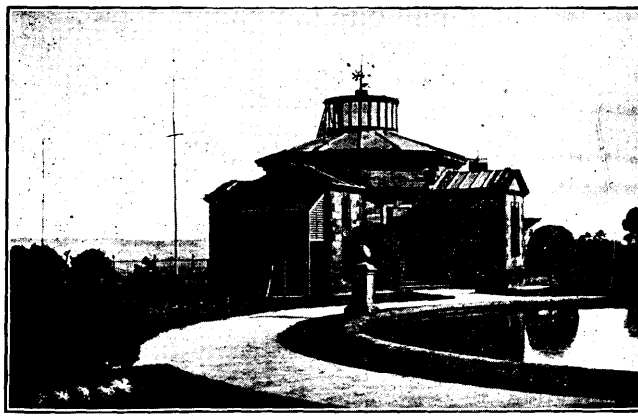
STONYHURST COLLEGE OBSERVATORY.

Lat. 53° 50′ 38·5″ N. Long. 9m. 52s. · 88 W.
Height of the Barometer above the Sea, 381 feet.



(FOUNDED 1838.)

Results of Geophysical and Solar Observations,

1930.

With Report and Notes of the Director,

Rev. E. D. O'CONNOR, S.J., M.A., F.R.A.S., F.R.Met.Soc.

BLACKBURN:
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CONTENTS.

REPORT AND NOTES.

GENERAL.—In August we lost the services of Mr. D. R. Ward, who is now engaged on his Theological studies. Mr. T. Corbishley, B.A., one of the Masters at the College, assists in the Weather Forecasting Department. The rest of the Staff remains unchanged.

A considerable amount of shelf-room has been added to that already available for the Library. Father Macklin has been engaged in entirely rearranging and cataloguing the books and various publications.

Father Rowland attended the Meeting of the British Association held at Bristol. He was nominated a member of the Committee of Section A.

The Director gave a number of Lectures to various Societies.

As in previous years, the boys at the School and visitors have been shown over the Observatory, and as opportunity served, interesting celestial objects were viewed through the 15-inch Equatorial.

METEOROLOGICAL.—The meteorological continuous records have been uninterrupted during the year, the results being forwarded, as usual, to the Meteorological Office, London, at the end of each week and of each month.

The outstanding features of the year's weather were an abnormally dry February, heavy rains in July, August, October, November, and, with the exception

of June, a general prevalence of clouds. The rainfall in February was only 0·410 in., more than half of which fell on the 14th. The mean February rainfall for the last 83 years is 3·516 in. The total fall for the year was 4·656 in. in excess of the mean. The days on which one or more inches of rain fell were May 8th, July 22nd, August 6th, October 29th, and November 18th. Precipitation took place on 222 days. The driest months were February, March and April, the wettest, January, August, October and November.

Sunshine was above the average in seven months of the year, but the total number of hours for the whole year was 6·5 hours below the average. This was due to a considerable deficit in April, July and December. Sunshine was recorded on 276 days.

Fine day periods of five days or more occurred as follows .

Feb. 7—13	Feb. 15—24	Feb. 26—Mar. 3
Apl. 27—May 4	June 1—8	Sept. 28—Oct. 2
	Dec. 1—5.	

A total of seven periods, with an average of 7·3 days each, as against eleven periods of 7·3 days each in 1929.

Bright sunshine for ten hours or more were recorded on :—

April 22, 29, 30; May 1, 2, 12, 14, 25, 27, 28, 29; June 5, 6, 7, 8, 15, 26; July 5, 9, 11; August 3, 16, 24, 26, 27, 28; September 2, 3, 15. A total of 29 days, with an average of 11·8 each, as against 41 days, with an average of 12·1 each in 1929.

Days on which notable continuous sunshine occurred were :

January 15 ; February 16 ; April 22, 29 ; May 1 ; June 6, 7, 8, ; July 5.

A total of nine days, as against 29 days in 1929.

The adopted mean temperature was 47°·3, 0°·4 above the normal. The highest shade temperature was 86°·0, on August 27th, 4°·8 above the normal ; the lowest 21°·0, on March 20th, 4°·5 above the normal. June, July and August were the warmest months ; February, March and December the coldest.

Six gales of 37 miles per hour or over were recorded : Two in January, one in September, one in November, and two in December. The greatest mean velocity of the wind, 48 miles per hour in direction S., was on January 10th. The highest gust, 69 miles per hour, occurred on January 2nd.

Synopsis of the Monthly Weather :—

January.—Wet, but comparatively mild and sunny.

Rainfall, 137·8% of the average. Wettest period the first fortnight, distributed fairly evenly.

Sunshine 140·0% of the average. Evenly distributed on 19 days.

Adopted mean temperature, 2°·6 *above* the normal. Ground frost on only eight days, the last week of the month being the coldest.

Total wind mileage, 107% of the average. The strongest gale of the year, 48 m.p.h., from the S., on the 10th.

February :—Sunny, exceptionally dry, calm, rather cold.

Rainfall, 11·5% of the average, on six days.

Sunshine, 122·9% of the average, on 18 days. Dull on the first four days; sunniest period, 15th—18th. Almost 50% of the total amount occurred on these four days.

Adopted mean temperature, 2°·6 *below* the normal. Coldest period, 17th—21st.

Total wind mileage, 62·2% of the average. Gale force never reached.

March.—Comparatively dry, otherwise normal.

Rainfall, 85·8% of the average on 16 days, most of which fell between 4th—21st; driest period, 22nd—30th, with only 0·070 in.

Sunshine, 98·2% of the average on 24 days. A sunny period, 22nd—24th, with an average of 8·2 hours each day. The first nine days were the dullest.

Adopted mean temperature 0°·4 *below* the normal; ground frost on 12 days; cold period 13th—20th, with ground frost each day.

Total wind mileage, 89·4% of the average. Gale force never reached.

April.—Comparatively warm and dry, but dull.

Rainfall, 84·7% of the average, evenly distributed on 18 days. Wettest period, 1st—14th; no rain fell after the 26th.

Sunshine, 69·4% of the average on 26 days. First 10 days, very dull; sunniest period, 16th—22nd. Last two days, very sunny.

Adopted mean temperature, 0°·8 *above* the normal.

Wind mileage, 96·2% of the average. Gale force never reached.

May.—Wet during the middle of the month, but otherwise normal.

Rainfall, 121·7% of the average. Heavy fall of 1·056 in. on the 8th.

Sunshine, 105·7% of the average. A sunny period, 25th—29th, with an average of 10·2 hours each day. Only two days, the 13th and 19th, were sunless.

June.—Calm, very dry, sunny and warm at first, then wet and mild.

Rainfall, very slightly below normal, approximately 60% of which fell after the 18th. Over one inch fell on the 9th and 10th.

Sunshine, 112·3% of the average, on 25 days. Specially sunny periods, 3rd to 8th, and 24th—30th.

Adopted mean temperature, 2°·0 *above* the normal.

July.—First half dry, normally sunny and warm; remainder, wet, very dull and mild.

Rainfall, 148·7% of the average. Rain fell every day after the 12th, with a heavy fall of 1·126 in. on the 22nd.

Sunshine, 80·1% of the average, on 28 days, 62% of which was registered on the first 12 days. A very dull period, 13th—23rd, with an average of only 0·8 of an hour each day.

August.—Normally warm and sunny, but very wet.

Rainfall, 146% of the average. First half of the month the wettest period, the last 7 days the driest. On the 6th a heavy fall of 1·055 in.

Sunshine, 107·9% of the average, fairly evenly distributed, except for a sunny period during the last week.

September.—Dry, but rather dull.

Rainfall, 81·3% of the average; two rainy periods 6th—11th, and 17th—22nd. Driest period, 23rd—30th, with approximately 17% of the total amount.

Sunshine, 92·4% of the average. The first three days bright, with 10 hours of sunshine each.

October.—Rather sunny and mild, but very wet and windy.

Rainfall, 162·8% of the average. A very rainy period began on the 3rd, 2·600 in. being registered for the next four days. Another heavy fall of 1·628 in. occurred on the 29th.

Sunshine, 113·5% of the average; sunniest period, 16th—26th. The first four days and last five days of the month, very dull.

Adopted mean temperature, 1° 7 *above* the average. Ground frost on the 27th.

Total wind mileage, 132% of the average, but greatest velocity just short of gale force.

November.—Wet, but comparatively sunny, mild.

Rainfall, 134·4% of the average, on 20 days. Two fairly dry periods, 3rd—6th, and 11th—17th. The last part of the month wet, commencing with a heavy fall of 1·200 in. on the 18th.

Sunshine, 120·0% of the average, but on only 17 days. The first eight days were responsible for over 50% of the total amount. During the last 20 days there was a daily average of just less than one hour.

Adopted mean temperature and total wind mileage both slightly above normal. A gale of 40 m.p.h. was recorded on the 24th, in direction E.S.E.

December.—Calm and dry, but very dull.

Rainfall, 76·0% of the average ; first week dry.

Sunshine, 64·8% of the average, on only 12 days.

Total wind mileage, only 65·9% of the average, in spite of gales of 40 m.p.h. on the 27th, and 39 m.p.h. on the 28th.

A Table showing the maximum gusts for each day, as recorded by the Dines Tube Anemometer, will be found at the end of these Notes. The maximum for each month is printed in heavy type.

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

MAGNETICAL.—Father Rowland reports:—Absolute measures of Horizontal Magnetic Force have been made once each month by the method of Vibration and Deflection. The constants of the magnetometer needles were described in our 1921 Annual Report (*p.* vii). The Inclination is also measured, once each month, by two needles, with Dover's Circle, No. 159. The Declination is observed each week, and usually at about 16 hours. The Differential Instruments, or Photo-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 an electro-magnet actuated from the Synchronome Clock. The scale values of the instruments are as follows:—

For the Unifilar	...	11·28′	per Cm. of Ordinate.
„ Bifilar	...	·000496	C.G.S. „ „

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

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

In the Tabular Summary on p. 37 the Absolute Measures of Horizontal Direction and Force are corrected by the difference between the curve ordinate at the time of observation and the monthly mean of the four daily readings on the five quietest days of the month, according to the rule stated on page xii of our Report for 1908.

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

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

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

From the measured ranges of D and H in minutes of arc on the five quietest days of a month a mean value is obtained of D and H combined. Similarly for each

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

It has, however, been felt for some time (*cf.* Report 1925, p. xxiv) that the ranges assigned for the higher character letters were too low, and accordingly a change was made in 1928 and the following scale adopted : (c) 0–2, (s) 3–7, (m) 8–20, (g) 21–65, (v.g.) over 65.

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

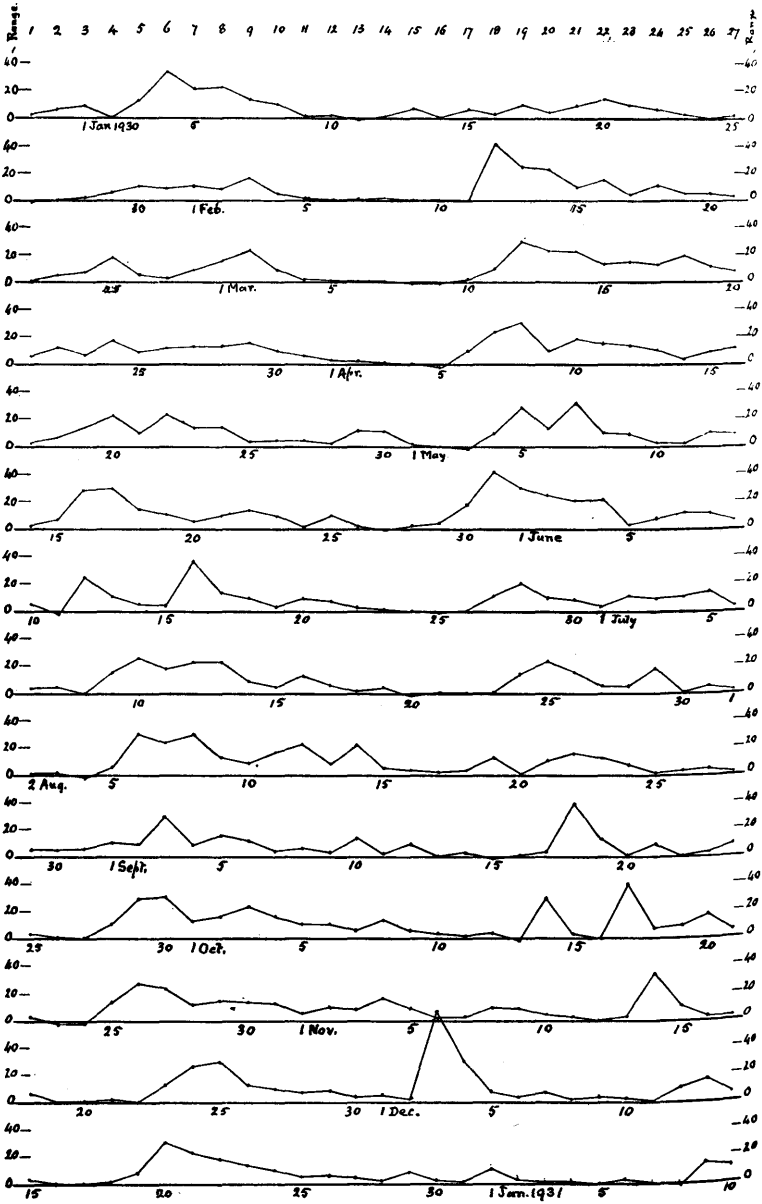
Corresponding tabulations are sent quarterly to the Meteorological Institute at De Bilt (Holland), for the International Committee on Terrestrial Magnetism. In these the significant notes are restricted to three— 0 (quiet), 1 (moderately disturbed), and 2 (highly disturbed). The character figures are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

There was only one magnetic disturbance during the year ranking as " very great " in our scale of characters, viz., that on December 3rd, with a range of 61′ in Declination and 343γ in Horizontal Force. The storm was heralded by a well marked "sudden commencement" at 1 h. 9 m., on the 3rd, but there were no further important movements of the magnets till about 14 h. 20 m.,

when the disturbance entered on its principal phase. The most remarkable feature of the storm was a very large oscillation of H between 15 h. 0 m. and 15 h. 30 m., covering the whole range of the storm. The details of this oscillation consisted of a sharp rise of 255γ in six minutes, minor oscillations about the maximum for three minutes, and a rapid fall of 343γ to the minimum in three stages occupying 21 minutes.

The year as a whole was remarkable for the very large number of disturbances classed as "moderate" or "greater," the number of days with these characters being respectively 138 and 48, as compared with 96 and 25 in the previous year. These disturbances for the most part fall into two groups of sequences centred respectively at approximately 27 days interval, which have retained their integrity throughout the year, as shewn in the chart of diurnal ranges on p. xvi. In this chart the year has been divided into periods of 27 days, successive periods being placed in vertical sequence, and the ordinates of the curves are taken from the figures of diurnal range which determine our character letters as explained on p.p. xiii, xiv. The mean synodic period of Solar rotation being 27·275 days, the recurrence of these periods of more pronounced magnetic disturbance at approximately this interval, points to the continued greater activity of two regions of the solar surface of considerable extent in longitude, separated by regions of less activity. There is an indication of one of these active regions dividing into two with increasing separation of centres and becoming less active, as shewn by the dividing of the second magnetic sequence into two after the notable disturbance of September 19th. The storm of December

XVI. DAY OF PERIOD.



1930. DAILY MAGNETIC CHARACTER IN 27-DAY PERIODS.

3rd may be either an isolated disturbance, or it may belong to the preceding branch of the divided sequence referred to above. It is noteworthy that these magnetic disturbances were not generally associated with the occurrence of conspicuous spotted areas near the central meridian, but the storm of December 3rd occurred about one and a half days after a quite insignificant group had crossed the central meridian.

The disturbance of December 20th was accompanied by an Aurora, which afforded an opportunity for an observation of exceptional interest, details of which were published in a letter to *Nature* (1931, January 17), and communicated to the Royal Astronomical Society at the meeting on January 9th. The substance of this observance was that the Aurora, which was observed during a period of rapid fall in the value of the Declination, faded out at the moment when that fall ceased, and it was suggested that this could be explained by assigning a negative charge to the stream of electrified particles to which both the Aurora and the magnetic deflection may be attributed.

" Sudden Commencements " were noted on the dates and at the times indicated in the following Table :

DATE	TIME
Jan. 13	1 h. 4 m.
,, 20	15 h. 12 m.
Feb. 9	12 h. 42 m.
June 12	0 h. 44 m.
,, 15	15 h. 53 m.
July 9	14 h. 54 m.
Oct. 14	4 h. 22 m.
Nov. 13	19 h. 30 m.
Dec. 3	1 h. 9 m.

The s.c. on January 13th was not followed by any notable disturbance, and that on February 9th was followed by three days "calm," and then by the second greatest disturbance of the year. That on December 3rd was followed after an interval of about 13 hours by the storm already described.

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

ASTRONOMICAL.—Of the 82 Lunar Occultations listed in the Nautical Almanac as visible at Greenwich, 72 were unobservable owing to rain or clouds. Eight were successfully observed, five disappearances and three reappearances, and the results sent to Dr. Comrie.

Twenty-six of the 52 Herschel "Nebulosity" Fields were examined with the 15-in. Refractor, each three or four times. The results were not very satisfactory, owing to the very few occasions when "seeing" was really good. On the best nights the appearance was not unlike the visual appearance of the Milky Way without optical aid, but with patches of more uniform density, something like patches of grey cloud. The Milky Way appearance was particularly noticeable in Fields 35 and 36, near α Ursæ Majoris, on the night of April 30th—May 1st. This was a particularly clear night.

A start has been made to attempt to photograph the Fields, using a 6-in. Dalmeyer Portrait Lens at F/4, with a Wratten Filter No. 16—so far without success.

SOLAR OBSERVATIONS.—Observations of the Solar Surface were made on 266 days, the same number of days as in 1929, and include 264 drawings, as against 272 the previous year. Of the drawings 235 are complete and show all spots and faculæ; of the remaining 29, 11 are complete for the spots.

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.

Through the kindness of Professor Brunner an interchange of copies of the Zurich and Stonyhurst drawings has been arranged to supplement, as far as possible, any gaps that may occur in our respective observations. The scales of the drawings are not quite the same. The diameter of the Zurich Disc is 25 cm., of the Stonyhurst Disc 10·5 in. = 26·67 cm. But each Observatory supplies the co-ordinates of the various spot-nuclei obtained from its own drawings.

Professor Favaro, of Catania, also very kindly places the Catania drawings at our disposal, sending all the Catania observations to Stonyhurst. These are duly returned, after examination, and copies taken of any drawings of particular interest, or of such as enable us further to fill in any gaps in our own observations. The practice at Catania is to draw the groups separately, not necessarily in their relative positions to one another. The whole disc is not shown, the scale of the drawing,

58 cm. to the diameter of the disc, being too large. The position angle, however, and distance from the limb of the various groups are indicated, if not too far away from the limb.

Tables have been formed whereby the projected areas of the spots, both in the case of the Zurich and Catania drawings, can be estimated.

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 those pages indicate the commencement of a new solar rotation. For the first four months of the year copies were not made of the Catania drawings if they did not exhibit some special feature ; hence the blanks that occur in the entries of the projected areas.

There were no spots on June 23rd, August 5th, December 8th and 31st.

The mean daily disc area of the spots, in units 1/5000 of the disc, works out at 2·44. From the Stonyhurst drawings alone it is slightly less, 2·26, as compared with 6·19 in 1929, and 7·19 in 1928.

The Sun-Spot Statistics are given on pp. 41—49. The groups are numbered in the order of their appearance in the Stonyhurst drawings. Spots special to the Zurich or Catania drawings receive the same number with a ′ as the Stonyhurst group which is nearest to them. Thus, Group 22 has co-ordinates, latitude +18°·1, longitude 36°·9. The spotlet 22′ which was on the Zurich drawing for February 4th has co-ordinates, latitude +11°·9, longitude 34°·2.

It was impossible to determine the co-ordinates of the spots special to the Catania drawings, as they usually appeared near the central portion of the disc, and no indications were given of their actual positions. The only exception was grouplet 86′, which appeared near the preceding limb on June 13th, and apparently coincided with a small patch of faculæ which was noted on the Stonyhurst drawing for June 14th, although there was no sign of the grouplet on that day. It will be observed that all the spots not found on the Stonyhurst drawings were quite small, area 0·1, or less, with the one exception of grouplet 86′, and generally were only on the disc for one day.

Finally a few of the values of maximum area were obtained from the Zurich or Catania drawings. These have been duly indicated.

The following Table shows the distribution of spot groups in the Northern and Southern Hemispheres at each rotation, with their maximum projected areas. The last column but one gives the sum of the maximum projected areas of all the groups on the Sun during the rotation in question. The rotations are numbered in accordance with the Greenwich convention.

Rotation Beginning	Northern Hemisphere		Southern Hemisphere		Sum. of Max'm Areas	Daily Mean Areas
	No. of Groups	Max'm Areas	No. of Groups	Max'm Areas		
1020. Dec. 15·42	16	37·1	6	12·4	49·5	12·23
1021. Jan. 11·74	13	18·0	10	9·4	27·4	5·76
1022. Feb. 8·08	6	4·5	6	14·4	18·9	3·00
1023. Mar. 7·42	11	6·7	6	8·1	14·8	3·15
1024. April 3·72	13	8·4	8	4·2	12·6	2·38
1025. April 30·98	7	9·4	5	3·5	12·9	2·47
1026. May 28·20	7	7·1	6	2·6	9·7	1·76
1027. June 24·40	10	3·4	6	2·1	5·5	0·75
1028. July 21·61	4	1·6	6	3·6	5·2	1·19
1029. Aug. 17·83	9	8·4	8	2·3	10·7	1·93
1030. Sept. 14·08	4	12·0	5	2·0	14·0	2·64
1031. Oct. 11·36	3	1·8	4	5·4	7·2	2·62
1032. Nov. 7·66	9	6·1	4	9·1	15·2	3·38
1033. Dec. 4·97	9	3·0	2	1·8	4·8	0·80
TOTALS	121	127·5	82	80·9	208·4	2·84

SEISMOLOGY.—Father Rowland reports:—The total number of earthquakes definitely recorded during the year was 97, as against 129 last year, distributed as follows:—

Jan	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1	3	3	8	16	9	13	7	7	13	7	10	97

During February a temporary modification was made to the motor clock to give a more open time scale, with a view to determining the velocity of transmission of surface waves from certain projected heavy explosions in connection with canal works at a distance of about seventeen miles from the Observatory, but no certain indications of tremors due to these explosions were discernible on the records. Whilst the instrument was

out of action for these alterations a destructive earthquake occurred in Greece on February 23rd, of which, in consequence, we have no record, and it is not included in the above summary.

Of the recorded earthquakes the greatest, as measured by amplitude of displacement on our records were :—

May	6	Persia
July	23	S. Italy
Dec.	3	Burma

Others of note were :—

Feb.	14	Crete
Mar.	26	New Guinea
,,	31	Greece
Apr.	17	,,
July	2	Assam
,,	13	Kansu
,,	14	Central America
Aug.	20	Formosa
Sept.	21	Burma
Oct.	24	N. of Marianne Islands
Nov.	9	New Guinea
,,	25	Japan.

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 investigation, and the whole of our January records were loaned to the Superintendent of Kew Observatory for a special study of microseisms.

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

Maximum Gusts for each Day of the Year, 1930.

Recorded by the Dines Tube Anemograph.

1930	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1930
DAY													DAY
1	54	37	31	41	29	21	28	20	26	29	21	23	1
2	**69**	32	43	45	20	23	27	36	17	20	40	31	2
3	34	21	34	47	22	19	36	20	15	12	42	20	3
4	46	25	30	56	22	14	29	31	16	38	29	14	4
5	47	30	19	30	30	14	22	24	18	42	27	10	5
6	36	36	27	31	30	25	34	37	23	51	17	16	6
7	46	**43**	27	23	39	32	35	33	31	38	43	13	7
8	36	30	27	32	38	24	33	28	27	**59**	48	29	8
9	42	25	29	16	32	35	30	26	13	31	45	11	9
10	68	17	32	8	22	32	31	20	14	42	48	20	10
11	48	13	22	26	23	30	27	31	29	34	42	39	11
12	55	26	30	34	26	15	27	39	29	39	35	36	12
13	47	22	26	34	32	18	19	33	28	31	41	44	13
14	44	36	26	24	31	21	21	**54**	35	41	38	27	14
15	21	42	38	32	28	23	22	46	31	38	44	13	15
16	23	32	36	29	31	23	26	35	12	46	24	24	16
17	35	17	22	45	41	17	29	15	37	46	13	12	17
18	33	33	24	45	**48**	20	28	32	**60**	40	37	29	18
19	41	30	18	**61**	40	21	26	51	48	42	24	29	19
20	34	15	**54**	39	28	33	23	37	38	31	34	31	20
21	32	20	44	24	15	34	**41**	49	44	36	41	24	21
22	28	24	34	28	28	33	28	45	13	35	39	14	22
23	19	41	28	29	22	35	27	31	38	27	39	28	23
24	45	39	20	18	29	40	24	34	45	43	**50**	18	24
25	18	25	44	20	21	31	15	24	46	45	47	16	25
26	41	23	28	24	13	19	37	20	44	24	34	40	26
27	39	20	19	28	23	22	33	27	40	7	16	52	27
28	18	19	37	41	33	**43**	28	14	30	34	30	**53**	28
29	20		51	46	26	23	30	28	27	41	34	41	29
30	17		32	27	33	40	26	—	29	46	14	36	30
31	50		47		32		25	21		17		36	31

METEOROLOGICAL REPORT.

JANUARY, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·194	29·481
Highest ,, ,, on the 16th ..... ,,	29·787	30·122
Lowest ,, ,, on the 31st ..... ,,	28·389	28·597
Range of Barometer Readings ..... ,,	1·398	1·525
Highest Reading of a Max. Therm. on the 19th...	54·9	51·4
Lowest Reading of a Min. Therm. on the 16th ...	28·1	22·0
Range of Thermometer Readings	26·8	29·4
Mean of Highest Daily Readings	45·2	42·6
Mean of Lowest Daily Readings	35·4	33·3
Mean Daily Range	9·8	9·3
Deduced Mean Temp. (from mean of Max. and Min.)	40·1	37·7
Mean Temperature from Dry Bulb	40·8	38·0
Adopted Mean Temperature	40·5	37·9
Mean Temperature of Evaporation	39·2	36·6
Mean Temperature of Dew Point	37·2	34·5
Mean elastic force of Vapour ..... inches	0·221	0·202
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	87
Mean weight of a cubic foot of air ..... grains	540·4	549·1
Mean amount of Cloud (0—10)	7 5	7·8
Fall of Rain ..... inches	6·060	4·419
Greatest Rainfall in one day (14th)..... ,,	0·658	0·824
No. of days on which ·005 in. or more Rain fell...	26	19·7

Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	2	2	1	10	10	5	0
Mean Velocity in miles per hr	8·3	4·6	10·5	5·3	11·2	14·2	14·5	0
Total No. of miles.....	198	221	503	127	2682	3400	1744	0

		Mean*
Total No. of miles registered	8875	8305·9
Greatest hourly velocity (10th, at 0230 G.M.T., Dir. S.	48	41·3

* *For the last* 63 *years.*

JANUARY, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·287 in.
Monthly range ,, ...	—	0·127 in.
Mean of highest daily temperatures	+	2·6°
Mean of lowest ,, ,, ...	+	2·1°
Mean daily range	+	0·5°
Adopted mean temperature	+	2·6°
Total rainfall	+	1·641 in.

Ground Frost on the 9th, 15th, 16th, 21st, 25th, 26th, 28th, 30th and 31st. Hoar Frost on the 15th, 16th, 25th, 26th, 28th. Snow on the 11th. Hail on the 5th, 10th—12th, and 25th. Heavy Rain on the 2nd, 10th and 14th. Gales of Wind on the 2nd and 10th. Fog on the 13th, 14th, 16th, 20th, 29th, 30th and 31st. Solar Halo on the 4th.

EXTREME READINGS FOR JANUARY.

During 83 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 ,, ,, ,,	†1850	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 other years.*

FEBRUARY, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·716	29·492
Highest ,, ,, on the 9th ... ,,	30·337	30·106
Lowest ,, ,, on the 1st ... ,,	28·474	28·647
Range of Barometer Readings ..... ,,	1·863	1·457
Highest Reading of a Max. Therm. on the 28th ...	52·0	52·1
Lowest Reading of a Min. Therm. on the 21st ...	25·2	22·6
Range of Thermometer Readings	26·8	29·5
Mean of Highest Daily Readings	40·0	43·8
Mean of Lowest Daily Readings	31·6	33·6
Mean Daily Range	8·4	10·2
Deduced Mean Temp. (from mean of Max. and Min.)	35·4	38·2
Mean Temperature from Dry Bulb	36·2	38·5
Adopted Mean Temperature	35·8	38·4
Mean Temperature of Evaporation	34·1	36·8
Mean Temperature of Dew Point	31·0	34·6
Mean elastic force of Vapour ..... inches	0·175	0·196
Mean weight of Vapour in a cub. ft. of air, grains	2·0	2·4
Mean additional weight required for saturation ,,	0·5	0·4
Mean degree of Humidity (saturation 100)	79	86
Mean weight of a cubic foot of air ..... grains	555·7	548·6
Mean amount of Cloud (0—10)	7·0	7·5
Fall of Rain ..... inches	0·410	3·516
Greatest Rainfall in one day (14th) ..... ,,	0·240	0·758
No. of days on which ·005 in. or more Rain fell...	6	16·7

Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	15	8	1	0	0	1	0
Mean Velocity in miles per hr.	9·1	5·9	8·1	7·1	0	0	4·8	0
Total No. of miles.....	658	2117	1549	171	0	0	116	0

		Mean*
Total No. of miles registered	4611	7386·7
Greatest hourly velocity (15th, at 1030 G.M.T., Dir. N.W.).....	24	40·0

* *For the last* 63 *years.*

FEBRUARY, 1930.

DIFFERENCES.

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

Mean barometric pressure	+	0·224 in.
Monthly range ,, ...	+	0·406 in.
Mean of highest daily temperatures	—	3·8°
Mean of lowest ,, ,, ...	—	2·0°
Mean daily range	—	1·8°
Adopted mean temperature	—	2·6°
Total rainfall	—	3·106 in.

Ground Frost on the 6th—12th, 14th, 16th—21st, 23rd, 25th and 26th. Hoar Frost on the 10th, 14th, 16th—18th, 20th and 21st. Snow on the 6th, 7th, 9th, 24th and 25th. Hail on the 6th. Fog on the 3rd, 14th, 20th, 25th, 26th and 28th.

EXTREME READINGS FOR FEBRUARY,

During 83 Years.

Highest reading of Barometer ...	1902 (1st)	30·476 in.
Lowest ,, ,, ...	1900 (19th)	27·870 in.
Highest temperature	1877 (8th)	58·3°
Lowest ,, ...	1902 (11th)	5·0°
Highest adopted mean temperature	1869	44·0°
Lowest ,, ,,	1855	28·6°
Greatest fall of rain	1848	8·882 in.
Least ,, ...	1858	0·306 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, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·375	29·454
Highest ,, ,, on the 1st ... ,,	30·135	30·045
Lowest ,, ,, on the 16th ... ,,	28·735	28·654
Range of Barometer Readings ..... ,,	1·400	1·391
Highest Reading of a Max. Therm. on the 31st ...	54·1	56·9
Lowest Reading of a Min. Therm. on the 20th...	21·0	23·5
Range of Thermometer Readings	33·1	33·4
Mean of Highest Daily Readings	45·0	47·0
Mean of Lowest Daily Readings	34·9	34·5
Mean Daily Range	10·1	12·5
Deduced Mean Temp. (from mean of Max. and Min.)	39·0	39·8
Mean Temperature from Dry Bulb	40·3	40·4
Adopted Mean Temperature	39·7	40·1
Mean Temperature of Evaporation	38·0	38·3
Mean Temperature of Dew Point	35·0	35·9
Mean elastic force of Vapour ..... inches	0·204	0·210
Mean weight of Vapour in a cub. ft. of air, grains	2·4	2·4
Mean additional weight required for saturation ,,	0·6	0·5
Mean degree of Humidity (saturation 100)	79	85
Mean weight of a cubic foot of air ..... grains	544·5	546·1
Mean amount of Cloud (0—10)	7·9	7·5
Fall of Rain ..... inches	2·855	3·319
Greatest Rainfall in one day (7th) ..... ,,	0·490	0·756
No. of days on which ·005 in. or more Rain fell...	16	16·7

Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of Days	4	5	2	2	3	6	9	0
Mean Velocity in miles per hr.	6·2	10·4	6·5	7·8	14·8	10·6	9·3	0
Total No. of miles.....	592	1245	312	374	1065	1528	2008	0

		Mean*
Total No. of miles registered	7424	8287·4
Greatest hourly velocity (31st, at 1200 G.M.T., Dir. S.S.E.....	34	39·6

* *For the last* 63 *years.*

MARCH, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·079 in.
Monthly range ,, ...	+	0·009 in.
Mean of highest daily temperatures	—	2·0°
Mean of lowest ,, ,, ...	+	0·4°
Mean daily range	—	2·4°
Adopted mean temperature	—	0·4°
Total rainfall	—	0·464 in.

Ground Frost on the 1st, 11th—14th, 17th, 18th, 19th, 20th, 22nd—24th. Hoar Frost on the 1st and 13th. Snow on the 11th, 13th, 15th, 16th, 18th, 19th, 20th, and 21st. Hail on the 12th, 13th, 20th and 21st. Fog on the 3rd, 4th, 7th, 8th, 12th, 20th and 24th. Lunar Halo on the 11th.

EXTREME READINGS FOR MARCH,

During 83 Years.

Highest reading of Barometer ...	1854 (4th)	30·452 in.
Lowest ,, ,, ...	1876 (10th)	28·100 in.
Highest temperature	1871 (25th)	68·0°
Lowest ,, ...	1874 (10th)	11·1°
Highest adopted mean temperature	1920	44·2°
Lowest ,, ,,	1883	34·4°
Greatest fall of rain	1912	7·205 in.
Least ,, ...	1852	0·352 in.
Greatest fall of rain in one day ...	1898 (17th)	1·540 in.
Greatest No. of days on which ·005 in. or more rain fell ...	†1861	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* 1914.

APRIL, 1930.

Results of Observations taken during the Month.			Mean for the last 83 years.
Mean Reading of the Barometer	inches	29·396	29·482
Highest ,, ,, on the 7th ...	,,	29·812	29·954
Lowest ,, ,, on the 13th ...	,,	28·958	28·802
Range of Barometer Readings	,,	0·854	1·152
Highest Reading of a Max. Therm. on the 24th...		60·1	64·3
Lowest Reading of a Min. Therm. on the 6th ...		32·3	28·2
Range of Thermometer Readings		27·8	36·1
Mean of Highest Daily Readings		51·3	54·1
Mean of Lowest Daily Readings		40·6	37·9
Mean Daily Range		10·7	16·2
Deduced Mean Temp. (from mean of Max. and Min.)		44·5	43·9
Mean Temperature from Dry Bulb		45·7	44·7
Adopted Mean Temperature		45·1	44·3
Mean Temperature of Evaporation		42·6	41·6
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	,,	0·8	0·7
Mean degree of Humidity (saturation 100)		76	80
Mean weight of a cubic foot of air	grains	538·8	542·0
Mean amount of Cloud (0—10)		7·7	6·8
Fall of Rain	inches	2·169	2·555
Greatest Rainfall in one day (9th)	,,	0·350	0·597
No. of days on which ·005 in. or more Rain fell...		18	14·9

Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	6	6	5	1	1	5	6	0
Mean Velocity in miles per hr.	9·5	10·8	12·7	4·9	21·0	6·4	9·2	0
Total No. of miles.....	1373	1554	1521	117	503	765	1325	0

		Mean*
Total No. of miles registered	7158	7440·0
Greatest hourly velocity (1st, at 1200 G.M.T., Dir. S. by E.; 4th, at 1100 G.M.T., Dir. E.)	30	35·9

* *For the last* 63 *years.*

APRIL, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·086 in.
Monthly range ,, ...	—	0·298 in.
Mean of highest daily temperatures	—	2·8°
Mean of lowest ,, ,, ...	+	2·7°
Mean daily range	—	5·5°
Adopted mean temperature	+	0·8°
Total rainfall	—	0·386 in.

Ground Frost on the 6th, 22nd and 23rd. Hoar Frost on the 6th. Snow on the 4th. Thunder on the 2nd, 14th and 25th. Lightning on the 2nd and 25th.

EXTREME READINGS FOR APRIL,

During 83 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, 1930.

Results of Observations taken during the Month.			Mean for the last 83 years.
Mean Reading of the Barometer	inches	29·529	29·538
Highest ,, ,, on the 23rd ...	,,	29·823	29·983
Lowest ,, ,, on the 11th ...	,,	28·928	28·943
Range of Barometer Readings	,,	0·895	1·040
Highest Reading of a Max. Therm. on the 26th...		66·8	71·7
Lowest Reading of a Min. Therm. on the 10th...		31·8	32·0
Range of Thermometer Readings		35·0	39·7
Mean of Highest Daily Readings		57·3	59·3
Mean of Lowest Daily Readings		43·0	42·6
Mean Daily Range		14·3	16·7
Deduced Mean Temp. (from mean of Max. and Min.)		48·5	49·2
Mean Temperature from Dry Bulb		50·5	50·1
Adopted Mean Temperature		49·5	49·7
Mean Temperature of Evaporation		46·8	46·5
Mean Temperature of Dew Point		42·9	43·0
Mean elastic force of Vapour	inches	0·277	0·280
Mean weight of Vapour in a cub. ft. of air, grains		3·2	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	535·9	536·9
Mean amount of Cloud (0—10)		7·3	7·0
Fall of Rain	inches	2·981	2·456
Greatest Rainfall in one day (8th)	,,	1·056	0·650
No. of days on which ·005 in. or more Rain fell...		15	14·7

Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	11	1	1	2	1	13	1
Mean Velocity in miles per hr.	12·3	7·3	7·5	2·8	9·2	8·7	9·7	7·5
Total No. of miles.....	296	1920	181	66	442	209	3013	181

		Mean*
Total No of miles registered	6308	6868·4
Greatest hourly velocity (17th, at 2130 G.M.T., Dir. S.S.W.)	26	32·2

* *For the last* **63** *years.*

MAY, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·009 in.
Monthly range ,, ...	—	0·145 in.
Mean of highest daily temperatures	—	2·0°
Mean of lowest ,, ,, ...	+	0·4°
Mean daily range	—	2·4°
Adopted mean temperature	—	0·2°
Total rainfall	+	0·525 in.

Ground Frost on the 8th and 10th. Hail on the 26th. Heavy Rain on the 8th. Fog on the 10th, 13th and 15th. Thunder on the 5th and 26th.

EXTREME READINGS FOR MAY,

During 83 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 ...	†1860	22
Least ,, ,, ,,	†1848	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 other years.*

JUNE, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·560	29·560
Highest ,, ,, on the 15th ... ,,	29·941	29·937
Lowest ,, ,, on the 24th ... ,,	29·205	29·046
Range of Barometer Readings ..... ,,	0·736	0·891
Highest Reading of a Max. Therm. on the 30th .	77·3	76·5
Lowest Reading of a Min. Therm. on the 12th...	42·0	39·2
Range of Thermometer Readings	35·3	37·3
Mean of Highest Daily Readings	65·8	64·9
Mean of Lowest Daily Readings	50·1	48·1
Mean Daily Range	15·7	16·8
Deduced Mean Temp. (from mean of Max. and Min.)	56·2	54·7
Mean Temperature from Dry Bulb	57·7	55·3
Adopted Mean Temperature	57·0	55·0
Mean Temperature of Evaporation	53·4	51·7
Mean Temperature of Dew Point	49·5	48·2
Mean elastic force of Vapour ..... inches	0·354	0·345
Mean weight of Vapour in a cub. ft. of air, grains	4·0	3·8
Mean additional weight required for saturation ,,	1·4	1·0
Mean degree of Humidity (saturation 100)	74	78
Mean weight of a cubic foot of air ..... grains	528·5	531·4
Mean amount of Cloud (0—10)	6·0	7·2
Fall of Rain ..... inches	3·148	3·289
Greatest Rainfall in one day (18th)..... ,,	0·708	0·795
No. of days on which ·005 in. or more Rain fell...	14	15·1

Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	8	2	1	1	7	9	0
Mean Velocity in miles per hr.	7·0	4·8	7·7	11·8	9·2	9·0	7·5	0
Total No. of miles.....	336	925	369	282	220	1516	1610	0

		Mean*
Total No. of miles registered	5258	6189·3
Greatest hourly velocity (30th, at 1300 G.M.T., Dir., S.S.E.)	25	29·2

* *For the last* 63 *years.*

JUNE, 1930.

DIFFERENCES.

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

Mean barometric pressure		0·000 in.
Monthly range ,, ...	—	0·155 in.
Mean of highest daily temperatures	+	0·9°
Mean of lowest ,, ,, ...	+	2·0°
Mean daily range	—	1·1°
Adopted mean temperature	+	2·0°
Total rainfall	—	0·141 in.

Hail on the 24th. Heavy Rain on the 9th and 18th. Thunder on the 18th and 23rd. Lightning on the 18th, 23rd and 30th. Solar Halo on the 15th.

EXTREME READINGS FOR JUNE,

During 83 Years.

Highest reading of Barometer ...	1874 (15th)	30·219 in.
Lowest ,, ,, ...	1862 (12th)	28·632 in.
Highest temperature	1893 (18th)	88·7°
Lowest ,, ...	1902 (9th)	32·0°
Highest adopted mean temperature	1896	59·3°
Lowest ,, ,,	1907	51·5°
Greatest fall of rain	1907	8·705 in.
Least ,, ...	1925	0·282 in.
Greatest fall of rain in one day ...	1857 (8th)	2·093 in.
Greatest No. of days on which ·005 in. or more rain fell ...	†1907	27
Least ,, ,, ,,	1887	4
*Greatest hourly velocity of wind...	1897 (16th)	45 mls.
*Greatest No. of miles registered ...	1877	8384
*Least ,, ,, ,, ...	1915	3967

* *Since* 1867 *only.* † *And* 1912.

JULY, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·394	29·525
Highest ,, ,, on the 9th ... ,,	29·847	29·904
Lowest ,, ,, on the 18th ... ,,	28·816	29·001
Range of Barometer Readings ..... ,,	1·031	0·903
Highest Reading of a Max. Therm. on the 1st ...	72·1	78·2
Lowest Reading of a Min. Therm. on the 11th...	46·6	42·9
Range of Thermometer Readings	25·5	35·3
Mean of Highest Daily Readings	63·1	67·2
Mean of Lowest Daily Readings	52·8	51·3
Mean Daily Range	10·3	15·9
Deduced Mean Temp. (from mean of Max. and Min.)	56·1	57·6
Mean Temperature from Dry Bulb	57·6	58·0
Adopted Mean Temperature	56·9	57·9
Mean Temperature of Evaporation	54·1	54·8
Mean Temperature of Dew Point	50·9	52·0
Mean elastic force of Vapour ..... inches	0·373	0·388
Mean weight of Vapour in a cub. ft. of air, grains	4·2	4·4
Mean additional weight required for saturation ,,	1·2	1·1
Mean degree of Humidity (saturation 100)	78	81
Mean weight of a cubic foot of air ..... grains	525·3	527·5
Mean amount of Cloud (0—10)	7·9	7·4
Fall of Rain ..... inches	5·989	4·051
Greatest Rainfall in one day (22nd) ..... ,,	1·126	0·887
No. of days on which ·005 in. or more Rain fell...	21	16·6

Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	5	0	0	0	4	7	12	3
Mean Velocity in miles per hr.	7·8	0	0	0	9·5	7·8	6·8	10·9
Total No. of Miles.....	931	0	0	0	908	1311	1964	788

		Mean*
Total No. of miles registered	5902	6306·5
Greatest hourly velocity (21st, at 1930 G.M.T., Dir. N. by W. ; 26th, at 1230 G.M.T., Dir. S.)	21	28·1

* *For the last* 63 *years.*

JULY, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·131 in.
Monthly range ,, ...	+	0·128 in.
Mean of highest daily temperatures	—	4·1°
Mean of lowest ,, ,, ...	+	1·5°
Mean daily range	—	5·6°
Adopted mean temperature	—	1·0°
Total rainfall	+	1·938 in.

Heavy Rain on the 16th, 17th, 20th, 22nd and 28th. Thunder on the 3rd, 4th and 14th. Lightning on the 3rd.

EXTREME READINGS FOR JULY,

During 83 Years.

Highest reading ot 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 ,, ,, ,, ...	†1863	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, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·411	29·490
Highest ,, ,, on the 31st ... ,,	29·901	29·892
Lowest ,, ,, on the 21st ... ,,	28·856	28·944
Range of Barometer Readings ..... ,,	1·045	0·948
Highest Reading of a Max. Therm. on the 27th ...	86·0	76·0
Lowest Reading of a Min. Therm. on the 1st & 6th	45·0	42·0
Range of Thermometer Readings	41·0	34·0
Mean of Highest Daily Readings	64·6	66·2
Mean of Lowest Daily Readings	52·6	50·9
Mean Daily Range	12·0	15·3
Deduced Mean Temp. (from mean of Max. and Min.)	56·9	56·9
Mean Temperature from Dry Bulb	58·5	57·7
Adopted Mean Temperature	57·7	57·3
Mean Temperature of Evaporation	55·5	54·5
Mean Temperature of Dew Point	52·8	51·8
Mean elastic force of Vapour ..... inches	0·400	0·387
Mean weight of Vapour in a cub. ft. of air, grains	4·5	4·3
Mean additional weight required for saturation ,,	1·1	0·9
Mean degree of Humidity (saturation 100)	82	82
Mean weight of a cubic foot of air ..... grains	524·7	527·3
Mean amount of Cloud (0—10)	7·5	7·3
Fall of Rain ..... inches	7·428	5·187
Greatest Rainfall in one day (6th) ..... ,,	1·055	1·084
No. of days on which ·005 in. or more Rain fell...	26	18·8

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	1	2	3	4	4	17	0
Mean Velocity in miles per hr.	0	5·0	6·9	7·4	6·8	9·0	10·3	0
Total No. of miles.....	0	119	332	532	651	862	4220	0

		Mean*
Total No. of miles registered	6716	6323·6
Greatest hourly velocity (14th, at 1200 G.M.T., Dir., W. by N.; 21st, at 2400 G.M.T., Dir. W.S.W.	28	30·4

* *For the last* 63 *years.*

AUGUST, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·079 in.
Monthly range ,, ...	+	0·097 in.
Mean of highest daily temperatures	—	1·6°
Mean of lowest ,, ,, ...	+	1·7°
Mean daily range	—	3·3°
Adopted mean temperature	+	0·4°
Total rainfall	+	2·241 in.

Heavy Rain on the 2nd, 6th, 13th, 21st and 29th. Fog on the 27th—30th. Thunder on the 25th and 27th. Lightning on the 5th, 18th, 19th, 27th and 28th.

EXTREME READINGS FOR AUGUST,

During 83 Years.

Highest reading of Barometer ...	1874 (21st)	30·114 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 ,, ...	1871	2·085 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, 1930.

Results of Observations taken during the Month.			Mean for the last 83 years.
Mean Reading of the Barometer	inches	29·488	29·543
Highest ,, ,, on the 2nd ...	,,	29·954	30·004
Lowest ,, ,, on the 20th ...	,,	28·420	28·888
Range of Barometer Readings	,,	1·534	1·116
Highest Reading of a Max. Therm. on the 3rd ...		69·3	71·7
Lowest Reading of a Min. Therm. on the 2nd ..		42·4	36·8
Range of Thermometer Readings		26·9	34·9
Mean of Highest Daily Readings		60·7	61·7
Mean of Lowest Daily Readings		50·0	47·4
Mean Daily Range		10·7	14·3
Deduced Mean Temp. (from mean of Max. and Min.)		54·1	53·3
Mean Temperature from Dry Bulb		55·3	54·3
Adopted Mean Temperature		54·7	53·8
Mean Temperature of Evaporation		52·4	51·0
Mean Temperature of Dew Point		49·6	48·3
Mean elastic force of Vapour	inches	0·355	0·339
Mean weight of Vapour in a cub. ft. of air, grains		3·8	3·9
Mean additional weight required for saturation ,,		1·0	0·8
Mean degree of Humidity (saturation 100)		81	82
Mean weight of a cubic foot of air	grains	529·6	532·5
Mean amount of Cloud (0—10)		7·4	6·7
Fall of Rain	inches	3·530	4·330
Greatest Rainfall in one day (6th)	,,	0·562	0·966
No. of days on which ·005 in. or more Rain fell...		17	16·5

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	7	4	1	1	4	8	2
Mean Velocity in miles per hr.	10·1	5·6	5·3	13·3	16·0	7·7	11·3	7·3
Total No. of miles	727	951	507	319	384	738	2174	348

		Mean*
Total No. of miles registered	6148	6034·2
Greatest hourly velocity (18th, at 0530 G.M.T., Dir., W.S.W.).....	37	31·6

* *For the last* **63** *years.*

SEPTEMBER, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·055 in.
Monthly range ,, ...	+	0·418 in.
Mean of highest daily temperatures	—	1·0°
Mean of lowest ,, ,, ...	+	2·6°
Mean daily range	—	3·6°
Adopted mean temperature	+	0·9°
Total rainfall	—	0·800 in.

Heavy Rain on the 6th. Fog on the 2nd, 16th and 22nd. Thunder on the 10th, 19th and 24th. Lightning on the 11th, 19th and 24th.

EXTREME READINGS FOR SEPTEMBER,

During 83 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 ...	1889 (26th)	2·060 in.
Greatest No. of days on which ·005 in. or more rain fell ...	1918	29
Least ,, ,, ,,	†1851	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, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·320	29·445
Highest ,, ,, on the 2nd ... ,,	30·042	30·021
Lowest ,, ,, on the 8th ... ,,	28·591	28·684
Range of Barometer Readings ..... ,,	1·451	1·337
Highest Reading of a Max. Therm. on the 15th..	63·1	64·0
Lowest Reading of a Min. Therm. on the 27th...	33·6	29·9
Range of Thermometer Readings	29·5	34·1
Mean of Highest Daily Readings	54·9	54·4
Mean of Lowest Daily Readings	44·7	42·2
Mean Daily Range	10·2	12·2
Deduced Mean Temp. (from mean of Max. and Min.)	48·8	47·3
Mean Temperature from Dry Bulb	49·9	48·0
Adopted Mean Temperature	49·4	47·8
Mean Temperature of Evaporation	47·2	45·5
Mean Temperature of Dew Point	44·3	43·1
Mean elastic force of Vapour ..... inches	0·292	0·279
Mean weight of Vapour in a cub. ft. of air, grains	3·4	3·2
Mean additional weight required for saturation ,,	0·7	0·6
Mean degree of Humidity (saturation 100)	81	84
Mean weight of a cubic foot of air ..... grains	532·7	537·3
Mean amount of Cloud (0—10)	7·3	7·?
Fall of Rain ..... inches	8·003	4·953
Greatest Rainfall in one day (29th)..... ,,	1·628	0·977
No. of days on which ·005 in. or more Rain fell...	23	18·9

Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	0	2	0	8	7	11	2
Mean Velocity in miles per hr.	7·3	0	7·8	0	15·7	10·4	11·4	13·5
Total No. of miles.....	127	0	375	0	3010	1754	3016	648

		Mean*
Total No. of miles registered, ...	8930	6799·0
Greatest hourly velocity (17th, at 2000 G.M.T., Dir., S.)	35	36·8

* *For the last 63 years.*

OCTOBER, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·125 in.
Monthly range ,, ...	+	0·114 in.
Mean of highest daily temperatures	+	0·5°
Mean of lowest ,, ,, ...	+	2·5°
Mean daily range	—	2·0°
Adopted mean temperature	+	1·6°
Total rainfall	+	3·050 in.

Ground Frost on the 27th. Heavy Rain on the 3rd, 4th, 6th and 29th. Fog on the 3rd, 4th, 27th and 28th. Thunder on the 6th. Lightning on the 21st.

EXTREME READINGS FOR OCTOBER,
During 83 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 ...	1903 and 1923.....	29
Least ,, ,, ,, ...	1920	8
*Greatest hourly velocity of wind ..	1877 (15th)	52 mls.
*Greatest No. of miles registered ...	1874	9818
*Least ,, ,, ,, ...	1915	3965

* *Since* 1867 *only.*

NOVEMBER, 1930.

Results of Observations taken during the Month.		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·365	29·458
Highest ,, ,, on the 12th ... ,,	30·211	30·067
Lowest ,, ,, on the 2nd ... ,,	28·363	28·569
Range of Barometer Readings ..... ,,	1·848	1·498
Highest Reading of a Max. Therm. on the 8th ...	55·5	55·8
Lowest Reading of a Min. Therm. on the 17th ...	23·4	25·5
Range of Thermometer Readings	32·1	30·3
Mean of Highest Daily Readings	47·8	47·1
Mean of Lowest Daily Readings	37·1	36·8
Mean Daily Range	10·7	10·3
Deduced Mean Temp. (from mean of Max. and Min.)	42·1	41·6
Mean Temperature from Dry Bulb	42·7	42·0
Adopted Mean Temperature	42·4	41·8
Mean Temperature of Evaporation	40·5	39·8
Mean Temperature of Dew Point	37·9	38·1
Mean elastic force of Vapour ..... inches	0·228	0·231
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·8
Mean additional weight required for saturation ,,	0·5	0·4
Mean degree of Humidity (saturation 100)	81	87
Mean weight of a cubic foot of air ..... grains	541·5	544·4
Mean amount of Cloud (0—10)	6·8	7·4
Fall of Rain ..... inches	6·021	4·477
Greatest Rainfall in one day (18th) ..... ,,	1·200	1·008
No. of days on which ·005 in. or more Rain fell ...	20	18·2

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	7	3	1	0	2	7	7	3
Mean Velocity in miles per hr.	6·2	8·4	24·9	0	12·4	11·3	14·7	8·9
Total No. of miles.....	1049	602	597	0	596	1893	2465	643

		Mean*
Total No. of miles registered	7845	7121·4
Greatest hourly velocity (24th, at 1200 G.M.T., Dir., E.S.E.)	40	40·9

* *For the last* **63** *years.*

NOVEMBER, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·093 in.
Monthly range ,, ...	+	0·350 in.
Mean of highest daily temperatures	+	0·7°
Mean of lowest ,, ,, ...	+	0·3°
Mean daily range	+	0·4°
Adopted mean temperature	+	0·6°
Total rainfall	+	1·624 in.

Ground Frost on the 4th—7th, 12th, 16th—18th, and 28th. Hoar Frost on the 5th and 6th. Heavy Rain on the 1st, 7th, 18th, 21st and 22nd. Gale of Wind on the 24th. Fog on the 1st and 28th. Solar Halo on the 17th.

EXTREME READINGS FOR NOVEMBER,

During 83 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	†1881	.....	47·0°
Lowest ,, ,,	1915	.....	36·3°
Greatest fall of rain	1866	.....	9·026 in.
Least ,, ...	1855	.....	1·158 in.
Greatest fall of rain in one day ...	1866	(16th)	3·700 in.
Greatest No. of days on which ·005 in. or more rain fell ...	1913	.....	28
Least ,, ,, ,, ...	1848	.....	6
*Greatest hourly velocity of wind...	1887	(1st)	62 mls.
*Greatest No. of miles registered....	1888	.....	12813
*Least ,, ,, ,, ...	1915	.....	4893

* *Since* 1867 *only.* † *And in other years.*

DECEMBER, 1930.

Results of Observations taken during the Month		Mean for the last 83 years.
Mean Reading of the Barometer ..... inches	29·393	29·431
Highest ,, ,, on the 21st ... ,,	30·125	30·068
Lowest ,, ,, on the 30th ... ,,	28·529	28·536
Range of Barometer Readings ..... ,,	1·596	1·532
Highest Reading of a Max. Therm. on the 27th ...	49·8	52·7
Lowest Reading of a Min. Therm. on the 10th.....	26·3	21·7
Range of Thermometer Readings	23·5	31·0
Mean of Highest Daily Readings	42·9	43·4
Mean of Lowest Daily Readings	34·9	33·9
Mean Daily Range	8·0	9·5
Deduced Mean Temp. (from mean of Max. and Min.)	38·9	38·6
Mean Temperature from Dry Bulb	39·7	39·2
Adopted Mean Temperature	39·3	39·0
Mean Temperature of Evaporation	38·3	37·4
Mean Temperature of Dew Point	36·5	35·4
Mean elastic force of Vapour ..... inches	0·216	0·209
Mean weight of Vapour in a cub. ft. of air, grains	2·5	2·4
Mean additional weight required for saturation ,,	0·4	0·4
Mean degree of Humidity (saturation 100)	87	87
Mean weight of a cubic foot of air ..... grains	545·3	546·9
Mean amount of Cloud (0—10)	8·0	7·7
Fall of Rain ..... inches	3·577	4·691
Greatest Rainfall in one day (28th) ..... ,,	0·470	0·837
No. of days on which ·005 in. or more Rain fell...	20	20·2

Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	9	1	1	1	6	12	0
Mean Velocity in miles per hr.	8·7	3·2	7·3	10·5	4·5	14·7	5·6	0
Total No. of miles.....	209	694	176	252	107	2112	1624	0

		*Mean
Total No. of miles registered	5174	7814·3
Greatest hourly velocity (27th, at 0800 G.M.T., Dir. S. by E.).....	40	41·9

* *For the last* 63 *years.*

DECEMBER, 1930.

DIFFERENCES.

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

Mean barometric pressure	—	0·038 in.
Monthly range ,, ...	+	0·064 in.
Mean of highest daily temperature	—	0·5°
Mean of lowest ,, ,, ...	+	1·0°
Mean daily range	—	1·5°
Adopted mean temperature	+	0·3°
Total rainfall	—	1·114 in.

Ground Frost on the 1st, 6th, 8th—11th, 15th and 18th. Hoar Frost on the 5th, 8th, 9th and 10th. Hail on the 14th. Gales of Wind on the 27th and 28th. Aurora Borealis on the 20th.

EXTREME READINGS FOR DECEMBER, During 83 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	1857	.....	44·6°
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 ,, ,, ,, ...	†1853	.....	8
*Greatest hourly velocity of wind...	1894	(22nd)	72 mls.
*Greatest No. of miles registered ...	1929	.....	11493
*Least ,, ,, ,, ...	1916	.....	4517

* *Since* 1867 *only.* † *And in other years.*

Summary of Observations, 1930.

Results of Observations taken during the Year.		Mean for the last 83 Years.
Readings of Barometer in inches.		
Mean of the Year	29·428	29·492
Highest Monthly Mean (February)	29·716	29·774
Lowest ,, ,, (October)	29·320	29·224
Highest Reading (February 9th)	30·337	30·294
Lowest ,, (November 2nd)	28·363	28·219
Range	1·974	2·075
Thermometer, Fahrenheit.		
Highest Monthly Mean Temperature (August)	57·7	58·6
Lowest ,, ,, ,, (February)	35·8	35·7
Highest Reading of a Max. Therm. (August 27th)	86·0	81·2
Lowest ,, Min. ,, (March 20th)	21·0	16·6
Range of Thermometer Readings	65·0	64·6
Mean of Highest Daily ,,	53·4	54·3
Mean of Lowest Daily ,,	42·3	41·1
Mean Daily Range	11·1	13·2
Deduced Mean Temp. (from Mean of Max. and Min.)	46·7	46·7
Mean Temperature from Dry Bulb	47·9	47·2
Adopted Mean Temperature of the Year	47·3	47·0
Mean Temperature of Evaporation	45·2	44·7
Mean Temperature of Dew Point	42·2	42·1
Mean elastic force of Vapour ... inches	0·278	0·275
Mean weight of Vapour in a cub. ft. of air...grns.	3·2	3·2
Mean additional weight required for saturation ,,	0·8	0·7
Mean degree of Humidity (saturation 100)	80	84
Mean weight of a cubic foot of air ... grns.	536·9	539·0
Mean amount of Cloud (0—10)	7·4	7·3
Total fall of Rain ... inches	52·171	47·570
Greatest Monthly Rainfall (October)	8·003	7·640
Least ,, ,, (February)	0·410	1·247
Greatest Rainfall in one day (October 29th)	1·628	1·661
No. of days per Month on which ·005 inch or more Rain fell	18·5	19·1

SUMMARY OF WIND, 1930.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	34	67	30	12	37	64	110	11
Mean Velocity in miles per hour...	8·0	6·4	8·9	7·8	11·9	10·5	9·6	9·9
Total No. of miles for each Direction	6496	10348	6422	2240	10568	16088	25279	2608

		Mean for the last 63 years.
Total No. of miles registered	80049	84988·5
Greatest Monthly Total (October)	8930	9942·2
Least ,, ,, (February)	4611	4913·8
Greatest recorded hourly velocity (January 10)..	48	50·4
Prevailing Direction of Wind	W.	W.

DIFFERENCES, 1930.

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

Mean barometric pressure	—	0·064 in.
Yearly range ,, ...	—	0·101 in.
Mean of highest daily temperatures	—	0·9°
Mean of lowest ,, ,, ...	+	1·2°
Mean daily range	—	2·1°
Adopted mean temperature	+	0·3°
Total rainfall	+	4·601 in

ABSOLUTE EXTREMES

FOR THE LAST 83 YEARS.

Readings of Barometer, in inches.

Highest monthly mean	1891 (Feb.)	29·997
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 ,, ,, ...†	1855 (Feb.).....	1·4

† *And on other dates.*

ABSOLUTE EXTREMES

FOR THE LAST 83 YEARS—*Continued.*

Rainfall, in inches.

Greatest Rainfall in one day	1866 (Nov. 16) ..	3·700
Greatest ,, ,, month	1870 (Oct.)	13·437
Least ,, ,, ,, ...	1859 (May)	0·249
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.) ..... and 1918 (Dec.)	30
Least ,, ,, ...	1852 (Mar.)	3
Greatest ,, year	1872	281
Least ,, ,, ...	1855	135

* *Wind.*

Greatest hourly velocity, in miles	1894 (Dec. 22) ...	72
Greatest No. of miles registered in a month	1888 (Nov.)	12813
Least ,, ,, ...	1917 (Feb.)	3160
Greatest Mean No. ,, ,, ...	March	8301
Least ,, ,, ,, ...	September	6032
Greatest No. ,, ,, year..	1868	102395
Least ,, ,, ,, ,, ...	1915	70623

* *Record dates from* 1867 *only.*

DATES OF OCCASIONAL PHENOMENA.

1930	Frost	Hoar Frost	Snow	Hail	Heavy Rain
January	9, 15, 16, 21, 25, 26, 28, 30, 31	15, 16, 25, 26, 28	11	5,10,11,12,25	2, 10, 4
February	6-12, 14, 16-21, 23, 25, 26	10, 14, 16-18, 20, 21	6, 7, 9, 24, 25	6	
March	1, 11-14, 17, 18, 19, 20, 22-24	1, 13	11,13,15,16,18,19,20,21	12, 13, 20, 21	
April	6, 22, 23	6	4		
May	8, 10			26	8
June				24	9, 18
July					16, 17, 20, 22,28
August					2, 6, 13, 21, 29
September					6
October	27				3, 4, 6, 29
November	4-7, 12, 16-18 28	5, 6			1, 7, 18, 21, 22
December	1, 6, 8-11, 15, 18	5, 8, 9, 10		14	

1930	Gales of Wind	Fog	Thunder	Lightning	Lunar Halo	Solar Halo	Aurora Borealis
January	2, 10	13, 14, 16, 20, 29, 30, 31				4	
February		3, 14, 20, 25, 26, 28					
March		3, 4, 7, 8, 12, 20, 24			11		
April			2, 14, 25	2, 25			
May		10, 13, 15,	5, 26				
June			18, 23	18, 23, 30		15	
July			3, 4, 14	3			
August		27, 28, 29, 30	25, 27	5, 18, 19, 27, 28			
September		2, 16, 22	10, 19, 24	11, 19, 24			
October		3, 4, 27, 28	6	21			
November	24	1, 28				17	
December	27, 28	3-10, 15, 18-22, 24					20

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1930. 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 ...	...	...	...	...	...	6·1	10·4	8·6	7·8	6·4	5·4	0·7	...	...	...	...	...
February ...	...	...	...	1·3	6·3	9·1	9·3	9·7	10·3	10·8	8·4	5·4	1·4	...	...	...	...
March ...	...	...	0·9	5·6	8·7	11·9	12·5	10·7	12·2	12·7	11·1	7·8	5·9	1·2	0·1	...	...
April ...	...	1·6	7·0	7·8	8·4	8·1	6·6	7·3	8·7	11·8	9·1	9·4	8·6	5·0	2·5	...	...
May ...	0·1	6·9	11·1	16·9	15·6	15·0	15·0	16·4	14·5	16·5	16·8	12·8	14·7	13·4	7·6	0·9	...
June ...	3·6	11·6	13·8	15·4	14·1	16·0	12·7	14·2	13·8	13·6	16·4	15·8	16·6	14·3	12·4	4·6	...
July ...	1·4	4·8	7·0	9·0	9·8	11·1	10·5	7·7	9·0	9·4	10·3	10·5	9 8	11·6	9·6	4·0	...
August ...	...	3·0	7·9	10·1	13·4	12·7	11·6	13·1	13·2	15·5	14·4	14·5	13 2	10·8	4·3	0·3	...
September ..	...	...	1·8	5·8	10·3	10·7	11·0	11·6	13·0	12·8	13·6	10·8	7·9	5·0	0·4	...	...
October ...	...	...	...	4·5	11·8	12·4	14·3	12·2	10·9	10·7	9·3	9·1	2·6	...	...	...	...
November...	...	...	...	0·4	4·4	8·8	11·0	9·8	7·7	7·0	6·0	1·6	0·1	...	...	...	...
December ...	...	...	...	...	...	2·2	3·7	4·3	3·9	1·9	1·6	0·1	...	...	...	...	...
Sums...	5·1	27·9	49·5	76·8	102·8	124·1	128·6	125·6	125·0	129·1	122·4	98·5	80·8	61·3	36·9	9·8	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1930	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ..	...	0·8	...	1·5	1·6	4·4	...	3·2	0·1	3·1	0·7	0·1	...	...	5·9	...	...
February ..	...	...	...	...	2·8	0·1	4·4	2·7	6·8	1·7	1·1	...	...	2·1	5·2	8·3	6·2
March ..	4·0	5·7	0·4	0·5	...	...	3·5	0·8	0·9	8·0	6·1	3·2	5·6	1·3	...	...	8·3
April ..	...	1·5	0·6	0·2	0·1	0·5	1·1	0·5	...	...	4·5	6·4	3·7	3·6	3·1	8·4	6·5
May ..	13·6	12·6	6·6	6·5	2·8	1·7	5·0	7·4	3·2	7·4	0·7	10·7	...	11·1	3·9	6·0	1·6
June ..	...	5·7	9·2	9·2	11·2	14·8	15·2	14·9	4·1	...	5·9	4·6	...	9·7	13·7	8·7	...
July ..	6·9	8·6	7·0	6·4	12·2	5·0	8·1	2·1	11·0	5·4	11·9	9·5	1·3	0·1	0·1	0·1	4·0
August ...	1·7	3·8	11·1	0·1	9·6	3·0	7·1	1·1	6·2	...	3·8	1·9	0·6	9·1	5·5	10·5	1·6
September ..	8·1	11·1	10·6	1·0	1·0	1·5	3·6	7·3	...	8·2	...	1·5	...	3·0	10·2	...	...
October ...	0·1	0·5	0·4	...	6·0	1·7	3·3	0·9	9·0	5·4	2·3	6·6	0·8	0·1	...	8·6	0·6
November...	...	3·0	1·0	7·8	7·0	5·8	2·3	3·0	...	2·3	6·3	...	...	...	...	6·4	0·7
December ...	...	...	0·7	0·1	...	...	...	...	...	...	...	0·7	1·6	1·0	3·8	...	...

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

1930	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY Total	MONTHLY Percen.
January ...	4·5	3·3	2·5	1·5	...	...	0·4	4·9	...	...	3·3	1·7	1·9	...	45·4	18·3
February ...	6·4	4·1	...	0·7	...	8·0	0·1	4·3	...	...	7·0	...	...	...	72·0	26·5
March ..	4·7	4·5	0·1	...	8·6	8·4	7·6	...	7·9	...	1·2	4·9	4·5	0·6	101·3	27·7
April ...	7·2	0·8	2·8	3·1	11·6	2·1	0·7	3·2	1 1	...	4·1	13·2	11·3	...	101·9	24·3
May ...	8·8	...	5·1	3·9	7·5	6·1	5·0	11·9	5·4	12·4	10·4	11·3	3·4	2·2	194·2	39·4
June ...	1·7	7·3	...	1·4	6·3	6·9	7·7	9·4	11·1	5·5	8·7	9·6	6·4	...	208·9	41·1
July ...	...	0·4	0·8	2·0	...	...	2·6	1·0	3·5	7·2	2·2	3·7	4·2	8·2	135·5	26·6
August ...	2·6	9·2	1·6	3·8	8·6	0·2	11·3	0·3	10·8	11·0	10·6	6·4	0·3	4·6	158·0	34·6
September ..	2·9	2·0	1·2	8·2	...	2·2	7·6	6·1	1·2	4·6	4·0	...	7·6	...	114·7	30·3
October ...	6·6	7·5	7·0	1·1	5·0	2·4	4·1	7·4	8·7	...	...	...	...	1·7	97·8	30·0
November...	...	1·5	...	...	...	1·7	...	2·2	3·5	0·6	...	...	1·7	...	56·8	22·2
December ..	...	...	...	4·7	...	0·2	...	0·2	...	2·8	1·8	...	...	0·1	17·7	7·7

SUMMARY OF SUNSHINE.

	Bright Sunshine Recorded					
	1930			Mean for the last 50 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	19	45·4	18·3	14·7	32·6	13·1
February ...	18	72·0	26·5	17·6	56·2	20·5
March ...	24	101·3	27·7	24·4	103·1	28·2
April ...	26	101·9	24·3	26·5	145·9	34·8
May ...	29	194·2	39·4	27·9	184·0	37·3
June ...	25	208·9	41·1	28·0	186·5	36·8
July ...	28	135·5	26·6	28·4	168·5	33·2
August ...	30	158·0	34·6	27·6	146·7	32·1
September ..	23	114·7	30·3	25·6	124·3	32·7
October ...	25	97·8	30·0	23·7	86·4	26·5
November ..	17	56·8	22·2	18·0	47·6	18·6
December ...	12	17·7	7·7	13·8	27·1	11·7
Year ...	276	1304·2	29·2	275·8	1310·7	29·3

SUMMARY OF SUNSHINE—*Continued.*

EXTREMES FOR THE LAST 50 YEARS.

Month	Number of Days on which Sunshine was recorded				Number of Hours on which Sunshine was recorded				Percentage of Possible Sunshine			
	Greatest		Least		Greatest		Least		Greatest		Least	
Jan.	21	1881	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	56·8	1912	48·9	1929	15·5	1912
April	30	*1909	22	1920	223·7	1893	80·7	1920	53·4	1893	19·3	1920
May	31	1929	22	1886	266·6	1881	79·7	1906	54·1	1881	16·2	1906
June	30	*1896	24	*1888	272·5	1887	85·2	1912	53·6	1887	16·8	1912
July	31	*1882	24	1920	263·4	1911	98·0	1888	51·7	1911	19·3	1888
Aug.	31	*1886	23	1894	235·2	1899	74·1	1912	51·5	1899	16·2	1912
Sept.	30	1914	21	1897	176·5	1914	62·9	1896	46·6	1914	16·6	1896
Oct.	28	*1891	17	1889	134·9	1899	50·0	1889	41·4	1899	15·3	1889
Nov.	24	1925	9	1897	89·9	1925	18·5	1891	33·8	1915	7·2	1891
Dec.	20	*1917	6	1882	60·1	1886	7·4	1912	26·0	1886	3·2	1912
Year	300	1905	251	1903	1613·7	1887	927·6	1912	36·1	1887	20·7	1912

**And in other years.*

HORIZONTAL MAGNETIC DIRECTION.

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

1930.	MEANS OF *				Mean for the month *	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	Highest readings	Lowest readings	4 a.m. readings	4 p.m. readings					
	13° +						14° +	13° +	
	′	′	′	′	′	′	′	′	′
January ...	57·7	52·1	54·3	56·5	55·2	14·6	13·7	31·7	42·0
February ...	59·5	50·3	53·9	55·9	54·9	16·6	11·7	19·7	52·0
March	59·7	52·5	54·9	56·5	55·9	16·1	7·7	34·7	31·0
April	60·3	48·7	53·3	56·7	54·8	19·4	15·7	30·7	45·0
May	58·3	47·1	52·1	55·7	53·3	19·0	11·7	26·7	45·0
June	56·6	46·8	50·4	53·6	51·9	16·6	18·8	35·8	43·0
July	55·2	45·8	48·4	52·6	50·5	14·9	3·8	28·8	35·0
August ...	55·6	44·0	47·6	52·8	50·0	19·0	7·8	19·8	48·0
September ...	53·4	43·6	45·8	49·0	48·0	19·8	17·8	20·8	57·0
October ...	51·6	43·8	46·4	48·2	47·5	19·9	6·8	25·8	41·0
November ...	49·0	43·8	45·2	46·8	46·2	13·8	10·8	29·8	41·0
December ...	46·0	43·4	44·4	45·6	45·1	13·5	19·8	14·8	65·0
Means	55·2	46·8	49·7	52·5	51·1	16·9	12·2	26·6	45·4

Mean for the year ... ... 13° 51′·1 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.

1930	MEANS OF * Highest readings	Lowest readings	4 a.m. readings	4 p.m. readings	Mean for the month *	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	17000 +						17000 +		
January ...	201	176	191	190	190	55·0	286	97	189
February ...	220	184	208	202	204	73·0	258	34	224
March ...	212	182	207	199	200	87·1	271	60	211
April	224	158	198	198	195	117·6	293	38	255
May	212	156	178	183	182	118·0	328	29	299
June	217	166	197	193	193	120·1	302	16	286
July	210	166	185	188	187	100·8	302	91	211
August ...	209	151	178	189	182	103·8	306	47	259
September ...	195	145	178	174	173	91·1	262	29	233
October ...	189	157	178	179	176	85·8	⩾249	11	⩾238
November ...	201	180	192	195	192	59·4	267	69	198
December ...	208	193	200	205	202	52·8	403	60	343
Means	208	168	191	191	190	88·7	294	48	246

Mean for the year ... ... ·17190 C. G. S. Units.

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

ABSOLUTE MEASURES—SUMMARY.

	DIRECTION		FORCE.		
1930	Declination Corrected	Inclination	Horizontal	Vertical	Total
			C. G. S. UNITS.		
	° ′ 13 +	° ′ 68 +	0·17000+	0·44000+	0·47000+
January ...	56·0	46·4	200	284	507
February ...	55·2	46·5	205	302	525
March ...	55·4	46·1	192	319	473
April	54·4	47·8	192	318	536
May	53·2	48·6	190	342	558
June	51·8	49·4	203	336	631
July	50·3	47·9	179	288	504
August ..	50·0	47·0	173	239	455
September ...	47·5	49·2	173	320	531
October ...	47·0	52·2	187	469	675
November ..	47·1	45·9	197	256	480
December ..	45·5	46·2	194	262	483
Means ..	° ′ 13 51·1 W.	° ′ 68 47·8	0·17190	0·44311	0·47530

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.

1930	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1930
D.													D.
1	m	m	m	s	c	g	s	c	m	m	s	s	1
2	c	m	g	c	c	g	m	c	m	m	m	c	2
3	m	m	m	c	c	m	m	c	g	g	m	v.g.	3
4	g	s	s	c	m	g	m	c	m	m	m	g	4
5	g	c	c	c	g	s	m	s	m	m	m	m	5
6	g	c	c	m	m	s	s	g	m	m	c	s	6
7	m	c	c	g	g	m	s	g	s	s	s	s	7
8	m	c	c	g	m	m	c	g	s	m	m	c	8
9	c	c	c	m	m	s	m	m	s	s	m	s	9
10	s	c	c	m	s	s	g	m	(m)	s	s	s	10
11	c	c	m	m	s	c	m	m	(s)	c	s	c	11
12	c	g	g	m	m	g	g	g	m	s	c	m	12
13	s	g	g	m	m	m	g	m	c	c	s	m	13
14	c	g	g	s	s	s	m	g	s	g	g	s	14
15	s	m	m	m	s	s	s	s	c	s	m	s	15
16	s	m	m	m	g	g	m	s	c	c	s	c	16
17	m	s	m	s	g	m	s	s	s	g	s	c	17
18	s	m	m	s	m	(m)	c	s	g	s	s	c	18
19	m	s	m	m	m	(s)	s	m	m	m	c	m	19
20	m	s	m	g	s	m	c	c	c	m	c	g	20
21	m	s	s	m	m	m	c	m	m	s	c	g	21
22	s	c	m	g	m	c	c	m	c	s	c	m	22
23	s	s	s	m	m	c	c	m	s	c	m	m	23
24	c	s	m	m	c	c	m	m	m	c	g	m	24
25	c	m	m	s	m	c	g	c	s	m	g	s	25
26	c	s	m	s	c	c	m	s	c	g	m	s	26
27	c	s	m	s	c	m	s	s	c	g	m	s	27
28	c	m	m	s	c	m	s	c	m	m	m	c	28
29	s		m	m	s	m	m	s	g	m	m	m	29
30	m		m	m	m	m	c	s	g	m	s	s	30
31	m		s		g		s	s		m		c	31
TOTAL c	10	8	6	4	7	6	7	7	7	5	6	8	81
TOTAL s	8	9	4	8	6	7	9	10	8	8	9	11	97
TOTAL m	10	8	17	14	13	12	11	9	11	13	12	8	138
TOTAL g	3	3	4	4	5	5	4	5	4	5	3	3	48
TOTAL vg	—	—	—	—	—	—	—	—	—	—	—	1	1

TOTALS

Note :—Character letters in brackets, indicates incomplete records.

DATES OF SOLAR OBSERVATIONS AND DISC AREAS OF SPOTS.

The unit is $\frac{1}{5000}$th of the Disc.
n—Note without a complete drawing at Stonyhurst.
Z—Area from copy of Zurich Drawing.
C—Area from Copy of Catania drawing, or Catania drawing examined.
* Area obtained from Stonyhurst and Catania drawings combined.

1930	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1930
DAY													DAY
1			4·3	Z*4·8*	4·5	Z *2·5*	0·6	0·2	0·9	C *2·5*	C *3·7*	C *2·9*	1
2	2·7	Z *4·3*	5·6	5·4	3·1	1·9	0·3	0·1	1·1	2·7	3·8	1·5	2
3	C	nC *3·9**	6·2	nC *5·4*	1·8	2·2	0·6	0·03	1·1	2·1	2·1	1·0	3
4	2·8	Z *5·9*	C *5·6*	nC *3·4*	1·5	2·1	0·5	C *0·1*	nZ *2·4*	C *1·7*	0·9	0·6	4
5	3·4	6·4	Z *9·3*	C *5·0*	1·8	1·8	0·3	0·0	3·8	3·6	0·4		5
6	5·5	C	C	C *4·5*	3·8	2·2	0·4	0·9	4·5	nC *6·7*	0·5	C *0·1*	6
7		7·1	7·0	Z *5·4*	5·8	4·5	0·3	1·4	4·6	7·1	0.5	Z *0·1*	7
8	9·0	6·2	5·8	nZ *4·2*	5·8	4·4	0·3	1·6	4·3	nC *8·0*	0·5	C *0·0*	8
9		5·1	5·1		4·1	3·3	0·9	2·4	C *3·6*	9·8	C *0·4*	0·3	9
10	11·8		4·4	C *3·0*	3·7	nC *1·6*	1·5	Z *3·7*	3·0	10·1	0·1	C *0·6*	10
11	n.	4·5	3·1	3·9	2·6	1·8	1·1	Z *3·0*	nC *2·3*	7·7	0·1	Z *0·4*	11
12	Z *9·6*	C	1·5	3·9	2·3	2·7	0·2	3·3	2·5	5·7	Z *0·4*	0·6	12
13	Z *9·8*	nZ *2·6*	1·1	nC	C *1·5*	nC *2·7*	0·4	Z *3·1*		4·3		0·7	13
14	C	1·2	0·5	1·6	0·9	1·8	nZ *0·9*	2·8	1·1	Z *3·4*	Z *0·4*	0·9	14

DATES OF SOLAR OBSERVATIONS & DISC AREAS OF SPOTS—CONTD.

1930	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1930
DAY													DAY
15	13·3	1·3	Z *0·7*	0·7	0·8	1·3	nZ *1·6*	2·1	0·6		Z *1·2*	0·7	15
16	n.	0·6	Z *2·9*	0·5	0·9	0·8	Z *1·8*	2·1	C *0·1*	0·5	1·7	C *0·5*	16
17	Z *10·4*	0·8	5·0	0·3	1·1		1·5	0·9	Z *0·1*	C *0·5*	Z *1·6*	0·3	17
18	8·7	1·5	4·7	0·2	1·5	0·1	Z *1·1*	0·4	0·1	0·4	Z *1·6*	Z *1·2*	18
19	6·6	0·8	2·3	0·2	Z *1·9*	0·1	nZ *0·7*	0·5	0·1	0·8	3·5	Z *2·2*	19
20	5·1	0·8	Z *2·0*	nC *0·2*	2·3		0·6	1·1	0·1	0·5	Z *4·5*	Z *2·5*	20
21	3·9	0·9	Z *1·7*	0·6	2·9	0·04	0·4	1·2	0·1	C *0·1*	C *4·9*	1·7	21
22	Z *3·1*	Z *0·7*	0·9	0·6	2·8	0·1	Z *0·3*	1·4		0·2	C *7·3*		22
23	n.	1·4	0·5	nZ *0·9*	2·7	0·0	Z *0·3*	C *0·8*	0·2	1·0	nZ *11·2*	1·3	23
24	n.		0·9	1·6	1·9	0·1	0·3	1·2	0·3	2·2	C *6·6*		24
25	2·3	2·0		2·1	1·6	0·2	0·5	nC *0·8*	0·6	2·6	8·0	1·6	25
26		C.	1·3	2·3	1·6	0·1	0·5	0·8	1·8	4·3	7·5		26
27	Z *1·4*	Z *2·1*	C.	C *2·7*	1·6	0·6	0·7	0·9	1·9	Z *6·2*	6·1	0·9	27
28	2·1	2·6	2·5	3·4	1·4	1·2	1·0	1·5	2·2	C *5·3*	Z *6·0*	0·8	28
29	2·7	..	3·5	3·5	2·0	0·9	0·6	2·1	C *2·3*	C *3·7*	Z *4·3*	C *0·4*	29
30	3·9	..	4·5	4·9	2·6	0·8	0·5	Z *1·8*	2·8	Z *4·3*	4·0	Z *0·6*	30
31	..	..	4·3	..	1·6		0·4	1·5	..	5·2	..	0·0	31
Mean	5·91	2·80	3·47	2·69	2·40	1·49	0·68	1·41	1·73	3·77	3·23	0·90	

SUN-SPOT STATISTICS, 1930.

Any area less than 0·05 is entered as 0·0. The points for which the co-ordinates were measured are indicated as follows :—s—centre of chief spot, g—centre of group, p—centre of preceding, f—centre of following spot. In the last column is entered the day and decimal thereof on which the centre of the spot or group actually passed the central meridian, or would have done so if on the Solar Surface on the day in question. The " Types are " :—

I.—One or more small spots.

II.—A double spot or group of some magnitude.

III.—A train of spots of some magnitude.

IV.—A single large spot with or without small companions.

V.—Irregular group of larger spots.

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

No. of Group	Date	Mean Latitude °	Mean Longitude °	Max. Area	Mean Type	Central Meridian
1	Jan. 2—10 ...	+ 8·4	60·6	0·3	I. s.	Jan. 7·1
2	,, 2—14 ...	+ 3·9	46·8	1·3	I. s.	,, 8·2
3	,, 2—13 ...	— 5·7	44·7	2·3	III, I. g.	,, 8·4
		— 6·7	50·0		s_1	,, 7·9
		— 5·9	48·0		s_2	,, 8·1
		— 7·7	35·8		s_3	,, 9·0
4	,, 5—10 ...	— 9·5	6·5	0·3	I. s.	,, 11·3
†*4′*	,, *13*	— *1·3*	*8·9*	*0·0*	*I. g.*	,, *11·1*
5	,, 6—18 ...	+ 5·2	352·7	4·5	IV. s.	,, 12·3
		+ 9·7	338·7		fg.	,, 13·4
6	,, 6—18 ...	— 3·4	347·0	4·8	III, II. g.	,, 12·7
		— 5·4	351·9		s_1	,, 12·4
		— 3·1	348·2		s_2	,, 12·6
7	,, 11—17 ...	+17·0	335·5	†0·5	I. g.	,, 13·6
8	,, 13—15 ...	— 7·2	300·8	0·1	I. g.	,, 16·2
9	,, 13—18 ...	—13·6	296·3	0·7	I. g.	,, 16·6
10	,, 12—22 ...	+13·0	274·3	†5·4	V. g.	,, 18·3
		+14·5	279·8		p.	,, 17·8
		+12·9	272·7		fg.	,, 18·4
11	,, 13—20 ...	—14·5	261·8	0·8	I. g.	,, 19·2
		—14·1	263·2		s.	,, 19·1
12	,, 14—22 ...	+12·7	250·0	0·2	I. s.	,, 20·1
13	,, 15—17 ...	—11·4	238·8	0·0	I. s.	,, 21·0

† Zurich Drawing.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date	Mean Latitude ○	Mean Longitude ○	Max. Area	Mean Type	Central Meridian
14	Jan. 17—20 ...	—17·4	320·9	0·3	I. g.	Jan. 14·7
15	,, 17—27 ...	+11·5	205·2	1·1	I. g.	,, 23·5
		+ 8·6	215·8		s_1	,, 22·7
		+13·0	212·2		s_2	,, 23·0
		+12·8	205·9		s_3	,, 23·4
		+14·2	195·0		s_4	,, 24·3
16	,, 21	+15·4	223·5	0·1	I. s.	,, 22·1
17	,, 21—31 ...	+11·0	147·6	1·9	IV, I. g.	,, 27·9
		+ 9·9	154·4		p.	,, 27·4
18	,, 27—Feb. 4	+15·4	123·7	1·8	I, III. p.	,, 29·7
		+15·7	116·7		f.	,, 30·3
19	,, 28—Feb. 8	+ 5·9	62·8	†1·0	IV. s.	Feb. 3·3
‡*19′*	,, *31*			*0·0* ?	*I.*	
20	,, 29—31 ...	+ 4·2	97·0	0·2	I. g.	Jan. 31·7
21	,, 30—31 ...	+ 3·3	167·6	0·2	I. g.	,, 26·4
22	,, 30—Feb. 9	+18·1	36·9	1·1	IV. s.	Feb. 5·3
†*22′*	*Feb. 4*	*+11·9*	*34·2*	*0·0*	*I. s.*	,, *5·5*
23	,, 2— 5 ...	— 5·5	70·8	0·1	I. g.	,, 2·7
†*23′*	,, *2*	*—17·8*	*109·8*	*0·0*	*I. s.*	*Jan. 30·8*
24	,, 2—12 ...	— 6·7	4·9	1·0	I. g.	Feb. 7·7
		— 7·7	12·2		p.	,, 7·2
		— 8·2	6·5		f_1	,, 7·6
		— 4·5	354·9		f_2	8·5
25	,, 2—14 ...	+ 7·2	353·3	1·5	V, I. g.	,, 8·6
26	,, 4— 9 ...	—13·4	50·3	1·6	I. g.	,, 4·3
		—11·4	53·4		p.	,, 4·0
27	,, 3—14 ...	—16·9	345·8	3·3	III. g.	,, 9·2
		—18·8	357·3		s_1p.	,, 8·3
		—18·5	352·5		s_1f.	,, 8·7
		—18·9	345·6		s_2	,, 9·2
		—14·4	340·5		s_3	,, 9·6
		—13·2	332·9		s_4	,, 10·1
28	,, 9	+12·2	321·3	0·2	I. g.	,, 11·0
29	,, 9—16 ...	+10·8	283·5	1·3	I. p.	,, 13·9
‡*29′*	,, *15*			*0·0* ?	*I.*	
30	,, 11—15 ...	— 3·6	326·6	0·2	I. g.	,, 10·6
‡*30′*	,, *12*			*0·0* ?	*I.*	

† Zurich Drawing. ‡ Catania Drawing.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date.	Mean Latitude o	Mean Longitude o	Max. Area	Mean Type	Central Meridian
31	Feb. 14—23 ...	+11·6	205·4	1·5	I, IV. g.	Feb. 19·8
		+10·4	209·2		p.	,, 19·5
32	,, 17—18 ...	— 9·3	239·0	0·0	I. s.	,, 17·3
33	,, 18	+ 9·0	231·5	0·0	I. s.	,, 17·8
34	,, 23—Mar. 6	— 6·3	84·0	2·1	IV. s.	,, 28·5
35	,, 28—Mar. 13	—17·3	357·3	†8·8	IV, III. g.	Mar. 7·6
		—16·0	5·7		s	,, 7·0
		—17·7	355·5		s_2	,, 7·8
		—17·9	353·7		s_3	,, 7·9
		—19·0	347·7		s_4	,, 8·3
		—21·3	344·6		s_5	,, 8·6
36	Mar. 7	+ 7·0	68·9	0·0	I. g.	,, 2·2
37	,, 7— 9 ...	+18·9	332·2	0·1	I. g.	,, 9·5
38	,, 9	— 7·0	14·0	0·0	I. s.	,, 6·4
39	,, 10	—17·7	314·9	0·0	I. g.	,, 10·8
40	,, 11—22 ...	+ 8·4	240·0	4·5	I, II. p_1	,, 16·5
		+ 7·9	236·2		p	,, 16·8
		+11·6	229·3		f.	,, 17·3
†40′	,, *16*	*+10·7*	*242·3*	*0·1*	*I. s.*	,, *16·4*
41	,, 13—17 ...	+14·2	219·2	0·4	I. p.	,, 18·1
42	,, 15—17 ...	+20·8	228·3	0·1	I. s.	,, 17·4
43	,, 16—23 ...	— 2·0	210·5	1·1	I. g.	,, 18·8
		— 1·4	213·6		p.	,, 18·5
		— 2·3	208·3		f.	,, 18·9
44	,, 17—21 ...	+ 5·9	191·2	0·1	I. s.	,, 20·2
45	,, 21—23 ...	+ 4·1	107·8	0·1	I. s.	,, 26·5
46	,, 22—Apl. 2	+ 8·9	85·1	0·8	IV, I. s.	,, 28·3
47	,, 24	+ 0·2	116·1	0·1	I. p.	,, 25·9
		+ 1·2	114·1		f.	,, 26·1
48	,, 24—Apl. 4	+ 8·4	61·0	0·3	I. s.	,, 30·1
		+ 6·9	67·8		p.	,, 29·6
		+ 6·3	61·9		f.	,, 30·0
49	,, 26—Apl. 7	— 6·0	26·7	†4·4	IV. s.	Apl. 1·7
		— 9·5	13·6		f.	,, 2·7
†49′	*Apl. 1 ... ...*	*—15·9*	*9·0*	*0·1*	*I. p.*	,, *3·0*
		—17·1	*5·2*		*f.*	,, *3·2*
†49″	,, *1 ... ...*	*—18·4*	*353·5*	*0·1*	*I. s.*	,, *4·2*

† Zurich Drawing.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date	Mean Latitude °	Mean Longitude °	Max Area	Mean Type	Central Meridian
50	Mar. 30	+ 9·8	50·6	0·1	I. s.	Mar. 30·9
51	,, 30—Apl. 2	—17·5	62·9	0·4	I. p.	,, 30·0
		—19·3	57·8		f.	,, 30·3
52	Apl. 2—13 ...	+11·7	309·6	†3·9	III, IV. p.	Apl. 7·5
†*52′*	,, *7*	*+ 7·2*	*288·6*	*0·0*	*I. g.*	,, *9·1*
‡*52″*	,, *3— 5* ...			*0·1*	*I.*	
53	,, 6—13 ...	+14·2	260·9	0·3	I. g.	,, 11·2
§*53′*	,, *5— 7* ...	*— 7·3*	*266·1*	*0·1*	*I. g.*	,, *10·8*
54	,, 10—15 ...	— 6·9	237·5	0·5	I. pg.	,, 13·0
		— 7·9	233·6		f.	,, 13·3
54a	,, 12—19 ...	—12·5	231·4	0·3	I. p.	,, 13·5
		—13·2	227·4		f.	,, 13·8
55	,, 10—17 ...	+12·7	221·1	1·4	I. p.	,, 14·2
		+14·6	214·7		f.	,, 14·7
56	,, 13—22 ...	+13·0	181·2	0·1	I. p.	,, 17·3
		+14·2	177·6		f.	,, 17·5
†*56′*	,, *23*	*+ 7·9*	*155·5*	*0·1*	*I. s.*	,, *19·2*
57	,, 14	—12·5	284·0	0·1	I. p.	,, 9·5
58	,, 14	+15·8	242·6	0·1	I. s.	,, 12·6
59	,, 17	— 4·3	200·4	0·0	I. s.	,, 15·8
60	,, 18—23 ...	+26·1	114·9	0·3	I. p.	,, 22·3
		+26·8	111·3		fg.	,, 22·6
61	,, 18—24 ...	—13·2	95·3	0·2	I. g.	,, 23·8
‡*61′*	,, *25*				*I.*	
62	,, 22	+12·6	90·2	0·1	I. p.	,, 24·2
		+10·2	87·9		f.	,, 24·3
63	,, 22—May 4	— 8·0	30·2	2·9	IV. s.	,, 28·7
64	,, 24— ,, 4	+11·3	22·7	2·1	I. g.	,, 29·3
		+10·9	24·2		p.	,, 29·1
		+11·5	20·5		f.	,, 29·4
65	,, 25	+ 5·8	77·8	0·0	I. p.	,, 25·1
		+ 7·1	77·0		f.	,, 25·2
66	,, 26	+ 6·6	93·9	0·0	I. s.	,, 23·9
67	,, 29—May 7	+10·8	344·6	1·1	I. g.	May 2·1
		+ 8·8	348·9		p.	,, 1·8
68	May 1—2, 4 ...	— 9·2	17·5	0·1	I. g.	Apl. 29·7
69	,, 2	+19·7	315·2	0·1	I. p.	May 4·4

† Zurich Drawing. ‡ Catania Drawing.

§ Catania and Zurich Drawings.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date	Mean Latitude °	Mean Longitude °	Max. Area	Mean Type	Central Meridian
70	May 4—14 ...	+16·2	276·3	5·8	I, II. g.	May 7·3
		+15·9	279·8		p.	,, 7·1
		+16·4	272·2		fg.	,, 7·6
71	,, 11—17 ...	+ 2·4	207·6	‡1·3	I. g.	,, 12·5
		+ 2·0	204·9		f.	,, 12·7
72	,, 14—17 ...	+15·2	178·5	0·2	I. g.	,, 14·7
73	,, 15—19 ...	— 5·9	158·6	0·3	I. g.	,, 16·2
74	,, 16—27 ...	—10·2	80·3	2·4	I, IV. g.	,, 22·1
		— 9·4	83·1		p.	,, 21·9
75	,, 19—31 ...	— 6·2	37·0	0·6	I. s.	,, 25·4
76	,, 23, 24	+26·3	104·4	0·2	I. g.	,, 20·2
77	,, 23—June 5	+12·4	349·1	0·6	I. p.	,, 29·0
		+12·7	345·8		p_2 g.	,, 29·3
		+12·5	339·0		fg.	,, 29·8
77a	,, 29	+ 8·3	350·5	0·0	I. g.	,, 28·9
78	,, 24, 25 ...	—11·3	1·5	0·1	I. g.	,, 28·1
79	,, 24—31 ...	+26·0	35·5	0·7	I. s_1	,, 25·5
		+19·8	35·9		s_2	,, 25·5
		+19·5	28·0		s_3	,, 26·1
80	,, 27	— 4·2	17·6	0·1	I. s.	,, 26·9
81	,, 27	— 0·9	348·1	0·0	I. g.	,, 29·1
82	,, 28—June 9	+17·0	279·3	2·0	IV. s.	June 3·3
83	,, 29—31 ...	— 1·8	321·0	0·2	I. g.	May 31·1
84	June 1— 7 ...	+14·8	258·1	0·2	I. g.	June 4·9
85	,, 3—11 ...	+ 1·0	244·1	1·8	I, II, IV. g	,, 6·0
		+ 0·4	246·9		p.	,, 5·8
		— 0·4	243·3		f.	,, 6·0
86	,, 5—14 ...	—10·3	212·2	2·0	I, II. g.	,, 8·4
		— 9·6	215·9		p.	,, 8·1
		—10·6	208·6		f.	,, 8·6
‡86′	,, *13*	*+ 0·8?*	*214·0?*	*0·2*	*I. g.*	,, *8·2*
87	,, 7	—12·1	293·6	0·0	I. s.	,, 2·2
88	,, 7—11 ...	— 5·5	178·2	0·3	I. g.	,, 10·9
89	,, 7—18 ...	+13·7	159·4	2·3	I, III. g.	,, 12·4
		+13·0	162·8		s_1	,, 12·1
		+14·6	160·1		s_2	,, 12·3
		+15·9	159·8		s_3	,, 12·3

‡ Catania Drawing.

SUN-SPOT STATISTICS, 1930 – *Contd.*

No. of Group	Date	Mean Latitude °	Mean Longitude °	Max Area	Mean Type	Central Meridian
90	June 15	+10·6	58·1	0·0	I. s.	Jne. 20·0
91	,, 16—19 ...	+ 9·6	69·5	0·2	I. g.	,, 19·1
92	,, 21, 26 ...	+11·5	345·8	0·0	I. g.	,, 25·5
93	,, 22	— 7·1	54·9	0·1	I. g.	,, 20·3
94	,, 24—28 ...	+14·7	337·5	0·1	I. g.	,, 26·1
95	,, 25—30 ...	+18·3	274·6	0·1	I. s.	,, 30·9
96	,, 27—July 3	+14·1	266·9	0·9	I. g.	July 1·4
		+13·3	265·2		s.	,, 1·6
97	,, 27— ,, 4	+14·4	243·8	0·3	I. p.	,, 3·2
		+15·2	238·6		fg.	,, 3·6
98	July 2— 9 ...	— 5·4	193·3	0·2	I. p.	,, 7·0
		— 5·4	188·4		fg.	,, 7·4
99	,, 3— 9 ...	+ 8·7	176·4	0·4	I. g.	,, 8·3
100	,, 5	— 6·6	219·6	0·0	I. g.	,, 5·0
101	,, 6	—10·0	208·5	0·2	I. s.	,, 5·9
102	,, 9—12 ...	+ 4·2	206·4	1·5	II. p.	,, 6·0
		+ 5·1	200·9		f.	,, 6·4
103	,, 9, 10 ...	— 4·6	91·7	0·0	I. s.	,, 14·7
104	,, 12	+ 0·7	93·8	0·0	I. s.	,, 14·5
105	,, 12—21 ...	— 5·6	74·7	1·8†	I, IV. p.	,, 16·0
†*105′*	,, *15, 16* ...	+ *8·0*	*66·9*	*0·1*	*I. g.*	,, *16·6*
106	,, 13, 14 ...	— 7·9	153·3	0·0	I. f.	,, 10·0
107	,, 17	+12·4	44·7	0·0	I. s.	,, 18·2
108	,, 21—23 ...	— 9·7	293·1	0·1	I. s.	,, 26·7
†*108′*	,, *23*	—*12·5*	*270·0*	*0·1*	*I. s.*	,, *28·4*
109	,, 21—29 ...	+ 3·9	282·8	0·3	I. s.	,, 27·4
110	,, 25—Aug. 2	+ 2·2	239·5	0·8	I. s.	,, 30·7
111	,, 28, 29 ...	+13·3	261·4	0·1	I. p.	,, 29·1
112	,, 28, 29 ...	—10·3	258·5	0·1	I. p.	,, 29·3
113	,, 28	— 3·9	220·0	0·0	I. s.	Aug. 1·2
114	,, 31—Aug. 4	— 8·4	161·2	0·0	I. s.	,, 5·6
‡*114′*	*Aug. 2*			*0·1*	*I.*	
115	,, 6—13 ...	+ 4·2	97·1	†0·5	I. s.	,, 10·5
116	,, 6—18 ...	— 6·7	73·9	3·3	IV. s.	,, 12·2
117	,, 18—26 ...	—11·4	274·3	0·5	I. s.	,, 24·3
118	,, 18—28 ...	+ 5·6	269·6	0·9	I. s.	,, 24·7
119	,, 19—21 ...	+10·0	282·1	0·1	I. s.	,, 23·7

† Zurich Drawing. ‡ Catania Drawing.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date	Mean Latitude °	Mean Longitude °	Max Area	Mean Type	Central Meridian
120	Aug. 24—27 ...	+ 7·5	290·0	0·2	I. s.	Aug. 23·1
121	,, 26—Sept. 3	— 9·4	201·2	0·5	I. g.	,, 29·9
122	,, 26— ,, 2	+ 7·6	189·3	1·6	II. p.	,, 30·8
		+ 8·2	187·1		fg.	,, 30·9
123	,, 27— ,, 7	+ 9·8	148·5	0·6	I. s.	Sep. 2·8
124	,, 29— ,, 4	—12·0	150·7	0·2	I. s.	,, 2·7
125	Sept. 1, 3—9 ...	+ 5·7	130·9	2·0	I, II, IV. g	,, 4·2
		+ 4·8	134·3		p.	,, 3·9
		+ 4·5	127·8		f.	,, 4·4
*126	,, 1— 5 ...	+ 5·0	85·8	0·2	I. s.	,, 7·6
127	,, 2—12 ...	— 7·1	77·4	0·8	I, IV. s.	,, 8·2
128	,, 4— 7 ...	—16·6	60·8	0·2	I. g.	,, 9·5
129	,, 4—16 ...	+16·8	38·6	2·7	IV. s.	,, 11·2
130	,, 6, 7 ...	— 4·7	107·0	0·1	I. g.	,, 6·0
*131	,, 6— 8 ...	+ 6·0	83·0	0·1	I. g.	,, 7·8
132	,, 7	— 9·6	121·3	0·0	I. g.	,, 4·9
133	,, 11, 12 ...	—10·2	330·9	0·0	I. g.	,, 14·8
134	,, 14—18 ...	—10·2	293·4	0·2	I. g.	,, 19·1
135	,, 15	— 8·0	47·6	0·0	I. s.	,, 10·5
136	,, 19	—19·0	288·4	0·1	I. g.	,, 19·5
137	,, 20, 21 ...	+17·1	270·1	0·1	I. g.	,, 21·0
138	,, 23—28 ...	+18·1	236·0	0·5	I. g.	,, 23·5
139	,, 24—Oct. 6	+ 6·3	136·4	‡1·6	IV. s.	Oct. 1·0
140	,, 26	—23·1	136·7	0·0	I. s.	,, 1·0
141	,, 26—Oct. 8	— 2·5	118·2	1·7	IV. s.	,, 2·4
‡*141′*	*Oct. 5 ... ...*			*0·1*	*I.*	
‡*141″*	,, *5 ... ...*			*0·1*	*I.*	
142	,, 5—14 ...	+ 7·2	6·1	9·8	II. g.	,, 11·0
		+ 7·4	12·0		p.	,, 10·5
		+ 8·1	0·3		f.	,, 11·3
143	,, 10—21 ...	+11·6	306·3	†1·6	I, II. g.	,, 15·4
		+10·0	310·5		p.	,, 15·1
		+12·6	303·1		f.	,, 15·7
144	,, 18—20 ...	+ 4·2	272·0	0·1	I. g.	,, 18·0
145	,, 22, 23 ...	—19·2	234·4	0·1	I. s.	,, 20·9

* Groups 126, 131 identical. ‡ Catania Drawing.
† Zurich Drawing.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date	Mean Latitude °	Mean Longitude °	Max Area	Mean Type	Central Meridian
146	Oct. 22—Nov. 4	— 7·1	123·6	5·2	IV, III. g	Oct. 29·3
		— 5·8	132·8		s.	,, 28·6
		— 6·7	127·6		s_1	,, 29·0
		— 8·7	124·4		s_2	,, 29·2
		— 5·0	119·5		s	,, 29·4
		— 7·9	130·1		s	,, 28·8
		— 6·3	111·8		f.	,, 30·2
§*146'*	,, *27—29* ...	— *4·8*	*152·6*	*0·1*	*I. g.*	,, *27·1*
†*146''*	,, *27*	— *4·8*	*94·2*	*0·0*	*I. g.*	,, *31·5*
‡*146''**	*Nov. 1*			*0·1*	*I.*	
147	Oct. 25—29 ...	+ 5·2	199·3	1·1	II. p.	,, 23·5
		+ 5·2	195·9		f.	,, 23·8
148	,, 26	+ 7·0	139·2	0·1	I. g.	,, 28·1
149	Nov. 3, 4 ...	+ 7·4	24·2	0·1	I. g.	Nov. 5·8
150	,, 3—12 ...	+12·7	339·8	0·5	I. s.	,, 9·2
†*150'*	,, *12*	+ *3·0*	*316·4*	*0·1*	*I. s.*	,, *11·0*
151	,, 14—25 ...	+ 4·6	203·9	2·5	III. g.	,, 19·5
		+ 3·5	209·6		p.	,, 19·1
		+ 3·4	197·5		f.	,, 20·0
152	,, 19, 20 ...	— 3·2	147·3	0·1	I. s.	,, 23·8
153	,, 18—28 ...	— 6·0	135·3	†3·4	IV. s.	,, 24·7
154	,, 21—Dec. 3	— 8·6	107·6	5·3	II. p.	,, 26·8
		— 8·3	101·9		f.	,, 27·2
155	,, 21—30 ...	+ 6·2	104·2	0·9	IV, I. s.	,, 27·1
156	,, 25, 26 ...	—26·3	181·9	0·3	I. g.	,, 21·2
157	,, 26—Dec. 4	+14·0	84·0	0·9	I. p.	,, 28·6
		+15·4	76·1		f.	,, 29·2
158	,, 26— ,, 1	+ 8·1	61·6	†0·5	I. g.	,, 30·3
		+ 8·4	63·3		p.	,, 30·2
		+ 8·7	60·3		f.	,, 30·4
159	,, 27—29 ...	+17·8	51·1	0·0	I. s.	Dec. 1·1
160	,, 27—Dec. 7	+ 8·4	36·1	0·6	I. g.	Nov. 29·6
		+ 8·2	39·1		p.	,, 29·3
161	Dec. 9—19 ...	+ 5·2	224·0	0·7	I. p.	Dec. 15·3
162	,, 12	+11·7	284·1	0·1	I. g.	,, 10·7
163	,, 11, 12, 18–21	+10·6	224·0	†0·7	I, IV.	,, 15·3

§ Catania and Zurich Drawings.
† Zurich Drawing. ‡ Catania Drawing.

SUN-SPOT STATISTICS, 1930—*Contd.*

No. of Group	Date	Mean Latitude o	Mean Longitude o	Max Area	Mean Type	Central Meridian
164	Dec. 11, 12 ...	+ 3·5	215·0	0·0	I. s.	Dec. 16·0
165	,, 14–16, 18–19	—13·2	240·7	0·3	I. p.	,, 14·0
166	,, 17—20 ...	—11·3	125·0	0·2	I. p.	,, 22·8
		—12·5	123·0		f.	,, 23·0
167	,, 18—25 ...	— 8·3	112·7	1·5	IV. s.	,, 23·7
168	,, 18—23 ...	+ 9·2	118·5	0·1	I. g.	,, 23·3
169	,, 25	+ 4·7	119·2	0·1	I. g.	,, 23·2
170	,, 20—30 ...	+12·8	90·4	1·1	I. p.	,, 25·4
		+ 4·3	85·0		f.	,, 25·9
171	,, 25—28, 30·	+ 8·2	44·7	0·1	I. p.	,, 28·9
		+ 7·6	38·0		f.	,, 29·4
172	,, 28	+ 8·4	24·9	0·0	I. s.	,, 30·4