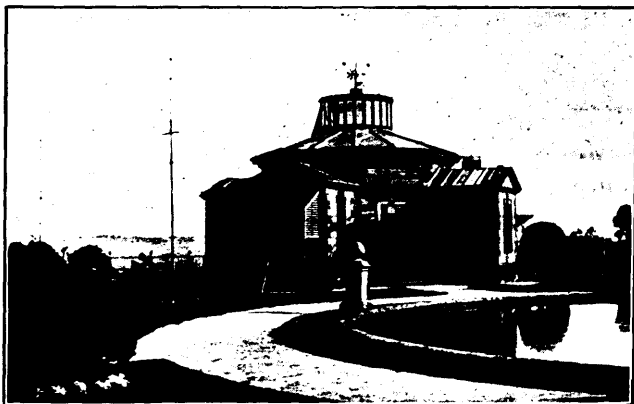


STONYHURST COLLEGE OBSERVATORY.

Lat. $53^{\circ} 50' 40''$ N. Long. $9^{\text{m}} 52^{\text{s}}.68$ W
Height of the Barometer above the Sea. 381 feet

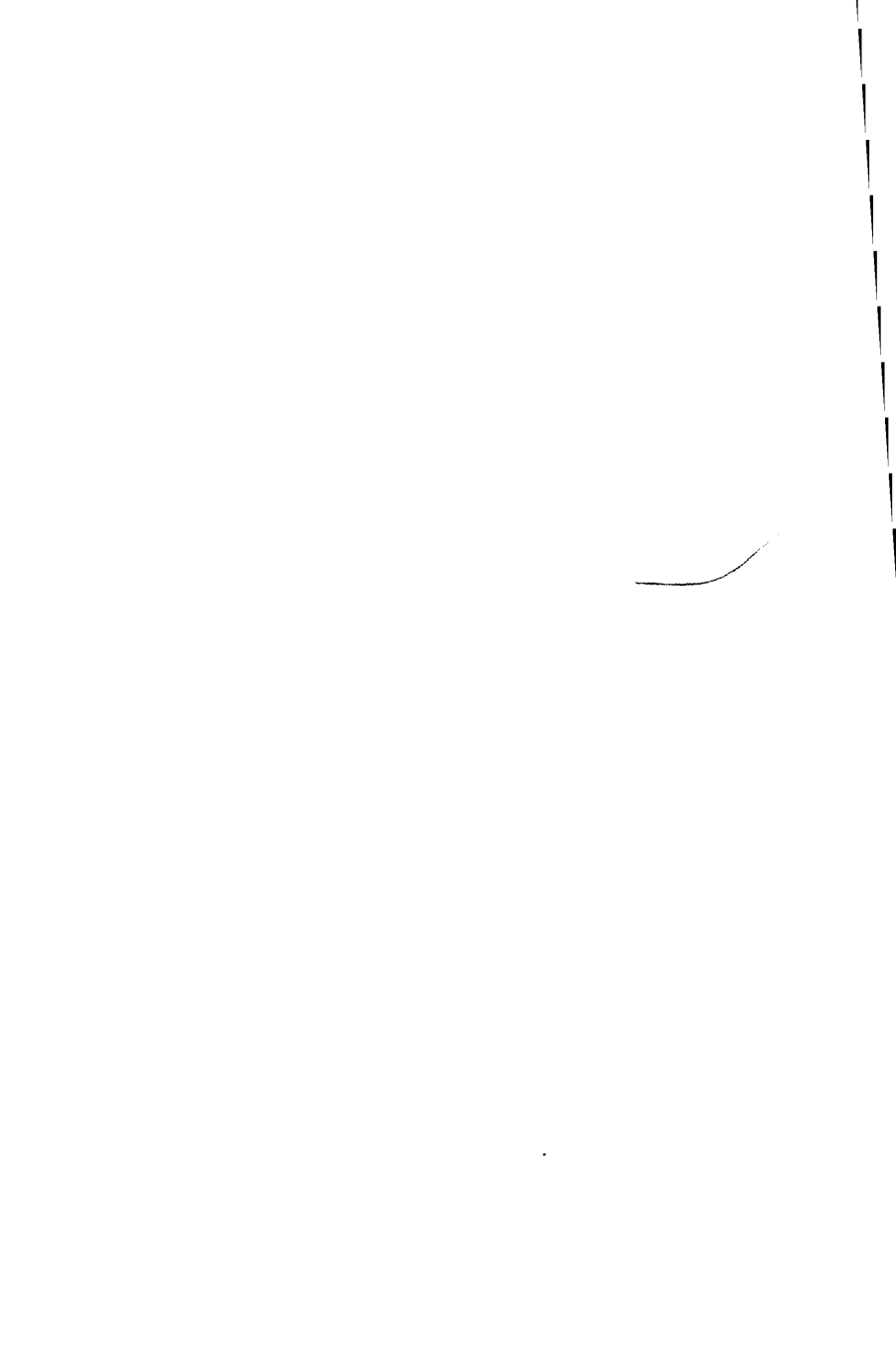


(FOUNDED 1838)

Results of Geophysical and Solar Observations, 1925.

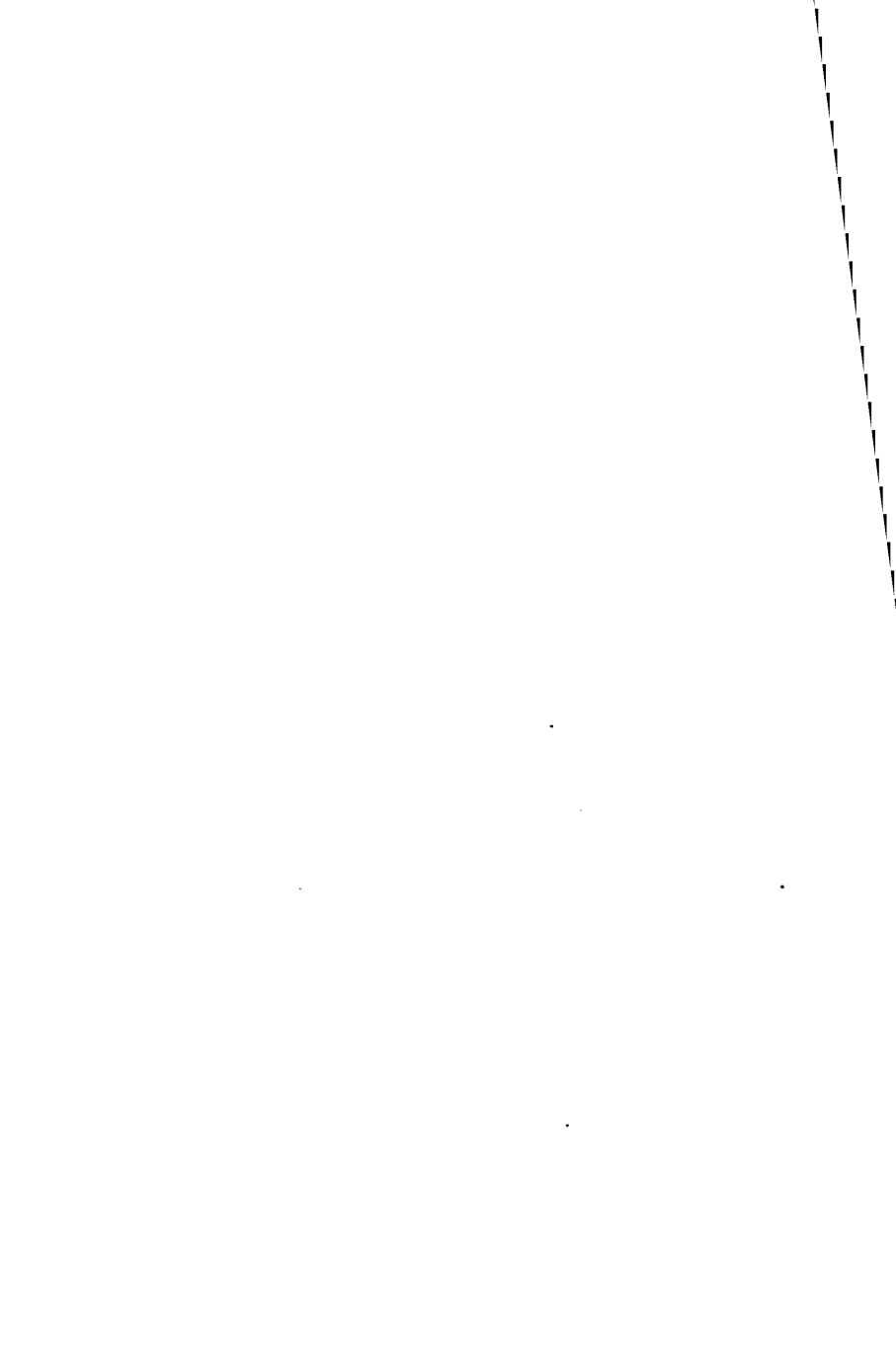
With Report and Notes of the Director,
Rev. E. D. O'CONNOR, S.J., M.A., F.R.A.S

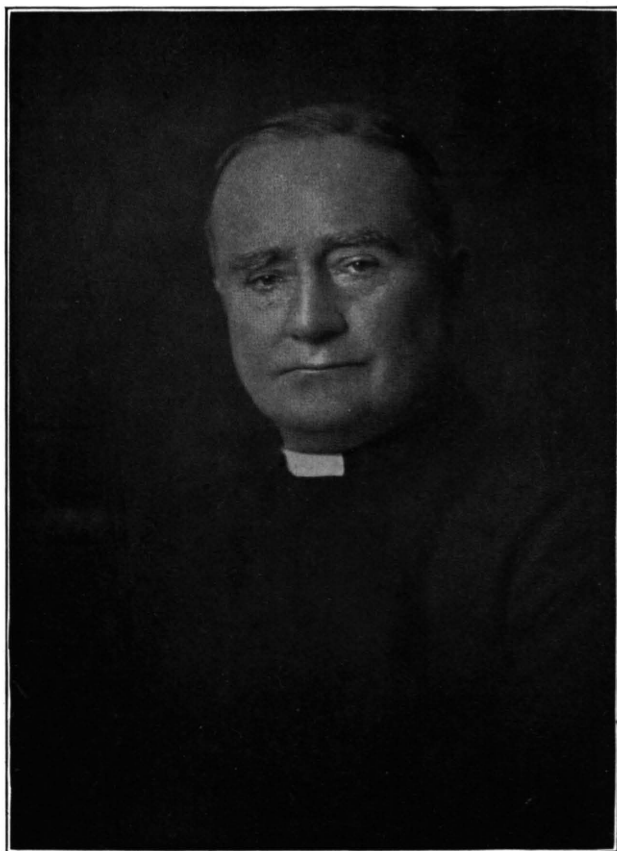
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Photograph by Swaine, New Bond Street.

The Rev. A. L. CORTIE, S.J.,

D.Sc., F.R.A.S., F.Inst.P., F.R.Met.S.

Born 22nd April, 1859.

Died 16th May, 1925.

O.S. 1872—1878.

REPORT AND NOTES.

GENERAL.—It is with deep regret we record the death, on 1925, May 16, of the Reverend Aloysius Laurence Cortie, S.J., D.Sc., F.R.A.S., F. Inst. P., F.R. Met. S., Director of the Stonyhurst Observatory since 1919, President of the Manchester Philosophical and Literary Society, and President of the Manchester Astronomical Society.

Father Cortie, to give him the title by which he was best known, and which he loved best, was ever actuated by a strong sense of duty, and it was truly edifying to see how this affected him in the last two or three weeks of his life, when it became evident that he would not rise again from his sick bed. He looked upon his departure from this life simply as the next duty he was called upon to perform ; and he prepared for it in the same business-like fashion as he had done for any of his various expeditions.

Many appreciations have already appeared dwelling on the cheeriness of his disposition, on the contagiousness of his good humour, on the loveableness and simplicity of his character, on the staunchness and universality of his friendships. To quote the Obituary Notice in *Monthly Notices*, Vol. 86, No. 4 : “ It was said of him that he had no acquaintances, for acquaintances became at once his friends.”

Reference, too, has been made to his untiring energy. It was not until 1914, August, that he was freed from his many duties at the College, and thus enabled to devote his whole time to the work he loved so well. Even then another claim was made on his time to which he generously responded. Owing to the exigencies of the War, in 1916 he was asked to take over the Editorship of the *Stonyhurst Magazine*; by no means a light task, as on him devolved the duty of writing a great number of the obituaries of Old Boys who were killed or died during the War, in addition to the ordinary work of Editor. For two years he edited the *Magazine* and fully maintained the very high standard of excellence which has won for it such a well-deserved reputation.

For 19 years, 1895—1914, he was engaged in ordinary class work, teaching Science and Mathematics, and was in charge of the Music of the School, with the onerous duties of training the Choir and Orchestra for the many calls on them in Church and Concert Room.

The pulpit, too, not unfrequently claimed his services. He was always ready to oblige on such occasions; and from 1892 onwards he regularly preached at the meetings of the British Association.

Indeed, it is truly wonderful that Father Cortie was able to carry through such an amount of Astronomical work as appears from his publications on the subject. His was indeed a "full" life.

He was born in London on 1859, April 22. He came to Stonyhurst as a boy in 1872, had a very successful course at the College, represented his School at Cricket,

was placed sixth on the Honours List in the London Matriculation in 1878, and awarded a £10 prize by the University, also secured the chief school prizes of that year—among them being the £20 prize for Classical Honours, and the £5 English Essay Prize. On leaving School he entered the Noviceship of the Society of Jesus at Roehampton, where he spent three years in the exercise of the special training the Society requires of its members. In 1881 he came up to St. Mary's Hall, Stonyhurst, and a year was spent in studying for the London University Degree.

Even as a boy Aloysius Cortie had devoted some of his spare time to working at the Observatory, but his main pursuits were rather on the Classical and Literary side. In 1882, however, he definitely took up Astronomy as his special study, and while following the usual Philosophical Course at St. Mary's Hall, he started under the direction of Father Perry the systematic observation of Sun-Spot Spectra. The section from B to D in the Solar Spectrum was selected so as to supplement the series of observations between D and F by Mr. Maunder, at Greenwich, and Professor Lockyer, at South Kensington.

The work of the first two years was mostly preliminary, but some useful results were obtained and appeared in a paper written by Father Perry for the *Monthly Notices*, 1884, March, Vol. xlv.

His systematic and careful notes for lecture purposes also began about this time. For Father Cortie soon realized that he had a very special gift as a lecturer ; and it is well known how eminently successful he was in

this matter. The demands on him for Gilchrist and other Lectures, both at home and abroad, were indeed very great. And the variety of his audiences, both as regards mental capacity, condition of life, and age, would have frightened anyone with less confidence in himself than Father Cortie. His lectures were indeed a very integral part of his life, and it is chiefly in the role of a lecturer that perhaps he will be best remembered by the general public.

In 1885 Father Cortie completed his Philosophical Studies and came on the College Staff to teach Mathematics and Science, while he devoted all his spare time to Astronomy.

In 1889 he went to St. Beuno's, North Wales, for his Theological Studies, in immediate preparation for the Priesthood, to which state he was raised in 1892, September 22. His holidays, however, were usually spent at Stonyhurst, where he pursued his Astronomical work.

In 1890 appeared his first substantial contribution to Astronomical Literature:—"Observations of the Spectra of Sun-Spots in the region B—D, made at the Stonyhurst College Observatory in the years 1882—1889," and published in the *Memoirs R.A.S.*, Vol. 50.

In 1891, January 9, he was elected Fellow of the Royal Astronomical Society, and in the following year published his life of Father Perry.

For a short time after this he was Director of Studies at the newly founded Jesuit Day School at Stamford Hill, London; but in 1895 he was back again at Stonyhurst, and there spent the remainder of his life.

In 1894 he had joined the B.A.A., and became a very active member of the Association. For eleven years—from 1900 to 1910—he was Director of the Solar Section, and in this capacity furnished a number of Reports to the Memoirs of the Association.

For many years he was President of the Preston Astronomical Society ; from 1911 to his death President of the Manchester Astronomical Society ; and for more than ten years served on the Council of the Royal Astronomical Society.

In 1905 he attended the Second Conference of the International Union for Co-operation in Solar Research, which met at Cambridge, England, and was appointed a member of the Committee on the Spectra of Sun-Spots. In the same year he organized an Expedition to observe the Total Solar Eclipse in Spain, his results and report being printed in the Transactions of the Royal Irish Academy xxxiii, Section A, Part I.

In 1908 he attended the Third Conference of the I.U.C.S.R., which met at Meudon, and at which his classification of Sun Spots was adopted. In 1910 the Conference took place at Mount Wilson. Father Cortie attended as one of the delegates of the R.A.S., and contributed a Report on the Spectra of Sun Spots in the Region $\lambda 5890$ — $\lambda 6560$. He was reappointed a member of the Committee on Sun-Spot Spectra.

The fifth Conference met at Bonn, in 1913, when Father Cortie was present as Secretary of the Sub-Committee on visual observations of Prominences and Related Phenomena.

The War then intervened, but in 1921 he attended the International Congress at Potsdam. In January of the next year, 1922, he was appointed member of the Committee on the Solar Atmosphere at the Astronomical Union, and in May attended the Congress in Rome.

In 1911 he was in charge of the Total Solar Eclipse Expedition to Vavau, in the South Pacific on behalf of the Permanent Joint Solar Eclipse Committee, on which he served for a great number of years. The results were only partially successful owing to clouds at the time of totality.

Likewise in 1914, he led the Expedition to Hernô-sand, Sweden, where he was fortunate in having excellent weather. The results of both eclipses were in due course communicated to the R.A.S.

His last expedition was in 1924, when he travelled to Toronto, Canada, to attend the meeting of the British Association as one of the delegates of the R.A.S.

He was very faithful in his attendance at the B.A. meetings, and usually contributed a Paper. His final Paper: "The Relation between Solar Activity and Terrestrial Magnetic Disturbances"—Report B.A., 1924, and "The 27-day period (interval) in Terrestrial Magnetic Disturbances"—Proceedings R.S., A. 106, pp. 19-32, published also in 1924 are the last words he had to say on his main life-work—the inter-relation between Solar Disturbances and Magnetic Storms.

A list of his publications is appended. This will perhaps give some little idea of Father Cortie's work in furtherance of the Science of his predilection.

It will be noticed that in addition to his solar and magnetic work, he undertook a fair share of stellar spectroscopy, especially of Novæ; nor was he in-different to the more general bearings of Science.

The following is a list of the papers he contributed to the *Monthly Notices* of the R.A.S. :—

1. Bands observed in the Spectra of Sun Spots at the Stonyhurst Observatory; xlvi, 19.
2. (Conjointly with Father Perry) Observations of the Spectrum between C and D of a Sun Spot observed 1884, May 27, and another of 1889, May 7; xlix, 410.
3. Note on the Spectrum of the Sun Spot of 1889, June; l, 64.
4. Second note on the same; l, 331.
5. Spectroscopic Notes and Queries; li, 18.
6. Abstract of "Observations of the Spectra of Sun-Spots in the region B—D, made at the Stonyhurst College Observatory in the years 1882—89"; li, 76. Published in the *Memoirs*, Vol. 50.
7. The Heliographic co-ordinates of Sun Spots and Faculæ in the Stonyhurst Drawings; lvii, 141.
8. The Wilsonian Theory and Mr. Howlett's Drawings of Sun Spots; lviii, 91.
9. Vanadium in the Spectrum, C to D, of Sun Spots; lviii, 370.
10. The duration of the greater Sun-Spot disturbances for the years 1881—99; lx, 531.
11. Note on the Visual Spectrum of Nova Persei; lxi, 463.
12. Visual and Spectroscopic Observations of the Sun-Spot Group of 1901, May 19—June 26; lxii, 516.
13. The Spectra of Sun-Spots in the region B—D; lxiii, 468.
14. Variation in Latitude of the greater Sun-Spot Distances of 1881—1903; lxiv, 762.
15. Magnetic Storms and Associated Sun Spots; lxv, 197.
16. Note on the Visual Spectrum of Mira Ceti in December, 1906; lxvii, 537.

17. Note to Captain Daunt's paper on Helium D Absorption in the neighbourhood of Sun Spots ; lxxviii, 625.
18. (Conjointly with Father Sidgreaves). Note on Comet o 1908 (Morehouse), September 29—October 2 ; lxxix, 54.
19. The Sun Spots and associated Magnetic Storms of September—October, 1909 ; lxxx, 19.
20. (Conjointly with Father Sidgreaves). Notes on Comet 1910 I ; lxxx, 464.
21. Note on the Spectrum of Nova Geminorum ; lxxxi, 714.
22. The Sun-Spot Minimum, Sun Spots and Prominences, 1912, October 12 ; lxxxii, 51.
23. Sun-Spots and Terrestrial Magnetic Phenomena, 1898—1911 : the cause of the annual variation in Magnetic Disturbances ; lxxxiii, 52.
24. The Greater Magnetic Storms ; lxxxiii, 148.
25. Sun-Spot Areas, Magnetic Storms and the Sun's Corona ; lxxxiii, 431.
26. The mode of propagation of the Sun's influence in Magnetic Storms ; lxxxiii, 539.
27. The Spectrum of Nova Geminorum 2, 1912, April, and 1913, February—April ; lxxxiii, 646.
28. An area of long continued Solar Disturbances and the Associated Magnetic Storms ; lxxxiv, 670.
29. The Transit of Mercury, 1914, Nov. 6-7 ; lxxxv, 66.
30. Preliminary Report on the Total Solar Eclipse of 1924, August 21, observed by the Expedition of the Joint Permanent Eclipse Committee to Hernösand, Sweden ; lxxxv, 105.
31. The Sun-Spot and the Solar Corona of 1914, August 21 (showing that regions of long continued solar spot activity were associated with bundles of divergent streamers) ; lxxxv, 496.
32. The Efficiency of Sun Spots in relation to Terrestrial Magnetic Disturbances ; lxxxvi, 15.
33. The Efficiency of Sun Spots in relation to the mean daily range of Terrestrial Magnetic Declination ; lxxxvi, 631.
34. The Chromospheric and Coronal Spectrum (6000—7600) in the total Solar Eclipse, 1911, April 28 ; lxxxviii, 441.
35. The Spectrum of the Corona, 1914, August 21 ; lxxxviii, 665.
36. The Earlier Spectrum of Nova Aquilæ ; lxxxix, 121.
37. The Spectrum of Nova Aquilæ, 1918, June 15 ; lxxxix, 171.

38. The Spectrum of Nova Aquilæ, 1918, July 25 ; lxxix, 491.

39. The Spectrum of Nova Aquilæ, 1918, August 23—October 23 ; lxxix, 555.

40. Note on the disturbed Sun-Spot Area on the Sun's Eastern Limb, 1919, May 29 ; lxxx, 204.

41. The Spectrum of Nova Aquilæ, July–August ; lxxx, 205.

42. The great Solar-Spot Group and the Magnetic Storm, 1920, March 22–23 ; lxxx, 574.

43. The Spectrum of Nova Cygni III ; lxxxi, 57.

44. The Ultra-Violet Spectrum of Nova Aquilæ ; lxxxi, 438.

45. (Conjointly with Father Rowland). The partial Eclipse of the Sun, 1921, April 7th ; Spectroscopic observations of the Reversing Layer ; lxxxi, 485.

46. The Sun-Spot Group and the Magnetic Disturbances 1921, May 8–21 ; lxxxi, 515.

47. Terrestrial Magnetic Disturbances and Sun-Spots ; lxxxii, 170.

48. Solar and Terrestrial Magnetic Phenomena, 1913—1921 ; lxxxiii, 204.

49. The Magnetic Disturbance of 1924, January 29–30 ; lxxxiv, 531.

50. The Spectrum of γ Cassiopeiæ, $H\beta$ to B ; lxxxiv, 576.

The following were his contributions to the *British Association Meetings* :—

1. On the Types of Sun-Spot Disturbances, 1900, Report, 675.

2. On the Drift in Longitude of Groups of Faculæ on the Sun's Surface ; 1901, Report, 542.

3. Minimum Sun-Spots and Terrestrial Magnetism ; 1902, Report, 522.

4. Solar Prominences and Terrestrial Magnetism ; 1903, Report, 574.

5. The Spectra of Sun-Spots ; 1904, Report, 458.

6. On the Connection between Disturbed Areas of the Solar Surface and the Solar Corona ; 1906, Report, 499.

7. The Variability in Light of Mira Cati and the Temperature of Sun-Spots ; 1907, Report, 465.

8. On the possible existence of Steam in the regions of Sun-Spots ; 1908, Report, 639.
9. On the Recent Eclipse of the Sun ; 1911, Report, 343.
10. Magnetic Disturbances, Sun-Spots, and the Solar Corona ; 1912, Report, 411.
11. Solar and Terrestrial Magnetic Disturbances ; 1913, Report, 394.
12. Efficiency of Sun-Spots in relation to Terrestrial Magnetic Phenomena ; 1916, Report, 364.
13. Progressive Spectra of Nova Aquilæ, 1918—1919 ; 1919, Report, 147.
14. Comparison of Drawings of Solar Faculæ and Photographs of Calcium Flocculi ; 1920, Report, 351, 381.
15. Magnetic Storms of the present Solar Cycle ; 1921, Report, 416, 464 (A29).
16. The Relation between Solar Activity and Terrestrial Magnetic Disturbances ; 1924, Report, 370.

In this Group may be inserted his paper on—" The 27-day period (interval) in Terrestrial Magnetic Disturbances " ; Proceedings of the R.S., A. 106, pp. 19-32.

TOTAL SOLAR ECLIPSE WORK :

1. " The Total Solar Eclipse of 1905 " ; Transactions of the Royal Irish Academy xxxiii, Section A, Part I.
2. " Report of the Total Solar Eclipse of 1911 " ; Proceedings of the Royal Society, A, lxxxvii, 293.
3. " The Total Solar Eclipse of 1914 " ; Proceedings of the Royal Institute, 1914—1915.

The following Papers were contributed to *The Astrophysical Journal* :—

1. On the Types of Sun-Spot Disturbances ; xiii, 4.
2. On Drift in Longitude of Groups of Faculæ on the Sun's Surface ; xiv, 5.
3. The Spectra of Sun-Spots in the Red and Yellow Regions of the Spectrum ; xx, 253.
4. On the Connexion between Disturbed Areas of the Solar Surface and the Solar Corona ; xxiv, 355.
5. The Variability in Light of Mira Ceti and the Temperature of Sun-Spots ; xxvi, 123.

6. On the possible existence of Steam in the regions of Sun-Spots; xxviii, 5.

7. Sir Norman Lockyer (Obituary); liii, 233.

To *The Observatory* he contributed the following articles :—

1. Papal Brief on Astronomy; xiv, 226.

2. Sun-Spot Group of August 28—October 4; xiv, 368.

3. On the Spectra of Sun-Spots; xxvii, 366.

4. Problems of Solar Physics (two papers); xxx, 100 and 180.

5. Disturbed Areas of the Solar Surface and the Solar Corona; xxx, 123.

6. A letter on Galileo; xxx, 415.

7. The Absorption of D_3 in the neighbourhood of Sun-Spots; xxxi, 51.

8. Recent work on the Spectra of Sun-Spots; xxxi, 450.

9. Sun-Spots and Solar Temperature; xxxii, 60.

10. Water Vapour Lines in the Sun's Spectrum; xxxii, 102.

11. The Foundations of Astro-Physics; xxxii, 465.

12. The Devil, The Turk and the Comet; xxxiii, 91.

13. The recent Magnetic Disturbance and the Sun's Activity (1910); xxxiii, 100.

14. Newall's "Spectroscope and its work"; xxxiii, 446.

15. Magnetic Disturbances, Sun-Spots and the Sun's Corona; xxxv, 356.

16. Progressive Spectra of Nova Aquilæ, 1918—1919; xlii, 366.

17. Extract from "Photographic Evidence for the Formation of Stars from Nebulæ" [published in *Photographic Journal*; lix, 207]. xlii, 398.

18—23. Sun-Spot Areas and Terrestrial Magnetic Horizontal Ranges and Disturbances for the years 1919—1924 (inclusive); xliii, 121; xlv, 91; xlv, 84; xlvi, 87; xlvii, 86; xlviii, 86.

24. Comparisons of Drawings of Solar Faculæ and Spectroheliograms of Calcium Flocculi; xliii, 387.

25. Early Spectra of Nova Aquilæ; xliii, 229.

26. Dissymetry in Sun Spots; xlv, 121.

27. Series of Magnetic Disturbances; xlv, 298.

To the B.A.A. Journal and Memoirs he contributed as follows :—

MEMOIRS :

The 8th (1898), 9th (1899), 10th (1900), 11th (1901), 12th (1902), and 13th (1910); Reports of the Section of the Observation of the Sun; Parts I of Vols. viii, xi, xii, xiii, xiv and xvii.

JOURNAL :

1. Some Problems with regard to Faculæ; ix, 3.
2. The Solar Surface during the Year 1902; xiv, 1.
3. Some Sun-Spot Groups of 1903, October, November; Magnetic Storms and Auroræ; xiv, 2.
4. The Stonyhurst Discs for Measuring the Positions of Sun-Spots; xviii, 1.
5. The Solar Surface in 1908; xix, 7.
6. A simple method of measuring the heights of Solar Prominences; xxiv, 1.
7. Notes on the Progressive Spectra of Nova Aquilæ; xxx, 1.

In *Nature* are to be found frequent references to Father Cortie's work and to his published papers. The following are his own contributions :—

1. The Chromospheric Line A° 6676.9. 1891, Dec. 3, p. 103.
2. A short history of Scientific Education, 1898, Nov. 3; p. 6.
3. The Absorption of D3 (He) in the Neighbourhood of Sun-Spots; 1908, Jan. 23; p. 281.
4. "Stonyhurst Sun Discs"; 1908, March 19; p. 469.
5. Water Vapour Lines in the Sun-Spot Spectrum; 1909, Feb. 11; p. 448.
6. Solar Activity and Magnetic Storms; 1910, Jan. 6; p. 293.
7. The New Comet, 1910 a.; 1910, February 10; p. 440.
8. Brilliant Meteor of July 31; 1910, Aug.; p. 204.
9. Photography of H_{α} during Solar Eclipses; 1912, Jan. 11; p. 349.
10. Errors of the Computed Times of Solar Eclipse Phenomena; 1912, Oct. 17, p. 191.

11. The Total Solar Eclipse Expedition to Hernosand, Sweden ; 1914, Oct. 22, p. 202.

12. The Magnetic Storm and Solar Disturbance of June 17 ; 1915, June 24, p. 450 ; July 15, p. 537 ; Aug. 5, p. 618.

13. The Aurora Australis of June 17 ; 1915, Sept. 30, p. 114.

14. The Aurora Borealis of November 5 ; 1915, Nov. 25, p. 342.

15. The Aurora, Magnetic Storm, and Sun-Spot of Jan. 4, 1917, Feb. 8, p. 446.

16. Pope Innocent VIII and Witchcraft ; 1918, May 2, p. 169.

17. Nova Aquilæ ; 1918, Aug. 22, p. 492.

18. The Magnetic Storm of Aug. 11—12 ; 1919, Aug. 14, p. 483.

19. A New Astronomical Model ; 1919, Nov. 27, p. 343.

20. Magnetic Storm of March 22—23, and Associated Phenomena ; 1920, April 1, p. 137.

21. The Spectrum of Nova Cygni III ; 1920, Sept. 16, p. 79.

22. The Great Sun-Spot Group and Magnetic Disturbances, May 8—21 ; 1921, June 2, p. 426.

23. Aurora Borealis, Terrestrial Magnetic Disturbances and Sun-Spots ; 1921, Oct. 27, p. 272.

24. Terrestrial Magnetic Disturbances and Sun-Spots ; 1922, Jan. 12, p. 44.

25. The Influence of Science ; 1922, Aug. 5, p. 180 ; Sept. 16, p. 378.

26. The Magnetic Disturbance of March 24—25 ; 1923, April 21, 534.

27. Astronomy for All—A Review ; 1924, June 21, p. 884.

His obituary appears in 1925, June 6, p. 881.

As President of the Manchester Astronomical Society, he contributed the following papers to the *Journal* :—

1. The Origin of the Sun and Stars ; 1914.

2. On Counting the Stars ; No. 2 ; 1914—15 ; p. 1.

3. The Colours and the Spectra of the Stars ; No. 3 ; 1915—16 ; p. 1.

4. The Planetary Relations ; No. 4 ; 1916-17, p. 2.
5. Measuring the Stars ; No. 6 ; 1922, p. 25.
6. The Work of a Magnetic Observatory ; Ibid., p. 23.
7. Solar Prominences ; Ibid., p. 41.
8. Einstein and Gravitation ; The Astronomical Tests ; No. 7 ; 1922-24, p. 45.

To *The Month*, the periodical published by the English Province of the Society of Jesus, he contributed the following articles :—

1. The Eruption of Krakatao ; 1889, March.
2. Some recent Studies on the Solar Spectrum ; 1891, August.
3. Babylonian Astronomy ; 1892, April.
4. The Temporary Star in Auriga ; 1893, January.
5. The Total Eclipse of the Sun of August 9th ; 1896, August.
6. The Attitude of the Church towards Natural Sciences ; 1899, September.
7. The November Meteors ; 1899, November.
8. The Total Eclipse of the Sun of May 28th, 1900 ; 1900, May.
9. The Sun's Corona ; 1910, October.
10. The System of the Stars ; 1912, March.
11. The Origin of the Sun and Stars ; 1914, January.
12. On Counting the Stars ; 1914, October.
13. The Colour and the Spectra of the Stars ; 1916, March.
14. Comets and their Tails ; 1916, August.
15. The Relations of Science and Literature in Education ; 1917, January.
16. The Planetary Relations ; 1917, June.
17. Gunfire and Rainfall ; 1918, February.
18. The Motion of the Sun in Space ; 1918, June.
19. The Spiral Nebulæ ; 1919, March.
20. The Confines of the known Material Universe ; 1921, April.
21. Measuring the Stars ; 1922, February.
22. The Origin of the Solar System ; 1922, July.
23. The System of the Stars, an Argument from Design ; 1922, September.

24. Does Revelation fetter Science ? 1922, December.
25. " Men like Gods " ; 1923, September.
26. Science and Man ; 1923, November.
27. Einstein and Gravitation :—The Astronomical Tests ; 1924, March.

To the American periodical, *America*, he contributed :—

1. The Centenary of a Great Astronomer (Secchi) ; 1918, June 22.
2. Father Secchi's Work ; 1918, June 29.
- 3 and 4. Astronomer and Jesuit, Father Walter Sidgreaves ; 1919, September 27, October 4.
5. Galileo again ; 1923, September 15.
6. Measuring the Diameters of the Stars ; 1923, November 3.
7. The System of the Planets ; 1924, August 16.
8. The System of the Stars ; its Dimensions ; 1924, October 4.
9. The System of the Stars ; its Symmetry ; 1924, October 18th.
10. Watching the Stars ; 1925, March 14th.

Other articles and papers appeared as follows :—

- " What Catholics have done for Astronomy " ; Benziger's Magazine ; 1908, January.
- " The Maintenance of the Sun's Heat "—Liverpool Astronomical Society, Annual Report, 1908—1909.
- " Sun-Spots "—The XIX Century and After ; 1903, November.
- " The Sun's Corona "—The Rochdale Literary and Scientific Society ; 1907 ; April 10th.
- " New Stars "—Knowledge ; xxiv, No. 188.
- " Solar Surface Disturbances "—Knowledge xxxvii, No. 546, 1.
- " The Nature of Sun-Spots "—Science Progress ; 1917, October.
- " New Stars "—Science Progress ; 1921, April.
- " Astronomy in our Schools "—The Chaldæon III, 11.

"Cosmic Immortality"—The Philosopher, 1924, Jan.—March, II, 1.

"Blind Chance—or God?"—The Catholic World, 1724, May.

After Father Cortie's death Father J. P. Rowland carried on the work of Director until the appointment of the new Director, which took place only in December, 1925.

The Observatory Staff was further much handicapped by sickness, with the result that very little more than routine work was done during the year.

The Meteorological, Magnetic and Seismological Observations have been carried on as usual, and the results forwarded to the official centres.

Father Rowland attended the meeting of the International Astronomical Union at Cambridge, and was nominated a member of the Solar Physics Commission. He has also been elected a member of the Seismological Committee of the British Association.

The Grating Spectrograph has not been in use during the year, owing to the lack of a mirror for the heliostat; the 10-inch mirror, formerly on loan from the Permanent Eclipse Committee, and the 8-inch mirror subsequently substituted for it, both having been recalled for use on Eclipse Expeditions.

METEOROLOGICAL.—The Meteorological continuous records have been uninterrupted during the year. For a description of the instruments and for the values of their constants reference may be made to our Report for 1920, pp. v—vii. But the Standard Barometer was restored to its original position, 381 feet above sea level, on 1921, November 10th.

The weather conditions for the year were most varied. A gale of 50 miles an hour ushered in the New Year, and the closing days of December witnessed a similar disturbance. But on the whole the dominating character of the weather was sunny, with 1363·7 hours of bright sunshine on 294 days.—[The *greatest* number of days in a year on which bright sunshine has been recorded was 300 in 1905, and the *least* number of hours was 927·6, in 1912.]

Fine day periods of five days or more were recorded as follows:—January 9—14, June 4—11, 16—30, July 10—25, August 14—20, October 5—12, November 8—23, December 1—5; that is a total of eight periods, with an average duration of 10·1 days each. It was the sunniest June for the past 26 years, while the rainfall of that month was the least on record—a period of 78 years. November, too, broke all previous records for the number of hours of sunshine, 89·9, giving an average of practically three hours a day, or 35·1 per cent. of the possible.

Bright sunshine for 10 hours or more was registered: one day in March, three days in April, one day in May, 13 days in June, six days in July, two days in August, and one day in September. The days on which was recorded the greatest number of *continuous* hours of sunshine were:—March 9; April 3, 8, 12, 19—21, 23—26; June 1, 5—11, 14, 17, 18, 23—25, 28—30; July 12—14, 19, 24, 25, 30; August 11, 15—17; September 3, 4, 10, 24, 27.

The rainfall was below the average by 5·280 inches, though there was precipitation on 215 days.

The wettest months were February, September and October, and the driest were March, June and November.

The greatest fall of rain in 24 hours was on the 10th of February, when 1·020 inches were registered.

The adopted mean temperature for the year was $46^{\circ}\cdot 8$, slightly below the normal. The highest shade temperature was $83^{\circ}\cdot 5$, on July 22nd ; the lowest was $17^{\circ}\cdot 0$, on December 25th. June, July and August were the warmest months ; February, November and December the coldest.

Gales of wind, 37 miles per hour and over, occurred : four in January, one in April, one in October, and one in December. The greatest velocity of the wind was on January 14th and on April 16th, which was registered at 50 miles per hour, in direction S and W. by N. respectively.

MAGNETICAL.—Since the death of Father Cortie, Father Rowland has been responsible for the Magnetic Observations and Reductions. 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 four times each month, at nearly equal intervals, and usually at 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.
 ,, Bifilar000496 C.G.S. ,, ,,

The Vertical Force Balance does not give sufficiently consistent readings to allow of numerical values being safely quoted, and the interpretation of its record is confined to estimates of greater or less disturbance.

Four daily readings are measured on the curves, the highest, the lowest, and those at the hours 4 and 16.

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, according to the rule stated on page xii of our Report, 1908; and the month means are taken from the readings on the five quietest days of the month.

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.

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. From a comparison of these character letters with the figures

published for each day from the central international station at De Bilt for the years 1921, 1922, the mean values of the figures corresponding to each letter are c—0·2, s—0·6, m—0·9, g—1·3, and v.g.—1·5. The civil day is used for both the international figures and for our own characteristic letters. 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. The following values of the excess are 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 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. It may happen also that a disturbance is classed as (v.g.) which can hardly claim the rank of a magnetic storm properly so called, and this is the case with every disturbance so classed during the year.

The mean daily ranges of Declination, 7'·8 for the quiet days, and 13'·0 for all days, and of Horizontal Force 33 for the quiet days, and 60 for all days (C.G.S. units), shew a decided increase on the corresponding values for 1924. The percentage of magnetically quiet days (c) was 36, as against 48 in the preceding year. These figures all shew a general increase in magnetic disturbance corresponding to the increased solar activity with the passage of the spot minimum.

The mean magnetic characters of the various months, derived from the numerical values on the international scale referred to above, of the Stonyhurst letters m, g, v.g., point to September and October as the most magnetically active months, and to February and April as the quietest. The following table exhibits a comparison of the Mean Daily Sunspot Areas with the Mean Daily Magnetic Character (1) including calms and small disturbances; (2) excluding calms and small disturbances (c—0·2, s—0·6, m—0·9, g—1·3, and v.g.—1·5 international scale).

MONTH	MEAN DAILY		SUN SPOT
	MAGNETIC CHARACTER.		AREA.
	(1)	(2)	
January... ..	0·51	0·22	0·0
February	0·49	0·14	1·8
March	0·54	0·24	1·0
April	0·44	0·12	1·4
May	0·53	0·16	3·5
June	0·62	0·32	3·1
July	0·52	0·20	3·1
August	0·60	0·35	1·8
September	0·71	0·47	3·1
October	0·69	0·45	4·7
November	0·65	0·32	7·4
December	0·60	0·30	15·3

Too much significance should not be attached to these numerical values of magnetic character, as the system of evaluation cannot be considered entirely satisfactory, as it appears to give an unduly preponderating influence to relatively small disturbances.

The greatest disturbances of the year occurred on June 24—25, September 1—2, and October 23—24, with extreme ranges in D of 41', 46', and 47', and in H of 238, 176, and 180, respectively. "Sudden Commencements" were noted on January 16, 19 h. 38 m., 18, 19 h. 48 m., July 9, 4 h. 8 m., August 14, 3 h. 53 m., 22, 14 h. 48 m., 31, 16 h. 16 m., September 1, 17 h. 46 m., 21, 2 h. 16 m., October 1, 3 h. 27 m., November 1, 0 h. 42 m.

ASTRONOMICAL TIME SERVICE.—The time service of the Observatory is under the charge of Father Rowland. His report is as follows :—

The radio time signals from the Eiffel Tower have been taken regularly throughout the year and the errors and rates of the sidereal and mean time clocks and chronometers determined from them. Time marks are made by the Synchronome Clock every minute on the Milne-Shaw Seismograph, and every two hours on the Magnetographs, the operation having been quite satisfactory throughout the year.

SOLAR OBSERVATIONS.—Observations of the solar surface were made on 253 days, and include 251 drawings. Of these drawings 211 are complete, and show all spots and faculæ; of the remaining 40, 33 are complete for the spots, two are only approximate, and five incomplete.

The mean daily disc area of the spots (in units of $1/5000$ th of the visible surface), stands at 3.53, as compared with 1.36 in 1924, and 0.37 in 1923.

The following table shows the distribution of spot-groups in the hemispheres, with their maximum

areas and the number of spotless days observed. It will be seen from this table that the sun-spot activity has shown a marked increase during the year, particularly so during the last month. It will also be noticed that the Northern Hemisphere was considerably more disturbed than the Southern.

Month	Northern Hemisphere		Southern Hemisphere		Spotless days observed	Sum. of Max'm Areas
	No. of Groups	Max'm Area	No. of Groups	Max'm Areas		
January ..	2	0.6	1	0.1	16	0.7
February ..	9	5.1	6	6.3	7	11.4
March ..	4	5.3	3	2.8	—	8.1
April	15	14.7	5	2.9	—	17.6
May	9	15.8	7	2.5	—	18.3
June	9	5.7	10	6.7*	2	12.4
July	11	8.0	7	11.1	1	19.1
August ..	11	9.4	6	3.6	3	13.0
September ..	11	10.2	11	6.8	—	17.0
October ..	11	9.7	9	17.1	—	26.8
November ..	15	25.3	7	14.4	—	39.7
December ...	17	51.8	12	31.1	—	82.9
TOTAL ..	124	161.6	84	105.4	29	267.0

On pages 40 to 45 will be found the Sun-spot Statistics for the year, including the mean "types" of the various groups.

Whereas in 1924 only 71 groups were recorded, in 1925 the number totalled 208. In consequence of this large increase, it has not been thought advisable to continue the record of "Disturbed Sun-spot Areas" started in 1923. Nor would the record convey infor-

mation of much use. The following points, however, are worthy of note :—

1. The Spots during the year were distributed almost entirely along the belts, Latitude $+10^{\circ}$ to $+28^{\circ}$, and -11° to -30° . The only exceptions were :—

Group No.	Mean. Lat.	Mean Long.	Max. Area	Date
270	+ 8.8	344.2	0.5	Feb. 7-14
337	+ 9.5	52.0	0.1	June 22-23
368	— 5.2	96.9	0.0	Aug. 11
290	+30.3	230.2	0.2	April 6-13
312	+33.6	144.1	2.0	May 17-22
333	+30.6	211.0	0.9	June 9-13
378	+31.2	238.0	0.1	Sept. 1
469	+37.9	353.8	0.2	Dec. 31
266	—32.8	88.5	0.2	Feb. 1
271	—32.3	339.7	0.0	Feb. 7
273	—30.7	271.3	1.2	Feb. 12-16
288	—32.0	287.9	0.2	April 3- 6
335	—34.8	194.8	0.7	June 13-14
341	—35.0	191.1	0.3	July 1- 5
396	—32.6	218.0	1.4	Sept. 18-27
435	—30.4	106.2	0.2	Nov. 20-27

2. In Longitude, the *less* disturbed areas in the Southern Hemisphere for the most part corresponded to the *more* disturbed areas in the Northern Hemisphere, and *vice versa*. This is well shown in the accompanying Table. It will be noted that in the Section 70° to 90° the actual area disturbed in the Southern Hemisphere is greater than that in the Northern Hemisphere, although the number of groups is much fewer. This is due to the great group No. 465 [mean lat. $-20^{\circ} \cdot 0$, mean long. $77^{\circ} \cdot 9$, max. area 18.5], recorded between Dec. 23rd and 31st.

Longitude	Southern Hemisphere		Northern Hemisphere	
	No. of Groups	Max. Area	No. of Groups	Max. Area
0°—12°	3	0·8	0	0·0
12°—26°	3	0·4	10	1·7
26°—48°	5	1·0	11	27·6
48°—70°	0	0·0	12	12·4
70°—90°	3	19·1	12	11·4
90°—112°	10	8·4	4	6·8
112°—140°	2	0·2	8	20·8
140°—151°	3	0·7	3	4·5
151°—161°	0	0·0	6	4·1
161°—173°	6	4·4	1	0·1
173°—190°	4	0·6	5	7·8
190°—215°	6	6·3	12	28·8
215°—230°	11	21·0	0	0·0
230°—250°	5	2·3	8	5·9
250°—270°	8	15·9	5	5·7
270°—290°	7	15·0	6	10·8
290°—308°	2	0·1	3	1·2
308°—320°	4	1·1	1	·9
320°—328°	0	0·0	2	1·2
328°—344°·2	4	1·7	0	0·0
344°·2—360	1	0·6	4	4·6

3. It will also be noted from the Table that the least disturbed sections are from 140° to 190°, and especially from 290° to 12° Longitude.

4. The Mean Latitude for the year is +20°, in the Northern Hemisphere; and -21°, in the Southern.

In the Southern Hemisphere the groups are fairly evenly distributed about the Mean Latitude. In the Northern Latitude this is also the case between

Longitudes 10° to 90° , and 300° to 360° . Between 90° and 300° the preponderance is alternately in excess and in defect of the Mean. Thus :—

In excess, between Longitudes 90° — 120° , 160° — 260° .
In defect, between Longitudes 120° — 160° , 260° — 300° .

SEISMOLOGICAL.—Father Rowland reports :—The Milne-Shaw seismograph has been in service throughout the year. A few records were lost through light failure and minor instrumental defects. The trouble due to instability of the site, which was referred to in our Report for 1924, resulting in entanglement of the lines of the record, has not been eliminated, as was hoped, by the repairs to the retaining walls of the round pond in front of the Observatory. It is now clear that this instability is to be attributed primarily to unequal temperature changes, due to the different effects of sunshine on the East and West sides of the Observatory. During the summer months a good many records suffer at certain times of the day from this defect, but fortunately not many earthquake records have been involved in the illegible portions of the trace.

The number of Earthquakes recorded during the year was 55, or little more than half the number of the previous year. They were distributed as follows :—

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
6	9	9	4	16	9	4	6	4	4	6	2	55

The most notable of these were on March 1st (Eastern Canada), April 16th (China), June 28th (China Sea), October 13th (N. Atlantic), November 13th (Philippine Isles), December 10th (Central America). None of them was of more than moderate intensity on our records,

but that of March 1st, which shook a large area in Eastern Canada and the United States, including New York, and did considerable damage along the banks of the St. Lawrence, aroused considerable public interest in this country. A small British Earthquake (Cornwall) was recorded on February 1st.

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



METEOROLOGICAL REPORT.

JANUARY, 1925.

Results of Observations taken during the Month.							Mean for the last 78 years.		
Mean Reading of the Barometer	inches	29·681						29·486	
Highest " " on the 19th ...	" "	30·269						30·127	
Lowest " " on the 2nd ...	" "	28·491						28·584	
Range of Barometer Readings	"	1·778						1·543	
Highest Reading of a Max. Therm. on the 2nd & 13th		51·7						51·3	
Lowest Reading of a Min Therm. on the 22nd & 23rd		30·5						21·7	
Range of Thermometer Readings		21·2						29·6	
Mean of Highest Daily Readings		45·1						42·5	
Mean of Lowest Daily Readings		36·3						33·3	
Mean Daily Range		8·8						9·2	
Deduced Mean Temp. (from mean of Max. and Min.)		40·5						37·6	
Mean Temperature from Dry Bulb		40·6						37·8	
Adopted Mean Temperature		40·6						37·8	
Mean Temperature of Evaporation		39·1						36·5	
Mean Temperature of Dew Point		37·2						34·4	
Mean elastic force of Vapour	inches	0·222						0·201	
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)		88						87	
Mean weight of a cubic foot of air	grains	549·6						549·3	
Mean amount of Cloud (0—10)		7·8						7·8	
Fall of Rain	inches	3·857						4·310	
Greatest Rainfall in one day (31st)	inches	0·685						0·823	
No. of days on which ·005 in. or more Rain fell...		16						19·5	
Wind:—Direction.....		N	NE	E	SE	S	SW	W	NW
No. of days.....		0	0	6	1	6	4	12	2
Mean Velocity in miles per hr		0	0	8·0	5·9	14·1	15·6	13·7	13·8
Total No. of miles		0	0	1149	142	2037	1501	3946	663
Total No. of miles registered								9438	Mean* 8286·5
Greatest hourly velocity (on the 14th, at 1 a.m., Dir. S.)								50	41·4

* For the last 58 years.

JANUARY, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.195 in.
Monthly range	..	..	..	+	0.235 in.
Mean of highest daily temperatures	...	...	...	+	2.6°
Mean of lowest	..	..	..	+	3.0°
Mean daily range	...	...	...	—	0.4°
Adopted mean temperature	...	...	...	+	2.8°
Total rainfall	...	...	...	—	0.453 in.

Ground Frost on the 4th, 7th, 10th, 12th, 13th, 16th, 17th, 22nd, 23rd, 25th, and 26th. Hoar Frost on the 12th, 16th, and 22nd. Snow on the 4th. Hail on the 4th, 5th, 28th, and 31st. Heavy Rain on the 1st, 28th, and 31st. Gales of Wind on the 1st, 2nd, 13th, and 14th. Fog on the 14th and 15th, Lunar Halo on the 9th.

EXTREME READINGS FOR JANUARY.

During 78 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	...	1921	.....	8.589 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, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.						
Mean Reading of the Barometer	inches 29·109	29·487						
Highest " " on the 1st & 4th ..	29·982	30·098						
Lowest " " on the 26th	28·112	28·644						
Range of Barometer Readings	1·870	1·454						
Highest Reading of a Max. Therm. on the 10th ...	51·2	51·9						
Lowest Reading of a Min. Therm. on the 22nd ...	27·0	22·6						
Range of Thermometer Readings	24·2	29·3						
Mean of Highest Daily Readings	43·9	43·9						
Mean of Lowest Daily Readings	34·6	33·6						
Mean Daily Range	9·3	10·3						
Deduced Mean Temp. (from mean of Max. and Min.)	38·9	38·3						
Mean Temperature from Dry Bulb	39·7	38·5						
Adopted Mean Temperature	39·3	38·4						
Mean Temperature of Evaporation	38·0	36·8						
Mean Temperature of Dew Point	36·3	34·6						
Mean elastic force of Vapour	inches 0·215	0·196						
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)	90	86						
Mean weight of a cubic foot of air	grains 540·6	548·5						
Mean amount of Cloud (0—10)	8·0	7·5						
Fall of Rain	inches 5·885	3·541						
Greatest Rainfall in one day (10th)	1·020	0·762						
No. of days on which ·005 in. or more Rain fell...	25	16·9						
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	0	3	2	2	5	13	1
Mean Velocity in miles per hr.	4·3	0	8·0	7·5	9·2	12·0	13·9	11·9
Total No. of miles.....	205	0	574	359	442	1444	4337	285
Total No. of miles registered	7646						Mean*	
Greatest hourly velocity (on the 8th, at 11 a.m., Dir. W. by S.)	32						7505·8	
							40·9	

* For the last 58 years.

FEBRUARY, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.378 in.
Monthly range	..	..	..	+	0.416 in.
Mean of highest daily temperatures	...	...	...		0.0°
Mean of lowest	..	..	..	+	1.0°
Mean daily range	...	...	...	—	1.0°
Adopted mean temperature	...	...	...	+	0.9°
Total rainfall	...	...	...	+	2.344 in.

Ground Frost on the 1st, 7th, 8th, 10th, 12th—16th, 19th—28th. Hoar Frost on the 20th, 22nd and 24th. Snow on the 6th, 9th, 11th, 14th, 19th, 23rd and 24th. Hail on the 6th, 9th, 12th, 19th, and 23rd. Heavy Rain on the 5th, 9th, 10th and 11th. Fog on the 14th and 22nd. Thunder on the 6th and 11th. Lightning on the 6th and 23rd. Solar Halo on the 14th.

EXTREME READINGS FOR FEBRUARY,

During 78 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.

C

MARCH, 1925.

Results of Observations taken during the Month.							Mean for the last 78 years.	
Mean Reading of the Barometer	inches	29.734					29.452	
Highest " " on the 4th ...	"	30.168					30.044	
Lowest " " on the 1st ...	"	29.128					28.648	
Range of Barometer Readings	"	1.040					1.396	
Highest Reading of a Max. Therm. on the 15th...		51.8					56.7	
Lowest Reading of a Min. Therm. on the 22nd ...		26.0					23.3	
Range of Thermometer Readings		25.8					33.4	
Mean of Highest Daily Readings		45.2					46.9	
Mean of Lowest Daily Readings		35.1					34.4	
Mean Daily Range		10.1					12.5	
Deduced Mean Temp. (from mean of Max. and Min.)		39.2					39.7	
Mean Temperature from Dry Bulb		40.8					40.3	
Adopted Mean Temperature		40.0					40.0	
Mean Temperature of Evaporation		38.4					38.2	
Mean Temperature of Dew Point		36.3					35.7	
Mean elastic force of Vapour	inches	0.215					0.210	
Mean weight of Vapour in a cub. ft. of air, grains		2.5					2.4	
Mean additional weight required for saturation ..		0.4					0.5	
Mean degree of Humidity (saturation 100)		87					85	
Mean weight of a cubic foot of air	grains	551.5					546.2	
Mean amount of Cloud (0—10)		7.6					7.5	
Fall of Rain	inches	2.150					3.355	
Greatest Rainfall in one day (13th)	"	0.450					0.763	
No. of days on which .005 in. or more Rain fell...		16					16.8	
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of Days	6	7	0	0	0	1	14	3
Mean Velocity in miles per hr.	7.3	6.0	0	0	0	15.5	10.8	15.5
Total No. of miles.....	1057	1005	0	0	0	371	3640	1101
Total No. of miles registered						7174	Mean*	
Greatest hourly velocity (on the 7th, at Noon, Dir. W. by N.).....						30	8350.6	
							40.1	

* For the last 58 years.

MARCH, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	...	+ 0.282 in.
Monthly range	..	..	..	..	— 0.356 in.
Mean of highest daily temperatures	...	...	...	...	— 1.7°
Mean of lowest	..	..	..	..	+ 0.7°
Mean daily range	...	...	...	...	— 2.4°
Adopted mean temperature	...	...	...	...	0.0°
Total rainfall	...	...	...	...	— 1.205 in

Ground Frost on the 1st, 3rd—5th, 8th—13th, 21st—23rd, and 25th—28th. Snow on the 8th—10th, 12th, 20th, 21st, 23rd, and 24th—26th. Hail on the 7th—10th, 13th, 24th and 25th. Fog on the 15th, 16th, 18th, and 19th. Thunder on the 25th. Lightning on the 25th. Lunar Halo on the 11th.

EXTREME READINGS FOR MARCH,

During 78 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	1892	5725

* Since 1867 only.

† And 1914.

APRIL, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.						
Mean Reading of the Barometer	inches 29.387	29.484						
Highest " " on the 20th ...	" 29.891	29.961						
Lowest " " on the 16th ...	" 28.887	28.829						
Range of Barometer Readings	" 1.004	1.132						
Highest Reading of a Max. Therm. on the 8th & 9th	57.0	64.4						
Lowest Reading of a Min. Therm. on the 3rd ...	30.0	28.1						
Range of Thermometer Readings	27.0	36.3						
Mean of Highest Daily Readings	50.2	54.3						
Mean of Lowest Daily Readings	38.4	37.8						
Mean Daily Range	11.8	16.5						
Deduced Mean Temp. (from mean of Max. and Min.)	42.8	43.9						
Mean Temperature from Dry Bulb	44.4	44.6						
Adopted Mean Temperature	43.6	44.3						
Mean Temperature of Evaporation	41.0	41.6						
Mean Temperature of Dew Point	37.9	38.2						
Mean elastic force of Vapour	inches 0.228	0.234						
Mean weight of Vapour in a cub. ft. of air, grains	2.6	2.7						
Mean additional weight required for saturation ..	0.6	0.7						
Mean degree of Humidity (saturation 100)	80	80						
Mean weight of a cubic foot of air	grains 540.9	542.2						
Mean amount of Cloud (0—10)	6.8	6.8						
Fall of Rain	inches 2.752	2.585						
Greatest Rainfall in one day (22nd)	" 0.630	0.599						
No. of days on which .005 in. or more Rain fell...	17	15.0						
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	3	1	2	2	5	14	1
Mean Velocity in miles per hr.	3.4	8.6	4.9	14.5	14.0	9.0	12.2	8.5
Total No. of miles.....	164	618	117	698	670	1083	4096	203
Total No of miles registered	7649	Mean*		7483.1				
Greatest hourly velocity (on the 16th, at 7 a.m., Dir. N.W. by W.	50			36.3				

* For the last 58 years.

APRIL, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.097 in.
Monthly range	..	...	...	—	0.128 in.
Mean of highest daily temperatures	...	...	...	—	4.1°
Mean of lowest	..	..	...	+	0.6°
Mean daily range	...	...	...	—	4.7°
Adopted mean temperature	...	...	...	—	0.7°
Total rainfall	...	...	...	+	0.167 in.

Ground Frost on the 3rd, 4th, 13th, 20th, 21st, 25th, 26th, 29th, and 30th. Hail on the 15th, 23rd, 26th, 28th, and 30th. Heavy Rain on the 22nd. Gale of Wind on the 16th. Thunder on the 7th, 8th, 15th, 26th and 28th. Lightning on the 7th, 8th, 15th, and 26th. Lunar Halo on the 1st and 3rd. Solar Halo on the 14th.

EXTREME READINGS FOR APRIL,

During 78 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, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.						
Mean Reading of the Barometer	inches 29·322	29·538						
Highest " " on the 14th ...	" 29·824	29·986						
Lowest " " on the 28th ...	" 28·728	28·951						
Range of Barometer Readings	" 1·096	1·035						
Highest Reading of a Max. Therm. on the 16th.....	70·0	71·8						
Lowest Reading of a Min. Therm. on the 1st	32·2	32·1						
Range of Thermometer Readings	37·8	39·7						
Mean of Highest Daily Readings	58·2	59·4						
Mean of Lowest Daily Readings	45·3	42·6						
Mean Daily Range	12·9	16·8						
Deduced Mean Temp. (from mean of Max. and Min.)	49·9	49·2						
Mean Temperature from Dry Bulb	50·8	50·1						
Adopted Mean Temperature	50·4	49·7						
Mean Temperature of Evaporation	48·0	46·5						
Mean Temperature of Dew Point	45·5	43·1						
Mean elastic force of Vapour	inches 0·305	0·280						
Mean weight of Vapour in a cub. ft. of air, grains	3·5	3·2						
Mean additional weight required for saturation ..	0·6	0·8						
Mean degree of Humidity (saturation 100)	84	77						
Mean weight of a cubic foot of air	grains 532·0	536·9						
Mean amount of Cloud (0—10)	8·6	7·1						
Fall of Rain	inches 4·539	2·795						
Greatest Rainfall in one day (23rd)	" 0·825	0·649						
No. of days on which ·005 in. or more Rain fell...	25	14·8						
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	2	4	2	4	5	12	0
Mean Velocity in miles per hr.	5·3	5·7	6·4	8·1	8·5	13·0	8·6	0
Total No. of miles.....	254	274	618	389	819	1557	2491	0
Total No of miles registered	6402	Mean*						
Greatest hourly velocity (on the 29th, at 10 p.m., Dir. S. by W.).....	32	6894·9	32·5					

* For the last 58 years.

MAY, 1925.

DIFFERENCES.

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

Mean barometric pressure	..	...	...	—	0·216 in.
Monthly range	„	...	...	+	0·061 in.
Mean of highest daily temperatures	...	...	...	—	1·2°
Mean of lowest	„	„	...	+	2·7°
Mean daily range	...	...	...	—	3·9°
Adopted mean temperature	...	...	...	+	0·7°
Total rainfall	...	...	...	+	1·744 in.

Ground Frost on the 1st. Hail on the 28th and 30th. Heavy Rain on the 8th and 23rd. Thunder on the 7th, 18th, 19th, 25th, 28th, and 30th. Lightning on the 7th, 18th, 19th, 28th, and 30th. Solar Halo on the 22nd.

EXTREME READINGS FOR MAY,

During 78 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, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.						
Mean Reading of the Barometer	inches 29.714	29.564						
Highest " " on the 10th ...	" 30.024	29.937						
Lowest " " on the 21st ...	" 29.495	29.053						
Range of Barometer Readings	" 0.529	0.884						
Highest Reading of a Max. Therm. on the 10th...	80.5	76.7						
Lowest Reading of a Min. Therm. on the 22nd	43.4	39.2						
Range of Thermometer Readings	37.1	37.5						
Mean of Highest Daily Readings	66.5	65.1						
Mean of Lowest Daily Readings	49.9	48.2						
Mean Daily Range	16.6	16.9						
Deduced Mean Temp. (from mean of Max. and Min.)	56.4	54.8						
Mean Temperature from Dry Bulb	57.6	55.3						
Adopted Mean Temperature	57.0	55.1						
Mean Temperature of Evaporation	52.6	51.8						
Mean Temperature of Dew Point	48.5	48.3						
Mean elastic force of Vapour	inches 0.341	0.347						
Mean weight of Vapour in a cub. ft. of air, grains	3.8	3.8						
Mean additional weight required for saturation "	1.4	1.0						
Mean degree of Humidity (saturation 100)	73	78						
Mean weight of a cubic foot of air	grains 532.1	531.4						
Mean amount of Cloud (0—10)	6.0	7.2						
Fall of Rain	inches 0.282	3.260						
Greatest Rainfall in one day (3rd)	" 0.200	0.801						
No. of days on which .005 in. or more Rain fell...	5	15.0						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	4	0	0	1	3	14	4
Mean Velocity in miles per hr.	6.4	4.5	0	0	3.5	5.9	7.3	5.0
Total No. of miles.....	615	433	0	0	85	425	2462	835
Total No. of miles registered	4855						Mean* 6167.2	
Greatest hourly velocity (on the 1st, Dir. W.S.W.).....	22						29.1	

* For the last 58 years

JUNE, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.150 in.
Monthly range	„	„	„	—	0.355 in
Mean of highest daily temperatures	...	...	...	+	1.4°
Mean of lowest	„	„	„	+	1.7°
Mean daily range	...	...	...	—	0.3°
Adopted mean temperature	...	...	...	+	1.9°
Total rainfall	...	...	...	—	2.978 in.

The driest month of June on record. Thunder on the 12th.
Fog on the 19th. Solar Halo on the 23th.

EXTREME READINGS FOR JUNE,

During 78 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, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.						
Mean Reading of the Barometer	inches 29.501	29.525						
Highest " " on the 11th.....	" 29.905	29.902						
Lowest " " on the 27th.....	" 28.982	29.005						
Range of Barometer Readings	" 0.923	0.897						
Highest Reading of a Max. Therm. on the 22nd...	83.5	78.3						
Lowest Reading of a Min. Therm. on the 27th...	47.2	42.7						
Range of Thermometer Readings	36.3	35.6						
Mean of Highest Daily Readings	69.0	67.3						
Mean of Lowest Daily Readings	54.3	51.2						
Mean Daily Range	14.7	16.1						
Deduced Mean Temp. (from mean of Max. and Min.)	59.8	57.6						
Mean Temperature from Dry Bulb	60.7	58.0						
Adopted Mean Temperature	60.3	57.9						
Mean Temperature of Evaporation	56.4	54.8						
Mean Temperature of Dew Point	53.0	52.0						
Mean elastic force of Vapour	inches 0.403	0.388						
Mean weight of Vapour in a cub. ft. of air, grains	4.5	4.4						
Mean additional weight required for saturation ,,	1.4	1.1						
Mean degree of Humidity (saturation 100)	77	81						
Mean weight of a cubic foot of air	grains 524.5	527.5						
Mean amount of Cloud (0—10)	7.3	7.4						
Fall of Rain	inches 2.525	4.036						
Greatest Rainfall in one day (25th)	" 0.660	0.884						
No. of days on which .005 in. or more Rain fell...	13	16.7						
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	4	6	1	2	1	17	0
Mean Velocity in miles per hr.	0	7.2	8.7	9.9	10.2	6.0	7.2	0
Total No. of Miles.....	0	689	1246	238	490	145	2956	0
Total No. of miles registered	5764	Mean*						
Greatest hourly velocity (on the 18th, at 2 p.m., Dir. S.S.W.)	25	6369.8	28.1					

* For the last 58 years.

JULY, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0·024 in.
Monthly range	„	„	„	+	0·026 in.
Mean of highest daily temperatures	...	...	...	+	1·7°
Mean of lowest	„	„	„	+	3·1°
Mean daily range	...	...	...	—	1·4°
Adopted mean temperature	...	...	...	+	1·6°
Total rainfall	...	...	...	—	1·511 in.

Heavy Rain on the 25th and 29th. Thunder on the 17th, 22nd, 25th, 26th and 27th. Lightning on the 22nd, 25th and 26th.

EXTREME READINGS FOR JULY,

During 78 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	„	†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, 1925.

Results of Observations taken during the Month.								Mean for the last 78 years.
Mean Reading of the Barometer	inches	29.521						29.492
Highest „ „ on 30th	„	30.188						29.892
Lowest „ „ on the 21st ...	„	29.127						28.944
Range of Barometer Readings	„	1.061						0.948
Highest Reading of a Max. Therm. on the 7th & 9th		68.0						76.0
Lowest Reading of a Min. Therm. on the 26th...		42.6						41.9
Range of Thermometer Readings		25.4						34.1
Mean of Highest Daily Readings		64.3						66.3
Mean of Lowest Daily Readings		52.7						50.8
Mean Daily Range		11.6						15.5
Deduced Mean Temp. (from mean of Max. and Min.)		56.8						56.9
Mean Temperature from Dry Bulb		58.6						57.7
Adopted Mean Temperature		57.7						57.3
Mean Temperature of Evaporation		55.4						54.4
Mean Temperature of Dew Point		53.3						51.8
Mean elastic force of Vapour	inches	0.408						0.387
Mean weight of Vapour in a cub. ft. of air, grains		4.6						4.3
Mean additional weight required for saturation „		0.8						0.9
Mean degree of Humidity (saturation 100)		85						82
Mean weight of a cubic foot of air	grains	527.5						527.4
Mean amount of Cloud (0—10)		7.6						7.3
Fall of Rain	inches	3.965						5.061
Greatest Rainfall in one day (21st)	„	0.567						1.064
No. of days on which .005 in. or more Rain fell...		22						18.6
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	2	3	0	2	4	15	1
Mean Velocity in miles per hr.	4.0	4.9	4.7	0	12.6	4.5	8.6	4.2
Total No. of miles.....	384	234	335	0	607	427	3097	104
Total No. of miles registered					5188			Mean* 6324.9
Greatest hourly velocity (on the 12th, Dir. S. by W.)					24			30.7

* For the last 58 years.

AUGUST, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.029 in.
Monthly range	„	...	...	+	0.113 in.
Mean of highest daily temperatures	...	...	...	—	2.0°
Mean of lowest	„	„	...	+	1.9°
Mean daily range	...	...	...	—	3.9°
Adopted mean temperature	...	...	...	+	0.4°
Total rainfall	...	...	...	—	1.096 in.

Heavy Rain on the 21st and 26th. Thunder on the 5th, 10th, 20th, 21st, 23rd and 24th. Lightning on the 10th, 20th, and 23rd.

EXTREME READINGS FOR AUGUST,

During 78 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	...	1857 (7th)	.....	2.333 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, 1925.

Results of Observations taken during the Month.								Mean for the last 78 years.
Mean Reading of the Barometer	inches	29.499						29.541
Highest " " on the 30th ...	"	29.953						30.006
Lowest " " on the 22nd ...	"	28.720						28.885
Range of Barometer Readings	"	1.233						1.121
Highest Reading of a Max. Therm. on the 15th...		62.3						71.7
Lowest Reading of a Min. Therm. on the 10th & 13th		39.4						36.7
Range of Thermometer Readings		22.9						35.0
Mean of Highest Daily Readings		56.8						61.8
Mean of Lowest Daily Readings		45.5						47.3
Mean Daily Range		11.3						14.5
Deduced Mean Temp. (from mean of Max. and Min.)		49.9						53.3
Mean Temperature from Dry Bulb		51.9						54.2
Adopted Mean Temperature		50.9						53.8
Mean Temperature of Evaporation		48.4						51.0
Mean Temperature of Dew Point		45.6						48.3
Mean elastic force of Vapour	inches	0.309						0.339
Mean weight of Vapour in a cub. ft. of air, grains		3.5						3.9
Mean additional weight required for saturation ..		0.7						0.8
Mean degree of Humidity (saturation 100)		84						82
Mean weight of a cubic foot of air	grains	535.8						532.6
Mean amount of Cloud (0—10)		7.1						6.7
Fall of Rain	inches	4.572						4.323
Greatest Rainfall in one day (19th)	"	0.754						0.960
No. of days on which .005 in. or more Rain fell...		23						16.6
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	5	0	0	1	3	5	12	4
Mean Velocity in miles per hr.	4.6	0	0	5.6	9.2	6.6	10.0	10.4
Total No. of miles.....	547	0	0	134	664	795	2878	1000
Total No. of miles registered						6018		Mean*
Greatest hourly velocity (on the 26th, at 9 p.m., Dir. N.W.)						28		6083.3
								31.9

* For the last 58 years.

SEPTEMBER, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0·042 in.
Monthly range	„	„	„	+	0·112 in.
Mean of highest daily temperatures	...	...	...	—	5·0°
Mean of lowest	„	„	„	—	1·8°
Mean daily range	...	...	...	—	2·2°
Adopted mean temperature	...	...	...	—	2·3°
Total rainfall	...	...	...	+	0·250 in.

Hail on the 20th. Heavy Rain on the 12th, 19th, 22nd, 23rd, and 24th. Fog on the 28th and 30th. Thunder on the 15th. Lightning on the 9th. Solar Halo on the 20th.

EXTREME READINGS FOR SEPTEMBER,

During 78 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, 1925.

Results of Observations taken during the Month.		Mean for the last 76 years.						
Mean Reading of the Barometer	inches 29.446	29.447						
Highest " " on the 9th	" 30.161	30.018						
Lowest " " on the 22nd ...	" 28.137	28.686						
Range of Barometer Readings	" 1.924	1.332						
Highest Reading of a Max. Therm. on the 5th ...	65.0	64.0						
Lowest Reading of a Min. Therm. on the 10th ...	31.8	29.9						
Range of Thermometer Readings	33.2	34.1						
Mean of Highest Daily Readings	54.6	54.5						
Mean of Lowest Daily Readings	43.8	42.1						
Mean Daily Range	10.8	12.4						
Deduced Mean Temp. (from mean of Max. and Min.)	48.2	47.3						
Mean Temperature from Dry Bulb	49.3	48.0						
Adopted Mean Temperature	48.8	47.8						
Mean Temperature of Evaporation	46.9	45.5						
Mean Temperature of Dew Point	44.9	43.1						
Mean elastic force of Vapour	inches 0.299	0.279						
Mean weight of Vapour in a cub. ft. of air, grains	3.3	3.2						
Mean additional weight required for saturation ..	0.6	0.6						
Mean degree of Humidity (saturation 100)	87	84						
Mean weight of a cubic foot of air	grains 528.1	537.4						
Mean amount of Cloud (0—10)	8.1	7.3						
Fall of Rain	inches 5.551	4.900						
Greatest Rainfall in one day (19th)	" 0.855	0.958						
No. of days on which .005 in. or more Rain fell...	22	18.7						
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	3	3	0	6	3	12	1
Mean Velocity in miles per hr.	3.5	4.6	7.6	0	10.6	7.7	6.8	8.1
Total No. of miles.....	252	328	549	0	2336	554	1955	194
Total No. of miles registered	6168	Mean*						
Greatest hourly velocity (on the 26th, Dir. S.)	41	6824.1						
		36.8						

* For the last 58 years.

OCTOBER, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0.001 in.
Monthly range	„	...	...	+	0.592 in.
Mean of highest daily temperatures	...	...	...	+	0.1°
Mean of lowest	„	„	...	+	1.7°
Mean daily range	...	...	...	—	1.6°
Adopted mean temperature	...	...	...	+	1.0°
Total rainfall	...	...	...	+	0.651 in.

Ground Frost on the 9th, 10th and 14th. Heavy Rain on the 12th, 19th, 22nd, 23rd and 24th. Gale of Wind on the 26th. Fog on the 1st, 2nd, 5th, 6th, 10th and 31st. Aurora Borealis on the 9th and 21st.

EXTREME READINGS FOR OCTOBER,

During 78 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, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.						
Mean Reading of the Barometer	inches 29.533	29.458						
Highest " " on the 19th ...	" 30.163	30.070						
Lowest " " on the 30th ...	" 28.897	28.574						
Range of Barometer Readings	" 1.266	1.496						
Highest Reading of a Max. Therm. on the 4th ...	57.0	55.7						
Lowest Reading of a Min. Therm. on the 15th & 21st	22.3	25.4						
Range of Thermometer Readings	24.7	30.3						
Mean of Highest Daily Readings	42.2	47.1						
Mean of Lowest Daily Readings	31.6	36.7						
Mean Daily Range	10.6	10.4						
Deduced Mean Temp. (from mean of Max. and Min.)	36.5	41.5						
Mean Temperature from Dry Bulb	36.9	41.9						
Adopted Mean Temperature	36.7	41.7						
Mean Temperature of Evaporation	35.0	39.7						
Mean Temperature of Dew Point	32.6	38.1						
Mean elastic force of Vapour	inches 0.185	0.230						
Mean weight of Vapour in a cub. ft. of air, grains	2.1	2.7						
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 550.4	544.7						
Mean amount of Cloud (0—10)	4.6	7.4						
Fall of Rain	inches 2.509	4.375						
Greatest Rainfall in one day (4th)	" 0.460	0.995						
No. of days on which .005 in. or more Rain fell...	11	18.0						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	8	9	1	1	1	3	3	4
Mean Velocity in miles per hr.	7.1	5.4	17.0	15.6	17.8	6.5	10.8	6.9
Total No. of miles.....	1357	1180	406	370	427	468	775	661
Total No. of miles registered	5644						Mean*	
Greatest hourly velocity (on the 2nd, at 6 a.m., Dir. S.).....	30						7140.7	
							40.5	

* For the last 58 years. † And in other years.

NOVEMBER, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	+	0.095 in.
Monthly range	„	...	...	—	0.230 in.
Mean of highest daily temperatures	...	...	...	—	4.9°
Mean of lowest	„	„	...	—	5.1°
Mean daily range	...	...	...	+	0.2°
Adopted mean temperature	...	...	...	—	5.0°
Total rainfall	...	...	...	—	1.866 in.

Hoar and Ground Frost, 9th—17th and 19th to 30th. Thunder on the 4th. Hail on the 27th. Snow on the 29th and 30th, Lunar Halo on the 25th. Fog on the 14th, 20th and 21st.

EXTREME READINGS FOR NOVEMBER, During 78 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, 1925.

Results of Observations taken during the Month.		Mean for the last 78 years.							
Mean Reading of the Barometer	inches 29·265	29·427							
Highest „ „ on the 4th ... „	30·122	30·058							
Lowest „ „ on the 20th ... „	28·274	28·532							
Range of Barometer Readings	„ 1·848	1·526							
Highest Reading of a Max. Therm. on the 29th...	53·8	52·8							
Lowest Reading of a Min. Therm. on the 25th...	17·0	21·5							
Range of Thermometer Readings	36·8	31·3							
Mean of Highest Daily Readings	40·7	43·5							
Mean of Lowest Daily Readings	30·7	33·8							
Mean Daily Range	10·0	9·7							
Deduced Mean Temp. (from mean of Max. and Min.)	35·7	38·7							
Mean Temperature from Dry Bulb	36·7	39·3							
Adopted Mean Temperature	36·2	39·0							
Mean Temperature of Evaporation	35·0	37·4							
Mean Temperature of Dew Point	33·2	35·4							
Mean elastic force of Vapour	inches 0·191	0·209							
Mean weight of Vapour in a cub. ft. of air, grains	2·2	2·4							
Mean additional weight required for saturation „	0·3	0·4							
Mean degree of Humidity (saturation 100)	89	87							
Mean weight of a cubic foot of air	grains 547·0	546·8							
Mean amount of Cloud (0—10)	7·0	7·7							
Fall of Rain	inches 4·395	4·742							
Greatest Rainfall in one day (28th)	„ 0·885	0·853							
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.....	7	4	0	2	2	7	7	2	
Mean Velocity in miles per hr.	3·4	7·2	0	3·7	15·9	15·3	14·3	3·8	
Total No. of miles.....	568	689	0	176	761	2573	2404	184	
Total No. of miles registered	7355							*Mean	
Greatest hourly velocity (on the 30th, at 10 p.m., Dir. W.S.W.)	44							7854·7	
								42·1	

* For the last 58 years.

DECEMBER, 1925.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0·162 in.
Monthly range	„	...	...	+	0·322 in.
Mean of highest daily temperature	...	...	...	—	2·8°
Mean of lowest „ „	„	„	...	—	3·1°
Mean daily range	...	...	...	+	0·3°
Adopted mean temperature	...	...	...	—	2·8°
Total rainfall	...	...	...	—	0·347 in.

Ground Frost, 1st—7th, 11th—17th, and 19th—26th. Hoar Frost on the 4th, 5th, 12th, 13th and 14th. Snow on the 13th, 15th, 19th, 21st, 22nd—26th. Hail on the 9th and 30th. Heavy Rain on the 9th and 28th. Gale on the 30th. Fog on the 4th. Thunder on the 9th and 30th. Lightning on the 9th and 30th. Lunar Halo on the 23rd.

EXTREME READINGS FOR DECEMBER,

During 78 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	.....	10·595 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	...	1898	.....	11265
*Least „ „ „	...	1916	.....	4517

* Since 1867 only.

† And in other years.

Summary of Observations, 1925.

Results of Observations taken during the Year.	Mean for the last 78 Years.	
<i>Readings of Barometer in inches.</i>		
Mean of the Year	29·476	29·493
Highest Monthly Mean (March)	29·734	29·742
Lowest " " (February)	29·109	29·225
Highest Reading (January 19th)	30·269	30·290
Lowest " (February 26th)	28·112	28·208
Range	2·157	2·082
<i>Thermometer, Fahrenheit.</i>		
Highest Monthly Mean Temperature (July)	69·0	58·6
Lowest " " " (December)..	30·7	35·7
Highest Reading of a Max. Therm. (July 22nd) ...	83·5	81·3
Lowest " Min. " (December 25)	17·0	16·3
Range of Thermometer Readings	66·5	65·0
Mean of Highest Daily " 	53·1	54·4
Mean of Lowest Daily " 	41·5	41·0
Mean Daily Range	11·6	13·4
Deduced Mean Temp. (from Mean of Max. and Min.)	46·2	46·7
Mean Temperature from Dry Bulb.....	47·3	47·1
Adopted Mean Temperature of the Year	46·8	47·0
Mean Temperature of Evaporation	44·5	44·6
Mean Temperature of Dew Point	42·0	42·1
Mean elastic force of Vapour inches	0·277	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·1	3·2
Mean additional weight required for saturation "	0·7	0·7
Mean degree of Humidity (saturation 100).....	84	83
Mean weight of a cubic foot of air grns.	538·3	539·1
Mean amount of Cloud (0—10)	7·2	7·3
Total fall of Rain	42·982	47·262
Greatest Monthly Rainfall (February)	5·885	7·569
Least " " (March)	2·150	1·257
Greatest Rainfall in one day (February 10th).....	1·020	1·641
No. of days per Month on which ·005 inch or more Rain fell	17·9	17·2

SUMMARY OF WIND, 1925.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	43	38	27	12	31	46	145	23
Mean Velocity in miles per hour...	5.2	6.0	7.7	8.7	12.6	10.3	10.1	9.5
Total No. of miles for each Direction	5403	5450	4994	2506	9338	11343	35037	5230

		Mean for the last 58 years.
Total No. of miles registered	79301	85269.0
Greatest Monthly Total (January)	9438	9930.9
Least " " (June)	4885	4944.8
Greatest hourly velocity (Jan. 14th & April 16th)	50	50.0
Prevailing Direction of Wind	W.	

DIFFERENCES, 1925.

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

Mean barometric pressure	...	...	...	-	0.017 in.
Yearly range	"	...	...	+	0.075 in.
Mean of highest daily temperatures	...	...	...	-	3.3°
Mean of lowest " "	"	"	...	+	0.5°
Mean daily range	...	...	...	-	1.8°
Adopted mean temperature	...	...	...	-	0.2°
Total rainfall	...	...	...	-	4.280 in.

**ABSOLUTE EXTREMES
FOR THE LAST 78 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 (July)	5.1
Least " "	†1855 (Feb.)	1.4

† And on other dates.

ABSOLUTE EXTREMES
FOR THE LAST 78 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.)	} 30
	and 1918 (Dec.)	
Least " "	1852 (Mar.)	3
Greatest " year	1872	281
Least " "	1855	135

* *Wind.*

Greatest hourly velocity, in miles	1894 (Dec. 22) ...	72
Greatest No. of miles registered in a month	1888 (Nov.)	12813
Least " "	1917 (Feb.)	3160
Greatest Mean No. " " ...	March	8448
Least " " " ...	September	6054
Greatest No. " " year..	1868	102395
Least " " " " ...	1915	70623

* *Record dates from 1867 only.*

DATES OF OCCASIONAL PHENOMENA.

1925		Frost	Hoar Frost	Snow	Hail	Heavy Rain
January	4, 7, 10, 12, 13, 16, 17, 22, 23, 25, 26	...	...12, 16, 22...	4	... 4, 5, 28, 31 ...	... 1, 28, 31 ...
February	1, 7, 8, 10, 12, 16, 19, 28	...	...20, 22, 24...	6, 9, 11, 14, 19, 23, 24	6, 9, 12, 19, 23	... 5, 9, 10, 11 ...
March	1, 3-5, 8-13, 21, 23, 25-28	...	...	8-10, 12, 20, 21, 23-26	7-10, 13, 24, 25	...
April	3, 4, 13, 20, 21, 25, 26, 29, 30	...	...	...	15, 23-26, 29, 30	... 22 ...
May	...	...	...	...	... 28, 30 ...	... 8, 23 ...
June	...	...	...	...	...	...
July	...	...	...	...	...	... 25, 29 ...
August	...	...	...	...	...	... 21, 26 ...
September	...	...	...	...	... 20 ...	... 19, 21, 22, 25 ...
October	9, 10, 14	...	...	...	...	... 12, 19, 22, 23, 24 ...
November	17, 19, 21, 22, 23, 25-30	...	9-16, 20, 24	29, 30	... 27 ...	...
December	1-7, 11-17, 19-26	...	4, 5, 12, 14	13, 15, 19, 21, 22-26	... 9, 30 ...	... 9, 28 ...

1925		Gales of Wind	Fog	Thunder	Lightning	Lunar Halo	Solar Halo	Aurora Borealis
January	1, 2, 13, 14	...	14, 15	...	...	... 9 ...	...	...
February	...	...	14, 22	6, 11	6, 23	...	... 14 ...	...
March	...	...	15, 16, 18, 19	25	25	... 11 ...	...	...
April	16	...	...	7, 8, 15, 26, 28	7, 8, 15, 26	... 1, 3 ...	... 14 ...	...
May	...	...	...	7, 18, 19, 25, 28, 30	7, 18, 19, 28, 30	...	... 22 ...	...
June	...	...	19	12	...	...	... 28 ...	...
July	...	...	...	17, 22, 25, 26, 27	22, 25, 26	...	...	...
August	...	...	...	5, 10, 20, 21, 23, 24	10, 20, 23	...	...	...
September	...	...	28, 30	15	9	...	... 20 ...	...
October	26	1, 2, 5, 6, 10, 31	...	...	...	...	...	... 9, 21 ...
November	...	1, 4, 20, 21	...	4	...	... 25 ...	...	...
December	30	4	...	9, 30	9, 30	... 23 ...	...	...

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1925. Local apparent time	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
January ...	...	...	...	...	0.1	2.7	5.6	8.0	7.2	5.3	4.1	0.4	...	...	...	...	...
February ...	...	...	...	0.2	1.0	4.2	5.9	6.8	7.7	7.6	6.2	2.6	1.2	0.1	...	...	...
March ...	...	...	0.9	6.7	9.1	11.3	12.7	10.3	11.0	11.6	10.3	9.2	8.5	3.1	...	...	...
April ...	...	0.3	6.1	11.1	11.6	15.0	15.1	15.7	15.9	14.7	15.1	17.0	12.8	7.8	2.1	0.2	...
May ...	0.2	1.4	5.1	6.3	8.4	9.3	8.9	9.3	13.3	12.7	12.0	12.1	8.3	6.4	2.9	...	...
June ...	0.7	6.2	11.1	14.1	17.6	18.5	20.0	19.6	22.1	22.5	21.0	20.7	20.3	19.6	16.8	9.4	0.2
July ...	0.9	4.2	6.3	12.0	12.6	11.5	10.2	11.7	13.7	15.8	16.2	14.3	16.0	16.0	10.3	5.3	...
August ...	...	1.2	3.6	6.0	8.6	11.2	12.5	11.3	10.9	10.8	9.0	10.1	10.9	9.8	4.9	0.8	...
September ...	...	...	2.8	11.3	14.8	14.6	14.1	13.2	11.4	11.2	10.6	10.3	9.2	5.9	0.5	...	...
October ...	...	...	1.9	4.4	5.6	8.8	9.4	10.0	11.1	11.2	7.3	5.8	0.8	...	...	...	...
November ...	...	...	...	...	1.7	9.9	13.9	15.8	14.5	15.5	13.0	5.6	...	...	...	...	...
December ...	...	...	...	...	0.3	4.8	8.7	10.3	10.3	8.9	6.2	1.4	...	...	...	...	...
Sums ...	1.8	13.3	37.8	72.1	91.4	121.8	137.0	142.0	149.1	146.8	131.0	109.5	88.0	68.7	37.5	15.7	0.2

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.																	
1925	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ...	...	...	...	0.6	1.7	5.8	...	...	5.7	0.9	...	...	0.4	...	5.0	0.3	0.7
February ...	1.9	0.3	...	3.7	...	2.6	6.4	...	...	...	...	2.0	3.7	3.5	5.0	2.0	0.1
March ...	...	5.3	3.6	3.2	...	...	3.2	8.3	10.0	4.8	2.5	8.7	...	...	1.8	...	2.7
April ...	6.6	...	11.6	7.5	1.2	1.9	2.2	9.3	0.9	4.5	2.1	11.5	4.5	4.5	3.7	7.0	3.8
May ...	2.6	2.2	...	0.1	3.3	8.8	1.5	0.2	0.4	4.4	...	3.0	4.5	6.5	9.1	2.7	5.6
June ...	11.5	7.6	1.4	8.4	11.3	8.9	10.0	13.9	12.4	13.0	13.0	4.2	4.3	11.6	7.6	2.3	9.3
July ...	...	6.1	3.5	2.4	13.5	0.3	8.7	3.3	2.7	5.4	8.2	9.4	11.7	13.0	1.5	0.8	3.2
August ...	3.6	6.8	...	5.8	1.1	3.7	4.5	6.8	8.3	4.2	10.6	...	3.9	1.1	9.7	9.8	10.8
September ..	3.5	1.4	11.1	9.4	1.1	7.3	0.2	6.5	2.7	8.4	3.8	6.8	5.8	...	7.6	5.2	...
October ...	6.5	6.7	...	0.1	5.6	...	0.5	5.0	9.1	6.9	1.9	...	1.7	6.5	1.0	7.3	0.6
November...	0.9	3.2	...	2.8	0.4	2.4	...	6.1	6.1	5.3	7.1	3.3	0.7	...	0.2	4.0	3.9
December...	2.8	6.7	6.2	...	3.7	2.3	...	1.0	0.4	0.5	5.3	5.2	1.2	5.7	0.1	0.5	...

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

1925	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY	
															Total	Per cent.
January ...	1.4	...	...	...	0.1	3.3	1.8	2.8	0.3	2.2	...	...	0.4	...	33.4	13.5
February ...	0.4	2.6	0.1	...	2.0	...	...	1.2	1.0	0.4	3.6	...	...	...	42.5	15.6
March ..	...	0.1	0.5	9.1	5.5	0.5	4.1	2.9	6.4	9.9	7.0	2.7	1.5	0.4	104.7	28.6
April ...	...	6.1	8.6	10.6	...	9.3	6.5	8.1	8.7	0.6	6.7	8.7	3.8	...	160.5	38.3
May ...	2.6	3.2	2.6	8.1	1.9	0.1	3.3	3.0	3.9	5.7	6.7	0.9	7.9	11.8	116.6	23.7
June ...	14.3	6.0	5.9	8.5	5.6	10.5	11.1	13.4	0.2	4.2	11.8	9.0	9.2	...	260.4	51.3
July ...	8.8	10.5	0.4	8.5	6.1	3.6	12.1	11.5	2.6	2.8	3.7	0.6	0.2	10.6	177.0	23.0
August ...	1.5	...	...	0.3	1.0	4.7	4.9	5.7	...	5.0	3.8	2.6	1.4	...	121.6	26.6
September ..	9.5	...	4.2	4.7	...	7.5	8.6	0.6	5.9	8.1	...	...	...	...	129.9	34.3
October ...	0.9	0.6	...	0.6	2.3	0.3	...	4.0	0.1	1.8	0.6	0.1	5.6	...	76.3	23.4
November...	6.5	6.2	...	...	...	5.7	0.1	5.5	5.6	6.0	6.5	0.1	1.3	...	89.9	35.1
December ..	...	...	...	...	...	4.7	3.6	0.2	...	0.3	...	...	0.2	...	50.9	22.0

SUMMARY OF SUNSHINE.

	BRIGHT SUNSHINE RECORDED					
	1925			Mean for the last 45 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	17	33·4	13·5	14·3	32·4	13·1
February ...	19	42·5	15·6	17·7	56·8	20·7
March ...	24	104·7	28·6	24·2	102·8	28·1
April ...	27	160·5	38·3	26·2	146·8	35·2
May ...	29	116·6	23·7	27·7	183·3	37·2
June ...	30	260·4	51·3	28·0	185·9	36·6
July ...	31	177·0	23·0	28·4	170·4	33·5
August ...	25	121·6	26·6	27·5	146·8	32·0
September ..	23	129·9	34·3	25·6	123·7	32·6
October ...	25	76·3	23·4	23·6	85·8	26·3
November ..	24	89·9	35·1	17·8	47·7	18·7
December ...	20	50·9	22·0	13·7	26·4	11·4
Year ...	294	1363·7	30·5	274·9	1310·1	29·3

SUMMARY OF SUNSHINE—Continued.
EXTREMES FOR THE LAST 45 YEARS.

MONTH	Number of Days				Number of Hours				Percentage of Possible Sunshine			
	on which Sunshine was recorded											
	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.	28	*1894	17	1904	168.6	1907	56.8	1912	46.1	1907	15.5	1912
April	30	*1909	22	1920	223.7	1893	80.7	1920	53.4	1893	19.3	1920
May	30	*1880	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).

1925.	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*	14° +					
	14° +									
January ...	61.5	57.9	58.5	60.3	59.8	8.1	67.0	38.0	29.0	
February ...	62.1	57.1	58.1	59.5	59.2	9.9	67.0	37.0	30.0	
March ...	62.6	55.8	57.2	58.6	58.6	13.5	70.0	49.0	21.0	
April ...	61.7	52.3	55.5	57.9	56.9	11.9	68.0	45.0	23.0	
May ...	59.3	51.3	53.7	56.5	55.2	11.6	68.0	38.0	30.0	
June ...	59.7	49.1	51.3	56.5	54.2	14.9	74.0	33.0	41.0	
July ...	57.8	47.2	51.8	55.6	53.1	13.1	66.0	38.0	28.0	
August ...	56.9	46.5	50.1	53.3	51.7	15.1	67.0	38.0	29.0	
September ...	55.5	46.1	48.9	51.9	50.6	16.4	64.0	17.0	47.0	
October ...	53.9	44.7	47.5	50.7	49.2	18.2	68.0	18.0	50.0	
November ...	48.8	43.0	45.0	46.4	45.8	12.2	59.0	16.0	43.0	
December ...	49.2	44.2	45.2	47.4	46.5	11.2	66.0	27.0	39.0	
Means ...	57.4	49.6	51.9	53.7	53.4	13.0	67.0	32.8	34.2	

Mean for the year 14° 53.4' 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.

1925	MEANS OF *				Mean for the month	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	Highest readings	Lowest readings	4 a. m. readings	4 p. m. readings					
	17000 +								
January ...	279	268	277	275	275	32.8	323	185	138
February ...	274	251	268	264	264	32.6	292	200	92
March ...	294	270	288	288	285	42.2	323	222	101
April ...	283	240	269	271	265	58.1	322	203	119
May ...	274	238	256	258	267	57.6	314	195	119
June ...	297	245	270	279	273	84.9	394	157	237
July ...	275	230	258	262	256	72.2	335	182	153
August ...	293	245	275	281	271	74.4	351	193	158
September ...	271	235	258	255	255	75.7	340	99	241
October ...	289	243	276	276	271	80.5	346	135	211
November ...	242	220	233	236	233	48.8	364	128	136
December ...	259	238	249	251	249	55.8	303	122	181
Means ...	277	244	265	266	263	59.6	326	168	157

Mean for the year 17263 C. G. S. Units.

* For the 5 quietest days.

† Includes all days.

ABSOLUTE MEASURES—SUMMARY.

DIRECTION			FORCE.		
1925	Declination Corrected	Inclination	Horizontal	Vertical	Total
	° ' ''	° ' ''	C. G. S. UNITS.		
	14 +	68 +	0·17000+	0·44000+	0·47000+
January ...	59·8	41·9	275	305	553
February ...	59·2	40·6	264	225	476
March ...	58·6	42·9	285	369	617
April	56·9	41·5	265	265	513
May	55·2	41·1	257	225	472
June	54·2	43·3	273	354	598
July	53·1	42·7	256	284	528
August ..	51·7	40·4	271	237	490
September ...	50·6	46 1	255	413	647
October ...	49·2	42·4	271	313	560
November ...	45·8	39·4	233	100	348
December ...	46·5	43·7	249	307	546
Means ...	° ' '' 14 53·4 W.	° ' '' 68 42·2	0·17263	0·44282	0·47529

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.

1925	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1925	
D.													D.	
1	c	s	m	c	c	m	s	s	v.g.	c	g	s	1	
2	c	c	c	c	c	s	s	c	v.g.	c	m	s	2	
3	s	c	c	s	s	m	c	m	m	c	s	c	3	
4	c	c	s	c	g	m	s	m	s	m	s	s	4	
5	s	c	m	s	s	c	s	s	s	s	c	m	5	
6	c	c	c	m	c	s	s	s	s	s	s	m	6	
7	s	s	c	c	s	c	s	m	m	c	s	m	7	
8	c	m	c	c	m	c	c	g	c	m	v.g.	s	8	
9	c	g	m	m	m	s	s	m	s	v.g.	v.g.	s	9	
10	c	s	m	s	s	s	s	m	s	v.g.	v.g.	m	10	
11	c	c	s	s	s	c	c	c	c	g	m	s	11	
12	c	s	c	m	s	c	c	c	s	v.g.	s	c	12	
13	s	s	s	c	c	g	c	c	c	s	m	s	13	
14	s	s	c	c	c	c	s	v.g.	c	c	g	s	14	
15	s	c	g	s	c	c	m	c	g	m	c	m	15	
16	g	s	s	s	c	s	c	s	m	s	s	m	16	
17	m	s	s	c	c	s	c	s	s	c	s	c	17	
18	m	s	c	c	s	s	c	m	m	c	s	m	18	
19	v.g.	m	s	c	s	s	s	c	c	c	s	c	19	
20	g	m	m	m	s	c	c	c	s	m	s	s	20	
21	s	c	c	s	s	c	m	v.g.	g	g	c	c	21	
22	c	c	s	s	s	s	m	m	m	m	c	c	22	
23	m	c	m	c	s	m	s	g	m	v.g.	s	s	23	
24	s	s	s	c	s	v.g.	s	s	v.g.	v.g.	s	s	24	
25	c	s	c	c	c	v.g.	m	m	s	s	c	c	25	
26	c	c	s	s	c	s	m	s	c	c	c	c	26	
27	c	c	m	s	s	m	m	c	c	m	c	v.g.	27	
28	c	s	c	c	m	m	m	c	c	s	c	v.g.	28	
29	s		s	s	s	s	s	s	c	s	s	c	29	
30	s		s	c	m	s	c	m	c	c	c	c	30	
31	c		c		m		c	s		s		c	31	
TOTAL	c s m g vg	15 10 3 2 1	12 12 3 1 ...	12 11 7 1 ...	15 11 4 1 ...	10 16 4 1 ...	9 12 6 1 2	11 13 7	10 10 9 6 2 ...	9 9 6 1 5	10 9 6 2 4	8 14 3 3 2	10 12 7 ... 2	

DATES OF SOLAR OBSERVATIONS, AND DISC AREAS OF SPOTS AS MEASURED FROM THE DRAWINGS.

The unit is $\frac{1}{5000}$ th of the visible surface.

n=note without a complete drawing.

1925	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov:	Dec.	1925
D.													D.
1		0.3		0.1	3.1	2.2	1.1	1.9	3.8	6.5		4.6	1
2	0.0		0.5		4.6	7.4	1.9	1.4	1.7	4.8	0.8	3.6	2
3	n		0.0	0.2		7.7			1.7			3.2	3
4	0.0	0.0	0.0	0.2		7.3	4.9	0.0	1.1		1.0	2.8	4
5	0.1			0.3	6.4	6.4	4.5		0.4	3.6	0.2	2.0	5
6	0.0	0.1		0.2	5.3	5.4		0.6	1.4			3.9	6
7		0.7	0.0	0.9	6.8	5.3	7.9	0.7					7
8			0.0	0.6		6.3	8.5	1.1	1.5	1.1	0.7		8
9	0.0		0.0	0.5		6.4	9.1	2.9	2.3	0.8	2.2	n	9
10	0.0		0.0	1.5	3.1	7.4	4.9	4.4	3.4	0.7	4.2		10
11	0.0		0.2	2.4		7.3	2.5	4.2	4.8	0.7	10.1	11.7	11
12	0.0	4.8	0.6	3.7	1.3	5.7	2.7		4.8		12.3	16.9	12
13	0.0	5.2		2.9	1.7	3.9	4.1	1.9	2.3	1.7	10.3		13
14		5.3		2.8	2.2	2.5	1.7	0.2		3.3	8.0	19.7	14
15	0.0	4.3	2.5	2.5	2.6	1.1		0.0	0.3		5.4		15
16	0.0	3.0		1.8	2.4			0.0	1.8	9.2	4.3		16
17	0.0			0.8	3.8	0.3	2.1	0.1			2.4		17
18	0.0				4.5	0.2	2.1	0.2	1.7	n	2.6		18
19		0.7		3.3	4.6	0.0	1.2			15.2	5.2		19
20			n	2.2	4.6	0.0			2.8		7.7		20
21			0.7	1.6	4.8	0.0	0.6		2.8	n	9.3		21
22	0.4	0.2	0.6		3.7	0.3	0.4	1.4		14.7			22
23	0.2			1.2		0.2	0.0	1.7	6.7		16.4	25.6	23
24	0.0		0.3	1.9	4.5	0.6	1.0	1.9	4.5			33.6	24
25	0.0	0.0	0.6	1.4	3.0	0.4	4.0	2.8	3.9	5.8	20.6		25
26			1.4	0.7	2.0				6.9		16.2		26
27	0.0	0.0	4.1		2.6	0.2	2.7	3.6	7.8	1.8	14.9	45.3	27
28		0.1	2.7	0.3	2.5	0.6	2.4	4.8			10.8		28
29			2.9	0.2		1.1							29
30	0.0		1.9	1.2	1.8	1.5		4.7		0.9	5.6		30
31					1.7		1.5					25.4	31
Daily Means	0.0	1.8	1.0	1.4	3.5	3.1	3.1	1.8	3.1	4.7	7.4	15.3	

SUN-SPOT STATISTICS, 1925.

The numbering of the Groups is in continuation of that in the Annual Report of 1924. The present series was started on January 1st, 1921. Any area less than $\frac{1}{10}$ unit is entered as 0.0.
 s—chief spot ; g—centre of group ; p—preceding ; f—following

No. of Group	Date	Mean Latitude	Mean Longitude	Max. Area	Where Measured	Mean Type
263	Jan. 3—5	—18.7	46.9	0.1	g.	I.
264	„ 19	+22.2	294.0	0.4	g.	I.
265	„ 23	+23.6	253.4	0.2	g.	I.
266	Feb. 1	—32.8	88.5	0.2	g.	I.
267	„ 1—6	+23.5	16.2	0.1	s.	I.
268	„ 4	+24.5	82.0	0.0	s.	I.
269	„ 4—6	+23.2	59.8	0.1	g.	I.
270	„ 7—14	+ 8.8	344.2	0.5	s.	I.
271	„ 7	—32.3	339.7	0.0	s.	I.
272	„ 7—16	—18.7	273.8	4.4	s.	IV.
273	„ 12—16	—30.7	271.3	1.2	g.	I.
274	„ 12—16	+17.5	246.8	0.1	g.	I.
275	„ 14	+15.4	283.0	0.1	g.	I.
276	„ 15	+21.1	237.9	0.0	g.	I.
277	„ 16	+14.5	266.8	0.1	g.	I.
278	„ 22	—21.8	209.3	0.1	s.	I.
279	„ 22	+22.9	180.3	0.1	s.	I.
280	„ 28—Mar. 3..	—24.9	84.5	0.4	s.	I.
281	Mar. 2	—18.9	24.6	0.1	g.	I.
282	„ 11—22	—21.8	222.5	2.5	s.	IV.
283	„ 22	—30.0	222.0	0.2	s.	I.
284	„ 24Apl. 1 ..	+19.5	100.6	4.1	p.s.	V.
285	„ 26	+19.7	87.4	0.1	s.	I.
286	„ 27	+19.8	70.9	0.0	s.	I.
287	„ 28	+20.2	83.4	0.1	s.	I.
288	Apl. 3—6	—32.0	287.9	0.2	s.	I.
289	„ 5—8	+15.6	272.1	0.5	g.	I.
290	„ 6—13	+30.3	230.2	0.2	s.	I.
291	„ 7—12	—22.5	220.4	0.3	s.	I.
292	„ 9—17	+20.5	241.4	2.6	p.g.	III.
293	„ 9—10	—15.3	263.2	0.0	g.	I.
294	„ 10—12	+12.2	283.0	0.3	g.	I.

SUN-SPOT STATISTICS, 1925—*Contd.*

No. of Group	Date	Mean Latitude	Mean Longitude	Max. Area	Where Measured	Mean Type
295	Apl. 11—17	+20.3	202.6	0.8	s.	IV.
296	.. 12—17	+17.4	156.8	0.2	s.	I
297	.. 15—20	+21.0	173.8	0.6	s.	IV.
298	.. 17—21	-24.5	90.7	2.2	g.	V.
299	.. 19—21	+20.1	114.6	0.4	g.	I.
300	.. 19—21	+18.0	89.0	0.1	s.	I.
301	.. 19—23	+15.6	71.0	0.1	s.	I.
302	.. 23	+13.9	67.6	0.1	s.	I.
303	.. 23—28	+26.8	95.1	1.7	g.	III.
304	.. 24—25	+20.1	117.3	0.2	p.s.	I.
305	.. 25—28	-16.6	30.9	0.2	g.	I.
306	.. 29	+11.9	44.9	0.2	g.	I.
307	.. 30—May 12..	+15.4	275.9	6.7	g.	IV.
308	May 5—7	+20.1	241.6	0.1	s.	I.
309	.. 10	+26.4	204.0	0.2	s.	I.
310	.. 10—18	-19.0	173.0	1.0	g.	III.
311	.. 12—22	+17.8	122.6	1.9	p.s.	III, IV.
312	.. 17—22	+33.6	144.1	2.0	p.s.	III, IV.
313	.. 17—26	+19.7	79.5	1.2	p.s.	III.
314	.. 17—28	+22.2	59.4	3.8	g.	III.
315	.. 18—20	-21.6	100.1	0.2	f.s.	II.
316	.. 20—22	+25.4	110.8	0.1	s.	I.
317	.. 20—24	-19.5	25.8	0.2	g.	I.
318	.. 27—28	-19.2	3.8	0.2	s.	I.
319	.. 27	-26.7	2.7	0.0	s.	I.
320	.. 27—June 3..	-19.4	344.1	0.9	s.	I.
321	.. 27— .. 7..	+13.8	276.3	1.5	s.	IV.
322	.. 30	-25.8	248.0	0.0	s.	I.
323	.. 31—June 9..	+26.5	259.7	5.0	g.	III.
324	June 1—5	+25.9	214.6	0.7	f.s.	I.
325	.. 1—11	-27.7	216.4	0.7	s.	IV.
326	.. 3—14	+20.7	191.1	1.3	s.	IV.
327	.. 4—6	-17.0	180.3	0.1	s.	I.
328	.. 5—15	+22.3	170.9	1.1	s.	IV.
329	.. 5—6	-22.4	283.1	0.2	s.	I.
330	.. 7—8	+18.2	260.2	0.3	g.	I.
331	.. 7—15	+18.2	180.1	1.1	g.	IV.

SUN-SPOT STATISTICS, 1925—Contd.

No. of Group	Date.	Mean Latitude	Mean Longitude	Max. Area	Where Measured	Mean Type
332	June 7—18	+17.1	140.0	2.1	p.s.	III, IV.
333	.. 8—13	+30.6	211.0	0.9	f.g.	I.
334	.. 8—13	-13.3	210.5	2.1	f.s.	III.
335	.. 13—14	-34.8	194.8	0.7	g.	II.
336	.. 18—19	+25.2	41.5	0.1	s.	I.
337	.. 22—23	+ 9.5	52.0	0.1	s.	I.
338	.. 22—23	-28.3	45.8	0.2	p.s.	I.
339	.. 24—July 1..	-26.5	271.8	0.6	s.	I.
340	.. 28— „ 9..	-12.4	223.4	1.5	s.	IV.
341	July 1— 5	-35.0	191.1	0.3	s.	I.
342	.. 2	-15.4	254.9	0.1	g.	I.
343	.. 2—13	-14.8	173.8	8.4	p.s.	IV, V.
344	.. 4— 5	-28.8	250.3	0.5	p.s.	I.
345	.. 5	+15.6	151.2	0.0	s.	I.
346	.. 7	-20.0	139.8	0.1	g.	I.
347	.. 9—18	+17.4	88.0	1.0	s.	IV.
348	.. 10—14	+17.7	79.0	0.7	g.	I.
349	.. 11—14	+18.4	61.0	0.7	s.	IV.
350	.. 11—19	+23.9	49.4	1.2	s.	IV.
351	.. 13	+16.9	138.8	0.1	f.s.	I.
352	.. 17—19	-17.2	1.4	0.6	g.	I.
353	.. 18	+26.7	29.0	0.1	g.	I.
354	.. 18	-20.6	95.0	0.1	g.	I.
355	.. 19—22	+18.2	13.4	0.3	p.g.	I.
356	.. 21—22	-25.0	32.0	0.3	g.	I.
357	.. 22	+27.1	30.4	0.1	s.	I.
358	.. 24—Aug. 2..	+20.4	271.9	3.2	p.s.	II.
359	.. 24— „ 2..	-29.2	244.6	1.6	g.	III.
360	.. 25—28	-11.4	226.6	0.3	s.	I.
361	Aug. 6— 7	+28.2	146.9	0.1	g.	I.
362	.. 6	+22.2	140.2	0.1	g.	I.
363	.. 6— 9	-27.8	164.2	0.6	g.	II.
364	.. 7—14	+23.4	118.3	4.0	g.	II.
365	.. 8—13	+21.1	66.4	0.5	s.	III.
366	.. 9—13	+21.1	35.4	0.1	g.	I.
367	.. 10—14	-27.8	95.0	0.1	g.	I.
368	.. 11	- 5.2	96.9	0.0	s.	I.

SUN-SPOT STATISTICS, 1925—Contd.

No. of Group	Date	Mean Latitude	Mean Longitude	Max Area	Where Measured	Mean Type
369	Aug. 11	+13·9	15·7	0·0	s.	I.
370	„ 17—18	+24·8	21·3	0·2	p.s.	I.
371	„ 22—28	—26·7	247·2	0·6	s.	IV.
372	„ 22—Sept. 2..	—17·7	221·4	2·3	p.s.	IV.
373	„ 24—25	+17·6	300·5	0·2	g.	I.
374	„ 24—Sept. 3..	+21·6	204·4	2·5	g.	II.
375	„ 28— „ 3..	+21·7	160·2	0·8	s.	I.
376	„ 30	—28·1	235·7	0·0	s.	I.
377	„ 30—Sept. 10..	+20·5	105·4	0·9	g.	I.
378	Sept. 1	+31·2	238·0	0·1	g.	I.
379	„ 1— 3	+22·0	183·6	0·2	g.	I.
380	„ 1— 3	—19·4	186·6	0·1	g.	I.
381	„ 2— 6	—25·3	165·0	0·2	g.	I.
382	„ 6	—23·6	144·9	0·1	s.	I.
383	„ 6	—27·8	111·3	0·1	s.	I.
384	„ 2— 5	—18·3	94·0	0·2	g.	I.
385	„ 4— 6	+20·8	138·6	0·2	g.	I.
386	„ 4	+20·6	123·1	0·0	s.	I.
387	„ 4	+24·1	72·4	0·0	s.	I.
388	„ 4— 6	+20·3	41·0	0·2	s.	I.
389	„ 6—13	+18·7	68·1	4·6	g.	II.
390	„ 11—12	—18·9	18·4	0·1	g.	I.
391	„ 15—21	+18·1	309·6	0·9	s.	IV.
392	„ 15—16	—18·9	329·1	0·1	g.	I.
393	„ 16—25	+28·8	243·6	0·7	p.s.	II.
394	„ 18—27	+22·6	208·5	0·7	s.	I.
395	„ 18—27	—16·3	221·9	0·9	s.	IV.
396	„ 18—27	—32·6	218·0	1·4	s.	IV.
397	„ 20—21	—16·6	309·8	0·2	g.	I.
398	„ 23—27	—12·5	227·1	3·3	f.s.	II.
399	„ 25—Oct. 2..	+11·9	156·0	2·7	s.	IV.
400	Oct. 1— 2	+22·9	157·6	0·2	g.	I.
401	„ 1—10	+16·1	79·5	0·9	s.	IV.
402	„ 1—11	+14·8	42·9	0·5	s.	I.
403	„ 1— 8	—18·9	101·6	4·0	p.s.	V.
404	„ 9—18	—17·1	318·7	0·6	g.	I.
405	„ 10—11	—19·0	292·2	0·0	g.	I.

SUN-SPOT STATISTICS, 1925—Contd.

No. of Group	Date	Mean Latitude	Mean Longitude	Max. Area	Where Measured	Mean Type
406	Oct. 11	+11·9	19·9	0·1	g.	I.
407	„ 11—16	-23·5	333·9	0·7	g.	I.
408	„ 13—22	+16·2	240·9	1·9	g.	III.
409	„ 14	+14·2	17·2	0·0	s.	I.
410	„ 14—25	-20·2	228·0	7·6	f.s.	II.
411	„ 16—27	+20·5	203·7	4·1	p.s.	V.
412	„ 18—22	-13·8	269·2	2·6	g.	II.
413	„ 18—27	-17·4	195·4	0·9	s.	I.
414	„ 21—25	-23·2	149·1	0·4	s.	IV.
415	„ 22	+20·6	276·5	0·0	s.	I.
416	„ 22—27	+17·6	187·5	0·8	s.	IV.
417	„ 22—27	+16·6	151·6	0·2	s.	I.
418	„ 30—Nov. 4..	+13·4	38·0	1·0	s.	I.
419	„ 30— „ 2..	-22·5	40·2	0·2	p.s.	III.
420	Nov. 5	+12·9	53·6	0·1	s.	I.
421	„ 5	-15·8	312·7	0·1	s.	I.
422	„ 8	+23·7	24·9	0·1	s.	I.
423	„ 8	-15·3	298·4	0·0	s.	I.
424	„ 8—19	-14·3	268·9	12·1	g.	II.
425	„ 9	+24·9	351·9	0·2	g.	I.
426	„ 9	+13·5	321·0	0·1	s.	I.
427	„ 9—12	-20·3	256·0	0·3	g.	I.
428	„ 12	-13·8	252·7	0·1	s.	I.
429	„ 14—17	+22·4	200·4	0·4	s.	I.
430	„ 16—27	-21·5	161·4	1·5	s.	IV.
431	„ 18—19	+12·6	266·3	0·2	g.	I.
432	„ 18—30	+17·9	126·7	11·5	g.	V.
433	„ 19	+20·5	197·0	0·0	s.	I.
434	„ 19—26	+22·9	180·2	4·8	g.	V.
435	„ 20—27	-30·4	106·2	0·2	s.	I.
436	„ 23	+24·9	198·7	0·0	g.	I.
437	„ 23—Dec. 3..	+22·0	84·7	5·9	g.	V.
438	„ 26	+26·1	30·7	0·0	s.	I.
439	„ 26—Dec. 1..	+20·3	21·8	0·5	g.	I.
440	„ 30	+12·7	13·5	0·3	g.	I.
441	„ 30—Dec. 6..	+20·4	358·2	1·4	s.	IV.
442	Dec. 1—4	+15·3	67·9	0·9	p.s.	IV.

SUN-SPOT STATISTICS, 1925--Contd.

No. of Group	Date	Mean Latitude	Mean Longitude	Max Area	Where Measured	Mean Type
443	Dec. 1—6	+27.6	327.6	1.1	g.	I.
444	.. 2—6	+10.8	13.2	0.1	g.	I.
445	.. 3—6	+23.8	37.2	0.2	g.	I.
446	.. 3—6	-17.7	356.8	0.6	g.	I.
447	.. 6	+14.9	294.5	0.5	g.	I.
448	.. 6	-27.8	308.5	0.2	g.	I.
449	.. 6—14	-18.5	280.9	6.9	p.s.	V.
450	.. 6—12	-13.1	259.3	0.2	s.	I.
451	.. 11—14	+23.6	203.1	12.4	p.s.	V.
452	.. 11—23	+24.5	179.1	1.4	g.	I.
453	.. 11—14	-14.6	191.5	2.1	s.	IV.
454	.. 12—14	-20.0	167.2	0.5	s.	I.
455	.. 14	-19.8	237.4	0.1	s.	I.
456	.. 23—24	+23.5	143.6	2.4	s.	IV.
457	.. 23—24	+15.5	135.9	4.4	s.	IV.
458	.. 23—24	+19.0	120.0	0.2	g.	I.
459	.. 23—31	+15.0	76.3	2.1	s.	IV.
460	.. 23	+22.0	67.9	0.1	s.	I.
461	.. 23—31	+23.4	36.3	24.7	g.	V.
462	.. 23	-18.5	174.6	0.2	s.	I.
463	.. 23—24	-17.2	119.4	0.1	s.	I.
464	.. 23—27	-11.7	108.3	1.3	s.	IV.
465	.. 23—31	-20.0	77.9	18.5	g.	V.
466	.. 24	-20.7	166.0	0.5	p.s.	I.
467	.. 27	+28.5	64.9	0.2	s.	I.
468	.. 31	+10.8	38.8	1.0	g.	II.
469	.. 31	+37.9	353.8	0.2	g.	I.
470	.. 31	+23.3	291.8	0.1	s.	I.



