ROYAL OBSERVATORY, GREENWICH.

# PHOTO-HELIOGRAPHIC RESULTS.

---

1874–1885.

# PHOTO-HELIOGRAPHIC RESULTS
## 1874 TO 1885

BEING

## SUPPLEMENTARY RESULTS

FROM

# PHOTOGRAPHS OF THE SUN

TAKEN AT

GREENWICH, AT HARVARD COLLEGE, U.S.A., AT MELBOURNE,
IN INDIA, AND IN MAURITIUS

IN THE YEARS

## 1874 TO 1885:

AND MEASURED AND REDUCED AT THE

## ROYAL OBSERVATORY, GREENWICH,

UNDER THE DIRECTION OF

SIR W. H. M. CHRISTIE, K.C.B., M.A., D.Sc., F.R.S.,
ASTRONOMER-ROYAL.

(APPENDIX TO THE GREENWICH OBSERVATIONS, 1905.)

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# PHOTO-HELIOGRAPHIC RESULTS,

# 1874-1885.

## INTRODUCTION.

THE purpose of the present volume is to supplement the "Measures of Positions and Areas of Spots and Faculæ upon Photographs of the Sun" for the years 1874 to 1885, as published in the volumes of the *Greenwich Observations* for the years 1877 to 1885, so as to render them uniform with the similiar results published for 1886 and the succeeding years. And this in two directions. First, by supplying as far as possible the gaps in the series of solar photographs taken at Greenwich; and next, by adding to the results of the measures of positions and areas of spots and faculæ as exhibited in calendar form the results of the measures in three other forms as well. These forms include; first, "ledgers," wherein the life history is given for each group of spots as shown in its position and area day by day; next, tables giving the total areas day by day of spots and faculæ, as "projected," that is, as seen uncorrected for foreshortening; and third, tables of the mean areas and mean latitude of spots for each synodic rotation of the Sun, and for each year. Such "spot ledgers" and tables were given for the year 1886, and subsequent years, and are now supplied for the years 1874 to 1885.

In the matter of supplying the days unrepresented in the series of photographs taken at Greenwich, the twelve years in question, 1874 to 1885, fall into three periods of four years each. For the first period, 1874 to 1877, a number of solar photographs taken at the Observatories of Harvard College, Cambridge, Mass., U.S.A., and of Melbourne, Australia, were placed by the Directors of those two Observatories in the hands of the Astronomer Royal, and have been measured and reduced at the Royal Observatory, Greenwich, and the results have been collated with the measures of the solar photographs taken at Greenwich for the same years. The first section of the present volume contains these combined results from the Greenwich, Harvard College, and Melbourne photographs for the four years, 1874 to 1877, exhibited as a daily register, *i.e.* in calendar form; the second section gives those results in the form of ledgers of the spot groups.

For the second period, 1878 to 1881, the Solar Physics Committee obtained a number of solar photographs taken at Dehra Dûn in India, and at Melbourne, besides a few taken in Mauritius, and these were measured and reduced at the Solar Physics Observatory, South Kensington, under the direction of Sir J. Norman Lockyer. The

results were collated with the measures of the Greenwich photographs for the same years, and were published by the Solar Physics Committee in calendar form, in 1892. The results for these four years exhibited in the form of ledgers of spot-groups form the third section of the present volume.

In the third period, 1882 to 1885, photographs taken at Dehra Dûn in India, necessary to fill the gaps in the Greenwich series, were sent to the Astronomer Royal by the Solar Physics Committee as required, and were measured and reduced at the Royal Observatory, Greenwich, together with the photographs taken at Greenwich; the results in calendar form being published in the volumes of *Greenwich Observations* for 1882 and the following years. In 1885 photographs were also supplied in like manner from the Royal Alfred Observatory, Mauritius, and were measured and reduced together with the Greenwich and Dehra Dûn negatives. The fourth section of the present volume gives the combined results for these four years, 1882 to 1885, in the form of ledgers of spot-groups. From the year 1886 the ledgers of spot groups have been given regularly in the annual volumes of *Greenwich Observations.*

The fifth section gives the daily total projected areas of spots and faculæ for the whole of the twelve years, 1874 to 1885, and the sixth, the mean areas and mean latitudes of spots for the same complete period.

§ 1. *Measures of Positions and Areas of Sun Spots and Faculæ on Photographs taken at Greenwich, at Harvard, and at Melbourne, with the deduced Heliographic Longitudes and Latitudes;* 1874–1877.

These measures are the republication, in a modified form, of the "*Measures of Positions and Areas of Spots and Faculæ*" printed on pages 105–151 of the volume of *Greenwich Observations* for 1877, supplemented by measures of photographs taken at the Observatories of Harvard College, Cambridge, Mass., U.S.A., and of Melbourne, Australia, and placed in the hands of the Astronomer Royal for the purpose of measurement and reduction by the Directors of those two Observatories, Professor Edward C. Pickering and Dr. Robert J. Ellery, F.R.S.

The Greenwich photographs were taken with the Kew Photoheliograph of 3·6 inches aperture up to 1875 September 17, and after that date with the Dallmeyer Photoheliograph of 4 inches aperture returned from the Transit of Venus Expedition to New Zealand. The Melbourne photographs were taken with an instrument of the same pattern and aperture as the Dallmeyer Photoheliograph; and the Harvard College photographs were taken in the primary focus of a "horizontal photoheliograph"; the sunlight being received upon a movable mirror from which it was reflected into a

stationary lens of 5 inches aperture and about 39 feet focal length. The mean diameter of the image of the sun with each of these different instruments was about 4 inches.

The results of the measures of photographs of the Sun given in this volume, begin with 1874 April 17, on which date the regular work of the Photoheliographic Department was commenced at the Royal Observatory, Greenwich. The following table gives, for each of the three contributing observatories, the number of days in each year for which photographs of the sun taken there have been used for measurement and subsequent reduction.

| | 1874. (From April 17.) | 1875. | 1876. | 1877. |
|---|---|---|---|---|
| Greenwich | 139 | 150 | 154 | 168 |
| Harvard College | 2 | 65 | 66 | ... |
| Melbourne | ... | 48 | 51 | 67 |
| Days represented | 141 | 263 | 271 | 235 |
| Days without record | 118 | 102 | 95 | 130 |
| Total | 259 | 365 | 366 | 365 |

The *first* column on each page in this, the first section of the following results, contains the Greenwich civil time at which each photograph was taken, expressed by the day of the year and decimals of a day, reckoning from Greenwich mean midnight, January 1d. 0h., and also by the day of the month (civil reckoning), which latter is placed opposite the total area of spots and faculæ for the day. In cases where two or more photographs taken on the same day have been measured, the mean of the several times has been given; the positions and areas of the several spots and faculæ as measured on the different photographs being similarly combined. The photographs taken at the Harvard College Observatory are distinguished by the letter H., those taken at the Melbourne Observatory by the letters Me.; when no distinguishing letter is inserted in this column, the photograph was taken at Greenwich.

The *second* column contains the initials of the two persons measuring the photograph; the initial on the left being that of the person who measured the photograph on the left of the centre of the measuring instrument, and that on the right being that of the person who measured on the right of the centre.

The following are the signatures of those persons who measured the photographs for the years 1874 to 1877:—

| | | | |
|---|---|---|---|
| E. W. Maunder | M | F. J. Bell | JB |
| H. P. Hollis | H | A. E. Pilkington | EP |
| H. Appleyard | A | W. Russell | WR |
| W. Baker | B | S. J. Temple | ST |

The *third* column gives the No. of the group, and the letter for the spot. The groups are numbered in order of their appearance.

The *next two* columns give the distance from the centre of the Sun in terms of the Sun's radius, and the position-angle from the Sun's axis, reckoned from the Sun's north pole in the direction *n*, *f*, *s*, *p*. The micrometer by which the measures of the photographs were made, and the processes of measurement and reduction are described in the Introductions to the annual volumes of the Greenwich Observations.

The *sixth* and *seventh* columns give the heliographic longitude and latitude of the spot; the inclination of the Sun's equator to the ecliptic being assumed to be 7° 15′, the longitude of the ascending node as 74°, the prime meridian of the Sun that which passed through the ascending node at mean noon 1854 January 1, and the period of rotation 25·38 days. The heliographic longitude and latitude of the centre of the Sun's disc at the time of the exposure of each photograph are also given (in brackets) in the *sixth* and *seventh* columns respectively. In the volume of *Greenwich Observations* for 1877 the longitudes, latitudes, and position-angles were expressed in degrees and minutes; in the present volume they are given in degrees and tenths of a degree. The *three last* columns give the areas of umbræ, whole spots and faculæ expressed in millionths of the Sun's visible hemisphere; the total areas for each day being given (in brackets) in the last line for that day. The individual spots in a group have not always been measured separately, but have often been combined into clusters of two or more spots close together, the position of the centre of gravity and the aggregate area of the cluster being given.

§ 2. *Ledgers of Areas and Positions of Groups of Sun Spots deduced from the measurement of the Solar photographs for each day in the years* 1874–1877.

In these ledgers the daily results for each group are collected together from the measures of the individual spots as printed in the previous section, and given in a condensed form. The *first* column gives, for each day on which the group was observed, the Greenwich civil time at which each photograph was taken, expressed by the day of the month (civil reckoning) and the decimals of a day reckoning from Greenwich mean midnight. The *second* and *third* columns give the sums for each day of the projected areas of all the umbræ and whole spots comprised in the group, the projected area being the area as it is measured upon the photograph, uncorrected for foreshortening, and expressed in millionths of the Sun's apparent disc. The *fourth* and *fifth* columns give the sums for each day of the areas of all the umbræ and whole spots comprised in the group, corrected for foreshortening, and expressed in millionths of the Sun's visible hemisphere. The *sixth* and *seventh* columns give the mean longitude and latitude of the group, found by multiplying the longitude and latitude of each separately measured component of the group by its area, and dividing the sum of the products by the sum

of the areas. The *last* column gives the mean longitude of the group from the central meridian, and is found by subtracting the longitude of the centre of the disc from the mean longitude of the group. In cases where no photograph has been available for measurement on a given day, the means have been taken of the areas and positions of the spot-groups as measured on the day immediately preceding and that immediately following the day for which the photograph is lacking. These interpolated values are enclosed in brackets, but have been used in taking the final means for each spot-group. These means of the areas of umbræ and whole spots and of the longitudes and latitudes of the spot-groups for the period of observation are given at the foot of the daily results.

§ 3. *Ledgers of Areas and Positions of Groups of Sun Spots deduced from the measurement of the Solar Photographs for each day in the years* 1878 *to* 1881.

This section contains ledgers of groups of sun spots similar in character and form to those given for the years 1874 to 1877 in the preceding section. The measures of Solar photographs here given in the form of ledgers were published in the form of a daily register, in the year 1892, by the Solar Physics Committee, under the title:— *Measures of Positions and Areas of Sun Spots and Faculæ on Photographs taken at Greenwich, Dehra Dûn, and Melbourne; with the deduced heliographic longitudes and latitudes*, 1878–1881.

The photographs taken at Greenwich during these four years were measured and reduced there under the direction of the Astronomer Royal, and the results were published in the annual volumes of the *Greenwich Observations* for the years 1878 to 1881, and also in the *Greenwich Spectroscopic and Photographic Results* extracted from those volumes of the *Greenwich Observations*. The photographs taken at Dehra Dûn and at Melbourne were measured and reduced at South Kensington, under the direction of the Solar Physics Committee, and were published in the year 1892 under the title quoted above, the Greenwich reductions (extracted from the volumes of *Greenwich Observations*) being interpolated for the sake of completeness. The position-angles, longitudes and latitudes given in the Greenwich results were at the same time altered from degrees and minutes to degrees and tenths of a degree.

Wherever two photographs were measured on any day, the means of the two photographs have been taken in the preparation of these ledgers, both as to the times of the photographs, and as to the areas and positions of the spots. An additional column has also been supplied to indicate the place where the photograph was taken. A photograph taken at Greenwich is indicated by the letter G, one taken at Dehra Dûn, in India, by the letter I., one taken at Melbourne, by the letters Me., and one taken in Mauritius, by the letters Ma.

The photographs taken in Mauritius were under the superintendence of the late Dr. C. Meldrum, Director of the Royal Alfred Observatory, Pamplemousses, Mauritius. The majority of these showed neither spots nor faculæ, being taken at a time of a pronounced minimum in the solar activity, and the absence of any features requiring measurement was recorded in the volume published by the Solar Physics Committee. But thirty-five photographs, taken at Mauritius and placed by Dr. Meldrum in the care of the Solar Physics Committee, showed spots or faculæ or both and fill up gaps on twenty-three days for which no other photographs are at present available. These photographs have now been measured at Greenwich, so far as the areas of the spots and faculæ are concerned; but as the photographs are not provided with wires, it was not possible to compute the heliographic co-ordinates of the spot-groups, which have therefore been simply interpolated from the results obtained on the days immediately preceding and following those on which the Mauritius photographs were taken. These interpolated values, like the values interpolated for days whereon no photograph is available, have been enclosed in brackets, but have been used in taking the final means for the spots-groups.

The following table gives the number of days in each of the four years for which photographs are available from each of the four Observatories, distinguishing in each case between the photographs actually measured, and those showing neither spots nor faculæ.

| | 1878. | 1879. | 1880. | 1881. |
|---|---|---|---|---|
| Greenwich :— | | | | |
| Photographs measured . . . | 51 | 62 | 150 | 168 |
| No spots or faculæ . . . . | 96 | 65 | 7 | 0 |
| Dehra Dûn, India :— | | | | |
| Photographs measured . . . | 41 | 23 | 146 | 170 |
| No spots or faculæ . . . . | 113 | 52 | 22 | 1 |
| Melbourne, Victoria :— | | | | |
| Photographs measured . . . | 4 | 11 | 16 | 9 |
| No spots or faculæ . . . . | 0 | 0 | 0 | 0 |
| Mauritius :— | | | | |
| Photographs measured . . . | 3 | 20 | 0 | 0 |
| No spots or faculæ . . . . | 39 | 85 | 0 | 0 |
| Days represented . . . . | 347 | 318 | 341 | 348 |
| Days without record . . . . | 18 | 47 | 25 | 17 |
| Total . . . . . | 365 | 365 | 366 | 365 |

All the photographs included in this section were on a scale of about 4 inches to the Solar diameter.

§ 4. *Ledgers of Areas and Positions of Groups of Sun Spots deduced from the measurement of the Solar Photographs for each day in the years* 1882 *to* 1885.

This section contains ledgers of groups of sun spots precisely similar in character and form to those given for the years 1874 to 1877 in the second section, and to the ledgers for the year 1886 and the following years given in the annual volumes of *Greenwich Observations* for 1886 and subsequent years. The ledgers here given are derived from the Measures of Positions and Areas of Spots and Faculæ published in the annual volumes of *Greenwich Observations* for the years 1882 to 1885, and in the *Greenwich Spectroscopic and Photographic Results* extracted from them.

The photographs measured in this section were taken at Greenwich under the direction of the Astronomer Royal, at Dehra Dûn, North-West Provinces, India, under the direction of the Deputy Superintendent, Trigonometrical Survey of India, and at the Royal Alfred Observatory, Mauritius, under the direction of the late Dr. C. Meldrum. The following table gives the number of days for which each of the three observatories supplied photographs used for measurement in the four years 1882 to 1885.

| | 1882. | 1883. | 1884. | 1885. |
|---|---|---|---|---|
| Greenwich . . . . . | 201 | 214 | 154 | 206 |
| Dehra Dûn . . . . . | 142 | 126 | 161 | 128 |
| Mauritius . . . . . | ... | ... | ... | 25 |
| Days represented . . . . | 343 | 340 | 315 | 359 |
| Days without record . . . . | 22 | 25 | 51 | 6 |
| Total . . . . . | 365 | 365 | 366 | 365 |

The photographs taken at Greenwich were on a scale of about 4 inches to the solar diameter up to 1884 April 2, and on a scale of nearly 8 inches from that date onwards; those taken at Dehra Dûn were on the 4-inch scale up to 1882 November 7, and from 1882 December 8 to 1883 May 20, after which date they were on the 8-inch scale; the photographs taken at Mauritius were on the 4-inch scale until the end of 1885 February, the 8-inch scale being adopted at the beginning of 1885 March.

§ 5. *Total Projected Areas of Sun Spots and Faculæ for each day from* 1874 *April* 17 *to* 1885 *December* 31.

This section requires no further explanation and supersedes for the years 1882 to 1885 the corresponding tables given on pp. *60* to *66* of the *Greenwich Observations*

for 1888, and of the *Results of the Spectroscopic and Photographic Observations* made at the Royal Observatory, Greenwich in the year 1888, extracted from that volume.

§ 6. *Mean Areas and Mean Heliographic Latitude of Sun Spots and Faculæ for each Rotation of the Sun from* 1874 *April* 27 *to* 1886 *January* 16 *and for each Year from* 1874 *to* 1885.

This section corresponds to the tables printed on pp. *106* to *112* of the *Greenwich Observations* for 1884, on pp. *103* and *104* of the *Greenwich Observations* for 1885, and on pp. *67* and *68* of the *Greenwich Observations* for 1888, and on the same pages of the *Greenwich Spectroscopic and Photographic Results* extracted from those three volumes. The figures given in this section, being based upon the measures of a more complete series of photographs than those given in the corresponding tables published in the volumes for 1884, 1885 and 1888, naturally supersede them.

The measurement of the photographs and the preparation of the tabular results contained in the present publication have been carried out under the immediate superintendence of Mr Edward Walter Maunder, Superintendent of the Photo-heliographic Branch.

W. H. M. CHRISTIE.

*Royal Observatory, Greenwich,*
1907 *July* 20.

# ERRATA AND ADDITIONS.

## GREENWICH OBSERVATIONS 1877.

### Measures of Positions and Areas of Spots and Faculæ.

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 108 | 1 | 5 | Mean Solar Time, *for* 154·692, *read* 154·962. |
| 109 | 1 | 34 | Area of Umbra, *for* 20, *read* 77. |
| | | | Area of Whole Spot, *for* 351, *read* 620. |
| | | 35 | Area of Umbra, *for* 90, *read* 23. |
| | | | Area of Whole Spot, *for* 717, *read* 405. |
| | | 37 | Total Area of Umbræ, *for* 130, *read* 120. |
| | | | Total Area of Whole Spots, *for* 1767, *read* 1724. |
| 114 | 1 | 29 | Area of Umbra, *for* 110, *read* 89. |
| | | | Area of Whole Spot, *for* 641, *read* 522. |
| | | 31 | Area of Whole Spot, *for* 60, *read* 73. |
| | | 33 | Total Area of Umbræ, *for* 110, *read* 89. |
| | | | Total Area of Whole Spots, *for* 701, *read* 595. |
| | | 34 | Area of Whole Spot, *for* 237, *read* 193. |
| | | 35 | Area of Whole Spot, *for* 53, *read* 65. |
| | | 36 | Total Area of Whole Spots, *for* 290, *read* 258. |
| 117 | 1 | 12 | Area of Whole Spot, *for* 13, *read* 26. |
| | | 14 | Total Area of Whole Spots, *for* 100, *read* 113. |
| 119 | 2 | 12 | Mean Solar Time, *for* 31·960, *read* 30·960. |
| | | 14 | Longitude, *for* 182° 52′, *read* 196° 2′. |
| | | 15 | Mean Solar Time, *for* Feb. 2, *read* Feb. 1. |
| | | 16 | Mean Solar Time, *for* 31·975, *read* 30·975. |
| | | 18 | Longitude, *for* 183° 8′, *read* 196° 18′. |
| | | 19 | Mean Solar Time, *for* Feb. 2, *read* Feb. 1. |
| 121 | 1 | 24 | Area of Umbra, *for* 101, *read* 63. |
| | | | Area of Whole Spot, *for* 597, *read* 376. |
| | | 28 | Total Area of Umbræ, *for* 101, *read* 63. |
| | | 28 | Total Area of Whole Spots, *for* 641, *read* 420. |
| | | 29 | Area of Umbra, *for* 81. *read* 51. |
| | | | Area of Whole Spot, *for* 451, *read* 284. |
| | | 33 | Total Area of Umbræ, *for* 81, *read* 51. |
| | | | Total Area of Whole Spots, *for* 478, *read* 311. |
| | 2 | 29 | No. of Group, *for* 153*, *read* 153†. |
| | | 37 | Area of Whole Spot, *for* 54, *read* 79. |
| | | 38 | Area of Umbra, *for* 34, *read* 32. |
| | | | Area of Whole Spot, *for* 110, *read* 105. |
| | | 39 | Area of Umbra, *for* 93, *read* 80. |
| | | | Area of Whole Spot, *for* 494, *read* 429. |
| | | 40 | Total Area of Umbræ, *for* 127, *read* 112. |
| | | | Total Area of Whole Spots, *for* 658, *read* 613. |
| 122 | 2 | 26 | Area of Umbra, *for* 155, *read* 127. |
| | | | Area of Whole Spot, *for* 951, *read* 773. |
| | | 27 | Total Area of Umbræ, *for* 183, *read* 155. |
| | | | Total Area of Whole Spots, *for* 1129, *read* 951. |
| 124 | 2 | 26 | Mean Solar Time, *for* 182·918, *read* 181·918. |
| | | | Position Angle, *for* 148° 14′, *read* 148° 30′. |

## GREENWICH OBSERVATIONS, 1877—*continued.*

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 124 | 2 | 26 | Longitude, *for* 49° 57′, *read* 63° 18′. |
| | | 27 | Position Angle, *for* 281° 33′, *read* 282° 0′. |
| | | | Longitude, *for* 125° 13′, *read* 138° 30′. |
| | | | Latitude, *for* +11° 55′, *read* +12° 18′. |
| | | 28 | Mean Solar Time, *for* July 3, *read* July 2. |
| | | 29 | Mean Solar Time, *for* 182·934, *read* 181·934. |
| | | | Position Angle, *for* 148° 21′, *read* 148° 48′. |
| | | | Longitude, *for* 49° 52′, *read* 63° 6′. |
| | | | Latitude, *for* −9° 23′, *read* −9° 10′. |
| | | 30 | Position Angle, *for* 281° 23′, *read* 281° 54′. |
| | | | Longitude, *for* 125° 11′, *read* 138° 24′. |
| | | | Latitude, *for* +11° 46′, *read* +12° 18′. |
| | | 31 | Mean Solar Time, *for* July 3, *read* July 2. |
| | | 32 | Mean Solar Time, *for* 185·885, *read* 184·885. |
| | | | Position Angle, *for* 247° 9′, *read* 247° 42′. |
| | | | Longitude, *for* 49° 35′, *read* 63° 0′. |
| | | | Latitude, *for* −9° 16′, *read* −9° 6′. |
| | | 33 | Mean Solar Time, *for* July 6, *read* July 5. |
| | | 34 | Mean Solar Time, *for* 185·901, *read* 184·901. |
| | | | Position Angle, *for* 247° 33′, *read* 248° 6′. |
| | | | Longitude, *for* 49° 50′, *read* 63° 12′. |
| | | | Latitude, *for* −9° 12′, *read* −9° 0′. |
| | | 35 | Mean Solar Time, *for* July 6, *read* July 5. |
| 125 | 1 | 2 | Mean Solar Time, *for* 186·902, *read* 185·902. |
| | | | Position Angle, *for* 253° 27′, *read* 253° 54′. |
| | | | Longitude, *for* 49° 35′, *read* 63° 0′. |
| | | | Latitude, *for* −9° 13′, *read* 8° 54′. |
| | | 3 | Mean Solar Time, *for* July 7, *read* July 6. |
| | | 4 | Mean Solar Time, *for* 186·955, *read* 185·955. |
| | | | Position Angle, *for* 253° 4′, *read* 253° 30′. |
| | | | Longitude, *for* 49° 44′, *read* 63° 0′. |
| | | | Latitude, *for* −9° 42′, *read* −9° 24′. |
| | | 5 | Mean Solar Time, *for* July 7, *read* July 6. |
| 135 | 1 | 37 | Mean Solar Time, *for* April 31, *read* May 1. |
| 137 | 1 | 33 | Latitude, *for* +7° 26′, *read* −7° 26′. |
| | 2 | 11 | Mean Solar Time, *for* July 23, *read* July 22. |
| 139 | First Note | | Line 2. *For* May 5, 16, 18 to 21, *read* May 5, 18 to 20. |

Mean Areas of Umbræ, Whole Spots, and Faculæ, for each Rotation of the Sun, and for each Year, from 1873 July 11, to the end of 1877. Pages 149, 150 and 151.

This Section is superseded by the corresponding Tables on pages 314–317 of the present Volume.

## GREENWICH OBSERVATIONS, 1878.

MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *56* | 1 | 37–39 | The second photograph taken on 1878 March 5 has not been used for the Ledger of Groups of Sun Spots. |
| | 2 | 9–10 | No. of Group. *Transpose 271b and 271c.* |
| | | 22 | No. of Group, *for 272a, read 272b.* |
| | | 23 | No. of Group, *for 272c, read 272a.* |
| | | 26 | No. of Group, *for 272a, read 272b.* |
| | | 27 | No. of Group, *for 272c, read 272a.* |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS AND FACULÆ, FOR EACH ROTATION OF THE SUN IN THE YEAR 1878, AND FOR THE YEAR. Page *39*.

This Section is superseded by the corresponding Tables on pages 314–317 of the present Volume.

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## GREENWICH OBSERVATIONS, 1879.

MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| | | | |
|---|---|---|---|
| *23* | 1 | 37 | *Diminish* all longitudes from November 12 to December 2 inclusive, by 1° 25′. |
| to | | | |
| *24* | 1 | 8 | |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS AND FACULÆ, FOR EACH ROTATION OF THE SUN IN THE YEAR 1879, AND FOR THE YEAR. Page *25*.

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC, FOR EACH ROTATION OF THE SUN, AND FOR EACH YEAR, FROM 1874 APRIL 16, TO 1879 DECEMBER 27. Pages *26* to *28*.

These two Sections are superseded by the corresponding Tables on pages 314–321 of the present Volume.

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## GREENWICH OBSERVATIONS, 1880.

MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| | | | |
|---|---|---|---|
| *67* | 1 | 26–28 | The second photograph taken on 1880 March 19 has not been used for the Ledger of Groups of Sun Spots. |
| *68* | 1 | 12 | Distance, *for* 0·859, *read* 0·864. |
| | | | Longitude, *for* 174° 25′, *read* 174° 52′. |
| | | | Latitude, *for* +19° 4′, *read* +19° 32′. |
| | | 13 | Distance, *for* 0·859, *read* 0·854. |
| | | | Longitude, *for* 174° 25′, *read* 173° 58′. |
| | | | Latitude, *for* +19° 2′, *read* +18° 35′. |
| | | 17 | Distance, *for* 0·867, *read* 0·872. |
| | | | Longitude, *for* 174° 47′, *read* 175° 16′. |
| | | | Latitude, *for* +18° 55′, *read* +19° 22′. |
| | | 18 | Distance, *for* 0·867, *read* 0·862. |

## GREENWICH OBSERVATIONS, 1880—*continued.*

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *68* | 1 | 18 | Longitude, *for* 174° 46′, *read* 174° 15′. |
| | | | Latitude, *for* +18° 59′, *read* +18° 32′. |
| *72* | 1 | 9 | Mean Solar Time, *for* 153·074, *read* 153·116. |
| | | 10–14 | *Diminish* all longitudes on June 2 by 0° 35′. |
| | | 20 | Distance, *for* 0·388, *read* 0·407. |
| | | | Position Angle, *for* 349° 45′, *read* 4 6′. |
| | | | Longitude, *for* 89° 58′, *read* 83° 54′. |
| | | | Latitude, *for* +22° 23′, *read* +23° 48′. |
| | | | Area of Whole Spot, *for* 19, *read* 14. |
| | | 21 | Total Area of Whole Spots, *for* 77, *read* 72. |
| | | 43–44 | Area of Umbra, *Transpose* 89 *and* 9. |
| | | | Area of Whole Spot, *Transpose* 345 *and* 12. |
| *73* | 2 | 31 | Longitude, *for* 51° 10′, *read* 62° 39′. |
| | | | Latitude, *for* −33° 55′, *read* −38° 36′. |
| *75* | 2 | 43 | Area of Whole Spot, *for* 690, *read* 69. |
| *76* | 1 | 12 | Total Area of Whole Spots, *for* 1625, *read* 1004. |
| *77* | 1 | 29 | *Increase* all longitudes on September 13 by 1°·0. |
| to | | | |
| | 2 | 5 | |
| *78* | 2 | 35 | Latitude, *for* −29° 10′, *read* −20° 10′. |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS AND FACULÆ, FOR EACH ROTATION OF THE SUN, IN THE YEAR 1880, AND FOR THE YEAR. Page *83*.

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC FOR EACH ROTATION OF THE SUN, IN THE YEAR 1880, AND FOR THE YEAR. Page *84*.

These two Sections are superseded by the Tables on pages 314–321 of the present Volume.

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## GREENWICH OBSERVATIONS, 1881.

MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

Page 66, Column 1, after line 28. *Insert* as follows :—

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *410b* | 0·697 | 64° 36′ | 237° 30′ | +13° 18′ | 0 | 21 | |
| | | *410b* | 0·734 | 64 18 | 234 36 | +14 36 | 0 | 17 | |

| | | | |
|---|---|---|---|
| *66* | 1 | 30 | Total Area of Whole Spots, *for* 730, *read* 768. |
| | 2 | 37 | No. of Group, *for* 417, *read* 418. |
| *67* | 2 | 15 | Distance, *for* 0·795, *read* 0·747. |
| | | | Longitude, *for* 260° 2′, *read* 264° 31′. |
| | | | Latitude, *for* −17° 29′, *read* −17° 6′. |
| *68* | 1 | 2 | Mean Solar Time, *for* 74·695, *read* 74·965. |
| | 2 | 7 | Longitude, *for* 223° 22′, *read* 225° 18′. |
| | | 9 | Longitude, *for* 170° 3′, *read* 169° 53′ |
| | | | Latitude, *for* +11° 2′, *read* +12° 54′. |
| *71* | 2 | 13–18 | *Diminish* all longitudes by 1° 0′. |
| *74* | 1 | 28 | Distance, *for* 0·632, *read* 0·684. |
| | | | Longitude, *for* 312° 44′, *read* 308° 45′. |
| | | | Latitude, *for* +12° 24′, *read* +13° 7′. |
| | | | Area of Whole Spot, *for* 70, *read* 75. |
| | | 35 | Total Area of Whole Spots, *for* 1396, *read* 1401. |

## GREENWICH OBSERVATIONS, 1881—*continued.*

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *80* | 1 | 31–32 | No. of Group, *transpose* 553 *and* 552. |
| | 2 | 35 | Distance, *for* 0·562, *read* 0·536. |
| | | | Longitude, *for* 19° 42′, *read* 21° 30′. |
| | | | Latitude, *for* +20° 10′, *read* +19° 36′. |
| *83* | 1 | 3 | Longitude, *for* 41° 22′, *read* 40° 22′. |
| *84* | 1 | 7 | Mean Solar Time, *for* 311·928, *read* 311·975. |
| | | 8–14 | *Diminish* all longitudes by 0° 40′ |
| | 2 | 11 | Area of Whole Spot, *for* 16, *read* 6. |
| | | 18 | Total Area of Whole Spots, *for* 1742, *read* 1732. |
| | | 25 | Distance, *for* 0·581, *read* 0·530. |
| | | | Longitude, *for* 248° 8′, *read* 251° 14′. |
| | | | Latitude, *for* +24° 54′, *read* +22° 51′. |
| *86* | 1 | 36 | Distance, *for* 0·477, *read* 0·426. |
| | | | Longitude, *for* 28° 22′, *read* 28° 8′. |
| | | | Latitude, *for* +28° 14′, *read* +24° 59. |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS, AND FACULÆ, FOR EACH ROTATION OF THE SUN, IN THE YEAR 1881, AND FOR THE YEAR. Page *88*.

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC FOR EACH ROTATION OF THE SUN, IN THE YEAR 1881, AND FOR THE YEAR. Page *89*.

These two Sections are superseded by the Tables on pages 314–321 of the present Volume.

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## GREENWICH OBSERVATIONS, 1882.

### INTRODUCTION.

| | | | |
|---|---|---|---|
| lxxxii | | 9 | *For* on 221 days, *read* on 201 days. |

### MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| | | | |
|---|---|---|---|
| *43* | 1 | 27 | Area of Whole Spot, *for* 78, *read* 8. |
| | | 34 | Total Area of Whole Spots, *for* 344, *read* 274. |
| *43* | 1 | 31 | Longitude, *for* 17°·2, *read* 18°·2. |
| *44* | 1 | 31 | Area of Whole Spot, *for* 186, *read* 18. |
| | | 39 | Total Area of Whole Spots, *for* 817, *read* 649. |
| | 2 | 22 | Longitude, *for* 241°·8, *read* 241°·6. |
| *45* | 1 | 46 | No. of Group, *for* 666, *read* 668. |
| | | | Distance, *for* 0·845, *read* 0·541. |
| | | | Longitude, *for* 262°·6, *read* 239°·1. |
| | | | Latitude, *for* +17°·4, *read* +7°·5. |
| | | | Area of Umbra, *for* 35, *read* 22. |
| | | | Area of Whole Spot, *for* 199, *read* 127. |
| | | | Area of Faculæ, *dele* 333*n*. |
| | 2 | 2 | Area of Faculæ, *insert* 333*n*. |
| | | 14 | Total Area of Umbræ, *for* 269, *read* 256. |
| | | | Total Area of Whole Spots, *for* 1856, *read* 1784. |

## GREENWICH OBSERVATIONS, 1882—*continued.*

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *45* | 1 | 22 | Area of Whole Spot, *for* 144, *read* 14. |
| | | 36 | Total Area of Whole Spots, *for* 1042, *read* 912. |
| *46* | 1 | 28 | Longitude, *for* 159·3, *read* 158·9. |
| *49* | 2 | 22 | Total Area of Whole Spots, *for* 844, *read* 845. |
| *51* | 1 | 33 | Area of Umbra, *for* 18, *read* 32. |
| | | 34 | Longitude, *for* 21°·0, *read* 21°·9. |
| | | 35 | Longitude, *for* 2°·6, *read* 3°·5. |
| | | 36 | Longitude, *for* 359°·4, *read* 0°·3. |
| | | 38 | Longitude, *for* 267°·7, *read* 268°·6. |
| | | 40 | Total Area of Umbræ, *for* 80, *read* 94. |
| | 2 | 5 | Area of Whole Spot, *for* 34, *read* 3. |
| | | 9 | Total Area of Whole Spots, *for* 742, *read* 711. |
| | Footnote. | | Group 711. *Omit*, It is not seen on March 28 and 29, but appears again on March 30. |
| *53* | 2 | 8 | Total Area of Umbræ, *for* 248, *read* 247. |
| | | 23 | Area of Whole Spot, *for* 79, *read* 8. |
| | | 33 | Total Area of Whole Spots, *for* 2208, *read* 2137. |
| *55* | 2 | 4 | Area of Umbra, *for* 271, *read* 162. |
| | | 6–10 | Groups 733 to 738. *Diminish* all longitudes by 0°·4. |
| | | 12 | Total Area of Umbræ, *for* 533, *read* 424. |
| | | 18 | Area of Whole Spot, *for* 49, *read* 5. |
| | | 28 | Total Area of Whole Spots, *for* 3376, *read* 3332. |
| *59* | 2 | 6 | Longitude, *for* 20°·0, *read* 20°·1. |
| | | | Latitude, *for* —13°·0, *read* —16°·5. |
| *60* | 2 | 2 | Longitude, *for* 332°·6, *read* 277°·3. |
| *63* | 1 | 13 | No. of Group, *for* 789, *read* 787. |
| *64* | 2 | 8 | Area of Whole Spot, *for* 316, *read* 32. |
| | | 12 | Total Area of Whole Spots, *for* 397, *read* 113. |
| *68* | 2 | 26 | Area of Whole Spot, *for* 166, *read* 17. |
| | | 32 | Total Area of Whole Spots, *for* 491, *read* 342. |
| *72* | 2 | 4 | Area of Umbra, *for* 97, *read* 36. |
| | | 9 | Total Area of Umbræ, *for* 119, *read* 58. |
| *75* | 1 | 18 | Longitude, *for* 286°·7, *read* 286°·4. |
| | | | Latitude, *for* +5°·7, *read* +8°·1. |
| *76* | 2 | 36–46 | Oct. 20. *Increase* all longitudes on this day by 1°·0. |
| *77* | 1 | 2–6 | |
| | | 16 | No. of Group, *for* 859, *read* 862. |
| | | | Longitude, *for* 197°·9, *read* 167°·8. |
| *83* | 2 | 31 | Area of Whole Spot, *for* 30, *read* 301. |
| | | 43 | Total Area of Whole Spots, *for* 817, *read* 1088. |
| *85* | 1 | 30 | Total Area of Umbræ, *for* 93, *read* 94. |
| *87* | 2 | 35 | Total Area of Whole Spots, *for* 1146, *read* 1147. |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS AND FACULÆ, FOR EACH ROTATION OF THE SUN, FROM 1881 DECEMBER 8 TO 1883 JANUARY 18, AND FOR THE YEAR 1882. Page *88*.

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC FOR EACH ROTATION OF THE SUN, FROM 1881 DECEMBER 8 TO 1883 JANUARY 18, AND FOR THE YEAR 1882. Page *89*.

These two Sections are superseded by the Tables on pages 314–321 of the present Volume.

## GREENWICH OBSERVATIONS, 1883.

MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *73* | 2 | 15 | Area of Whole Spot, *for* 224, *read* 22. |
| | | 18 | Longitude, *for* 187°·7, *read* 197°·7. |
| | | 23 | Total Area of Whole Spots, *for* 1110, *read* 908. |
| *74* | 2 | 7 | Total Area of Umbræ, *for* 152, *read* 142. |
| *75* | 2 | 19 | Latitude, *for* +11°·0, *read* +11°·4. |
| | | 20 | Longitude, *for* 266°·9, *read* 266°·7. |
| | Footnote. | | *For* Jan. 29–Feb. 1, *read* Jan. 28–Feb. 1. |
| *78* | 2 | 22 | Area of Whole Spot, *for* 17, *read* 169. |
| | | 32 | Total Area of Whole Spots, *for* 641, *read* 793. |
| *81* | 1 | 26–30 | Mar. 18. *Increase* all longitudes by 0°·9. |
| *85* | 2 | 34 | Mean Solar Time. *Insert* Apr. 21. |
| *89* | Footnote. | | *For* June 2–9, *read* June 2–10. |
| *91* | 1 | 22 | No. of Group, *for* 1043, *read* 1045. |
| | 2 | 5 | Total Area of Umbræ, *for* 1, *read* 19. |
| | | 21 | Total Area of Faculæ, *for* 84, *read* 684. |
| *95* | 1 | 37 | Mean Solar Time, *for* 189·084, *read* 189·894. |
| | Footnote. | | *For* July 14–16, *read* July 13–16. |
| *97* | 2 | 21 | Total Area of Umbræ, *for* 314, *read* 311. |
| *99* | 1 | 34 | Area of Umbra, *for* 22, *read* 12. |
| | | 36 | Total Area of Umbræ, *for* 73, *read* 63. |
| | 2 | 32 | Total Area of Umbræ, *for* 548, *read* 558. |
| *102* | 2 | 46 | Latitude, *for* —11°·8, *read* +11°·8. |
| *104* | Footnote. | | Group 1130, *for* Oct. 2–13, *read* Oct. 2–14. |
| *105* | 1 | 8 | Mean Solar Time, *for* 277·795, *read* 278·644. |
| | Footnote. | | *Insert* Group 1140, Oct. 9–18. A regular spot. |
| *107* | Footnote. | | *Insert* Oct. 14. Some of the groups on this day were measured on an Indian photograph, 285·644. |
| *108* | 1 | 20 | Longitude, *for* 127°·1, *read* 128°·0. |
| | | 24 | Area of Faculæ, *for* 1860*c*, *read* 4860*c*. |
| | | 27–34 | Groups 1140–1147, *increase* all longitudes by 0°·9 |
| | | 37 | Total Area of Faculæ, *for* 6353, *read* 9353. |
| *110* | 1 | 23 | Area of Umbra, *for* 1, *read* 4. |
| | | 24 | Total Area of Umbræ, *for* 206, *read* 209. |
| *112* | 1 | 32 | Mean Solar Time, *for* 306·791, *read* 306·707. |
| | 2 | 15 | Distance, *dele* 0·840. |
| | | | Position Angle, *dele* 283°·7. |
| *113* | 1 | 34 | Area of Whole Spot, *for* 8, *read* 2. |
| | | 47 | Total Area of Whole Spots, *for* 602, *read* 596. |
| | 2 | 6 | Area of Umbra, *for* 1, *read* 2. |
| | | 15 | Total Area of Umbræ, for 151, *read* 152. |
| *116* | 1 | 26 | Area of Spot, *for* 86, *read* 9. |
| | | 31 | Total Area of Whole Spots, *for* 2786, *read* 2709. |
| | 2 | 4 | Area of Umbra, *for* 33, *read* 3. |
| | | 14 | Total Area of Umbræ, *for* 303, *read* 273. |
| *118* | 1 | 4 | Longitude, *for* 105°·7, *read* 105°·6. |
| *119* | Footnote. | | Group 1204, *for* Dec. 10–20, *read* Dec. 10–21. |
| *120* | 1 | 18 | Longitude, *for* 354°·3, *read* 353°·7. |
| | | 42 | Total Area of Whole Spots, *for* 736, *read* 737. |
| | 2 | 9 | Total Area of Whole Spots, *for* 760, *read* 762. |
| *121* | 2 | 21 | Longitude, *for* 212°·7, *read* 211°·7. |
| | | 28 | No. of Group, *insert* 1204. |
| *122* | 1 | 48 | Area of Umbra, *for* 24, *read* 11. |
| | | | Area of Whole Spot, *for* 191, *read* 86. |
| | 2 | 8 | Total Area of Umbræ, *for* 410, *read* 397. |
| | | | Total Area of Whole Spots, *for* 3258, *read* 3153. |

## GREENWICH OBSERVATIONS, 1883—*continued*.

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *123* | 2 | 14 | Area of Whole Spot, *for* 114, *read* 11. |
| | | 39 | Total Area of Whole Spots, *for* 2022, *read* 1919. |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS, AND FACULÆ, FOR EACH ROTATION OF THE SUN FROM 1882 DECEMBER 23 TO 1884 JANUARY 8, AND FOR THE YEAR 1883. Page *125*.

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC FOR EACH ROTATION OF THE SUN, FROM 1882 DECEMBER 23, TO 1884 JANUARY 8, AND FOR THE YEAR 1883. Page *126*.

These two Sections are superseded by the Tables on pages 314–321 of the present Volume.

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## GREENWICH OBSERVATIONS, 1884.

MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| | | | |
|---|---|---|---|
| *41* | 1 | 30 | Area of Umbra, *for* 10, *read* 0. |
| | | 37 | Total Area of Umbræ, *for* 63, *read* 53. |
| | 2 | 5 | Longitude, *for* 140°·9, *read* 137°·9. |
| *53* | Footnote. | | Group 1293, *for* Feb. 22–27, *read* Feb. 21–27. |
| *54* | 1 | 8–10 | No. of Group, *for* 1298, *read* 1299. |
| | | 21 | Area of Faculæ, *for* 7986*c*, *read* 799*c*. |
| | | 25 | Total Area of Faculæ, *for* 10244, *read* 3057. |
| *58* | 1 | 6 | Total Area of Whole Spots, *for* 1759, *read* 1758. |
| | 2 | 33 | Area of Umbra, *for* 2, *read* 0. |
| *59* | 1 | 4 | Total Area of Umbræ, *for* 233, *read* 231. |
| *62* | 1 | 4 | Area of Umbra, *for* 20, *read* 10. |
| | | 16 | Total Area of Umbræ, *for* 181, *read* 171. |
| *72* | 1 | 6–19 | No. of Group. *Lower* all these numbers for May 29 two lines each. |
| | 2 | 39<br>2 | Mean Solar Time, *for* 148·655, *read* 150·659. |
| *74* | 1 | 5 | Area of Umbra, *for* 5, *read* 10. |
| | | 7 | Total Area of Umbræ, *for* 52, *read* 57. |
| | | 24 | Area of Umbra, *for* 10, *read* 13. |
| | | 28 | Total Area of Umbræ, *for* 54, *read* 57. |
| *76* | 2 | 33 | Area of Whole Spot, *for* 9, *read* 1. |
| | | 41 | Total Area of Whole Spots, *for* 555, *read* 547. |
| *77* | 1<br>2 | 33<br>2 | Mean Solar Time, *for* 199·709, *read* 199·909. |
| *82* | 1 | 27 | Longitude, *for* 224°·9, *read* 225°·0. |
| | | | Latitude, *for* —7°·1, *read* —7°·0. |
| | 2 | 10 | Longitude, *for* 222°·0, *read* 222°·2. |
| *97* | 2 | 3 | Area of Whole Spot, *for* 194, *read* 225. |
| | | 17 | Total Area of Whole Spots, *for* 679, *read* 710. |
| *100* | 2 | 26 | Area of Umbra, *for* 37, *read* 4. |
| | | 33 | Total Area of Umbræ, *for* 162, *read* 129. |
| *102* | 2 | 2 | Mean Solar Time, *for* 346·148, *read* 346·748. |

## GREENWICH OBSERVATIONS, 1884—*continued.*

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *108* | 2 | 5 | Total Area of Umbræ, *for* 69, *read* 70. |
| | | 12 | Longitude, *for* 218°·4, *read* 215°·5. |
| | | | Latitude, *for* −12°·7, *read* −12°·9. |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS AND FACULÆ FOR EACH SYNODIC ROTATION OF THE SUN, FROM 1873 JULY 28. Pages *106* to *108*.

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC, FOR EACH SYNODIC ROTATION OF THE SUN FROM 1874 APRIL 27 TO 1884 DECEMBER 30. Pages *109* to *111*.

MEAN AREAS OF UMBRÆ, WHOLE SPOTS AND FACULÆ, FOR EACH YEAR FROM 1873 TO 1884. Page *112*.

MEAN HELIOGRAPHIC LATITUDE OF SPOTS UPON THE SUN'S DISC, FOR EACH YEAR FROM 1874 TO 1884. Page *112*.

These four Sections are superseded by the corresponding Tables on pages 314–321 of the present Volume.

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## GREENWICH OBSERVATIONS, 1885.

### MEASURES OF POSITIONS AND AREAS OF SPOTS AND FACULÆ.

| | | | |
|---|---|---|---|
| *34* | *2* | 14 | Area for Faculæ, *for* 14, *read* 141. |
| | | 15 | Area for Faculæ, *for* 68, *read* 677. |
| | | 17 | Total Area of Faculæ, *for* 1245, *read* 1981. |
| *35* | *1* | 26 | Area of Whole Spot, *for* 9, *read* 19. |
| | | 28 | Total Area of Whole Spots, *for* 57, *read* 67. |
| | *2* | 35 | Longitude, *for* 169°·5, *read* 169°·6. |
| *41* | *1* | 9 | Longitude, *for* 248°·6, *read* 248°·7. |
| | | 10 | Longitude, *for* 246°·1, *read* 246°·2. |
| | | 11 | Longitude, *for* 244°·1, *read* 246°·2. |
| *42* | *1* | 10 | Area of Whole Spot, *for* 92, *read* 9. |
| | | 21 | Total Area of Whole Spots, *for* 1332, *read* 1197. |
| *43* | 1 | 18 | Area of Umbra, *for* 6, *read* 1. |
| | | 35 | Total Area of Umbræ, *for* 190, *read* 185. |
| | 2 | 18 | Total Area of Whole Spots, *for* 1386, *read* 1378. |
| | | 35 | Total Area of Whole Spots, *for* 1150, *read* 1158. |
| *47* | 2 | 12 | Area of Whole Spot, *for* 96, *read* 10. |
| | | 15 | Total Area of Whole Spots, *for* 2012, *read* 1926. |
| *48* | 1 | 7 | Distance, *for* 0·935, *read* 9·931. |
| | | 11 | Distance, *for* 0·841, *read* 0·836. |
| | | 12 | Distance, *for* 0·833, *read* 0·828. |
| *52* | 2 | 2 | Longitude, *for* 244°·4, *read* 243°·6. |
| | | 3 | Longitude, *for* 240°·5, *read* 239°·7. |
| | | 4 | Longitude, *for* 235°·7, *read* 236°·4. |

### PHOTO-HELIOGRAPHIC RESULTS, 1874–1885.

## GREENWICH OBSERVATIONS, 1885—*continued.*

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| *52* | 2 | 5 | Longitude, *for* 222°·3, *read* 221°·5. |
| *54* | 2 | 17–22 | Group 1639, *increase* all longitudes by 0°·3. |
| *56* | 2 | 18 | Area of Whole Spot, *for* 2, *read* 3. |
| | | 27 | Total Area of Whole Spots, *for* 762, *read* 763. |
| | 2 | 30–31 | *Insert* between lines 30 and 31, the following :— |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1651 | 0·707 | 258°·5 | 281°·0 | −11°·1 | 0 | 2 | |
| | | 1651 | 0·691 | 259·7 | 279·8 | −10·2 | 0 | 4 | |

| | | | |
|---|---|---|---|
| | | 40 | Group 1649, *dele* the entire line. |
| | Footnote. | | Group 1649, *for* April 26–28, *read* April 26–27. |
| | Footnote. | | Group 1649, *dele* and 28. |
| | Footnote. | | Group 1651, *dele*, It is not seen on April 28. |
| *57* | 1 | 17 | Total Area of Whole Spots, *for* 941, *read* 940. |
| *58* | 1 | 36 | Greenwich Civil Time, *for* 124·159, *read* 124·279. |
| | 2 | 2 | |
| *59* | 2 | 20 | Area of Umbra, *for* 0, *read* 2. |
| *60* | 1 | 8 | Total Area of Umbræ, *for* 122, *read* 124. |
| *61* | 2 | 33 | Area of Whole Spot, *for* 69, *read* 7. |
| *62* | 1 | 10 | Total Area of Whole Spots, *for* 1754, *read* 1692. |
| | | 30 | Area of Umbra, *for* 32, *read* 21. |
| | | 35 | Total Area of Umbræ, *for* 219, *read* 208. |
| *63* | 2 | 16 | Area of Umbra, *for* 2, *read* 0. |
| | | 23 | Total Area of Umbræ, *for* 60, *read* 67. |
| *64* | 1 | 4 | Total Area of Whole Spots, *for* 389, *read* 789. |
| *65* | 2 | 33 | Latitude, *for* −11°·7, *read* −1°·7. |
| *69* | 2 | 38 | Longitude, *for* 201°·1, *read* 202°·1. |
| | Footnote. | | Group 1708, *for* June 20, *read* June 19–20. |
| *75* | 2 | 19–21 | No. of Group, *for* 1723, *read* 1723*. |
| | | 25 | Area of Umbra, *for* 19, *read* 2. |
| | | 32 | Total Area of Umbræ, *for* 206, *read* 189. |
| *75* | Footnote. | | *Insert* Group 1723*. July 17. Three very small spots. |
| *76* | 1 | 9 | Area of Umbra, *for* 1, *read* 0. |
| | | 24 | Total Area of Umbræ, *for* 357, *read* 356. |
| *80* | 2 | 11 | Total Area of Umbræ, *for* 109, *read* 112. |
| *81* | 1 | 3–4 | *Insert* between lines 3 and 4 the following :— |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1738 | 0·364 | 191°·9 | 278°·3 | −14°·2 | 0 | 4 | |

| | | | |
|---|---|---|---|
| *81* | 1 | 13 | Total Area of Whole Spots, *for* 763, *read* 767. |
| *82* | 1 | 7 | Area of Umbra, *for* 2, *read* 0. |
| | | 19 | Total Area of Umbræ, *for* 96, *read* 94. |
| *83* | 2 | 21–22 | *Insert* between lines 21 and 22 the following :— |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1756* | 0·804 | 87°·2 | 7°·8 | + 6°·6 | 0 | 24 | |

| | | | |
|---|---|---|---|
| *83* | 2 | 25 | Total Area of Whole Spots, *for* 933, *read* 957. |
| | Footnote. | | *Insert* Group 1756*. Aug. 28. A small spot. |
| *84* | 2 | 2 | No. of Group, *for* 1759, *read* 1757. |
| *89* | 2 | 2 | Greenwich Civil Time, *for* 285·381, *read* 282·151. |
| *98* | 1 | 17 | Longitude, *for* 281°·0, *read* 280°·1. |
| *100* | 2 | 6 | No. of Group, *for* 1813, *read* 1813*. |
| | | 7 | |
| | Footnote. | | *Insert* Group 1813*. Dec. 21. Two very small spots. |

GREENWICH OBSERVATIONS, 1885—*continued.*

PAGE. COL. LINE.

*102* 1 5 Area of Whole Spot, *for* 30, *read* 16.

11 Total Area of Whole Spots, *for* 315, *read* 301.

Photographs representing five days in 1885 have been obtained from the Royal Alfred Observatory, Mauritius, further supplementing the measures published in the *Greenwich Observations* for 1885. The results of the measures of these five photographs follow. These results have been used in the formation of the Ledgers in the present Volume.

| 1885. | | | | ° | ° | ° | | | |
|---|---|---|---|---|---|---|---|---|---|
| 212·414 | M, H | | 0·964 | 247·9 | 134·6 | +22·8 | | | 29 |
| | | | 0·933 | 284·5 | 128·7 | +15·7 | | | 105 |
| | | | 0·903 | 296·1 | 123·5 | +26·1 | | | 189 |
| | | | 0·891 | 252·0 | 119·4 | −13·0 | | | 344 |
| | | 1735 | 0·886 | 250·5 | 118·5 | −14·2 | 0 | 8 | |
| | | 1732 | 0·733 | 248·1 | 103·0 | −11·6 | 10 | 49 | |
| | | 1733*a* | 0·445 | 165·7 | 52·5 | −19·5 | 7 | 40 | |
| M. | | 1733 | 0·486 | 166·7 | 52·3 | −22·2 | 0 | 9 | |
| | | 1733*b* | 0·497 | 160·0 | 48·7 | −21·8 | 33 | 202 | |
| | | 1733 | 0·474 | 156·7 | 47·8 | −19·8 | 0 | 3 | |
| | | 1733 | 0·529 | 159·9 | 47·8 | −23·8 | 0 | 5 | |
| | | 1733 | 0·544 | 160·0 | 47·4 | −24·7 | 0 | 4 | |
| | | 1733 | 0·524 | 156·8 | 46·3 | −22·8 | 11 | 55 | |
| | | | 0·927 | 109·5 | 354·3 | −15·5 | | | 275 |
| Aug. 1 | | Centre | | | (59·2) | (+ 6·0) | (61) | (375) | (922) |
| 233·499 | M, M | | 0·939 | 255·0 | 208·0 | −11·5 | | | 160 |
| M. | | 1750 | 0·768 | 272·8 | 190·9 | + 6·6 | 0 | 2 | 670 |
| | | 1748 | 0·624 | 236·6 | 172·9 | −14·2 | 37 | 224 | |
| Aug. 22 | | Centre | | | (140·5) | (+ 7·0) | (37) | (226) | (227) |
| 234·211 | SP, M | | 0·986 | 252·1 | 208·6 | −16·2 | | | 39 |
| | | | 0·853 | 251·0 | 186·5 | −12·1 | | | 107 |
| | | 1750 | 0·882 | 274·1 | 193·3 | + 7·0 | 8 | 19 | |
| | | 1750 | 0·863 | 273·2 | 191·0 | + 6·4 | 2 | 17 | } 308*c* |
| | | 1750 | 0·845 | 273·4 | 189·0 | + 6·7 | 2 | 24 | |
| | | 1748 | 0·766 | 242·4 | 175·8 | −15·7 | 0 | 1 | |
| | | 1748 | 0·729 | 244·0 | 173·3 | −13·4 | 37 | 203 | } 139*c* |
| M. | | 1748 | 0·718 | 241·8 | 171·8 | −14·5 | 0 | 1 | |
| | | 1754*a* | 0·963 | 103·9 | 58·9 | −11·3 | 35 | 187 | |
| | | 1754 | 0·983 | 102·6 | 53·6 | −11·0 | 0 | 59 | } 516*c* |
| | | 1754 | 0·985 | 100·6 | 52·6 | − 9·1 | 0 | 34 | |
| | | | 0·895 | 107·6 | 70·5 | −12·3 | | | 371 |
| Aug. 23 | | Centre | | | (131·1) | (+ 7·1) | (84) | (545) | (1480) |
| 238·509 | HE, P | | 0·837 | 237·1 | 123 6 | −22·5 | | | 52 |
| | | 1755 | 0·710 | 241·9 | 114·4 | −14·1 | 5 | 32 | |
| | | 1755 | 0·694 | 240·2 | 112·6 | −14·6 | 0 | 4 | |
| | | 1755 | 0·672 | 237·4 | 110·1 | −15·4 | 11 | 45 | |
| | | 1754*a* | 0·414 | 139·5 | 58·4 | −11·4 | 17 | 203 | |
| | | 1754 | 0·449 | 130·8 | 54·2 | −10·3 | 0 | 14 | |
| M. | | 1754 | 0·451 | 118·0 | 50·8 | − 5·7 | 8 | 31 | |
| | | 1756 | 0·832 | 100·9 | 19·4 | − 5·0 | 0 | 24 | |
| | | 1756 | 0·860 | 102·0 | 16·7 | − 6·5 | 0 | 19 | |
| | | 1756 | 0·882 | 98·3 | 13·5 | − 3·9 | 0 | 12 | } 193*c* |
| | | 1756 | 0·891 | 99·3 | 12·5 | − 5·0 | 0 | 79 | |
| | | 1756 | 0·909 | 99·0 | 10·2 | − 5·1 | 13 | 78 | |
| | | 1756* | 0·912 | 86·5 | 8·2 | + 6·1 | 0 | 37 | 99*c* |
| Aug. 27 | | Centre | | | (74·3) | (+ 7·1) | (54) | (578) | (344) |

GREENWICH OBSERVATIONS, 1885—*continued.*

| 1885. | | | | ° | ° | ° | | | |
|---|---|---|---|---|---|---|---|---|---|
| 242·210 | H, SP | | 0·854 | 289·1 | 84·4 | +20·1 | | | 71 |
| | | | 0·818 | 270·1 | 80·3 | + 4·2 | | | 115 |
| | | | 0·770 | 248·6 | 72·2 | −11·4 | | | 361 |
| | | 1754*a* | 0·628 | 242·4 | 59·8 | −11·0 | 12 | 88 | |
| | | 1754 | 0·580 | 243·6 | 57·0 | − 8·8 | 4 | 13 | |
| | | 1754 | 0·582 | 241·0 | 56·8 | −10·2 | 0 | 16 | |
| | | 1754 | 0·612 | 235·9 | 56·7 | −13·9 | 0 | 5 | |
| | | 1754 | 0·581 | 238·5 | 55·6 | −11·4 | 14 | 47 | |
| | | 1754 | 0·557 | 241·9 | 55·1 | − 8·9 | 20 | 54 | |
| | | 1754 | 0·594 | 233·5 | 54·8 | −14·4 | 0 | 4 | |
| | | 1754 | 0·561 | 237·7 | 54·2 | −11·1 | 0 | 7 | |
| M. | | 1758 | 0·450 | 239·9 | 48·4 | − 6·4 | 1 | 4 | |
| | | 1758 | 0·400 | 232·9 | 44·1 | − 7·1 | 4 | 23 | |
| | | 1756 | 0·216 | 168·4 | 22·9 | − 5·0 | 25 | 127 | |
| | | 1756 | 0·229 | 160·6 | 21·0 | − 5·2 | 3 | 19 | |
| | | 1756 | 0·231 | 151·8 | 19·1 | − 4·6 | 1 | 9 | |
| | | 1756 | 0·268 | 140·6 | 15·6 | − 4·8 | 11 | 108 | |
| | | 1756 | 0·326 | 128·7 | 10·7 | − 4·7 | 13 | 65 | |
| | | 1757 | 0·688 | 80·7 | 341·7 | +11·6 | 46 | 238 | } 254*c* |
| | | 1757 | 0·714 | 83·3 | 339·6 | + 9·8 | 28 | 253 | |
| | | | 0·822 | 102·6 | 331·8 | − 6·0 | | | 126 |
| | | | 0·854 | 77·4 | 326·2 | +14·5 | | | 116 |
| | | | 0·939 | 104·1 | 317·7 | −10·6 | | | 162 |
| Aug. 31 | | Centre | | | (25·4) | (+ 7·2) | (182) | (1080) | (1205) |

MEAN AREAS OF UMBRÆ, WHOLE SPOTS, AND FACULÆ FOR EACH ROTATION OF THE SUN, FROM 1884 DECEMBER 31 TO 1885 DECEMBER 20, AND FOR THE YEAR 1885. Page *103.*

MEAN HELIOGRAPHIC LATITUDE OF THE SPOTS UPON THE SUN'S DISC FOR EACH ROTATION OF THE SUN, FROM 1884 DECEMBER 31 TO 1885 DECEMBER 20, AND FOR THE YEAR 1885. Page *104.*

These two Sections are superseded by the corresponding Tables on pages 314–321 in the present Volume.

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## GREENWICH OBSERVATIONS, 1888.

TOTAL PROJECTED AREAS OF UMBRÆ, WHOLE SPOTS, AND FACULÆ FOR EACH DAY, AND MEAN PROJECTED AREAS FOR EACH ROTATION OF THE SUN, AND FOR EACH YEAR FROM 1882 TO 1885. Pages *69* to *68.*

This Section is superseded by the corresponding Tables on pages 305–321 in the present Volume.

# PUBLICATIONS OF THE SOLAR PHYSICS COMMITTEE.

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**MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS TAKEN AT GREENWICH, DEHRA DÛN, AND MELBOURNE, WITH THE DEDUCED HELIOGRAPHIC LONGITUDES AND LATITUDES, 1878–1881.**

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 5 | 1 | 31 | Mean Solar Time, *for* Feb. 26, *read* Feb. 26ᵈ. |
| | 2 | 6–8 | The second photograph on March 5 has not been used for the Ledger in the present Volume. |
| 6 | 2 | 15 | Mean Solar Time, *for* June 4, *read* 153·936. |
| | | | Area of Faculæ, *insert* 530*s*. |
| | | | *After* Line 15 :— |
| | | | Mean Solar Time, *insert* June 4. |
| | | | Total Area of Umbræ, *insert* (9). |
| | | | Total Area of Whole Spots, *insert* (52). |
| | | | Total Area of Faculæ, *insert* (530). |
| 7 | 1 | 4 | Latitude, *for* +12°·8, *read* +12°·7. |
| 8 | 2 | 8 | Latitude, *for* +10°·1, *read* +10°·0. |
| 9 | 2 | 16 | Total Area of Faculæ, *for* 138, *read* 128. |
| 12 | 2 | 44 | Area of Umbra, *for* 6, *read* 0. |
| 13 | 1 | 5 | Longitude, *for* 267°·5, *read* 267°·1. |
| | | 6 | Longitude, *for* 264°·5, *read* 267°·1. |
| | | 25 | Longitude, *for* 266°·5, *read* 266°·1. |
| | | 40 | Longitude, *for* 24·7, *read* 22·7. |
| | 2 | 3 | Longitude, *for* 22°·7, *read* 22·2. |
| 14 | 2 | 35 | Total Area of Umbræ, *for* 122, *read* 112. |
| 15 | 2 | 22–23 | The photograph on Jan. 29 has not been used for the Ledger, or for the computation of Projected Areas in the present Volume. |
| | | 24 | Mean Solar Time, *for* 29·136, *read* 29·036. |
| | | 30 | Latitude, *for* −15°·6, *read* −15°·5. |
| | | 31 | Latitude, *for* +19°·2, *read* +19°·3. |
| 16 | 2 | 36 | Total Area of Whole Spots, *for* 544, *read* 644. |
| | | 40 | Latitude, *for* +28°·2, *read* +28°·3. |
| 17 | 2 | 32–33, 37–38, 45–46 | No. of Group, *for* 312, *read* 312ᵈ. |
| 18 | 1 | 38 | Total Area of Umbræ, *for* 40, *read* 50. |
| | | 41 | Latitude, *for* +19°·7, *read* +19°·6. |
| 19 | 1 | 27 | Latitude, *for* −20°·3, *read* +20°·3. |
| | 2 | 30 | No. of Group, *for* 317, *read* 317ᵈ. |
| 20 | 1 | 11 | Position Angle, *for* 301°·6, *read* 301°·1. |
| | | | Longitude, *for* 201°·9, *read* 201°·2. |
| | | 36 | Distance, *for* 0·859, *read* 0·864. |
| | | | Longitude, *for* 174°·4, *read* 174°·9. |
| | | | Latitude, *for* +19°·1, *read* +19°·5. |
| | | 37 | Distance, *for* 0·859, *read* 0·854. |
| | | | Longitude, *for* 174°·4, *read* 174°·0. |
| | | | Latitude, *for* 19°·0, *read* +18°·6. |
| | | 41 | Distance, *for* 0·867, *read* 0·872. |

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 20 | 1 | 41 | Longitude, *for* 174°·8, *read* 175°·3. |
| | | | Latitude, *for* +18°·9, *read* +19°·0. |
| | | 42 | Distance, *for* 0·867, *read* 0·862. |
| | | | Longitude, *for* 174°·8, *read* 174°·3. |
| | | | Latitude, *for* +19°·0, *read* +18°·5. |
| | 2 | 10 | Position Angle, *for* 244°·6, *read* 244°·4. |
| 21 | 2 | 30 | Distance, *for* 0·394, *read* 0·398. |
| | | 31 | No. of Group, *for* 322, *read* 320. |
| 22 | 2 | 32 | Area of Umbra, *for* 11, *read* 1. |
| 23 | 1 | 13 | Longitude, *for* 87°·6, *read* 87°·7. |
| | | 43 | Total Area of Faculæ, *for* 506, *read* 706. |
| 24 | 1 | 45 | Position Angle, *insert* 60°·5. |
| | 2 | 14 | Longitude, *for* 153°·3, *read* 153°·5. |
| | | 26 | Position Angle, *insert* 55°·2. |
| 25 | 1 | 15 | Longitude, *for* 156°·9, *read* 157°·0. |
| | | 30 | Distance, *for* 0·388, *read* 0·407. |
| | | | Position Angle, *for* 349°·8, *read* 4°·6. |
| | | | Longitude, *for* 90°·0, *read* 83°·9. |
| | | | Latitude, *for* + 22°·4, *read* + 23°·8. |
| | | | Area of Whole Spot, *for* 19, *read* 14. |
| | | 31 | Total Area of Whole Spots, *for* 77, *read* 72. |
| | | 49 | Total Area of Whole Spots, *for* 147, *read* 113. |
| | 2 | 37 | Total Area of Umbræ, *insert* (150). |
| | | | Total Area of Whole Spots, *insert* (619). |
| | | | Total Area of Faculæ, *insert* (1271). |
| 26 | 1 | 52 | Position Angle, *insert* 122°·5. |
| | | 53 | Position Angle, *insert* 69°·3. |
| | 2 | 12 | Total Area of Umbræ, *for* 190, *read* 196. |
| | | 50 | No. of Group, *for* 333, *read* 333ᵈ. |
| 27 | 1 | 6 | No. of Group, *for* 333, *read* 333ᵈ. |
| | | | Area of Faculæ, *insert* 340*f*. |
| | | 7 | Area of Faculæ, *insert* 192*c*. |
| | | 18 | Latitude, *for* — 36°·2, *read* — 36°·0. |
| | | 27 | No. of Group, *for* 333, *read* 333ᵈ. |
| | 2 | 18 | Area of Faculæ, *insert* 722*c*. |
| | | 25 | Area of Faculæ, *insert* 386*c*. |
| 28 | 1 | 39 | Total Area of Umbræ, for 96, *read* 86. |
| 29 | 1 | 50 | Total Area of Whole Spots, *for* 509, *read* 609. |
| | 2 | 12 | Total Area of Faculæ, *insert* (505). |
| 30 | 1 | 17 | Area of Faculæ, *insert* 635*f*. |
| | | 49 | Latitude, *for* 13°·9, *read* 18°·9. |
| | 2 | 35 | Total Area of Whole Spots, *for* 1625, *read* 1004. |
| 31 | 1 | 40 | Total Area of Whole Spots, *for* 197, *read* 199. |
| Between lines. 26 and 27 | 2 | | Distance, *insert* 0·982. Position Angle, *insert* 109°·8. Area, *insert* 319. |
| 31 | 2 | 45 | Total Area of Umbræ, *insert* (127). |
| | | | Total Area of Whole Spots, *insert* (605). |
| | | | Total Area of Faculæ, *insert* (1067). |

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 32 | 2 | 4 | Position Angle, *for* 206°·6, *read* 206°·5. |
| | | 8 | Longitude, *for* 237°·6, *read* 237°·7. |
| 33 | 1 | 44 | Position Angle, *for* 237°·6, *read* 237°·7. |
| | 2 | 8 | Distance, *for* 0·673, *read* 0·675. |
| 34 | 1 | 20 | Position Angle, *for* 113°·5, *read* 113°·8. |
| | | 30 | Longitude, *for* 91°·4, *read* 91°·6. |
| 35 | 1 | 19 | No. of Group, *for* 360, *read* 361. |
| | | 24 | Position Angle, *for* 288°·9, *read* 289°·9. |
| | 2 | 16 | Latitude, *for* — 19°·2, *read* 20° 2. |
| | | 45 | Area of Faculæ, *dele* 49. |
| | | 46 | Total Area of Faculæ, *for* 49, *read* 0. |
| 36 | 1 | 49 | Total Area of Faculæ, *for* 2618, *read* 2718. |
| | 2 | 26 | Area of Faculæ, *insert* 117*p*. |
| | | 45 | No. of Group, *for* 373, *read* 373*. |
| 37 | 1 | 8 | No. of Group, *for* 373, *read* 373*. |
| | | 33 | No. of Group, *for* 380, *read* 380‡. |
| | | | Position Angle, *for* 67°·9, *read* 67°·8. |
| | | 40, 41, 42 | No. of Group, *for* 380, *read* 380‡. |
| | | 48 | No. of Group, *for* 380, *read* 380†. |
| | 2 | 3, 4 | No. of Group, *for* 380, *read* 380*. |
| | | 7, 23, 24, 25, 26, 27, 32, 33, 34, 35, 44, 45, 47 | No. of Group, *for* 380, *read* 380†. |
| 38 | 1 | 10, 12, 13, 28 | No. of Group, *for* 380 , *read* 380†. |
| | | 49 | Total Area of Umbræ, *insert* (139). |
| | | 49 | Total Area of Whole Spots, *insert* (574). |
| | | 49 | Total Area of Faculæ, *insert* (1090). |
| 39 | 1 | 51 | Total Area of Umbræ, *for* 22, *read* 26. |
| | | 51 | Total Area of Whole Spots, *for* 91, *read* 81. |
| 40 | 1 | 17 | Distance, *for* 0·916, *read* 0·915. |
| | | 44 | Total Area of Umbræ, *insert* (257). |
| | | | Total Area of Whole Spots, *insert* (1120). |
| | | | Total Area of Faculæ, *insert* (2594). |
| 40 | 2 | 5 | Distance, *for* 0·989, *read* 0·939. |
| 41 | 2 | 44 | Area of Faculæ, *insert* 344*c*. |
| 42 | 1 | 8 | Position Angle, *insert* 62°·3. |
| 43 | 1 | 8 | Mean Solar Time, *for* Dec. 30, *read* Dec. 30*. |
| | | | Total Area of Whole Spots, *for* 560, *read* 494. |
| 44 | 1 | Between lines 36 and 37 | Distance, *insert* 0·918. |
| | | | Position Angle, *insert* 108°·8. |
| | | | Area of Faculæ, *insert* 286. |
| | 2 | 31 | Total Area of Whole Spots, *for* 738, *read* 753. |
| 45 | 1 | 26 | Total Area of Whole Spots, *for* 1443, *read* 1439. |
| | 2 | 11 | Total Area of Faculæ, *for* 1902, *read* 1922. |
| | | 30 | Total Area of Umbræ, *for* 243, *read* 253. |
| 46 | 2 | 17 | Position Angle, *insert* 73°·0. |
| 47 | 1 | 17 | Total Area of Faculæ, *for* 7264, *read* 6964. |
| 47 | 1 | 33 | Total Area of Whole Spots, *for* 508, *read* 518. |
| | 2 | 10 | Total Area of Umbræ, *for* 194, *read* 204. |
| | | 44 | Total Area of Faculæ, *for* 2418, *read* 2218. |
| | | 45 | Mean Solar Time, *insert* 54·923. |
| 48 | 2 | 22 | Position Angle has been omitted, and cannot now be supplied. |
| | | 41 | Latitude, *for* +18°·5, *read* —18°·5. |
| | | 42 | Latitude, *for* —19°·7, *read* +19°·7. |
| | | 50 | Area of Umbræ, *for* 5, *read* 9. |
| | | 51 | Distance, *for* 0·779, *read* 0·979. |
| 49 | 2 | 15 | No. of Group, *for* 434, *read* 433. |
| | | 30 | Mean Solar Time, *for* 74·695, *read* 74·965. |
| 50 | 1 | 3 | Area of Faculæ, *insert* 586*f*. |
| | 2 | 51, 7, 8, 9, 15, 16, 22 | No. of Group, *for* 441, *read* 441*. |
| | | 44 | Area of Faculæ, *for* 118, *read* 108. |
| 51 | 2 | 13 | Area of Faculæ, *insert* 262*c*. |
| | | 14 | Area of Faculæ, *insert* 445*np*. |
| 52 | 1 | 3 | Latitude, *for* +23°·1, *read* +23°·0. |
| | 2 | 47 | Total Area of Whole Spots, *for* 546, *read* 775. |
| 53 | 1 | 36 | No. of Group, *for* 465, *read* 465*. |
| | 2 | 27 | Mean Solar Time, *for* May 4, *read* May 4*. |
| 54 | 1 | 24 | Mean Solar Time, *for* May 8, *read* May 8*. |
| | | 25 | Area of Faculæ, *for* 227, *read* 277. |
| | | 43 | Mean Solar Time, *for* May 10, *read* May 10*. |
| | | | Total Area of Umbræ, *for* 77, *read* 87. |
| | 2 | 39 | Area of Faculæ, *for* 413, *read* 423. |
| | | 46 | Longitude, *for* 207°·0, *read* 206°·8. |
| 55 | 1 | 11 | Area of Faculæ, *insert* 497*p*. |
| | | 14 | Area of Faculæ, *for* 1213, *read* 1213*f*. |
| | | 14–19 | *Diminish* all longitudes on May 21 by 1°·0. |
| | | 29 | Total Area of Umbræ, *for* 66, *read* 68. |
| 57 | 2 | 40 | Total Area of Faculæ, *for* 560, *read* 1316. |
| 58 | 2 | 7 | Total Area of Umbræ, *for* 164, *read* 128. |
| | | | Total Area of Whole Spots, *for* 725, *read* 718. |
| | | | Total Area of Faculæ, *for* 3252, *read* 4314. |
| | | 30 | Area of Whole Spot, *for* 70, *read* 75. |
| | | 37 | Total Area of Whole Spots, *for* 1396, *read* 1401. |
| 59 | 1 | 46 | Position Angle, *insert* 201°·8. |
| | | 47 | Position Angle, *insert* 120°·0. |
| | 2 | 18 | Position Angle, *for* 65°·3, *read* 65°·0. |
| 63 | 1 | 7 | Total Area of Faculæ, *for* 4929, *read* 5129. |
| | 2 | 5 | Total Area of Umbræ, *for* 93, *read* 95. |
| | | 14 | Position Angle, *insert* 74°·8. |
| | | 15 | Position Angle, *insert* 140°·7. |
| | | 25 | Area of Faculæ, *insert* 849*p*. |
| 64 | 1 | 4 | Area of Faculæ, *for* 255, *read* 270. |
| | 2 | 47 | Position Angle, *for* 72°·7, *read* 72°·4. |
| 65 | 2 | 18 | Area of Faculæ, *insert* 11338*p*. |
| 66 | 1 | 22 | Area of Faculæ, *insert* 572*f*. |
| | | 23 | Area of Faculæ, *insert* 188*p*. |
| | | 30 | Area of Faculæ, *for* 316, *read* 326. |
| 67 | 1 | 18 | Area of Faculæ, *insert* 260. |
| | | 27 | Position Angle, *for* 53°·0, *read* 54°·0. |
| | | 40 | Area of Faculæ, *insert* 585*c*. |

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 67 | 1 | 48 | Position Angle, *for* 60°·1, *read* 60°·0. |
| 68 | 2 | 26 | Area of Faculæ, *insert* 74°·2. |
| | | 27 | Area of Faculæ, *insert* 116·5. |
| 69 | 1 | 16 | Area of Umbra, *for* 24, *read* 22. |
| | 2 | 21 | Total Area of Whole Spots, *for* 655, *read* 685. |
| | | 31 | Total Area of Whole Spots, *for* 886, *read* 916. |
| | | 53 | Mean Solar Time, *for* Oct. 12, *read* Oct. 12*. |
| 71 | 1 | 28 | Total Area of Umbræ, *for* 210, *read* 209. |
| | 2 | 25 | Distance, *for* 0·956, *read* 0·966. |
| 72 | 2 | 38 | Longitude, *for* 251·6, *read* 251°·9. |
| 73 | 1 | 19–29 | The Indian photograph for Nov. 16 does not show Groups 601 and 608, which are seen on the Greenwich photograph for that date. The Greenwich measures for those two groups have therefore been adopted in the formation of the Ledgers in the present volume; increasing the Total Area for Whole Spots in line 29, *from* 1105 *to* 1117. |
| 75 | 1 | 23 | Total Area of Umbræ, *for* 191, *read* 201. |
| 77 | 1 | 13 | Area of Faculæ, *insert* 204a. |
| | 2 | 14 | Total Area of Umbræ. *for* 32, *read* (32). |

RECORD OF ABSENCE OF SPOTS IN THE YEARS 1878–1881.

| PAGE. | LINE. | |
|---|---|---|
| 77 | 8 | 1878 March, *insert* 91 I. |
| 78 | 12 | 1879 March, *insert* 16 I. |
| | 15 | 1879 May, *for* 17 I, *read* 17. |
| | 23 | 1879 November, *insert* 6. |
| | 27 | 1880 February, *insert* 14 Me. |
| | | 1880 February, *for* 16 I, *read* 16 Me. |
| | 28 | 1880 March, *for* 23 I, *read* 23. |
| | 29 | 1880 April, *for* 22 I, *read* 22 Me. |
| | 31 | 1880 June, *insert* 14 Me. |
| | 32 | 1880 July, *insert* 17 Me. |
| | 36 | 1881 January, *insert* 15 I. |
| | 37 | 1881 August, *insert* 14 I, *and* 16 I. |
| After 37 | | *Insert* October 31 I. |

# PHOTO-HELIOGRAPHIC RESULTS, 1874-1885.

MEASURES OF POSITIONS AND AREA OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS TAKEN IN THE YEARS, 1874–1877.

Photographs taken on the following additional dates show neither Spots nor Faculæ :—

1874, April 20, 21, 22, 23.
June 8, 9.
October 26, 27, 29.
December 3.
1875, January 28.
February 15, 16.
1876, March 3.
September 12, 20.
November 24, 27, 30.
December 1, 2, 7, 12, 14.
1877, May 30.
June 12, 17, 18, 19, 20, 21, 22.
July 6, 7, 13, 24, 25, 26, 29.
August 9, 12, 16, 17, 18, 20, 21.
September 22.
October 2, 3, 8, 9, 11, 12, 15, 16, 18, 20.
November 20.
December 28.

| PAGE. | COL. | LINE. | |
|---|---|---|---|
| 3 | 2 | 28 | Group 96. *Dele* the entire line. |
| | | 29 | Total Area of Whole Spots, *for* 588, *read* 541. |
| | Footnote | | Group 96, *for* June 25–July 4, *read* June 27–July 4. |
| 8 | 1 | 13 | Area of Faculæ, *insert* 662*p*. |
| | | 19 | Total Area of Faculæ, *for* 4898, *read* 5560. |
| | 2 | 8 | Area of Faculæ, *insert* 1702*p*. |
| | | 10 | Total Area of Faculæ, *for* 0, *read* 1702. |
| 12 | 2 | 24 | Longitude, *for* 316°·3, *read* 320°·4. |
| 13 | 2 | 24 | No. of Group, *for* 150*, *read* 150. |
| 14 | 1 | 23 | Position Angle, *for* 250°·9, *read* 257°·3. |
| | | | Longitude, *for* 9°·5, *read* 9°·9. |
| | | | Latitude, *for* —19°·3, *read* —14°·3. |
| 15 | 2 | 4 | Greenwich Civil Time, *insert* H. |
| 17 | 2 | 16 | *For* No Spots or Faculæ, *read* No photograph. |
| 19 | 2 | 23 | *For* No Spots or Faculæ, *read* No photograph. |
| 21 | 1 | 22 | Greenwich Civil Time, *for* Sept. 23, *read* Sept. 22. |
| 23 | 2 | 28 | *For* No Spots or Faculæ, *read* No photograph. |
| 28 | 1 | 19 | No. of Group, *dele* 201. |
| | 2 | 18 | No. of Group, *dele* 208. |
| 30 | 2 | 14 | *For* No Spots or Faculæ, *read* No photograph. |
| 34 | 2 | 22 | *For* No Spots or Faculæ, *read* No photograph. |
| 35 | 2 | 29 | *For* No Spots or Faculæ, *read* No photograph. |
| 40 | Footnote | | Group 246, *insert* Another distant companion is seen on May 17. |
| 45 | 1 | 12 | Area of Faculæ, *for* 644, *read* 464. |
| | 2 | 4 | Greenwich Civil Time, *for* Dec. 7, *read* Dec. 8. |
| | | 7 | Greenwich Civil Time, *for* Dec. 11, *read* Dec. 14. |
| | | 8 | Greenwich Civil Time, *for* Dec. 14, *read* Dec. 17. |
| | | 10 | Greenwich Civil Time, *for* Dec. 15, *read* Dec. 18. |
| | | 11 | Greenwich Civil Time, *for* Dec. 17, *read* Dec. 26. |

LEDGERS OF AREAS AND POSITIONS OF GROUPS OF SUN SPOTS FOR THE YEARS 1878–1881.

| PAGE. | GROUP. | DATE. | |
|---|---|---|---|
| 89 | 317 | Apr. 8 | Longitude, for 174°·6, *read* 174°·7. |
| | | | Latitude, *for* +19°·0, *read* +18°·8. |
| | | Means | Longitude, *for* 173°·79, *read* 173°·80, |
| | | | Latitude, *for* +18°·30, *read* +18°·28. |
| 96 | 368 | Oct. 4 | Projected Area of Whole Spot, *for* 12, *read* 122. |
| 114 | 487 | June 9 | Projected Area of Whole Spot, *for* 775, *read* 175. |
| 120 | 528 | Aug. 2 | Area of Whole Spot, *for* 511, *read* 51. |
| | | Means | Mean Area of Whole Spot, *for* 274, *read* 228. |
| 126 | 576 | Oct. 4 | Projected Area of Umbra, *for* 40, *read* 37. |
| | | | Area of Umbra, *for* 24, *read* 22. |

Page 85, Group 296, *substitute* the following :—

Group 296.

One small spot, not seen on November 26.

| d | | | | | | ° | ° | ° |
|---|---|---|---|---|---|---|---|---|
| Nov. 25·554 | G | 3 | 15 | 5 | 23 | 27·1 | —12·2 | —70·9 |
| 26 | Ma | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27 | ... | No photograph | | ... | ... | ... | ... | ... |
| 28·547 | G | 17 | 39 | 11 | 25 | 22·5 | —13·3 | —36·1 |
| 29·174 | Ma | 0 | 26 | 0 | 15 | 22·5 | —13·3 | —27·8 |
| Means ... | ... | ... | ... | 4 | 16 | 24·03 | —12·93 | ... |

Page 89, Group 316A, *substitute* the following:—

Group 316A.

A few spots, mostly small, in a stream inclined at a considerable angle to the equator. The group is not seen on March 28.

| 1880.d | | | | | | ° | ° | ° |
|---|---|---|---|---|---|---|---|---|
| Mar. 27·217 | I | 9 | 33 | 5 | 18 | 287·1 | −30·8 | + 4·9 |
| 28 | ... | 0 | 0 | 0 | 0 | ... | ... | ... |
| 29·175 | I | 31 | 138 | 20 | 87 | 288·8 | −29·2 | +32·5 |
| 30·312 | I | 30 | 146 | 24 | 114 | 288·9 | −28·9 | +47·5 |
| 31·303 | I | 16 | 84 | 16 | 84 | 287·3 | −28·7 | +58·9 |
| Means ... | ... | ... | ... | 13 | 61 | 288·03 | −29·40 | ... |

Pages 93 and 94, Group 349, *substitute* the following:—

Group 349.

A small spot on August 21, not seen on August 22. The group has re-appeared as a pair of small spots by August 23. It is not seen on August 25, 26 or 27, but has reappeared again by August 28, and has greatly increased in size by August 30 and 31.

| d | | | | | | ° | ° | ° |
|---|---|---|---|---|---|---|---|---|
| Aug. 21·503 | G | 17 | 33 | 19 | 36 | 71·2 | +23·1 | −63·4 |
| 22·261 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·205 | I | 17 | 65 | 12 | 46 | 67·8 | +22·2 | −44·3 |
| 24·216 | I | 35 | 122 | 21 | 72 | 69·8 | +22·7 | −29·0 |
| 25 | ... | 0 | 0 | 0 | 0 | ... | ... | ... |
| 26 | ... | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27 | ... | 0 | 0 | 0 | 0 | ... | ... | ... |
| 28·506 | G | 0 | 39 | 0 | 22 | 66·7 | +22·0 | +24·6 |
| 29·236 | I | 43 | 174 | 27 | 109 | 66·0 | +21·8 | +33·5 |
| 30·285 | I | 95 | 459 | 72 | 348 | 66·8 | +21·6 | +48·2 |
| 31·516 | G | 68 | 469 | 74 | 514 | 66·0 | +21·9 | +63·7 |
| Sept. 1·404 | G | 26 | 252 | 51 | 443 | 65·7 | +22·0 | +74·6 |
| 2·517 | G | 0 | 55 | 0 | 218 | 61·3 | +23·8 | +85·4 |
| Means ... | ... | ... | ... | 21 | 139 | 66·81 | +22·34 | ... |

## LEDGERS OF AREAS AND POSITIONS OF GROUPS OF SUN SPOTS FOR THE YEARS 1882–1885.

| PAGE. | GROUP. | DATE. | |
|---|---|---|---|
| 162 | 862 | Oct. 21 | Projected Area of Whole Spot, *for* 557, *read* 574. |
| | | | Area of Whole Spot, *for* 322, *read* 332. |
| | | | Longitude, *for* 167°·5, *read* 167°·6. |
| 162 | 862 | Oct. 21 | Longitude from Central Meridian, *for* +29°·1, *read* +29°·2. |
| | | Means. | Mean Area of Whole Spot, *for* 170, *read* 172. |
| | | | Mean Longitude, *for* 168°·55, *read* 168°·57. |
| 187 | 1062 | June 27 | Area of Umbra, *for* 209, *read* 228. |
| | | | Area of Whole Spot, *for* 1227, *read* 1391. |
| 187 | 1062 | June 27 | Latitude, *for* +9°·7, *read* +9°·6. |
| | | Means. | Mean Area of Umbra, *for* 218, *read* 220. |
| | | | Mean Area of Whole Spot, *for* 1353, *read* 1366. |
| | | | Mean Latitude, *for* +10°·49, *read* +10°·48. |
| 197 | 1137 | Oct. 8. | Area of Whole Spot, *for* 142, *read* 144. |

Page 162. Group 859, *substitute* the following:—

Group 859.

Four or five small spots arranged in a straight line.

| Oct. 16·191 | 0 | 98 | 0 | 50 | 193·6 | +15·2 | −10·7 |
|---|---|---|---|---|---|---|---|
| 17·323 | 15 | 132 | 8 | 67 | 195·3 | +15·1 | + 5·8 |
| 18·336 | 34 | 69 | 18 | 37 | 194·3 | +15·0 | +18·2 |
| 19·309 | 13 | 77 | 8 | 46 | 194·7 | +15·7 | +31·4 |
| 20·491 | 8 | 75 | 6 | 56 | 195·7 | +15·6 | +48·1 |
| 21·196 | 0 | 16 | 0 | 15 | 196·0 | +15·2 | +57·6 |
| Means ... | ... | ... | 7 | 45 | 194·93 | +15·30 | ... |

Group 859.*

A small spot.

| Oct. 22·635 | 2 | 24 | 4 | 43 | 193·8 | +9·7 | +74·4 |
|---|---|---|---|---|---|---|---|
| Means ... | ... | ... | 4 | 43 | 193·8 | +9·7 | ... |

## TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ FOR EACH DAY IN THE YEARS, 1874–1885.

| PAGE. | DATE. | |
|---|---|---|
| 290 | 1874 June 25. | Area of Whole Spots, *for* 361, *read* 278. |
| 295 | 1877 March 30. | *For* 0 0 0, *read* No photograph. |
| 301 | 1880 June 28. | Area of Faculæ, *for* 1033, *read* 1580. |
| 311 | 1885 August 30. | Area of Faculæ, *for* 285, *read* 993. |

ROYAL OBSERVATORY, GREENWICH.

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# MEASURES OF POSITIONS AND AREAS

OF

# SUN SPOTS AND FACULÆ

ON

# PHOTOGRAPHS

TAKEN

AT GREENWICH, AT HARVARD, AND AT MELBOURNE,

WITH THE DEDUCED

# HELIOGRAPHIC LONGITUDES AND LATITUDES.

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1874—1877.

## MEASURES of POSITIONS and AREAS of SUN SPOTS and FACULÆ on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at HARVARD COLLEGE OBSERVATORY, CAMBRIDGE, U.S.A., and at the GOVERNMENT OBSERVATORY, MELBOURNE, in the Years 1874 to 1877.

NOTE.—The Greenwich Civil Time at which the Photograph was taken is expressed by the Day of the Year and decimals of a day, reckoning from Midnight, January $1^d\ 0^h$.
For convenience of reference, the Month and Day of the Month (Civil Reckoning) are added.
The letter H. signifies that the photograph was taken at Harvard; the letters Me. that the photograph was taken at Melbourne; the time given is Greenwich Civil Time.
The position-angles are reckoned from the North Pole of the Sun's Axis in the direction N., E., S., W., N.
The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric. The longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 106·485 | JB, B | 82 | 0·388 | 61·2 | 113·3 | + 5·8 | 0 | 113 | |
| Apr. 17 | | Centre | | | (133·2) | (− 5·3) | (0) | (113) | (0) |
| 107·506 | JB, B | 82 | 0·210 | 26·7 | 114·3 | + 5·6 | 0 | 60 | |
| Apr. 18 | | Centre | | | (119·7) | (− 5·2) | (0) | (60) | (0) |
| 116·556 | JB, B | 83 | 0·899 | 101·7 | 296·0 | − 12·4 | 0 | 171 | |
| Apr. 27 | | Centre | | | (0·1) | (− 4·4) | (0) | (171) | (0) |
| 117·574 | M, M | 83 | 0·766 | 102·6 | 297·0 | − 12·4 | 41 | 221 | |
| Apr. 28 | | Centre | | | (346·7) | (− 4·3) | (41) | (221) | (0) |
| 118·663 | M, M | 83 | 0·594 | 105·8 | 296·6 | − 12·6 | 33 | 189 | |
| Apr. 29 | | Centre | | | (332·3) | (− 4·2) | (33) | (189) | (0) |
| 119·577 | JB, B | 83 | 0·428 | 112·1 | 296·3 | − 13·0 | 40 | 205 | |
| | | 84 | 0·284 | 316·8 | 331·5 | + 7·9 | 0 | 24 | |
| Apr. 30 | | Centre | | | (320·2) | (− 4·1) | (40) | (229) | (0) |
| 120·539 | M, M | 83 | 0·249 | 130·0 | 296·2 | − 13·0 | 32 | 191 | |
| | | 84 | 0·455 | 295·6 | 331·8 | + 7·7 | 0 | 34 | |
| | | 85 | 0·893 | 92·1 | 244·4 | − 3·7 | 0 | 42 | |
| May 1 | | Centre | | | (307·5) | (− 4·0) | (32) | (267) | (0) |
| 121·499 | JB, B | 83 | 0·167 | 187·3 | 296·0 | − 13·3 | 45 | 178 | |
| | | 84 | 0·622 | 288·1 | 331·3 | + 8·0 | 0 | 29 | |
| | | 85 | 0·777 | 91·9 | 243·9 | − 3·9 | 11 | 132 | |
| May 2 | | Centre | | | (294·8) | (− 3·9) | (56) | (339) | (0) |
| 123·571 | JB, B | 83 | 0·500 | 248·6 | 295·9 | − 13·7 | 25 | 164 | |
| | | 85 | 0·330 | 93·8 | 248·2 | − 4·7 | 28 | 314 | |
| May 4 | | Centre | | | (267·4) | (− 3·6) | (53) | (478) | (0) |
| 1874. | | | | ° | ° | ° | | | |
| 124·490 | JB, B | 83 | 0·660 | 253·2 | 295·6 | − 13·6 | 16 | 133 | |
| | | 85 | 0·128 | 102·6 | 248·1 | − 5·1 | 31 | 277 | |
| May 5 | | Centre | | | (255·2) | (− 3·5) | (47) | (410) | (0) |
| 125·432 | JB, B | 83 | 0·797 | 256·0 | 295·1 | − 13·2 | 21 | 188 | |
| | | 85 | 0·083 | 245·6 | 247·1 | − 5·4 | 11 | 324 | |
| | | 86 | 0·951 | 82·0 | 171·5 | + 6·5 | 0 | 248 | |
| May 6 | | Centre | | | (242·8) | (− 3·4) | (32) | (760) | (0) |
| 126·515 | JB, B | 83 | 0·920 | 256·5 | 295·2 | − 13·7 | 34 | 188 | |
| | | 85 | 0·344 | 263·8 | 248·4 | − 5·3 | 39 | 264 | |
| | | 86 | 0·848 | 79·1 | 171·5 | + 7·4 | 72 | 467 | |
| | | 87 | 0·953 | 96·2 | 156·1 | − 6·9 | 93 | 954 | |
| May 7 | | Centre | | | (228·5) | (− 3·3) | (238) | (1873) | (0) |
| 127·552 | M, M | 85 | 0·558 | 264·8 | 248·5 | − 5·6 | 42 | 258 | |
| | | 86 | 0·700 | 75·8 | 171·7 | + 7·5 | 98 | 494 | |
| | | 87 | 0·859 | 95·8 | 155·6 | − 6·6 | 39 | 1075 | |
| May 8 | | Centre | | | (214·7) | (− 3·2) | (179) | (1827) | (0) |
| 128·497 | JB, B | 85 | 0·721 | 265·9 | 248·3 | − 5·1 | 35 | 233 | |
| | | 86 | 0·537 | 70·9 | 171·6 | + 7·4 | 64 | 378 | |
| | | 87 | 0·735 | 96·7 | 155·1 | − 7·0 | 130 | 852 | |
| | | 88 | 0·787 | 299·3 | 249·1 | +20·5 | 0 | 68 | |
| May 9 | | Centre | | | (202·3) | (− 3·1) | (229) | (1531) | (0) |
| 130·526 | JB, B | 85 | 0·958 | 265·4 | 248·7 | − 5·2 | 0 | 100 | 1149*f* |
| | | 86 | 0·180 | 15·4 | 172·7 | + 7·1 | 4 | 196 | |
| | | 87 | 0·330 | 104·0 | 156·7 | − 7·2 | 52 | 427 | |
| | | 88 | 0·953 | 294·1 | 244·8 | +21·9 | 0 | 44 | |
| May 11 | | Centre | | | (175·4) | (− 2·9) | (56) | (767) | (1149) |

Group 82, April 17–18. Single spot, which breaks up into two on April 18.
Group 83, April 27–May 7. Single spot.
Group 84, April 30–May 2. Small scattered group.
Group 85, May 1–11. A large spot, with several small ones near it.
Group 86, May 6–11. Two large spots.
Group 87, May 7–18. A large group of many spots.
Group 88, May 9–11. A group of three small spots, widely separated.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued*.

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 135·438 | M, M | 87 | 0·732 | 263·1 | 157·2 | − 6·6 | 34 | 235 | |
| | | 89 | 0·929 | 103·6 | 42·5 | −13·4 | 0 | 79 | |
| May 16 | | | | | (110·4) | (− 2·3) | (34) | (314) | (0) |
| 137·441 | JB, B | 87 | 0·967 | 263·6 | 159·1 | − 6·7 | 0 | 92 | |
| | | 89 | 0·657 | 108·2 | 44·3 | −13·4 | 0 | 27 | |
| May 18 | | Centre | | | (84·0) | (− 2·1) | (0) | (119) | (0) |
| 139·445 | JB, B | 89 | 0·295 | 134·3 | 44·9 | −13·6 | 0 | 28 | |
| | | 89* | 0·434 | 125·4 | 35·9 | −16·2 | 47 | 301 | |
| May 20 | | Centre | | | (57·5) | (− 1·9) | (47) | (329) | (0) |
| 140·559 | JB, B | 89 | 0·211 | 190·0 | 44·9 | −13·7 | 0 | 30 | |
| | | 89* | 0·290 | 149·5 | 33·9 | −16·1 | 5 | 192 | |
| May 21 | | Centre | | | (42·7) | (− 1·7) | (5) | (222) | (0) |
| 141·515 | JB, B | 89 | 0·336 | 231·0 | 45·6 | −13·7 | 0 | 16 | |
| | | 89* | 0·265 | 196·9 | 34·6 | −16·2 | 18 | 265 | |
| May 22 | | Centre | | | (30·1) | (− 1·6) | (18) | (281) | (0) |
| 145·442 | JB, B | 89* | 0·876 | 253·5 | 38·2 | −14·9 | 3 | 44 | 1176*sf* |
| | | 90 | 0·875 | 76·4 | 278·2 | +11·3 | 59 | 384 | 733*uf* |
| May 26 | | Centre | | | (338·1) | (− 1·1) | (62) | (428) | (1909) |
| 149·472 | M, B | 90 | 0·223 | 26·5 | 279·0 | +10·8 | 45 | 259 | |
| May 30 | | Centre | | | (284·8) | (− 0·7) | (45) | (259) | (0) |
| 151·481 | JB, B | 90 | 0·412 | 300·5 | 279·4 | +11·6 | 32 | 202 | |
| | | 91 | 0·895 | 98·0 | 195·1 | − 7·3 | 33 | 111 | |
| June 1 | | Centre | | | (258·2) | (− 0·4) | (65) | (313) | (0) |
| 152·527 | JB, B | 90 | 0·600 | 289·3 | 279·4 | +11·2 | 34 | 226 | |
| | | 91 | 0·760 | 98·4 | 195·4 | − 6·6 | 38 | 166 | |
| | | | 0·945 | 82·7 | 173·8 | + 6·8 | | | 818 |
| June 2 | | Centre | | | (244·3) | (− 0·3) | (72) | (392) | (818) |
| 154·466 | JB, B | 90 | 0·878 | 282·5 | 279·3 | +10·9 | 38 | 216 | |
| | | 91 | 0·413 | 107·2 | 195·4 | − 7·0 | 27 | 142 | |
| June 4 | | Centre | | | (218·7) | (− 0·1) | (65) | (358) | (0) |
| 155·466 | JB, B | 90 | 0·966 | 282·0 | 280·0 | +11·6 | 0 | 213 | |
| | | 91 | 0·202 | 127·8 | 196·2 | − 7·0 | 12 | 127 | |
| June 5 | | Centre | | | (205·4) | (+ 0·1) | (12) | (340) | (0) |
| 161·534 | JB, B | 92 | 0·215 | 164·2 | 121·7 | −11·1 | 0 | 50 | |
| June 11 | | Centre | | | (125·1) | (+ 0·8) | (0) | (50) | (0) |
| 162·417 | JB, B | 92 | 0·255 | 213·6 | 121·7 | −11·3 | 0 | 30 | |
| June 12 | | Centre | | | (113·4) | (+ 0·9) | (0) | (30) | (0) |
| 163·409 | JB, B | 92 | 0·396 | 237·9 | 120·2 | −11·1 | 21 | 108 | |
| | | 93 | 0·500 | 285·8 | 129·3 | + 8·7 | 0 | 26 | |
| June 13 | | Centre | | | (100·3) | (+ 1·0) | (21) | (134) | (0) |
| 165·552 | B, B | 92 | 0·790 | 255·9 | 122·8 | −10·2 | 0 | 29 | |
| | | 92* | 0·390 | 237·4 | 91·1 | −10·9 | 0 | 29 | |
| | | 94 | 0·869 | 76·8 | 12·3 | +12·1 | 0 | 126 | |
| June 15 | | Centre | | | (71·9) | (+ 1·3) | (0) | (184) | (0) |
| 169·527 | M, M | 92* | 0·971 | 259·7 | 94·8 | − 9·5 | 0 | 250 | |
| | | 94 | 0·211 | 40·7 | 11·3 | +10·9 | 27 | 418 | |
| June 19 | | Centre | | | (19·3) | (+ 1·8) | (27) | (668) | (0) |
| 172·608 | JB, B | 94 | 0·577 | 285·2 | 12·9 | +10·4 | 54 | 548 | |
| June 22 | | Centre | | | (338·5) | (+ 2·1) | (54) | (548) | (0) |
| 173·469 | JB, B | 94 | 0·736 | 282·3 | 14·0 | +10·5 | 52 | 589 | |
| June 23 | | Centre | | | (327·1) | (+ 2·2) | (52) | (589) | (0) |
| 174·458 | JB, B | 94 | 0·888 | 280·4 | 16·4 | +10·2 | 34 | 481 | |
| | | 95 | 0·975 | 68·9 | 237·3 | +21·1 | 0 | 62 | |
| June 24 | | Centre | | | (314·1) | (+ 2·3) | (34) | (543) | (0) |
| 175·512 | JB, M | 94 | 0·975 | 279·8 | 17·2 | +10·1 | 70 | 428 | 3638 |
| | | 95 | 0·929 | 66·9 | 232·9 | +22·3 | 0 | 113 | |
| | | ~~96~~ | ~~0·459~~ | ~~124·9~~ | ~~277·1~~ | ~~−12·9~~ | ~~0~~ | ~~47~~ | |
| June 25 | | Centre | | | (300·1) | (+ 2·4) | (70) | (~~588~~ 541) | (3638) |
| 177·574 | M, M | 95 | 0·766 | 66·8 | 224·8 | +19·3 | 42 | 373 | |
| | | 96 | 0·277 | 133·7 | 261·0 | − 8·4 | 0 | 17 | |
| June 27 | | Centre | | | (272·8) | (+ 2·7) | (42) | (390) | (0) |

Group 89, May 16–22. Two or three small spots.
Group 89*, May 20–26. Two large spots of irregular shape.
Group 90, May 26–June 5. One large spot of very irregular shape.
Group 91, June 1–5. One well-defined spot of regular shape.
Group 92, June 11–15. Two faint spots.
Group 92*, June 15–19. Two spots.
Group 93, June 13. One small spot.
Group 94, June 15–25. One spot, which greatly increases in size on June 19, and breaks up into several fragments.
Group 95, June 24–July 6. A very scattered group, composed principally of five spots. It undergoes a very rapid change in form and in size during its course.
Group 96, June ~~25~~ 27–July 4. Single spot. On June 29 it has expanded into a long straggling group of small spots. The group undergoes very rapid change in form and size during the whole of its course.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots: Area of UMBRA for each Spot (and for Day). | Spots: Area of WHOLE for each Spot (and for Day). | Faculæ: Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 179·416 | JB, B | 95 | 0·470 | 58·8 | 223·7 | +16·7 | 44 | 319 | |
| | | 96 | 0·327 | 226·6 | 262·3 | −10·1 | 44 | 419 | |
| June 29 | | Centre | | | (248·4) | (+2·9) | (88) | (738) | (0) |
| 180·409 | JB, B | 95 | 0·303 | 36·1 | 224·6 | +17·0 | 27 | 355 | 314 |
| | | 96 | 0·502 | 243·2 | 262·2 | −10·4 | 100 | 733 | |
| | | 97 | 0·766 | 104·1 | 186·7 | − 8·7 | 0 | 22 | |
| June 30 | | Centre | | | (235·3) | (+3·0) | (127) | (1110) | (314) |
| 182·464 | JB, B | | 0·919 | 282·5 | 274·8 | +12·7 | | | 442 |
| | | 95 | 0·394 | 308·9 | 226·7 | +17·3 | 31 | 186 | |
| | | 96 | 0·826 | 255·7 | 262·2 | − 9·9 | 66 | 609 | 2233*c* |
| | | 97 | 0·387 | 122·4 | 188·9 | − 8·8 | 1 | 43 | |
| | | 98 | 0·864 | 77·5 | 148·5 | +12·4 | 0 | 14 | 66*onf* |
| | | 99 | 0·939 | 96·9 | 138·9 | − 5·4 | 18 | 120 | 424*c* |
| July 2 | | Centre | | | (208·1) | (+3·2) | (116) | (972) | (3759) |
| 183·529 | M, M | 95 | 0·582 | 295·5 | 227·2 | +17·2 | 0 | 42 | |
| | | 96 | 0·949 | 258·7 | 264·5 | − 9·6 | 7 | 167 | 1268*c* |
| | | 97 | 0·214 | 163·9 | 190·6 | − 8·5 | 0 | 79 | |
| | | 98 | 0·703 | 74·9 | 150·0 | +12·9 | 22 | 223 | |
| | | 99 | 0·821 | 97·3 | 139·5 | − 4·1 | 33 | 228 | |
| July 3 | | Centre | | | (194·0) | (+3·3) | (62) | (739) | (1268) |
| 184·403 | JB, B | 95 | 0·722 | 291·2 | 227·1 | +17·6 | 20 | 97 | |
| | | 96 | 0·979 | 260·2 | 259·7 | − 8·9 | 0 | 59 | 513*c* |
| | | 97 | 0·265 | 216·4 | 191·5 | − 8·9 | 0 | 11 | |
| | | 98 | 0·529 | 73·8 | 151·4 | +11·4 | 77 | 620 | |
| | | 99 | 0·700 | 102·0 | 139·1 | − 5·8 | 23 | 405 | |
| | | 100 | 0·990 | 101·8 | 101·7 | −11·1 | 0 | 532 | |
| July 4 | | Centre | | | (182·4) | (+3·4) | (120) | (1724) | (513) |
| 186·546 | JB, B | 95 | 0·956 | 286·6 | 227·0 | +16·9 | 0 | 63 | 2456*nf* |
| | | 98 | 0·145 | 20·0 | 151·2 | +11·4 | 174 | 1016 | |
| | | 99 | 0·307 | 118·7 | 138·4 | − 4·9 | 88 | 441 | |
| | | 100 | 0·815 | 105·2 | 101·2 | −10·1 | 109 | 620 | 2130*f* |
| | | 101 | 0·435 | 82·2 | 128·4 | + 6·6 | 14 | 85 | |
| July 6 | | Centre | | | (154·1) | (+3·6) | (385) | (2225) | (4586) |
| 187·454 | JB, B | | 0·956 | 290·8 | 214·9 | +20·9 | | | 470 |
| | | 98 | 0·202 | 309·3 | 151·2 | +11·0 | 154 | 1228 | |
| | | 99 | 0·165 | 155·1 | 138·1 | − 4·8 | 46 | 307 | |
| | | 100 | 0·686 | 110·1 | 101·2 | −10·8 | 83 | 529 | 1346*f* |
| | | 101 | 0·250 | 77·7 | 127·9 | + 6·7 | 0 | 23 | |
| July 7 | | Centre | | | (142·1) | (+3·7) | (283) | (2087) | (1816) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots: Area of UMBRA for each Spot (and for Day). | Spots: Area of WHOLE for each Spot (and for Day). | Faculæ: Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 188·513 | JB, B | | 0·955 | 275·0 | 200·7 | + 5·9 | | | 201 |
| | | | 0·888 | 256·5 | 189·0 | −10·2 | | | 632 |
| | | 98 | 0·432 | 287·2 | 152·8 | +10·8 | 148 | 1301 | |
| | | 99 | 0·232 | 229·4 | 138·1 | − 4·8 | 55 | 329 | |
| | | 100 | 0·502 | 117·9 | 101·4 | −10·1 | 103 | 514 | |
| | | 101 | 0·141 | 277·6 | 136·0 | + 4·9 | 0 | 19 | |
| July 8 | | Centre | | | (128·0) | (+3·9) | (306) | (2163) | (833) |
| 189·535 | M, M | | 0·966 | 257·7 | 188·2 | −10·8 | | | 271 |
| | | 98 | 0·637 | 283·2 | 153·5 | +11·4 | 179 | 1283 | |
| | | 99 | 0·447 | 249·7 | 139·3 | − 5·3 | 25 | 213 | |
| | | 100 | 0·332 | 138·6 | 101·7 | −10·5 | 83 | 427 | |
| | | 101 | 0·379 | 272·1 | 136·7 | + 4·5 | 0 | 10 | |
| | | | 0·921 | 76·0 | 47·4 | +14·1 | | | 298 |
| July 9 | | Centre | | | (114·5) | (+4·0) | (287) | (1933) | (569) |
| 190·501 | JB, B | 98 | 0·779 | 281·5 | 152·7 | +11·5 | 130 | 858 | |
| | | 99 | 0·627 | 256·5 | 139·3 | − 5·2 | 20 | 113 | |
| | | 100 | 0·248 | 180·1 | 101·7 | −10·2 | 47 | 424 | |
| | | 102 | 0·807 | 74·9 | 48·3 | +14·5 | 0 | 29 | |
| July 10 | | Centre | | | (101·7) | (+4·1) | (197) | (1424) | (0) |
| 193·549 | JB, B | 98*a* | 0·975 | 275·3 | 138·6 | + 6·1 | 0 | 118 | 998*f* |
| | | 99 | 0·980 | 263·5 | 139·1 | − 5·5 | 0 | 72 | 297*f* |
| | | 100 | 0·685 | 248·7 | 101·8 | −11·0 | 97 | 479 | |
| | | 102 | 0·303 | 58·0 | 46·3 | +13·4 | 14 | 100 | |
| July 13 | | Centre | | | (61·4) | (+4·4) | (111) | (769) | (1295) |
| 194·512 | JB, B | 100 | 0·828 | 253·6 | 102·4 | −10·9 | 54 | 236 | |
| | | 102 | 0·174 | 14·4 | 46·1 | +14·1 | 0 | 47 | |
| | | 103 | 0·975 | 71·8 | 331·1 | +18·7 | 0 | 87 | |
| July 14 | | Centre | | | (48·6) | (+4·4) | (54) | (370) | (0) |
| 195·443 | JB, B | 100 | 0·923 | 257·3 | 102·1 | − 9·9 | 151 | 445 | 1162*f* |
| | | 102 | 0·231 | 315·2 | 45·9 | +13·8 | 38 | 141 | |
| | | 103 | 0·909 | 72·9 | 331·1 | +17·4 | 55 | 141 | 563*f* |
| | | 104 | 0·452 | 68·7 | 10·8 | +13·5 | 0 | 53 | |
| July 15 | | Centre | | | (36·3) | (+4·5) | (244) | (780) | (1725) |
| 196·524 | JB, B | 100 | 0·991 | 258·6 | 102·8 | −10·5 | 0 | 537 | 1749*f* |
| | | 102 | 0·527 | 286·8 | 53·0 | +12·7 | 28 | 185 | |
| | | 103 | 0·786 | 70·1 | 331·1 | +18·5 | 36 | 174 | 1352*f* |
| | | 104* | 0·599 | 85·8 | 345·2 | + 6·2 | 0 | 77 | |
| | | 104 | 0·269 | 50·1 | 9·8 | +14·4 | 0 | 17 | |
| July 16 | | Centre | | | (22·0) | (+4·6) | (64) | (990) | (3101) |

Group 97, June 30–July 4. One small faint spot. It breaks up into a cluster of very small spots on July 2.
Group 98, July 2–13. Two spots. They are small on July 2, but much larger on the following days, and form two streams. Only one spot of the Group, 98*a*, is still on the disc on July 13.
Group 99. July 2–13. At first a single well-defined spot. On July 3 and 4 a row of small spots forms immediately behind it. Group 100, July 4–16. One large regular spot.
Group 101, July 6–9. Two spots, the first being very small. They greatly decrease in size on July 7, and on July 8 one disappears altogether. The spots 98 to 101 seem to suffer continual changes.
Group 102, July 10–18. On July 10 one small spot. On July 13 it has become two of much larger size. These two spots become more and more widely separated, increase in size, and break up into several portions as the group crosses the Sun.
Group 103, July 14–24. One large regular spot. Group 104, July 15–16. At first one faint spot, which breaks up into two or three on July 16.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 197·516 | M, M | 102 | 0·758 | 279·8 | 58·1 | +10·5 | 41 | 258 | |
| | | 103 | 0·644 | 66·5 | 330·6 | +18·6 | 29 | 164 | |
| | | 104* | 0·386 | 84·4 | 346·2 | + 6·5 | 36 | 328 | |
| July 17 | | Centre | | | (8·9) | (+4·7) | (106) | (750) | (0) |
| 198·511 | M, B | 102 | 0·879 | 279·3 | 57·4 | +10·5 | 34 | 168 | 1129*p* |
| | | 103 | 0·477 | 59·5 | 330·2 | +18·3 | 22 | 127 | |
| | | 104* | 0·166 | 81·2 | 346·3 | + 6·2 | 81 | 436 | |
| July 18 | | Centre | | | (355·7) | (+4·8) | (137) | (731) | (1129) |
| 200·513 | JB, B | | 0·868 | 283·2 | 30·7 | +13·3 | | | 1603 |
| | | 103 | 0·233 | 358·7 | 329·3 | +18·4 | 22 | 77 | |
| | | 104* | 0·319 | 275·8 | 347·7 | + 6·6 | 138 | 752 | |
| | | | 0·910 | 70·3 | 264·6 | +19·2 | | | 1670 |
| | | | 0·877 | 100·0 | 268·2 | − 7·1 | | | 1168 |
| July 20 | | Centre | | | (329·2) | (+5·0) | (160) | (829) | (4441) |
| 201·503 | JB, B | | 0·875 | 281·0 | 17·3 | +12·1 | | | 1074 |
| | | 103 | 0·316 | 317·7 | 329·0 | +18·4 | 15 | 54 | |
| | | 104* | 0·526 | 273·3 | 347·9 | + 6·0 | 172 | 714 | |
| | | | 0·827 | 69·2 | 261·0 | +20·0 | | | 614 |
| | | | 0·825 | 108·8 | 263·2 | −12·3 | | | 924 |
| July 21 | | Centre | | | (316·1) | (+5·1) | (187) | (768) | (2612) |
| 203·497 | JB, B | 103 | 0·645 | 293·2 | 328·4 | +18·8 | 8 | 30 | |
| | | 104* | 0·851 | 274·4 | 348·2 | + 6·5 | 148 | 1075 | 625*np* |
| | | 105 | 0·970 | 86·0 | 213·7 | + 5·2 | 52 | 231 | 713*np* |
| July 23 | | Centre | | | (289·8) | (+5·2) | (208) | (1336) | (1338) |
| 204·565 | JB, B | 103 | 0·805 | 288·9 | 328·8 | +18·3 | 0 | 24 | |
| | | 104* | 0·957 | 274·4 | 348·9 | + 5·8 | 158 | 993 | 499*n* |
| | | 105 | 0·872 | 87·0 | 214·9 | + 5·3 | 49 | 261 | 292*c* |
| July 24 | | Centre | | | (275·6) | (+5·3) | (207) | (1278) | (791) |
| 205·460 | JB, B | 104* | 0·985 | 274·7 | 344·2 | + 5·6 | 0 | 71 | 753*nf* |
| | | 105 | 0·750 | 88·4 | 215·2 | + 4·8 | 56 | 299 | 426*f* |
| July 25 | | Centre | | | (263·8) | (+5·4) | (56) | (370) | (1179) |
| 210·452 | JB, B | | 0·896 | 291·7 | 260·9 | +22·0 | | | 337 |
| | | | 0·935 | 259·5 | 265·1 | − 7·8 | | | 673 |
| | | 105 | 0·315 | 277·0 | 216·1 | + 7·7 | 55 | 276 | |
| | | 106*a* | 0·553 | 79·6 | 164·3 | +10·5 | 3 | 117 | } |
| | | 106*b* | 0·688 | 78·8 | 154·4 | +11·9 | 64 | 347 | } 200*nf* |
| | | 106*c* | 0·751 | 88·2 | 149·1 | + 5·2 | 28 | 170 | } |
| July 30 | | Centre | | | (197·3) | (+5·8) | (150) | (910) | (1210) |

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|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 211·420 | JB, B | | 0·951 | 294·3 | 257·5 | +25·0 | | | 586 |
| | | 105 | 0·527 | 275·5 | 216·8 | + 7·9 | 44 | 232 | |
| | | 106*a* | 0·372 | 75·1 | 163·6 | +10·9 | 4 | 86 | |
| | | 106*b* | 0·515 | 76·1 | 154·4 | +12·1 | 51 | 312 | |
| | | 106*c* | 0·579 | 89·0 | 149·5 | + 5·4 | 54 | 223 | |
| | | 107 | 0·954 | 80·8 | 112·0 | +10·5 | 44 | 189 | 566*f* |
| July 31 | | Centre | | | (185·0) | (+5·9) | (197) | (1042) | (1152) |
| 214·434 | JB, B | 105 | 0·951 | 275·8 | 217·4 | + 7·4 | 43 | 153 | 506*f* |
| | | 106*b* | 0·201 | 309·1 | 154·3 | +13·2 | 44 | 256 | |
| | | 106*c* | 0·050 | 279·7 | 147·9 | + 6·5 | 45 | 237 | |
| | | 107 | 0·551 | 79·8 | 111·8 | +10·7 | 41 | 313 | |
| | | 108 | 0·688 | 128·5 | 110·2 | −20·3 | 42 | 193 | |
| | | 109 | 0·697 | 112·8 | 104·4 | −11·1 | 25 | 72 | |
| | | | 0·969 | 79·5 | 68·8 | +11·8 | | | 299 |
| Aug. 3 | | Centre | | | (145·1) | (+6·1) | (240) | (1224) | (805) |
| 217·437 | JB, B | | 0·902 | 247·7 | 166·0 | −17·0 | | | 160 |
| | | 106*b* | 0·757 | 282·3 | 154·7 | +13·4 | 37 | 207 | } |
| | | 106*d* | 0·725 | 274·0 | 152·0 | + 7·2 | 38 | 207 | } 1011*p* |
| | | 106*e* | 0·653 | 270·8 | 146·2 | + 5·3 | 5 | 96 | } |
| | | 107 | 0·153 | 306·6 | 112·6 | +11·4 | 38 | 184 | |
| | | 108 | 0·458 | 191·5 | 110·9 | −20·3 | 47 | 183 | |
| | | 109 | 0·306 | 176·4 | 104·3 | −11·4 | 20 | 73 | |
| | | | 0·892 | 107·5 | 45·1 | −12·5 | | | 215 |
| | | | 0·932 | 77·1 | 36·1 | +14·3 | | | 879 |
| Aug. 6 | | Centre | | | (105·4) | (+6·3) | (185) | (950) | (2265) |
| 219·451 | JB, B | 106*e* | 0·987 | 273·6 | 159·7 | + 4·6 | 0 | 40 | } |
| | | 106*b* | 0·967 | 282·3 | 154·8 | +13·5 | 25 | 229 | } 1439*f* |
| | | 106*d* | 0·958 | 275·3 | 152·4 | + 6·9 | 39 | 387 | } |
| | | 107 | 0·563 | 281·4 | 112·9 | +11·6 | 26 | 153 | |
| | | 108 | 0·683 | 230·5 | 112·9 | −20·4 | 71 | 317 | 262*p* |
| | | 109 | 0·519 | 234·5 | 104·2 | −11·7 | 14 | 56 | |
| | | 110 | 0·990 | 88·7 | 356·9 | + 2·2 | 80 | 518 | 2811*n* |
| | | | 0·891 | 114·2 | 20·1 | −18·2 | | | 158 |
| Aug. 8 | | Centre | | | (78·8) | (+6·4) | (255) | (1700) | (4670) |
| 221·431 | JB, B | 107 | 0·864 | 280·1 | 112·8 | +12·0 | 40 | 177 | 643*nf* |
| | | 108 | 0·930 | 245·0 | 116·4 | −20·4 | 18 | 188 | 1129*f* |
| | | 109 | 0·814 | 250·8 | 104·1 | −11·5 | 14 | 45 | 337*n* |
| | | 110 | 0·821 | 92·0 | 357·6 | + 2·1 | 103 | 502 | 1773*nf* |
| | | 111 | 0·987 | 110·2 | 335·0 | −18·6 | 80 | 900 | 775*c* |
| Aug. 10 | | Centre | | | (52·6) | (+6·5) | (255) | (1812) | (4657) |

Group 104*, July 16–25. A very faint close cluster of small spots. The group has partly passed round the limb on July 25.
Group 105, July 23–August 3. One regular spot.
Group 106, July 30–August 8. A number of spots in a fine stream. *b*, the leader, on August 3 and the succeeding days, is a large regular spot.
Group 107, July 31–August 11. One large spot, and two or three small fragments near it. It gradually diminishes in size.
Group 108, August 3–10. A long line of small spots. It is seen much foreshortened on August 10, being very close to the limb, and is therefore difficult to measure.
Group 109, August 3–11. One small spot.
Group 110, August 8–20. A large regular spot.
Group 111, August 10–22. Three spots, one very large.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 222·513 | JB, B | | 0·960 | 245·9 | 107·8 | −20·9 | | | 982 |
| | | 107 | 0·966 | 280·4 | 114·0 | +11·8 | 30 | 123 | 797*f* |
| | | 109 | 0·931 | 254·5 | 104·5 | −11·8 | 0 | 45 | 390*nf* |
| | | 110 | 0·652 | 93·9 | 357·9 | + 2·5 | 95 | 536 | 714*nf* |
| | | 111 | 0·936 | 111·9 | 332·7 | −17·7 | 170 | 1244 | 1068*c* |
| Aug. 11 | | Centre | | | (38·3) | (+6·6) | (295) | (1948) | (3951) |
| 223·439 | JB, B | | 0·941 | 255·8 | 92·1 | −10·2 | | | 684 |
| | | 110 | 0·479 | 97·3 | 357·8 | + 2·4 | 102 | 475 | |
| | | 111 | 0·844 | 116·6 | 333·7 | −18·2 | 136 | 1082 | 1097*s* |
| | | | 0·908 | 73·3 | 320·2 | +18·0 | | | 573 |
| Aug. 12 | | Centre | | | (26·0) | (+6·6) | (238) | (1557) | (2354) |
| 225·501 | JB, B | | 0·921 | 281·7 | 66·4 | +13·4 | | | 289 |
| | | 110 | 0·076 | 173·9 | 358·3 | + 2·4 | 80 | 420 | |
| | | 111 | 0·574 | 133·9 | 333·2 | −17·3 | 164 | 1150 | |
| Aug. 14 | | Centre | | | (358·8) | (+6·7) | (244) | (1570) | (289) |
| 226·432 | JB, B | 110 | 0·214 | 249·2 | 358·0 | + 2·3 | 76 | 463 | |
| | | 111 | 0·472 | 151·5 | 332·9 | −17·9 | 124 | 912 | |
| | | 112 | 0·849 | 248·5 | 40·8 | −14·2 | 10 | 96 | |
| | | | 0·935 | 99·3 | 278·6 | − 6·3 | | | 373 |
| Aug. 15 | | Centre | | | (346·5) | (+6·7) | (210) | (1471) | (373) |
| 228·477 | JB, B | 110 | 0·630 | 265·1 | 358·2 | + 2·2 | 72 | 459 | |
| | | 111 | 0·471 | 208·2 | 332·9 | −17·8 | 127 | 685 | |
| Aug. 17 | | Centre | | | (319·5) | (+6·8) | (199) | (1144) | (0) |
| 230·543 | JB, B | 110 | 0·920 | 268·2 | 358·8 | + 1·1 | 8 | 391 | |
| | | 111 | 0·742 | 237·7 | 333·3 | −18·2 | 83 | 491 | |
| | | 114 | 0·621 | 121·0 | 259·2 | −12·8 | 0 | 17 | |
| | | 115 | 0·903 | 111·3 | 231·4 | −15·8 | 45 | 268 | |
| | | 116 | 0·958 | 85·8 | 219·1 | + 6·0 | 0 | 78 | |
| Aug. 19 | | Centre | | | (292·2) | (+6·9) | (136) | (1245) | (0) |
| 231·563 | JB, B | 110 | 0·993 | 269·7 | 1·6 | + 0·6 | 0 | 347 | 843*nf* |
| | | 111 | 0·847 | 243·9 | 331·4 | −17·8 | 86 | 694 | 1759*c* |
| | | 114 | 0·415 | 139·0 | 262·6 | −11·5 | 31 | 191 | |
| | | 115 | 0·794 | 115·0 | 230·7 | −14·9 | 47 | 328 | 355*c* |
| | | 116 | 0·859 | 86·5 | 219·2 | + 6·6 | 0 | 27 | 803*nf* |
| Aug. 20 | | Centre | | | (278·7) | (+7·0) | (164) | (1587) | (3760) |

| Greenwich Civil Time. | Measurers. | No. of Group and Letter for Spot | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 232·536 | JB, B | | 0·910 | 287·1 | 332·4 | +18·5 | | | 253 |
| | | 111 | 0·939 | 247·9 | 331·7 | −17·9 | 58 | 306 | 1301*c* |
| | | 114 | 0·297 | 174·1 | 264·1 | −10·1 | 19 | 121 | |
| | | 115 | 0·653 | 122·8 | 231·3 | −14·9 | 49 | 261 | |
| | | 116 | 0·721 | 87·7 | 219·6 | + 6·5 | 25 | 78 | |
| Aug. 21 | | Centre | | | (265·8) | (+7·0) | (151) | (766) | (1554) |
| 233·475 | JB, B | 111 | 0·989 | 248·2 | 331·4 | −20·3 | 0 | 79 | 1215*f* |
| | | 114 | 0·335 | 208·6 | 262·7 | −10·0 | 0 | 82 | |
| | | 115 | 0·523 | 136·0 | 231·3 | −15·5 | 47 | 272 | |
| | | 116 | 0·556 | 90·0 | 219·6 | + 5·9 | 20 | 45 | |
| Aug. 22 | | Centre | | | (253·4) | (+7·0) | (67) | (478) | (1215) |
| 235·502 | JB, B | 114 | 0·637 | 247·7 | 263·0 | − 8·2 | 0 | 80 | |
| | | 115 | 0·387 | 191·4 | 231·1 | −15·1 | 53 | 253 | |
| | | 117 | 0·953 | 80·6 | 153·5 | +11·1 | 0 | 44 | 864*sp* |
| Aug. 24 | | Centre | | | (226·6) | (+7·1) | (53) | (377) | (864) |
| 236·452 | JB, B | 114 | 0·752 | 255·0 | 260·8 | − 6·4 | 0 | 22 | 359*np* |
| | | 115 | 0·471 | 217·6 | 231·3 | −15·1 | 35 | 201 | |
| | | 117 | 0·864 | 81·6 | 153·8 | +10·8 | 19 | 57 | 957*sf* |
| | | | 0·989 | 110·0 | 135·8 | −18·5 | | | 385 |
| Aug. 25 | | Centre | | | (214·1) | (+7·1) | (54) | (280) | (1701) |
| 237·429 | JB, B | | 0·891 | 256·0 | 262·1 | − 9·1 | | | 1191 |
| | | | 0·843 | 288·8 | 258·9 | +19·7 | | | 225 |
| | | 115 | 0·607 | 233·1 | 231·2 | −15·2 | 46 | 230 | |
| | | 117 | 0·738 | 82·4 | 153·4 | +10·4 | 17 | 57 | |
| | | | 0·941 | 112·3 | 135·8 | −18·5 | | | 672 |
| | | | 0·979 | 91·8 | 123·3 | − 0·3 | | | 184 |
| Aug. 26 | | Centre | | | (201·2) | (+7·1) | (63) | (287) | (2272) |
| 238·488 | JB, B | | 0·965 | 256·5 | 259·9 | −11·0 | | | 1123 |
| | | | 0·940 | 290·3 | 258·2 | +21·5 | | | 232 |
| | | 115 | 0·757 | 242·9 | 231·2 | −15·0 | 44 | 217 | |
| | | 117 | 0·547 | 80·2 | 154·0 | +11·3 | 0 | 24 | |
| | | | 0·893 | 117·7 | 129·6 | −20·9 | | | 1206 |
| | | | 0·932 | 87·8 | 120·5 | + 4·7 | | | 418 |
| Aug. 27 | | Centre | | | (187·2) | (+7·1) | (44) | (241) | (2979) |
| 239·434 | JB, B | 115 | 0·868 | 248·5 | 231·0 | −14·6 | 28 | 218 | 510*c* |
| | | 117 | 0·362 | 77·4 | 153·7 | +11·2 | 3 | 29 | |
| | | | 0·920 | 113·5 | 111·1 | −18·6 | | | 1588 |
| | | | 0·881 | 81·0 | 112·6 | +11·8 | | | 419 |
| Aug. 28 | | Centre | | | (174·7) | (+7·2) | (31) | (247) | (2517) |

Group 112, August 15. A few very small spots in a close cluster.
Group 114, August 19–25. A scattered group of small spots.
Group 115, August 19–29. Two spots close together.
Group 116, August 19–22. One small spot.
Group 117, August 24–31. One small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic | | Spots. | | Faculæ. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Longitude. | Latitude. | Area of UMBRA for each Spot (and for Day). | Area of WHOLE for each Spot (and for Day). | Area for each Group (and for Day). |
| 1874. | | | | ° | ° | ° | | | |
| 240·515 | JB, B | | 0·868 | 277·0 | 221·1 | + 9·7 | | | 293 |
| | | 115 | 0·963 | 251·8 | 231·6 | −15·3 | 32 | 168 | 363*e* |
| | | 117 | 0·140 | 55·9 | 153·6 | +11·6 | 9 | 29 | |
| | | 118 | 0·287 | 147·6 | 151·5 | − 6·9 | 4 | 81 | |
| | | | 0·903 | 115·3 | 100·8 | −19·2 | | | 1008 |
| | | | 0·887 | 85·8 | 97·6 | + 7·0 | | | 98 |
| Aug. 29 | | Centre | | | (160·4) | (+7·2) | (45) | (278) | (1762) |
| 242·483 | JB, B | 117 | 0·340 | 285·0 | 153·9 | +11·9 | 0 | 8 | |
| | | 118 | 0·406 | 231·2 | 152·8 | − 7·8 | 0 | 65 | |
| Aug. 31 | | Centre | | | (134·4) | (+7·2) | (0) | (73) | (0) |
| 243·456 | JB, B | 118 | 0·585 | 245·7 | 154·0 | − 7·8 | 9 | 93 | |
| | | | 0·954 | 108·8 | 52·2 | −15·5 | | | 831 |
| Sept. 1 | | Centre | | | (121·6) | (+7·2) | (9) | (93) | (831) |
| 244·418 | JB, B | | 0·895 | 276·8 | 172·9 | + 9·4 | | | 685 |
| | | 118 | 0·736 | 253·3 | 153·9 | − 7·1 | 14 | 127 | |
| | | | 0·907 | 111·1 | 47·6 | −15·7 | | | 1174 |
| | | | 0·944 | 74·8 | 37·1 | +16·8 | | | 587 |
| Sept. 2 | | Centre | | | (108·8) | (+7·2) | (14) | (127) | (2446) |
| 246·570 | JB, B | | 0·942 | 277·3 | 151·4 | + 9·3 | | | 589 |
| | | | 0·878 | 241·7 | 135·8 | −20·6 | | | 722 |
| | | 118 | 0·964 | 259·3 | 153·2 | − 8·3 | 45 | 358 | 805*c* |
| | | 119 | 0·979 | 88·9 | 2·4 | + 2·6 | 0 | 69 | 154*c* |
| | | | 0·934 | 72·5 | 10·2 | +18·9 | | | 298 |
| Sept. 4 | | Centre | | | (80·4) | (+7·3) | (45) | (427) | (2568) |
| 247·403 | JB, B | | 0·858 | 241·5 | 122·6 | −19·9 | | | 1326 |
| | | 118 | 0·992 | 262·1 | 151·0 | − 6·9 | 56 | 319 | |
| | | 119 | 0·922 | 92·0 | 2·5 | + 1·1 | 0 | 33 | 1922*sf* |
| Sept. 5 | | Centre | | | (69·4) | (+7·3) | (56) | (352) | (3248) |
| 251·609 | JB, B | 119 | 0·206 | 117·5 | 3·4 | + 1·7 | 0 | 34 | |
| | | 120 | 0·892 | 270·1 | 77·0 | + 3·4 | 0 | 29 | 271*inf* |
| | | 121 | 0·600 | 233·3 | 43·5 | −14·7 | 7 | 52 | |
| Sept. 9 | | Centre | | | (13·9) | (+7·3) | (7) | (115) | (271) |
| 252·439 | JB, B | 120 | 0·945 | 272·9 | 74·3 | + 5·1 | 0 | 75 | 380*inf* |
| | | 121 | 0·712 | 242·4 | 43·3 | −13·7 | 8 | 85 | |
| Sept. 10 | | Centre | | | (2·9) | (+7·2) | (8) | (160) | (380) |
| 254·434 | JB, B | | 0·871 | 290·5 | 37·5 | +21·4 | | | 668 |
| | | 119* | 0·691 | 273·0 | 20·5 | + 7·3 | 27 | 129 | |
| | | 121 | 0·936 | 252·1 | 42·9 | −13·9 | 33 | 388 | 1240*c* |
| | | | 0·875 | 104·8 | 277·8 | − 9·3 | | | 564 |
| Sept. 12 | | Centre | | | (336·6) | (+7·2) | (60) | (517) | (2472) |
| 256·464 | JB, B | 119* | 0·963 | 275·2 | 24·6 | + 7·0 | 29 | 114 | 1767*sf* |
| | | | 0·599 | 223·3 | 335·5 | −19·2 | | | 2405 |
| | | | 0·941 | 80·1 | 238·9 | +11·8 | | | 141 |
| | | | 0·736 | 90·6 | 262·5 | + 4·5 | | | 534 |
| | | | 0·783 | 117·8 | 263·8 | −16·4 | | | 303 |
| Sept. 14 | | Centre | | | (309·8) | (+7·2) | (29) | (114) | (5150) |
| 257·467 | JB, B | | 0·933 | 277·7 | 5·9 | + 9·7 | | | 987 |
| | | 122 | 0·934 | 107·3 | 230·4 | −13·3 | 0 | 48 | |
| | | | 0·888 | 80·8 | 233·3 | +11·5 | | | 517 |
| Sept. 15 | | Centre | | | (296·5) | (+7·2) | (0) | (48) | (1504) |
| 261·450 | JB, B | | 0·883 | 288·8 | 306·5 | +19·9 | | | 107 |
| | | 122 | 0·417 | 142·4 | 229·6 | −12·9 | 0 | 14 | |
| | | | 0·896 | 85·3 | 180·0 | + 7·4 | | | 490 |
| Sept. 19 | | Centre | | | (244·0) | (+7·1) | (0) | (14) | (597) |
| 264·452 | JB, B | | 0·897 | 250·5 | 264·9 | −14·1 | | | 152 |
| | | 122 | 0·535 | 231·9 | 229·8 | −12·9 | 0 | 13 | |
| | | 123 | 0·373 | 48·2 | 187·1 | +21·0 | 16 | 65 | |
| | | 124 | 0·739 | 109·2 | 159·6 | − 9·1 | 76 | 382 | 3308*sf* |
| | | | 0·881 | 75·5 | 142·0 | +16·2 | | | 202 |
| Sept. 22 | | Centre | | | (204·4) | (+7·0) | (92) | (460) | (684) |
| 266·414 | JB, B | | 0·915 | 286·3 | 245·5 | +17·7 | | | 242 |
| | | | 0·911 | 245·3 | 239·5 | −19·2 | | | 210 |
| | | 123 | 0·295 | 327·9 | 188·1 | +21·2 | 11 | 51 | |
| | | 124 | 0·417 | 130·5 | 159·8 | − 9·1 | 71 | 414 | |
| | | | 0·914 | 116·9 | 117·9 | −21·2 | | | 370 |
| Sept. 24 | | Centre | | | (178·5) | (+6·9) | (82) | (465) | (822) |
| 267·425 | JB, B | | 0·927 | 290·7 | 233·9 | +21·7 | | | 402 |
| | | | 0·902 | 244·3 | 224·6 | −19·6 | | | 192 |
| | | 123 | 0·451 | 305·2 | 188·3 | +21·3 | 11 | 43 | |
| | | 124 | 0·284 | 161·4 | 159·9 | − 8·7 | 76 | 415 | |
| | | 125 | 0·980 | 87·8 | 86·7 | + 3·6 | 0 | 52 | 345*c* |
| Sept. 25 | | Centre | | | (165·1) | (+6·9) | (87) | (510) | (939) |

Group 118, August 29–September 5. A scattered group of faint spots.
Group 119, September 4–9. One spot.
Group 119*, September 12–14. A long row of small spots.
Group 120, September 9–10. One small spot.
Group 121, September 9–12. A group of small spots forming a circle.
Group 122, September 15–22. One small regular spot.
Group 123, September 22–28. A small spot and a very small marking at a little distance.
Group 124, September 22–October 1. One large regular spot. Group 125, September 25–30. One small regular spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic | | Spots. | | Faculæ. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Longitude. | Latitude. | Area of UMBRA for each Spot (and for Day). | Area of WHOLE for each Spot (and for Day). | Area for each Group (and for Day). |
| 1874. | | | | ° | ° | ° | | | |
| 268·526 | JB, B | | 0·875 | 284·0 | 212·2 | +15·5 | | | 292 |
| | | 123 | 0·640 | 295·0 | 188·8 | +21·1 | 9 | 33 | |
| | | 124 | 0·311 | 211·5 | 160·0 | − 8·6 | 69 | 380 | |
| | | 125 | 0·894 | 88·7 | 87·2 | + 4·3 | 16 | 55 | 545*f* |
| Sept. 26 | | Centre | | | (150·6) | (+6·9) | (94) | (468) | (837) |
| 270·509 | JB, B | 123 | 0·901 | 289·3 | 188·7 | +20·3 | 0 | 18 | 288*s* |
| | | 124 | 0·629 | 247·7 | 160·3 | − 8·3 | 67 | 383 | |
| | | 125 | 0·604 | 92·7 | 87·4 | + 3·8 | 0 | 16 | |
| | | 127 | 0·982 | 105·0 | 47·6 | −13·3 | 148 | 1002 | 1231*p* |
| Sept. 28 | | Centre | | | (124·4) | (+6·8) | (215) | (1419) | (1519) |
| 271·516 | JB, B | | 0·923 | 280·3 | 179·1 | +12·1 | | | 952 |
| | | 124 | 0·781 | 253·7 | 160·1 | − 8·2 | 56 | 341 | 662*p* |
| | | 125 | 0·402 | 96·1 | 87·6 | + 3·7 | 0 | 15 | |
| | | 126 | 0·800 | 108·6 | 60·8 | −10·5 | 10 | 59 | 456*c* |
| | | 127 | 0·936 | 106·8 | 44·3 | −13·1 | 105 | 1399 | 2251*f* |
| | | | 0·919 | 78·8 | 43·7 | +12·9 | | | 791 |
| | | | 0·937 | 70·8 | 40·7 | +20·3 | | | 448 |
| Sept. 29 | | Centre | | | (111·1) | (+6·7) | (171) | (1814) | (~~4898~~) 5560 |
| 272·476 | JB, B | 124 | 0·896 | 257·4 | 160·2 | − 8·1 | 55 | 285 | |
| | | 125 | 0·192 | 107·1 | 88·0 | + 3·3 | 0 | 10 | |
| | | 126 | 0·654 | 116·3 | 61·9 | −11·5 | 15 | 70 | |
| | | 127 | 0·847 | 110·7 | 44·1 | −13·6 | 87 | 868 | |
| Sept. 30 | | Centre | | | ( 98·5) | (+6·7) | (157) | (1233) | (0) |
| 273·461 | JB, B | 124 | 0·974 | 259·9 | 160·9 | − 8·3 | 69 | 281 | 1755*sf* |
| | | 126 | 0·495 | 128·2 | 62·1 | −11·7 | 9 | 38 | |
| | | 127 | 0·720 | 116·3 | 44·0 | −13·6 | 159 | 1151 | 1020*sf* |
| | | | 0·941 | 83·3 | 14·9 | + 8·4 | | | 533 |
| Oct. 1 | | Centre | | | (85·5) | (+6·6) | (237) | (1470) | (3308) |
| 275·454 | JB, B | | 0·879 | 248·7 | 117·0 | −15·3 | | | 324 |
| | | 126 | 0·316 | 183·5 | 60·3 | −11·8 | 1 | 28 | |
| | | 127 | 0·426 | 142·1 | 43·7 | −13·3 | 195 | 1426 | |
| | | | 0·865 | 103·7 | 358·2 | − 9·9 | | | 247 |
| | | | 0·907 | 76·3 | 353·5 | +15·1 | | | 184 |
| | | | 0·922 | 71·5 | 351·3 | +19·7 | | | 1166 |
| Oct. 3 | | Centre | | | (59·2) | (+6·5) | (196) | (1454) | (1921) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic | | Spots. | | Faculæ. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Longitude. | Latitude. | Area of UMBRA for each Spot (and for Day). | Area of WHOLE for each Spot (and for Day). | Area for each Group (and for Day). |
| 1874. | | | | ° | ° | ° | | | |
| 277·477 | JB, B | | 0·891 | 236·0 | 87·8 | −26·3 | | | 352 |
| | | | 0·839 | 269·8 | 89·5 | + 3·3 | | | 332 |
| | | 127 | 0·387 | 210·2 | 44·9 | −13·2 | 158 | 1044 | |
| | | | 0·862 | 56·5 | 334·8 | +32·0 | | | 223 |
| | | | 0·892 | 112·5 | 333·4 | −16·7 | | | 1494 |
| Oct. 5 | | Centre | | | (32·5) | (+6·4) | (158) | (1044) | (2401) |
| 280·508 | JB, B | 127 | 0·812 | 249·8 | 43·6 | −12·4 | 98 | 734 | 1702*p* |
| | | 128 | 0·440 | 283·8 | 18·2 | +11·6 | 0 | 15 | |
| Oct. 8 | | Centre | | | (352·5) | (+6·2) | (98) | (749) | (0) 1702 |
| 282·409 | B, B | 127 | 0·973 | 256·4 | 42·0 | −11·7 | 45 | 335 | 2048*s* |
| | | 128 | 0·771 | 281·7 | 18·0 | +12·9 | 8 | 103 | |
| | | 129 | 0·407 | 197·4 | 334·7 | −16·7 | 47 | 234 | |
| Oct. 10 | | Centre | | | (327·4) | (+6·1) | (100) | (672) | (2048) |
| 285·491 | M, M | 129 | 0·806 | 244·7 | 336·0 | −16·3 | 38 | 145 | |
| Oct. 13 | | Centre | | | (286·8) | (+5·9) | (38) | (145) | (0) |
| 287·538 | JB, B | 129 | 0·986 | 252·2 | 337·7 | −16·4 | 0 | 77 | 1187*f* |
| | | 130 | 0·643 | 82·2 | 219·7 | + 9·4 | 11 | 71 | |
| | | 131 | 0·953 | 82·0 | 187·1 | + 9·4 | 57 | 171 | 522*f* |
| Oct. 15 | | Centre | | | (259·8) | (+5·7) | (68) | (319) | (1709) |
| 291·538 | JB, B | 130 | 0·226 | 285·4 | 219·7 | + 8·7 | 0 | 26 | |
| | | 131 | 0·324 | 79·2 | 188·3 | + 8·6 | 20 | 122 | |
| | | 132 | 0·743 | 105·5 | 161·0 | − 7·7 | 22 | 135 | |
| Oct. 19 | | Centre | | | (207·0) | (+5·4) | (42) | (283) | (0) |
| 292·503 | JB, B | 130 | 0·394 | 280·6 | 217·3 | + 9·0 | 13 | 52 | |
| | | 131 | 0·113 | 59·3 | 188·7 | + 8·6 | 11 | 80 | |
| | | 132 | 0·579 | 111·0 | 161·4 | − 7·5 | 22 | 79 | |
| Oct. 20 | | Centre | | | (194·3) | (+5·3) | (46) | (211) | (0) |
| 294·551 | JB, B | 130 | 0·765 | 276·4 | 217·3 | + 8·2 | 0 | 16 | 677*f* |
| | | 131 | 0·382 | 279·8 | 189·5 | + 8·5 | 15 | 50 | |
| | | 132 | 0·245 | 154·7 | 161·2 | − 7·7 | 23 | 122 | |
| | | 133 | 0·800 | 114·8 | 118·3 | −16·2 | 0 | 21 | 610*c* |
| | | | 0·961 | 101·7 | 94·8 | − 9·8 | | | 1040 |
| Oct. 22 | | Centre | | | (167·3) | (+5·1) | (38) | (209) | (2327) |

Group 126, September 29–October 3. One small spot, and two very small specks near.
Group 127, September 28–October 10. A close cluster composed of many spots.
Group 128, October 8–10. At first one very small spot; but on October 10 it has extended into a row of several small fragments.
Group 129, October 10–15. Three spots arranged in a line.
Group 130, October 15–22. Two small spots. The smaller of these grows gradually fainter, and disappears on October 20.
Group 131, October 15–23. Single spot.
Group 132, October 19–23. Single spot.
Group 133, October 22. Single spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day) |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 295·514 | JB, B | | 0·890 | 276·8 | 217·7 | + 8·4 | | | 326 |
| | | 131 | 0·580 | 276·8 | 189·9 | + 8·1 | 0 | 27 | |
| | | 132 | 0·259 | 206·6 | 161·2 | − 8·3 | 25 | 90 | |
| Oct. 23 | | Centre | | | (154·6) | (+ 5·0) | (25) | (117) | (326) |
| 300·531 | JB, B | | 0·918 | 295·7 | 154·4 | +25·3 | | | 332 |
| | | | 0·951 | 259·7 | 159·2 | − 8·3 | | | 707 |
| | | | 0·800 | 116·8 | 39·8 | −18·2 | | | 1488 |
| | | | 0·916 | 74·3 | 22·0 | +16·2 | | | 2000 |
| Oct. 28 | | Centre | | | (88·4) | (+ 4·5) | (0) | (0) | (4527) |
| 306·552 | JB, B | 134 | 0·638 | 121·5 | 334·6 | −16·2 | 82 | 446 | |
| Nov. 3 | | Centre | | | (9·0) | (+ 4·0) | (82) | (446) | (0) |
| 307·488 | JB, B | | 0·819 | 248·2 | 48·6 | −15·3 | | | 1428 |
| | | 134 | 0·498 | 133·0 | 334·4 | −16·2 | 95 | 518 | |
| Nov. 4 | | Centre | | | (356·7) | (+ 3·9) | (95) | (518) | (1428) |
| 308·493 | JB, B | | 0·873 | 246·0 | 40·6 | −18·8 | | | 806 |
| | | 134 | 0·378 | 155·8 | 334·2 | −16·4 | 90 | 486 | |
| Nov. 5 | | Centre | | | (343·4) | (+ 3·7) | (90) | (486) | (806) |
| 309·575 | JB, B | 134 | 0·355 | 191·7 | 333·5 | −16·6 | 63 | 458 | |
| Nov. 6 | | Centre | | | (329·2) | (+ 3·6) | (63) | (458) | (0) |
| 310·469 | JB, B | | 0·860 | 286·5 | 16·2 | +15·9 | | | 334 |
| | | 134 | 0·435 | 221·2 | 334·6 | −15·7 | 94 | 557 | |
| Nov. 7 | | Centre | | | (317·4) | (+ 3·5) | (94) | (557) | (334) |
| 312·582 | JB, B | 134 | 0·737 | 246·5 | 333·7 | −14·7 | 156 | 820 | |
| Nov. 9 | | Centre | | | (289·5) | (+ 3·3) | (156) | (820) | (0) |
| 314·471 | JB, B | 134 | 0·948 | 254·6 | 334·4 | −13·5 | 18 | 451 | |
| Nov. 11 | | Centre | | | (264·6) | (+ 3·1) | (18) | (451) | (0) |
| 315·426 | JB, B | 134 | 0·985 | 253·1 | 330·4 | −16·0 | 0 | 124 | 502*c* |
| | | 135 | 0·960 | 84·4 | 178·3 | + 6·2 | 0 | 87 | 2042*mp* |
| Nov. 12 | | Centre | | | (252·0) | (+ 3·0) | (0) | (211) | (2544) |
| 316·472 | JB, B | 135 | 0·851 | 83·8 | 180·1 | + 6·8 | 35 | 149 | 764 |
| Nov. 13 | | Centre | | | (238·4) | (+ 2·8) | (35) | (149) | (764) |
| 1874. | | | | ° | ° | ° | | | |
| 319·512 | JB, B | | 0·868 | 253·7 | 256·7 | −12·8 | | | 505 |
| | | 135 | 0·277 | 70·9 | 182·9 | + 7·6 | 68 | 368 | |
| Nov. 16 | | Centre | | | (198·2) | (+ 2·5) | (68) | (368) | (505) |
| 320·574 | | 135 | | | | | 55 | 234 | |
| Nov. 17 | | | | | | | (55) | (234) | (0) |
| 323·492 | JB, B | 135 | 0·656 | 279·0 | 186·3 | + 7·4 | 88 | 537 | 589*p* |
| | | 136 | 0·960 | 86·0 | 72·2 | + 4·4 | 25 | 119 | 510*c* |
| | | 137 | 0·997 | 74·5 | 60·2 | +15·6 | 0 | 247 | |
| Nov. 20 | | Centre | | | (145·7) | (+ 2·0) | (113) | (903) | (1099) |
| 326·459 | B, B | | 0·860 | 259·3 | 165·1 | − 8·4 | | | 110 |
| | | 135 | 0·991 | 277·0 | 188·7 | + 7·1 | 19 | 326 | 1067*f* |
| | | 136 | 0·540 | 86·1 | 74·1 | + 3·5 | 20 | 102 | |
| | | 137 | 0·753 | 71·2 | 59·2 | +15·1 | 41 | 284 | 649*f* |
| | | | 0·940 | 109·2 | 38·4 | −17·4 | | | 809 |
| Nov. 23 | | Centre | | | (106·6) | (+ 1·6) | (80) | (712) | (2635) |
| 327·515 | B, B | 136 | 0·310 | 83·4 | 74·8 | + 3·4 | 13 | 69 | |
| | | 137 | 0·588 | 66·8 | 58·9 | +14·6 | 24 | 251 | |
| Nov. 24 | | Centre | | | (92·7) | (+ 1·5) | (37) | (320) | (0) |
| 330·514 | B, B | 136 | 0·384 | 274·5 | 75·6 | + 2·7 | 2 | 21 | |
| | | 137 | 0·251 | 339·8 | 58·2 | +14·6 | 37 | 205 | |
| | | | 0·960 | 105·4 | 340·4 | −14·5 | | | 628 |
| Nov. 27 | | Centre | | | (53·1) | (+ 1·1) | (39) | (226) | (628) |
| 337·445 | JB, B | | 0·951 | 247·5 | 32·0 | −21·2 | | | 510 |
| Dec. 4 | | Centre | | | (321·8) | (+ 0·2) | (0) | (0) | (510) |
| 340·447 | JB, B | 138 | 0·162 | 238·6 | 290·2 | − 5·0 | 14 | 111 | |
| | | | 0·959 | 85·3 | 209·1 | + 4·5 | | | 178 |
| Dec. 7 | | Centre | | | (282·3) | (− 0·2) | (14) | (111) | (178) |
| 342·704 | H, EP | 138 | 0·685 | 263·0 | 295·4 | − 5·1 | 0 | 39 | |
| | | 138 | 0·643 | 263·8 | 292·2 | − 4·3 | 0 | 15 | |
| | | 138* | 0·450 | 243·1 | 276·6 | −12·1 | 0 | 44 | |
| | | 138* | 0·365 | 237·0 | 270·6 | −11·9 | 0 | 20 | |
| H. | | 140*a* | 0·872 | 81·3 | 192·4 | + 7·4 | 5 | 67 | |
| | | 140*c* | 0·937 | 85·3 | 183·3 | + 4·3 | 0 | 27 | |
| | | 140*d* | 0·965 | 84·5 | 178·0 | + 5·2 | 0 | 68 | 205*c* |
| | | | 0·948 | 78·1 | 181·8 | +11·1 | | | 335 |
| Dec. 9 | | Centre | | | (252·5) | (− 0·4) | (5) | (280) | (540) |

Group 134, November 3–12. Two rather large spots. The first and larger spot throws off several fragments on November 7.
Group 135, November 12–23. One spot. A second small spot appears on the second photograph on November 12. The group entirely changes its character on the following days, and on November 16 has changed into a very long irregular line of small spots. On November 23 the greater portion of the group has disappeared round the limb. The area only of the group, not its position, was measured on November 17.
Group 136, November 20–27. One spot. On November 23 several very small markings appear close behind it. These disappear again on November 27.
Group 137, November 20–27. The spot is seen as a notch in the limb on November 20.
Group 138, December 7–11. A line of very small spots.
Group 138*, December 9. A few small spots in a straight stream.
Group 140, December 9–18. A very scattered group, composed at first of four spots, *a*, *b*, *c*, and *d*. Spot *a* breaks up on December 14 into several little spots, and two fresh spots appear, *e* and *f*. Spot *d* disappears on December 14, and spot *b* on December 18.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1874. | | | | ° | ° | ° | | | |
| 344·477 | JB, B | 138 | 0·876 | 263·8 | 290·0 | − 5·7 | 0 | 36 | 462*np* |
| | | 139 | 0·297 | 319·2 | 240·6 | +12·3 | 0 | 18 | |
| | | 140*a* | 0·619 | 76·7 | 191·9 | + 7·6 | 15 | 48 | 349*nf* |
| | | 140*b* | 0·623 | 79·8 | 191·3 | + 5·8 | 0 | 9 | |
| | | 140*c* | 0·703 | 84·1 | 184·9 | + 3·7 | 22 | 95 | |
| | | 140*d* | 0·782 | 83·2 | 178·2 | + 4·9 | 22 | 80 | |
| Dec. 11 | | Centre | | | (229·2) | (−0·7) | (59) | (286) | (811) |
| 345·742 | H, EP | 140*a* | 0·381 | 68·4 | 191·6 | + 7·4 | 22 | 249 | |
| | | 140*c* | 0·481 | 78·8 | 184·3 | + 4·7 | 21 | 137 | |
| H. | | 140*d* | 0·596 | 79·9 | 176·5 | + 5·4 | 9 | 76 | |
| | | | 0·957 | 55·3 | 143·4 | +32·7 | | | 511 |
| Dec. 12 | | Centre | | | (212·4) | (−0·7) | (52) | (462) | (511) |
| 347·498 | JB, B | 140*a* | 0·158 | 336·7 | 192·9 | + 7·2 | 11 | 63 | |
| | | 140*c* | 0·106 | 29·9 | 186·3 | + 4·2 | 15 | 90 | |
| | | 140*d* | 0·236 | 63·0 | 177·2 | + 5·1 | 0 | 31 | |
| 1874. | | | | ° | ° | ° | | | |
| 347·498 | JB, B | 140*e* | 0·235 | 29·2 | 182·7 | +10·7 | 0 | 25 | |
| | | 140*f* | 0·297 | 47·4 | 176·5 | +10·5 | 17 | 60 | |
| Dec. 14 | | Centre | | | (189·3) | (− 1·1) | (43) | (269) | (0) |
| 350·583 | JB, B | 140*a* | 0·716 | 281·6 | 193·5 | + 7·2 | 4 | 69 | |
| | | 140*c* | 0·625 | 277·3 | 186·9 | + 3·4 | 10 | 57 | |
| | | 140*d* | 0·562 | 285·0 | 181·7 | + 7·1 | 0 | 5 | |
| | | 140*e* | 0·618 | 288·5 | 185·1 | +10·1 | 0 | 40 | |
| | | 140*f* | 0·502 | 292·7 | 176·6 | + 9·9 | 0 | 26 | |
| Dec. 17 | | Centre | | | (148·7) | (− 1·5) | (14) | (197) | (0) |
| 351·513 | JB, B | 140*a* | 0·852 | 278·8 | 194·1 | + 6·7 | 0 | 51 | |
| | | 140*c* | 0·776 | 275·4 | 186·9 | + 3·2 | 0 | 23 | |
| | | 140*e* | 0·768 | 284·4 | 185·3 | + 9·9 | 0 | 31 | |
| | | 140*f* | 0·672 | 286·2 | 177·1 | + 9·6 | 0 | 21 | |
| Dec. 18 | | Centre | | | (136·5) | (− 1·6) | (0) | (126) | (0) |

Group 139, December 11. A group of very small spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 1·527 | M, M | 141 | 0·567 | 250·6 | 331·9 | −13·6 | 32 | 215 | |
| Jan. 2 | | Centre | | | (298·7) | (−3·4) | (32) | (215) | (0) |
| 4·550 | JB, B | 141 | 0·953 | 256·7 | 331·3 | −13·8 | 31 | 140 | 1670*sf* |
| | | | 0·930 | 82·0 | 191·3 | + 6·0 | | | 437 |
| Jan. 5 | | Centre | | | (258·9) | (−3·7) | (31) | (140) | (2107) |
| 5·486 | M, M | | 0·993 | 249·3 | 330·5 | −21·0 | | | 391 |
| | | | 0·945 | 297·0 | 313·5 | +23·9 | | | 235 |
| | | | 0·906 | 81·3 | 182·6 | + 6·2 | | | 416 |
| Jan. 6 | | Centre | | | (246·6) | (−3·8) | (0) | (0) | (1042) |
| 15·543 | JB, B | | 0·945 | 278·5 | 184·2 | + 6·4 | | | 944 |
| | | | 0·821 | 257·2 | 169·4 | −13·3 | | | 697 |
| | | 142 | 0·547 | 98·9 | 81·2 | − 8·9 | 6 | 42 | |
| Jan. 16 | | Centre | | | (114·3) | (−4·9) | (6) | (42) | (1641) |
| 21·530 | JB, B | | 0·909 | 258·0 | 101·0 | −13·2 | | | 139 |
| | | 142* | 0·629 | 287·0 | 72·4 | + 6·2 | 119 | 559 | 409*np* |
| | | 143 | 0·289 | 355·6 | 36·6 | +11·2 | 17 | 79 | |
| | | | 0·879 | 107·8 | 333·8 | −18·2 | | | 1341 |
| Jan. 22 | | Centre | | | (35·3) | (−5·4) | (136) | (638) | (1889) |
| 24·554 | JB, B | 142* | 0·970 | 277·2 | 70·5 | + 5·5 | 0 | 57 | 826*c* |
| | | 143 | 0·707 | 291·8 | 37·3 | +11·0 | 0 | 39 | |
| Jan. 25 | | Centre | | | (355·5) | (−5·7) | (0) | (96) | (826) |
| 25·734 | H, EP | | 0·821 | 300·6 | 28·9 | +21·0 | | | 78 |
| H. | | 143* | 0·869 | 293·9 | 36·1 | +17·5 | 0 | 27 | 135*c* |
| Jan. 26 | | Centre | | | (339·9) | (−5·7) | (0) | (27) | (213) |
| 26·625 | JB, B | | 0·925 | 286·0 | 33·6 | +12·4 | | | 486 |
| | | | 0·916 | 72·3 | 264·5 | +13·7 | | | 524 |
| Jan. 27 | | Centre | | | (328·2) | (−5·8) | (0) | (0) | (1010) |
| 29·552 | JB, B | | 0 892 | 294·3 | 348·5 | +18·5 | | | 225 |
| | | | 0·880 | 251·2 | 35·1·4 | −19·3 | | | 651 |
| | | | 0·919 | 84·0 | 223·7 | + 3·1 | | | 403 |
| Jan. 30 | | Centre | | | (289·7) | (−6·0) | (0) | (0) | (1279) |
| 1875. | | | | ° | ° | ° | | | |
| 30·520 | JB, B | | 0·975 | 285·7 | 352·0 | +13·8 | | | 427 |
| | | | 0·869 | 72·2 | 219·4 | +12·2 | | | 1012 |
| Jan. 31 | | Centre | | | (277·0) | (−6·1) | (0) | (0) | (1439) |
| 31·773 | H, EP | | 0·928 | 251·7 | 329·2 | −19·3 | | | 437 |
| H. | | 144 | 0·917 | 67·2 | 197·9 | +18·0 | 0 | 150 | 265*c* |
| | | | 0·915 | 80·5 | 195·5 | + 6·1 | | | 502 |
| Feb. 1 | | Centre | | | (260·5) | (−6·2) | (0) | (150) | (1204) |
| 34·485 | JB, B | 144 | 0·593 | 45·5 | 198·3 | +18·8 | 17 | 91 | |
| | | | 0·859 | 253·2 | 284·3 | −17·7 | | | 172 |
| Feb. 4 | | Centre | | | (224·8) | (−6·4) | (17) | (91) | (172) |
| 35·657 | H, EP | | 0·887 | 290·7 | 268·3 | +15·0 | | | 435 |
| | | 144*a* | 0·453 | 23·0 | 198·6 | +18·3 | 12 | 100 | |
| H. | | 144*b* | 0·486 | 25·7 | 196·4 | +19·7 | 0 | 5 | |
| | | 144*c* | 0·505 | 27·7 | 194·9 | +20·3 | 0 | 22 | |
| Feb. 5 | | Centre | | | (209·3) | (−6·4) | (12) | (127) | (435) |
| 36·774 | H, EP | | 0·931 | 289·1 | 259·9 | +15·1 | | | 478 |
| | | 144*a* | 0·425 | 350·3 | 198·8 | +18·2 | 21 | 69 | |
| H. | | 144*b* | 0·451 | 354·5 | 197·1 | +20·1 | 0 | 10 | |
| | | 144*c* | 0·460 | 359·9 | 194·5 | +20·8 | 0 | 16 | |
| Feb. 6 | | Centre | | | (194·5) | (−6·5) | (21) | (95) | (478) |
| 37·215 | A, H | | 0·944 | 288·5 | 256·6 | +15·0 | | | 339 |
| | | 144 | 0·461 | 348·7 | 194·3 | +20·7 | 0 | 24 | |
| Me. | | 144*a* | 0·454 | 339·4 | 198·5 | +18·7 | 20 | 97 | |
| | | | 0·925 | 171·5 | 162·3 | −72·2 | | | 265 |
| Feb. 7 | | Centre | | | (188·8) | (−6·5) | (20) | (121) | (604) |
| 38·699 | H, EP | 144 | 0·618 | 311·2 | 198·4 | +18·2 | 8 | 59 | 441*c* |
| H. | | | | | | | | | |
| Feb. 8 | | Centre | | | (169·2) | (−6·6) | (8) | (59) | (441) |
| 39·229 | A, H | 144*a* | 0·688 | 306·4 | 197·8 | +18·7 | 9 | 51 | |
| | | 144*c* | 0·641 | 311·8 | 192·6 | +19·6 | 0 | 4 | |
| Me. | | 144* | 0·978 | 82·5 | 84·3 | + 5·9 | 23 | 90 | 534*c* |
| | | | 0·941 | 100·4 | 91·0 | −12·6 | | | 228 |
| | | | 0·935 | 71·4 | 96·0 | +14·8 | | | 702 |
| Feb. 9 | | Centre | | | (162·2) | (−6·6) | (32) | (145) | (1464) |

Group 141, 1875. January 2–5. Single spot.
Group 142, January 16. A group of two or three very small spots.
Group 142*, January 22–25. Two large spots close together, and a few small markings round them.
Group 143, January 22–25. A small spot, surrounded by a few very small and scattered markings. It becomes slightly more condensed on January 25.
Group 143*, January 26. A small spot.
Group 144, February 1–9. A number of spots in an irregular stream.
Group 144*, February 9–11. A regular spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 40·687 | H, EP | | 0·858 | 292·9 | 198·1 | +15·7 | | | 682 |
| H. | | 144* | 0·869 | 79·8 | 84·1 | + 5·5 | 0 | 40 | 285c |
| Feb. 10 | | Centre | | | (143·1) | (− 6·7) | (0) | (40) | (967) |
| 41·205 | A, H | | 0·882 | 294·4 | 193·5 | +17·8 | | | 734 |
| Me. | | 144* | 0·798 | 78·5 | 84·7 | + 5·0 | 12 | 39 | 941c |
| Feb. 11 | | Centre | | | (136·2) | (− 6·7) | (12) | (39) | (1675) |
| 44·019 | A, H | 144† | 0·336 | 358·2 | 99·8 | +12·7 | 0 | 10 | |
| Me. | | | 0·878 | 72·5 | 40·6 | +11·7 | | | 343 |
| Feb. 14 | | Centre | | | (99·2) | (− 6·9) | (0) | (10) | (343) |
| 47·075 | A, H | | 0·957 | 108·1 | 344·6 | −19·3 | | | 225 |
| Me. | | | | | | | | | |
| Feb. 17 | | | | | (58·9) | (− 7·0) | (0) | (0) | (225) |
| 48·448 | JB, B | | 0·789 | 293·0 | 89·0 | +13·3 | | | 545 |
| | | | 0·840 | 111·8 | 343·8 | −22·1 | | | 211 |
| | | 145 | 0·989 | 70·5 | 322·7 | +17·9 | 134 | 478 | 166*np* |
| Feb. 18 | | Centre | | | (40·9) | (− 7·0) | (134) | (478) | (922) |
| 50·075 | A, H | | 0·907 | 281·2 | 83·0 | + 7·0 | | | 560 |
| | | 145 | 0·893 | 64·9 | 321·1 | +18·6 | ·125 | 606 | |
| Me. | | 146 | 0·846 | 99·3 | 321·2 | −11·6 | 28 | 173 | 500c |
| | | 146* | 0·955 | 66·1 | 311·1 | +20·3 | 0 | 49 | 732c |
| Feb. 20 | | Centre | | | (19·5) | (− 7·1) | (153) | (828) | (1792) |
| 51·517 | JB, B | 145 | 0·732 | 57·0 | 320·4 | +18·1 | 168 | 725 | |
| | | 146 | 0·623 | 99·7 | 321·9 | −11·6 | 62 | 383 | |
| Feb. 21 | | Centre | | | (0·5) | (− 7·1) | (230) | (1108) | (0) |
| 52·527 | JB, B | 145 | 0·601 | 46·1 | 320·2 | +18·2 | 146 | 658 | |
| | | 146 | 0·428 | 101·3 | 322·0 | −11·2 | 48 | 273 | |
| | | 147 | 0·986 | 83·1 | 267·9 | + 5·6 | 0 | 166 | |
| Feb. 22 | | Centre | | | (347·2) | (− 7·1) | (194) | (1097) | (0) |
| 53·496 | JB, B | 145 | 0·489 | 28·9 | 320·0 | +18·3 | 136 | 679 | |
| | | 146 | 0·223 | 107·0 | 321·9 | −10·7 | 63 | 359 | |
| | | 147 | 0·946 | 81·4 | 264·6 | + 5·7 | 19 | 156 | 423*n* |
| Feb. 23 | | Centre | | | (334·4) | (− 7·2) | (218) | (1194) | (423) |
| 1875. | | | | ° | ° | ° | | | |
| 55·531 | JB, B | 145 | 0·475 | 334·5 | 320·0 | +18·3 | 131 | 696 | |
| | | 146 | 0·232 | 249·7 | 320·3 | −11·6 | 53 | 215 | |
| | | 147 | 0·677 | 74·6 | 266·9 | + 4·9 | 22 | 108 | 355*nf* |
| Feb. 25 | | Centre | | | (307·6) | (− 7·2) | (206) | (1019) | (355) |
| 56·558 | | 145 | Photograph missing. | | | | 145 | 714 | |
| | | 146 | | | | | 16 | 144 | |
| | | 147 | | | | | 0 | 27 | |
| Feb. 26 | | Centre | | | | | (161) | (885) | (0) |
| 57·030 | A, H | 145 | 0·652 | 308·5 | 320·1 | +17·8 | 108 | 614 | |
| | | 146 | 0·549 | 260·1 | 321·1 | −11·4 | 18 | 119 | |
| | | 147* | 0·442 | 257·2 | 313·8 | −12·1 | 9 | 36 | |
| Me. | | 147 | 0·357 | 57·2 | 270·4 | + 4·3 | 17 | 80 | |
| | | 147 | 0·479 | 64·6 | 262·2 | + 5·4 | 0 | 20 | |
| | | | 0·944 | 103·4 | 216·1 | −15·0 | | | 248 |
| Feb. 27 | | Centre | | | (287·8) | (− 7·2) | (152) | (869) | (248) |
| 58·027 | A, H | 145 | 0·787 | 300·0 | 320·4 | +18·2 | 156 | 731 | |
| | | 146 | 0·722 | 260·9 | 321·2 | −11·6 | 15 | 114 | 417c |
| | | 147* | 0·631 | 259·7 | 313·9 | −12·1 | 0 | 9 | |
| Me. | | 147 | 0·212 | 21·2 | 270·5 | + 4·2 | 13 | 79 | |
| | | | 0·868 | 102·3 | 213·9 | −14·3 | | | 260 |
| | | | 0·921 | 75·0 | 210·0 | +10·8 | | | 391 |
| Feb. 28 | | Centre | | | (274·7) | (− 7·2) | (184) | (933) | (1068) |
| | | | | | 320.4 | | | | |
| 59·077 | H, A | 145 | 0·900 | 294·4 | ~~316·3~~ | +18·3 | 123 | 654 | 898c |
| | | 146 | 0·863 | 260·4 | 321·1 | −11·9 | 16 | 76 | 353c |
| Me. | | 147 | 0·253 | 320·9 | 270·1 | + 4·0 | 14 | 71 | |
| | | 147† | 0·960 | 81·1 | 188·5 | + 6·4 | 0 | 11 | 439*np* |
| Mar. 1 | | Centre | | | (260·9) | (− 7·2) | (153) | (812) | (1690) |
| 60·209 | A, H | 145 | 0·977 | 290·5 | 320·1 | +18·2 | 109 | 634 | 994*sf* |
| | | 146 | 0·968 | 259·8 | 322·2 | −11·7 | 0 | 31 | 390*nf* |
| | | 147 | 0·448 | 293·9 | 270·0 | + 3·9 | 11 | 66 | |
| Me. | | 147† | 0·782 | 72·6 | 197·1 | + 8·8 | 13 | 39 | } 348c |
| | | 147† | 0·782 | 75·6 | 196·4 | + 6·5 | 13 | 62 | |
| Mar. 2 | | Centre | | | (245·9) | (− 7·2) | (146) | (832) | (1732) |
| 61·266 | A, H | 147 | 0·644 | 285·3 | 270·4 | + 4·2 | 10 | 49 | |
| | | 147† | 0·602 | 67·0 | 198·1 | + 7·7 | 10 | 71 | } |
| Me. | | 147† | 0·645 | 70·8 | 194·3 | + 6·6 | 0 | 9 | } 227c |
| | | 147† | 0·691 | 72·1 | 190·7 | + 6·9 | 0 | 23 | |
| Mar. 3 | | Centre | | | (232·0) | (− 7·2) | (20) | (152) | (227) |

Group 144†, February 14. A small spot.
Group 145, February 18–March 2. A very large spot, with two or three small ones near it.
Group 146, February 20–March 2. One large spot, surrounded by many small ones.
Group 146*, February 20. A small spot following Group 145.
Group 147, February 22–March 5. Two small spots. The preceding spot alone has appeared by February 22. The following and smaller spot decreases in size as the group crosses the disk, until on March 5 only the preceding spot is left.
Group 147*, February 27–28. A small spot following Group 146.
Group 147†, March 1–3. A number of small spots in an irregular stream.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 63·446 | JB, B | 147 | 0·934 | 277·0 | 271·4 | + 3·8 | 0 | 31 | 584*n* |
| | | 148 | 0·411 | 348·5 | 208·2 | +16·4 | 18 | 90 | |
| Mar. 5 | | Centre | | | (203·3) | (− 7·3) | (18) | (121) | (584) |
| 64·070 | A, H | | 0·967 | 285·6 | 267·9 | +13·1 | | | 243 |
| | | | 0·908 | 281·4 | 258·7 | + 7·2 | | | 336 |
| Me. | | 148 | 0·446 | 331·4 | 207·9 | +16·0 | 19 | 168 | |
| Mar. 6 | | Centre | | | (195·1) | (− 7·2) | (19) | (168) | (579) |
| 65·082 | A, H | | 0·929 | 284·7 | 247·7 | + 9·8 | | | 285 |
| | | 148 | 0·571 | 312·3 | 207·7 | +16·1 | 34 | 322 | |
| Me. | | 149 | 0·741 | 257·1 | 229·7 | −14·4 | 19 | 139 | |
| | | 149 | 0·700 | 254·9 | 226·1 | −15·7 | 8 | 55 | |
| Mar. 7 | | Centre | | | (181·7) | (− 7·2) | 61) | (516) | (285) |
| 66·884 | H, WR | 148 | 0·838 | 294·1 | 210·5 | +15·6 | 9 | 79 | |
| | | 148 | 0·787 | 298·2 | 204·3 | +16·9 | 5 | 84 | |
| H. | | 149 | 0·954 | 256 6 | 231·5 | −14·9 | 0 | 55 | |
| | | 149 | 0·912 | 254·6 | 224·6 | −17·0 | 0 | 81 | |
| Mar. 8 | | Centre | | | (158·0) | (− 7·2) | (14) | (299) | (0) |
| 67·547 | JB, B | 148 | 0·893 | 292·8 | 208·2 | +16·5 | 51 | 281 | 1203*sp* |
| | | 149 | 0·964 | 254·4 | 225·1 | −17·0 | 0 | 179 | 104*np* |
| | | | 0·864 | 72·1 | 92·5 | +11·5 | | | 371 |
| Mar. 9 | | Centre | | | (149·3) | (− 7·2) | (51) | (460) | (1678) |
| 68·528 | JB, B | 148 | 0·977 | 287·6 | 211·2 | +15·4 | 27 | 247 | 983*f* |
| | | 149* | 0·931 | 94·5 | 67·4 | − 6·8 | 20 | 182 | 686*sf* |
| Mar. 10 | | Centre | | | (136·4) | (− 7·2) | (47) | (429) | (1669) |
| 69·597 | JB, B | | 0·908 | 282·6 | 185·1 | + 8·2 | | | 589 |
| | | 149* | 0·819 | 93·5 | 67·1 | − 7·0 | 31 | 213 | 789*s* |
| | | 150 | 0·971 | 91·9 | 46·0 | − 3·6 | 48 | 224 | |
| Mar. 11 | | Centre | | | (122·3) | (− 7·2) | (79) | (437) | (1378) |
| 70·680 | H, EP | 149† | 0·967 | 279·0 | 181·9 | + 6·8 | 0 | 13 | 384*nf* |
| | | 149* | 0·651 | 92·8 | 67·2 | − 7·3 | 8 | 57 | |
| H. | | 149* | 0·673 | 95·4 | 65·5 | − 9·0 | 0 | 22 | |
| | | 150 | 0·875 | 90·7 | 46·9 | − 4·2 | 29 | 92 | 504*c* |
| Mar. 12 | | Centre | | | (108·0) | (− 7·2) | (37) | (184) | (888) |
| 1875. | | | | ° | ° | ° | | | |
| 71·060 | A, H | | 0·970 | 279·4 | 177·5 | + 7·3 | | | 485 |
| | | 149* | 0·581 | 92·1 | 67·4 | − 7·1 | 16 | 108 | |
| Me. | | 150 | 0·831 | 89·7 | 46·8 | − 3·8 | 28 | 180 | 394*f* |
| | | | 0·955 | 71·5 | 33·4 | +15·2 | | | 208 |
| Mar. 13 | | Centre | | | (103·0) | (− 7·2) | (44) | (288) | (1087) |
| 72·644 | JB, B | 149* | 0·262 | 93·2 | 66·9 | − 7·8 | 0 | 14 | |
| | | 150 | 0·584 | 87·0 | 46·5 | − 4·1 | 28 | 169 | |
| Mar. 14 | | Centre | | | (82·1) | (− 7·2) | (28) | (183) | (0) |
| 73·584 | JB, B | 150 | 0·394 | 83·3 | 46·8 | − 3·9 | 25 | 166 | |
| Mar. 15 | | Centre | | | (69·7) | (− 7·1) | (25) | (166) | (0) |
| 74·127 | A, H | 149* | 0·076 | 232·7 | 66·0 | − 9·8 | 0 | 10 | |
| Me. | | 150 | 0·273 | 78·5 | 46·7 | − 3·7 | 11 | 122 | |
| Mar. 16 | | Centre | | | (62·5) | (− 7·1) | (11) | (132) | (0) |
| 75·760 | H, WR | 150* | 0·275 | 258·4 | 56·9 | −10·0 | 6 | 35 | |
| | | 150* | 0·215 | 256·4 | 53·3 | − 9·9 | 3 | 34 | |
| | | 150 | 0·125 | 300·0 | 47·3 | − 3·5 | 11 | 45 | |
| H. | | 150† | 0·191 | 87·4 | 30·1 | − 6·5 | 4 | 27 | |
| | | 151 | 0·993 | 70·8 | 320·8 | +18·0 | 55 | 529 | |
| | | | 0·965 | 102·0 | 325·3 | −13·4 | | | 577 |
| Mar. 17 | | Centre | | | (41·1) | (− 7·1) | (79) | (670) | (577) |
| 76·570 | JB, B | | 0·897 | 285·5 | 91·7 | +10·5 | | | 435 |
| | | 150* | 0·410 | 262·7 | 54·6 | − 9·4 | 21 | 85 | |
| | | 150* | 0·294 | 281·1 | 47·1 | − 3·5 | 6 | 26 | |
| | | 151 | 0·955 | 69·2 | 321·2 | +17·5 | 91 | 384 | 342*f* |
| | | | 0·909 | 102·2 | 324·3 | −14·0 | | | 518 |
| Mar. 18 | | Centre | | | (30·4) | (− 7·1) | (118) | (495) | (1295) |
| 77·691 | H, WR | 150* | 0·694 | 263·9 | 59·8 | − 9·3 | 0 | 9 | |
| | | 150* | 0·615 | 263·0 | 53·7 | − 9·8 | 0 | 29 | |
| | | 150 | 0·531 | 274·5 | 47·5 | − 3·6 | 0 | 18 | |
| H. | | 150† | 0·273 | 268·9 | 31·5 | − 7·0 | 0 | 20 | |
| | | 151 | 0·854 | 64·4 | 321·9 | +17·6 | 50 | 363 | 450*f* |
| Mar. 19 | | Centre | | | (15·6) | (− 7·0) | (50) | (439) | (450) |
| 78·076 | A, H | | 0·969 | 280·5 | 84·6 | + 8·3 | | | 317 |
| | | 150* | 0·754 | 263·9 | 59·7 | − 9·2 | 0 | 23 | 931*nf* |
| Me. | | 150* | 0·670 | 263·2 | 52·8 | − 9·8 | 4 | 14 | 881*f* |
| | | 150 | 0·598 | 274·0 | 47·0 | − 3·3 | 2 | 17 | |

Group 148, March 5–10. Several small spots ranged in a straight line.
Group 149, March 7–9. One spot.
Group 149*, March 10–16. One spot, regular in shape. It has divided into two parts by March 12, and is not seen on March 15.
Group 149†, March 12. A small spot.
Group 150, March 11–21. Single spot.
Group 150*, March 17–21. Some small spots, forming *s p* Group 150.
Group 150†, March 17–20. A small spot, not seen on March 18; probably hidden by the wire.
Group 151, March 17–29. One large spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 78·076 | A, H | 150† | 0·353 | 268·6 | 31·2 | − 7·1 | 0 | 18 | |
| Me. | | 151* | 0·147 | 142·8 | 5·3 | −13·7 | 0 | 70 | |
| | | 151 | 0·817 | 62·0 | 321·3 | +18·0 | 57 | 329 | |
| Mar. 20 | | Centre | | | (10·5) | (−7·0) | (63) | (471) | (2129) |
| 79·207 | A, H | 150* | 0·833 | 262·9 | 52·0 | − 9·8 | 0 | 8 | 807*p* |
| | | 150* | 0·817 | 261·9 | 50·8 | −10·7 | 0 | 11 | |
| | | 150 | 0·788 | 271·0 | 47·5 | − 3·5 | 0 | 14 | |
| Me. | | 151* | 0·211 | 235·6 | 5·9 | −13·7 | 8 | 107 | |
| | | 151 | 0·672 | 53·4 | 321·2 | +17·8 | 62 | 362 | 770*nf* |
| | | | 0·972 | 101·1 | 278·2 | −12·4 | | | 150 |
| Mar. 21 | | Centre | | | (355·6) | (−7·0) | (70) | (502) | (1727) |
| 80·725 | H, WR | | 0·925 | 264·5 | 43·5 | − 7·7 | | | 438 |
| H. | | 151* | 0·557 | 253·3 | 8·9 | −15·0 | 0 | 113 | |
| | | 151 | 0·482 | 30·1 | 320·8 | +17·9 | 41 | 247 | |
| Mar. 22 | | Centre | | | (335·5) | (−6·9) | (41) | (360) | (438) |
| 81·435 | JB, B | | 0·911 | 264·3 | 32·3 | − 8·1 | | | 230 |
| | | 151* | 0·687 | 256·7 | 9·6 | −14·1 | 111 | 459 | |
| | | 151 | 0·434 | 12·4 | 320·6 | +18·1 | 72 | 343 | |
| | | | 0·829 | 77·5 | 271·9 | + 6·3 | | | 276 |
| Mar. 23 | | Centre | | | (326·2) | (−6·9) | (183) | (802) | (506) |
| 82·115 | A, H | | 0·947 | 257·3 (257·9 | 29·3 | −13·7 | | | 229 |
| Me. | | 151* | 0·792 | ~~250·9~~ | 9·~~5~~9 | −1~~0~~·3 | 87 | 702 | 336*c* |
| | | 151 | 0·425 | 346·7 | 323·1 | +17·5 | 55 | 296 | |
| Mar. 24 | | Centre | | | (317·2) | (−6·9) | (142) | (998) | (565) |
| 83·448 | JB, B | 151* | 0·931 | 256·9 | 8·9 | −14·6 | 102 | 491 | 879*c* |
| | | 151 | 0·542 | 321·0 | 320·6 | +18·5 | 66 | 325 | |
| | | | 0·921 | 105·5 | 231·9 | −16·9 | | | 237 |
| Mar. 25 | | Centre | | | (299·7) | (−6·8) | (168) | (816) | (1116) |
| 84·608 | JB, B | 151* | 0·986 | 257·0 | 5·9 | −13·9 | 0 | 215 | 171*c* |
| | | 151 | 0·690 | 306·3 | 320·1 | +18·6 | 60 | 323 | |
| | | | 0·951 | 71·4 | 215·5 | +15·3 | | | 569 |
| Mar. 26 | | Centre | | | (284·4) | (−6·8) | (60) | (538) | (740) |
| 85·428 | JB, B | 151 | 0·795 | 300·0 | 320·0 | +18·8 | 41 | 288 | |
| | | | 0·902 | 70·1 | 212·4 | +14·7 | | | 557 |
| Mar. 27 | | Centre | | | (273·5) | (−6·7) | (41) | (288) | (557) |
| 1875. | | | | ° | ° | ° | | | |
| 86·530 | JB, B | | 0·875 | 298·9 | 314·0 | +21·2 | | | 576 |
| | | 151 | 0·907 | 294·8 | 319·4 | +19·1 | 57 | 330 | |
| | | 152 | 0·226 | 40·6 | 250·6 | + 3·2 | 0 | 36 | |
| | | | 0·924 | 78·3 | 193·2 | + 8·1 | | | 1193 |
| Mar. 28 | | Centre | | | (259·0) | (−6·7) | (57) | (366) | (1769) |
| 87·713 | H, WR | 151 | 0·982 | 290·6 | 319·1 | +18·7 | 27 | 224 | 839*ef* |
| | | 152 | 0·265 | 317·5 | 253·7 | + 4·7 | 19 | 85 | |
| | | 152 | 0·243 | 327·6 | 250·9 | + 5·2 | 0 | 20 | |
| | | 152 | 0·192 | 333·3 | 248·3 | + 3·3 | 10 | 88 | |
| H. | | 152 | 0·188 | 320·5 | 250·2 | + 1·7 | 0 | 5 | |
| | | 152* | 0·680 | 107·0 | 200·9 | −16·4 | 0 | 31 | |
| | | 152* | 0·713 | 107·2 | 198·2 | −16·9 | 6 | 40 | |
| | | | 0·861 | 79·4 | 185·4 | + 5·6 | | | 764 |
| Mar. 29 | | Centre | | | (243·4) | (−6·6) | (62) | (493) | (1603) |
| 88·703 | H, WR | 152 | 0·441 | 295·1 | 253·9 | + 4·8 | 21 | 137 | |
| | | 152 | 0·400 | 297·8 | 251·1 | + 4·7 | 5 | 34 | |
| | | 152 | 0·347 | 298·8 | 248·1 | + 3·4 | 17 | 50 | |
| H. | | 152* | 0·479 | 111·0 | 202·8 | −15·7 | 0 | 36 | |
| | | 152* | 0·547 | 111·3 | 198·3 | −17·0 | 23 | 59 | |
| Mar. 30 | | Centre | | | (230·4) | (−6·5) | (66) | (316) | (0) |
| 89·752 | H, WR | 152 | 0·642 | 285·4 | 254·7 | + 4·7 | 28 | 172 | |
| | | 152 | 0·594 | 285·6 | 251·3 | + 3·9 | 0 | 20 | |
| | | 152 | 0·552 | 286·2 | 248·4 | + 3·3 | 8 | 46 | |
| H. | | 152* | 0·267 | 127·6 | 203·9 | −15·7 | 8 | 57 | |
| | | 152* | 0·355 | 120·9 | 198·1 | −16·6 | 26 | 46 | |
| | | | 0·898 | 76·7 | 154·5 | + 8·9 | | | 287 |
| Mar. 31 | | Centre | | | (216·5) | (−6·5) | (70) | (341) | (287) |
| 90·587 | WR, H | 152 | 0·689 | 282·0 | 247·7 | + 3·5 | 0 | 9 | |
| | | 152 | 0·723 | 281·7 | 250·4 | + 3·9 | 0 | 38 | |
| | | 152 | 0·771 | 281·2 | 254·6 | + 4·4 | 0 | 120 | |
| | | 152* | 0·221 | 142·8 | 197·4 | −16·5 | 9 | 78 | |
| | | 152* | 0·189 | 155·8 | 200·8 | −16·3 | 0 | 7 | |
| | | 152* | 0·170 | 166·2 | 203·0 | −15·9 | 0 | 65 | |
| Apr. 1 | | Centre | | | (205·4) | (−6·4) | (9) | (317) | (0) |
| 91·460 | JB, B | 152 | 0·880 | 278·7 | 254·4 | + 4·5 | 28 | 122 | 528*f* |
| | | 152* | 0·209 | 220·8 | 202·1 | −15·4 | 33 | 194 | |
| Apr. 2 | | Centre | | | (194·0) | (−6·4) | (61) | (316) | (528) |

Group 151*, March 20–26. Two large spots.
Group 152, March 28–April 2. A number of small spots.
Group 152*, March 29–April 4. A number of small spots in a straight line.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 93·567 | JB, B | | 0·834 | 295·3 | 218·1 | +17·0 | | | 275 |
| | | 152* | 0·615 | 252·7 | 203·5 | −15·5 | 0 | 55 | |
| | | 153 | 0·835 | 102·1 | 109·3 | −13·5 | 0 | 11 | 283*n* |
| | | | 0·912 | 78·0 | 102·1 | + 8·2 | | | 341 |
| Apr. 4 | | Centre | | | (166·2) | (− 6·3) | (0) | (66) | (899) |
| 94·507 | JB, B | | 0·921 | 286·8 | 218·2 | +12·8 | | | 449 |
| | | 153* | 0·263 | 20·7 | 148·4 | + 8·0 | 0 | 16 | |
| Apr. 5 | | Centre | | | (153·7) | (− 6·2) | (0) | (16) | (449) |
| 95·427 | JB, B | | 0·916 | 285·8 | 205·6 | +11·9 | | | 405 |
| | | 153* | 0·265 | 335·9 | 147·8 | + 7·8 | 2 | 51 | |
| Apr. 6 | | Centre | | | (141·6) | (− 6·1) | (2) | (51) | (405) |
| 96·667 | H, WR | | 0·941 | 254·8 | 196·1 | −16·3 | | | 393 |
| H. | | 153* | 0·453 | 299·7 | 148·6 | + 7·4 | 3 | 59 | |
| Apr. 7 | | Centre | | | (125·3) | (− 6·0) | (3) | (59) | (393) |
| 97·522 | JB, B | 153* | 0·597 | 291·9 | 147·8 | + 7·9 | 0 | 17 | |
| Apr. 8 | | Centre | | | (114·0) | (− 6·0) | (0) | (17) | (0) |
| 98·108 | A, H | 153* | 0·739 | 285·9 | 151·9 | + 7·5 | 0 | 16 | |
| Me. | | | | | | | | | |
| Apr. 9 | | Centre | | | (106·3) | (− 6·0) | (0) | (16) | (0) |
| 99·641 | H, WR | | 0·907 | 281·4 | 149·6 | + 7·8 | | | 341 |
| | | 153† | 0·314 | 304·8 | 100·9 | + 4·7 | 7 | 15 | |
| | | 153† | 0·259 | 309·1 | 97·6 | + 3·7 | 5 | 42 | |
| H. | | 154 | 0·885 | 77·5 | 25·4 | + 8·2 | 0 | 28 | 440*c* |
| | | 154 | 0·905 | 76·0 | 23·1 | +10·0 | 0 | 21 | |
| | | 155 | 0·962 | 102·6 | 11·2 | −13·7 | 53 | 434 | 502*c* |
| Apr. 10 | | Centre | | | (86·0) | (− 5·8) | (65) | (540) | (1283) |
| 102·565 | JB, B | 153† | 0·812 | 281·3 | 100·8 | + 5·8 | 0 | 34 | |
| | | 153† | 0·823 | 281·0 | 101·0 | + 5·7 | 0 | 44 | 287*np* |
| | | 154 | 0·385 | 48·6 | 30·5 | + 9·3 | 24 | 100 | |
| | | 155 | 0·615 | 105·8 | 10·0 | −14·1 | 82 | 482 | |
| Apr. 13 | | Centre | | | (47·4) | (− 5·6) | (106) | (660) | (287) |
| 103·531 | JB, B | 153† | 0·915 | 278·6 | 99·8 | + 5·6 | 0 | 79 | 737*n* |
| | | 154 | 0·263 | 12·6 | 31·3 | + 9·3 | 32 | 105 | |
| | | 155 | 0·437 | 110·8 | 9·8 | −13·9 | 80 | 429 | |
| Apr. 14 | | Centre | | | (34·6) | (− 5·5) | (112) | (613) | (737) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in term of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 104·671 | H, EP | 154 | 0·329 | 318·5 | 32·3 | + 8·9 | 19 | 101 | |
| | | 154 | 0·308 | 326·6 | 29·5 | + 9·5 | 0 | 9 | |
| H | | 154 | 0·288 | 332·1 | 27·4 | + 9·3 | 0 | 7 | |
| | | 155 | 0·223 | 134·4 | 10·2 | −14·3 | 59 | 370 | |
| | | | 0·934 | 65·1 | 314·7 | +20·9 | | | 707 |
| Apr. 15 | | Centre | | | (19·6) | (− 5·4) | (78) | (487) | (707) |
| 105·543 | JB, B | 154 | 0·449 | 303·2 | 30·3 | + 9·2 | 40 | 169 | |
| | | 155 | 0·161 | 193·9 | 10·4 | −14·3 | 75 | 336 | |
| | | | 0·861 | 60·6 | 314·3 | +21·9 | | | 823 |
| Apr. 16 | | Centre | | | (8·1) | (− 5·4) | (115) | (505) | (823) |
| 106·470 | JB, B | 154 | 0·615 | 293·0 | 30·7 | + 9·5 | 22 | 148 | |
| | | 155 | 0·285 | 237·5 | 10·1 | −13·9 | 66 | 330 | |
| | | | 0·800 | 52·1 | 311·5 | +25·6 | | | 703 |
| | | | 0·917 | 76·2 | 291·1 | +10·4 | | | 397 |
| Apr. 17 | | Centre | | | (355·8) | (− 5·3) | (88) | (478) | (1100) |
| 107·517 | JB, B | 154 | 0·806 | 285·0 | 33·7 | + 8·8 | 16 | 106 | 250*nf* |
| | | 155 | 0·491 | 251·3 | 10·4 | −13·6 | 64 | 292 | |
| | | | 0·780 | 60·2 | 296·4 | +19·2 | | | 202 |
| | | | 0·907 | 73·3 | 279·2 | +12·7 | | | 191 |
| Apr. 18 | | Centre | | | (342·0) | (− 5·2) | (80) | (398) | (643) |
| 108·444 | JB, B | 154 | 0·911 | 282·0 | 33·8 | + 8·7 | 13 | 76 | 615*nf* |
| | | 155 | 0·652 | 255·2 | 10·0 | −13·5 | 38 | 252 | |
| | | | 0·936 | 72·3 | 262·9 | +14·6 | | | 241 |
| Apr. 19 | | Centre | | | (329·8) | (− 5·1) | (51) | (328) | (856) |
| 109·581 | JB, B | 154 | 0·990 | 279·2 | 35·3 | + 8·3 | 0 | 79 | 500*nf* |
| | | 155 | 0·819 | 257·6 | 9·6 | −13·0 | 47 | 243 | 761*sf* |
| | | 156 | 0·946 | 75·1 | 245·7 | +12·3 | 0 | 30 | 581*np* |
| Apr. 20 | | Centre | | | (314·7) | (− 5·0) | (47) | (352) | (1842) |
| 110·699 | H, WR | 155 | 0·942 | 257·4 | 10·7 | −13·5 | 0 | 246 | 952*c* |
| H | | 156 | 0·831 | 71·7 | 246·3 | +12·3 | 0 | 51 | 245*c* |
| Apr. 21 | | Centre | | | (300·0) | (− 4·9) | (0) | (297) | (1197) |
| 111·659 | H, WR | | 0·973 | 255·0 | 293·1 | −13·4 | | | 459 |
| H. | | 156 | 0·705 | 67·1 | 245·8 | +12·3 | 0 | 39 | 181*sf* |
| | | | 0·925 | 72·5 | 222·0 | +14·2 | | | 243 |
| Apr. 22 | | Centre | | | (287·3) | (− 4·8) | (0) | (39) | (883) |

Group 153, April 4. One very small spot.
Group 153*, April 5–9. One very small spot.
Group 153†, April 10–14. Two very small spots.
Group 154, April 10–20. Two small spots on April 10. One spot, regular in shape, on April 13. Has two companions on April 15; but on April 18 only the chief spot remains.
Group 155, April 10–21. Two large spots very close together.
Group 156, April 20–22. One small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 112·703 | H, WR | | 0·916 | 287·8 | 337·3 | +14·3 | | | 109 |
| H. | | | 0·823 | 69·6 | 221·0 | +13·8 | | | 207 |
| Apr. 23 | | Centre | | | (273·4) | (−4·7) | (0) | (0) | (316) |
| 113·488 | JB, B | | 0·858 | 70·2 | 206·9 | +14·3 | | | 291 |
| Apr. 24 | | Centre | | | (263·1) | (−4·7) | (0) | (0) | (291) |
| 114·481 | JB, B | | 0·913 | 299·7 | 310·6 | +24·7 | | | 652 |
| | | 156* | 0·923 | 94·8 | 182·6 | − 6·1 | 54 | 263 | 706*f* |
| Apr. 25 | | Centre | | | (250·0) | (−4·6) | (54) | (263) | (1358) |
| 115·515 | JB, B | 156* | 0·807 | 94·3 | 182·6 | − 6·1 | 39 | 184 | |
| | | 157 | 0·977 | 80·1 | 160·0 | + 8·7 | 0 | 552 | |
| Apr. 26 | | Centre | | | (236·3) | (−4·5) | (39) | (736) | (0) |
| 116·497 | JB, B | 156* | 0·653 | 94·0 | 182·6 | − 5·9 | 49 | 223 | |
| | | 157 | 0·914 | 78·2 | 158·8 | + 8·9 | 100 | 823 | 1368*nf* |
| Apr. 27 | | Centre | | | (223·4) | (−4·4) | (149) | (1046) | (1368) |
| 117·548 | JB, B | 156* | 0·455 | 94·9 | 182·5 | − 6·0 | 28 | 178 | |
| | | 157 | 0·798 | 75·1 | 158·3 | + 9·2 | 127 | 773 | 918*nf* |
| Apr. 28 | | Centre | | | (209·5) | (−4·3) | (155) | (951) | (918) |
| 118·582 | JB, B | 156* | 0·239 | 99·1 | 182·2 | − 6·2 | 32 | 147 | |
| | | 157 | 0·640 | 69·4 | 158·5 | + 9·6 | 133 | 981 | |
| Apr. 29 | | Centre | | | (195·8) | (−4·2) | (165) | (1128) | (0) |
| 119·499 | JB, B | 156* | 0·042 | 145·1 | 182·3 | − 6·1 | 0 | 38 | |
| | | 157 | 0·486 | 61·6 | 158·1 | + 9·6 | 74 | 773 | |
| Apr. 30 | | Centre | | | (183·7) | (−4·1) | (74) | (811) | (0) |
| 120·129 | A, H | 156* | 0·114 | 248·1 | 181·4 | − 6·4 | 15 | 89 | |
| | | 157 | 0·365 | 50·7 | 158·7 | + 9·5 | 103 | 554 | |
| Me. | | 157* | 0·495 | 58·0 | 150·0 | +11·6 | 17 | 212 | |
| | | | 0·920 | 77·9 | 109·7 | + 9·5 | | | 426 |
| May 1 | | Centre | | | (175·3) | (−4·0) | (135) | (855) | (426) |
| 122·499 | JB, B | 156* | 0·614 | 264·1 | 181·8 | − 6·6 | 19 | 79 | |
| | | 157 | 0·347 | 310·1 | 159·5 | + 9·3 | 99 | 691 | |
| May 3 | | Centre | | | (144·0) | (−3·8) | (118) | (770) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 123·072 | A, H | 156* | 0·708 | 265·1 | 181·5 | − 6·1 | 19 | 52 | |
| Me. | | 157 | 0·440 | 300·1 | 159·1 | + 9·3 | 63 | 564 | |
| May 4 | | Centre | | | (136·5) | (−3·7) | (82) | (616) | (0) |
| 124·482 | JB, B | 156* | 0·898 | 264·2 | 181·7 | − 6·8 | 0 | 26 | |
| | | 157 | 0·694 | 287·1 | 159·8 | + 9·1 | 89 | 590 | |
| May 5 | | Centre | | | (117·8) | (−3·6) | (89) | (616) | (0) |
| 125·504 | B, B | 157 | 0·841 | 283·1 | 160·1 | + 9·0 | 89 | 397 | |
| May 6 | | Centre | | | (104·3) | (−3·5) | (89) | (397) | (0) |
| 126·772 | H, WR | 157 | 0·958 | 280·1 | 159·8 | + 8·7 | 76 | 351 | 1275*nf* |
| H. | | | 0·949 | 104·9 | 15·9 | −15·1 | | | 385 |
| May 7 | | Centre | | | (87·5) | (−3·3) | (76) | (351) | (1660) |
| 128·460 | B, B | | 0·914 | 105·7 | 359·4 | −15·6 | | | 454 |
| May 9 | | Centre | | | (65·2) | (−3·1) | (0) | (0) | (454) |
| 129·700 | H, WR | | 0·744 | | | | | | 272 |
| H. | | | | | | | | | |
| May 10 | | Centre | | | (48·8) | (−3·0) | (0) | (0) | (272) |
| 130·649 | H, WR | | 0·967 | 283·0 | 110·3 | +11·8 | | | 321 |
| H. | | | 0·857 | 290·9 | 92·5 | +16·2 | | | 246 |
| May 11 | | Centre | | | (36·3) | (−2·9) | (0) | (0) | (567) |
| May 12 | | No Spots or Faculæ. | | | | | | | |
| 132·718 | H, WR | | 0·873 | 265·7 | 69·7 | − 5·1 | | | 285 |
| H. | | | | | | | | | |
| May 13 | | Centre | | | (9·0) | (−2·7) | (0) | (0) | (285) |
| 133·575 | B, B | | 0·944 | 265·4 | 68·2 | − 5·2 | | | 265 |
| | | | 0·924 | 70·7 | 292·2 | +16·8 | | | 293 |
| May 14 | | Centre | | | (357·6) | (−2·5) | (0) | (0) | (558) |
| 134·598 | B, B | | 0·820 | 284·5 | 37·7 | +10·4 | | | 202 |
| | | | 0·863 | 63·8 | 288·2 | +21·1 | | | 477 |
| May 15 | | Centre | | | (344·1) | (−2·4) | (0) | (0) | (679) |
| 136·477 | JB, B | | 0·928 | 287·5 | 25·6 | +15·3 | | | 230 |
| | | | 0·849 | 233·5 | 12·3 | −31·6 | | | 207 |
| | | | 0·944 | 75·5 | 249·8 | +12·9 | | | 129 |
| May 17 | | Centre | | | (319·2) | (−2·2) | (0) | (0) | (566) |

Group 156*, April 25–May 5. Two small spots very close together.
Group 157, April 26–May 7. One large spot, with several small ones following it.
Group 157*, May 1. A pair of spots following Group 157.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of Umbra for each Spot (and for Day). | Spots. Area of Whole for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 137·766 | H, WR | | 0·958 | 253·2 | 15·1 | −16·7 | | | 282 |
| H. | | | 0·859 | 252·0 | 0·3 | −16·5 | | | 119 |
| May 18 | | Centre | | | (302·1) | (−2·1) | (0) | (0) | (401) |
| 138·077 | A, H | | 0·910 | 250·8 | 2·6 | −18·3 | | | 288 |
| Me. | | | 0·931 | 72·6 | 231·1 | +15·4 | | | 209 |
| May 19 | | Centre | | | (298·0) | (−2·0) | (0) | (0) | (497) |
| 139·077 | A, H | | 0·904 | 71·1 | 222·0 | +16·2 | | | 259 |
| Me. | | | | | | | | | |
| May 20 | | Centre | | | (284·7) | (−1·9) | (0) | (0) | (259) |
| 140·533 | JB, B | | 0·963 | 81·0 | 191·8 | + 8·2 | | | 226 |
| May 21 | | Centre | | | (265·5) | (−1·7) | (0) | (0) | (226) |
| 141·667 | H, WR | 157† | 0·828 | 78·5 | 195·6 | + 8·6 | 0 | 13 | 177*f* |
| H. | | | 0·875 | 96·0 | 189 9 | + 4·4 | | | 121 |
| | | | 0·984 | 81·6 | 171·4 | + 8·0 | | | 244 |
| May 22 | | Centre | | | (250·5) | (−1·6) | (0) | (13) | (542) |
| May 23 | | No Spots or Faculæ. | | | | | | | |
| 143·535 | JB, B | 158 | 0·385 | 41·1 | 210·6 | +15·5 | 0 | 46 | |
| | | 159 | 0·896 | 80·3 | 163·0 | + 8·0 | 0 | 35 | 905*f* |
| May 24 | | Centre | | | (225·8) | (−1·4) | (0) | (81) | (905) |
| 145·610 | JB, B | 159 | 0·595 | 74·5 | 163·1 | + 8·2 | 0 | 27 | |
| May 26 | | Centre | | | (198·4) | (−1·2) | (0) | (27) | (0) |
| 146·644 | H, WR | 159 | 0·403 | 66·9 | 162·7 | + 8·1 | 5 | 26 | |
| H. | | | 0·922 | 82·6 | 117·9 | + 6·5 | | | 103 |
| May 27 | | Centre | | | (184·6) | (−1·0) | (5) | (26) | (103) |
| 147·647 | H, WR | 159 | 0·217 | 41·5 | 163·1 | + 8·5 | 6 | 18 | |
| H. | | | 0·803 | 79·3 | 118·8 | + 8·1 | | | 176 |
| May 28 | | Centre | | | (171·4) | (−0·9) | (6) | (18) | (176) |
| 150·603 | H, WR | | 0·861 | 280·2 | 190·9 | + 8·5 | | | 186 |
| H. | | | 0·964 | 101·2 | 58·1 | −10·9 | | | 232 |
| May 31 | | Centre | | | (132·2) | (−0·5) | (0) | (0) | (418) |
| 151·542 | JB, B | 160 | 0·866 | 102·0 | 60·6 | −10·5 | 3 | 79 | |
| June 1 | | Centre | | | (119·9) | (−0·4) | (3) | (79) | (0) |
| 152·527 | JB, B | | 0·853 | 284·3 | 164·3 | +12·0 | | | 639 |
| | | 160 | 0·735 | 103·6 | 60·5 | −10·1 | 33 | 202 | 549*nf* |
| June 2 | | Centre | | | (106·8) | (−0·3) | (33) | (202) | (1188) |
| 1875. | | | | ° | ° | ° | | | |
| 153·602 | JB, B | | 0·918 | 283·8 | 158·4 | +12·6 | | | 686 |
| | | 160 | 0·553 | 109·7 | 60·8 | −10·8 | 58 | 496 | |
| June 3 | | Centre | | | (92·6) | (−0·2) | (58) | (496) | (686) |
| 154·532 | JB, B | | 0·949 | 284·7 | 151·0 | +13·8 | | | 217 |
| | | 160 | 0·380 | 119·3 | 60·7 | −10·7 | 72 | 478 | |
| June 4 | | Centre | | | (80·3) | (−0·1) | (72) | (478) | (217) |
| 155·634 | JB, B | 160 | 0·193 | 156·7 | 61·3 | −10·1 | 97 | 520 | |
| June 5 | | Centre | | | (65·7) | (+0·1) | (97) | (520) | (0) |
| 158·532 | JB, B | 160 | 0·586 | 252·6 | 61·8 | − 9·7 | 57 | 502 | |
| June 8 | | Centre | | | (27·4) | (+0·4) | (57) | (502) | (0) |
| 160·564 | JB, B | 160 | 0·886 | 258·2 | 62·0 | −10·1 | 60 | 433 | 701*sf* |
| June 10 | | Centre | | | (0·5) | (+0·−) | (60) | (433) | (701) |
| 161·560 | JB, B | 160 | 0·966 | 259·1 | 61·5 | −10·4 | 87 | 457 | 582*c* |
| June 11 | | Centre | | | (347·3) | (+0·8) | (87) | (457) | (582) |
| June 12 | | No Spots or Faculæ. Photograph | | | | | | | |
| 164·686 | H, WR | | 0·906 | 254·9 | 9·6 | −13·1 | | | 112 |
| H. | | | 0·861 | 83·3 | 246·8 | + 6·4 | | | 186 |
| | | | 0·971 | 68·8 | 230·3 | +20·9 | | | 351 |
| June 14 | | Centre | | | (305·9) | (+1·2) | (0) | (0) | (649) |
| June 15 | | No Spots or Faculæ. | | | | | | | |
| 166·516 | JB, B | 161 | 0·566 | 80·9 | 247·6 | + 6·2 | 23 | 179 | |
| | | | 0·843 | 103·8 | 225·4 | −10·9 | | | 234 |
| June 16 | | Centre | | | (281·7) | (+1·4) | (23) | (179) | (234) |
| 167·457 | JB, B | 161 | 0·381 | 76·3 | 247·4 | + 6·6 | 87 | 545 | |
| June 17 | | Centre | | | (269·2) | (+1·5) | (87) | (545) | (0) |
| 169·478 | JB, B | 161 | 0·116 | 318·2 | 246·8 | + 6·6 | 122 | 722 | |
| | | | 0·904 | 81·7 | 178·1 | + 8·2 | | | 214 |
| June 19 | | Centre | | | (242·5) | (+1·7) | (122) | (722) | (214) |

Group 157†, May 22. A small spot.
Group 158, May 24. Two small spots.
Group 159, May 24–28. One small spot.
Group 160, June 1–11. Two spots. This group greatly increases in size on June 3 and following days
Group 161, June 16–24. Three or four small spots close together.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 170·644 | JB, B | 161 | 0·366 | 283·4 | 247 9 | + 6·6 | 98 | 527 | |
| June 20 | | Centre | | | (227·0) | (+ 1·9) | (98) | (527) | (0) |
| 171·678 | H, WR | 161 | 0·605 | 277·4 | 250·3 | + 6·1 | 24 | 170 | |
| | | 161 | 0·521 | 278·3 | 244·4 | + 6·0 | 34 | 201 | |
| H. | | 162 | 0·215 | 139·7 | 205·3 | − 7·4 | 0 | 18 | |
| | | 162* | 0·767 | 69·1 | 164·9 | +17·2 | 0 | 22 | 773*f* |
| June 21 | | Centre | | | (213·3) | (+ 2·0) | (58) | (411) | (773) |
| 172·497 | JB, B | 161 | 0·705 | 276·8 | 247·0 | + 6·2 | 72 | 440 | |
| | | 162 | 0·198 | 203·3 | 207·0 | − 8·4 | 31 | 206 | |
| June 22 | | Centre | | | (202·5) | (+ 2·1) | (103) | (646) | (0) |
| 173·530 | JB, B | 161 | 0·854 | 275·4 | 247·3 | + 5·8 | 103 | 333 | 955*c* |
| | | 162 | 0·334 | 239·5 | 205·6 | − 7·6 | 105 | 551 | |
| June 23 | | Centre | | | (188·8) | (+ 2·2) | (208) | (884) | (955) |
| 174·483 | JB, B | 161 | 0·942 | 275·4 | 246·4 | + 5·8 | 7 | 157 | 490*c* |
| | | 162 | 0·524 | 251·2 | 206·1 | − 7·7 | 184 | 775 | |
| June 24 | | Centre | | | (176·2) | (+ 2·3) | (191) | (932) | (490) |
| 175·552 | JB, B | 162 | 0·704 | 257·4 | 205·7 | − 7·0 | 181 | 856 | |
| June 25 | | Centre | | | (162·0) | (+ 2·4) | (181) | (856) | (0) |
| 176·519 | JB, B | 162 | 0·846 | 259·1 | 206·2 | − 7·8 | 123 | 826 | |
| June 26 | | Centre | | | (149·4) | (+ 2·5) | (123) | (826) | (0) |
| 177·531 | JB, B | 162 | 0·941 | 261·1 | 205·3 | − 7·4 | 106 | 611 | 717*c* |
| | | 163 | 0·961 | 102·9 | 63·1 | −11·6 | 28 | 170 | 329*p* |
| June 27 | | Centre | | | (135·9) | (+ 2·6) | (134) | (781) | (1046) |
| 178·611 | H, WR | 164 | 0·312 | 295·9 | 138·1 | +10·5 | 5 | 28 | |
| H. | | 163 | 0·870 | 104·0 | 62·5 | −10·7 | 20 | 163 | 402*c* |
| June 28 | | Centre | | | (121·6) | (+ 2·8) | (25) | (191) | (402) |
| 179·501 | M, M | 164 | 0·482 | 285·4 | 137·8 | + 9·8 | 10 | 51 | |
| | | 163 | 0·750 | 107·2 | 63·1 | −10·8 | 18 | 111 | |
| June 29 | | Centre | | | (109·8) | (+ 2·9) | (28) | (162) | (0) |
| 1875. | | | | ° | ° | ° | | | |
| 180·081 | A, H | | 0·916 | 281·8 | 168·2 | +12·0 | | | 545 |
| | | 164 | 0·583 | 284 3 | 136·9 | +10·6 | 25 | 72 | |
| Me. | | 163 | 0·662 | 109·3 | 62·7 | −10·4 | 16 | 130 | |
| | | 163* | 0·860 | 80·2 | 42·9 | + 9·9 | 0 | 11 | 318*f* |
| June 30 | | Centre | | | (102·0) | (+ 2·9) | (41) | (213) | (863) |
| 182·426 | JB, B | 164 | 0·924 | 282·0 | 138·5 | +12·3 | 18 | 139 | 265*sp* |
| | | 163 | 0·260 | 148·7 | 63·2 | − 9·6 | 21 | 102 | |
| July 2 | | Centre | | | (71·0) | (+ 3·2) | (39) | (241) | (265) |
| 183·602 | WR, H | | 0·987 | 279·7 | 136·5 | +10·2 | | | 409 |
| H. | | 163 | 0·260 | 210·2 | 63·1 | − 9·6 | 15 | 93 | |
| July 3 | | Centre | | | (55·5) | (+ 3·3) | (15) | (93) | (409) |
| 185·393 | JB, B | 163 | 0·556 | 247·4 | 62·9 | − 9·2 | 13 | 40 | |
| July 5 | | Centre | | | (31·3) | (+ 3·5) | (13) | (40) | (0) |
| 186·429 | JB, B | 163 | 0·729 | 253·3 | 62·9 | − 9·5 | 9 | 38 | |
| July 6 | | Centre | | | (18·0) | (+ 3·6) | (9) | (38) | (0) |
| 188·596 | WR, H | | 0·953 | 257·9 | 60·5 | −10·3 | | | 409 |
| H. | | 164* | 0·825 | 74·2 | 294·3 | +15·2 | 0 | 27 | 309*c* |
| July 8 | | Centre | | | (349·4) | (+ 3·8) | (0) | (27) | (718) |
| 189·595 | WR, H | 164* | 0·686 | | | | 28 | 159 | |
| H. | | | | | | | | | |
| July 9 | | Centre | | | | | (28) | (159) | (0) |
| 190·554 | JB, B | 164* | 0·522 | 66·3 | 293·9 | +15·6 | 36 | 144 | |
| | | | 0·947 | 80·5 | 252·1 | +10·3 | | | 826 |
| July 10 | | Centre | | | (323·5) | (+ 4·0) | (36) | (144) | (826) |
| 192·585 | WR, H | | 0·946 | 256·2 | 6·1 | −11·6 | | | 428 |
| | | 164* | 0·213 | 1·6 | 296·2 | +16·5 | 0 | 11 | |
| H. | | 164* | 0·238 | 20·9 | 291·5 | +17·0 | 17 | 75 | |
| July 12 | | Centre | | | (296·6) | (+ 4·2) | (17) | (86) | (428) |
| 193·644 | WR, H | 164* | 0·267 | 324·0 | 291·9 | +16·7 | 6 | 69 | |
| H. | | | 0·955 | 96·8 | 210·5 | − 5·2 | | | 668 |
| July 13 | | Centre | | | (282·5) | (+ 4·3) | (6) | (69) | (668) |
| 194·640 | WR, H | 164* | 0·428 | 300·7 | 291·9 | +16·6 | 0 | 45 | |
| H. | | | 0·897 | 100·1 | 206·8 | − 7·1 | | | 609 |
| July 14 | | Centre | | | (269·4) | (+ 4·4) | (0) | (45) | (609) |

Group 162, June 21–27. Single spot. Greatly increases in size, and breaks up into several spots on June 23.
Group 162*, June 21. A small spot.
Group 163, June 27–July 6. One spot at first, which breaks up into two on July 3.
Group 163*, June 30. A small spot.
Group 164, June 28–30. One small spot, regular in shape. It has broken up into several spots on July 3.
Group 164*, July 8–14. Two spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 196·067 | A, H | | 0·965 | 282·6 | 325·8 | +13·4 | | | 372 |
| Me. | | | 0·905 | 83·8 | 185·7 | + 7·5 | | | 299 |
| July 16 | | | | | (250·6) | (+4·6) | (0) | (0) | (671) |
| 197·598 | WR, H | | 0·944 | 257·1 | 299·5 | −10·6 | | | 233 |
| | | | 0·886 | 287·6 | 292·5 | +17·7 | | | 490 |
| | | 164† | 0·435 | 295·7 | 254·1 | +15·1 | 0 | 22 | |
| H. | | 164† | 0·381 | 296·4 | 250·8 | +14·1 | 0 | 8 | |
| | | | 0·913 | 73·3 | 164·3 | +17·2 | | | 298 |
| | | | 0·924 | 84·7 | 162·7 | + 6·7 | | | 377 |
| July 17 | | Centre | | | (230·3) | (+4·7) | (0) | (30) | (1398) |
| 198·493 | JB, B | | 0·965 | 287·2 | 293·7 | +17·8 | | | 217 |
| July 18 | | Centre | | | (218·4) | (+4·8) | (0) | (0) | (217) |
| July 19 | | No Spots or Faculæ. | | | | | | | |
| 200·660 | WR, H | | 0·888 | 282·4 | 252·5 | +13·3 | | | 583 |
| H. | | | | | | | | | |
| July 20 | | Centre | | | (189·7) | (+5·0) | (0) | (0) | (583) |
| July 21 | | No Spots or Faculæ. | | | | | | | |
| 202·645 | WR, H | | 0·975 | 84·8 | 85·9 | + 6·3 | | | 1390 |
| H. | | | | | | | | | |
| July 22 | | Centre | | | (163·5) | (+5·2) | (0) | (0) | (1390) |
| 203·044 | A, H | | 0·780 | 251·4 | 206·9 | −11·0 | | | 347 |
| Me. | | | | | | | | | |
| July 23 | | Centre | | | (158·2) | (+5·2) | (0) | (0) | (347) |
| 204·489 | JB, B | | 0·948 | 257·5 | 208·9 | −10·0 | | | 309 |
| | | 165 | 0·572 | 58·7 | 107·5 | +21·7 | 0 | 12 | |
| | | | 0·960 | 104·4 | 67·3 | −12·2 | | | 223 |
| July 24 | | Centre | | | (139·1) | (+5·3) | (0) | (12) | (532) |
| 205·445 | JB, B | | 0·887 | 277·4 | 189·3 | + 9·1 | | | 327 |
| | | 165 | 0·437 | 47·3 | 106·3 | +22·2 | 0 | 22 | |
| | | | 0·900 | 102·5 | 63·9 | − 8·8 | | | 206 |
| July 25 | | Centre | | | (126·5) | (+5·4) | (0) | (22) | (533) |
| 206·519 | JB, B | 166 | 0·929 | 83·7 | 43·8 | + 7·9 | 19 | 172 | 830*nf* |
| July 26 | | Centre | | | (112·3) | (+5·5) | (19) | (172) | (830) |
| 207·583 | JB, B | 166 | 0·801 | 84·3 | 44·8 | + 7·9 | 0 | 95 | |
| July 27 | | Centre | | | (98·2) | (+5·6) | (0) | (95) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 208·450 | JB, B | | 0·963 | 254·7 | 159·0 | −13·1 | | | 152 |
| | | 166 | 0·669 | 83·0 | 44·7 | + 8·8 | 32 | 171 | |
| | | | 0·917 | 104·5 | 22·2 | −10·9 | | | 184 |
| July 28 | | Centre | | | (86·7) | (+5·6) | (32) | (171) | (336) |
| 209·472 | JB, B | | 0·941 | 257·8 | 141·8 | − 9·5 | | | 184 |
| | | 166 | 0·490 | 83·9 | 43·4 | + 8·0 | 31 | 209 | |
| July 29 | | Centre | | | (73·2) | (+5·7) | (31) | (209) | (184) |
| 210·594 | JB, B | 166 | 0·220 | 77·2 | 45·9 | + 8·4 | 26 | 167 | |
| July 30 | | Centre | | | (58·4) | (+5·8) | (26) | (167) | (0) |
| 211·509 | JB, B | 166 | 0·067 | 329·3 | 48·2 | + 9·1 | 20 | 156 | |
| July 31 | | Centre | | | (46·3) | (+5·9) | (20) | (156) | (0) |
| 213·472 | JB, B | 166*a* | 0·581 | 276·1 | 55·9 | + 8·4 | 44 | 272 | |
| | | 166*b* | 0·368 | 276·5 | 41·9 | + 8·0 | 33 | 218 | |
| | | | 0·797 | 78·0 | 327·3 | +13·1 | | | 123 |
| Aug. 2 | | Centre | | | (20·3) | (+6·0) | (77) | (490) | (123) |
| 214·501 | JB, B | 166*a* | 0·772 | 275·9 | 57·4 | + 8·4 | 36 | 124 | |
| | | 166*b* | 0·592 | 274·7 | 43·0 | + 7·7 | 29 | 145 | |
| Aug. 3 | | Centre | | | (6·7) | (+6·1) | (65) | (269) | (0) |
| 216·492 | JB, B | 166*a* | 0·971 | 277·2 | 57·0 | + 8·4 | 0 | 88 | |
| | | 166*b* | 0·902 | 276·4 | 45·0 | + 8·4 | 37 | 112 | 644*nf* |
| Aug. 5 | | Centre | | | (340·4) | (+6·2) | (37) | (200) | (644) |
| Aug. 6 | | No Spots or Faculæ. photograph. | | | | | | | |
| Aug. 9 | | No Spots or Faculæ. | | | | | | | |
| 221·463 | JB, B | | 0·822 | 283·5 | 330·2 | +14·7 | | | 163 |
| Aug. 10 | | Centre | | | (274·7) | (+6·4) | (0) | (0) | (163) |
| 222·599 | JB, B | | 0·915 | 286·7 | 326·5 | +17·9 | | | 211 |
| | | | 0·976 | 84·2 | 181·9 | + 7·1 | | | 620 |
| Aug. 11 | | Centre | | | (259·7) | (+6·5) | (0) | (0) | (831) |

Group 164†, July 17. A short stream.
Group 165, July 24–25. One small spot.
Group 166, July 26–August 5. Several small spots close together. The group becomes more and more scattered up to August 2, when it has completely divided into two parts.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 224·517 | JB, B | | 0·917 | 283·7 | 301·4 | +15·1 | | | 316 |
| | | | 0·833 | 84·5 | 177·6 | + 8·2 | | | 399 |
| Aug. 13 | | Centre | | | (234·3) | (+6·6) | (0) | (0) | (715) |
| Aug. 14 | | No Spots or Faculæ. | | | | | | | |
| 227·425 | JB, B | | 0·893 | 283·6 | 259·8 | +15·1 | | | 243 |
| Aug. 16 | | Centre | | | (196·0) | (+6·7) | (0) | (0) | (243) |
| Aug. 17 to Aug. 19 | | No Spots or Faculæ. | | | | | | | |
| 231·715 | WR, H | 167 | 0·971 | 82·0 | 62·3 | + 9·4 | 0 | 102 | 414*c* |
| H. | | | | | | | | | |
| Aug. 20 | | Centre | | | (139·1) | (+6·9) | (0) | (102) | (414) |
| 232·461 | JB, B | 167 | 0·919 | 83·7 | 62·1 | + 8·5 | 22 | 115 | |
| | | 168 | 0·987 | 84·2 | 48·3 | + 6·9 | 59 | 382 | 646 |
| Aug. 21 | | Centre | | | (129·3) | (+7·0) | (81) | (497) | (646) |
| 233·639 | JB, B | | 0·896 | 276·5 | 177·8 | + 8·9 | | | 327 |
| | | 167 | 0·783 | 85·0 | 62·0 | + 8·2 | 26 | 82 | |
| | | 168 | 0·919 | 86·1 | 46·7 | + 6·3 | 50 | 300 | 1499*n* |
| Aug. 22 | | Centre | | | (113·7) | (+7·0) | (76) | (382) | (1826) |
| 234·505 | JB, B | | 0·944 | 277·3 | 173·6 | + 9·2 | | | 135 |
| | | 167 | 0·641 | 85·3 | 62·2 | + 8·4 | 13 | 50 | |
| | | 168 | 0·818 | 86·6 | 47·1 | + 6·8 | 62 | 253 | 970*np* |
| | | | 0·962 | 103·3 | 30·2 | −10·7 | | | 256 |
| Aug. 23 | | Centre | | | (102·3) | (+7·0) | (75) | (303) | (1361) |
| 235·682 | WR, H | 167 | 0·410 | 83·5 | 62·4 | + 9·1 | 0 | 32 | |
| H. | | 168 | 0·637 | 86·9 | 47·0 | + 7·5 | 18 | 161 | |
| Aug. 24 | | Centre | | | (86·7) | (+7·1) | (18) | (193) | (0) |
| 236·755 | WR, H | 167 | 0·174 | 78·9 | 62·6 | + 8·9 | 0 | 28 | |
| H. | | 168 | 0·423 | 87·7 | 47·4 | + 7·4 | 20 | 129 | |
| Aug. 25 | | Centre | | | (72·5) | (+7·1) | (20) | (157) | (0) |
| 237·642 | WR, H | 167 | 0·045 | 316·1 | 62·6 | + 9·0 | 0 | 19 | |
| H. | | 168 | 0·227 | 88·3 | 47·6 | + 7·3 | 18 | 86 | |
| Aug. 26 | | Centre | | | (60·8) | (+7·1) | (18) | (105) | (0) |
| 238·537 | JB, B | 167 | 0·242 | 279·0 | 62·9 | + 9·1 | 0 | 23 | |
| | | 168 | 0·024 | 99·9 | 47·7 | + 6·9 | 27 | 128 | |
| Aug. 27 | | Centre | | | (49·0) | (+7·1) | (27) | (151) | (0) |
| 239·640 | WR, H | 167 | 0·472 | 275·3 | 62·7 | + 8·9 | 0 | 13 | |
| H. | | 168 | 0·236 | 272·0 | 48·1 | + 7·5 | 20 | 91 | |
| Aug. 28 | | Centre | | | (34·4) | (+7·2) | (20) | (104) | (0) |
| 240·480 | JB, B | 168 | 0·410 | 271·8 | 47·6 | + 7·3 | 33 | 128 | |
| Aug. 29 | | Centre | | | (23·3) | (+7·2) | (33) | (128) | (0) |
| 241·438 | JB, B | 168 | 0·606 | 273·9 | 48·1 | + 8·1 | 23 | 123 | |
| | | 169 | 0·920 | 104·5 | 306·0 | −10·3 | 0 | 14 | 341*c* |
| Aug. 30 | | Centre | | | (10·7) | (+7·2) | (23) | (137) | (341) |
| 242·440 | JB, B | 168 | 0·766 | 274·3 | 47·7 | + 7·9 | 12 | 75 | 1071*np* |
| | | | 0·838 | 104·5 | 302·6 | − 8·0 | | | 328 |
| Aug. 31 | | Centre | | | (357·4) | (+7·2) | (12) | (75) | (1399) |
| 243·526 | JB, B | | 0·884 | 98·2 | 282·0 | − 3·8 | | | 967 |
| Sept. 1 | | Centre | | | (343·1) | (+7·2) | (0) | (0) | (967) |
| 244·765 | H, SY | | 0·959 | 278·3 | 40·9 | +10·0 | | | 933 |
| H. | | | 0·943 | 258·4 | 35·5 | − 8·4 | | | 561 |
| Sept. 2 | | Centre | | | (326·7) | (+7·2) | (0) | (0) | (1494) |
| Sept. 3 | | No Spots or Faculæ. | | | | | | | |
| Sept. 4 | | No Spots or Faculæ. | | | | | | | |
| Sept. 6 to Sept. 8 | | No Spots or Faculæ. | | | | | | | |
| 251·414 | JB, B | | 0·913 | 259·7 | 303·3 | − 6·3 | | | 291 |
| | | | 0·895 | 286·8 | 303·1 | +18·3 | | | 220 |
| | | 170 | 0·566 | 135·9 | 214·6 | −17·3 | 0 | 17 | |
| | | | 0·900 | 82·8 | 174·2 | + 9·7 | | | 224 |
| Sept. 9 | | Centre | | | (238·9) | (+7·3) | (0) | (17) | (735) |

Group 167, August 20–28. One spot.
Group 168, August 21–31. One spot.
Group 169, August 30. One small spot.
Group 170, September 9–11. Two small spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 253·670 | H, ST | 170 | 0·417 | 199·6 | 217·4 | −15·9 | 0 | 24 | |
| H. | | 170 | 0·416 | 190·2 | 213·5 | −16·9 | 0 | 9 | |
| Sept. 11 | | Centre | | | (209·1) | (+7·2) | (0) | (33) | (0) |
| Sept. 13 | | No Spots or Faculæ. | | | | | | | |
| 256·490 | JB, B | 171 | 0·965 | 76·6 | 96·0 | +14·8 | 38 | 173 | 621*p* |
| Sept. 14 | | Centre | | | (171·9) | (+7·2) | (38) | (173) | (621) |
| 257·478 | JB, B | | 0·891 | 246·9 | 217·5 | −16·8 | | | 134 |
| | | 171 | 0·866 | 76·5 | 98·3 | +15·2 | 5 | 76 | 396*s* |
| | | 172 | 0·294 | 93·0 | 141·7 | + 6·0 | 0 | 11 | |
| Sept. 15 | | Centre | | | (158·8) | (+7·2) | (5) | (87) | (530) |
| 258·426 | JB, B | 171 | 0·740 | 76·0 | 98·5 | +15·1 | 0 | 43 | 641*s* |
| Sept. 16 | | Centre | | | (146·3) | (+7·2) | (0) | (43) | (641) |
| 259·096 | A, H | | 0·960 | 82·7 | 63·1 | + 9·0 | | | 329 |
| Me. | | | | | | | | | |
| Sept. 17 | | Centre | | | (137·5) | (+7·1) | (0) | (0) | (329) |
| 260·679 | H, ST | | 0·866 | 80·3 | 56·2 | +11·7 | | | 688 |
| H. | | | | | | | | | |
| Sept. 18 | | Centre | | | (116·6) | (+7·1) | (0) | (0) | (688) |
| Sept. 21 to Sept. 25 | | No Spots or Faculæ. | | | | | | | |
| 266·574 | H, ST | | 0·889 | 266·2 | 101·1 | − 0·2 | | | 297 |
| H. | | | 0·871 | 286·5 | 99·8 | +17·7 | | | 336 |
| Sept. 24 | | Centre | | | (38·8) | (+6·9) | (0) | (0) | (633) |
| 267·593 | H, ST | | 0·944 | 283·9 | 96·9 | +15·4 | | | 265 |
| H. | | | 0·948 | 104·2 | 316·0 | −11·1 | | | 350 |
| | | | 0·972 | 266·5 | 101·7 | − 1·7 | | | 657 |
| Sept. 25 | | Centre | | | (25·3) | (+6·9) | (0) | (0) | (1272) |
| 269·546 | JB, B | | 0·877 | 280·0 | 61·4 | +12·0 | | | 530 |
| | | 173 | 0·703 | 109·4 | 317·7 | − 8·4 | 18 | 111 | |
| | | | 0·986 | 80·5 | 278·5 | +10·4 | | | 192 |
| Sept. 27 | | Centre | | | (359·6) | (+6·8) | (18) | (111) | (722) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 270·722 | H, ST | 173 | 0·494 | 119·5 | 318·4 | − 8·0 | 24 | 136 | |
| H. | | 173 | 0·554 | 116·5 | 314·0 | − 8·4 | 0 | 77 | |
| Sept. 28 | | Centre | | | (344·0) | (−6·8) | (24) | (213) | (0) |
| 271·467 | M, M | | 0·917 | 280·0 | 41·3 | +11·9 | | | 131 |
| | | 173 | 0·361 | 134·5 | 319·3 | − 8·1 | 25 | 157 | |
| | | 174 | 0·571 | 230·6 | 1·3 | −15·2 | 0 | 28 | |
| | | | 0·811 | 81·0 | 279·7 | +11·3 | | | 53 |
| Sept. 29 | | Centre | | | (334·2) | (+6·7) | (25) | (185) | (184) |
| 272·471 | JB, B | 173 | 0·255 | 171·1 | 318·7 | − 7·8 | 32 | 120 | |
| | | 174 | 0·746 | 241·6 | 3·8 | −15·8 | 0 | 14 | |
| Sept. 30 | | Centre | | | (321·0) | (+6·7) | (32) | (134) | (0) |
| 273·065 | A, H | 173 | 0·265 | 198·8 | 318·1 | − 7·8 | 0 | 77 | |
| Me. | | | | | | | | | |
| Oct. 1 | | Centre | | | (313·2) | (+6·7) | (0) | (77) | (0) |
| 274·423 | JB, B | 173 | 0·444 | 238·4 | 317·5 | − 7·3 | 0 | 53 | |
| | | 174 | 0·955 | 252·0 | 4·9 | −14·9 | 0 | 20 | 373*sf* |
| | | 175 | 0·269 | 197·6 | 299·9 | − 8·2 | 27 | 166 | |
| Oct. 2 | | Centre | | | (295·2) | (+6·6) | (27) | (239) | (373) |
| 276·715 | H, ST | | 0·838 | 254·8 | 319·7 | − 9·0 | | | 292 |
| H. | | 175 | 0·620 | 247·8 | 300·3 | − 8·2 | 13 | 116 | 232*c* |
| | | 175 | 0·589 | 245·6 | 297·7 | − 8·6 | 6 | 27 | |
| Oct. 4 | | Centre | | | (265·0) | (+6·5) | (19) | (143) | (524) |
| 277·566 | JB, B | 175 | 0·754 | 254·9 | 300·7 | − 7·0 | 27 | 85 | 166*p* |
| | | 176 | 0·749 | 285·2 | 302·1 | +15·6 | 0 | 16 | 200*p* |
| | | 177 | 0·376 | 287·4 | 275·2 | +12·4 | 0 | 27 | |
| Oct. 5 | | Centre | | | (253·8) | (+6·4) | (27) | (128) | (366) |
| 278·423 | JB, B | | 0·970 | 260·5 | 317·1 | − 7·5 | | | 299 |
| | | | 0·855 | 249·3 | 297·8 | −14·0 | | | 118 |
| | | 175 | 0·862 | 257·4 | 300·3 | − 7·4 | 14 | 73 | 217*c* |
| | | 176 | 0·860 | 284·0 | 302·1 | +15·3 | 0 | 11 | 328*np* |
| | | 177 | 0·581 | 281·1 | 277·8 | +11·6 | 0 | 12 | |
| Oct. 6 | | Centre | | | (242·5) | (+6·4) | (14) | (96) | (962) |

Group 171, September 14–16. Three or four very small spots.
Group 172, September 15. Two very small spots.
Group 173, September 27–October 2. One spot surrounded by several very much smaller ones.
Group 174, September 29–October 2. One small spot. The photograph on October 1 is too dense for the group to be seen.
Group 175, October 2–7. Two spots.
Group 176, October 5–6. Two small spots close together.
Group 177, October 5–9. A scattered cluster of very small spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 279·439 | JB, B | | 0·952 | 284·7 | 302·0 | +15·9 | | | 251 |
| | | | 0·940 | 257·7 | 297·4 | − 9·3 | | | 135 |
| | | 175 | 0·951 | 259·8 | 299·6 | − 7·6 | 0 | 20 | 213*f* |
| | | 177 | 0·721 | 281·2 | 275·2 | +12·4 | 34 | 122 | |
| Oct. 7 | | Centre | | | (229·1) | (+6·3) | (34) | (142) | (599) |
| 280·705 | H, ST | 177 | 0·904 | 279·2 | 277·5 | +11·2 | 0 | 58 | 481*c* |
| H. | | | | | | | | | |
| Oct. 8 | | Centre | | | (212·3) | (+6·2) | (0) | (58) | (481) |
| 281·415 | JB, B | 177 | 0·964 | 280·4 | 278·1 | +11·6 | 0 | 20 | 154*c* |
| | | 178 | 0·237 | 243·6 | 215·2 | 0·0 | 0 | 12 | |
| Oct. 9 | | Centre | | | (203·0) | (+6·2) | (0) | (32) | (154) |
| 282·457 | JB, B | 178 | 0·438 | 258·7 | 214·5 | + 0·6 | 6 | 32 | |
| Oct. 10 | | Centre | | | (189·2) | (+6·1) | (6) | (32) | (0) |
| 283·429 | | | 0·957 | 88·3 | 103·4 | + 3·4 | | | 424 |
| Oct. 11 | | Centre | | | (176·5) | (+6·0) | (0) | (0) | (424) |
| 284·108 | A, H | | 0·886 | 73·5 | 104·8 | +17·4 | | | 315 |
| Me. | | | 0·909 | 87·5 | 102·1 | + 4·8 | | | 714 |
| Oct. 12 | | Centre | | | (167·5) | (+6·0) | (0) | (0) | (1029) |
| Oct. 13 | | No Spots or Faculæ. | | | | | | | |
| Oct. 17 | | No Spots or Faculæ. | | | | | | | |
| 290·213 | A, H | | 0·965 | 276·4 | 162·1 | + 7·7 | | | 194 |
| | | 178* | 0·896 | 254·7 | 148·0 | −11·1 | 0 | 19 | |
| Me. | | 178* | 0·871 | 252·8 | 145·1 | −12·0 | 0 | 20 | 292*c* |
| | | | 0·961 | 68·5 | 12·3 | +22·2 | | | 368 |
| | | | 0·969 | 81·3 | 10·8 | + 9·9 | | | 301 |
| Oct. 18 | | Centre | | | (87·0) | (+5·6) | (0) | (39) | (1155) |
| 293·402 | JB, B | | 0·842 | 272·2 | 102·3 | + 4·8 | | | 74 |
| | | 179 | 0·161 | 51·2 | 37·6 | +11·2 | 0 | 22 | |
| Oct. 21 | | Centre | | | (44·9) | (+5·5) | (0) | (22) | (74) |
| 297·476 | JB, B | 180 | 0·912 | 80·3 | 285·3 | +10·8 | 90 | 505 | 895*f* |
| Oct. 25 | | Centre | | | (351·2) | (+4·9) | (90) | (505) | (895) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 298·415 | JB, B | 180 | 0·808 | 79·8 | 284·9 | +11·0 | 52 | 319 | |
| Oct. 26 | | Centre | | | (338·8) | (+4·8) | (52) | (319) | (0) |
| 299·112 | A, H | | 0·934 | 282·2 | 38·8 | +13·1 | | | 388 |
| | | 180* | 0·584 | 287·2 | 4·4 | +13·8 | 5 | 18 | |
| Me. | | 180 | 0·702 | 79·9 | 285·0 | +10·4 | 62 | 414 | 510*f* |
| Oct. 27 | | Centre | | | (329·5) | (+4·7) | (67) | (432) | (898) |
| 300·066 | A, H | 180* | 0·753 | 284·7 | 5·5 | +14·1 | 9 | 40 | 132*p* |
| | | 180* | 0·720 | 286·0 | 2·5 | +14·7 | 0 | 6 | |
| Me. | | 180 | 0·540 | 77·4 | 284·7 | +10·7 | 58 | 335 | |
| Oct. 28 | | Centre | | | (317·0) | (+4·6) | (67) | (381) | (132) |
| 301·042 | A, H | 180* | 0·881 | 283·7 | 5·9 | +14·2 | 0 | 33 | 489*c* |
| Me. | | 180 | 0·342 | 69·3 | 285·1 | +11·2 | 45 | 442 | |
| Oct. 29 | | Centre | | | (304·1) | (+4·5) | (45) | (475) | (489) |
| 304·665 | H, ST | 180 | 0·490 | 286·3 | 284·9 | +11·6 | 65 | 386 | |
| H. | | | 0·915 | 80·9 | 190·0 | +10·0 | | | 419 |
| Nov. 1 | | Centre | | | (256·3) | (+4·2) | (65) | (386) | (419) |
| 305·386 | JB, B | 180 | 0·621 | 282·0 | 284·8 | +10·7 | 83 | 305 | |
| Nov. 2 | | Centre | | | (246·8) | (+4·2) | (83) | (305) | (0) |
| 306·753 | H, ST | 180 | 0·827 | 280·6 | 284·5 | +10·9 | 50 | 343 | 464*c* |
| H. | | | 0·877 | 82·8 | 167·5 | + 8·2 | | | 531 |
| | | | 0·963 | 104·2 | 156·0 | −12·5 | | | 148 |
| Nov. 3 | | Centre | | | (228·8) | (+3·9) | (50) | (343) | (1143) |
| Nov. 6 | | No Spots or Faculæ. | | | | | | | |
| 311·497 | JB, B | | 0·879 | 267·8 | 227·5 | − 0·4 | | | 241 |
| Nov. 8 | | Centre | | | (166·3) | (+3·4) | (0) | (0) | (241) |
| Nov. 10 | | No Spots or Faculæ. | | | | | | | |
| Nov. 12 | | No Spots or Faculæ. | | | | | | | |

Group 178, October 9–10. Two very small spots. On October 10 one of the two spots has disappeared.
Group 178*, October 18. A short stream.
Group 179, October 21. A small spot.
Group 180, October 25–November 3. One large spot.
Group 180*, October 27–29. A regular spot, with a small companion on October 28.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 316·026 | A, H | | 0·889 | 278·9 | 169·1 | + 9·2 | | | 528 |
| Me. | | | 0·799 | 250·7 | 157·1 | −13·4 | | | 186 |
| Nov. 13 | | Centre | | | (106·5) | (+2·9) | (0) | (0) | (714) |
| 318·415 | JB, B | | 0·960 | 250·3 | 146·8 | −18·1 | | | 166 |
| | | 181 | 0·924 | 287·5 | 142·0 | +17·1 | 0 | 9 | 200*nf* |
| | | | 0·902 | 112·8 | 13·6 | −19·2 | | | 219 |
| Nov. 15 | | Centre | | | (75·1) | (+2·6) | (0) | (9) | (585) |
| 321·410 | JB, B | 182*a* | 0·604 | 104·9 | 359·8 | − 7·1 | 34 | 136 | |
| | | 182*b* | 0·685 | 105·9 | 354·0 | − 9·1 | 15 | 61 | |
| | | | 0·932 | 76·9 | 327·1 | +13·1 | | | 542 |
| Nov. 18 | | Centre | | | (35·6) | (+2·3) | (49) | (197) | (542) |
| 322·401 | M, M | 182*a* | 0·423 | 111·4 | 358·8 | − 6·8 | 25 | 140 | |
| | | 182*b* | 0·508 | 111·4 | 354·1 | − 8·7 | 7 | 42 | |
| | | 183 | 0·706 | 76·9 | 338·3 | +10·7 | 7 | 36 | 520*f* |
| Nov. 19 | | Centre | | | (22·5) | (+2·2) | (39) | (218) | (520) |
| 323·539 | M, M | 182*a* | 0·183 | 144·6 | 1·4 | − 6·5 | 37 | 126 | |
| | | 182*b* | 0·267 | 129·9 | 355·7 | − 7·8 | 16 | 75 | |
| | | 183 | 0·485 | 71·9 | 339·7 | +10·4 | 13 | 63 | |
| | | 184 | 0·891 | 100·3 | 305·4 | − 8·2 | 23 | 101 | |
| | | 185 | 0·992 | 78·6 | 284·7 | +11·6 | 0 | 81 | |
| Nov. 20 | | Centre | | | (7·5) | (+2·0) | (89) | (446) | (0) |
| 325·429 | M, M | 182*a* | 0·376 | 247·5 | 2·9 | − 6·6 | 22 | 96 | |
| | | 182*b* | 0·268 | 235·5 | 355·4 | − 6·9 | 16 | 70 | |
| | | 183 | 0·168 | 17·7 | 339·7 | +10·9 | 5 | 18 | |
| | | 184 | 0·606 | 105·6 | 306·7 | − 7·9 | 63 | 267 | |
| | | 185 | 0·839 | 77·0 | 286·2 | +11·8 | 19 | 56 | 370*nf* |
| Nov. 22 | | Centre | | | (342·6) | (+1·8) | (125) | (507) | (370) |
| 326·498 | JB, B | 182*a* | 0·585 | 256·0 | 3·2 | − 6·7 | 28 | 97 | |
| | | 182*b* | 0·478 | 251·4 | 355·5 | − 7·3 | 6 | 39 | |
| | | 183 | 0·265 | 303·9 | 341·4 | +10·1 | 0 | 10 | |
| | | 184*a* | 0·349 | 117·8 | 310·5 | − 7·8 | 44 | 181 | |
| | | 184*b* | 0·442 | 112·7 | 304·3 | − 8·3 | 19 | 88 | |
| | | 185 | 0·686 | 74·8 | 286·2 | +11·5 | 11 | 62 | |
| Nov. 23 | | Centre | | | (328·5) | (+1·7) | (108) | (477) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 328·572 | JB, B | 182 | 0·895 | 263·2 | 4·1 | − 5·4 | 29 | 149 | 160*sf* |
| | | 183* | 0·266 | 333·0 | 308·3 | +15·0 | 0 | 21 | |
| | | 184*a* | 0·219 | 226·9 | 310·4 | − 7·2 | 30 | 186 | |
| | | 184*b* | 0·174 | 203·1 | 305·1 | − 7·7 | 10 | 53 | |
| | | 185 | 0·310 | 56·0 | 286·1 | +11·3 | 15 | 40 | |
| Nov. 25 | | Centre | | | (301·2) | (+1·4) | (84) | (449) | (160) |
| 329·082 | A, H | 182 | 0·940 | 264·3 | 4·0 | − 4·9 | 13 | 125 | 383*f* |
| | | 184 | 0·306 | 241·5 | 310·1 | − 7·1 | 26 | 129 | |
| | | 184 | 0·247 | 231·2 | 305·5 | − 7·6 | 0 | 30 | |
| Me. | | 183* | 0·319 | 316·0 | 307·6 | +14·5 | 0 | 8 | |
| | | 185 | 0·228 | 40·2 | 285·8 | +11·3 | 4 | 38 | |
| Nov. 26 | | Centre | | | (294·4) | (+1·3) | (43) | (330) | (383) |
| 330·077 | A, H | | 0·953 | 262·2 | 353·1 | − 7·1 | | | 286 |
| | | 182 | 0·989 | 265·1 | 2·5 | − 4·7 | 0 | 134 | |
| Me. | | 184 | 0·498 | 254·5 | 310·1 | − 6·6 | 23 | 188 | |
| | | 185 | 0·195 | 338·0 | 285·6 | +11·6 | 0 | 8 | |
| Nov. 27 | | Centre | | | (281·3) | (+1·2) | (23) | (330) | (286) |
| 332·096 | A, H | | 0·876 | 287·4 | 315·3 | +15·6 | | | 233 |
| Me. | | 184 | 0·832 | 262·1 | 310·7 | − 6·0 | 35 | 249 | 377*c* |
| Nov. 29 | | Centre | | | (254·8) | (+0·9) | (35) | (249) | (610) |
| 333·108 | H, A | 184 | 0·935 | 263·5 | 310·2 | − 5·8 | 35 | 234 | 522*f* |
| Me. | | | | | | | | | |
| Nov. 30 | | Centre | | | (241·4) | (+0·8) | (35) | (234) | (522) |
| 341·059 | H, A | | 0·884 | 44·4 | 84·1 | +38·9 | | | 275 |
| Me. | | | 0·912 | 78·3 | 71·5 | +10·6 | | | 227 |
| Dec. 8 | | Centre | | | (136·6) | (−0·2) | (0) | (0) | (502) |
| Dec. 10 | | No Spots or Faculæ. | | | Photograph. | | | | |
| 347·449 | JB, B | 186 | 0·314 | 341·1 | 58·4 | +16·2 | 0 | 11 | |
| | | 187 | 0·702 | 97·5 | 8·3 | − 6·0 | 0 | 10 | |
| Dec. 14 | | Centre | | | (52·4) | (−1·0) | (0) | (21) | (0) |
| 348·074 | H, A | | 0·943 | 88·4 | 333·9 | − 1·2 | | | 155 |
| Me. | | 189 | 0·987 | 102·9 | 323·7 | −12·9 | 39 | 345 | 271*c* |
| Dec. 15 | | Centre | | | (44·2) | (−1·1) | (39) | (345) | (426) |

Group 181, November 15. One small spot.
Group 182, November 18–27. A stream of spots.
Group 183, November 19–23. Cluster of two or three small spots.
Group 183*, November 25–26. Four very small spots.
Group 184, November 20–30. Two large spots, with several very small ones between them. A somewhat scattered group. The group breaks up into two on November 23.
Group 185, November 20–27. Single spot.
Group 186, December 14. One small spot.
Group 187, December 14. One small spot.
Group 188, December 17–23. Group of three or four spots ranged in a line.
Group 189, December 15–24. One large spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for each Day). | Spots. Area of WHOLE for each Spot (and for each Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1875. | | | | ° | ° | ° | | | |
| 349·071 | H, A | 189 | 0·931 | 103·1 | 323·0 | −12·7 | 41 | 388 | 542*f* |
| Me. | | | | | | | | | |
| Dec. 16 | | Centre | | | (31·1) | (−1·2) | (41) | (388) | (542) |
| 350·497 | JB, B | 188 | 0·278 | 111·5 | 357·3 | − 7·1 | 22 | 70 | |
| | | 189 | 0·774 | 103·7 | 322·4 | −11·4 | 54 | 366 | 274*f* |
| Dec. 17 | | Centre | | | (12·3) | (−1·4) | (76) | (436) | (274) |
| 351·026 | H, A | | 0·937 | 284·9 | 73·7 | +13·4 | | | 382 |
| | | 188 | 0·147 | 129·2 | 358·9 | − 6·8 | 16 | 105 | |
| | | 189 | 0·691 | 106·3 | 322·8 | −12·3 | 36 | 322 | 297*c* |
| Me. | | | 0·804 | 104·1 | 313·2 | +10·3 | | | 123 |
| | | | 0·946 | 79·3 | 294·6 | −10·6 | | | 301 |
| Dec. 18 | | Centre | | | (5·4) | (−1·5) | (52) | (427) | (1103) |
| 353·108 | H, A | 188 | 0·370 | 257·2 | 359·0 | − 6·3 | 0 | 71 | |
| Me. | | 189 | 0·303 | 123·7 | 323·0 | −11·3 | 16 | 178 | |
| Dec. 20 | | Centre | | | (337·8) | (−1·7) | (16) | (249) | (6) |
| 354·081 | H, A | 188 | 0·575 | 262·2 | 359·8 | − 6·0 | 0 | 23 | |
| | | 189 | 0·167 | 163·8 | 322·3 | −11·1 | 25 | 174 | |
| Me. | | | 0·927 | 101·2 | 257·3 | −11·1 | | | 306 |
| Dec. 21 | | Centre | | | (325·0) | (−1·9) | (25) | (197) | (306) |
| 355·063 | A, H | 188 | 0·719 | 263·4 | 357·8 | − 6·1 | 0 | 12 | |
| Me. | | 189 | 0·244 | 230·9 | 323·2 | −10·8 | 29 | 154 | |
| Dec. 22 | | Centre | | | (312·1) | (−2·0) | (29) | (166) | (0) |
| 356·550 | M, M | 188 | 0·915 | 264·0 | 358·6 | − 6·3 | 0 | 27 | 184*c* |
| | | 189 | 0·512 | 253·5 | 322·3 | −10·2 | 30 | 161 | |
| Dec. 23 | | Centre | | | (292·5) | (−2·2) | (30) | (188) | (184) |
| 357·540 | JB, B | | 0·984 | 263·3 | 359·2 | − 7·1 | | | 155 |
| | | 189 | 0·706 | 257·2 | 323·7 | −10·6 | 18 | 84 | |
| Dec. 24 | | Centre | | | (279·5) | (−2·3) | (18) | (84) | (155) |
| 363·087 | A, H | 189* | 0·856 | 262·7 | 265·2 | − 7·7 | 3 | 33 | 202*c* |
| Me. | | | | | | | | | |
| Dec. 30 | | Centre | | | (206·5) | (−2·9) | (3) | (33) | (202) |

Group 189*, December 30. A small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| Jan. 1 | | No Spots or Faculæ. | | | | | | | |
| 4·487 | JB, B | 190 | 0·649 | 93·6 | 81·6 | − 5·1 | 0 | 16 | |
| Jan. 5 | | Centre | | | (122·2) | (− 3·7) | (0) | (16) | (0) |
| 10·072 | A, H | | 0·972 | 284·7 | 123·4 | +13·2 | | | 250 |
| | | 190* | 0·320 | 321·0 | 60·4 | +10·2 | 3 | 20 | |
| Me. | | 190* | 0·287 | 330·1 | 56·9 | + 9·8 | 0 | 11 | |
| | | | 0·974 | 76·5 | 333·2 | +12·1 | | | 293 |
| Jan. 11 | | Centre | | | (48·6) | (− 4·3) | (3) | (31) | (543) |
| 11·052 | A, H | 190* | 0·493 | 300·6 | 61·2 | +10·5 | 0 | 19 | |
| Me. | | 190* | 0·446 | 303·7 | 57·7 | +10·2 | 0 | 5 | |
| | | | 0·924 | 74·0 | 330·3 | −12·9 | | | 500 |
| Jan. 12 | | Centre | | | (35·7) | (− 4·4) | (0) | (24) | (500) |
| 12·091 | A, H | | 0·872 | 70·2 | 324·2 | +14·8 | | | 237 |
| Me. | | | 0·875 | 100·2 | 318·5 | −11·1 | | | 273 |
| Jan. 13 | | Centre | | | (22·1) | (− 4·5) | (0) | (0) | (510) |
| 17·526 | JB, B | 191 | 0·436 | 309·2 | 330·5 | +11·2 | 6 | 26 | |
| | | 192 | 0·945 | 99·6 | 239·2 | −10·7 | 49 | 266 | 388*sf* |
| Jan. 18 | | Centre | | | (310·5) | (− 5·0) | (55) | (292) | (388) |
| 18·503 | B, B | 191 | 0·591 | 298·8 | 329·5 | +12·2 | 42 | 162 | |
| | | 192 | 0·857 | 99·9 | 238·5 | −11·1 | 105 | 658 | 428*sf* |
| Jan. 19 | | Centre | | | (297·6) | (− 5·1) | (147) | (820) | (428) |
| 19·711 | ST, H | 191 | 0·783 | 289·3 | 329·5 | +11·6 | 0 | 29 | |
| | | 191 | 0·752 | 292·5 | 327·0 | +13·1 | 0 | 124 | |
| H. | | 192 | 0·672 | 102·1 | 239·7 | −12·0 | 67 | 352 | |
| | | 193 | 0·828 | 103·3 | 225·8 | −13·9 | 0 | 138 | |
| Jan. 20 | | Centre | | | (281·7) | (− 5·2) | (67) | (643) | (0) |
| 20·723 | H, ST | 191 | 0·875 | 287·9 | 326·7 | +12·8 | 0 | 111 | 384*c* |
| | | 194 | 0·191 | 220·3 | 275·6 | −13·6 | 0 | 40 | |
| H. | | 194 | 0·164 | 196·9 | 271·1 | −14·3 | 5 | 19 | |
| | | 192 | 0·485 | 105·0 | 239·8 | −11·9 | 47 | 301 | 194*c* |
| | | 193 | 0·679 | 103·9 | 225·8 | −13·3 | 0 | 45 | |
| Jan. 21 | | Centre | | | (268·3) | (− 5·3) | (52) | (516) | (578) |
| 1876. | | | | ° | ° | ° | | | |
| 21·472 | JB, B | 191 | 0·945 | 284·4 | 327·5 | +11·7 | 6 | 291 | |
| | | 192 | 0·337 | 109·9 | 239·7 | −11·7 | 53 | 266 | |
| | | 193 | 0·536 | 104·4 | 226·6 | −12·2 | 0 | 12 | |
| | | 194 | 0·271 | 229·9 | 270·9 | −15·3 | 0 | 13 | |
| Jan. 22 | | Centre | | | (258·5) | (− 5·4) | (59) | (582) | (0) |
| 22·521 | JB, B | 192 | 0·144 | 143·7 | 239·7 | −12·0 | 45 | 252 | |
| | | 193 | 0·327 | 113·7 | 226·9 | −12·7 | 0 | 13 | |
| | | 194 | 0·557 | 251·7 | 277·7 | −14·6 | 13 | 132 | |
| Jan. 23 | | Centre | | | (244·7) | (− 5·5) | (58) | (397) | (0) |
| 23·466 | B, B | 192 | 0·171 | 227·4 | 239·6 | −12·1 | 48 | 244 | |
| | | 194 | 0·703 | 253·9 | 276·5 | −15·2 | 78 | 320 | |
| Jan. 24 | | Centre | | | (232·2) | (− 5·6) | (126) | (564) | (0) |
| 24·511 | JB, B | | 0·874 | 289·5 | 276·3 | −14·0 | | | 145 |
| | | 192 | 0·377 | 250·8 | 239·7 | −12·3 | 46 | 247 | |
| | | 194 | 0·856 | 255·7 | 277·5 | −15·1 | 71 | 335 | 860*f* |
| Jan. 25 | | Centre | | | (218·5) | (− 5·6) | (117) | (582) | (1005) |
| 25·688 | H, ST | 194 | 0·934 | 255·6 | 272·6 | −15·5 | 0 | 118 | |
| H. | | 192 | 0·597 | 256·9 | 239·4 | −12·4 | 0 | 135 | |
| Jan. 26 | | Centre | | | (203·0) | (− 5·7) | (0) | (253) | (0) |
| 26·496 | JB, B | 192 | 0·735 | 257·0 | 239·6 | −13·4 | 20 | 110 | |
| | | 194 | 0·980 | 253·8 | 271·8 | −17·0 | 0 | 96 | |
| Jan. 27 | | Centre | | | (192·4) | (− 5·8) | (20) | (206) | (0) |
| 27·099 | A, H | 192 | 0·815 | 258·8 | 239·3 | −12·5 | 9 | 52 | |
| Me. | | | | | | | | | |
| Jan. 28 | | Centre | | | (184·5) | (− 5·8) | (9) | (52) | (0) |
| 28·445 | JB, B | 192 | 0·954 | 257·3 | 239·8 | −13·9 | 0 | 68 | 617*f* |
| | | 195 | 0·980 | 96·7 | 87·9 | − 7·7 | 0 | 62 | |
| Jan. 29 | | Centre | | | (166·7) | (− 5·9) | (0) | (130) | (617) |
| 30·452 | JB, B | 195 | 0·786 | 95·2 | 88·4 | − 7·9 | 10 | 35 | 279*f* |
| Jan. 31 | | Centre | | | (140·3) | (− 6·1) | (10) | (35) | (279) |
| 32·514 | B, B | 195 | 0·421 | 95·7 | 88·2 | − 8·0 | 5 | 25 | |
| Feb. 2 | | Centre | | | (113·3) | (− 6·2) | (5) | (25) | (0) |

Group 190, January 5. Scattered group of very faint small spots.
Group 190*, January 11–12. A short stream.
Group 191, January 18–22. Scattered group, but with two principal spots.
Group 192, January 18–29. Single large spot, but several smaller spots are seen on January 19.
Group 193, January 20–23. Scattered group of small spots.
Group 194, January 21–27. Scattered group of small spots. A change of shape is seen on January 24.
Group 195, January 29–February 4. Single spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 34·457 | JB, B | 195 | 0·040 | 197·8 | 88·3 | − 8·5 | 1 | 6 | 0 |
| Feb. 4 | | Centre | | | (87·6) | (−6·3) | (1) | (6) | (0) |
| 38·718 | H, ST | | 0·903 | 69·0 | 330·6 | +15·7 | 0 | 0 | 262 |
| H. | | | | | | | | | |
| Feb. 8 | | Centre | | | (31·5) | (−6·6) | (0) | (0) | (262) |
| 40·445 | JB, B | 196 | 0·991 | 100·8 | 285·8 | −11·6 | 14 | 377 | |
| Feb. 10 | | Centre | | | (8·7) | (−6·7) | (14) | (377) | (0) |
| 42·679 | H, ST | 196 | 0·808 | 101·6 | 285·1 | −13·4 | 104 | 647 | |
| H. | | | | | | | | | |
| Feb. 12 | | Centre | | | (339·3) | (−6·8) | (104) | (647) | (0) |
| 43·559 | JB, B | 196 | | No | Wires. | | 152 | 695 | |
| Feb. 13 | | Centre | | | (327·7) | (−6·8) | (152) | (695) | (0) |
| 44·564 | JB, B | | 0·915 | 283·8 | 18·8 | + 9·6 | | | 97 |
| | | 196 | 0·494 | 104·2 | 285·2 | −12 9 | 149 | 695 | |
| | | | 0·959 | 99·5 | 240·3 | −11·0 | | | 291 |
| Feb. 14 | | Centre | | | (314·4) | (−6·9) | (149) | (695) | (388) |
| 45·083 | A, H | 196 | 0·385 | 107·4 | 285·5 | −13·0 | 97 | 642 | |
| Me. | | | 0·910 | 97·7 | 241·6 | − 9·9 | | | 225 |
| Feb. 15 | | Centre | | | (307·6) | (−6 9) | (97) | (642) | (225) |
| 46·674 | H, ST | 196 | 0·108 | | | | 107 | 711 | |
| H. | | | | | | | | | |
| Feb. 16 | | Centre | | | (286·7) | (−7·0) | (107) | (711) | (0) |
| 47·108 | A, H | 196 | 0·138 | 216·8 | 285·9 | −13·3 | 117 | 701 | 0 |
| Me. | | | | | | | | | |
| Feb. 17 | | Centre | | | (281·0) | (−7·0) | (117) | (701) | (0) |
| 48·414 | JB, B | | 0·958 | 284·7 | 334·8 | +11·8 | | | 113 |
| | | 196 | 0·397 | 251·4 | 286·4 | −13·7 | 106 | 516 | |
| Feb. 18 | | Centre | | | (263·8) | (−7·0) | (106) | (516) | (113) |
| 49·532 | JB, B | 196 | 0·609 | 256·5 | 286·5 | −13·8 | 113 | 541 | |
| Feb. 19 | | Centre | | | (249·1) | (−7·1) | (113) | (541) | (0) |
| 1876. | | | | ° | ° | ° | | | |
| 51·689 | H, ST | 196 | 0·906 | 258·8 | 286·2 | −13·1 | 26 | 401 | 332c |
| H. | | | | | | | | | |
| Feb. 21 | | Centre | | | (220·6) | (−7·1) | (26) | (401) | (332) |
| 52·446 | JB, B | 196 | 0·962 | 257·1 | 285·7 | −14·3 | 74 | 334 | 969sf |
| Feb. 22 | | Centre | | | (210·7) | (−7·1) | (74) | (334) | (969) |
| Feb. 23 | | No Spots or Faculæ. | | | | | | | |
| 54·453 | JB, B | | 0·836 | 258·7 | 241·4 | −13·4 | | | 137 |
| | | | 0·955 | 74·3 | 114·1 | +12·6 | | | 102 |
| Feb. 24 | | Centre | | | (184·4) | (−7·2) | (0) | (0) | (239) |
| Feb. 25 | | No Spots or Faculæ. | | | | | | | |
| 56·425 | JB, B | | 0·979 | 284·3 | 234·3 | +12·3 | | | 137 |
| | | | 0·959 | 259·2 | 232·7 | −12·3 | | | 113 |
| | | 197 | 0·702 | 67·8 | 117·2 | + 9·9 | 17 | 97 | |
| | | | 0·963 | 92·3 | 83·8 | − 4·3 | | | 801 |
| Feb. 26 | | Centre | | | (158·3) | (−7·2) | (17) | (97) | (1051) |
| 58·558 | JB, B | | 0·869 | 285·7 | 187·7 | + 9·8 | | | 59 |
| | | 197 | 0·361 | 38·5 | 117·1 | + 9·3 | 17 | 65 | |
| | | | 0·794 | 91·7 | 77·0 | − 5·7 | | | 253 |
| Feb. 28 | | Centre | | | (130·2) | (−7·2) | (17) | (65) | (312) |
| 59·593 | JB, B | 197 | 0·289 | 2·1 | 115·9 | + 9·5 | 9 | 80 | |
| Feb. 29 | | Centre | | | (116·5) | (−7·2) | (9) | (80) | (0) |
| 60·074 | A, H | 197 | 0·308 | 336·7 | 117·2 | + 9·3 | 9 | 128 | |
| Me. | | 198 | 0·501 | 88·7 | 80 0 | − 5·6 | 15 | 72 | |
| Mar. 1 | | Centre | | | (110·1) | (−7·2) | (24) | (200) | (0) |
| 61·595 | JB, B | 198 | 0·155 | 76·9 | 81·5 | − 5·2 | 2 | 16 | |
| Mar. 2 | | Centre | | | (90·1) | (−7·3) | (2) | (16) | (0) |
| 63·415 | JB, B | | 0·829 | 285·5 | 119·8 | + 8·6 | | | 244 |
| Mar. 4 | | Centre | | | (66·2) | (−7·3) | (0) | (0) | (244) |

Group 196, February 10–22. Single large spot.
Group 197, February 26–March 1. Somewhat scattered group of very small spots.
Group 198, March 1–2. Single small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic | | Spots. | | Faculæ. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Longitude. | Latitude. | Area of UMBRA for each Spot (and for Day) | Area of WHOLE for each Spot (and for Day). | Area for each Group (and for Day). |
| 1876. | | | | ° | ° | ° | | | |
| 65·411 | JB, B | | 0·985 | 279·3 | 118·3 | + 7·8 | | | 225 |
| | | 198* | 0·666 | 289·3 | 79·0 | + 7·1 | 16 | 39 | |
| | | | 0·934 | 73·2 | 333·8 | +12·9 | | | 333 |
| Mar. 6 | | Centre | | | (39·9) | (− 7·3) | (16) | (39) | (558) |
| 66·410 | JB, B | | 0·865 | 265·5 | 87·0 | − 7·5 | | | 765 |
| | | 198* | 0·820 | 284·2 | 79·8 | + 7·2 | 7 | 26 | |
| | | | 0·842 | 69·2 | 333·0 | +13·2 | | | 201 |
| Mar. 7 | | Centre | | | (26·7) | (− 7·2) | (7) | (26) | (966) |
| 67·503 | JB, B | | 0·937 | 264·8 | 82·2 | − 7·3 | | | 365 |
| | | | 0·925 | 279·9 | 78·5 | + 6·3 | | | 189 |
| | | | 0·984 | 100·3 | 291·7 | −11·5 | | | 31 |
| Mar. 8 | | Centre | | | (12·3) | (− 7·2) | (0) | (0) | (585) |
| 68·425 | JB, B | | 0·984 | 265·3 | 80·2 | − 5·8 | | | 244 |
| | | 199 | 0·965 | 99·4 | 284·7 | −10·9 | 15 | 100 | 560*sp* |
| Mar. 9 | | Centre | | | (0·2) | (− 7·2) | (15) | (100) | (804) |
| 69·545 | JB, B | 199 | 0·872 | 99·1 | 284·2 | −11·4 | 18 | 86 | 252*sp* |
| | | | 0·977 | 85·1 | 268·5 | + 3·2 | | | 171 |
| Mar. 10 | | Centre | | | (345·4) | (− 7·2) | (18) | (86) | (423) |
| 70·478 | JB, B | 199 | 0·744 | 99·0 | 284·7 | −11·5 | 14 | 66 | 270*sf* |
| | | | 0·908 | 82·4 | 269·0 | + 3·8 | | | 171 |
| Mar. 11 | | Centre | | | (333·1) | (− 7·2) | (14) | (66) | (441) |
| 72·633 | JB, B | 199 | 0·349 | 105·1 | 284·7 | −11·9 | 18 | 58 | |
| | | 200 | 0·921 | 70·2 | 241·2 | +15·1 | 45 | 215 | 520*sf* |
| | | | 0·926 | 99·3 | 236·3 | −11·3 | | | 79 |
| Mar. 13 | | Centre | | | (304·7) | (− 7·2) | (63) | (273) | (599) |
| 73·560 | JB, B | 199 | 0·157 | 121 7 | 284·7 | −11·8 | 17 | 57 | |
| | | 200 | 0·827 | 64·9 | 241·4 | +16·1 | 49 | 176 | 524*sf* |
| | | 201 | 0·960 | 93·2 | 218·5 | − 5 0 | | | 138 |
| Mar. 14 | | Centre | | | (292·5) | (− 7·1) | (66) | (233) | (662) |
| 74·565 | JB, B | 199 | 0·125 | 234·4 | 285·1 | −11·2 | 10 | 37 | |
| | | 200 | 0·696 | 59·3 | 241·0 | +15·2 | 40 | 123 | |
| | | 201 | 0·903 | 93·5 | 214·5 | − 6·2 | 0 | 8 | 756*np* |
| Mar. 15 | | Centre | | | (279·2) | (− 7·1) | (50) | (168) | (756) |
| 75·448 | JB, B | 199 | 0·302 | 251·0 | 284·5 | − 12·4 | 2 | 17 | |
| | | 200 | 0·586 | 50·4 | 239·8 | +15·6 | 52 | 185 | |
| | | 201 | 0·789 | 91·6 | 215·4 | − 5·7 | 8 | 43 | |
| Mar. 16 | | C entre | | | (267·6) | (− 7·1) | (62) | (245) | (0) |
| 76·474 | JB, B | 199 | 0·512 | 257·3 | 284·7 | − 12·5 | 0 | 13 | |
| | | 200 | 0·463 | 35·8 | 237·8 | +15·2 | 20 | 154 | |
| | | 201 | 0·635 | 91·4 | 214·6 | − 6·3 | 57 | 220 | |
| | | 202 | 0·818 | 101·2 | 198·8 | − 13·2 | 1 | 18 | |
| Mar. 17 | | Centre | | | (254·1) | (− 7·1) | (78) | (405) | (0) |
| 77·511 | JB, B | 199 | 0·695 | 258 8 | 284·6 | − 12·8 | 0 | 9 | |
| | | 200 | 0·377 | 357·7 | 241·3 | +15·0 | 16 | 56 | |
| | | 201 | 0·429 | 89·5 | 215·0 | − 6·1 | 43 | 132 | |
| | | 202 | 0·630 | 102·2 | 201·4 | − 13·1 | 0 | 10 | |
| | | 203 | 0·926 | 96·8 | 172·1 | − 8·9 | 3 | 121 | |
| Mar. 18 | | Centre | | | (240·4) | (− 7·0) | (62) | (328) | (0) |
| 78·688 | JB, B | 200 | 0·446 | 324·6 | 240·3 | + 14·5 | 2 | 57 | |
| | | 201 | 0·170 | 89·2 | 215·1 | − 6·7 | 41 | 122 | |
| | | 203 | 0·792 | 97·5 | 172·2 | − 10·2 | 48 | 229 | 270*sf* |
| Mar. 19 | | Centre | | | (224·9) | (− 7·0) | (91) | (408) | (270) |
| 79·485 | JB, B | 200 | 0·545 | 307·4 | 240·7 | + 13·0 | 5 | 50 | |
| | | 201 | 0·103 | 276·1 | 220·2 | − 6·3 | 16 | 48 | |
| | | 203 | 0·642 | 95·7 | 174·2 | − 9·0 | 40 | 137 | |
| | | 204 | 0·952 | 72·9 | 145·0 | +13·9 | 64 | 275 | |
| Mar. 20 | | Centre | | | (214·4) | (− 7·0) | (125) | (510) | (0) |
| 80·117 | A, H | | 0·965 | 254·8 | 282·0 | − 16·5 | | | 328 |
| | | 200 | 0·643 | 302·4 | 240·1 | + 14·4 | 3 | 30 | |
| Me. | | 201 | 0·240 | 272·4 | 219·7 | − 6·2 | 5 | 28 | |
| | | 203 | 0·471 | 93·8 | 177·9 | − 7·9 | 9 | 52 | |
| | | 203 | 0·569 | 100·3 | 171·4 | − 11·6 | 5 | 38 | |
| | | 204 | 0·800 | 65·3 | 157·5 | +15·0 | 7 | 37 | 172*f* |
| | | 204 | 0·898 | 71·9 | 145·2 | +12·9 | 30 | 255 | 751c |
| Mar. 21 | | Centre | | | (206·1) | (− 6·9) | (59) | (440) | (1251) |
| 81·534 | JB, B | | 0·822 | 294·5 | 238·1 | +15·6 | | | 392 |
| | | 201 | 0·540 | 268·9 | 220·1 | − 6 4 | 5 | 16 | |
| | | 203 | 0·216 | 95·3 | 174·9 | − 7·9 | 12 | 63 | |
| | | 204 | 0·661 | 57·9 | 152·1 | +14·9 | 157 | 522 | 299*sf* |
| | | 205 | 0·870 | 76·9 | 128·8 | + 7·8 | 8 | 24 | 228*f* |
| Mar. 22 | | Centre | | | (187·6) | (− 6·9) | (182) | (625) | (919) |

Group 198*, March 6–7. A few very small spots not far apart, some of which disappear on March 7.
Group 199, March 9–18. Single spot.
Group 200, March 13–21. Scattered group. A great change is seen on March 17.
Group 201, March 15–24. Small group, principally consisting of one spot, the smaller spots disappearing on March 20.
Group 202, March 17–18. Single spot..
Group 203, March 18–23. Scattered group.
Group 204, March 20–30. Scattered group, consisting principally of two large spots.
Group 205, March 22–25. Single small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 82·652 | H, ST | | 0·914 | 290·0 | 235·2 | +15·1 | | | 1048 |
| | | 201 | 0·732 | 267·2 | 219·8 | − 6·7 | 0 | 22 | |
| | | 203 | 0·090 | 272·3 | 177·8 | − 6·6 | 0 | 19 | |
| | | 204 | 0·426 | 27·3 | 160·9 | +15·5 | 14 | 121 | |
| | | 204 | 0·431 | 36·7 | 157·3 | +13·6 | 11 | 23 | |
| H. | | 204 | 0·469 | 34·6 | 156·6 | +16·1 | 0 | 7 | |
| | | 204 | 0·503 | 39·9 | 153·0 | +16·2 | 7 | 66 | |
| | | 204 | 0·561 | 53·6 | 145·1 | +13·4 | 19 | 198 | |
| | | 205 | 0·714 | 72·4 | 129·4 | + 7·5 | 1 | 27 | |
| | | | 0·978 | 95·3 | 94·3 | − 6·6 | | | 215 |
| Mar. 23 | | Centre | | | (172·6) | (− 6·8) | (52) | (483) | (1263) |
| 83·456 | JB, B | | 0·966 | 286·8 | 234·4 | +14·2 | | | 832 |
| | | 201 | 0·849 | 265·9 | 220·4 | − 7·0 | 0 | 14 | 196*nf* |
| | | 204 | 0·393 | 20·4 | 153·9 | +14·8 | 89 | 469 | |
| | | 205 | 0·583 | 65·9 | 129·6 | + 8·0 | 8 | 29 | |
| | | | 0·928 | 94·6 | 93·6 | − 6·8 | | | 264 |
| Mar. 24 | | Centre | | | (162·0) | (− 6·8) | (97) | (512) | (1292) |
| 84·414 | JB, B | ~~201~~ | 0·910 | 265·8 | 215·1 | − 6·6 | | | 284 |
| | | 204 | 0·378 | 348·3 | 153·9 | +14·9 | 80 | 442 | |
| | | 205 | 0·414 | 52·1 | 130·2 | + 8·3 | 8 | 17 | |
| | | | 0·855 | 94·2 | 90·4 | − 7·1 | | | 289 |
| Mar. 25 | | Centre | | | (149·4) | (− 6·8) | (88) | (459) | (573) |
| 86·087 | A, H | 204 | 0·637 | 303·6 | 160·5 | +15·0 | 23 | 252 | |
| Me. | | 204 | 0·553 | 311·2 | 152·7 | +15·3 | 0 | 8 | |
| | | 204 | 0·455 | 318·7 | 145·2 | +13·6 | 10 | 90 | |
| Mar. 27 | | Centre | | | (127·3) | (− 6·7) | (33) | (350) | (0) |
| 87·673 | ST, H | | 0·909 | 262·8 | 172·2 | − 9·3 | | | 1101 |
| H. | | 204 | 0·848 | 292·4 | 160·5 | +15·0 | 0 | 214 | 382*c* |
| | | 204 | 0·689 | 297·7 | 145·1 | +13·5 | 6 | 52 | |
| Mar. 28 | | Centre | | | (106·4) | (− 6·6) | (6) | (266) | (1483) |
| 88·589 | JB, B | | 0·964 | 258·2 | 169·8 | −13·1 | | | 275 |
| | | 204 | 0·936 | 289·0 | 160·5 | +15·1 | 71 | 257 | 311*nf* |
| | | 205* | 0·816 | 291·9 | 145·3 | +13·6 | 2 | 18 | |
| Mar. 29 | | Centre | | | (94·3) | (− 6·6) | (73) | (275) | (586) |
| 89·466 | JB, B | 204 | 0·983 | 286·4 | 159·6 | +14·8 | 39 | 189 | 378*nf* |
| | | 205* | 0·906 | 287·8 | 144·9 | +13·0 | 0 | 14 | |
| Mar. 30 | | Centre | | | (82·7) | (− 6·5) | (39) | (203) | (378) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 90·496 | JB, B | | 0·959 | 287·0 | 139·9 | +14·3 | | | 224 |
| Mar. 31 | | Centre | | | (69·2) | (− 6·5) | (0) | (0) | (224) |
| 92·456 | JB, B | | 0·811 | 266·3 | 97·7 | − 6·7 | | | 242 |
| Apr. 2 | | Centre | | | (43·3) | (− 6·3) | (0) | (0) | (242) |
| 93·435 | JB, B | | 0·910 | 264·8 | 96·1 | − 7·3 | | | 168 |
| Apr. 3 | | Centre | | | (30·4) | (− 6·3) | (0) | (0) | (168) |
| 94·412 | JB, B | 206 | 0·854 | 102·7 | 318·5 | −14·0 | 0 | 4 | 71*inp* |
| Apr. 4 | | Centre | | | (17·5) | (− 6·2) | (0) | (4) | (71) |
| Apr. 5 | | No Spots or Faculæ. | | | | | | | |
| 96·676 | ST, H | 206* | 0·985 | 108·8 | 266·3 | −19·5 | 0 | 99 | |
| H. | | | 0·916 | 72·6 | 283·9 | +13·3 | | | 264 |
| | | | 0·919 | 105·3 | 280·3 | −16·5 | | | 275 |
| Apr. 6 | | Centre | | | (347·6) | (− 6·1 | (0) | (99) | (539) |
| 97·406 | JB, B | | 0·839 | 68·8 | 284·3 | +14·0 | | | 90 |
| Apr. 7 | | Centre | | | (338·0) | (− 6·0) | (0) | (0) | (90) |
| 98·527 | JB, B | 207 | 0·650 | 60·2 | 287·8 | +14·0 | 0 | 19 | |
| | | ~~208~~ | 0·941 | 73·8 | 255·4 | +12·9 | | | 190 |
| Apr. 8 | | Centre | | | (323·2) | (− 5·9) | (0) | (19) | (190) |
| 99·555 | M, M | 207 | 0·485 | 46·5 | 288·5 | +13·9 | 0 | 9 | |
| | | 208 | 0 795 | 69·7 | 260·1 | +12·2 | 0 | 7 | |
| | | | 0·945 | 70·3 | 241·8 | +16·4 | | | 484 |
| Apr. 9 | | Centre | | | (309·6) | (− 5·9) | (0) | (16) | (484) |
| 100·667 | ST, H | 208 | 0·628 | 63·5 | 260·0 | +11·5 | 0 | 43 | |
| H. | | | 0·885 | 70·8 | 235·6 | +14·0 | | | 761 |
| Apr. 10 | | Centre | | | (294·9) | (− 5·8) | (0) | (43) | (761) |
| 101·453 | JB, B | 208 | 0·517 | 56·6 | 258·5 | +11·3 | 0 | 30 | |
| | | | 0·778 | 63·7 | 238·2 | +16·3 | | | 390 |
| | | | 0·914 | 97·9 | 218·2 | − 9·4 | | | 123 |
| Apr. 11 | | Centre | | | (284·5) | (− 5·7) | (0) | (30) | (513) |

Group 205*, March 29–30. A small spot following Group 204.
Group 206, April 4. Very small single spot.
Group 206*, April 6. A group only seen close to the west limb.
Group 207, April 8–9. Very small single spot.
Group 208, April 9–13. Group of small spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 102·682 H. | ST, H | 208 | 0·336 | 27·3 | 259·3 | +11·7 | 6 | 65 | |
| Apr. 12 | | Centre | | | (268·3) | (−5·7) | (6) | (65) | (0) |
| 103·051 Me. | H, A | 208† | 0·212 | 311·9 | 272·4 | + 2·6 | 6 | 26 | |
| | | 208 | 0·299 | 12·4 | 259·7 | +11·3 | 0 | 15 | |
| Apr. 13 | | Centre | | | (263·4) | (−5·6) | (6) | (41) | (0) |
| 104·611 | JB, B | | 0·780 | 292·3 | 290·6 | +13·6 | | | 90 |
| | | 208* | 0·361 | 94·0 | 221·7 | − 6·5 | 12 | 46 | |
| | | | 0·925 | 101·8 | 174·8 | −13·0 | | | 628 |
| Apr. 14 | | Centre | | | (242·8) | (−5·5) | (12) | (46) | (718) |
| 105·508 | JB, B | | 0·867 | 289·2 | 287·7 | +13·7 | | | 115 |
| | | 208* | 0·173 | 94·7 | 221·1 | − 6·1 | 7 | 24 | |
| | | | 0·856 | 101·7 | 171·9 | −12·8 | | | 377 |
| | | | 0·965 | 72·2 | 158·7 | +15·6 | | | 160 |
| Apr. 15 | | Centre | | | (231·0) | (−5·4) | (7) | (24) | (652) |
| 106·537 | JB, B | | 0·953 | 285·8 | 287·7 | +13·3 | | | 122 |
| | | | 0·831 | 276·8 | 272·8 | + 2·7 | | | 168 |
| | | 208* | 0·022 | 191·3 | 217·7 | − 6·5 | 0 | 8 | |
| | | | 0·920 | 68·2 | 154·0 | +17·7 | | | 134 |
| Apr. 16 | | Centre | | | (217·4) | (−5·3) | (0) | (8) | (424) |
| 107·662 H. | ST, H | | 0·946 | 275·3 | 272·9 | + 3·3 | | | 396 |
| | | 208‡ | 0·202 | 80·5 | 191·0 | − 3·2 | 0 | 59 | |
| Apr. 17 | | Centre | | | (202·5) | (−5·2) | (0) | (59) | (396) |
| 108·558 | JB, B | 208‡ | 0·045 | 327·5 | 192·1 | − 3·1 | 0 | 19 | |
| Apr. 18 | | Centre | | | (190·7) | (−5·1) | (0) | (19) | (0) |
| 110·462 | JB, B | | 0·946 | 288·9 | 234·0 | +16·1 | | | 173 |
| | | | 0·839 | 263·7 | 222·8 | − 8·0 | | | 166 |
| | | | 0·867 | 93·8 | 105·3 | − 5·8 | | | 168 |
| Apr. 20 | | Centre | | | (165·6) | (−5·0) | (0) | (0) | (507) |
| 111·042 Me. | H, A | | 0·867 | 264·0 | 218·1 | − 7·7 | | | 357 |
| Apr. 21 | | Centre | | | (157·9) | (−4·9) | (0) | (0) | (357) |
| 1876. | | | | ° | ° | ° | | | |
| Apr. 22 | | No Spots or Faculæ. | | | | | | | |
| 113·597 | JB, B | | 0·823 | 257·2 | 179·3 | −13·2 | | | 233 |
| Apr. 23 | | Centre | | | (124·1) | (−4·7) | (0) | (0) | (233) |
| 114·404 | JB, B | | 0·882 | 256·4 | 175·3 | −14·2 | | | 305 |
| Apr. 24 | | Centre | | | (113·5) | (−4·6) | (0) | (0) | (305) |
| 115·564 | JB, B | | 0·908 | 295·0 | 159·3 | +20·4 | | | 103 |
| | | | 0·944 | 254·2 | 169·1 | −16·5 | | | 328 |
| Apr. 25 | | Centre | | | (98·1) | (−4·5) | (0) | (0) | (431) |
| 116·032 Me. | H, A | | 0·982 | 293·8 | 168·0 | +22·4 | | | 623 |
| Apr. 26 | | | | | (91·9) | (−4·4) | (0) | (0) | (623) |
| Apr. 27 to Apr. 29 | | No Spots or Faculæ. | | | | | | | |
| 121·420 | JB, B | | 0·874 | 92·8 | 319·8 | − 4·3 | | | 285 |
| May 1 | | Centre | | | (20·7) | (−3·9) | (0) | (0) | (285) |
| 122·527 | JB, B | | 0·947 | 74·0 | 296·7 | +13·8 | | | 80 |
| May 2 | | Centre | | | (6·1) | (−3·8) | (0) | (0) | (80) |
| 123·514 | JB, B | | 0·867 | 72·2 | 295·2 | +13·4 | 0 | 0 | 218 |
| May 3 | | Centre | | | (353·1) | (−3·7) | (0) | (0) | (218) |
| 124·532 | JB, B | | 0·807 | 72·5 | 288·0 | +11·7 | | | 462 |
| May 4 | | Centre | | | (339·6) | (−3·6) | (0) | (0) | (462) |
| May 5 | | No Spots or Faculæ. | | | | | | | |
| 126·424 | JB, B | | 0·964 | 103·4 | 240·1 | −13·8 | | | 353 |
| May 6 | | Centre | | | (314·6) | (−3·4) | (0) | (0) | (353) |
| 127·589 | JB, B | 209 | 0·839 | 104·1 | 242·6 | −13·6 | 67 | 229 | 318*sf* |
| May 7 | | Centre | | | (299·2) | (−3·3) | (67) | (229) | (318) |

Group 208*, April 14–16. Group consisting mainly of one small spot.
Group 208†, April 13. A short stream of small spots.
Group 208‡, April 17–18. A small faint spot.
Group 209, May 7–15. Fairly large spot, with a small one at a little distance, the latter almost disappearing on May 10.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 128·468 | JB, B | 209 | 0·708 | 105·7 | 243·3 | −13·3 | 50 | 176 | 280*f* |
| May 8 | | Centre | | | (287·6) | (− 3·2) | (50) | (176) | (280) |
| 129·483 | JB, B | 209 | 0·539 | 111·1 | 243·1 | −13·7 | 34 | 158 | |
| May 9 | | Centre | | | (274·2) | (− 3·0) | (34) | (158) | (0) |
| 130·463 | JB, B | | 0·885 | 263·0 | 323·3 | − 7·6 | | | 114 |
| | | 209 | 0·344 | 124·4 | 244·3 | −14·0 | 28 | 112 | |
| | | | 0·960 | 96·7 | 187·3 | − 7·2 | | | 208 |
| | | | 0·987 | 76·7 | 181·7 | +12·7 | | | 208 |
| May 10 | | Centre | | | (261·2) | (− 2·9) | (28) | (112) | (530) |
| 131·475 | JB, B | | 0·778 | 288·5 | 297·0 | +12·3 | | | 124 |
| | | 209 | 0·203 | 168·0 | 245·3 | −14·2 | 22 | 89 | |
| | | | 0·892 | 101·1 | 184·9 | −11·1 | | | 200 |
| | | | 0·924 | 74·6 | 182·0 | +13·1 | | | 137 |
| May 11 | | Centre | | | (247·8) | (− 2·8) | (22) | (89) | (461) |
| 132·576 | JB, B | | 0·898 | 285·7 | 295·5 | +12·7 | | | 218 |
| | | 209 | 0·294 | 224·9 | 245·6 | −14·6 | 27 | 108 | |
| | | | 0·899 | 107·1 | 169·9 | −16·5 | | | 183 |
| | | | 0·807 | 70·5 | 182·0 | +14·0 | | | 156 |
| May 12 | | Centre | | | (233·3) | (− 2·7) | (27) | (108) | (557) |
| 133·451 | JB, B | | 0·960 | 285·7 | 294·0 | +14·2 | | | 128 |
| | | 209 | 0·452 | 240·8 | 245·6 | −15·0 | 22 | 106 | |
| | | | 0·815 | 110·5 | 168·5 | −18·0 | | | 189 |
| May 13 | | Centre | | | (221·7) | (− 2·6) | (22) | (106) | (317) |
| 135·563 | JB, B | 209 | 0·797 | 252·6 | 245·5 | −15·2 | 0 | 9 | 180*sf* |
| May 15 | | Centre | | | (193·7) | (− 2·4) | (0) | (9) | (180) |
| 136·544 | JB, B | | 0·889 | 281·3 | 242·4 | + 8·9 | | | 125 |
| | | | 0·888 | 252·0 | 242·5 | −17·0 | | | 416 |
| | | | 0·929 | 96·5 | 112·6 | − 6·8 | | | 129 |
| May 16 | | Centre | | | (180·8) | (− 2·3) | (0) | (0) | (670) |
| 137·657 H. | ST, H | | 0·969 | 253·9 | 241·5 | −16·1 | 0 | 0 | 729 |
| May 17 | | Centre | | | (166·0) | (− 2·1) | (0) | (0) | (729) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day) | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| May 18 to May 19 | | No Spots or Faculæ. | | | | | | | |
| 140·596 II. | ST, H | | 0·889 | 263·1 | 189·7 | − 7·0 | 0 | 0 | 226 |
| May 20 | | Centre | | | (127·2) | (− 1·8) | (0) | (0) | (226) |
| 141·521 | JB, B | | 0·930 | 257·7 | 183·0 | −12·0 | | | 236 |
| May 21 | | Centre | | | (114·9) | (− 1·7) | (0) | (0) | (236) |
| 142·874 II. | ST, H | | 0·981 | 255·0 | 175·6 | −15·0 | | | 901 |
| | | | 0·898 | 265·1 | 160·7 | − 5·1 | | | 179 |
| May 22 | | Centre | | | (97·0) | (− 1·5) | (0) | (0) | (1080) |
| May 23 to May 24 | | No Spots or Faculæ. photograph. | | | | | | | |
| 145·588 H. | H, ST | 209* | 0·955 | 100·1 | 348·7 | −10·0 | 0 | 55 | 276*f* |
| May 25 | | Centre | | | (61·1) | (− 1·2) | (0) | (55) | (276) |
| 146·639 H. | H, ST | 209* | 0·849 | 100·4 | 349·6 | − 9·3 | 0 | 31 | 401*f* |
| May 26 | | Centre | | | (47·2) | (− 1·0) | (0) | (31) | (401) |
| 147·589 H. | H, ST | 209* | 0·708 | 102·1 | 350·3 | − 9·2 | 4 | 24 | 522*nf* |
| May 27 | | Centre | | | (34·6) | (− 0·9) | (4) | (24) | (522) |
| May 29 to May 31 | | No Spots or Faculæ | | | | | | | |
| 152·414 | JB, B | | 0·862 | 262·8 | 29·9 | − 6·3 | | | 114 |
| June 1 | | Centre | | | (330·8) | (− 0·4) | (0) | (0) | (114) |
| 154·579 H. | H, ST | | 0·909 | 111·2 | 238·6 | −19·2 | | | 288 |
| | | | 0·969 | 52·8 | 230·3 | +35·8 | | | 298 |
| June 3 | | Centre | | | (302·2) | (− 0·1) | (0) | (0) | (586) |

Group 209*, May 25–27. A small group.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 155·657 | JB, B | | 0·860 | 259·7 | 346·5 | − 8·8 | | | 130 |
| | | | 0·896 | 99·8 | 224·8 | − 8·7 | | | 81 |
| June 4 | | Centre | | | (287·9) | (+0·0) | (0) | (0) | (211) |
| June 6 to June 9 | | No Spots or Faculæ | | | | | | | |
| June 12 to June 16 | | No Spots or Faculæ | | | | | | | |
| 169·463 | JB, B | | 0·907 | 95·8 | 40·2 | − 4·5 | | | 368 |
| June 18 | | Centre | | | (104·9) | (+1·7) | (0) | (0) | (368) |
| 170·605 | JB, B | | 0·767 | 96·5 | 40·3 | − 3·8 | | | 269 |
| June 19 | | Centre | | | (90·0) | (+1·8) | (0) | (0) | (269) |
| 171·471 | JB, B | | 0·768 | 327·2 | 112·2 | −41·7 | | | 233 |
| June 20 | | Centre | | | (78·5) | (+1·9) | (0) | (0) | (233) |
| 172·440 | JB, B | 210 | 0·932 | 90·1 | 357·2 | + 0·6 | 0 | 40 | 783*f* |
| June 21 | | Centre | | | (65·7) | (+2·0) | (0) | (40) | (783) |
| 173·575 | H, ST | 210 | 0·800 | 92·5 | 357·8 | − 0·7 | 7 | 22 | 377*nf* |
| H. | | | | | | | | | |
| June 22 | | Centre | | | (50·7) | (+2·2) | (7) | (22) | (377) |
| 174·580 | H, ST | 210 | 0·639 | 93·6 | 357·9 | − 0·5 | 6 | 25 | |
| H. | | | | | | | | | |
| June 23 | | Centre | | | (37·3) | (+2·3) | (6) | (25) | (0) |
| 175·689 | H, ST | 210 | 0·416 | 97·1 | 358·4 | − 0·8 | 0 | 21 | |
| H. | | | | | | | | | |
| June 24 | | Centre | | | (22·7) | (+2·4) | (0) | (21) | (0) |
| 177·432 | JB, B | 210* | 0·470 | 247·6 | 25·5 | − 7·9 | 0 | 6 | |
| June 26 | | Centre | | | (359·6) | (+2·6) | (0) | (6) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 178·580 | H, ST | 210† | 0·797 | 276·5 | 37·1 | + 6·9 | 0 | 58 | |
| H. | | | | | | | | | |
| June 27 | | Centre | | | (344·4) | (+2·7) | (0) | (58) | (0) |
| 179·586 | H, ST | 210† | 0·937 | 275·7 | 40·5 | + 6·3 | 7 | 47 | 265*c* |
| H. | | 210† | 0·903 | 275·0 | 35·6 | + 5·7 | 8 | 29 | |
| June 28 | | Centre | | | (331·1) | (+2·8) | (15) | (76) | (265) |
| 180·094 | H, A | 210† | 0·969 | 276·5 | 40·1 | + 7·0 | 16 | 82 | 256*c* |
| Me. | | 210† | 0·955 | 276·7 | 37·1 | + 7·3 | 0 | 26 | |
| | | 210† | 0·942 | 275·8 | 34·8 | + 6·5 | 34 | 101 | |
| June 29 | | Centre | | | (324·4) | (+2·9) | (50) | (209) | (256) |
| June 30 | | No Spots or Faculæ. | | | | | | | |
| 184·599 | JB, B | 211 | 0·714 | 250·6 | 308·0 | −11·2 | 16 | 64 | 228*c* |
| | | 212 | 0·843 | 100·2 | 208·4 | − 6·7 | 67 | 299 | 668*f* |
| July 3 | | Centre | | | (264·8) | (+3·4) | (83) | (363) | (896) |
| 185·566 | H, ST | 211 | 0·885 | 256·4 | 312·6 | −10·3 | 0 | 32 | 224*c* |
| H. | | 211 | 0·818 | 253·8 | 304·9 | −11·1 | 0 | 22 | |
| | | 212 | 0·709 | 104·3 | 208·2 | − 7·5 | 20 | 196 | |
| July 4 | | Centre | | | (251·9) | (+3·5) | (20) | (250) | (224) |
| 186·578 | H, ST | | 0·942 | 256·1 | 307·5 | −11·9 | | | 303 |
| H. | | 212 | 0·535 | 107·8 | 207·9 | − 6·4 | 24 | 138 | |
| July 5 | | Centre | | | (238·6) | (+3·6) | (24) | (138) | (303) |
| 187·573 | H, ST | 212 | 0·338 | 119·5 | 208·4 | − 6·0 | 10 | 67 | |
| H. | | 214 | 0·870 | 81·4 | 165·1 | + 9·3 | 0 | 56 | 168*f* |
| July 6 | | Centre | | | (225·5) | (+3·7) | (10) | (123) | (168) |
| 188·407 | JB, B | 212 | 0·189 | 149·4 | 208·9 | − 5·5 | 16 | 65 | |
| | | 213 | 0·544 | 95·1 | 181·7 | + 0·4 | 0 | 10 | |
| | | 214 | 0·758 | 80·4 | 165·3 | + 9·7 | 0 | 11 | 463*nf* |
| July 7 | | Centre | | | (214·4) | (+3·8) | (16) | (86) | (463) |
| 189·463 | JB, B | 212 | 0·287 | 224·0 | 212·0 | − 8·0 | 18 | 46 | |
| | | 213 | 0·308 | 103·2 | 183·0 | − 0·3 | 12 | 73 | |
| | | 214 | 0·581 | 78·8 | 165·2 | + 9·7 | 3 | 5 | |
| July 8 | | Centre | | | (200·4) | (+3·9) | (33) | (124) | (0) |

Group 210, June 21–24. Single small spot.
Group 210*, June 26. A very small spot.
Group 210†, June 27–29. A short stream of spots.
Group 211, July 3–4. Group of small spots.
Group 212, July 3–10. Group consisting mainly of three fairly large spots, of which two disappear on July 7.
Group 213, July 7–11. Group of small spots.
Group 214, July 6–8. Single small spot.

## Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 191·545 | JB, B | 212 | 0·640 | 253·6 | 210·9 | − 7·2 | 6 | 23 | 241*inp* |
| | | 213 | 0·180 | 246·7 | 182·3 | 0·0 | 0 | 4 | |
| July 10 | | Centre | | | (172·8) | (+4·1) | (6) | (27) | (241) |
| 192·575 | H, ST | | 0·813 | 261·6 | 212·7 | − 4·3 | | | 549 |
| H. | | 213 | 0·473 | 258·0 | 186·7 | − 1·9 | 0 | 25 | |
| July 11 | | Centre | | | (159·2) | (+4·2) | (0) | (25) | (549) |
| 193·496 | JB, B | 212 | 0·889 | 259·4 | 208·5 | − 7·3 | | | 609 |
| July 12 | | Centre | | | (147·0) | (+4·3) | (0) | (0) | (609) |
| 194·589 | JB, B | | 0·952 | 261·0 | 203·7 | − 7·2 | | | 479 |
| July 13 | | Centre | | | (132·6) | (+4·4) | (0) | (0) | (479) |
| 195·588 | H, ST | | 0·926 | 265·0 | 186·6 | − 2·9 | | | 138 |
| H. | | | 0·976 | 84·5 | 41·9 | + 6·3 | | | 486 |
| July 14 | | Centre | | | (119·4) | (+4·5) | (0) | (0) | (624) |
| July 15 | | No Spots or Faculæ. | | | | | | | |
| 198·488 | JB, B | | 0·968 | 279·0 | 156·8 | + 9·8 | | | 188 |
| July 17 | | Centre | | | (81·0) | (+4·8) | (0) | (0) | (188) |
| July 18 | | No Spots or Faculæ. | | | | | | | |
| 200·591 | JB, B | 215 | 0·835 | 89·7 | 356·6 | + 3·0 | 0 | 58 | |
| July 19 | | Centre | | | (53·1) | (+5·0) | (0) | (58) | (0) |
| 201·571 | JB, B | 215 | 0·690 | 91·5 | 356·7 | + 2·6 | 6 | 36 | |
| | | 216 | 0·861 | 101·7 | 342·1 | − 7·4 | 9 | 22 | 374*nf* |
| July 20 | | Centre | | | (40·2) | (+5·0) | (15) | (58) | (374) |
| 202·594 | JB, B | 215 | 0·493 | 94·5 | 357·3 | + 2·3 | 0 | 8 | |
| | | 216 | 0·711 | 105·9 | 343·2 | − 7·5 | 0 | 4 | 273*nf* |
| | | 217 | 0·957 | 102·4 | 315·1 | −10·3 | 32 | 121 | 295*f* |
| July 21 | | Centre | | | (26·7) | (+5·1) | (32) | (133) | (568) |
| 203·451 | JB, B | 215 | 0·304 | 98·6 | 357·9 | + 2·4 | 0 | 9 | |
| | | 217 | 0·884 | 104·1 | 315·0 | − 9·9 | 23 | 102 | 391*f* |
| July 22 | | Centre | | | (15·3) | (+5·2) | (23) | (111) | (391) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 205·580 | H, ST | 217 | 0·586 | 117·4 | 315·2 | −11·1 | 11 | 78 | 143*c* |
| H. | | | 0·910 | 99·8 | 282·8 | − 6·6 | | | 582 |
| July 24 | | | | | (347·1) | (+5·4) | (11) | (78) | (725) |
| 206·493 | JB, B | 217 | 0·437 | 128·1 | 314·7 | −10·5 | 22 | 100 | |
| | | | 0·811 | 100·9 | 282·2 | − 5·5 | | | 293 |
| July 25 | | Centre | | | (335·1) | (+5·5) | (22) | (100) | (293) |
| 207·495 | JB, B | 217 | 0·303 | 157·6 | 315·1 | −10·7 | 19 | 66 | |
| July 26 | | Centre | | | (321·8) | (+5·5) | (19) | (66) | (0) |
| 208·433 | JB, B | 217 | 0·303 | 199·5 | 315·3 | −11·0 | 16 | 42 | |
| July 27 | | Centre | | | (309·4) | (+5·6) | (16) | (42) | (0) |
| 209·587 | H, ST | 217 | 0·455 | 233·1 | 315·7 | −10·5 | 0 | 17 | |
| H. | | | 0·969 | 94·4 | 219·1 | − 2·8 | | | 220 |
| July 28 | | Centre | | | (294·1) | (+5·7) | (0) | (17) | (220) |
| 210·578 | H, ST | | 0·919 | | | | | | 418 |
| H. | | | 0·890 | | | | | | 328 |
| July 29 | | Centre | | | (281·0) | (−5·8) | (0) | (0) | (746) |
| 212·116 | H, A | | 0·970 | 261·7 | 335·5 | − 6·5 | | | 226 |
| | | 217 | 0·846 | 253·7 | 316·1 | −10·4 | 0 | 33 | |
| Me. | | 217 | 0·813 | 252·9 | 312·7 | −10·2 | 7 | 32 | 313*p* |
| | | 217 | 0·771 | 250·6 | 308·3 | −10·9 | 0 | 7 | |
| July 31 | | Centre | | | (260·7) | (+5·9) | (7) | (72) | (539) |
| 213·589 | H, ST | | 0·946 | 256·3 | 310·4 | −10·9 | | | 655 |
| H. | | | | | | | | | (0) (655) |
| Aug. 1 | | Centre | | | (241·2) | (+6·0) | (0) | | |
| 214·514 | JB, B | | 0·835 | 258·4 | 284·1 | − 6·3 | | | 260 |
| Aug. 2 | | Centre | | | (229·0) | (+6·0) | (0) | (0) | (260) |
| 215·550 | JB, B | | 0·946 | 261·2 | 285·2 | − 6·3 | | | 179 |
| Aug. 3 | | Centre | | | (215·3) | (+6·1) | (0) | (0) | (179) |
| Aug. 4 to Aug. 5 | | No Spots or Faculæ. | | | | | | | |

Group 215, July 19–22. Single small spot.
Group 216 July 20–21. Single small spot.
Group 217, July 21–31. Single spot. It is not seen on July 29, but a number of spots in a short stream mark its place on July 31.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued*.

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 219·460 | JB, B | | 0·865 | 261·8 | 222·5 | − 3·8 | | | 261 |
| | | 218 | 0·908 | 278·2 | 229·2 | +10·1 | 0 | 87 | |
| Aug. 7 | | Centre | | | (163·6) | (+6·4) | (0) | (87) | (261) |
| Aug. 8 | | No Spots or Faculæ. | | | | | | | |
| 221·481 | JB, B | | 0·951 | 256·8 | 206·9 | −10·4 | | | 149 |
| Aug. 9 | | Centre | | | (136·9) | (+6·5) | (0) | (0) | (149) |
| Aug. 10 to Aug. 11 | | No Spots or Faculæ. | | | | | | | |
| Aug. 14 | | No Spots or Faculæ. | | | | | | | |
| 227·663 H. | H, ST | | 0·913 | 103·8 | 351·3 | − 9·6 | | | 218 |
| Aug. 15 | | Centre | | | (55·1) | (+6·8) | (0) | (0) | (218) |
| 228·499 | JB, B | 219 | 0·791 | 105·9 | 354·1 | − 8·1 | 0 | 41 | |
| Aug. 16 | | Centre | | | (44·1) | (+6·8) | (0) | (41) | (0) |
| 229·465 | JB, B | 219 | 0·651 | 109·5 | 353·3 | − 7·2 | 46 | 127 | |
| Aug. 17 | | Centre | | | (31·3) | (+6·9) | (46) | (127) | (0) |
| 230·681 H. | ST, H | 219 | 0·440 | 121·8 | 353·2 | − 7·0 | 9 | 111 | |
| Aug. 18 | | Centre | | | (15·3) | (+6·9) | (9) | (111) | (0) |
| 231·686 H. | ST, H | 219 | 0·289 | 148·1 | 353·1 | − 7·4 | 10 | 80 | |
| Aug. 19 | | Centre | | | (1·9) | (+6·9) | (10) | (80) | (0) |
| Aug. 21 | | No Spots or Faculæ. | | | | | | | |
| 234·587 H. | ST, H | 220 | 0·472 | 124·6 | 300·5 | − 9·1 | 4 | 45 | |
| Aug. 22 | | Centre | | | (323·6) | (+7·0) | (4) | (45) | (0) |
| 235·403 | JB, B | 220 | 0·367 | 140·2 | 299·2 | − 9·4 | 12 | 40 | |
| Aug. 23 | | Centre | | | (312·9) | (+7·1) | (12) | (40) | (0) |
| 237·586 | JB, B | 220 | 0·406 | 227·1 | 301·5 | − 9·2 | 34 | 97 | |
| | | | 0·863 | 103·7 | 226·3 | − 8·0 | | | 271 |
| Aug. 25 | | Centre | | | (284·0) | (+7·1) | (34) | (97) | (271) |
| 238·739 | ST, H | | 0·798 | 248·0 | 318·0 | −12·8 | | | 214 |
| H. | | 220 | 0·646 | 244·2 | 304·9 | −10·6 | 7 | 65 | |
| | | 220 | 0·559 | 241·1 | 298·4 | − 9·5 | 0 | 18 | |
| Aug. 26 | | Centre | | | (268·8) | (+7·1) | (7) | (83) | (214) |
| 240·588 | ST, H | 220 | 0·893 | 254·3 | 305·1 | −10·5 | 0 | 40 | |
| H. | | 220 | 0·856 | 252·9 | 300·5 | −10·6 | 7 | 49 | 459e |
| Aug. 28 | | Centre | | | (244·4) | (+7·2) | (7) | (89) | (459) |
| 241·481 | JB, B | 220 | 0·943 | 256·8 | 300·9 | − 9·9 | 0 | 27 | 466p |
| Aug. 29 | | Centre | | | (232·6) | (+7·2) | (0) | (27) | (466) |
| 242·582 | ST, H | 221 | 0·424 | 141·7 | 202·5 | −12·4 | 0 | 30 | |
| H. | | 221 | 0·465 | 139·2 | 199·9 | −13·7 | 8 | 20 | |
| Aug. 30 | | Centre | | | (218·0) | (+7·2) | (8) | (50) | (0) |
| 243·451 | JB, B | 221 | 0·374 | 162·1 | 199·8 | −13·6 | 14 | 44 | |
| Aug. 31 | | Centre | | | (206·5) | (+7·2) | (14) | (44) | (0) |
| 244·599 | JB, B | 221 | 0·393 | 207·9 | 202·2 | −13·1 | 17 | 70 | |
| Sept. 1 | | Centre | | | (191·4) | (+7·2) | (17) | (70) | (0) |
| 245·649 | ST, H | 221 | 0·538 | 232·1 | 203·3 | −12·8 | 0 | 150 | |
| H. | | 221 | 0·493 | 228·0 | 199·5 | −12·6 | 0 | 39 | |
| Sept. 2 | | Centre | | | (177·5) | (+7·2) | (0) | (189) | (0) |
| 247·588 | ST, H | | 0·989 | 259·6 | 231·8 | − 9·1 | | | 714 |
| H. | | 221 | 0·816 | 247·1 | 202·5 | −14·0 | 0 | 72 | |
| | | 221 | 0·768 | 245·8 | 197·8 | −13·4 | 0 | 11 | 523c |
| Sept. 4 | | Centre | | | (151·9) | (+7·2) | (0) | (83) | (1237) |
| 248·582 | JB, B | | 0·948 | 266·8 | 209·7 | − 0·6 | | | 152 |
| | | 221 | 0·890 | 250·9 | 198·4 | −13·3 | 0 | 9 | 608np |
| Sept. 5 | | Centre | | | (138·8) | (+7·3) | (0) | (9) | (760) |

Group 218, August 7. Single small spot.
Group 219, August 16–19. Two spots.
Group 220, August 22–29. Only one spot is seen at first, but a second of equal size appears on August 25.
Group 221, August 30–September 5. Two small spots, one of which breaks into small fragments on September 1, and finally disappears on September 5.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 249·529 | JB, B | 221 | 0·966 | 253·3 | 198·4 | − 14·0 | | | 344 |
| Sept. 6 | | Centre | | | (126·3) | (+ 7·3) | (0) | (0) | (344) |
| Sept. 7 to Sept. 8 | | No Spots or Faculæ. | | | | | | | |
| 257·588 H. | ST, H | 223 | 0·848 | 105·8 | 324·2 | − 9·3 | 28 | 157 | 560*f* |
| Sept. 14 | | Centre | | | (19·8) | (+ 7·2) | (28) | (157) | (560) |
| 258·745 H. | ST, H | 223 | 0·692 | 112·0 | 324·0 | − 9·5 | 39 | 136 | 394*f* |
| Sept. 15 | | Centre | | | (4·5) | (+ 7·2) | (39) | (136) | (394) |
| 259·581 H. | ST, H | 223 | 0·558 | 119·4 | 324·2 | − 9·7 | 19 | 106 | |
| Sept. 16 | | Centre | | | (353·6) | (+ 7·1) | (19) | (106) | (0) |
| 261·440 | JB, B | 222 | 0·947 | 279·7 | 41·0 | + 11·4 | 0 | 31 | 149*p* |
| | | 223 | 0·303 | 162·1 | 323·6 | − 9·6 | 33 | 126 | |
| Sept. 18 | | Centre | | | (329·0) | (+ 7·1) | (33) | (157) | (149) |
| 264·529 | JB, B | | 0·942 | 92·2 | 218·3 | + 0·3 | | | 670 |
| Sept. 21 | | Centre | | | (288·2) | (+ 7·0) | (0) | (0) | (670) |
| 265·445 | JB, B | | 0·866 | 93·4 | 216·6 | + 0·6 | | | 861 |
| | | | 0·958 | 109·6 | 206·2 | − 16·3 | | | 166 |
| Sept. 22 | | Centre | | | (276·2) | (+ 7·0) | (0) | (0) | (1027) |
| 268·089 Me. | H, A | | 0·968 | 85·2 | 165·4 | + 6·4 | | | 204 |
| Sept. 25 | | Centre | | | (241·3) | (+ 6·9) | (0) | (0) | (204) |
| 269·091 Me. | H, A | | 0·967 | 98·3 | 154·1 | − 6·2 | | | 201 |
| Sept. 26 | | Centre | | | (228·1) | (+ 6·8) | (0) | (0) | (201) |
| 270·586 H. | H, ST | 224 | 0·797 | 102·8 | 157·1 | − 5·9 | 39 | 403 | 410*c* |
| Sept. 27 | | Centre | | | (208·3) | (+ 6·8) | (39) | (403) | (410) |
| 271·465 | JB, B | 224 | 0·675 | 107·1 | 156·4 | − 6·3 | 81 | 341 | |
| Sept. 28 | | Centre | | | (196·7) | (+ 6·7) | (81) | (341) | (0) |
| 272·495 | JB, B | 224 | 0·503 | 115·2 | 156·0 | − 6·4 | 113 | 421 | |
| Sept. 29 | | Centre | | | (183·1) | (+ 6·7) | (113) | (421) | (0) |
| 273·587 H. | H, ST | 224 | 0·323 | 132·6 | 154·9 | − 6·2 | 47 | 390 | |
| Sept. 30 | | Centre | | | (168·7) | (+ 6·6) | (47) | (390) | (0) |
| 275·578 H. | H, ST | 224 | 0·330 | 233·5 | 157·9 | − 5·0 | 26 | 239 | |
| Oct. 2 | | Centre | | | (142·5) | (+ 6·5) | (26) | (239) | (0) |
| 276·585 H. | H, ST | 224 | 0·512 | 249·0 | 157·7 | − 4·9 | 28 | 238 | |
| Oct. 3 | | Centre | | | (129·2) | (+ 6·5) | (28) | (238) | (0) |
| 277·544 | B, B | 224 | 0·700 | 257·0 | 159·5 | − 4·4 | 39 | 180 | |
| Oct. 4 | | Centre | | | (116·5) | (+ 6·4) | (39) | (180) | (0) |
| 278·443 | JB, B | 224 | 0·828 | 260·2 | 159·4 | − 4·4 | 46 | 172 | 353*sf* |
| Oct. 5 | | Centre | | | (104·7) | (+ 6·4) | (46) | (172) | (353) |
| 279·565 | JB, B | 224 | 0·942 | 263·4 | 159·3 | − 4·1 | 34 | 131 | 405*sf* |
| | | | 0·980 | 103·7 | 13·3 | − 12·0 | | | 165 |
| Oct. 6 | | Centre | | | (89·8) | (+ 6·3) | (34) | (131) | (570) |
| Oct. 7 | | No ~~Spots or Faculæ.~~ photograph. | | | | | | | |
| Oct. 9 to Oct. 10 | | No Spots or Faculæ. | | | | | | | |
| 284·559 | JB, B | 225 | 0·298 | 159·0 | 17·7 | − 10·2 | 2 | 18 | |
| Oct. 11 | | Centre | | | (23·9) | (+ 6·0) | (2) | (18) | (0) |

Group 222, September 18. Single spot.
Group 223, September 14–18. Two small spots.
Group 224, September 27–October 6. Two spots of nearly equal size, of which the preceding spot grows larger and the following spot smaller on October 4 and 5.
Group 225, October 11–18. Scattered group.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 285·498 | JB, B | 225 | 0·301 | 198·8 | 17·2 | −10·6 | 29 | 99 | |
| | | | 0·977 | 94·0 | 294·5 | − 2·5 | | | 142 |
| Oct. 12 | | Centre | | | (11·6) | (+5·9) | (29) | (99) | (142) |
| 289·052 | H, A | 225 | 0·822 | 253·9 | 17·8 | − 9·8 | 35 | 195 | |
| Me. | | | | | | | | | |
| Oct. 16 | | Centre | | | (324·7) | (+5·6) | (35) | (195) | (0) |
| 290·468 | JB, B | 225 | 0·961 | 258·6 | 18·5 | − 9·4 | 144 | 694 | 554*c* |
| | | | 0·945 | 90·8 | 234·7 | + 1·0 | | | 150 |
| Oct. 17 | | Centre | | | (306·0) | (+5·5) | (144) | (694) | (704) |
| 291·070 | H, A | | 0·937 | 89·6 | 228·7 | + 2·4 | | | 395 |
| Me. | | 225 | 0·991 | 259·0 | 18·9 | −10·0 | 14 | 331 | 837*c* |
| Oct. 18 | | Centre | | | (298·1) | (+5·6) | (14) | (331) | (1232) |
| 292·469 | JB, B | 226 | 0·907 | 107·6 | 217·1 | −13·4 | 62 | 308 | 627*f* |
| | | | 0·821 | 92·1 | 224·6 | + 1·4 | | | 154 |
| | | | 0·894 | 91·6 | 216·6 | + 0·9 | | | 58 |
| Oct. 19 | | Centre | | | (279·6) | (+5·4) | (62) | (308) | (839) |
| 293·083 | H, A | 226 | 0·826 | 109·3 | 218·7 | −12·7 | 16 | 163 | |
| Me. | | 226 | 0·878 | 107·7 | 212·7 | −12·7 | 10 | 107 | 507*c* |
| Oct. 20 | | Centre | | | (271·5) | (+5·3) | (26) | (270) | (507) |
| 294·079 | H, A | 226 | 0·688 | 114·5 | 218·7 | −12·6 | 16 | 121 | |
| Me. | | 226 | 0·756 | 112·4 | 212·7 | −13·1 | 17 | 65 | |
| | | 226 | 0·785 | 111·1 | 209·6 | −13·0 | 6 | 48 | 391*c* |
| Oct. 21 | | Centre | | | (258·4) | (+5·2) | (39) | (234) | (391) |
| 296·220 | H, A | 226 | 0·363 | 145·0 | 217·9 | −12·4 | 22 | 131 | |
| Me. | | 226 | 0·430 | 135·6 | 212·3 | −13·1 | 0 | 38 | |
| | | 226 | 0·470 | 131·3 | 209·0 | −13·4 | 8 | 72 | |
| Oct. 23 | | Centre | | | (230·2) | (+5·0) | (30) | (241) | (0) |
| 298·193 | H, A | 226 | 0·378 | 217·8 | 217·9 | −12·6 | 24 | 102 | |
| Me. | | 226 | 0·369 | 213·6 | 216·2 | −13·1 | 0 | 6 | |
| | | 226 | 0·328 | 195·0 | 209·2 | −13·6 | 0 | 8 | |
| Oct. 25 | | Centre | | | (204·2) | (+4·8) | (24) | (116) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 299·049 | H, A | 226 | 0·507 | 235·2 | 217·9 | −12·4 | 17 | 79 | |
| Me. | | | | | | | | | |
| Oct. 26 | | Centre | | | (192·8) | (+4·8) | (17) | (79) | (0) |
| 300·080 | H, A | 226 | 0·674 | 245·6 | 218·1 | −12·5 | 17 | 95 | |
| Me. | | | | | | | | | |
| Oct. 27 | | Centre | | | (179·3) | (+4·7) | (17) | (95) | (0) |
| Oct. 31 to Nov. 1 | | No Spots or Faculæ. | | | | | | | |
| 306·648 | H, ST | 226* | 0·666 | 281·9 | 134·0 | +10·9 | 16 | 82 | |
| | | 226* | 0·598 | 283·1 | 128·8 | +11·0 | 18 | 61 | |
| H. | | | 0·945 | 102·9 | 23·1 | −10·8 | | | 527 |
| Nov. 2 | | Centre | | | (92·6) | (+4·0) | (34) | (143) | (527) |
| 307·752 | H, ST | 226* | 0·846 | 279·5 | 135·8 | +10·2 | 25 | 174 | |
| | | 226* | 0·806 | 281·0 | 131·6 | +11·1 | 0 | 27 | 333*c* |
| H. | | 226* | 0·765 | 280·6 | 127·8 | +10·6 | 4 | 70 | |
| | | | 0·819 | 102·7 | 24·5 | − 8·1 | | | 377 |
| Nov. 3 | | Centre | | | (78·1) | (+3·9) | (29) | (271) | (710) |
| 308·664 | H, ST | 226* | 0·946 | 279·7 | 137·2 | +10·4 | 36 | 138 | |
| | | 226* | 0·881 | 280·1 | 127·7 | +10·7 | 0 | 34 | 382*c* |
| H. | | | 0·964 | 134·7 | 0·7 | −41·2 | | | 292 |
| Nov. 4 | | Centre | | | (66·0) | (+3·8) | (36) | (172) | (674) |
| Nov. 7 to Nov. 8 | | No Spots or Faculæ. | | | | | | | |
| 313·572 | JB, B | 227 | 0·876 | 98·8 | 301·1 | − 6·1 | 0 | 28 | 202*p* |
| Nov. 9 | | Centre | | | (1·4) | (+3·2) | (0) | (28) | (202) |
| Nov. 10 | | No ~~Spots or Faculæ.~~ photograph. | | | | | | | |
| 317·657 | H, ST | 227* | 0·810 | 98·3 | 254·0 | − 5·0 | 0 | 66 | |
| | | 228 | 0·925 | 88·4 | 240·0 | + 2·6 | 0 | 84 | 367*c* |
| H. | | | | | (307·5) | (+2·9) | (0) | (150) | (367) |
| Nov. 13 | | Centre | | | | | | | |

Group 226, October 19–27. One large spot and two or three small ones.
Group 226*, November 2–4. A stream of spots.
Group 227, November 9. Single spot.
Group 227*, November 13. A group seen only near the east limb.
Group 228, November 13–16. Single spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 318·582 | JB, B | 228 | 0·819 | 90·1 | 240·5 | + 1·5 | 34 | 125 | 190*p* |
| Nov. 14 | | Centre | | | (295·3) | (+ 2·6) | (34) | (125) | (190) |
| 319·518 | JB, B | 228 | 0·674 | 91·1 | 240·8 | + 1·2 | 17 | 65 | |
| | | 229*a* | 0·896 | 104·4 | 220·8 | − 11·6 | 57 | 159 | 282*sf* |
| | | 229*b* | 0·929 | 102·7 | 216·9 | − 10·9 | 37 | 126 | |
| Nov. 15 | | Centre | | | (283·0) | (+ 2·5) | (111) | (350) | (282) |
| 320·497 | JB, B | 228 | 0·490 | 92·3 | 240·9 | + 1·0 | 6 | 30 | |
| | | 229*a* | 0·779 | 107·5 | 220·9 | − 11·9 | 36 | 132 | |
| | | 229*b* | 0·839 | 104·6 | 214·5 | − 10·8 | 25 | 87 | |
| Nov. 16 | | Centre | | | (270·1) | (+ 2·4) | (67) | (249) | (0) |
| 322·080 | H, A | 229*a* | 0·508 | 116·1 | 221·5 | − 10·9 | 13 | 62 | |
| Me. | | 229*b* | 0·603 | 111·4 | 214·4 | − 10·7 | 6 | 44 | |
| Nov. 18 | | Centre | | | (249·1) | (+ 2·2) | (19) | (106) | (0) |
| 323·493 | JB, B | 229*a* | 0·271 | 145·6 | 221·5 | − 10·8 | 27 | 102 | |
| | | 229*b* | 0·364 | 128·4 | 213·6 | − 11·0 | 15 | 59 | |
| | | 230 | 0·954 | 260·9 | 302·3 | − 8·0 | 0 | 26 | 349*nf* |
| Nov. 19 | | Centre | | | (230·6) | (+ 2·1) | (42) | (187) | (349) |
| 324·097 | H, A | | 0·977 | 261·8 | 299·6 | − 7·5 | | | 242 |
| | | 229*a* | 0·224 | 177·3 | 222·0 | − 10·9 | 8 | 46 | |
| Me. | | 229*b* | 0·269 | 147·1 | 214·1 | − 11·0 | 0 | 17 | |
| Nov. 20 | | Centre | | | (222·6) | (+ 2·0) | (8) | (63) | (242) |
| 325·021 | H, A | 229*a* | 0·304 | 222·0 | 222·3 | − 11·1 | 4 | 46 | |
| | | 229*b* | 0·226 | 196·0 | 214·0 | − 10·6 | 0 | 21 | |
| Me. | | | 0·954 | 80·0 | 138·6 | − 8·9 | | | 280 |
| Nov. 21 | | Centre | | | (210·4) | (+ 1·9) | (4) | (67) | (280) |
| Nov. 28 | | No Spots or Faculæ. | | | | | | | |
| 333·477 | JB, B | | 0·956 | 102·8 | 26·8 | − 12·0 | | | 186 |
| Nov. 29 | | Centre | | | (99·0) | (+ 0·8) | (0) | (0) | (186) |
| 340·463 | JB, B | | 0·915 | 99·8 | 301·3 | − 9·0 | | | 136 |
| Dec. 6 | | Centre | | | (6·9) | (− 0·1) | (0) | (0) | (136) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1876. | | | | ° | ° | ° | | | |
| 347·561 | JB, B | | 0·799 | 104·8 | 221·3 | − 12·3 | | | 287 |
| Dec. 13 | | Centre | | | (273·4) | (− 1·0) | (0) | (0) | (287) |
| 352·045 | H, A | 231 | 0·940 | 78·5 | 145·2 | + 10·2 | 53 | 258 | 389*c* |
| Me. | | | | | | | | | |
| Dec. 18 | | Centre | | | (214·3) | (− 1·6) | (53) | (258) | (389) |
| 353·248 | H, A | 231 | 0·825 | 76·5 | 144·2 | + 10·1 | 49 | 394 | |
| Me. | | | | | | | | | |
| Dec. 19 | | Centre | | | (198·6) | (− 1·7) | (49) | (394) | (0) |
| 354·116 | H, A | 231 | 0·696 | 73·5 | 144·4 | + 10·8 | 66 | 402 | |
| Me. | | | | | | | | | |
| Dec. 20 | | Centre | | | (187·0) | (− 1·8) | (66) | (402) | (0) |
| 355·103 | H, A | 231 | 0·513 | 65·5 | 145·8 | + 10·6 | 42 | 150 | |
| Me. | | | | | | | | | |
| Dec. 21 | | Centre | | | (174·0) | (− 1·9) | (42) | (150) | (0) |
| 356·549 | JB, B | 231 | 0·273 | 37·0 | 145·4 | + 10·5 | 89 | 667 | |
| Dec. 22 | | Centre | | | (155·0) | (− 2·1) | (89) | (667) | (0) |
| 357·066 | H, A | 231 | 0·224 | 11·9 | 145·5 | + 10·4 | 44 | 274 | |
| Me. | | | | | | | | | |
| Dec. 23 | | Centre | | | (148·2) | (− 2·2) | (44) | (274) | (0) |
| 361·020 | H, A | 231 | 0·779 | 285·2 | 145·7 | + 10·0 | 85 | 501 | |
| Me. | | | | | | | | | |
| Dec. 27 | | Centre | | | (96·1) | (− 2·7) | (85) | (501) | (0) |
| 363·053 | H, A | 231 | 0·973 | 280·7 | 145·1 | + 9·7 | 103 | 378 | |
| Me. | | | | | | | | | |
| Dec. 29 | | Centre | | | (69·4) | (− 2·9) | (103) | (378) | (0) |
| Dec. 30 | | No Spots or Faculæ. | | | | | | | |

Group 229, November 15–21. Two spots of nearly equal size.
Group 230, November 19. Single spot.
Group 231, December 18–29. Single spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| Jan. 3 to Jan. 5 | } | No Spots or Faculæ. | | | | | | | |
| 5·057 | H, A | 231* | 0·777 | 77·9 | 274·2 | + 6·9 | 0 | 42 | |
| Me. | | 231* | 0·794 | 80·0 | 272·3 | + 5·6 | 0 | 16 | |
| Jan. 6 | | Centre | | | (323·9) | (− 3·8) | (0) | (58) | (0) |
| 7·048 | H, A | 231† | 0·539 | 72·7 | 266·7 | + 5·8 | 0 | 18 | |
| Me. | | | | | | | | | |
| Jan. 8 | | | | | (297·7) | (− 4·0) | (0) | (18) | (0) |
| 8·068 | H, A | 231† | 0·345 | 59·1 | 267·1 | + 6·3 | 0 | 8 | |
| Me. | | | | | | | | | |
| Jan. 9 | | Centre | | | (284·3) | (− 4·1) | (0) | (8) | (0) |
| 9·068 | H, A | 232* | 0·465 | 260·0 | 298·6 | − 8·4 | 0 | 20 | |
| | | 232* | 0·426 | 259·6 | 296·0 | − 8·3 | 0 | 29 | |
| Me. | | 231† | 0·191 | 21·6 | 267·1 | + 5·8 | 0 | 47 | |
| | | 232*a* | 0·967 | 79·4 | 197·1 | + 9·1 | 51 | 280 | } 350*c* |
| | | 232 | 0·990 | 81·2 | 190·2 | + 8·1 | 6 | 95 | |
| Jan. 10 | | Centre | | | (271·1) | (− 4·3) | (57) | (471) | (350) |
| 10·243 | H, A | 232* | 0·702 | 261·6 | 300·2 | − 9·1 | 0 | 19 | |
| | | 232* | 0·653 | 262·7 | 296·4 | − 8·1 | 0 | 27 | |
| Me. | | 231† | 0·277 | 311·6 | 267·7 | + 6·3 | 0 | 59 | |
| | | 232*a* | 0·871 | 77·6 | 196·6 | + 8·5 | 38 | 180 | } 295*c* |
| | | 232 | 0·930 | 79·0 | 188·6 | + 8·5 | 0 | 76 | |
| Jan. 11 | | Centre | | | (255·7) | (− 4·4) | (38) | (361) | (295) |
| 11·052 | H, A | 232*a* | 0·776 | 75·1 | 195·9 | + 8·5 | 35 | 190 | } 221*c* |
| Me. | | 232 | 0·848 | 76·5 | 188·6 | + 8·9 | 0 | 30 | |
| Jan. 12 | | Centre | | | (245·0) | (− 4·5) | (35) | (220) | (221) |
| 12·036 | H, A | 232*a* | 0·631 | 70·6 | 195·2 | + 8·4 | 19 | 172 | |
| Me. | | 232 | 0·711 | 72·4 | 188·8 | + 9·1 | 0 | 25 | |
| Jan. 13 | | Centre | | | (232·0) | (− 4·6) | (19) | (197) | (0) |
| 14·585 | JB, B | | 0·903 | 285·5 | 261·0 | +11·8 | | | 192 |
| | | 232*a* | 0·247 | 14·6 | 194·9 | + 9·0 | 55 | 215 | |
| | | 233 | 0·800 | 72·7 | 147·7 | +10·8 | 75 | 325 | 706*nf* |
| Jan. 15 | | Centre | | | (198·5) | (− 4·8) | (130) | (540) | (898) |
| 1877. | | | | ° | ° | ° | | | |
| 16·089 | H, A | 232*a* | 0·371 | 310·6 | 195·2 | + 9·3 | 40 | 166 | |
| Me. | | 233*a* | 0·571 | 63·6 | 147·5 | +10·5 | 53 | 363 | |
| | | 233 | 0·614 | 58·6 | 146·1 | +14·5 | 0 | 14 | |
| Jan. 17 | | Centre | | | (178·7) | (− 4·9) | (93) | (543) | (0) |
| 17·049 | H, A | 232*a* | 0·537 | 296·5 | 195·0 | + 9·5 | 27 | 181 | |
| Me. | | 233*a* | 0·410 | 50·1 | 147·4 | +10·4 | 42 | 367 | |
| Jan. 18 | | Centre | | | (166·0) | (− 5·0) | (69) | (548) | (0) |
| 18·041 | H, A | 232*a* | 0·698 | 289·2 | 194·8 | + 9·5 | 39 | 219 | |
| Me. | | 233*a* | 0·297 | 20·0 | 147·1 | +11·1 | 17 | 360 | |
| | | 233 | 0·369 | 21·2 | 145·1 | +15·0 | 0 | 12 | |
| Jan. 19 | | Centre | | | (153·0) | (− 5·1) | (56) | (591) | (0) |
| 19·050 | H, A | 232*a* | 0·840 | 284·9 | 194·8 | + 9·6 | 29 | 216 | |
| Me. | | 233*a* | 0·309 | 333·5 | 147·6 | +10·9 | 20 | 202 | |
| Jan. 20 | | Centre | | | (139·6) | (− 5·2) | (49) | (418) | (0) |
| 21·118 | H, A | 232*a* | 0·992 | 280·3 | 193·9 | + 9·5 | 56 | 207 | 459*c* |
| | | 233*a* | 0·630 | 295·3 | 147·8 | +11·2 | 18 | 133 | |
| Me. | | 233 | 0·610 | 293·0 | 146·9 | + 9·3 | 0 | 9 | |
| | | 233 | 0·608 | 297·9 | 145·6 | +12·0 | 0 | 9 | |
| Jan. 22 | | Centre | | | (112·4) | (− 5·4) | (74) | (358) | (459) |
| 22·500 | JB, B | 233*a* | 0·824 | 288·2 | 147·0 | +11·6 | 16 | 88 | |
| Jan. 23 | | Centre | | | (94·3) | (− 5·5) | (16) | (88) | (0) |
| 23·536 | JB, B | 233*a* | 0·926 | 285·1 | 146·3 | +11·6 | 17 | 86 | 283*nf* |
| Jan. 24 | | Centre | | | (80·6) | (− 5·6) | (17) | (86) | (283) |
| 24·064 | H, A | 233*a* | 0·966 | 283·9 | 146·8 | +11·9 | 0 | 156 | 516*f* |
| Me. | | | | | | | | | |
| Jan. 25 | | Centre | | | (73·6) | (− 5·6) | (0) | (156) | (516) |
| 25·533 | M, M | 234 | 0·710 | 94·6 | 9·0 | − 7·3 | 0 | 28 | 200*c* |
| Jan. 26 | | Centre | | | (54·3) | (− 5·8) | (0) | (28) | (200) |
| 26·024 | H, A | 234 | 0·626 | 94·8 | 9·0 | − 7·5 | 0 | 11 | |
| Me. | | | | | | | | | |
| Jan. 27 | | Centre | | | (47·8) | (− 5·8) | (0) | (11) | (0) |

Group 231*, January 6. Two small spots.
Group 231†, January 8–11. One or two spots, mostly small.
Group 232, January 10–22. One regular spot, *a*, usually with a small companion.
Group 232*, January 10–11. A short stream of spots.
Group 233, January 15–25. One regular spot, *a*, usually with one or two small companions. *a* preserves its form, but decreases in size as it crosses the Sun.
Group 234, January 26–27. One small faint spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 28·467 | JB, B | | 0·945 | 98·2 | 304·3 | − 9·8 | | | 299 |
| Jan. 29 | | Centre | | | (15·7) | (− 6·0) | (0) | (0) | (299) |
| 29·534 | JB, B | 234* | 0·864 | 94·4 | 301·7 | − 7·2 | 0 | 9 | 190*p* |
| Jan. 30 | | Centre | | | (1·7) | (− 6·1) | (0) | (9) | (190) |
| 30·078 | H, A | 234* | 0·780 | 93·9 | 303·1 | − 6·9 | 0 | 12 | |
| Me. Jan. 31 | | Centre | | | (354·5) | (− 6·1) | (0) | (12) | (0) |
| 32·083 | H, A | 234* | 0·407 | 93·1 | 304·0 | − 7·0 | 3 | 14 | |
| Me. Feb. 2 | | Centre | | | (328·1) | (− 6·2) | (3) | (14) | (0) |
| 33·557 | JB, B | 234* | 0·088 | 113·6 | 304·0 | − 8·3 | 0 | 16 | |
| Feb. 3 | | Centre | | | (308·7) | (− 6·3) | (0) | (16) | (0) |
| 36·097 | H, A | 234* | 0·633 | 265·8 | 314·7 | − 7·5 | 0 | 7 | |
| Me. Feb. 6 | | Centre | | | (275·3 | (− 6·5) | (0) | (7) | (0) |
| 37·459 | JB, B | 234* | 0·827 | 265·4 | 313·4 | − 7·5 | 0 | 6 | |
| | | 235 | 0·900 | 75·6 | 195·3 | + 9·9 | 28 | 124 | |
| Feb. 7 | | Centre | | | (257·3) | (− 6·6) | (28) | (130) | (0) |
| 38·523 | JB, B | 235 | 0·778 | 72·1 | 194·9 | + 9·5 | 31 | 154 | |
| Feb. 8 | | Centre | | | (243·3) | (− 6·6) | (31) | (154) | (0) |
| 40·073 | H, A | 235 | 0·524 | 60·8 | 195·4 | + 8·8 | 21 | 128 | |
| Me. | | | 0·956 | 76·5 | 152·0 | +10·7 | | | 394 |
| Feb. 10 | | Centre | | | (222·9) | (− 6·7) | (21) | (128) | (394) |
| 46·508 | JB, B | 235 | 0·860 | 284·9 | 195·3 | + 9·0 | 28 | 123 | 204*p* |
| | | | 0·854 | 80·5 | 80·8 | + 4·4 | | | 92 |
| Feb. 16 | | Centre | | | (138·2) | (− 7·0) | (28) | (123) | (296) |
| 47·533 | JB, B | 235 | 0·954 | 281·8 | 195·4 | + 9·0 | 33 | 146 | 216*n* |
| Feb. 17 | | Centre | | | (124·7) | (− 7·0) | (33) | (146) | (216) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 49·559 | JB, B | | 0·872 | 289·5 | 155·4 | +13·2 | | | 176 |
| Feb. 19 | | Centre | | | (98·0) | (− 7·0) | (0) | (0) | (176) |
| Feb. 20 to Feb. 21 | | No Spots or Faculæ. | | | | | | | |
| Feb. 23 to Feb 24 | | No Spots or Faculæ. | | | | | | | |
| 56·048 | H, A | 236 | 0·968 | 80·0 | 298·5 | + 7·8 | 0 | 112 | 366*f* |
| Me. Feb. 26 | | Centre | | | (12·5) | (− 7·2) | (0) | (112) | (366) |
| 57·546 | JB, B | 236 | 0·837 | 76·1 | 298·0 | + 7·4 | 36 | 133 | 596*nf* |
| Feb. 27 | | Centre | | | (352·8) | (− 7·2) | (36) | (133) | (596) |
| 59·089 | H, A | 236* | 0·327 | 93·4 | 313·2 | − 8·0 | 6 | 31 | |
| | | 236* | 0·381 | 94·3 | 309·9 | − 8·3 | 9 | 34 | |
| Me. | | 236 | 0·591 | 67·4 | 299·2 | + 7·1 | 10 | 36 | |
| | | 236 | 0·621 | 65·2 | 297·7 | + 9·2 | 0 | 7 | |
| Mar. 1 | | Centre | | | (332·4) | (− 7·2) | (25) | (108) | (0) |
| 61·027 | H, A | 236* | 0·115 | 257·6 | 313·4 | − 8·6 | 0 | 46 | |
| | | 236* | 0·047 | 233·4 | 309·1 | − 8·8 | 11 | 97 | |
| Me. | | 236 | 0·275 | 27·8 | 299·5 | + 6·9 | 2 | 16 | |
| Mar. 3 | | Centre | | | (306·9) | (− 7·2) | (13) | (159) | (0) |
| 63·086 | H, A | 236* | 0·547 | 265·7 | 313·1 | − 8·4 | 0 | 19 | |
| | | 236* | 0·479 | 265·4 | 308·6 | − 8·5 | 10 | 133 | |
| Me. | | 236 | 0·412 | 313·5 | 297·4 | + 9·6 | 0 | 39 | |
| Mar. 5 | | Centre | | | (279·8) | (− 7·2) | (10) | (191) | (0) |
| 66·609 | JB, B | 237 | 0·529 | 261·2 | 265·3 | −10·8 | 0 | 36 | |
| Mar. 8 | | Centre | | | (233·3) | (− 7·2) | (0) | (36) | (0) |
| 67·069 | H, A | | 0·919 | 283·8 | 291·9 | + 9·6 | | | 410 |
| Me. | | 237 | 0·620 | 261·2 | 265·8 | −11·1 | 0 | 37 | |
| Mar. 9 | | Centre | | | (227·3) | (− 7·2) | (0) | (37) | (410) |

Group 234*, January 30–February 7. Very small faint spot, that breaks up into several fragments on February 3.
Group 235, February 7–17. A well-defined regular spot, which gradually diminishes in size, but does not otherwise change its form.
Group 236, February 26–March 5. A group of three or four small spots.
Group 236*, March 1–5. A short stream of spots.
Group 237, March 8–10. Faint ill-defined spot, which breaks up into several spots on March 10.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 68·559 | JB, B | 237 | 0·910 | 262·6 | 273·6 | − 9·8 | 0 | 40 | 238*f* |
| Mar. 10 | | Centre | | | (207·7) | (−7·2) | (0) | (40) | (238) |
| Mar. 14 | | No Spots or Faculæ. | | | | | | | |
| Mar. 16 | | No Spots or Faculæ. | | | | | | | |
| 75·481 | JB, B | 238 | 0·211 | 249·7 | 128·0 | −11·1 | 5 | 39 | |
| Mar. 17 | | Centre | | | (116·4) | (−7·1) | (5) | (39) | (0) |
| 76·399 | JB, B | 238 | 0·424 | 258·5 | 129·2 | −11·2 | 46 | 197 | |
| Mar. 18 | | Centre | | | (104·3) | (−7·0) | (46) | (197) | (0) |
| 77·562 | JB, B | 238 | 0·648 | 261·0 | 129·6 | −11·1 | 39 | 261 | |
| Mar. 19 | | Centre | | | (89·0) | (−7·0) | (39) | (261) | (0) |
| 79·169 | H, A | 238 | 0·888 | 261·2 | 131·0 | −11·0 | 17 | 151 | 320*c* |
| Me. | | 238 | 0·865 | 259·7 | 128·2 | −12·4 | 0 | 18 | |
| | | 238 | 0·827 | 261·1 | 124·0 | −11·3 | 8 | 69 | |
| Mar. 21 | | Centre | | | (67·8) | (−6·9) | (25) | (238) | (320) |
| 80·465 | JB, B | 238 | 0·985 | 259·4 | 131·8 | −11·6 | 50 | 173 | 373*nf* |
| Mar. 22 | | Centre | | | (50·7) | (−6·9) | (50) | (173) | (373) |
| 81·503 | JB, B | | 0·894 | 75·4 | 335·9 | + 9·8 | | | 237 |
| | | | 0·977 | 97·4 | 318·8 | − 8·7 | | | 391 |
| Mar. 23 | | Centre | | | (37·1) | (−6·9) | (0) | (0) | (628) |
| 82·474 | JB, B | | 0·926 | 96·3 | 316·0 | − 8·4 | | | 730 |
| Mar. 24 | | Centre | | | (24·2) | (−6·8) | (0) | (0) | (730) |
| 85·561 | JB, B | | 0·928 | 100·2 | 274·7 | −12·0 | | | 446 |
| Mar. 27 | | Centre | | | (343·5) | (−6·7) | (0) | (0) | (446) |
| Mar. 28 to Mar. 29 | | No Spots or Faculæ. | | | | | | | |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 89·427 | JB, B | | 0·775 | 294·8 | 339·0 | +14·5 | | | 208 |
| Mar. 31 | | Centre | | | (292·6) | (−6·5) | (0) | (0) | (208) |
| 93·571 | JB, B | | 0·946 | 261·3 | 309·5 | −10·3 | | | 273 |
| | | | 0·931 | 284·0 | 304·5 | +10·6 | | | 307 |
| | | | 0·951 | 177·0 | 224·4 | −77·7 | | | 156 |
| Apr. 4 | | Centre | | | (237·9) | (−6·3) | (0) | (0) | (736) |
| 94·564 | JB, B | | 0·952 | 279·0 | 295·7 | + 6·6 | | | 354 |
| Apr. 5 | | Centre | | | (224·8) | (−6·2) | (0) | (0) | (354) |
| 95·500 | JB, B | 239 | 0·982 | 101·7 | 132·5 | −12·6 | 8 | 63 | 207*c* |
| Apr. 6 | | Centre | | | (212·4) | (−6·1) | (8) | (63) | (207) |
| 96·460 | JB, B | | 0·914 | 286·0 | 263·4 | +12·0 | | | 124 |
| | | 239 | 0·917 | 101·4 | 132·7 | −12·9 | 3 | 34 | 445*c* |
| Apr. 7 | | Centre | | | (199·7) | (−6·0) | (3) | (34) | (569) |
| Apr. 9 | | No Spots or Faculæ. | | | | | | | |
| Apr. 11 | | No Spots or Faculæ. | | | | | | | |
| 101·409 | JB, B | | 0·877 | 267·0 | 195·8 | − 5·6 | | | 140 |
| Apr. 12 | | Centre | | | (134·4) | (−5·7) | (0) | (0) | (140) |
| Apr. 13 to Apr. 14 | | No Spots or Faculæ. | | | | | | | |
| 105·123 | H, A | 240 | 0·387 | 242·4 | 106·1 | −15·4 | 33 | 216 | |
| | | 240 | 0·323 | 241·2 | 102·3 | −14·1 | 6 | 118 | |
| Me. | | 240 | 0·302 | 233·4 | 99·9 | −15·6 | 8 | 34 | |
| Apr. 16 | | Centre | | | (85·4) | (−5·4) | (47) | (368) | (0) |
| 106·476 | JB, B | | 0·909 | 257·7 | 133·2 | −13·4 | | | 211 |
| | | 240 | 0·614 | 252·2 | 104·5 | −15·0 | 70 | 401 | |
| Apr. 17 | | Centre | | | (67·5) | (−5·3) | (70) | (401) | (211) |

Group 238, March 17–22. A scattered group of ill-defined spots, which gradually condenses into two well-defined spots. On March 22 one of the spots has gone off the limb, and the other is only partly visible.
Group 239, April 6–7. One small well-defined spot.
Group 240, April 16–20. A group composed of three spots, of which the smallest gradually disappears.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 108·523 | JB, B | 240 | 0·891 | 256·4 | 103·6 | −14·4 | 58 | 302 | 337*f* |
| Apr. 19 | | Centre | | | (40·4) | (− 5·1) | (58) | (302) | (337) |
| 109·470 | JB, B | 240 | 0·966 | 257·0 | 103·4 | −13·9 | 56 | 243 | 355*f* |
| | | 241 | 0·705 | 84·4 | 343·6 | + 0·4 | 4 | 41 | 319*n* |
| | | | 0·971 | 79·6 | 313·0 | + 8·8 | | | 115 |
| Apr. 20 | | Centre | | | (27·9) | (− 5·0) | (60) | (284) | (789) |
| 112·408 | JB, B | 241 | 0·122 | 17·7 | 347·0 | + 1·9 | 27 | 137 | |
| | | 242 | 0·720 | 96·1 | 303·1 | − 7·6 | 21 | 73 | |
| Apr. 23 | | Centre | | | (349·1) | (− 4·7) | (48) | (210) | (0) |
| 113·423 | JB, B | 241 | 0·241 | 299·8 | 347·7 | + 2·3 | 23 | 69 | |
| | | 242 | 0·534 | 96·8 | 303·5 | − 7·5 | 11 | 41 | |
| Apr. 24 | | Centre | | | (335·7) | (− 4·6) | (34) | (110) | (0) |
| 114·417 | JB, B | 241 | 0·447 | 284·7 | 348·1 | + 2·4 | 20 | 68 | |
| | | 242 | 0·303 | 102·6 | 305·3 | − 8·1 | 16 | 48 | |
| Apr. 25 | | Centre | | | (322·6) | (− 4·5) | (36) | (116) | (0) |
| 116·560 | M, B | 241 | 0·823 | 277·4 | 348·9 | + 3·6 | 0 | 23 | 311*nf* |
| | | 242 | 0·285 | 261·5 | 310·6 | − 6·6 | 13 | 56 | |
| Apr. 27 | | Centre | | | (294·2) | (− 4·3) | (13) | (79) | (311) |
| 117·062 | H, A | 242 | 0·396 | 263·0 | 310·8 | − 6·7 | 0 | 33 | |
| Me. | | | 0·973 | 101·0 | 210·6 | −11·7 | | | 260 |
| Apr. 28 | | Centre | | | (287·6) | (− 4·3) | (0) | (33) | (260) |
| 119·554 | M, B | 242 | 0·893 | 246·4 | 318·0 | − 6·8 | 11 | 33 | 468*f* |
| | | 243 | 0·827 | 50·9 | 207·8 | +28·6 | 0 | 25 | 136*nf* |
| Apr. 30 | | Centre | | | (254·7) | (− 4·0) | (11) | (58) | (604) |
| 120·107 | H, A | | 0·853 | 264·4 | 305·9 | − 6·9 | | | 221 |
| Me. | | 242 | 0·947 | 263·4 | 318·6 | − 7·5 | 0 | 28 | |
| | | 243 | 0·768 | 46·5 | 208·0 | +28·8 | 0 | 47 | |
| May 1 | | Centre | | | (247·3) | (− 4·0) | (0) | (75) | (221) |
| 121·075 | H, A | | 0·946 | 264·7 | 305·6 | − 6·3 | | | 223 |
| Me. | | 243 | 0·659 | 33·3 | 209·9 | +29·8 | 0 | 27 | |
| | | 243 | 0·681 | 38·1 | 205·9 | +28·9 | 4 | 41 | |
| May 2 | | Centre | | | (234·5) | (− 3·9) | (4) | (68) | (223) |
| 122·428 | M, B | 243 | 0·571 | 12·4 | 208·6 | +30·1 | 13 | 48 | |
| May 3 | | Centre | | | (216·7) | (− 3·7) | (13) | (48) | (0) |
| 123·516 | M, B | 243 | 0·561 | 350·9 | 208·1 | +29·9 | 0 | 32 | |
| | | 244 | 0·259 | 273·5 | 217·2 | − 2·6 | 12 | 49 | |
| May 4 | | Centre | | | (202·3) | (− 3·6) | (12) | (81) | (0) |
| 124·447 | M, B | 244 | 0·491 | 272·3 | 219·3 | − 1·9 | 10 | 31 | |
| May 5 | | Centre | | | (190·0) | (− 3·5) | (10) | (31) | (0) |
| 126·414 | M, B | | 0·799 | 312·3 | 206·9 | +30·0 | | | 229 |
| | | 244 | 0·838 | 270·1 | 220·7 | − 1·7 | 4 | 11 | 125*f* |
| | | 245 | 0·871 | 104·5 | 103·8 | −14·2 | 35 | 151 | 230*sf* |
| May 7 | | Centre | | | (164·0) | (− 3·3) | (39) | (162) | (584) |
| 127·411 | M, B | | 0·891 | 306·5 | 206·5 | +30·1 | | | 191 |
| | | 244 | 0·943 | 269·1 | 221·1 | − 1·9 | 0 | 20 | 202*f* |
| | | 245 | 0·743 | 106·3 | 103·7 | −14·2 | 31 | 139 | 215*sf* |
| | | | 0·948 | 80·2 | 80·3 | + 8·2 | | | 230 |
| May 8 | | Centre | | | (150·8) | (− 3·2) | (31) | (159) | (838) |
| 128·455 | M, B | | 0·962 | 302·5 | 206·5 | +30·1 | | | 207 |
| | | | 0·925 | 263·9 | 204·7 | − 6·9 | | | 129 |
| | | 245 | 0·573 | 110·6 | 103·6 | −14·1 | 17 | 61 | |
| | | 246 | 0·823 | 77·9 | 82·9 | + 8·2 | 11 | 35 | 196*nf* |
| May 9 | | Centre | | | (137·0) | (− 3·1) | (28) | (96) | (532) |
| 129·469 | M, B | 245 | 0·388 | 120·3 | 103·5 | −14·0 | 19 | 68 | |
| | | 246 | 0·676 | 74·1 | 82·6 | + 8·4 | 30 | 107 | |
| May 10 | | Centre | | | (123·6) | (− 3·0) | (49) | (175) | (0) |
| 130·591 | M, B | 245 | 0·213 | 155·8 | 103·6 | −14·0 | 14 | 61 | |
| | | 246 | 0·439 | 64·3 | 85·3 | + 8·3 | 26 | 139 | |
| May 11 | | Centre | | | (108·7) | (− 2·8) | (40) | (200) | (0) |
| 134·549 | M, B | 246 | 0·526 | 291·2 | 86·0 | + 8·8 | 23 | 105 | |
| May 15 | | Centre | | | (56·4) | (− 2·4) | (23) | (105) | (0) |
| 135·093 | H, A | 246 | 0·619 | 287·1 | 85·8 | + 8·6 | 11 | 90 | |
| Me. | | | | | | | | | |
| May 16 | | | | | (49·2) | (− 2·3) | (11) | (90) | (0) |

Group 241, April 20–27. A group of small spots, which change greatly on April 23.
Group 242, April 23–May 1. A group consisting principally of two small spots, of which one disappears on April 27.
Group 243, April 30–May 4. A scattered group of small faint spots.
Group 244, May 4–8. A scattered group of small faint spots, condensing on May 5 into a single spot.
Group 245, May 7–11. A single well-defined spot.
Group 246, May 9–18. One small well-defined spot. A second appears on May 10, but soon disappears again.
Another distant companion is seen on May 17.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Spots. Longitude. | Heliographic Spots. Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 136·051 | H, A | 246 | 0·807 | 288·8 | 88·2 | +13·7 | 1 | 26 | } 30c |
| | | 246 | 0·771 | 283·5 | 85·7 | + 8·9 | 8 | 67 | |
| Me. | | 247 | 0·974 | 79·4 | 320·4 | + 9·8 | 0 | 25 | 366f |
| May 17 | | Centre | | | (36·5) | (− 2·2) | (9) | (118) | (396) |
| 137·418 | M, B | 246 | 0·933 | 280·1 | 86·4 | + 8·6 | 0 | 14 | 382nf |
| | | 247 | 0·834 | 76·5 | 323·2 | +10·0 | 26 | 92 | 302f |
| | | | 0·872 | 97·7 | 317·9 | − 7·7 | | | 141 |
| May 18 | | Centre | | | (18·4) | (− 2·1) | (26) | (106) | (825) |
| 143·470 | M, B | 247 | 0·473 | 291·4 | 324·7 | + 8·7 | 19 | 89 | |
| May 24 | | Centre | | | (298·4) | (− 1·3) | (19) | (89) | (0) |
| 144·460 | M, B | 247 | 0·641 | 285·9 | 323·7 | + 9·1 | 29 | 93 | |
| May 25 | | Centre | | | (285·3) | (− 1·2) | (29) | (93) | (0) |
| 145·441 | M, B | 247 | 0·798 | 281·9 | 324·2 | + 8·7 | 7 | 61 | 458n |
| | | 248 | 0·626 | 256·4 | 310·1 | − 9·3 | 15 | 53 | |
| May 26 | | Centre | | | (272·3) | (− 1·1) | (22) | (114) | (458) |
| 147·420 | M, B | | 0·972 | 281·3 | 321·9 | +10·8 | | | 200 |
| | | | 0·908 | 259·5 | 310·9 | − 9·9 | | | 177 |
| May 28 | | Centre | | | (246·1) | (− 0·8) | (0) | (0) | (377) |
| 148·410 | M, B | | 0·977 | 260·8 | 310·5 | − 9·2 | | | 250 |
| May 29 | | Centre | | | (233·0) | (− 0·7) | (0) | (0) | (250) |
| May 31 | | No Spots or Faculæ. | | | | | | | |
| 153·499 | M, B | 249 | 0·851 | 102·3 | 108·2 | −10·5 | 11 | 37 | 160nf |
| | | | 0·959 | 75·8 | 92·9 | +13·6 | | | 212 |
| June 3 | | Centre | | | (165·7) | (− 0·1) | (11) | (37) | (372) |
| 154·432 | M, B | | 0·898 | 277·5 | 216·8 | + 6·7 | | | 140 |
| | | 249 | 0·727 | 104·3 | 107·8 | −10·3 | 37 | 238 | 0 |
| June 4 | | Centre | | | (153·3) | (− 0·0) | (37) | (238) | (140) |
| 155·441 | M, B | 249 | 0·553 | 109·0 | 108·0 | −10·2 | 42 | 200 | 0 |
| June 5 | | Centre | | | (140·0) | (+ 0·1) | (42) | (200) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Spots. Longitude. | Heliographic Spots. Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 156·464 | M, B | 249 | 0·349 | 121·8 | 109·0 | −10·3 | 33 | 143 | 0 |
| June 6 | | Centre | | | (126·4) | (+ 0·2) | (33) | (143) | (0) |
| 157·413 | M, B | 249 | 0·206 | 153·8 | 108·6 | −10·3 | 36 | 144 | 0 |
| June 7 | | Centre | | | (113·9) | (+ 0·3) | (36) | (144) | (0) |
| 158·506 | M, B | 249 | 0·246 | 219·5 | 108·5 | −10·4 | 37 | 159 | 0 |
| June 8 | | Centre | | | (99·4) | (+ 0·5) | (37) | (159) | (0) |
| 159·419 | M, B | 249 | 0·403 | 242·1 | 108·4 | −10·3 | 49 | 221 | 0 |
| June 9 | | Centre | | | (87·3) | (+ 0·6) | (49) | )221) | (0) |
| 161·469 | M, B | 249 | 0·760 | 255·0 | 108·3 | −10·7 | 33 | 184 | 320c |
| June 11 | | Centre | | | (60·2) | (+ 0·8) | (33) | (184) | (320) |
| 164·416 | M, B | | 0·816 | 77·9 | 327·3 | +10·5 | | | 150 |
| | | | 0·913 | 99·9 | 316·1 | − 8·6 | | | 465 |
| June 14 | | Centre | | | (21·3) | (+ 1·1) | (0) | (0) | (615) |
| 165·397 | M, B | | 0·790 | 101·7 | 317·0 | − 8·5 | | | 260 |
| June 15 | | Centre | | | (8·3) | (+ 1·2) | (0) | (0) | (260) |
| 166·412 | M, B | | 0·737 | 83 8 | 307·6 | + 5·5 | | | 205 |
| June 16 | | Centre | | | (354·8) | (+ 1·4) | (0) | (0) | (205) |
| 175·428 | M, B | | 0·956 | 257·2 | 307·2 | −11·4 | | | 200 |
| | | 250 | 0·298 | 152·7 | 227·4 | −12·8 | 24 | 70 | |
| | | | 0·874 | 91·3 | 174·7 | + 0·1 | | | 156 |
| June 25 | | Centre | | | (235·4) | (+ 2·5) | (24) | (70) | (356) |
| 177·539 | M, B | | 0·899 | 269·2 | 271·2 | − 0·5 | | | 128 |
| June 27 | | Centre | | | (207·4) | (+ 2·7) | (0) | (0) | (128) |
| 178·490 | M, B | 251 | 0·590 | 245·0 | 227·8 | −12·0 | 10 | 30 | |
| | | | 0·976 | 100·9 | 118·4 | −10·0 | | | 215 |
| June 28 | | Centre | | | (194·9) | (+ 2·8) | (10) | (30) | (215) |

Group 247, May 17–26. One small spot. A second appears on May 24, and a third on May 26.
Group 248, May 26. Two small spots.
Group 249, June 3–11. Two spots, one of them very small.
Group 250, June 25. Two small spots.
Group 251, June 28–29. A very close pair of well-defined small spots.

DATA Chg -
pg 42 Ln 4, Col 20,
Fn 357 → to 356
Addition Error.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group and Letter for Spot | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic | | Spots. | | Faculæ. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Longitude. | Latitude. | Area of UMBRA for each Spot (and for Day). | Area of WHOLE for each Spot (and for Day). | Area for each Group (and for Day). |
| 1877. | | | | ° | ° | ° | | | |
| 179·459 | M, B | 251 | 0·749 | 250·1 | 228·1 | −12·7 | 32 | 97 | 300*f* |
| | | | 0·937 | 217·9 | 237·8 | −46·0 | | | 157 |
| | | | 0·912 | 101·6 | 117·4 | − 9·3 | | | 265 |
| June 29 | | Centre | | | (182·0) | (+2·9) | (32) | (97) | (722) |
| 183·442 | M, B | 252 | 0·626 | 77·2 | 91·1 | +10·6 | 10 | 31 | 0 |
| July 3 | | Centre | | | (129·4) | (+3·4) | (10) | (31) | (0) |
| 184·440 | M, B | | 0·789 | 269·7 | 168·0 | + 2·0 | | | 116 |
| | | 252 | 0·400 | 73·3 | 93·3 | + 9·8 | 3 | 31 | |
| July 4 | | Centre | | | (116·1) | (+3·5) | (3) | (31) | (116) |
| 185·407 | M, B | 252 | 0·190 | 56·1 | 94·2 | + 9·6 | 1 | 25 | 0 |
| July 5 | | Centre | | | (103·3) | (+3·6) | (1) | (25) | (0) |
| July 9 | | No Spots or Faculæ. | | | | | | | |
| 190·436 | M, B | | 0·854 | 279·5 | 95·5 | +10·2 | | | 190 |
| July 10 | | Centre | | | (36·9) | (+4·0) | (0) | (0) | (190) |
| 191·104 | H, A | | 0·981 | 280·5 | 107·3 | +11·1 | | | 324 |
| Me. July 11 | | Centre | | | (28·1) | (+4·1) | (0) | (0) | (324) |
| 192·495 | M, B | | 0·928 | 102·2 | 303·0 | − 9·6 | | | 245 |
| July 12 | | Centre | | | (9·7) | (+4·2) | (0) | (0) | (245) |
| 194·063 | H, A | 252* | 0·316 | 211·7 | 358·4 | −11·2 | 5 | 26 | 0 |
| Me. July 14 | | Centre | | | (348·7) | (+4·4) | (5) | (26) | (0) |
| July 17 | | No Spots or Faculæ. | | | | | | | |
| 198·468 | M, B | 253 | 0·565 | 237·4 | 319·6 | −13·4 | 6 | 16 | |
| | | | 0·870 | 109·1 | 232·8 | −14·0 | | | 258 |
| July 18 | | Centre | | | (290·5) | (+4·8) | (6) | (16) | (258) |
| 200·519 | M, B | | 0·947 | 283·5 | 335·1 | +14·4 | | | 160 |
| | | | 0·858 | 253·6 | 320·3 | −11·4 | | | 215 |
| July 20 | | Centre | | | (263·4) | (+4·9) | (0) | (0) | (375) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in term of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic | | Spots. | | Faculæ. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Longitude. | Latitude. | Area of UMBRA for each Spot (and for Day). | Area of WHOLE for each Spot (and for Day). | Area for each Group (and for Day). |
| 1877. | | | | ° | ° | ° | | | |
| 201·514 | M, B | | 0·948 | 278·9 | 321·9 | +10·0 | | | 95 |
| | | | 0·938 | 254·7 | 317·9 | −12·4 | | | 261 |
| July 21 | | Centre | | | (250·2) | (+5·0) | (0) | (0) | (357/6) |
| July 23 | | No Spots or Faculæ. | | | | | | | |
| 210·416 | M, B | | 0·879 | 48·6 | 74·8 | +38·8 | | | 51 |
| July 30 | | Centre | | | (132·4) | (+5·8) | (0) | (0) | (51) |
| 211·408 | M, B | | 0·800 | 44·3 | 73·4 | +39·1 | | | 91 |
| July 31 | | Centre | | | (119·3) | (+5·9) | (0) | (0) | (91) |
| 213·523 | M, B | 254 | 0·617 | 282·4 | 129·2 | +12·4 | 19 | 47 | 0 |
| Aug. 2 | | Centre | | | (91·3) | (+6·0) | (19) | (47) | (0) |
| 214·503 | M, B | 254 | 0·792 | 280·7 | 130·9 | +12·1 | 0 | 20 | 104*f* |
| Aug. 3 | | Centre | | | (78·4) | (+6·1) | (0) | (20) | (104) |
| Aug. 4 | | No Spots or Faculæ. | | | | | | | |
| Aug. 7 | | No Spots or Faculæ. | | | | | | | |
| 225·523 | M, B | | 0·858 | 108·3 | 236·4 | −12·0 | | | 139 |
| Aug. 14 | | Centre | | | (292·6) | (+6·7) | (0) | (0) | (139) |
| 233·506 | M, B | 255 | 0·991 | 83·0 | 104·5 | + 7·9 | 27 | 116 | 334*n* |
| Aug. 22 | | Centre | | | (187·2) | (+7·0) | (27) | (116) | (334) |
| 234·534 | M, B | 255 | 0·939 | 83·4 | 103·3 | + 8·6 | 32 | 149 | 654*nf* |
| Aug. 23 | | Centre | | | (173·6) | (+7·1) | (32) | (149) | (654) |
| 235·440 | M, B | 255 | 0·848 | 84·1 | 103·2 | + 8·8 | 30 | 230 | 695*f* |
| Aug. 24 | | Centre | | | (161·6) | (+7·1) | (30) | (230) | (695) |
| 239·478 | M, B | 255 | 0·082 | 70·3 | 103·8 | + 8·7 | 15 | 41 | 0 |
| Aug. 28 | | Centre | | | (108·3) | (+7·2) | (15) | (41) | (0) |

Group 252, July 3–5. One very small spot which breaks up into two or three on July 4.
Group 252*, July 14. Several small spots in a semicircle.
Group 253, July 18. One very small spot.
Group 254, August 2–3. Two very small spots, one of which disappears on August 3.
Group 255, August 22–31. A large spot divided into three portions by bridges. On August 28 it has separated into two small spots, one of which disappears on August 29.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 240·570 | M, B | | 0·942 | 268·1 | 164·0 | + 0·7 | | | 90 |
| | | 255 | 0·182 | 277·4 | 104·3 | + 8·4 | 11 | 30 | |
| Aug. 29 | | Centre | | | (93·9) | (+7·2) | (11) | (30) | (90) |
| 242·406 | M, B | 255 | 0·573 | 273·5 | 104·7 | + 7·9 | 4 | 19 | 0 |
| Aug. 31 | | Centre | | | (69·6) | (+7·2) | (4) | (19) | (0) |
| 243·506 | M, B | | 0·728 | 275·6 | 102·1 | + 9·0 | | | 538 |
| | | | 0·935 | 100·3 | 357·4 | − 7·0 | | | 202 |
| Sept. 1 | | Centre | | | (55·1) | (+7·2) | (0) | (0) | (740) |
| 246·503 | M, B | 256 | 0·931 | 82·6 | 306·3 | + 9·5 | 25 | 117 | 296*c* |
| Sept. 4 | | Centre | | | (15·5) | (+7·3) | (25) | (117) | (296) |
| 247·474 | M, B | 256 | 0·822 | 83·6 | 306·5 | + 9·4 | 46 | 216 | 296*c* |
| Sept. 5 | | Centre | | | (2·7) | (+7·3) | (46) | (216) | (296) |
| 248·436 | M, B | 256 | 0·676 | 84·2 | 307·2 | + 9·2 | 51 | 213 | 149 |
| Sept. 6 | | Centre | | | (350·0) | (+7·3) | (51) | (213) | (149) |
| 249·392 | M, B | 256 | 0·512 | 84·3 | 306·4 | + 9·1 | 45 | 249 | 0 |
| Sept. 7 | | Centre | | | (337·3) | (+7·3) | (45) | (249) | (0) |
| 251·520 | M, B | 256 | 0·030 | 35·1 | 308·2 | + 8·6 | 36 | 158 | 0 |
| Sept. 9 | | Centre | | | (309·2) | (+7·2) | (36) | (158) | (0) |
| 254·405 | M, B | 256 | 0·607 | 274·7 | 308·7 | + 8·6 | 26 | 106 | |
| | | 257 | 0·789 | 110·6 | 222·5 | −11·4 | 19 | 75 | 211*sf* |
| Sept. 12 | | Centre | | | (271·2) | (+7·2) | (45) | (181) | (211) |
| 260·524 | M, B | 257 | 0·593 | 240·1 | 221·8 | −11·1 | 1 | 15 | |
| | | 258 | 0·438 | 115·7 | 167·2 | − 4·4 | 0 | 12 | 186*c* |
| Sept. 18 | | Centre | | | (190·4) | (+7·1) | (1) | (27) | (186) |
| 262·087 | H, A | 258 | 0·203 | 178·0 | 169·3 | − 4·6 | 0 | 6 | |
| Me. | | 258 | 0·204 | 159·7 | 165·7 | − 3·9 | 0 | 6 | 0 |
| Sept. 20 | | Centre | | | (169·7) | (+7·1) | (0) | (12) | (0) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 263·463 | M, B | | 0·946 | 253·3 | 219·9 | −13·3 | | | 330 |
| | | 258 | 0·349 | 233·3 | 167·8 | − 5·3 | 1 | 12 | |
| Sept. 21 | | Centre | | | (151·5) | (+7·0) | (1) | (12) | (330) |
| 266·405 | M, B | | 0·842 | 258·4 | 168·7 | − 5·9 | | | 245 |
| Sept. 24 | | Centre | | | (112·9) | (+6·9) | (0) | (0) | (245) |
| 267·111 | H, A | | 0·907 | 260·4 | 167·4 | − 5·7 | | | 360 |
| | | 258* | 0·555 | 254·6 | 135·9 | − 2·7 | 0 | 5 | |
| Me. | | 259 | 0·999 | 98·1 | 22·1 | − 7·1 | 0 | 133 | 334*c* |
| Sept. 25 | | Centre | | | (103·6) | (+6·9) | (0) | (138) | (694) |
| 268·588 | M, B | 259 | 0·901 | 101·9 | 21·5 | − 7·6 | 20 | 85 | 308*sf* |
| Sept. 26 | | Centre | | | (84·0) | (+6·8) | (20) | (85) | (308) |
| 269·506 | M, B | 259 | 0·785 | 104·8 | 22·1 | − 7·2 | 8 | 33 | 381*sf* |
| Sept. 27 | | Centre | | | (71·9) | (+6·8) | (8) | (33) | (381) |
| 270·411 | M, B | 259 | 0·651 | 109·2 | 21·8 | − 7·0 | 6 | 35 | 0 |
| Sept. 28 | | Centre | | | (59·9) | (+6·8) | (6) | (35) | (0) |
| 271·521 | M, B | | 0·877 | 280·9 | 107·0 | +12·7 | | | 241 |
| | | 259 | 0·456 | 119·4 | 21·7 | − 6·7 | 3 | 9 | |
| | | | 0·921 | 100·9 | 339·7 | − 7·3 | | | 54 |
| Sept. 29 | | Centre | | | (45·2) | (+6·7) | (3) | (9) | (295) |
| 273·415 | M, B | 260 | 0·458 | 196·3 | 28·0 | −19·4 | 3 | 8 | |
| | | | 0·941 | 82·3 | 309·5 | + 9·5 | | | 196 |
| Oct. 1 | | Centre | | | (20·2) | (+6·6) | (3) | (8) | (196) |
| 277·421 | M, B | | 0·842 | 260·8 | 23·5 | − 4·2 | | | 242 |
| Oct. 5 | | Centre | | | (327·3) | (+6·4) | (0) | (0) | (242) |
| 278·440 | M, B | | 0·936 | 259·7 | 22·2 | − 7·3 | | | 389 |
| Oct. 6 | | Centre | | | (314·3) | (+6·3) | (0) | (0) | (389) |
| 289·424 | M, B | | 0·809 | 76·7 | 115·1 | +14·0 | | | 82 |
| Oct. 17 | | Centre | | | (169·1) | (+5·5) | (0) | (0) | (82) |
| Oct. 23 | | No Spots or Faculæ. | | | | | | | |
| 296·447 | M, B | | 0·839 | 79·3 | 19·3 | +11·7 | | | 157 |
| Oct. 24 | | Centre | | | (76·4) | (+4·9) | (0) | (0) | (157) |

Group 256, September 4–12. Two spots; the following spot, which is small and faint, disappears on September 9, and the larger spot has greatly increased in size by September 5.
Group 257, September 12–18. One small spot.
Group 258, September 18–21. Two small faint spots.
Group 258*, September 25. A very small spot.
Group 259, September 25–29. One small spot.
Group 260, October 1. One very small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 298·072 | H, A | 261 | 0·982 | 99·6 | 337·0 | − 8·5 | 39 | 444 | |
| Me. | | 261 | 0·991 | 97·8 | 333·7 | − 7·0 | 0 | 151 | |
| Oct. 26 | | Centre | | | (55·0) | (+ 4·8) | (39) | (595) | (0) |
| 302·513 | M, B | | 0·747 | 257·5 | 43·4 | − 6·4 | | | 120 |
| | | 261 | 0·421 | 119·7 | 334·8 | − 8·0 | 139 | 605 | |
| | | 262 | 0·703 | 98·0 | 312·4 | − 2·5 | 20 | 120 | 347c |
| Oct. 30 | | Centre | | | (356·4) | (+ 4·3) | (159) | (725) | (467) |
| 303·448 | M, B | 261 | 0·268 | 142·4 | 334·6 | − 8·0 | 124 | 662 | |
| | | 262 | 0·528 | 101·1 | 313·0 | − 2·2 | 25 | 124 | |
| Oct. 31 | | Centre | | | (344·1) | (+ 4·2) | (149) | (786) | (0) |
| 304·445 | M, B | | 0·788 | 283·3 | 22·7 | + 13·0 | | | 313 |
| | | 261 | 0·222 | 195·9 | 334·5 | − 8·1 | 116 | 778 | |
| | | 262 | 0·322 | 109·2 | 313·3 | − 2·1 | 25 | 139 | |
| | | | 0·775 | 81·3 | 280·3 | + 9·3 | | | 173 |
| Nov. 1 | | Centre | | | (331·0) | (+ 4·1) | (141) | (917) | (486) |
| 305·131 | H, A | | 0·938 | 258·1 | 30·3 | − 9·7 | | | 270 |
| Me. | | 261 | 0·299 | 227·3 | 334·7 | − 7·7 | 104 | 770 | |
| | | 262 | 0·171 | 131·7 | 314·6 | − 2·5 | 4 | 76 | |
| Nov. 2 | | Centre | | | (321·9) | (+ 4·1) | (108) | (846) | (270) |
| 306·482 | M, B | 261 | 0·541 | 248·1 | 334·4 | − 8·2 | 120 | 562 | |
| | | 262 | 0·188 | 234·2 | 312·8 | − 2·4 | 18 | 76 | |
| Nov. 3 | | Centre | | | (304·1) | (+ 3·9) | (138) | (638) | (0) |
| 307·491 | M, B | 261 | 0·715 | 254·6 | 334·7 | − 8·2 | 101 | 543 | |
| | | 262 | 0·394 | 254·6 | 313·0 | − 2·5 | 6 | 45 | |
| Nov. 4 | | Centre | | | (290·6) | (+ 3·8) | (107) | (588) | (0) |
| 308·442 | M, B | 261 | 0·845 | 257·7 | 334·6 | − 8·3 | 100 | 508 | 358c |
| | | 262 | 0·590 | 259·4 | 313·6 | − 3·2 | 0 | 24 | |
| Nov. 5 | | Centre | | | (278·2) | (+ 3·7) | (100) | (532) | (358) |
| 310·073 | H, A | | 0·816 | 264·3 | 310·9 | − 2·5 | | | 386 |
| Me. | | 261 | 0·979 | 260·7 | 334·2 | − 8·4 | 89 | 564 | |
| | | 261 | 0·956 | 258·8 | 328·4 | − 9·6 | 0 | 15 | 920c |
| Nov. 7 | | Centre | | | (256·8) | (+ 3·6) | (89) | (579) | (1306) |
| 1877. | | | | ° | ° | ° | | | |
| 311·440 | M, B | | 0·959 | 265·2 | 311·8 | − 3·6 | | | 539 |
| Nov. 8 | | Centre | | | (238·8) | (+ 3·5) | (0) | (0) | (539) |
| 313·442 | M, B | | 0·961 | 265·2 | 285·8 | − 3·7 | | | 405 |
| Nov. 10 | | Centre | | | (212·3) | (+ 3·3) | (0) | (0) | (405) |
| 315·441 | M, B | | 0·944 | 80·2 | 115·2 | + 10·2 | | | 191 |
| Nov. 12 | | Centre | | | (185·9) | (+ 3·0) | (0) | (0) | (191) |
| 317·494 | M, B | 263 | 0·590 | 111·1 | 125·2 | − 9·7 | 38 | 111 | |
| Nov. 14 | | Centre | | | (158·9) | (+ 2·7) | (38) | (111) | (0) |
| 319·548 | M, B | 263 | 0·232 | 155·2 | 126·2 | − 9·7 | 16 | 58 | |
| Nov. 16 | | Centre | | | (131·9) | (+ 2·4) | (16) | (58) | (0) |
| 320·586 | M, B | 263 | 0·265 | 214·4 | 126·9 | − 10·3 | 15 | 27 | |
| Nov. 17 | | Centre | | | (118·2) | (+ 2·3) | (15) | (27) | (0) |
| 325·508 | M, B | | 0·965 | 257·3 | 127·2 | − 11·8 | | | 183 |
| | | | 0·899 | 280·7 | 117·0 | + 10·4 | | | 104 |
| | | 264 | 0·980 | 100·6 | 335·5 | − 10·1 | 86 | 301 | 363c |
| Nov. 22 | | Centre | | | (53·3) | (+ 1·7) | (86) | (301) | (650) |
| 326·436 | M, B | 264 | 0·922 | 101·9 | 334·9 | − 10·3 | 79 | 392 | 609c |
| Nov. 23 | | Centre | | | (41·1) | (+ 1·6) | (79) | (392) | (609) |
| 327·103 | H, A | 264 | 0·852 | 103·7 | 335·1 | − 10·8 | 50 | 562 | 181c |
| Me. | | | | | | | | | |
| Nov. 24 | | Centre | | | (32·3) | (+ 1·5) | (50) | (562) | (181) |
| 328·218 | H, A | 264 | 0·652 | 110·9 | 340·2 | − 12·3 | 0 | 17 | |
| Me. | | 264 | 0·696 | 106·9 | 335·1 | − 10·6 | 51 | 505 | |
| Nov. 25 | | Centre | | | (17·6) | (+ 1·4) | (51) | (522) | (0) |
| 329·552 | M, B | 264 | 0·464 | 115·3 | 334·9 | − 10·3 | 95 | 468 | |
| Nov. 26 | | Centre | | | (0·1) | (+ 1·2) | (95) | (468) | (0) |

Group 261, October 26–November 7. A large well-defined spot surrounded by several small fragments.
Group 262, October 30–November 5. A somewhat scattered group of small spots.
Group 263, November 14–17. Two small spots, the second of which moves more quickly than the first, and grows gradually smaller.
Group 264, November 22–December 3. A well-defined spot, closely surrounded by several smaller ones.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| 330·221 | H, A | 264 | 0·294 | 134·3 | 338·9 | −10·7 | 0 | 24 | |
| Me. | | 264 | 0·340 | 127·1 | 335·2 | −10·7 | 50 | 379 | |
| Nov. 27 | | Centre | | | (351·2) | (+1·1) | (50) | (403) | (0) |
| 331·469 | M, B | 264 | 0·193 | 180·5 | 334·9 | −10·1 | 73 | 343 | |
| Nov. 28 | | Centre | | | (334·7) | (+1·0) | (73) | (343) | (0) |
| 332·086 | H, A | 264 | 0·238 | 215·7 | 334·7 | −10·2 | 44 | 327 | |
| Me. | | | | | | | | | |
| Nov. 29 | | Centre | | | (326·6) | (+0·9) | (44) | (327) | (0) |
| 333·428 | M, B | 264 | 0·472 | 246·9 | 335·0 | −10·0 | 68 | 261 | |
| Nov. 30 | | Centre | | | (308·9) | (+0·7) | (68) | (261) | (0) |
| 335·518 | M, B | 264 | 0·819 | 257·3 | 335·4 | −10·1 | 50 | 203 | 464 / 528 |
| | | | 0·965 | 62·6 | 208·4 | +26·5 | | | 64 |
| Dec. 2 | | Centre | | | (281·4) | (+0·4) | (50) | (203) | (528) |
| 336·077 | H, A | 264 | 0·881 | 258·1 | 335·0 | −10·3 | 31 | 215 | 528c |
| Me. | | | | | | | | | |
| Dec. 3 | | Centre | | | (274·0) | (+0·4) | (31) | (215) | (528) |

| Greenwich Civil Time. | Measurers. | No. of Group, and Letter for Spot. | Distance from Centre in terms of Sun's Radius. | Position Angle from Sun's Axis. | Heliographic Longitude. | Heliographic Latitude. | Spots. Area of UMBRA for each Spot (and for Day). | Spots. Area of WHOLE for each Spot (and for Day). | Faculæ. Area for each Group (and for Day). |
|---|---|---|---|---|---|---|---|---|---|
| 1877. | | | | ° | ° | ° | | | |
| Dec. 5 to Dec. 7/8 | | No Spots or Faculæ. | | | | | | | |
| Dec. 10 to Dec. 11/14 | | No Spots or Faculæ. | | | | | | | |
| Dec. 17/14 to Dec. 15/18 | | No Spots or Faculæ. | | | | | | | |
| Dec. 17/16 | | No Spots or Faculæ. | | | | | | | |
| 354·100 | H, A | 264* | 0·887 | 103·3 | 334·6 | −12·7 | 0 | 37 | 184c |
| Me. | | | | | | | | | |
| Dec. 21 | | Centre | | | (36·6) | (−1·9) | (0) | (37) | (184) |
| 364·466 | M, B | | 0·960 | 255·6 | 333·8 | −14·7 | | | 205 |
| | | 265 | 0·944 | 279·1 | 329·9 | + 7·5 | 0 | 34 | 192f |
| Dec. 31 | | Centre | | | (260·0) | (−3·2) | (0) | (34) | (397) |

Group 264*, December 21. A small spot.
Group 265, December 31. Two small spots.

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ROYAL OBSERVATORY, GREENWICH.

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# LEDGERS

OF

# AREAS AND POSITIONS OF GROUPS OF SUN SPOTS

DEDUCED FROM THE MEASUREMENT

OF THE

# SOLAR PHOTOGRAPHS

FOR EACH DAY IN THE YEARS

# 1874-1877.

## AREAS AND HELIOGRAPHIC POSITIONS OF GROUPS OF SUN SPOTS DEDUCED FOR EACH DAY FROM THE MEASUREMENTS OF THE PHOTOGRAPHS TAKEN AT THE ROYAL OBSERVATORY, GREENWICH, AT THE OBSERVATORY OF HARVARD COLLEGE, CAMBRIDGE, U.S.A., AND AT THE MELBOURNE OBSERVATORY, AUSTRALIA, IN THE YEARS 1874 TO 1877.

NOTE.—The Greenwich Civil Time at which the photograph was taken is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight.

The Projected Area of the Umbræ and Whole Spots is the area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Column "Longitude from Central Meridian" gives the Mean Heliographic longitude of the group, reckoned from the meridian passing through the centre of the Sun's disk at the moment of observation; longitudes west of the centre being reckoned as positive.

Dates for which the decimal of the day is not given indicate days for which no photographic Record is at present available. In these cases the means have been taken of the areas and positions of the spot-groups as measured on the day immediately preceding, and that immediately following the day for which the photograph is lacking. These interpolated values are enclosed in brackets, but are used in taking the final means for each spot-group.

### Group 82.

Single spot which breaks up into two on April 18.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| April 17·485 | 0 | 208 | 0 | 113 | 113·3 | + 5·8 | −19·9 |
| 18·506 | 0 | 117 | 0 | 60 | 114·3 | + 5·6 | − 5·4 |
| Means ... | ... | ... | 0 | 87 | 113·80 | + 5·70 | ... |

### Group 83.

Single spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| April 27·556 | 0 | 150 | 0 | 171 | 296·0 | −12·4 | −64·1 |
| 28·574 | 53 | 285 | 41 | 221 | 297·0 | −12·4 | −49·7 |
| 29·663 | 53 | 306 | 33 | 189 | 296·6 | −12·6 | −35·7 |
| 30·577 | 72 | 369 | 40 | 205 | 296·3 | −13·0 | −23·9 |
| May 1·539 | 62 | 369 | 32 | 191 | 296·2 | −13·0 | −11·3 |
| 2·499 | 88 | 349 | 45 | 178 | 296·0 | −13·3 | + 1·2 |
| 3 | No photograph. | | (35 | 171 | 296·0 | −13·5 | +14·9) |
| 4·571 | 43 | 284 | 25 | 164 | 295·9 | −13·7 | +28·5 |
| 5·490 | 24 | 200 | 16 | 133 | 295·6 | −13·6 | +40·4 |
| 6·432 | 25 | 227 | 21 | 188 | 295·1 | −13·2 | +52·3 |
| 7·515 | 27 | 149 | 34 | 188 | 295·2 | −13·7 | +66·7 |
| Means ... | ... | ... | 29 | 182 | 295·99 | −13·13 | ... |

### Group 84.

Small scattered group.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| April 30·577 | 0 | 46 | 0 | 24 | 331·5 | + 7·9 | +11·3 |
| May 1·539 | 0 | 60 | 0 | 34 | 331·8 | + 7·7 | +24·3 |
| 2·499 | 0 | 46 | 0 | 29 | 331·3 | + 8·0 | +36·5 |
| Means ... | ... | ... | 0 | 29 | 331·53 | + 7·87 | ... |

### Group 85.

A large spot with several small ones near it.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| May 1·539 | 0 | 38 | 0 | 42 | 244·4 | − 3·7 | −63·1 |
| 2·499 | 14 | 168 | 11 | 132 | 243·9 | − 3·9 | −50·9 |
| 3 | No photograph. | | (20 | 223 | 246·1 | − 4·3 | −35·1) |
| 4·571 | 53 | 593 | 28 | 314 | 248·2 | − 4·7 | −19·2 |
| 5·490 | 61 | 548 | 31 | 277 | 248·1 | − 5·1 | − 7·1 |
| 6·432 | 22 | 645 | 11 | 324 | 247·1 | − 5·4 | + 4·3 |
| 7·515 | 73 | 494 | 39 | 264 | 248·4 | − 5·3 | +19·9 |
| 8·552 | 70 | 428 | 42 | 258 | 248·5 | − 5·6 | +33·8 |
| 9·497 | 48 | 322 | 35 | 233 | 248·3 | − 5·1 | +46·0 |
| 10 | No photograph. | | (18 | 167 | 248·5 | − 5·2 | +59·7) |
| 11·526 | 0 | 58 | 0 | 100 | 248·7 | − 5·2 | +73·3 |
| Means ... | ... | ... | 21 | 212 | 247·29 | −4·86 | ... |

### Group 86.

Two large spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 6·432 | 0 | 156 | 0 | 248 | 171·5 | + 6·5 | −71·3 |
| 7·515 | 76 | 495 | 72 | 467 | 171·5 | + 7·4 | −57·0 |
| 8·552 | 140 | 706 | 98 | 494 | 171·7 | + 7·5 | −43·0 |
| 9·497 | 108 | 639 | 64 | 378 | 171·6 | + 7·4 | −30·7 |
| 10 | No photograph. | | (34 | 287 | 172·2 | + 7·3 | −16·7) |
| 11·526 | 8 | 384 | 4 | 196 | 172·7 | + 7·1 | − 2·7 |
| Means ... | ... | ... | 45 | 345 | 171·87 | + 7·20 | ... |

### Group 87.

A large group of many spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 7·515 | 58 | 591 | 93 | 954 | 156·1 | − 6·9 | −72·4 |
| 8·552 | 40 | 1107 | 39 | 1075 | 155·6 | − 6·6 | −59·1 |
| 9·497 | 177 | 1159 | 130 | 852 | 155·1 | − 7·0 | −47·2 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 87 —*continued.*** | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| May 10 | No photograph. | | (91 | 640 | 155·9 | − 7·1 | −33·0) |
| 11·526 | 98 | 807 | 52 | 427 | 156·7 | − 7·2 | −18·7 |
| 12 | No photograph. | | (48 | 389 | 156·8 | − 7·1 | − 5·6) |
| 13 | No photograph. | | (45 | 350 | 156·9 | − 7·0 | + 7·5) |
| 14 | No photograph. | | (41 | 312 | 157·0 | − 6·9 | +20·6) |
| 15 | No photograph. | | (38 | 273 | 157·1 | − 6·8 | +33·7) |
| 16·438 | 47 | 322 | 34 | 235 | 157·2 | − 6·6 | +46·8 |
| 17 | No photograph. | | (17 | 164 | 158·2 | − 6·7 | +61·0) |
| 18·441 | 0 | 48 | 0 | 92 | 159·1 | − 6·7 | +75·1 |
| Means ... | ... | ... | 52 | 480 | 156·81 | − 6·88 | ... |
| **Group 88.** A group of three small spots widely separated. | | | | | | | |
| May 9·497 | 0 | 84 | 0 | 68 | 249·1 | +20·5 | +46·8 |
| 10 | No photograph. | | (0 | 56 | 247·0 | +21·2 | +58·1) |
| 11·526 | 0 | 27 | 0 | 44 | 244·8 | +21·9 | +69·4 |
| Means ... | ... | ... | 0 | 56 | 246·97 | +21·20 | ... |
| **Group 89.** Two or three small spots. | | | | | | | |
| May 16·438 | 0 | 59 | 0 | 79 | 42·5 | −13·4 | −67·9 |
| 17 | No photograph. | | (0 | 53 | 43·4 | −13·4 | −53·8) |
| 18·441 | 0 | 41 | 0 | 27 | 44·3 | −13·4 | −39·7 |
| 19 | No photograph. | | (0 | 28 | 44·6 | −13·5 | −26·2) |
| 20·445 | 0 | 53 | 0 | 28 | 44·9 | −13·6 | −12·6 |
| 21·559 | 0 | 59 | 0 | 30 | 44·9 | −13·7 | + 2·2 |
| 22·515 | 0 | 30 | 0 | 16 | 45·6 | −13·7 | +15·5 |
| Means ... | ... | ... | 0 | 37 | 44·31 | −13·53 | ... |
| **Group 89*.** Two large spots of irregular shape. | | | | | | | |
| May 20·445 | 85 | 542 | 47 | 301 | 35·9 | −16·2 | −21·6 |
| 21·559 | 10 | 367 | 5 | 192 | 33·9 | −16·1 | − 8·8 |
| 22·515 | 35 | 509 | 18 | 265 | 34·6 | −16·2 | + 4·5 |
| 23 | No photograph. | | (14 | 210 | 35·5 | −15·9 | +18·4) |
| 24 | No photograph. | | (10 | 155 | 36·4 | −15·6 | +32·3) |
| 25 | No photograph. | | (6 | 100 | 37·3 | −15·3 | +46·2) |
| 26·442 | 3 | 43 | 3 | 44 | 38·2 | −14·9 | +60·1 |
| Means ... | ... | ... | 15 | 181 | 35·97 | −15·74 | ... |
| **Group 90.** One large spot of very irregular shape. | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| May 26·442 | 58 | 376 | 59 | 384 | 278·2 | +11·3 | −59·9 |
| 27 | No photograph. | | (55 | 353 | 278·4 | +11·2 | −46·4) |
| 28 | No photograph. | | (52 | 322 | 278·6 | +11·1 | −32·9) |
| 29 | No photograph. | | (48 | 290 | 278·8 | +10·9 | −19·4) |
| 30·472 | 87 | 502 | 45 | 259 | 279·0 | +10·8 | − 5·8 |
| 31 | No photograph. | | (39 | 231 | 279·2 | +11·2 | + 7·7) |
| June 1·481 | 58 | 368 | 32 | 202 | 279·4 | +11·6 | +21·2 |
| 2·527 | 55 | 364 | 34 | 226 | 279·4 | +11·2 | +35·1 |
| 3 | No photograph. | | (36 | 221 | 279·4 | +11·1 | +47·8) |
| 4·466 | 37 | 210 | 38 | 216 | 279·3 | +10·9 | +60·6 |
| 5·466 | 0 | 113 | 0 | 213 | 280·0 | +11·6 | +74·6 |
| Means ... | ... | ... | 40 | 265 | 279·06 | +11·17 | ... |
| **Group 91.** One well-defined spot of regular shape. | | | | | | | |
| June 1·481 | 30 | 100 | 33 | 111 | 195·1 | − 7·3 | −63·1 |
| 2·527 | 49 | 216 | 38 | 166 | 195·4 | − 6·6 | −48·9 |
| 3 | No photograph. | | (33 | 154 | 195·4 | − 6·8 | −36·1) |
| 4·466 | 49 | 258 | 27 | 142 | 195·4 | − 7·0 | −23·3 |
| 5·466 | 23 | 248 | 12 | 127 | 196·2 | − 7·0 | − 9·2 |
| Means ... | ... | ... | 29 | 140 | 195·50 | − 6·94 | ... |
| **Group 92.** Two faint spots. | | | | | | | |
| June 11·534 | 0 | 97 | 0 | 50 | 121·7 | −11·1 | − 3·4 |
| 12·417 | 0 | 58 | 0 | 30 | 121·7 | −11·3 | + 8·3 |
| 13·409 | 38 | 198 | 21 | 108 | 120·2 | −11·1 | +19·9 |
| 14 | No photograph. | | (11 | 69 | 121·5 | −10·7 | +35·4) |
| 15·552 | 0 | 36 | 0 | 29 | 122·8 | −10·2 | +50·9 |
| Means ... | ... | ... | 6 | 57 | 121·58 | −10·88 | ... |
| **Group 92*.** Two spots. | | | | | | | |
| June 15·552 | 0 | 53 | 0 | 29 | 91·1 | −10·9 | +19·2 |
| 16 | No photograph. | | (0 | 85 | 92·0 | −10·6 | +33·7) |
| 17 | No photograph. | | (0 | 140 | 93·0 | −10·2 | +47·6) |
| 18 | No photograph. | | (0 | 195 | 93·9 | − 9·8 | +61·6) |
| 19·527 | 0 | 123 | 0 | 250 | 94·8 | − 9·5 | +75·5 |
| Means ... | ... | ... | 0 | 140 | 92·96 | −10·20 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 93.** One small spot. | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| June 13·409 | 0 | 45 | 0 | 26 | 129·3 | + 8·7 | +29·0 |
| Means ... | ... | ... | 0 | 26 | 129·3 | + 8·7 | ... |
| **Group 94.** One spot, which greatly increases in size on June 19, and breaks up into several fragments. | | | | | | | |
| June 15·552 | 0 | 126 | 0 | 126 | 12·3 | +12·1 | −59·6 |
| 16 | No photograph. | | (7 | 199 | 12·1 | +11·8 | −46·7) |
| 17 | No photograph. | | (14 | 272 | 11·8 | +11·5 | −33·8) |
| 18 | No photograph. | | (21 | 345 | 11·6 | +11·2 | −20·9) |
| 19·527 | 53 | 815 | 27 | 418 | 11·3 | +10·9 | − 8·0 |
| 20 | No photograph. | | (36 | 461 | 11·8 | +10·7 | + 6·2) |
| 21 | No photograph. | | (45 | 504 | 12·4 | +10·5 | +20·3) |
| 22·608 | 89 | 899 | 54 | 548 | 12·9 | +10·4 | +34·4 |
| 23·469 | 71 | 801 | 52 | 589 | 14·0 | +10·5 | +46·9 |
| 24·458 | 32 | 447 | 34 | 481 | 16·4 | +10·2 | +62·3 |
| 25·512 | 32 | 193 | 70 | 428 | 17·2 | +10·1 | +77·1 |
| Means ... | ... | ... | 33 | 397 | 13·07 | +10·90 | ... |
| **Group 95.** A very scattered group composed principally of five spots. It undergoes very rapid changes in form and in size during its course. | | | | | | | |
| June 24·458 | 0 | 28 | 0 | 62 | 237·3 | +21·1 | −76·8 |
| 25·512 | 0 | 85 | 0 | 113 | 232·9 | +22·3 | −67·2 |
| 26 | No photograph. | | (21 | 243 | 228·9 | +20·8 | −57·6) |
| 27·574 | 54 | 481 | 42 | 373 | 224·8 | +19·3 | −48·0 |
| 28 | No photograph. | | (43 | 346 | 224·3 | +18·0 | −36·4) |
| 29·416 | 77 | 561 | 44 | 319 | 223·7 | +16·7 | −24·7 |
| 30·409 | 52 | 678 | 27 | 355 | 224·6 | +17·0 | −10·7 |
| July 1 | No photograph. | | (29 | 271 | 225·7 | +17·2 | + 3·9) |
| 2·464 | 57 | 340 | 31 | 186 | 226·7 | +17·3 | +18·6 |
| 3·529 | 0 | 68 | 0 | 42 | 227·2 | +17·2 | +33·2 |
| 4·403 | 28 | 135 | 20 | 97 | 227·1 | +17·6 | +44·7 |
| 5 | No photograph. | | (10 | 80 | 227·1 | +17·3 | +58·8) |
| 6·546 | 0 | 37 | 0 | 63 | 227·0 | +16·9 | +72·9 |
| Means ... | ... | ... | 21 | 196 | 227·48 | +18·36 | ... |
| **Group 96.** Single spot. On June 29 it has expanded into a long straggling group of small spots. The group undergoes very rapid change in form and size during the whole of its course. | | | | | | | |
| June 27·574 | 0 | 33 | 0 | 17 | 261·0 | − 8·4 | −11·8 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 96—*continued.*** | | | | | | | |
| 1874. | | | | | ° | ° | ° |
| June 28 | No photograph. | | (22 | 218 | 261·7 | − 9·3 | + 1·1) |
| 29·416 | 83 | 792 | 44 | 419 | 262·3 | −10·1 | +13·9 |
| 30·409 | 173 | 1268 | 100 | 733 | 262·2 | −10·4 | +26·9 |
| July 1 | No photograph. | | (83 | 671 | 262·2 | −10·2 | +40·5) |
| 2·464 | 75 | 688 | 66 | 609 | 262·2 | − 9·9 | +54·1 |
| 3·529 | 4 | 107 | 7 | 167 | 264·5 | − 9·6 | +70·5 |
| 4·403 | 0 | 25 | 0 | 59 | 259·7 | − 8·9 | +77·3 |
| Means ... | ... | ... | 40 | 362 | 261·98 | − 9·60 | ... |
| **Group 97.** One small faint spot. It breaks up into a cluster of very small spots on July 2. | | | | | | | |
| June 30·409 | 0 | 28 | 0 | 22 | 186·7 | − 8·7 | −48·6 |
| July 1 | No photograph. | | (1 | 33 | 187·8 | − 8·8 | −33·9) |
| 2·464 | 2 | 79 | 1 | 43 | 188·9 | − 8·8 | −19·2 |
| 3·529 | 0 | 153 | 0 | 79 | 190·6 | − 8·5 | − 3·4 |
| 4·403 | 0 | 21 | 0 | 11 | 191·5 | − 8·9 | + 9·1 |
| Means ... | ... | ... | 0 | 38 | 189·10 | − 8·74 | ... |
| **Group 98.** Two spots. They are small on July 2 but much larger on the following days, and form two streams. Only one spot of the group, 98*a*, is still on the disk on July 13. | | | | | | | |
| July 2·464 | 0 | 14 | 0 | 14 | 148·5 | +12·4 | −59·6 |
| 3·529 | 31 | 317 | 22 | 223 | 150·0 | +12·9 | −44·0 |
| 4·403 | 131 | 1054 | 77 | 620 | 151·4 | +11·4 | −31·0 |
| 5 | No photograph. | | (126 | 818 | 151·3 | +11·4 | −17·0) |
| 6·546 | 343 | 2002 | 174 | 1016 | 151·2 | +11·4 | − 2·9 |
| 7·454 | 300 | 2395 | 154 | 1228 | 151·2 | +11·0 | + 9·1 |
| 8·513 | 266 | 2342 | 148 | 1301 | 152·8 | +10·8 | +24·8 |
| 9·535 | 276 | 1976 | 179 | 1283 | 153·5 | +11·4 | +39·0 |
| 10·501 | 164 | 1081 | 130 | 858 | 152·7 | +11·5 | +51·0 |
| 11 | No photograph. | | (87 | 612 | 148·0 | + 9·7 | +59·7) |
| 12 | No photograph. | | (43 | 365 | 143·3 | + 7·9 | +68·4) |
| 13·549 | 0 | 53 | 0 | 118 | 138·6 | + 6·1 | +77·2 |
| Means ... | ... | ... | 95 | 705 | 149·38 | +10·66 | ... |
| **Group 99.** At first a single well-defined spot. On July 3 and 4 a row of small spots forms immediately behind it. | | | | | | | |
| July 2·464 | 13 | 84 | 18 | 120 | 138·9 | − 5·4 | −69·2 |
| 3·529 | 38 | 262 | 33 | 228 | 139·5 | − 4·1 | −54·5 |
| 4·403 | 33 | 579 | 23 | 405 | 139·1 | − 5·8 | −43·3 |
| 5 | No photograph. | | (56 | 423 | 138·8 | − 5·4 | −29·5) |
| 6·546 | 167 | 838 | 88 | 441 | 138·4 | − 4·9 | −15·7 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 99—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| July 7·454 | 90 | 602 | 46 | 307 | 138·1 | − 4·8 | − 4·0 |
| 8·513 | 107 | 638 | 55 | 329 | 138·1 | − 4·8 | +10·1 |
| 9·535 | 45 | 379 | 25 | 213 | 139·3 | − 5·3 | +24·8 |
| 10·501 | 31 | 176 | 20 | 113 | 139·3 | − 5·2 | +37·6 |
| 11 | No photograph. | | (14 | 100 | 139·2 | − 5·3 | +51·0) |
| 12 | No photograph. | | (7 | 86 | 139·2 | − 5·4 | +64·4) |
| 13·549 | 0 | 30 | 0 | 72 | 139·1 | − 5·5 | +77·7 |
| Means ... | ... | ... | 32 | 236 | 138·92 | − 5·16 | ... |

### Group 100.

One large regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| July 4·403 | 0 | 154 | 0 | 532 | 101·7 | −11·1 | −80·7 |
| 5 | No photograph. | | (55 | 576 | 101·5 | −10·6 | −66·8) |
| 6·546 | 126 | 719 | 109 | 620 | 101·2 | −10·1 | −52·9 |
| 7·454 | 121 | 772 | 83 | 529 | 101·2 | −10·8 | −40·9 |
| 8·513 | 178 | 889 | 103 | 514 | 101·4 | −10·1 | −26·6 |
| 9·535 | 156 | 803 | 83 | 427 | 101·7 | −10·5 | −12·8 |
| 10·501 | 91 | 818 | 47 | 424 | 101·7 | −10·2 | 0·0 |
| 11 | No photograph. | | (64 | 442 | 101·7 | −10·5 | +13·5) |
| 12 | No photograph. | | (81 | 460 | 101·8 | −10·8 | +27·0) |
| 13·549 | 142 | 699 | 97 | 479 | 101·8 | −11·0 | +40·4 |
| 14·512 | 61 | 267 | 54 | 236 | 102·4 | −10·9 | +53·8 |
| 15·443 | 116 | 343 | 151 | 445 | 102·1 | − 9·9 | +65·8 |
| 16·524 | 0 | 150 | 0 | 537 | 102·8 | −10·5 | +80·8 |
| Means ... | ... | ... | 71 | 479 | 101·77 | −10·54 | ... |

### Group 101.

Two spots, the first being very small. They greatly decrease in size on July 7, and on July 8 one disappears altogether. The spots 98 to 101 seem to suffer continual changes.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| July 6·546 | 25 | 152 | 14 | 85 | 128·4 | + 6·6 | −25·7 |
| 7·454 | 0 | 44 | 0 | 23 | 127·9 | + 6·7 | −14·2 |
| 8·513 | 0 | 35 | 0 | 19 | 136·0 | + 4·9 | + 8·0 |
| 9·535 | 0 | 19 | 0 | 10 | 136·7 | + 4·5 | +22·2 |
| Means ... | ... | ... | 4 | 34 | 132·25 | + 5·68 | ... |

### Group 102.

On July 10 one small spot. On July 13 it has become two of much larger size. These two spots become more and more widely separated, increase in size, and break up into several portions as the group crosses the sun.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| July 10·501 | 0 | 35 | 0 | 29 | 48·3 | +14·5 | −53·4 |
| 11 | No photograph. | | ( 5 | 53 | 47·7 | +14·1 | −40·6) |
| 12 | No photograph. | | (10 | 77 | 47·0 | +13·8 | −27·9) |
| 13·549 | 27 | 191 | 14 | 100 | 46·3 | +13·4 | −15·1 |
| 14·512 | 0 | 92 | 0 | 47 | 46·1 | +14·1 | − 2·5 |

### Group 102—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| July 15·443 | 74 | 274 | 38 | 141 | 45·9 | +13·8 | + 9·6 |
| 16·524 | 48 | 315 | 28 | 185 | 53·0 | +12·7 | +31·0 |
| 17·516 | 54 | 338 | 41 | 258 | 58·1 | +10·5 | +49·2 |
| 18·511 | 33 | 161 | 34 | 168 | 57·4 | +10·5 | +61·7 |
| Means ... | ... | ... | 19 | 118 | 49·98 | +13·04 | ... |

### Group 103.

One large regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| July 14·512 | 0 | 39 | 0 | 87 | 331·1 | +18·7 | −77·5 |
| 15·443 | 46 | 118 | 55 | 141 | 331·1 | +17·4 | −65·2 |
| 16·524 | 45 | 216 | 36 | 174 | 331·1 | +18·5 | −50·9 |
| 17·516 | 44 | 251 | 29 | 164 | 330·6 | +18·6 | −38·3 |
| 18·511 | 39 | 222 | 22 | 127 | 330·2 | +18·3 | −25·5 |
| 19 | No photograph. | | (22 | 102 | 329·8 | +18·4 | −12 6) |
| 20·513 | 43 | 149 | 22 | 77 | 329·3 | +18·4 | + 0·3 |
| 21·503 | 29 | 103 | 15 | 54 | 329·0 | +18·4 | +12·9 |
| 22 | No photograph. | | (12 | 42 | 328·7 | +18·6 | +25·8) |
| 23·497 | 12 | 46 | 8 | 30 | 328·4 | +18·8 | +38·6 |
| 24·565 | 0 | 29 | 0 | 24 | 328·8 | +18·3 | +53·2 |
| Means ... | ... | ... | 20 | 93 | 329·83 | +18·40 | ... |

### Group 104.

At first one faint spot, which breaks up into two or three on July 16.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| July 15·443 | 0 | 94 | 0 | 53 | 10·8 | +13·5 | −25·5 |
| 16·524 | 0 | 33 | 0 | 17 | 9·8 | +14·4 | −12·2 |
| Means ... | ... | ... | 0 | 35 | 10·30 | +13·95 | ... |

### Group 104*.

A very faint close cluster of small spots. The group has partly passed round the limb on July 25.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| July 16·524 | 0 | 124 | 0 | 77 | 345·2 | + 6·2 | −36·8 |
| 17·516 | 66 | 604 | 36 | 328 | 346·2 | + 6·5 | −22·7 |
| 18·511 | 159 | 855 | 81 | 436 | 346·3 | + 6·2 | − 9·4 |
| 19 | No photograph. | | (110 | 594 | 347·0 | + 6·4 | + 4·6) |
| 20·513 | 261 | 1421 | 138 | 752 | 347·7 | + 6·6 | +18·5 |
| 21·503 | 292 | 1214 | 172 | 714 | 347·9 | + 6·0 | +31·8 |
| 22 | No photograph. | | (160 | 895 | 348·1 | + 6·3 | +45·1) |
| 23·497 | 157 | 1140 | 148 | 1075 | 348·2 | + 6·5 | +58·4 |
| 24·565 | 92 | 576 | 158 | 993 | 348·9 | + 5·8 | +73·3 |
| 25·460 | 0 | 25 | 0 | 71 | 344·2 | + 5·6 | +80·4 |
| Means ... | ... | ... | 100 | 594 | 346·97 | + 6·21 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 105.

One regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| July 23·497 | 25 | 113 | 52 | 231 | 213·7 | + 5·2 | −76·4 |
| 24·565 | 49 | 258 | 49 | 261 | 214·9 | + 5·3 | −60·7 |
| 25·460 | 74 | 398 | 56 | 299 | 215·2 | + 4·8 | −48·6 |
| 26 | No photograph. | | (56 | 294 | 215·4 | + 5·4 | −35·1) |
| 27 | No photograph. | | (56 | 290 | 215·6 | + 6·0 | −21·6) |
| 28 | No photograph. | | (55 | 285 | 215·8 | + 6·6 | − 8·1) |
| 29 | No photograph. | | (55 | 280 | 216·0 | + 7·2 | + 5·4) |
| 30·452 | 105 | 524 | 55 | 276 | 216·1 | + 7·7 | +18·8 |
| 31·420 | 75 | 394 | 44 | 232 | 216·8 | + 7·9 | +31·8 |
| Aug. 1 | No photograph. | | (44 | 206 | 217·0 | + 7·7 | +45·3) |
| 2 | No photograph. | | (43 | 180 | 217·2 | + 7·6 | +58·8) |
| 3·434 | 27 | 95 | 43 | 153 | 217·4 | + 7·4 | +72·3 |
| Means ... | ... | ... | 51 | 249 | 215·93 | + 6·57 | ... |

### Group 106.

A number of spots in a fine stream, *b* the leader on August 3 and the succeeding days is a large regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 30·452 | 135 | 928 | 95 | 634 | 154·8 | + 9·8 | −42·5 |
| 31·420 | 182 | 1056 | 109 | 621 | 153·9 | + 9·5 | −31·1 |
| Aug. 1 | No photograph. | | (102 | 578 | 153·0 | + 9·7 | −18·7) |
| 2 | No photograph. | | (96 | 535 | 152·1 | + 9·9 | − 6·3) |
| 3·434 | 176 | 971 | 89 | 493 | 151·2 | +10·0 | + 6·1 |
| 4 | No photograph. | | (86 | 499 | 151·5 | + 9·8 | +19·6) |
| 5 | No photograph. | | (83 | 505 | 151·8 | + 9·6 | +33·1) |
| 6·437 | 108 | 703 | 80 | 510 | 152·0 | + 9·4 | +46·6 |
| 7 | No photograph. | | (72 | 583 | 152·9 | + 9·3 | +60·8) |
| 8·451 | 36 | 356 | 64 | 656 | 153·7 | + 9·1 | +74·9 |
| Means ... | ... | ... | 88 | 561 | 152·69 | + 9·61 | ... |

### Group 107.

One large spot, and two or three small fragments near it. It gradually diminishes in size.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 31·420 | 27 | 115 | 44 | 189 | 112·0 | +10·5 | −73·0 |
| Aug. 1 | No photograph. | | (43 | 230 | 111·9 | +10·6 | −59·8) |
| 2 | No photograph. | | (42 | 272 | 111·9 | +10·6 | −46·5) |
| 3·434 | 68 | 523 | 41 | 313 | 111·8 | +10·7 | −33·3 |
| 4 | No photograph. | | (40 | 270 | 112·1 | +10·9 | −19·8) |
| 5 | No photograph. | | (39 | 227 | 112·4 | +11·1 | − 6·3) |
| 6·437 | 75 | 362 | 38 | 184 | 112·6 | +11·4 | + 7·2 |
| 7 | No photograph. | | (32 | 169 | 112·8 | +11·5 | +20·7) |
| 8·451 | 43 | 252 | 26 | 153 | 112·9 | +11·6 | +34·1 |

### Group 107—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| Aug. 9 | No photograph. | | (33 | 165 | 112·9 | +11·8 | +47·1) |
| 10·431 | 41 | 181 | 40 | 177 | 112·8 | +12·0 | +60·2 |
| 11·513 | 16 | 65 | 30 | 123 | 114·0 | +11·8 | +75·7 |
| Means ... | ... | ... | 37 | 206 | 112·51 | +11·21 | ... |

### Group 108.

A long line of small spots. It is seen much foreshortened on August 10, being very close to the limb, and is therefore difficult to measure.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 3·434 | 61 | 282 | 42 | 193 | 110·2 | −20·3 | −34·9 |
| 4 | No photograph. | | (44 | 190 | 110·4 | −20·3 | −21·5) |
| 5 | No photograph. | | (46 | 187 | 110·6 | −20·3 | − 8·0) |
| 6·437 | 83 | 324 | 47 | 183 | 110·9 | −20·3 | + 5·5 |
| 7 | No photograph. | | (59 | 250 | 111·9 | −20·4 | +19·8) |
| 8·451 | 104 | 463 | 71 | 317 | 112·9 | −20·4 | +34·1 |
| 9 | No photograph. | | (45 | 253 | 114·7 | −20·4 | +49·0) |
| 10·431 | 13 | 139 | 18 | 188 | 116·4 | −20·4 | +63·8 |
| Means ... | ... | ... | 47 | 220 | 112·25 | −20·35 | ... |

### Group 109.

One small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 3·434 | 36 | 104 | 25 | 72 | 104·4 | −11·1 | −40·7 |
| 4 | No photograph. | | (23 | 72 | 104·4 | −11·2 | −27·5) |
| 5 | No photograph. | | (22 | 73 | 104·3 | −11·3 | −14·3) |
| 6·437 | 38 | 139 | 20 | 73 | 104·3 | −11·4 | − 1·1 |
| 7 | No photograph. | | (17 | 65 | 104·2 | −11·6 | −12·1) |
| 8·451 | 24 | 96 | 14 | 56 | 104·2 | −11·7 | +25·4 |
| 9 | No photograph. | | (14 | 51 | 104·2 | −11·6 | +38·5) |
| 10·431 | 16 | 53 | 14 | 45 | 104·1 | −11·5 | +51·5 |
| 11·513 | 0 | 33 | 0 | 45 | 104·5 | −11·8 | +66·2 |
| Means ... | ... | ... | 17 | 61 | 104·29 | −11·47 | ... |

### Group 110.

A large regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 8·451 | 23 | 150 | 80 | 518 | 356·9 | + 2·2 | −81·9 |
| 9 | No photograph. | | (92 | 510 | 357·3 | + 2·2 | −68·5) |
| 10·431 | 118 | 577 | 103 | 502 | 357·6 | + 2·1 | −55·0 |
| 11·513 | 144 | 815 | 95 | 536 | 357·9 | + 2·5 | −40·4 |
| 12·439 | 179 | 831 | 102 | 475 | 357·8 | + 2·4 | −28·2 |
| 13 | No photograph. | | (91 | 448 | 358·1 | + 2·4 | −14·4) |
| 14·501 | 159 | 836 | 80 | 420 | 358·3 | + 2·4 | − 0·5 |
| 15·432 | 147 | 898 | 76 | 463 | 358·0 | + 2·3 | +11·5 |
| 16 | No photograph. | | (74 | 461 | 358·1 | + 2·3 | +25·1) |
| 17·477 | 112 | 716 | 72 | 459 | 358·2 | + 2·2 | +38·7 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 110—*continued.*** | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| Aug. 18 | No photograph. | | (40 | 425 | 358·5 | + 1·7 | +52·7) |
| 19·543 | 6 | 309 | 8 | 391 | 358·8 | + 1·1 | +66·6 |
| 20·563 | 0 | 87 | 0 | 347 | 1·6 | + 0·6 | +82·9 |
| Means ... | ... | ... | 70 | 458 | 358·24 | + 2·03 | ... |
| **Group 111.** Three spots, one very large. | | | | | | | |
| Aug. 10·431 | 26 | 297 | 80 | 900 | 335·0 | −18·6 | −77·6 |
| 11·513 | 121 | 883 | 170 | 1244 | 332·7 | −17·7 | −65·6 |
| 12·439 | 147 | 1169 | 136 | 1082 | 333·7 | −18·2 | −52·3 |
| 13 | No photograph. | | (150 | 1116 | 333·5 | −17·8 | −39·0) |
| 14·501 | 269 | 1886 | 164 | 1150 | 333·2 | −17·3 | −25·6 |
| 15·432 | 218 | 1605 | 124 | 912 | 332·9 | −17·9 | −13·6 |
| 16 | No photograph. | | (126 | 799 | 332·9 | −17·9 | − 0·1) |
| 17·477 | 224 | 1206 | 127 | 685 | 332·9 | −17·8 | +13·4 |
| 18 | No photograph. | | (105 | 588 | 333·1 | −18·0 | +27·3) |
| 19·543 | 112 | 663 | 83 | 491 | 333·3 | −18 2 | +41·1 |
| 20·563 | 92 | 743 | 86 | 694 | 331·4 | −17·8 | +52·7 |
| 21·536 | 40 | 211 | 58 | 306 | 331·7 | −17·9 | +65·9 |
| 22·475 | 0 | 24 | 0 | 79 | 331·4 | −20·3 | +78·0 |
| Means ... | ... | ... | 108 | 773 | 332·90 | −18·11 | ... |
| **Group 112.** A few very small spots in a close cluster. | | | | | | | |
| Aug. 15·432 | 11 | 102 | 10 | 96 | 40·8 | −14·2 | +54·3 |
| Means ... | ... | ... | 10 | 96 | 40·8 | −14·2 | ... |
| **Group 114.** A scattered group of small spots. | | | | | | | |
| Aug. 19·543 | 0 | 27 | 0 | 17 | 259·2 | −12·8 | −33·0 |
| 20·563 | 56 | 346 | 31 | 191 | 262·6 | −11·5 | −16·1 |
| 21·536 | 36 | 231 | 19 | 121 | 264·1 | −10·1 | − 1·7 |
| 22·475 | 0 | 154 | 0 | 82 | 262·7 | −10·0 | + 9·3 |
| 23 | No photograph. | | (0 | 81 | 262·9 | − 9·1 | +22·9) |
| 24·502 | 0 | 123 | 0 | 80 | 263·0 | − 8·2 | +36·4 |
| 25·452 | 0 | 29 | 0 | 22 | 260·8 | − 6·4 | +46·7 |
| Means ... | ... | ... | 7 | 85 | 262·19 | − 9·73 | ... |
| **Group 115.** Two spots close together. | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| Aug. 19·543 | 39 | 230 | 45 | 268 | 231·4 | −15·8 | −60·8 |
| 20·563 | 57 | 400 | 47 | 328 | 230·7 | −14·9 | −48·0 |
| 21·536 | 74 | 397 | 49 | 261 | 231·3 | −14·9 | −34·5 |
| 22·475 | 80 | 462 | 47 | 272 | 231·3 | −15·5 | −22·1 |
| 23 | No photograph. | | (50 | 263 | 231·2 | −15·3 | − 8·8) |
| 24·502 | 98 | 466 | 53 | 253 | 231·1 | −15·1 | + 4·5 |
| 25·452 | 62 | 354 | 35 | 201 | 231·3 | −15·1 | +17·2 |
| 26·429 | 74 | 368 | 46 | 230 | 231·2 | −15·2 | +30·0 |
| 27·488 | 58 | 284 | 44 | 217 | 231·2 | −15·0 | +44·0 |
| 28·434 | 28 | 220 | 28 | 218 | 231·0 | −14·6 | +56·3 |
| 29·515 | 18 | 92 | 32 | 168 | 231·6 | −15·3 | +71·2 |
| Means ... | ... | ... | 43 | 244 | 231·21 | −15·15 | ... |
| **Group 116.** One small spot. | | | | | | | |
| Aug. 19·543 | 0 | 45 | 0 | 78 | 219·1 | + 6·0 | −73·1 |
| 20·563 | 0 | 28 | 0 | 27 | 219·2 | + 6·6 | −59·5 |
| 21·536 | 35 | 108 | 25 | 78 | 219·6 | + 6·5 | −46·2 |
| 22·475 | 33 | 75 | 20 | 45 | 219·6 | + 5·9 | − |
| Means ... | ... | ... | 11 | 57 | 219·38 | + 6·25 | |
| **Group 117.** One small spot. | | | | | | | |
| Aug. 24·502 | 0 | 27 | 0 | 44 | 153·5 | +11·1 | −73·1 |
| 25·452 | 19 | 58 | 19 | 57 | 153·8 | +10·8 | −60·3 |
| 26·429 | 23 | 78 | 17 | 57 | 153·4 | +10·4 | −47·8 |
| 27·488 | 0 | 40 | 0 | 24 | 154·0 | +11·3 | −33·2 |
| 28·434 | 5 | 54 | 3 | 29 | 153·7 | +11·2 | −21·0 |
| 29·515 | 18 | 57 | 9 | 29 | 153·6 | +11·6 | − 6·8 |
| 30 | No photograph. | | (5 | 19 | 153·8 | +11·8 | + 6·4) |
| 31·483 | 0 | 15 | 0 | 8 | 153·9 | +11·9 | +19·5 |
| Means ... | ... | ... | 7 | 33 | 153·71 | +11·26 | ... |
| **Group 118.** A scattered group of faint spots. | | | | | | | |
| Aug. 29·515 | 8 | 156 | 4 | 81 | 151·5 | − 6·9 | − 8·9 |
| 30 | No photograph. | | (2 | 73 | 152·2 | − 7·4 | + 4·8) |
| 31·483 | 0 | 118 | 0 | 65 | 152·8 | − 7·8 | +18·4 |
| Sept. 1·456 | 15 | 152 | 9 | 93 | 154·0 | − 7·8 | +32·4 |
| 2·418 | 19 | 173 | 14 | 127 | 153·9 | − 7·1 | +45·1 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date, Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 118—*continued.*** | | | | | | | |
| 1874. a | | | | | ° | ° | ° |
| Sept. 3 | No photograph. | | (30 | 243 | 153·6 | − 7·7 | +59·0) |
| 4·570 | 24 | 193 | 45 | 358 | 153·2 | − 8·3 | +72·8 |
| 5·403 | 15 | 83 | 56 | 319 | 151·0 | − 6·9 | +81·6 |
| Means ... | ... | ... | 20 | 170 | 152·78 | − 7·49 | ... |
| **Group 119.** One spot. | | | | | | | |
| Sept. 4·570 | 0 | 29 | 0 | 69 | 2·4 | + 2·6 | −78·0 |
| 5·403 | 0 | 26 | 0 | 33 | 2·5 | + 1·1 | −66·9 |
| 6 | No photograph. | | (0 | 33 | 2·7 | + 1·3 | −52·8) |
| 7 | No photograph. | | (0 | 34 | 2·9 | + 1·4 | −38·7) |
| 8 | No photograph. | | (0 | 34 | 3·2 | + 1·6 | −24·6) |
| 9·609 | 0 | 66 | 0 | 34 | 3·4 | + 1·7 | −10·5 |
| Means ... | ... | ... | 0 | 40 | 2·85 | + 1·62 | ... |
| **Group 119*.** A long row of small spots. | | | | | | | |
| Sept. 12·434 | 39 | 187 | 27 | 129 | 20·5 | + 7·3 | +43·9 |
| 13 | No photograph. | | (28 | 122 | 22·6 | + 7·1 | +59·4) |
| 14·464 | 16 | 63 | 29 | 114 | 24·6 | + 7·0 | +74·8 |
| Means ... | ... | ... | 28 | 122 | 22·57 | + 7·13 | ... |
| **Group 120.** One small spot. | | | | | | | |
| Sept. 9·609 | 0 | 26 | 0 | 29 | 77·0 | + 3·4 | +63·1 |
| 10·439 | 0 | 50 | 0 | 75 | 74·3 | + 5·1 | +71·4 |
| Means ... | ... | ... | 0 | 52 | 75·65 | + 4·25 | ... |
| **Group 121.** A group of small spots forming a circle. | | | | | | | |
| 1874. a | | | | | ° | ° | ° |
| Sept. 9·609 | 11 | 84 | 7 | 52 | 43·5 | −14·7 | +29·6 |
| 10·439 | 11 | 120 | 8 | 85 | 43·3 | −13·7 | +40·4 |
| 11 | No photograph. | | (20 | 237 | 43·1 | −13·8 | +53·4) |
| 12·434 | 24 | 275 | 33 | 388 | 42·9 | −13·9 | +66·3 |
| Means ... | ... | ... | 17 | 191 | 43·20 | −14·03 | ... |
| **Group 122.** One small regular spot. | | | | | | | |
| Sept. 15·467 | 0 | 35 | 0 | 48 | 230·4 | −13·3 | −66·1 |
| 16 | No photograph. | | (0 | 39 | 230·2 | −13·2 | −53·2) |
| 17 | No photograph. | | (0 | 31 | 230·0 | −13·1 | −40·3) |
| 18 | No photograph. | | (0 | 22 | 229·8 | −13·0 | −27·4) |
| 19·450 | 0 | 25 | 0 | 14 | 229·6 | −12·9 | −14·4 |
| 20 | No photograph. | | (0 | 14 | 229·7 | −12·9 | − 1·2) |
| 21 | No photograph. | | (0 | 13 | 229·7 | −12·9 | +12·1) |
| 22·452 | 0 | 22 | 0 | 13 | 229·8 | −12·9 | +25·4 |
| Means ... | ... | ... | 0 | 24 | 229·90 | −13·03 | ... |
| **Group 123.** A small spot and a very small marking at a little distance. | | | | | | | |
| Sept. 22·452 | 30 | 120 | 16 | 65 | 187·1 | +21·0 | −17·3 |
| 23 | No photograph. | | (14 | 58 | 187·6 | +21·1 | − 3·9) |
| 24·414 | 21 | 97 | 11 | 51 | 188·1 | +21·2 | + 9·6 |
| 25·425 | 20 | 77 | 11 | 43 | 188·3 | +21·3 | +23·2 |
| 26·526 | 14 | 51 | 9 | 33 | 188·8 | +21·1 | +38·2 |
| 27 | No photograph. | | (5 | 26 | 188·8 | +20·7 | +51·3) |
| 28·509 | 0 | 16 | 0 | 18 | 188·7 | +20·3 | +64·3 |
| Means ... | ... | ... | 9 | 42 | 188·20 | +20·96 | ... |
| **Group 124.** One large regular spot. | | | | | | | |
| Sept. 22·452 | 103 | 516 | 76 | 382 | 159·6 | − 9·1 | −44·8 |
| 23 | No photograph. | | (74 | 398 | 159·7 | − 9·1 | −31·8) |
| 24·414 | 129 | 749 | 71 | 414 | 159·8 | − 9·1 | −18·7 |
| 25·425 | 146 | 797 | 76 | 415 | 159·9 | − 8·7 | − 5·2 |
| 26·526 | 131 | 722 | 69 | 380 | 160·0 | − 8·6 | + 9·4 |
| 27 | No photograph. | | (68 | 382 | 160·2 | − 8·5 | +22·7) |
| 28·509 | 105 | 597 | 67 | 383 | 160·3 | − 8·3 | +35·9 |
| 29·516 | 71 | 436 | 56 | 341 | 160·1 | − 8·2 | +49·0 |
| 30·476 | 50 | 257 | 55 | 285 | 160·2 | − 8·1 | +61·7 |
| Oct. 1·461 | 32 | 129 | 69 | 281 | 160·9 | − 8·3 | +75·4 |
| Means ... | ... | ... | 68 | 366 | 160·07 | − 8·60 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 125.

One small regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| Sept. 25·425 | 0 | 21 | 0 | 52 | 86·7 | + 3·6 | −78·4 |
| 26·526 | 14 | 50 | 16 | 55 | 87·2 | + 4·3 | −63·4 |
| 27 | No photograph. | | (8 | 36 | 87·3 | + 4·1 | −50·2) |
| 28·509 | 0 | 26 | 0 | 16 | 87·4 | + 3·8 | −37·0 |
| 29·516 | 0 | 27 | 0 | 15 | 87·6 | + 3·7 | −23·5 |
| 30·476 | 0 | 20 | 0 | 10 | 88·0 | + 3·3 | −10·5 |
| Means ... | ... | ... | 4 | 31 | 87·37 | + 3·80 | ... |

### Group 126.

One small spot and two very small specks near.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Sept. 29·516 | 12 | 71 | 10 | 59 | 60·8 | −10·5 | −50·3 |
| 30·476 | 23 | 106 | 15 | 70 | 61·9 | −11·5 | −36·6 |
| Oct. 1·461 | 16 | 66 | 9 | 38 | 62·1 | −11·7 | −23·4 |
| 2 | No photograph. | | (5 | 33 | 61·2 | −11·8 | −11·2) |
| 3·454 | 2 | 53 | 1 | 28 | 60·3 | −11·8 | + 1·1 |
| Means ... | ... | ... | 8 | 46 | 61·26 | −11·46 | ... |

### Group 127.

A close cluster composed of many spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Sept. 28·509 | 58 | 391 | 148 | 1002 | 47·6 | −13·3 | −76·8 |
| 29·516 | 75 | 993 | 105 | 1399 | 44·3 | −13·1 | −66·8 |
| 30·476 | 93 | 929 | 87 | 868 | 44·1 | −13·6 | −54·4 |
| Oct. 1·461 | 221 | 1600 | 159 | 1151 | 44·0 | −13·6 | −41·5 |
| 2 | No photograph. | | (177 | 1288 | 43·9 | −13·5 | −28·5) |
| 3·454 | 351 | 2567 | 195 | 1426 | 43·7 | −13·3 | −15·5 |
| 4 | No photograph. | | (177 | 1235 | 44·3 | −13·3 | − 1·6) |
| 5·477 | 291 | 1921 | 158 | 1044 | 44·9 | −13·2 | +12·4 |
| 6 | No photograph. | | (138 | 941 | 44·5 | −13·0 | +25·3) |
| 7 | No photograph. | | (118 | 838 | 44·0 | −12·7 | +38·2) |
| 8·508 | 115 | 859 | 98 | 734 | 43·6 | −12·4 | +51·1 |
| 9 | No photograph. | | (72 | 535 | 42·8 | −12·0 | +62·9) |
| 10·409 | 21 | 157 | 45 | 335 | 42·0 | −11·7 | +74·6 |
| Means ... | ... | ... | 129 | 984 | 44·13 | −12·98 | ... |

### Group 128.

At first, one very small spot, but on October 10 it has extended into a row of several small fragments.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Oct. 8·508 | 0 | 27 | 0 | 15 | 18·2 | +11·6 | +25·7 |
| 9 | No photograph. | | (4 | 59 | 18·1 | +12·3 | +38·2) |
| 10·409 | 10 | 132 | 8 | 103 | 18·0 | +12·9 | +50·6 |
| Means ... | ... | ... | 4 | 59 | 18·10 | +12·27 | ... |

### Group 129.

Three spots arranged in a line.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1874. d | | | | | ° | ° | ° |
| Oct. 10·409 | 86 | 426 | 47 | 234 | 334·7 | −16·7 | + 7·3 |
| 11 | No photograph. | | (44 | 204 | 335·1 | −16·6 | +21·3) |
| 12 | No photograph. | | (41 | 175 | 335·5 | −16·5 | +35·2) |
| 13·491 | 45 | 173 | 38 | 145 | 336·0 | −16·3 | +49·2 |
| 14 | No photograph. | | (19 | 111 | 336·8 | −16·4 | +63·6) |
| 15·538 | 0 | 26 | 0 | 77 | 337·7 | −16·4 | +77·9 |
| Means ... | ... | ... | 32 | 158 | 335·97 | −16·48 | ... |

### Group 130.

Two small spots. The smaller of these grows gradually fainter, and disappears on October 20.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Oct. 15·538 | 17 | 109 | 11 | 71 | 219·7 | + 9·4 | −40·1 |
| 16 | No photograph. | | (8 | 60 | 219·7 | + 9·3 | −26·9) |
| 17 | No photograph. | | (5 | 49 | 219·7 | + 9·1 | −13·7) |
| 18 | No photograph. | | (3 | 37 | 219·7 | + 8·9 | − 0·5) |
| 19·538 | 0 | 50 | 0 | 26 | 219·7 | + 8·7 | +12·7 |
| 20·503 | 24 | 95 | 13 | 52 | 217·3 | + 9·0 | +23·0 |
| 21 | No photograph. | | (7 | 34 | 217·3 | + 8·6 | +36·5) |
| 22·551 | 0 | 21 | 0 | 16 | 217·3 | + 8·2 | +50·0 |
| Means ... | ... | ... | 6 | 43 | 218·80 | + 8·90 | ... |

### Group 131.

Single spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Oct. 15·538 | 35 | 106 | 57 | 171 | 187·1 | + 9·4 | −72·7 |
| 16 | No photograph. | | (47 | 158 | 187·4 | + 9·2 | −59·2) |
| 17 | No photograph. | | (38 | 146 | 187·7 | + 9·0 | −45·7) |
| 18 | No photograph. | | (29 | 134 | 188·0 | + 8·8 | −32·2) |
| 19·538 | 38 | 231 | 20 | 122 | 188·3 | + 8·6 | −18·7 |
| 20·503 | 22 | 158 | 11 | 80 | 188·7 | + 8·6 | − 5·6 |
| 21 | No photograph. | | (13 | 65 | 189·1 | + 8·6 | + 8·3) |
| 22·551 | 28 | 92 | 15 | 50 | 189·5 | + 8·5 | +22·2 |
| 23·514 | 0 | 44 | 0 | 27 | 189·9 | + 8·1 | +35·3 |
| Means ... | ... | ... | 26 | 106 | 188·41 | + 8·76 | ... |

### Group 132.

Single spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Oct. 19·538 | 29 | 181 | 22 | 135 | 161·0 | − 7·7 | −46·0 |
| 20·503 | 36 | 130 | 22 | 79 | 161·4 | − 7·5 | −32·9 |
| 21 | No photograph. | | (23 | 101 | 161·3 | − 7·6 | −19·5) |
| 22·551 | 44 | 235 | 23 | 122 | 161·2 | − 7·7 | − 6·1 |
| 23·514 | 48 | 174 | 25 | 90 | 161·2 | − 8·3 | + 6·6 |
| Means ... | ... | ... | 23 | 105 | 161·22 | − 7·76 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 133.** | | | | | | | |
| Single spot. | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| Oct. 22·551 | 0 | 25 | 0 | 21 | 118·3 | −16·2 | −49·0 |
| Means ... | ... | ... | 0 | 21 | 118·3 | −16·2 | ... |
| **Group 134.** | | | | | | | |
| Two rather large spots. The first and larger spot throws off several fragments on November 7. | | | | | | | |
| Nov. 3·552 | 126 | 687 | 82 | 446 | 334·6 | −16·2 | −34·4 |
| 4·488 | 164 | 896 | 95 | 518 | 334·4 | −16·2 | −22·3 |
| 5·493 | 167 | 899 | 90 | 486 | 334·2 | −16·4 | − 9·2 |
| 6·575 | 118 | 856 | 63 | 458 | 333·5 | −16·6 | + 4·3 |
| 7·469 | 168 | 997 | 94 | 557 | 334·6 | −15·7 | +17·2 |
| 8 | No photograph. | | (125 | 689 | 334·1 | −15·2 | +30·7) |
| 9·582 | 212 | 1115 | 156 | 820 | 333·7 | −14·7 | +44·2 |
| ...10 | No photograph. | | (87 | 636 | 334·1 | −14·1 | +57·0) |
| 11·471 | 12 | 289 | 18 | 451 | 334·4 | −13·5 | +69·8 |
| 12·426 | 0 | 43 | 0 | 124 | 330·4 | −16·0 | +78·4 |
| Means ... | ... | ... | 81 | 519 | 333·80 | −15·46 | ... |
| **Group 135.** | | | | | | | |
| One spot. A second small spot appears on the second photograph on November 12. The group entirely changes its character on the following days, and on November 16 has changed into a very long irregular line of small spots. On November 23 the greater portion of the group has disappeared round the limb. The area only of the group, not its position, was measured on November 17. | | | | | | | |
| Nov. 12·426 | 0 | 50 | 0 | 87 | 178·3 | + 6·2 | −73·7 |
| 13·472 | 37 | 158 | 35 | 149 | 180·1 | + 6·8 | −58·3 |
| 14 | No photograph. | | (46 | 222 | 181·0 | + 7·1 | −44·0) |
| 15 | No photograph. | | (57 | 295 | 182·0 | + 7·3 | −29·6) |
| 16·512 | 131 | 707 | 68 | 368 | 182·9 | + 7·6 | −15·3 |
| 17·574 | 109 | 466 | 55 | 234 | (183·8 | + 7·6 | − 1·3) |
| 18 | No photograph. | | (66 | 335 | 184·6 | + 7·5 | +12·7) |
| 19 | No photograph. | | (77 | 436 | 185·5 | + 7·4 | +26·7) |
| 20·492 | 133 | 811 | 88 | 537 | 186·3 | + 7·4 | +40·6 |
| 21 | No photograph. | | (65 | 467 | 187·1 | + 7·3 | +54·5) |
| 22 | No photograph. | | (42 | 397 | 187·9 | + 7·2 | +68·3) |
| 23·459 | 5 | 91 | 19 | 326 | 188·7 | + 7·1 | +82·1 |
| Means ... | ... | ... | 52 | 321 | 184·02 | + 7·21 | ... |
| **Group 136.** | | | | | | | |
| One spot. On November 23 several very small markings appear close behind it. These disappear again on November 27. | | | | | | | |
| 1874. d | | | | | ° | ° | ° |
| Nov. 20·492 | 14 | 68 | 25 | 119 | 72·2 | + 4·4 | −73·5 |
| 21 | No photograph. | | (24 | 114 | 72·8 | + 4·1 | −59·8) |
| 22 | No photograph. | | (22 | 108 | 73·5 | + 3·8 | −46·1) |
| 23·459 | 34 | 171 | 20 | 102 | 74·1 | + 3·5 | −32·5 |
| 24·515 | 25 | 131 | 13 | 69 | 74·8 | + 3·4 | −17·9 |
| 25 | No photograph. | | (9 | 53 | 75·0 | + 3·2 | − 4·4) |
| 26 | No photograph. | | (6 | 37 | 75·3 | + 2·9 | + 9·1) |
| 27·514 | 4 | 39 | 2 | 21 | 75·6 | + 2·7 | +22·5 |
| Means ... | ... | ... | 15 | 78 | 74·16 | + 3·50 | ... |
| **Group 137.** | | | | | | | |
| The spot is seen as a notch in the limb on November 20. | | | | | | | |
| Nov. 20·492 | 0 | 40 | 0 | 247 | 60·2 | +15·6 | −85·5 |
| 21 | No photograph. | | (14 | 259 | 59·9 | +15·4 | −72·8) |
| 22 | No photograph. | | (28 | 272 | 59·5 | +15·2 | −60·1) |
| 23·459 | 54 | 375 | 41 | 284 | 59·2 | +15·1 | −47·4 |
| 24·515 | 39 | 407 | 24 | 251 | 58·9 | +14·6 | −33·8 |
| 25 | No photograph. | | (28 | 236 | 58·6 | +14·6 | −20·8) |
| 26 | No photograph. | | (33 | 220 | 58·4 | +14·6 | − 7·8) |
| 27·514 | 71 | 396 | 37 | 205 | 58·2 | +14·6 | + 5·1 |
| Means ... | ... | ... | 26 | 247 | 59·11 | +14·96 | ... |
| **Group 138.** | | | | | | | |
| A line of very small spots. | | | | | | | |
| Dec. 7·704 | 28 | 219 | 14 | 111 | 290·2 | − 5·0 | + 7·9 |
| 8 | No photograph. | | (7 | 83 | 292·4 | − 5·0 | +25·0) |
| 9·289 | 0 | 80 | 0 | 54 | 294·5 | − 4·9 | +42·0 |
| 10 | No photograph. | | (0 | 45 | 292·3 | − 5·3 | +51·4) |
| 11·477 | 0 | 35 | 0 | 36 | 290·0 | − 5·7 | +60·8 |
| Means ... | ... | ... | 4 | 66 | 291·88 | − 5·18 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 138*.

A few small spots in a straight stream.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | | | | | ° | ° | ° |
| 1874. d<br>Dec. 9·704 | 0 | 115 | 0 | 64 | 274·7 | −12·0 | +22·2 |
| Means ... | ... | ... | 0 | 64 | 274·7 | −12·0 | ... |

### Group 139.

A group of very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 11·477 | 0 | 34 | 0 | 18 | 240·6 | +12·3 | +11·4 |
| Means ... | ... | ... | 0 | 18 | 240·6 | +12·3 | ... |

### Group 140.

A very scattered group composed at first of four spots, *a*, *b*, *c*, and *d*. Spot *a* breaks up on December 14 into several little spots, and two fresh spots appear, *e* and *f*. Spot *d* disappears on December 14, and spot *b* on December 18.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | | | | | | ° | ° |
| 1874. d<br>Dec. 9·704 | 5 | 121 | 5 | 162 | 184·8 | + 6·0 | −67·7 |
| 10 | No photograph. | | (32 | 197 | 184·6 | + 5·5 | −56·3) |
| 11·477 | 83 | 325 | 59 | 232 | 184·3 | + 5·0 | −44·9 |
| 12·742 | 92 | 823 | 52 | 462 | 187·0 | + 6·3 | −25·4 |
| 13 | No photograph. | | (48 | 366 | 185·7 | + 6·7 | −15·2) |
| 14·498 | 84 | 527 | 43 | 269 | 184·3 | + 7·0 | − 5·0 |
| 15 | No photograph. | | (34 | 245 | 185·3 | + 7·0 | + 9·6) |
| 16 | No photograph. | | (24 | 221 | 186·4 | + 7·0 | +24·2) |
| 17·583 | 22 | 302 | 14 | 197 | 187·4 | + 7·0 | +38·7 |
| 18·513 | 0 | 154 | 0 | 126 | 187·8 | + 7·3 | +51·3 |
| Means ... | ... | ... | 31 | 248 | 185·76 | + 6·48 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 141.** Single spot. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| Jan. 2·527 | 53 | 355 | 32 | 215 | 331·9 | −13·6 | +33·2 |
| 3 | No photograph. | | (32 | 190 | 331·7 | −13·7 | +46·2) |
| 4 | No photograph. | | (31 | 165 | 331·5 | −13·7 | +59·3) |
| 5·550 | 19 | 87 | 31 | 140 | 331·3 | −13·8 | +72·4 |
| Means ... | ... | ... | 32 | 178 | 331·60 | −13·70 | ... |
| **Group 142.** A group of two or three very small spots. | | | | | | | |
| Jan. 16·543 | 10 | 70 | 6 | 42 | 81·2 | − 8·9 | −33·1 |
| Means ... | ... | ... | 6 | 42 | 81·2 | − 8·9 | ... |
| **Group 142*.** Two large spots close together, and a few small markings round them. | | | | | | | |
| Jan. 22·530 | 186 | 872 | 119 | 559 | 72·4 | + 6·2 | +37·1 |
| 23 | No photograph. | | (79 | 391 | 71·8 | + 6·0 | +49·7) |
| 24 | No photograph. | | (40 | 224 | 71·2 | + 5·8 | +62·4) |
| 25·554 | 0 | 28 | 0 | 57 | 70·5 | + 5·5 | +75·0 |
| Means ... | ... | ... | 60 | 308 | 71·48 | + 5·88 | ... |
| **Group 143.** A small spot, surrounded by a few very small and scattered markings. It becomes slightly more condensed on January 25. | | | | | | | |
| Jan. 22·530 | 32 | 151 | 17 | 79 | 36·6 | +11·2 | + 1·3 |
| 23 | No photograph. | | (12 | 65 | 36·8 | +11·1 | +14·8) |
| 24 | No photograph. | | ( 6 | 52 | 37·0 | +11·1 | +28·3) |
| 25·554 | 0 | 55 | 0 | 39 | 37·3 | +11·0 | +41·8 |
| Means ... | ... | ... | 9 | 59 | 36·93 | +11·10 | ... |
| **Group 143*.** A small spot. | | | | | | | |
| Jan. 26·734 | 0 | 27 | 0 | 27 | 36·1 | +17·5 | +56·2 |
| Means ... | ... | ... | 0 | 27 | 36·1 | +17·5 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 144.** A number of spots in an irregular stream. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| Feb. 1·773 | 0 | 122 | 0 | 150 | 197·9 | +18·0 | −62·6 |
| 2 | No photograph. | | ( 6 | 130 | 198·0 | +18·3 | −50·6) |
| 3 | No photograph. | | ( 12 | 110 | 198·2 | +18·6 | −38·5) |
| 4·485 | 28 | 147 | 17 | 91 | 198·3 | +18·8 | −26·5 |
| 5·657 | 21 | 225 | 12 | 127 | 197·9 | +18·7 | −11·4 |
| 6·774 | 38 | 170 | 21 | 95 | 197·9 | +18·8 | + 3·4 |
| 7·215 | 36 | 215 | 20 | 121 | 197·7 | +19·1 | + 8·9 |
| 8·699 | 13 | 93 | 8 | 59 | 198·4 | +18·2 | +29·2 |
| 9·229 | 13 | 80 | 9 | 55 | 197·4 | +18·8 | +35·2 |
| Means ... | ... | ... | 12 | 104 | 197·97 | +18·59 | ... |
| **Group 144*.** A regular spot. | | | | | | | |
| Feb. 9·229 | 10 | 39 | 23 | 90 | 84·3 | + 5·9 | −77·9 |
| 10·687 | 0 | 40 | 0 | 40 | 84·1 | + 5·5 | −59·0 |
| 11·205 | 15 | 47 | 12 | 39 | 84·7 | + 5·0 | −51·5 |
| Means ... | ... | ... | 12 | 56 | 84·37 | + 5·47 | ... |
| **Group 144†.** A small spot. | | | | | | | |
| Feb. 14·019 | 0 | 19 | 0 | 10 | 99·8 | +12·7 | + 0·6 |
| Means ... | ... | ... | 0 | 10 | 99·8 | +12·7 | ... |
| **Group 145.** A very large spot, with two or three small ones near it. | | | | | | | |
| Feb. 18·448 | 42 | 148 | 134 | 478 | 322·7 | +17·9 | −78·2 |
| 19 | No photograph. | | (130 | 542 | 321·9 | +18·2 | −68·3) |
| 20·075 | 114 | 551 | 125 | 606 | 321·1 | +18·6 | −58·4 |
| 21·517 | 230 | 993 | 168 | 725 | 320·4 | +18·1 | −40·1 |
| 22·527 | 235 | 1059 | 146 | 658 | 320·2 | +18·2 | −27·0 |
| 23·496 | 237 | 1181 | 136 | 679 | 320·0 | +18·3 | −14·4 |
| 24 | No photograph. | | (134 | 688 | 320·0 | +18·3 | − 1·0) |
| 25·531 | 229 | 1218 | 131 | 696 | 320·0 | +18·3 | +12·4 |
| 26·558 | 235 | 1157 | 145 | 714 | (320·1 | +18·1 | +22·4) |
| 27·030 | 164 | 933 | 108 | 614 | 320·1 | +17·8 | +32·3 |
| 28·027 | 193 | 906 | 156 | 731 | 320·4 | +18·2 | +45·7 |
| Mar. 1·077 | 108 | 576 | 123 | 654 | 320·4 | +18·3 | +59·5 |
| 2·209 | 47 | 273 | 109 | 634 | 320·1 | +18·2 | +74·2 |
| Means ... | ... | ... | 134 | 648 | 320·57 | +18·19 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 146.

One large spot, surrounded by many small ones.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Feb. 20·075 | 30 | 185 | 28 | 173 | 321·2 | −11·6 | −58·3 |
| 21·517 | 97 | 601 | 62 | 383 | 321·9 | −11·6 | −38·6 |
| 22·527 | 86 | 491 | 48 | 273 | 322·0 | −11·2 | −25·2 |
| 23·496 | 122 | 696 | 63 | 359 | 321·9 | −10·7 | −12·5 |
| 24 | No photograph. | | (58 | 287 | 321·1 | −11·2 | + 0·1) |
| 25·531 | 103 | 417 | 53 | 215 | 320·3 | −11·6 | +12·7 |
| 26·558 | 29 | 261 | 16 | 144 | (320·7 | −11·5 | +23·0) |
| 27·030 | 30 | 199 | 18 | 119 | 321·1 | −11·4 | +33·3 |
| 28·027 | 21 | 158 | 15 | 114 | 321·2 | −11·6 | +46·5 |
| Mar. 1·077 | 16 | 78 | 16 | 76 | 321·1 | −11·9 | +60·2 |
| 2·209 | 0 | 16 | 0 | 31 | 322·2 | −11·7 | +76·3 |
| Means ... | ... | ... | 34 | 198 | 321·34 | −11·45 | ... |

### Group 146*.

A small spot following Group 145.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 20·075 | 0 | 29 | 0 | 49 | 311·1 | +20·3 | −68·4 |
| Means ... | ... | ... | 0 | 49 | 311·1 | +20·3 | ... |

### Group 147.

Two small spots. The preceding spot alone has appeared by February 22. The following and smaller spot decreases in size as the group crosses the disk, until on March 5 only the preceding spot is left.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 22·527 | 0 | 56 | 0 | 166 | 267·9 | + 5·6 | −79·3 |
| 23·496 | 12 | 101 | 19 | 156 | 264·6 | + 5·7 | −69·8 |
| 24 | No photograph. | | (21 | 132 | 265·8 | + 5·3 | −55·3) |
| 25·531 | 33 | 160 | 22 | 108 | 266·9 | + 4·9 | −40 7 |
| 26·558 | 0 | 45 | 0 | 27 | (267·8 | + 4·7 | −29·9) |
| 27·030 | 32 | 184 | 17 | 100 | 268·7 | + 4·5 | −19·1 |
| 28·027 | 25 | 154 | 13 | 79 | 270·5 | + 4·2 | − 4·2 |
| Mar. 1·077 | 22 | 137 | 14 | 71 | 270·1 | + 4·0 | + 9·2 |
| 2·209 | 20 | 117 | 11 | 66 | 270·0 | + 3·9 | +24·1 |
| 3·266 | 15 | 75 | 10 | 49 | 270·4 | + 4·2 | +38·4 |
| 4 | No photograph. | | (5 | 40 | 270·9 | + 4·0 | +53·3) |
| 5·446 | 0 | 22 | 0 | 31 | 271·4 | + 3·8 | +68·1 |
| Means ... | ... | ... | 11 | 85 | 268·75 | + 4·57 | ... |

### Group 147*.

A small spot following Group 146.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 27·030 | 16 | 64 | 9 | 36 | 313·8 | −12·1 | +26·0 |
| 28·027 | 0 | 14 | 0 | 9 | 313·9 | −12·1 | +39·2 |
| Means ... | ... | ... | 5 | 23 | 313·85 | −12·10 | ... |

### Group 147†.

A number of small spots in an irregular stream.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Mar. 1·077 | 0 | 6 | 0 | 11 | 188·5 | + 6·4 | −72·4 |
| 2·209 | 32 | 127 | 26 | 101 | 196·7 | + 7·4 | −49·2 |
| 3·266 | 16 | 161 | 10 | 103 | 196·1 | + 7·4 | −35·9 |
| Means ... | ... | ... | 12 | 72 | 193·77 | + 7·07 | ... |

### Group 148.

Several small spots ranged in a straight line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 5·446 | 33 | 164 | 18 | 90 | 208·2 | +16·4 | + 4·9 |
| 6·070 | 34 | 299 | 19 | 168 | 207·9 | +16·0 | +12·8 |
| 7·082 | 56 | 528 | 34 | 322 | 207·7 | +16·1 | +26·0 |
| 8·884 | 16 | 191 | 14 | 163 | 207·3 | +16·3 | +49·3 |
| 9·547 | 46 | 256 | 51 | 281 | 208·2 | +16·5 | +58·9 |
| 10·528 | 12 | 106 | 27 | 247 | 211·2 | +15·4 | +74·8 |
| Means ... | ... | ... | 27 | 212 | 208·42 | +16·12 | ... |

### Group 149.

One spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 7·082 | 37 | 267 | 27 | 194 | 228·7 | −14·8 | +47·0 |
| 8·884 | 0 | 101 | 0 | 136 | 227·4 | −16·2 | +69·4 |
| 9·547 | 0 | 97 | 0 | 179 | 225·1 | −17·0 | +75·8 |
| Means ... | ... | ... | 9 | 170 | 227·07 | −16·00 | ... |

### Group 149*.

One spot regular in shape. It has divided into two parts by March 12, and is not seen on March 15.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 10·528 | 15 | 135 | 20 | 182 | 67·4 | − 6·8 | −69·0 |
| 11·597 | 36 | 245 | 31 | 213 | 67·1 | − 7·0 | −55·2 |
| 12·680 | 12 | 120 | 8 | 79 | 66·7 | − 7·8 | −41·3 |
| 13·060 | 26 | 176 | 16 | 108 | 67·4 | − 7·1 | −35·6 |
| 14·644 | 0 | 27 | 0 | 14 | 66·9 | − 7·8 | −15·2 |
| 15·584 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 16·127 | 0 | 20 | 0 | 10 | 66·0 | − 9·8 | + 3·5 |
| Means ... | ... | ... | 11 | 87 | 66·92 | − 7·72 | ... |

### Group 149†.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 12·680 | 0 | 7 | 0 | 13 | 181·9 | + 6·8 | +73·9 |
| Means ... | ... | ... | 0 | 13 | 181·9 | + 6·8 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 150.

Single spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Mar. 11·597 | 24 | 110 | 48 | 224 | 46·0 | − 3·6 | −76·3 |
| 12·680 | 28 | 90 | 29 | 92 | 46·9 | − 4·2 | −61·1 |
| 13·060 | 31 | 202 | 28 | 180 | 46·8 | − 3·8 | −56·2 |
| 14·644 | 46 | 275 | 28 | 169 | 46·5 | − 4·1 | −35·6 |
| 15·584 | 46 | 304 | 25 | 166 | 46·8 | − 3·9 | −22·9 |
| 16·127 | 21 | 234 | 11 | 122 | 46·7 | − 3·7 | −15·8 |
| 17·760 | 22 | 89 | 11 | 45 | 47·3 | − 3·5 | + 6·2 |
| 18·570 | 11 | 50 | 6 | 26 | 47·1 | − 3·5 | +16·7 |
| 19·691 | 0 | 30 | 0 | 18 | 47·5 | − 3·6 | +31·9 |
| 20·076 | 3 | 27 | 2 | 17 | 47·0 | − 3·3 | +36·5 |
| 21·207 | 0 | 17 | 0 | 14 | 47·5 | − 3·5 | +51·9 |
| Means ... | ... | ... | 17 | 98 | 46·92 | − 3·70 | ... |

### Group 150*.

Some small spots forming *s.p.*, Group 150.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 17·760 | 18 | 133 | 9 | 69 | 55·1 | −10·0 | +14·0 |
| 18·570 | 38 | 155 | 21 | 85 | 54·6 | − 9·4 | +24·2 |
| 19·691 | 0 | 59 | 0 | 38 | 55·1 | − 9·7 | +39·5 |
| 20·076 | 6 | 51 | 4 | 37 | 57·1 | − 9·4 | +46·6 |
| 21·207 | 0 | 22 | 0 | 19 | 51·3 | −10·3 | +55·7 |
| Means ... | ... | ... | 7 | 50 | 54·64 | − 9·76 | ... |

### Group 150†.

A small spot, not seen on March 18 ; probably hidden by the wire.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 17·760 | 8 | 53 | 4 | 27 | 30·1 | − 6·5 | −11·0 |
| 18·570 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 19·691 | 0 | 38 | 0 | 20 | 31·5 | − 7·0 | +15·9 |
| 20·076 | 0 | 34 | 0 | 18 | 31·2 | − 7·1 | +20·7 |
| Means ... | ... | ... | 1 | 16 | 30·93 | − 6·87 | ... |

### Group 151*.

Two large spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 20·076 | 0 | 138 | 0 | 70 | 5·3 | −13·7 | − 5·2 |
| 21·207 | 16 | 209 | 8 | 107 | 5·9 | −13·7 | +10·3 |
| 22·725 | 0 | 188 | 0 | 113 | 8·9 | −15·0 | +33·4 |
| 23·435 | 162 | 670 | 111 | 459 | 9·6 | −14·1 | +43·4 |
| 24·115 | 106 | 856 | 87 | 702 | 9·9 | −14·3 | +52·3 |
| 25·448 | 75 | 363 | 102 | 491 | 8·9 | −14·6 | +69·2 |
| 26·608 | 0 | 73 | 0 | 215 | 5·9 | −13·9 | +81·5 |
| Means ... | ... | ... | 44 | 308 | 7·77 | −14·19 | ... |

### Group 151.

One large spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Mar. 17·760 | 14 | 132 | 55 | 529 | 320·8 | +18·0 | −80·3 |
| 18·570 | 55 | 230 | 91 | 384 | 321·2 | +17·5 | −69·2 |
| 19·691 | 53 | 381 | 50 | 363 | 321·9 | +17·6 | −53·7 |
| 20·076 | 66 | 382 | 57 | 329 | 321·3 | +18·0 | −49·2 |
| 21·207 | 92 | 536 | 62 | 362 | 321·2 | +17·8 | −34·4 |
| 22·725 | 72 | 432 | 41 | 247 | 320·8 | +17·9 | −14·7 |
| 23·435 | 130 | 617 | 72 | 343 | 320·6 | +18·1 | − 5·6 |
| 24·115 | 99 | 533 | 55 | 296 | 323·1 | +17·5 | + 5·9 |
| 25·448 | 111 | 546 | 66 | 325 | 320·6 | +18·5 | +20·9 |
| 26·608 | 87 | 468 | 60 | 323 | 320·1 | +18·6 | +35·7 |
| 27·428 | 50 | 351 | 41 | 288 | 320·0 | +18·8 | +46·5 |
| 28·530 | 48 | 281 | 57 | 330 | 319·4 | +19·1 | +60·4 |
| 29·713 | 11 | 87 | 27 | 224 | 319·1 | +18·7 | +75·7 |
| Means ... | ... | ... | 56 | 334 | 320·78 | +18·16 | ... |

### Group 152.

A number of small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 28·530 | 0 | 70 | 0 | 36 | 250·6 | + 3·2 | − 8·4 |
| 29·713 | 56 | 384 | 29 | 198 | 250·9 | + 4·1 | + 7·5 |
| 30·703 | 79 | 401 | 43 | 221 | 252·2 | + 4·5 | +21·8 |
| 31·752 | 56 | 372 | 36 | 238 | 253·2 | + 4·4 | +36·7 |
| Apr. 1·587 | 0 | 219 | 0 | 167 | 253·3 | + 4·2 | +47·9 |
| 2·460 | 27 | 117 | 28 | 122 | 254·4 | + 4·5 | +60·4 |
| Means ... | ... | ... | 23 | 164 | 252·43 | + 4·15 | ... |

### Group 152*.

A number of small spots in a straight line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 29·713 | 8 | 102 | 6 | 71 | 199·4 | −16·7 | −44·0 |
| 30·703 | 38 | 162 | 23 | 95 | 200·0 | −16·5 | −30 4 |
| 31·752 | 64 | 195 | 34 | 103 | 201·3 | −16·1 | −15·2 |
| Apr. 1·587 | 17 | 292 | 9 | 150 | 200·0 | −16·2 | − 5·4 |
| 2·460 | 64 | 378 | 33 | 194 | 202·1 | −15·4 | + 8·1 |
| 3 | No photograph. | | (17 | 125 | 202·8 | −15·5 | +22·7) |
| 4·567 | 0 | 87 | 0 | 55 | 203·5 | −15·5 | +37·3 |
| Means ... | ... | ... | 17 | 113 | 201·30 | −15·99 | ... |

### Group 153.

One very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 4·567 | 0 | 12 | 0 | 11 | 109·3 | −13·5 | −56·9 |
| Means ... | ... | ... | 0 | 11 | 109·3 | −13·5 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots —*continued.*

### Group 153*.

One very small spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Apr. 5·507 | 0 | 31 | 0 | 16 | 148·4 | + 8·0 | − 5·3 |
| 6·427 | 4 | 98 | 2 | 51 | 147·8 | + 7·8 | + 6·2 |
| 7·667 | 5 | 105 | 3 | 59 | 148·6 | + 7·4 | +23·3 |
| 8·522 | 0 | 27 | 0 | 17 | 147·8 | + 7·9 | +33·8 |
| 9·108 | 0 | 22 | 0 | 16 | 151·9 | + 7·5 | +45·6 |
| Means ... | ... | .. | 1 | 32 | 148·90 | + 7·72 | ... |

### Group 153†.

Two very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 10·641 | 23 | 110 | 12 | 57 | 98·5 | + 4·0 | +12·5 |
| 11 | No photograph. | | (8 | 64 | 99·3 | + 4·6 | +26·2) |
| 12 | No photograph. | | (4 | 71 | 100·1 | + 5·2 | +39·9) |
| 13·565 | 0 | 90 | 0 | 78 | 100·9 | + 5·7 | +53·5 |
| 14·531 | 0 | 65 | 0 | 79 | 99·8 | + 5·6 | +65·2 |
| Means ... | ... | ... | 5 | 70 | 99·72 | + 5·02 | ... |

### Group 154.

Two small spots on April 10. One spot, regular in shape, on April 13. Has two companions on April 15; but on April 18 only the chief spot remains.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 10·641 | 0 | 44 | 0 | 49 | 24·4 | + 9·0 | −61·6 |
| 11 | No photograph. | | ( 8 | 66 | 26·4 | + 9·1 | −46·7) |
| 12 | No photograph. | | (16 | 83 | 28·5 | + 9·2 | −31·8) |
| 13·565 | 44 | 184 | 24 | 100 | 30·5 | + 9·3 | −16·9 |
| 14·531 | 61 | 202 | 32 | 105 | 31·3 | + 9·3 | − 3·3 |
| 15·671 | 36 | 221 | 19 | 117 | 31·8 | + 9·0 | +12·2 |
| 16·543 | 71 | 301 | 40 | 169 | 30·3 | + 9·2 | +22·2 |
| 17·470 | 35 | 234 | 22 | 148 | 30·7 | + 9·5 | +34·9 |
| 18·517 | 19 | 126 | 16 | 106 | 33·7 | + 8·8 | +51·7 |
| 19·444 | 11 | 63 | 13 | 76 | 33·8 | + 8·7 | +64·0 |
| 20·581 | 0 | 23 | 0 | 79 | 35·3 | + 8·3 | +80·6 |
| Means ... | ... | ... | 17 | 100 | 30·61 | + 9·04 | ... |

### Group 155.

Two large spots very close together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 10·641 | 29 | 239 | 53 | 434 | 11·2 | −13·7 | −74·8 |
| 11 | No photograph. | | (63 | 450 | 10·8 | −13·8 | −62·3) |
| 12 | No photograph. | | (72 | 466 | 10·4 | −14·0 | −49·8) |
| 13·565 | 130 | 762 | 82 | 482 | 10·0 | −14·1 | −37·4 |
| 14·531 | 143 | 768 | 80 | 429 | 9·8 | −13·9 | −24·8 |
| 15·671 | 114 | 718 | 59 | 370 | 10·2 | −14·3 | − 9·4 |
| 16·543 | 148 | 662 | 75 | 336 | 10·4 | −14·3 | + 2·3 |
| 17·470 | 127 | 634 | 66 | 330 | 10·1 | −13·9 | +14·3 |

### Group 155—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Apr. 18·517 | 111 | 508 | 64 | 292 | 10·4 | −13·6 | +28·4 |
| 19·444 | 58 | 383 | 38 | 252 | 10·0 | −13·5 | +40·2 |
| 20·581 | 54 | 279 | 47 | 243 | 9·6 | −13·0 | +54·9 |
| 21·699 | 0 | 167 | 0 | 246 | 10·7 | −13·5 | +70·7 |
| Means ... | ... | ... | 58 | 361 | 10·30 | −13·80 | ... |

### Group 156.

One small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 20·581 | 0 | 20 | 0 | 30 | 245·7 | +12·3 | −69·0 |
| 21·699 | 0 | 57 | 0 | 51 | 246·3 | +12·3 | −53·7 |
| 22·659 | 0 | 55 | 0 | 39 | 245·8 | +12·3 | −41·5 |
| Means ... | ... | ... | 0 | 40 | 245·93 | +12·30 | ... |

### Group 156*.

Two small spots very close together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 25·481 | 42 | 205 | 54 | 263 | 182·6 | − 6·1 | −67·4 |
| 26·515 | 46 | 219 | 39 | 184 | 182·6 | − 6·1 | −53·7 |
| 27·497 | 74 | 339 | 49 | 223 | 182·6 | − 5·9 | −40·8 |
| 28·548 | 50 | 315 | 28 | 178 | 182·5 | − 6·0 | −27·0 |
| 29·582 | 62 | 284 | 32 | 147 | 182·2 | − 6·2 | −13·6 |
| 30·499 | 0 | 76 | 0 | 38 | 182·3 | − 6·1 | − 1·4 |
| May 1·129 | 30 | 176 | 15 | 89 | 181·4 | − 6·4 | + 6·1 |
| 2 | No photograph. | | (17 | 84 | 181·6 | − 6·5 | +22·0) |
| 3·499 | 30 | 125 | 19 | 79 | 181·8 | − 6·6 | +37·8 |
| 4·072 | 27 | 73 | 19 | 52 | 181·5 | − 6·1 | +45·0 |
| 5·482 | 0 | 23 | 0 | 26 | 181·7 | − 6·8 | +63·9 |
| Means ... | ... | ... | 25 | 124 | 182·07 | − 6·25 | ... |

### Group 157.

One large spot with several small ones following it.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 26·515 | 0 | 237 | 0 | 552 | 160·0 | + 8·7 | −76·3 |
| 27·497 | 82 | 675 | 100 | 823 | 158·8 | + 8·9 | −64·6 |
| 28·548 | 155 | 943 | 127 | 773 | 158·3 | + 9·2 | −51·2 |
| 29·582 | 205 | 1511 | 133 | 981 | 158·5 | + 9·6 | −37·3 |
| 30·499 | 129 | 1345 | 74 | 773 | 158·1 | + 9·6 | −25·6 |
| May 1·129 | 192 | 1030 | 103 | 554 | 158·7 | + 9·5 | −16·6 |
| 2 | No photograph. | | (101 | 623 | 159·1 | + 9·4 | − 0·5) |
| 3·499 | 185 | 1292 | 99 | 691 | 159·5 | + 9·3 | +15·5 |
| 4·072 | 113 | 1010 | 63 | 564 | 159·1 | + 9·3 | +22·6 |
| 5·482 | 128 | 850 | 89 | 590 | 159·8 | + 9·1 | +42·0 |
| 6·504 | 97 | 433 | 89 | 397 | 160·1 | + 9·0 | +55·8 |
| 7·772 | 44 | 204 | 76 | 351 | 159·8 | + 8·7 | +72·3 |
| Means ... | ... | ... | 88 | 639 | 159·15 | + 9·19 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued*.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 157*.** A pair of spots following Group 157. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| May 1·129 | 29 | 367 | 17 | 212 | 150·0 | +11·6 | −25·3 |
| Means ... | ... | ... | 17 | 212 | 150·0 | +11·6 | ... |
| **Group 157†.** A small spot. | | | | | | | |
| May 22·667 | 0 | 15 | 0 | 13 | 195·6 | + 8·6 | −54·9 |
| Means ... | ... | ... | 0 | 13 | 195·6 | + 8·6 | ... |
| **Group 158.** Two small spots. | | | | | | | |
| May 24·535 | 0 | 85 | 0 | 46 | 210·6 | +15·5 | −15·2 |
| Means ... | ... | ... | 0 | 46 | 210·6 | +15·5 | ... |
| **Group 159.** One small spot. | | | | | | | |
| May 24·535 | 0 | 32 | 0 | 35 | 163·0 | + 8·0 | −62·8 |
| 25 | No photograph. | | (0 | 31 | 163·1 | + 8·1 | −49·1) |
| 26·610 | 0 | 44 | 0 | 27 | 163·1 | + 8·2 | −35·3 |
| 27·644 | 9 | 48 | 5 | 26 | 162·7 | + 8·1 | −21·9 |
| 28·647 | 12 | 35 | 6 | 18 | 163·1 | + 8·5 | − 8·3 |
| Means ... | ... | ... | 2 | 27 | 163·00 | + 8·18 | ... |
| **Group 160.** Two spots. This group greatly increases in size on June 3 and following days. | | | | | | | |
| June 1·542 | 3 | 80 | 3 | 79 | 60·6 | −10·5 | −59·3 |
| 2·527 | 45 | 275 | 33 | 202 | 60·5 | −10·1 | −46·3 |
| 3·602 | 97 | 828 | 58 | 496 | 60·8 | −10·8 | −31·8 |
| 4·532 | 133 | 884 | 72 | 478 | 60·7 | −10·7 | −19·6 |
| 5·634 | 189 | 1014 | 97 | 520 | 61·3 | −10·1 | − 4·4 |
| 6 | No photograph. | | (84 | 514 | 61·4 | −10·0 | + 8·5) |
| 7 | No photograph. | | (70 | 508 | 61·6 | − 9·8 | +21·5) |
| 8·532 | 93 | 818 | 57 | 502 | 61·8 | − 9·7 | +34·4 |
| 9 | No photograph. | | (59 | 468 | 61·9 | − 9·9 | +48·0) |
| 10·564 | 56 | 407 | 60 | 433 | 62·0 | −10·1 | +61·5 |
| 11·560 | 46 | 242 | 87 | 457 | 61·5 | −10·4 | +74·2 |
| Means ... | ... | ... | 62 | 423 | 61·28 | −10·19 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 161.** Three or four small spots close together. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| June 16·516 | 38 | 295 | 23 | 179 | 247·6 | + 6·2 | −34·1 |
| 17·457 | 161 | 1008 | 87 | 545 | 247·4 | + 6·6 | −21·8 |
| 18 | No photograph. | | (105 | 634 | 247·1 | + 6·6 | − 8·8) |
| 19·478 | 242 | 1430 | 122 | 722 | 246·8 | + 6·6 | 4·3 |
| 20·644 | 182 | 980 | 98 | 527 | 247·9 | + 6·6 | +20·9 |
| 21·678 | 96 | 614 | 58 | 371 | 247·1 | + 6·0 | +33·8 |
| 22·497 | 102 | 625 | 72 | 440 | 247·0 | + 6·2 | +44·5 |
| 23·530 | 108 | 350 | 103 | 333 | 247·3 | + 5·8 | +58·5 |
| 24·483 | 5 | 107 | 7 | 157 | 246·4 | + 5·8 | +70·2 |
| Means ... | ... | ... | 75 | 434 | 247·18 | + 6·27 | ... |
| **Group 162.** Single spot. Greatly increases in size, and breaks up into several spots on June 23. | | | | | | | |
| June 21·678 | 0 | 35 | 0 | 18 | 205·3 | − 7·4 | − 8·0 |
| 22·497 | 60 | 402 | 31 | 206 | 207·0 | − 8·4 | + 4·5 |
| 23·530 | 197 | 1036 | 105 | 551 | 205·6 | − 7·6 | +16·8 |
| 24·483 | 313 | 1318 | 184 | 775 | 206·1 | − 7·7 | +29·9 |
| 25·552 | 257 | 1216 | 181 | 856 | 205·7 | − 7·0 | +43·7 |
| 26·519 | 132 | 884 | 123 | 826 | 206·2 | − 7·8 | +56·8 |
| 27·531 | 72 | 415 | 106 | 611 | 205·3 | − 7·4 | +69·4 |
| Means ... | ... | ... | 104 | 549 | 205·89 | − 7·61 | ... |
| **Group 162*.** A small spot. | | | | | | | |
| June 21·678 | 0 | 28 | 0 | 22 | 164·9 | +17·2 | −48·4 |
| Means ... | ... | ... | 0 | 22 | 164·9 | +17·2 | ... |
| **Group 163.** One spot at first, which breaks up into two on July 3. | | | | | | | |
| June 27·531 | 16 | 95 | 28 | 170 | 63·1 | −11·6 | −72·8 |
| 28·611 | 20 | 163 | 20 | 163 | 62·5 | −10·7 | −59·1 |
| 29·501 | 24 | 148 | 18 | 111 | 63·1 | −10·8 | −46·7 |
| 30·081 | 24 | 195 | 16 | 130 | 62·7 | −10·4 | −39·3 |
| July 1 | No photograph. | | (19 | 116 | 62·9 | −10·0 | −23·6) |
| 2·426 | 41 | 197 | 21 | 102 | 63·2 | − 9·6 | − 7·8 |
| 3·602 | 29 | 179 | 15 | 93 | 63·1 | − 9·6 | + 7·6 |
| 4 | No photograph. | | (14 | 67 | 63·0 | − 9·4 | +19·6) |
| 5·393 | 22 | 66 | 13 | 40 | 62·9 | − 9·2 | +31·6 |
| 6·429 | 12 | 52 | 9 | 38 | 62·9 | − 9·5 | +44·9 |
| Means ... | ... | ... | 17 | 103 | 62·94 | −10·08 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 163*.** A small spot. | | | | | | | |
| June 30·081 | 0 | 11 | 0 | 11 | 42·9 | + 9·9 | −59·1 |
| Means ... | ... | ... | 0 | 11 | 42·9 | + 9·9 | ... |
| **Group 164.** One small spot, regular in shape. It has broken up into several spots on July 2. | | | | | | | |
| 1875·d | | | | | ° | ° | ° |
| June 28·611 | 10 | 53 | 5 | 28 | 138·1 | +10·5 | +16·5 |
| 29·501 | 18 | 89 | 10 | 51 | 137·8 | + 9·8 | +28·0 |
| 30·081 | 41 | 117 | 25 | 72 | 136·9 | +10·6 | +34·9 |
| July 1 | No photograph. | | (22 | 106 | 137·7 | +11·5 | +51·2) |
| 2·426 | 14 | 107 | 18 | 139 | 138·5 | +12·3 | +67·5 |
| Means ... | ... | ... | 16 | 79 | 137·80 | +10·94 | ... |
| **Group 164*.** Two spots. | | | | | | | |
| July 8·596 | 0 | 31 | 0 | 27 | 294·3 | +15·2 | −55·1 |
| 9·595 | 41 | 232 | 28 | 159 | (294·1 | +15·4 | −42·4) |
| 10·554 | 61 | 245 | 36 | 144 | 293·9 | +15·6 | −29·6 |
| 11 | No photograph. | | (27 | 115 | 293·0 | +16·3 | −17·1) |
| 12·585 | 33 | 166 | 17 | 86 | 292·1 | +16·9 | − 4·5 |
| 13·644 | 12 | 132 | 6 | 69 | 291·9 | +16·7 | + 9·4 |
| 14·640 | 0 | 81 | 0 | 45 | 291·9 | +16·6 | +22·5 |
| Means ... | ... | ... | 16 | 92 | 293·03 | +16·10 | ... |
| **Group 164†.** A short stream. | | | | | | | |
| July 17·598 | 0 | 54 | 0 | 30 | 253·2 | +14·8 | +22·9 |
| Means ... | ... | ... | 0 | 30 | 253·2 | +14·8 | ... |
| **Group 165.** One small spot. | | | | | | | |
| July 24·489 | 0 | 20 | 0 | 12 | 107·5 | +21·7 | −31·6 |
| 25·445 | 0 | 39 | 0 | 22 | 106·3 | +22·2 | −20·2 |
| Means ... | ... | ... | 0 | 17 | 106·90 | +21·95 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 166.** Several small spots close together. The group becomes more and more scattered up to August 2, when it has completely divided into two parts. | | | | | | | |
| 1875·d | | | | | ° | ° | ° |
| July 26·519 | 14 | 127 | 19 | 172 | 43·8 | + 7·9 | −68·5 |
| 27·583 | 0 | 114 | 0 | 95 | 44·8 | + 7·9 | −53·4 |
| 28·450 | 48 | 255 | 32 | 171 | 44·7 | + 8·8 | −42·0 |
| 29·472 | 54 | 364 | 31 | 209 | 43·4 | + 8·0 | −29·8 |
| 30·594 | 50 | 324 | 26 | 167 | 45·9 | + 8·4 | −12·5 |
| 31·509 | 40 | 310 | 20 | 156 | 48·2 | + 9·1 | + 1·9 |
| Aug. 1 | No photograph. | | (49 | 323 | 49·0 | + 8·7 | +15·7) |
| 2·472 | 133 | 848 | 77 | 490 | 49·7 | + 8·2 | +29·4 |
| 3·501 | 93 | 394 | 65 | 269 | 49·6 | + 8·0 | +42·9 |
| 4 | No photograph. | | (51 | 235 | 50·0 | + 8·2 | +56·4) |
| 5·492 | 32 | 140 | 37 | 200 | 50·3 | + 8·4 | +69·9 |
| Means ... | ... | ... | 37 | 226 | 47·22 | + 8·33 | ... |
| **Group 167.** One spot. | | | | | | | |
| Aug. 20·715 | 0 | 50 | 0 | 102 | 62·3 | + 9·4 | −76·8 |
| 21·461 | 17 | 91 | 22 | 115 | 62·1 | + 8·5 | −67·2 |
| 22·639 | 33 | 103 | 26 | 82 | 62·0 | + 8·2 | −51·7 |
| 23·505 | 20 | 77 | 13 | 50 | 62·2 | + 8·4 | −40·1 |
| 24·682 | 0 | 58 | 0 | 32 | 62·4 | + 9·1 | −24·3 |
| 25·755 | 0 | 55 | 0 | 28 | 62·6 | + 8·9 | − 9·9 |
| 26·642 | 0 | 38 | 0 | 19 | 62·6 | + 9·0 | + 1·8 |
| 27·537 | 0 | 44 | 0 | 23 | 62·9 | + 9·1 | +13·9 |
| 28·640 | 0 | 23 | 0 | 13 | 62·7 | + 8·9 | +28·3 |
| Means ... | ... | ... | 7 | 52 | 62·42 | + 8·83 | ... |
| **Group 168.** One spot. | | | | | | | |
| Aug. 21·461 | 19 | 126 | 59 | 382 | 48·3 | + 6·9 | −81·0 |
| 22·639 | 40 | 240 | 50 | 300 | 46·7 | + 6·3 | −67·0 |
| 23·505 | 72 | 293 | 62 | 253 | 47·1 | + 6·8 | −55·2 |
| 24·682 | 28 | 248 | 18 | 161 | 47·0 | + 7·5 | −39·7 |
| 25·755 | 36 | 233 | 20 | 129 | 47·4 | + 7·4 | −25·1 |
| 26·642 | 35 | 167 | 18 | 86 | 47·6 | + 7·3 | −13·2 |
| 27·537 | 54 | 256 | 27 | 128 | 47·7 | + 6·9 | − 1·3 |
| 28·640 | 39 | 177 | 20 | 91 | 48·1 | + 7·5 | +13·7 |
| 29·480 | 60 | 233 | 33 | 128 | 47·6 | + 7·3 | +24·3 |
| 30·438 | 37 | 197 | 23 | 123 | 48·1 | + 8·1 | +37·4 |
| 31·440 | 15 | 97 | 12 | 75 | 47·7 | + 7·9 | +50·3 |
| Means ... | ... | ... | 31 | 169 | 47·57 | + 7·26 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 169.** One small spot. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| Aug. 30·438 | 0 | 11 | 0 | 14 | 306·0 | −10·3 | −64·7 |
| Means ... | ... | ... | 0 | 14 | 306·0 | −10·3 | ... |
| **Group 170.** Two small spots. | | | | | | | |
| Sept. 9·414 | 0 | 28 | 0 | 17 | 214·6 | −17·3 | −24·3 |
| 10 | No photograph. | | (0 | 25 | 215·5 | −16·8 | − 8·6) |
| 11·670 | 0 | 59 | 0 | 33 | 216·3 | −16·2 | + 7·2 |
| Means ... | ... | ... | 0 | 25 | 215·47 | −16·77 | ... |
| **Group 171.** Three or four very small spots. | | | | | | | |
| Sept. 14·490 | 20 | 92 | 38 | 173 | 96·0 | +14·8 | −75·9 |
| 15·478 | 5 | 77 | 5 | 76 | 98·3 | +15·2 | −60·5 |
| 16·426 | 0 | 58 | 0 | 43 | 98·5 | +15·1 | −47·8 |
| Means ... | ... | ... | 14 | 97 | 97·60 | +15·03 | ... |
| **Group 172.** Two very small spots. | | | | | | | |
| Sept. 15·478 | 0 | 21 | 0 | 11 | 141·7 | + 6·0 | −17·1 |
| Means ... | ... | ... | 0 | 11 | 141·7 | + 6·0 | ... |
| **Group 173.** One spot surrounded by several very much smaller ones. | | | | | | | |
| Sept. 27·546 | 26 | 158 | 18 | 111 | 317·7 | − 8·4 | −41·9 |
| 28·722 | 42 | 366 | 24 | 213 | 316·8 | − 8·1 | −27·2 |
| 29·467 | 47 | 292 | 25 | 157 | 319·3 | − 8·1 | −14·9 |
| 30·471 | 62 | 232 | 32 | 120 | 318·7 | − 7·8 | − 2·3 |
| Oct. 1·065 | 0 | 148 | 0 | 77 | 318·1 | − 7·8 | + 4·9 |
| 2·423 | 0 | 95 | 0 | 53 | 317·5 | − 7·3 | +22·3 |
| Means ... | ... | ... | 17 | 122 | 318·02 | − 7·92 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 174.** One small spot. The photograph on October 1 is too dense for the group to be seen. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| Sept. 29·467 | 0 | 46 | 0 | 28 | 1·3 | −15·2 | +27·1 |
| 30·471 | 0 | 19 | 0 | 14 | 3·8 | −15·8 | +42·8 |
| Oct. 1·065 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 2·423 | 0 | 12 | 0 | 20 | 4·9 | −14·9 | +69·7 |
| Means ... | ... | ... | 0 | 16 | 3·33 | −15·30 | ... |
| **Group 175.** Two spots. | | | | | | | |
| Oct. 2·423 | 52 | 319 | 27 | 166 | 299·9 | − 8·2 | + 4·7 |
| 3 | No photograph. | | (23 | 155 | 299·9 | − 8·3 | +19·8) |
| 4·715 | 30 | 226 | 19 | 143 | 299·8 | − 8·3 | +34·8 |
| 5·566 | 36 | 112 | 27 | 85 | 300·7 | − 7·0 | +46·9 |
| 6·423 | 14 | 74 | 14 | 73 | 300·3 | − 7·4 | +57·8 |
| 7·439 | 0 | 13 | 0 | 20 | 299·6 | − 7·6 | +70·5 |
| Means ... | ... | ... | 18 | 107 | 300·03 | − 7·80 | ... |
| **Group 176.** Two small spots close together. | | | | | | | |
| Oct. 5·566 | 0 | 21 | 0 | 16 | 302·1 | +15·6 | +48·3 |
| 6·423 | 0 | 11 | 0 | 11 | 302·1 | +15·3 | +59·6 |
| Means ... | ... | ... | 0 | 14 | 302·10 | +15·45 | ... |
| **Group 177.** A scattered cluster of very small spots. | | | | | | | |
| Oct. 5·566 | 0 | 50 | 0 | 27 | 275·2 | +12·4 | +21·4 |
| 6·423 | 0 | 20 | 0 | 12 | 277·8 | +11·6 | +35·3 |
| 7·439 | 47 | 170 | 34 | 122 | 275·2 | +12·4 | +46·1 |
| 8·705 | 0 | 50 | 0 | 58 | 277·5 | +11·2 | +65·2 |
| 9·415 | 0 | 11 | 0 | 20 | 278·1 | +11·6 | +75·1 |
| Means ... | ... | ... | 7 | 48 | 276·76 | +11·84 | ... |
| **Group 178.** Two very small spots. On October 10 one of the two spots has disappeared. | | | | | | | |
| Oct. 9·415 | 0 | 23 | 0 | 12 | 215·2 | 0·0 | +12·2 |
| 10·457 | 11 | 57 | 6 | 32 | 214·5 | + 0·6 | +25·3 |
| Means ... | ... | ... | 3 | 22 | 214·85 | + 0·30 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued*

### Group 178*.

A short stream.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° ′ | ° |
| Oct. 18·213 | 0 | 37 | 0 | 39 | 146·5 | −11·6 | +59·5 |
| Means ... | ... | ... | 0 | 39 | 146·5 | −11·6 | ... |

### Group 179.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 21·402 | 0 | 43 | 0 | 22 | 37·6 | +11·2 | − 7·3 |
| Means ... | ... | ... | 0 | 22 | 37·6 | +11·2 | ... |

### Group 180.

One large spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 25·476 | 75 | 419 | 90 | 505 | 285·3 | +10·8 | −65·9 |
| 26·415 | 61 | 376 | 52 | 319 | 284·9 | +11·0 | −53·9 |
| 27·112 | 89 | 592 | 62 | 414 | 285·0 | +10·4 | −44·5 |
| 28·066 | 97 | 563 | 58 | 335 | 284·7 | +10·7 | −32·3 |
| 29·042 | 85 | 831 | 45 | 442 | 285·1 | +11·2 | −19·0 |
| 30 | No photograph. | | (52 | 424 | 285·0 | +11·3 | − 3·1) |
| 31 | No photograph. | | (59 | 405 | 285·0 | +11·5 | +12·8) |
| Nov. 1·665 | 113 | 672 | 65 | 386 | 284·9 | +11·6 | +28·6 |
| 2·386 | 130 | 479 | 83 | 305 | 284·8 | +10·7 | +38·0 |
| 3·753 | 57 | 388 | 50 | 343 | 284·5 | +10·9 | +55·7 |
| Means ... | ... | ... | 62 | 388 | 284·92 | +11·01 | ... |

### Group 180*.

A regular spot with a small companion on October 28.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 27·112 | 8 | 29 | 5 | 18 | 4·4 | +13·8 | +34·9 |
| 28·066 | 12 | 61 | 9 | 46 | 5·1 | +14·2 | +48·1 |
| 29·042 | 0 | 32 | 0 | 33 | 5·9 | +14·2 | +61·8 |
| Means ... | ... | ... | 5 | 32 | 5·13 | +14·07 | ... |

### Group 181.

One small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 15·415 | 0 | 7 | 0 | 9 | 142·0 | +17·1 | +66·9 |
| Means ... | ... | ... | 0 | 9 | 142·0 | +17·1 | ... |

### Group 182.

A stream of spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1875. d | | | | | ° | ° | ° |
| Nov. 18·410 | 76 | 307 | 49 | 197 | 358·0 | − 7·7 | −37·6 |
| 19·401 | 57 | 325 | 32 | 182 | 357·7 | − 7·2 | −24·8 |
| 20·539 | 104 | 391 | 53 | 201 | 359·3 | − 7·0 | − 8·2 |
| 21 | No photograph. | | (46 | 184 | 359·5 | − 6·9 | + 4·5) |
| 22·429 | 72 | 312 | 38 | 166 | 359·7 | − 6·7 | +17·1 |
| 23·498 | 57 | 226 | 34 | 136 | 1·0 | − 6·9 | +32·5 |
| 24 | No photograph. | | (32 | 143 | 2·6 | − 6·2 | +47·7) |
| 25·572 | 26 | 134 | 29 | 149 | 4·1 | − 5·4 | +62·9 |
| 26·082 | 9 | 86 | 13 | 125 | 4·0 | − 4·9 | +69·6 |
| 27·077 | 0 | 42 | 0 | 134 | 2·5 | − 4·7 | +81·2 |
| Means ... | ... | ... | 33 | 162 | 0·84 | − 6·36 | ... |

### Group 183.

Cluster of two or three small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 19·401 | 10 | 51 | 7 | 36 | 338·3 | +10·7 | −44·2 |
| 20·539 | 23 | 110 | 13 | 63 | 339·7 | +10·4 | −27·8 |
| 21 | No photograph. | | ( 9 | 41 | 339·7 | +10·7 | −15·4) |
| 22·429 | 10 | 35 | 5 | 18 | 339·7 | +10·9 | − 2·9 |
| 23·498 | 0 | 19 | 0 | 10 | 341·4 | +10·1 | +12·9 |
| Means ... | ... | ... | 7 | 34 | 339·76 | +10·56 | ... |

### Group 183*.

Four very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 25·572 | 0 | 40 | 0 | 21 | 308·3 | +15·0 | + 7·1 |
| 26·082 | 0 | 15 | 0 | 8 | 307·6 | +14·5 | +13·2 |
| Means ... | ... | ... | 0 | 15 | 307·95 | +14·75 | ... |

### Group 184.

Two large spots, with several very small ones between them. A somewhat scattered group. The group breaks up into two on November 23.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 20·539 | 21 | 93 | 23 | 101 | 305·4 | − 8·2 | −62·1 |
| 21 | No photograph. | | (43 | 184 | 306·1 | − 8·1 | −49·0) |
| 22·429 | 101 | 427 | 63 | 267 | 306·7 | − 7·9 | −35·9 |
| 23·498 | 116 | 496 | 63 | 269 | 308·5 | − 8·0 | −20·0 |
| 24 | No photograph. | | (52 | 254 | 308·9 | − 7·7 | − 6·0) |
| 25·572 | 78 | 465 | 40 | 239 | 309·2 | − 7·3 | + 8·0 |
| 26·082 | 50 | 304 | 26 | 159 | 309·2 | − 7·2 | +14·8 |
| 27·077 | 40 | 325 | 23 | 188 | 310·1 | − 6·6 | +28·8 |
| 28 | No photograph. | | (29 | 219 | 310·4 | − 6·3 | +42·4) |
| 29·096 | 39 | 276 | 35 | 249 | 310·7 | − 6·0 | +55·9 |
| 30·108 | 25 | 168 | 35 | 234 | 310·2 | − 5·8 | +68·8 |
| Means ... | ... | ... | 39 | 215 | 308·67 | − 7·19 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 185.** Single spot. | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| Nov. 20·539 | 0 | 21 | 0 | 81 | 284·7 | +11·6 | −82·8 |
| 21 | No photograph. | | (10 | 69 | 285·5 | +11·7 | −69·6) |
| 22·429 | 21 | 61 | 19 | 56 | 286·2 | +11·8 | −56·4 |
| 23·498 | 16 | 91 | 11 | 62 | 286·2 | +11·5 | −42·3 |
| 24 | No photograph. | | (13 | 51 | 286·2 | +11·4 | −28·7) |
| 25·572 | 29 | 76 | 15 | 40 | 286·1 | +11·3 | −15·1 |
| 26·082 | 8 | 74 | 4 | 38 | 285·8 | +11·3 | − 8·6 |
| 27·077 | 0 | 16 | 0 | 8 | 285·6 | +11·6 | + 4·3 |
| Means ... | ... | ... | 9 | 51 | 285·79 | +11·53 | ... |
| **Group 186.** One small spot. | | | | | | | |
| Dec. 14·449 | 0 | 21 | 0 | 11 | 58·4 | +16·2 | + 6·0 |
| Means ... | ... | ... | 0 | 11 | 58·4 | +16·2 | ... |
| **Group 187.** One small spot. | | | | | | | |
| Dec. 14·449 | 0 | 14 | 0 | 10 | 8·3 | − 6·0 | −44·1 |
| Means ... | ... | ... | 0 | 10 | 8·3 | − 6·0 | ... |
| **Group 188.** Group of three or four spots ranged in a line. | | | | | | | |
| Dec. 17·497 | 42 | 134 | 22 | 70 | 357·3 | − 7·1 | −15·0 |
| 18·026 | 32 | 207 | 16 | 105 | 358·9 | − 6·8 | − 6·5 |
| 19 | No photograph. | | (8 | 88 | 359·0 | − 6·6 | + 7·4) |
| **Group 188—*continued.*** | | | | | | | |
| 1875. d | | | | | ° | ° | ° |
| Dec. 20·108 | 0 | 131 | 0 | 71 | 359·0 | − 6·3 | +21·2 |
| 21·081 | 0 | 38 | 0 | 23 | 359·8 | − 6·0 | +34·8 |
| 22·063 | 0 | 17 | 0 | 12 | 357·8 | − 6·1 | +45·7 |
| 23·550 | 0 | 22 | 0 | 27 | 358·6 | − 6·3 | +66·1 |
| Means ... | ... | ... | 7 | 57 | 358·63 | − 6·46 | ... |
| **Group 189.** One large spot. | | | | | | | |
| Dec. 15·074 | 13 | 114 | 39 | 345 | 323·7 | −12·9 | −80·5 |
| 16·071 | 30 | 287 | 41 | 388 | 323·0 | −12·7 | −68·1 |
| 17·497 | 69 | 465 | 54 | 366 | 322·4 | −11·4 | −49·9 |
| 18·026 | 52 | 467 | 36 | 322 | 322·8 | −12·3 | −42·6 |
| 19 | No photograph. | | (26 | 200 | 322·9 | −11·8 | −28·7) |
| 20·108 | 31 | 340 | 16 | 178 | 323·0 | −11·3 | −14·8 |
| 21·081 | 49 | 341 | 25 | 174 | 322·3 | −11·1 | − 2·7 |
| 22·063 | 56 | 297 | 29 | 154 | 323·2 | −10·8 | +11·1 |
| 23·550 | 52 | 277 | 30 | 161 | 322·3 | −10·2 | +29·8 |
| 24·540 | 26 | 119 | 18 | 84 | 323·7 | −10·6 | +44·2 |
| Means ... | ... | ... | 31 | 237 | 322·93 | −11·51 | ... |
| **Group 189*.** A small spot. | | | | | | | |
| Dec. 30·087 | 3 | 34 | 3 | 33 | 265·2 | − 7·7 | +58·7 |
| Means ... | ... | ... | 3 | 33 | 265·20 | − 7·70 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 190.

Scattered group of very faint small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1876. d | | | | | ° | ° | ° |
| Jan. 5·487 | 0 | 24 | 0 | 16 | 81·6 | − 5·1 | −40·6 |
| Means ... | ... | ... | 0 | 16 | 81·6 | − 5·1 | ... |

### Group 190*.

A short stream.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 11·072 | 6 | 59 | 3 | 31 | 59·2 | +10·1 | +10·6 |
| 12·052 | 0 | 42 | 0 | 24 | 60·5 | +10·4 | +24·8 |
| Means ... | ... | ... | 2 | 28 | 59·85 | +10·25 | ... |

### Group 191.

Scattered group, but with two principal spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 18·526 | 11 | 47 | 6 | 26 | 330·5 | +11·2 | +20·0 |
| 19·503 | 68 | 262 | 42 | 162 | 329·5 | +12·2 | +31·9 |
| 20·711 | 0 | 200 | 0 | 153 | 327·5 | +12·8 | +45·8 |
| 21·723 | 0 | 109 | 0 | 111 | 326·7 | +12·8 | +58·4 |
| 22·472 | 4 | 192 | 6 | 291 | 327·5 | +11·7 | +69·0 |
| Means ... | ... | ... | 11 | 149 | 328·34 | +12·14 | ... |

### Group 192.

Single large spot, but several smaller spots are seen on January 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 18·526 | 32 | 176 | 49 | 266 | 239·2 | −10·7 | −71·3 |
| 19·503 | 109 | 684 | 105 | 658 | 238·5 | −11·1 | −59·1 |
| 20·711 | 99 | 521 | 67 | 352 | 239·7 | −12·0 | −42·0 |
| 21·723 | 82 | 524 | 47 | 301 | 239·8 | −11·9 | −28·5 |
| 22·472 | 100 | 500 | 53 | 266 | 239·7 | −11·7 | −18·8 |
| 23·521 | 89 | 496 | 45 | 252 | 239·7 | −12·0 | − 5·0 |
| 24·466 | 94 | 478 | 48 | 244 | 239·6 | −12·1 | + 7·4 |
| 25·511 | 85 | 457 | 46 | 247 | 239·7 | −12·3 | +21·2 |
| 26·688 | 0 | 217 | 0 | 135 | 239·4 | −12·4 | +36·4 |
| 27·496 | 27 | 150 | 20 | 110 | 239·6 | −13·4 | +47·2 |
| 28·099 | 10 | 60 | 9 | 52 | 239·3 | −12·5 | +54·8 |
| 29·445 | 0 | 41 | 0 | 68 | 239·8 | −13·9 | +73·1 |
| Means ... | ... | ... | 41 | 246 | 239·50 | −12·17 | ... |

### Group 193.

Scattered group of small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1876. d | | | | | ° | ° | ° |
| Jan. 20·711 | 0 | 156 | 0 | 138 | 225·8 | −13·9 | −55·9 |
| 21·723 | 0 | 66 | 0 | 45 | 225·8 | −13·3 | −42·5 |
| 22·472 | 0 | 20 | 0 | 12 | 226·6 | −12·2 | −31·9 |
| 23·521 | 0 | 25 | 0 | 13 | 226·9 | −12·7 | −17·8 |
| Means ... | ... | ... | 0 | 52 | 226·28 | −13·03 | ... |

### Group 194.

Scattered group of small spots. A change of shape is seen on January 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 21·723 | 10 | 115 | 5 | 59 | 274·2 | −13·8 | + 5·9 |
| 22·472 | 0 | 25 | 0 | 13 | 270·9 | −15·3 | +12·4 |
| 23·521 | 22 | 219 | 13 | 132 | 277·7 | −14·6 | +33·0 |
| 24·466 | 109 | 454 | 78 | 320 | 276·5 | −15·2 | +44·3 |
| 25·511 | 74 | 348 | 71 | 335 | 277·5 | −15·1 | +59·0 |
| 26·688 | 0 | 85 | 0 | 118 | 272·6 | −15·5 | +69·6 |
| 27·496 | 0 | 39 | 0 | 96 | 271·8 | −17·0 | +79·4 |
| Means ... | ... | ... | 24 | 153 | 274·46 | −15·21 | ... |

### Group 195.

Single spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 29·445 | 0 | 25 | 0 | 62 | 87·9 | − 7·7 | −78·8 |
| 30 | No photograph. | | (5 | 49 | 88·2 | − 7·8 | −65·4) |
| 31·452 | 12 | 43 | 10 | 35 | 88·4 | − 7·9 | −51·9 |
| Feb. 1 | No photograph. | | (8 | 30 | 88·3 | − 8·0 | −38·5) |
| 2·514 | 9 | 45 | 5 | 25 | 88·2 | − 8·0 | −25·1 |
| 3 | No photograph. | | (3 | 16 | 88·3 | − 8·3 | −12·2) |
| 4·457 | 2 | 12 | 1 | 6 | 88·3 | − 8·5 | + 0·7 |
| Means ... | ... | ... | 5 | 32 | 88·23 | − 8·03 | ... |

### Group 196.

Single large spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 10·445 | 4 | 106 | 14 | 377 | 285·8 | −11·6 | −82·9 |
| 11 | No photograph. | | (59 | 512 | 285·4 | −12·5 | −68·6) |
| 12·679 | 123 | 763 | 104 | 647 | 285·1 | −13·4 | −54·2 |
| 13·559 | 225 | 1029 | 152 | 695 | (285·2 | −13·2 | −41·7) |
| 14·564 | 259 | 1209 | 149 | 695 | 285·2 | −12·9 | −29·2 |
| 15·083 | 178 | 1181 | 97 | 642 | 285·5 | −13·0 | −22·1 |
| 16·674 | 213 | 1415 | 107 | 711 | (285·7 | −13·1 | − 8·6) |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 196—*continued.*** | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Feb. 17·108 | 232 | 1388 | 117 | 701 | 285·9 | −13·3 | + 4·9 |
| 18·414 | 194 | 944 | 106 | 516 | 286·4 | −13·7 | +22·6 |
| 19·532 | 180 | 860 | 113 | 541 | 286·5 | −13·8 | +37·4 |
| 20 | No photograph. | | (70 | 471 | 286·4 | −13·5 | +51·5) |
| 21·689 | 22 | 341 | 26 | 401 | 286·2 | −13·1 | +65·6 |
| 22·446 | 41 | 184 | 74 | 334 | 285·7 | −14·3 | +75·0 |
| Means ... | ... | ... | 91 | 557 | 285·77 | −13·18 | ... |
| **Group 197.** Somewhat scattered group of very small spots. | | | | | | | |
| Feb. 26·425 | 24 | 139 | 17 | 97 | 117·2 | + 9·9 | −41·1 |
| 27 | No photograph. | | (17 | 81 | 117·2 | + 9·6 | −27·1) |
| 28·558 | 32 | 121 | 17 | 65 | 117·1 | + 9·3 | −13·1 |
| 29·593 | 17 | 153 | 9 | 80 | 115·9 | + 9·5 | − 0·6 |
| Mar. 1·074 | 17 | 243 | 9 | 128 | 117·2 | + 9·3 | + 7·1 |
| Means ... | ... | ... | 14 | 90 | 116·92 | + 9·52 | ... |
| **Group 198.** Single small spot. | | | | | | | |
| Mar. 1·074 | 26 | 125 | 15 | 72 | 80·0 | − 5·6 | −30·1 |
| 2·595 | 4 | 32 | 2 | 16 | 81·5 | − 5·2 | − 8·6 |
| Means ... | ... | ... | 9 | 44 | 80·75 | − 5·40 | ... |
| **Group 198*.** A few very small spots, not far apart, some of which disappear on March 7. | | | | | | | |
| Mar. 6·411 | 24 | 58 | 16 | 39 | 79·0 | + 7·1 | +39·1 |
| 7·410 | 8 | 30 | 7 | 26 | 79·8 | + 7·2 | +53·1 |
| Means ... | ... | ... | 12 | 33 | 79·40 | + 7·15 | ... |
| **Group 199.** Single spot. | | | | | | | |
| Mar. 9·425 | 8 | 53 | 15 | 100 | 284·7 | −10·9 | −75·5 |
| 10·545 | 18 | 85 | 18 | 86 | 284·2 | −11·4 | −61·2 |
| 11·478 | 19 | 88 | 14 | 66 | 284·7 | −11·5 | −48·4 |
| 12 | No photograph. | | (16 | 62 | 284·7 | −11·7 | −34·2) |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 199—*continued.*** | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Mar. 13·633 | 34 | 108 | 18 | 58 | 284·7 | −11·9 | −20·0 |
| 14·560 | 33 | 112 | 17 | 57 | 284·7 | −11·8 | − 7·8 |
| 15·565 | 20 | 73 | 10 | 37 | 285·1 | −11·2 | + 5·9 |
| 16·448 | 4 | 32 | 2 | 17 | 284·5 | −12·4 | +16·9 |
| 17·474 | 0 | 22 | 0 | 13 | 284·7 | −12·5 | +30·6 |
| 18·511 | 0 | 13 | 0 | 9 | 284·6 | −12·8 | +44·2 |
| Means ... | ... | ... | 11 | 51 | 284·66 | −11·81 | ... |
| **Group 200.** Scattered group. A great change is seen on March 17. | | | | | | | |
| Mar. 13·633 | 36 | 170 | 45 | 215 | 241·2 | +15·1 | −63·5 |
| 14·560 | 55 | 199 | 49 | 176 | 241·4 | +16·1 | −51·1 |
| 15·565 | 58 | 177 | 40 | 123 | 241·0 | +15·2 | −38·2 |
| 16·448 | 85 | 302 | 52 | 185 | 239·8 | +15·6 | −27·8 |
| 17·474 | 35 | 273 | 20 | 154 | 237·8 | +15·2 | −16·3 |
| 18·511 | 30 | 104 | 16 | 56 | 241·3 | +15·0 | + 0·9 |
| 19·688 | 4 | 101 | 2 | 57 | 240·3 | +14·5 | +15·4 |
| 20·485 | 8 | 84 | 5 | 50 | 240·7 | +13·0 | +26·3 |
| 21·117 | 5 | 46 | 3 | 30 | 240·1 | +14·4 | +34·0 |
| Means ... | ... | ... | 26 | 116 | 240·40 | +14·90 | ... |
| **Group 201.** Small group, principally consisting of one spot, the smaller spots disappearing on March 20. | | | | | | | |
| Mar. 15·565 | 0 | 7 | 0 | 8 | 214·5 | − 6·2 | −64·7 |
| 16·448 | 10 | 53 | 8 | 43 | 215·4 | − 5·7 | −52·2 |
| 17·474 | 88 | 341 | 57 | 220 | 214·6 | − 6·3 | −39·5 |
| 18·511 | 77 | 238 | 43 | 132 | 215·0 | − 6·1 | −25·4 |
| 19·688 | 80 | 239 | 41 | 122 | 215·1 | − 6·7 | − 9·8 |
| 20·485 | 32 | 96 | 16 | 48 | 220·2 | − 6·3 | + 5·8 |
| 21·117 | 10 | 54 | 5 | 28 | 219·7 | − 6·2 | +13·6 |
| 22·534 | 8 | 27 | 5 | 16 | 220·1 | − 6·4 | +32·5 |
| 23·652 | 0 | 30 | 0 | 22 | 219·8 | − 6·7 | +47·2 |
| 24·456 | 0 | 15 | 0 | 14 | 220·4 | − 7·0 | +58·4 |
| Means ... | ... | ... | 18 | 65 | 217·48 | − 6·36 | ... |
| **Group 202.** Single spot. | | | | | | | |
| Mar. 17·474 | 1 | 21 | 1 | 18 | 198·8 | −13·2 | −55·3 |
| 18·511 | 0 | 16 | 0 | 10 | 201·4 | −13·1 | −39·0 |
| Means ... | ... | ... | 1 | 14 | 200·10 | −13·15 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 203.** Scattered group. | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Mar. 18·511 | 2 | 92 | 3 | 121 | 172·1 | − 8·9 | −68·3 |
| 19·688 | 59 | 279 | 48 | 229 | 172·2 | −10·2 | −52·7 |
| 20·485 | 61 | 210 | 40 | 137 | 174·2 | − 9·0 | −40·2 |
| 21·117 | 28 | 177 | 14 | 90 | 175·2 | − 9·5 | −30·9 |
| 22·534 | 23 | 122 | 12 | 63 | 174·9 | − 7·9 | −12·7 |
| 23·652 | 0 | 38 | 0 | 19 | 177·8 | − 6·6 | + 5·2 |
| Means ... | ... | ... | 20 | 110 | 174·40 | − 8·68 | ... |
| **Group 204.** Scattered group, consisting principally of two large spots. | | | | | | | |
| Mar. 20·485 | 40 | 171 | 64 | 275 | 145·0 | +13·9 | −69·4 |
| 21·117 | 35 | 271 | 37 | 292 | 146·8 | +13·2 | −59·3 |
| 22·534 | 236 | 785 | 157 | 522 | 152·1 | +14·9 | −35·5 |
| 23·652 | 89 | 714 | 51 | 415 | 151·8 | +14·5 | −20·8 |
| 24·456 | 164 | 863 | 89 | 469 | 153·9 | +14·8 | − 8·1 |
| 25·414. | 148 | 818 | 80 | 442 | 153·9 | +14·9 | + 4·5 |
| 26 | No photograph. | | (57 | 396 | 155·2 | +14·8 | +11·8) |
| 27·087 | 53 | 560 | 33 | 350 | 156·4 | +14·6 | +19·1 |
| 28·673 | 9 | 304 | 6 | 266 | 157·5 | +14·7 | +51·1 |
| 29·589 | 50 | 182 | 71 | 257 | 160·5 | +15·1 | +66·2 |
| 30·466 | 15 | 72 | 39 | 189 | 159·6 | +14·8 | +76·9 |
| Means ... | ... | ... | 62 | 352 | 153·88 | +14·56 | ... |
| **Group 205.** Single small spot. | | | | | | | |
| Mar. 22·534 | 8 | 24 | 8 | 24 | 128·8 | + 7·8 | −58·8 |
| 23·652 | 1 | 38 | 1 | 27 | 129·4 | + 7·5 | −43·2 |
| 24·456 | 13 | 47 | 8 | 29 | 129·6 | + 8·0 | −32·4 |
| 25·414 | 15 | 31 | 8 | 17 | 130·2 | + 8·3 | −19·2 |
| Means ... | ... | ... | 6 | 24 | 129·50 | + 7·90 | ... |
| **Group 205*.** A small spot following Group 204. | | | | | | | |
| Mar. 29·589 | 2 | 21 | 2 | 18 | 145·3 | +13·6 | +51·0 |
| 30·466 | 0 | 12 | 0 | 14 | 144·9 | +13·0 | +62·2 |
| Means ... | ... | ... | 1 | 16 | 145·10 | +13·30 | ... |
| **Group 206.** Very small single spot. | | | | | | | |
| Apr. 4·412 | 0 | 4 | 0 | 4 | 318·5 | −14·0 | −59·0 |
| Means ... | ... | ... | 0 | 4 | 318·5 | −14·0 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 206*.** A group only seen close to the west limb. | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Apr. 6·676 | 0 | 35 | 0 | 99 | 266·3 | −19·5 | −81·3 |
| Means ... | ... | ... | 0 | 99 | 266·3 | −19·5 | ... |
| **Group 207.** Very small single spot. | | | | | | | |
| Apr. 8·527 | 0 | 29 | 0 | 19 | 287·8 | +14·0 | −35·4 |
| 9·555 | 0 | 16 | 0 | 9 | 288·5 | +13·9 | −21·1 |
| Means ... | ... | ... | 0 | 14 | 288·15 | +13·95 | ... |
| **Group 208.** Group of small spots. | | | | | | | |
| Apr. 9·555 | 0 | 8 | 0 | 7 | 260·1 | +12·2 | −49·5 |
| 10·667 | 0 | 67 | 0 | 43 | 260·0 | +11·5 | −34·9 |
| 11·453 | 0 | 51 | 0 | 30 | 258·5 | +11·3 | −26·0 |
| 12·682 | 11 | 122 | 6 | 65 | 259·3 | +11·7 | − 9·0 |
| 13·051 | 0 | 29 | 0 | 15 | 259·7 | +11·3 | − 3·7 |
| Means ... | ... | ... | 1 | 32 | 259·52 | +11·60 | ... |
| **Group 208*.** Group consisting mainly of one small spot. | | | | | | | |
| Apr. 14·611 | 22 | 86 | 12 | 46 | 221·7 | − 6·5 | −21·1 |
| 15·508 | 14 | 47 | 7 | 24 | 221·1 | − 6·1 | − 9·9 |
| 16·537 | 0 | 16 | 0 | 8 | 217·7 | − 6·5 | + 0·3 |
| Means ... | ... | ... | 6 | 26 | 220·17 | − 6·37 | ... |
| **Group 208†.** A short stream of small spots. | | | | | | | |
| Apr. 13·051 | 12 | 51 | 6 | 26 | 272·4 | + 2·6 | + 9·0 |
| Means ... | ... | ... | 6 | 26 | 272·4 | + 2·6 | ... |
| **Group 208‡.** A small faint spot. | | | | | | | |
| Apr. 17·662 | 0 | 115 | 0 | 59 | 191·0 | − 3·2 | −11·5 |
| 18·558 | 0 | 38 | 0 | 19 | 192·1 | − 3·1 | + 1·4 |
| Means ... | ... | ... | 0 | 39 | 191·55 | − 3·15 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 209.** Fairly large spot, with a small one at a little distance, the latter almost disappearing on May 10. | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| May 7·589 | 73 | 250 | 67 | 229 | 242·6 | −13·6 | −56·6 |
| 8·468 | 71 | 248 | 50 | 176 | 243·3 | −13·3 | −44·3 |
| 9·483 | 57 | 265 | 34 | 158 | 243·1 | −13·7 | −31·1 |
| 10·463 | 52 | 213 | 28 | 112 | 244·3 | −14·0 | −16·9 |
| 11·475 | 43 | 174 | 22 | 89 | 245·3 | −14·2 | − 2·5 |
| 12·576 | 52 | 206 | 27 | 108 | 245·6 | −14·6 | +12·3 |
| 13·451 | 39 | 189 | 22 | 106 | 245·6 | −15·0 | +23·9 |
| 14 | No photograph. | | (11 | 58 | 245·6 | −15·1 | +37·9) |
| 15·563 | 0 | 11 | 0 | 9 | 245·5 | −15·2 | +51·8 |
| Means ... | ... | ... | 29 | 116 | 244·54 | −14·30 | ... |
| **Group 209*.** A small group. | | | | | | | |
| May 25·588 | 0 | 33 | 0 | 55 | 348·7 | −10·0 | −72·4 |
| 26·639 | 0 | 33 | 0 | 31 | 349·6 | − 9·3 | −57·6 |
| 27·589 | 6 | 34 | 4 | 24 | 350·3 | − 9·2 | −44·3 |
| Means ... | ... | ... | 1 | 37 | 349·53 | − 9·50 | ... |
| **Group 210.** Single small spot. | | | | | | | |
| June 21·440 | 0 | 29 | 0 | 40 | 357·2 | + 0·6 | −68·5 |
| 22·575 | 8 | 26 | 7 | 22 | 357·8 | − 0·7 | −52·9 |
| 23·580 | 9 | 39 | 6 | 25 | 357·9 | − 0·5 | −39·4 |
| 24·689 | 0 | 38 | 0 | 21 | 358·4 | − 0·8 | −24·3 |
| Means ... | ... | ... | 3 | 27 | 357·83 | − 0·35 | ... |
| **Group 210.*** A very small spot. | | | | | | | |
| June 26·432 | 0 | 11 | 0 | 6 | 25·5 | − 7·9 | +25·9 |
| Means ... | ... | ... | 0 | 6 | 25·5 | − 7·9 | ... |
| **Group 210†.** A short stream of spots. | | | | | | | |
| June 27·580 | 0 | 70 | 0 | 58 | 37·1 | + 6·9 | +52·7 |
| 28·586 | 12 | 58 | 15 | 76 | 38·6 | + 6·1 | +67·5 |
| 29·094 | 31 | 126 | 50 | 209 | 37·2 | + 6·8 | +72·8 |
| Means ... | ... | ... | 22 | 114 | 37·63 | + 6·60 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 211.** Group of small spots. | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| July 3·599 | 22 | 90 | 16 | 64 | 308·0 | −11·2 | +43·2 |
| 4·566 | 0 | 56 | 0 | 54 | 309·5 | −10·6 | +57·6 |
| Means ... | ... | ... | 8 | 59 | 308·75 | −10·90 | ... |
| **Group 212.** Group consisting mainly of three fairly large spots, of which two disappear on July 7. | | | | | | | |
| July 3·599 | 72 | 323 | 67 | 299 | 208·4 | − 6·7 | −56·4 |
| 4·566 | 28 | 276 | 20 | 196 | 208·2 | − 7·5 | −43·7 |
| 5·578 | 41 | 233 | 24 | 138 | 207·9 | − 6·4 | −30·7 |
| 6·573 | 19 | 126 | 10 | 67 | 208·4 | − 6·0 | −17·1 |
| 7·407 | 31 | 127 | 16 | 65 | 208·9 | − 5·5 | − 5·5 |
| 8·463 | 35 | 88 | 18 | 46 | 212·0 | − 8·0 | +11·6 |
| 9 | No photograph. | | (12 | 35 | 211·5 | − 7·6 | +24·9) |
| 10·545 | 9 | 35 | 6 | 23 | 210·9 | − 7·2 | +38·1 |
| Means ... | ... | ... | 22 | 109 | 209·53 | − 6·86 | ... |
| **Group 213.** Group of small spots. | | | | | | | |
| July 7·407 | 0 | 17 | 0 | 10 | 181·7 | + 0·4 | −32·7 |
| 8·463 | 23 | 139 | 12 | 73 | 183·0 | − 0·3 | −17·4 |
| 9 | No photograph. | | (6 | 39 | 182·7 | − 0·2 | − 4·0) |
| 10·545 | 0 | 8 | 0 | 4 | 182·3 | 0·0 | + 9·5 |
| 11·575 | 0 | 44 | 0 | 25 | 186·7 | − 1·9 | +27·5 |
| Means ... | ... | ... | 4 | 30 | 183·28 | − 0·40 | ... |
| **Group 214.** Single small spot. | | | | | | | |
| July 6·573 | 0 | 56 | 0 | 56 | 165·1 | + 9·3 | −60·4 |
| 7·407 | 0 | 14 | 0 | 11 | 165·3 | + 9·7 | −49·1 |
| 8·463 | 5 | 8 | 3 | 5 | 165·2 | + 9·7 | −35·2 |
| Means ... | ... | ... | 1 | 24 | 165·20 | + 9·57 | ... |
| **Group 215.** Single small spot. | | | | | | | |
| July 19·591 | 0 | 64 | 0 | 58 | 356·6 | + 3·0 | −56·5 |
| 20·571 | 9 | 52 | 6 | 36 | 356·7 | + 2·6 | −43·5 |
| 21·594 | 0 | 14 | 0 | 8 | 357·3 | + 2·3 | −29·4 |
| 22·451 | 0 | 17 | 0 | 9 | 357·9 | + 2·4 | −17·4 |
| Means ... | ... | ... | 2 | 28 | 357·13 | + 2·58 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 216.** Single small spot. | | | | | | | |
| 1876. d | | | | | ° | ° ′ | ° |
| July 20·571 | 9 | 23 | 9 | 22 | 342·1 | − 7·4 | −58·1 |
| 21·594 | 0 | 6 | 0 | 4 | 343·2 | − 7·5 | −43·5 |
| Means ... | ... | ... | 5 | 13 | 342·65 | − 7·45 | ... |
| **Group 217.** Single spot. It is not seen on July 29 but a number of spots in a short stream mark its place on July 31. | | | | | | | |
| July 21·594 | 19 | 71 | 32 | 121 | 315·1 | −10·3 | −71·6 |
| 22·451 | 22 | 96 | 23 | 102 | 315·0 | − 9·9 | −60·3 |
| 23 | No photograph. | | (17 | 90 | 315·1 | −10·5 | −46·1) |
| 24·580 | 18 | 127 | 11 | 78 | 315·2 | −11·1 | −31·9 |
| 25·493 | 39 | 179 | 22 | 100 | 314·7 | −10·5 | −20·4 |
| 26·495 | 36 | 126 | 19 | 66 | 315·1 | −10·7 | − 6·7 |
| 27·433 | 31 | 80 | 16 | 42 | 315·3 | −11·0 | + 5·9 |
| 28·587 | 0 | 30 | 0 | 17 | 315·7 | −10·5 | +21·6 |
| 29·578 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 30 | No photograph. | | (0 | 0 | ... | ... | ...) |
| 31·116 | 8 | 81 | 7 | 72 | 313·9 | −10·4 | +53·2 |
| Means ... | ... | ... | 13 | 63 | 315·01 | −10·54 | ... |
| **Group 218.** Single small spot. | | | | | | | |
| Aug. 7·460 | 0 | 74 | 0 | 87 | 229·2 | +10·1 | +65·6 |
| Means ... | ... | ... | 0 | 87 | 229·20 | +10·10 | ... |
| **Group 219.** Two spots. | | | | | | | |
| Aug. 16·499 | 0 | 50 | 0 | 41 | 354·1 | − 8·1 | −50·0 |
| 17·465 | 70 | 193 | 46 | 127 | 353·3 | − 7·2 | −38·0 |
| 18·681 | 16 | 199 | 9 | 111 | 353·2 | − 7·0 | −22·1 |
| 19·686 | 19 | 153 | 10 | 80 | 353·1 | − 7·4 | − 8·8 |
| Means ... | ... | ... | 16 | 90 | 353·43 | − 7·43 | ... |
| **Group 220.** Only one spot is seen at first, but a second of equal size appears on August 25. | | | | | | | |
| Aug. 22·587 | 7 | 79 | 4 | 45 | 300·5 | − 9·1 | −23·1 |
| 23·403 | 22 | 74 | 12 | 40 | 299·2 | − 9·4 | −13·7 |
| 24 | No photograph. | | (23 | 69 | 300·4 | − 9·3 | + 1·9) |
| 25·586 | 62 | 177 | 34 | 97 | 301·5 | − 9·2 | +17·5 |
| 26·739 | 11 | 129 | 7 | 83 | 303·5 | −10·4 | +34·7 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 220—*continued.*** | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Aug. 27 | No photograph. | | (7 | 86 | 303·1 | −10·5 | +46·5) |
| 28·588 | 7 | 87 | 7 | 89 | 302·6 | −10·6 | +58·2 |
| 29·481 | 0 | 18 | 0 | 27 | 300·9 | − 9·9 | +68·3 |
| Means ... | ... | ... | 12 | 67 | 301·46 | − 9·80 | ... |
| **Group 221.** Two small spots, one of which breaks into small fragments on September 1, and finally disappears on September 5. | | | | | | | |
| Aug. 30·582 | 14 | 89 | 8 | 50 | 201·5 | −12·9 | −16·5 |
| 31·451 | 26 | 81 | 14 | 44 | 199·8 | −13·6 | − 6·7 |
| Sept. 1·599 | 31 | 129 | 17 | 70 | 202·2 | −13·1 | +10·8 |
| 2·649 | 0 | 320 | 0 | 189 | 202·5 | −12·8 | +25·0 |
| 3 | No photograph. | | (0 | 136 | 202·2 | −13·4 | +37·5) |
| 4·588 | 0 | 98 | 0 | 83 | 201·9 | −13·9 | +50·0 |
| 5·582 | 0 | 8 | 0 | 9 | 198·4 | −13·3 | +59·6 |
| Means ... | ... | ... | 6 | 83 | 201·21 | −13·29 | ... |
| **Group 222.** Single spot. | | | | | | | |
| Sept. 18·440 | 0 | 20 | 0 | 31 | 41·0 | +11·4 | +72·0 |
| Means ... | ... | ... | 0 | 31 | 41·0 | +11·4 | ... |
| **Group 223.** Two small spots. | | | | | | | |
| Sept. 14·588 | 30 | 168 | 28 | 157 | 324·2 | − 9·3 | −55·6 |
| 15·745 | 57 | 197 | 39 | 136 | 324·0 | − 9·5 | −40·5 |
| 16·581 | 32 | 176 | 19 | 106 | 324·2 | − 9·7 | −29·4 |
| 17 | No photograph. | | (26 | 116 | 323·9 | − 9·7 | −17·4) |
| 18·440 | 63 | 241 | 33 | 126 | 323·6 | − 9·6 | − 5·4 |
| Means ... | ... | ... | 29 | 128 | 323·98 | − 9·56 | ... |
| **Group 224.** Two spots of nearly equal size, of which the preceding spot grows larger, and the following spots smaller on October 4 and 5. | | | | | | | |
| Sept. 27·586 | 47 | 488 | 39 | 403 | 157·1 | − 5·9 | −51·2 |
| 28·465 | 120 | 505 | 81 | 341 | 156·4 | − 6·3 | −40·3 |
| 29·495 | 195 | 728 | 113 | 421 | 156·0 | − 6·4 | −27·1 |
| 30·587 | 89 | 737 | 47 | 390 | 154·9 | − 6·2 | −13·8 |
| Oct. 1 | No photograph. | | (37 | 315 | 156·4 | − 5·6 | + 0·8) |
| 2·578 | 49 | 452 | 26 | 239 | 157·9 | − 5·0 | +15·4 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 224—*continued.*** | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Oct. 3·585 | 48 | 409 | 28 | 238 | 157·7 | − 4·9 | +28·5 |
| 4·544 | 56 | 257 | 39 | 180 | 159·5 | − 4·4 | +43·0 |
| 5·443 | 52 | 194 | 46 | 172 | 159·4 | − 4·4 | +54·7 |
| 6·565 | 23 | 89 | 34 | 131 | 159·3 | − 4·1 | +69·5 |
| Means ... | ... | ... | 49 | 283 | 157·46 | − 5·32 | ... |
| **Group 225.** Scattered group. | | | | | | | |
| Oct. 11·559 | 4 | 34 | 2 | 18 | 17·7 | −10·2 | − 6·2 |
| 12·498 | 55 | 189 | 29 | 99 | 17·2 | −10·6 | + 5·6 |
| 13 | No photograph. | | (31 | 123 | 17·4 | −10·4 | +17·5) |
| 14 | No photograph. | | (32 | 147 | 17·5 | −10·2 | +29·4) |
| 15 | No photograph. | | (33 | 171 | 17·6 | −10·0 | +41·3) |
| 16·052 | 40 | 222 | 35 | 195 | 17·8 | − 9·8 | +53·1 |
| 17·468 | 81 | 389 | 144 | 694 | 18·5 | − 9·4 | +72·5 |
| 18·070 | 4 | 93 | 14 | 331 | 18·9 | −10·0 | +80·8 |
| Means ... | ... | ... | 40 | 222 | 17·83 | −10·08 | ... |
| **Group 226.** One large spot and two or three small ones. | | | | | | | |
| Oct. 19·469 | 53 | 262 | 62 | 308 | 217·1 | −13·4 | −62·5 |
| 20·083 | 28 | 288 | 26 | 270 | 216·3 | −12·7 | −55·2 |
| 21·079 | 52 | 322 | 39 | 234 | 215·2 | −12·8 | −43·2 |
| 22 | No photograph. | | (35 | 238 | 214·8 | −12·8 | −29·5) |
| 23·220 | 55 | 439 | 30 | 241 | 214·4 | −12·8 | −15·8 |
| 24 | No photograph. | | (27 | 179 | 215·8 | −12·7 | − 1·4) |
| 25·193 | 44 | 215 | 24 | 116 | 217·2 | −12·7 | +13·0 |
| 26·049 | 29 | 136 | 17 | 79 | 217·9 | −12·4 | +25·1 |
| 27·080 | 25 | 141 | 17 | 95 | 218·1 | −12·5 | +38·8 |
| Means ... | ... | ... | 31 | 196 | 216·31 | −12·76 | ... |
| **Group 226*.** A stream of spots. | | | | | | | |
| Nov. 2·648 | 53 | 221 | 34 | 143 | 131·8 | +10·9 | +39·2 |
| 3·752 | 32 | 308 | 29 | 271 | 133·3 | +10·4 | +55·2 |
| 4·664 | 23 | 123 | 36 | 172 | 135·3 | +10·5 | +69·3 |
| Means ... | ... | ... | 33 | 195 | 133·47 | +10·60 | ... |
| **Group 227.** Single spot. | | | | | | | |
| Nov. 9·572 | 0 | 27 | 0 | 28 | 301·1 | − 6·1 | −60·3 |
| Means ... | ... | ... | 0 | 28 | 301·1 | − 6·1 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 227*.** A group seen only near the east limb. | | | | | | | |
| 1876. d | | | | | ° | ° | ° |
| Nov. 13·657 | 0 | 78 | 0 | 66 | 254·0 | − 5·0 | −53·5 |
| Means ... | ... | ... | 0 | 66 | 254·0 | − 5·0 | ... |
| **Group 228.** Single spot. | | | | | | | |
| Nov. 13·657 | 0 | 65 | 0 | 84 | 240·0 | + 2·6 | −67·5 |
| 14·582 | 39 | 144 | 34 | 125 | 240·5 | + 1·5 | −54·8 |
| 15·518 | 25 | 96 | 17 | 65 | 240·8 | + 1·2 | −42·2 |
| 16·497 | 10 | 52 | 6 | 30 | 240·9 | + 1·0 | −29·2 |
| Means ... | ... | ... | 14 | 76 | 240·55 | + 1·58 | ... |
| **Group 229.** Two spots of nearly equal size. | | | | | | | |
| Nov. 15·518 | 79 | 238 | 94 | 285 | 219·1 | −11·3 | −63·9 |
| 16·497 | 72 | 261 | 61 | 219 | 218·4 | −11·5 | −51·7 |
| 17 | No photograph. | | (40 | 163 | 218·5 | −11·2 | −41·1) |
| 18·080 | 32 | 177 | 19 | 106 | 218·6 | −10·8 | −30·5 |
| 19·493 | 80 | 306 | 42 | 161 | 218·6 | −10·9 | −12·0 |
| 20·097 | 16 | 122 | 8 | 63 | 219·9 | −10·9 | − 2·7 |
| 21·021 | 8 | 129 | 4 | 67 | 220·2 | −10·9 | + 9·8 |
| Means ... | ... | ... | 38 | 152 | 219·04 | −11·07 | ... |
| **Group 230.** Single spot. | | | | | | | |
| Nov. 19·493 | 0 | 16 | 0 | 26 | 302·3 | − 8·0 | +71·7 |
| Means ... | ... | ... | 0 | 26 | 302·3 | − 8·0 | ... |
| **Group 231.** Single spot. | | | | | | | |
| Dec. 18·045 | 37 | 178 | 53 | 258 | 145·2 | +10·2 | −69·1 |
| 19·248 | 55 | 445 | 49 | 394 | 144·2 | +10·1 | −54·4 |
| 20·116 | 95 | 579 | 66 | 402 | 144·4 | +10·8 | −42·6 |
| 21·103 | 72 | 257 | 42 | 150 | 145·8 | +10·6 | −28·2 |
| 22·549 | 171 | 1281 | 89 | 667 | 145·4 | +10·5 | − 9·6 |
| 23·066 | 85 | 532 | 44 | 274 | 145·5 | +10·4 | − 2·7 |
| 24 | No photograph. | | (54 | 331 | 145·5 | +10·3 | +10·4) |
| 25 | No photograph. | | (65 | 388 | 145·6 | +10·2 | +23·5) |
| 26 | No photograph. | | (75 | 445 | 145·6 | +10·1 | +36·5) |
| 27·020 | 107 | 631 | 85 | 501 | 145·7 | +10·0 | +49·6 |
| 28 | No photograph. | | (94 | 440 | 145·4 | + 9·9 | +62·7) |
| 29·053 | 48 | 178 | 103 | 378 | 145·1 | + 9·7 | +75·7 |
| Means ... | ... | ... | 68 | 386 | 145·28 | +10·23 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 231*.** Two small spots. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Jan. 6·057 | 0 | 73 | 0 | 58 | 273·7 | + 6·5 | −50·2 |
| Means ... | ... | ... | 0 | 58 | 273·7 | + 6·5 | ... |
| **Group 231†.** One or two spots, mostly small. | | | | | | | |
| Jan. 8·048 | 0 | 30 | 0 | 18 | 266·7 | + 5·8 | −31·0 |
| 9·068 | 0 | 15 | 0 | 8 | 267·1 | + 6·3 | −17·2 |
| 10·068 | 0 | 92 | 0 | 47 | 267·1 | + 5·8 | − 4·0 |
| 11·243 | 0 | 113 | 0 | 59 | 267·7 | + 6·3 | +12·0 |
| Means | ... | ... | 0 | 33 | 267·15 | + 6·05 | ... |
| **Group 232.** One regular spot, *a*, usually with a small companion. | | | | | | | |
| Jan. 10·068 | 29 | 174 | 57 | 375 | 195·4 | + 8·8 | −75·7 |
| 11·243 | 38 | 236 | 38 | 256 | 194·2 | + 8·5 | −61·5 |
| 12·052 | 44 | 273 | 35 | 220 | 194·9 | + 8·6 | −50·1 |
| 13·036 | 29 | 302 | 19 | 197 | 194·4 | + 8·5 | −37·6 |
| 14 | No photograph. | | (37 | 206 | 194·7 | + 8·8 | −20·6) |
| 15·585 | 106 | 415 | 55 | 215 | 194·9 | + 9·0 | − 3·6 |
| 16 | No photograph. | | (48 | 190 | 195·1 | + 9·2 | + 6·5) |
| 17·089 | 74 | 307 | 40 | 166 | 195·2 | + 9·3 | +16·5 |
| 18·049 | 46 | 306 | 27 | 181 | 195·0 | + 9·5 | +29·0 |
| 19·041 | 56 | 313 | 39 | 219 | 194·8 | + 9·5 | +41·8 |
| 20·050 | 32 | 235 | 29 | 216 | 194·8 | + 9·6 | +55·2 |
| 21 | No photograph. | | (43 | 212 | 194·4 | + 9·6 | +68·4) |
| 22·118 | 15 | 54 | 56 | 207 | 193·9 | + 9·5 | +81·5 |
| Means ... | ... | ... | 40 | 220 | 194·75 | + 9·11 | ... |
| **Group 232*.** A short stream of spots. | | | | | | | |
| Jan. 10·068 | 0 | 87 | 0 | 49 | 297·1 | − 8·3 | +26·0 |
| 11·243 | 0 | 68 | 0 | 46 | 298·0 | − 8·5 | +42·3 |
| Means ... | ... | ... | 0 | 48 | 297·55 | − 8·40 | ... |
| **Group 233.** One regular spot, *a*, usually with one or two small companions. *a* preserves its form, but decreases in size as it crosses the Sun. | | | | | | | |
| Jan. 15·585 | 90 | 390 | 75 | 325 | 147·7 | +10·8 | −50·8 |
| 16 | No photograph. | | (64 | 351 | 147·6 | +10·7 | −41·1) |
| 17·089 | 87 | 617 | 53 | 377 | 147·4 | +10·6 | −31·3 |
| 18·049 | 76 | 668 | 42 | 367 | 147·4 | +10·4 | −18·6 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 233—*continued.*** | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Jan. 19·041 | 32 | 710 | 17 | 372 | 147·0 | +11·2 | − 6·0 |
| 20·050 | 38 | 384 | 20 | 202 | 147·6 | +10·9 | + 8·0 |
| 21 | No photograph. | | (19 | 177 | 147·6 | +11·0 | +21·6) |
| 22·118 | 28 | 235 | 18 | 151 | 147·6 | +11·1 | +35·2 |
| 23·500 | 18 | 100 | 16 | 88 | 147·0 | +11·6 | +52·7 |
| 24·536 | 13 | 65 | 17 | 86 | 146·3 | +11·6 | +65·7 |
| 25·064 | 0 | 83 | 0 | 156 | 146·8 | +11·9 | +73·2 |
| Means ... | ... | ... | 31 | 241 | 147·03 | +11·07 | ... |
| **Group 234.** One small faint spot. | | | | | | | |
| Jan. 26·533 | 0 | 39 | 0 | 28 | 9·0 | − 7·3 | −45·3 |
| 27·024 | 0 | 17 | 0 | 11 | 9·0 | − 7·5 | −38·8 |
| Means ... | ... | ... | 0 | 20 | 9·00 | − 7·40 | ... |
| **Group 234*.** Very small faint spot, that breaks up into several fragments on February 3. | | | | | | | |
| Jan. 30·534 | 0 | 9 | 0 | 9 | 301·7 | − 7·2 | −60·0 |
| 31·078 | 0 | 15 | 0 | 12 | 303·1 | − 6·9 | −51·4 |
| Feb. 1 | No photograph. | | (2 | 13 | 303·6 | − 7·0 | −37·8) |
| 2·083 | 5 | 25 | 3 | 14 | 304·0 | − 7·0 | −24·1 |
| 3·557 | 0 | 32 | 0 | 16 | 304·0 | − 8·3 | − 4·7 |
| 4 | No photograph. | | (0 | 13 | 307·6 | − 8·0 | +10·0) |
| 5 | No photograph. | | (0 | 10 | 311·2 | − 7·8 | +24·7) |
| 6·097 | 0 | 11 | 0 | 7 | 314·7 | − 7·5 | +39·4 |
| 7·459 | 0 | 7 | 0 | 6 | 313·4 | − 7·5 | +56·1 |
| Means ... | ... | ... | 1 | 11 | 307·03 | − 7·47 | ... |
| **Group 235.** A well-defined regular spot, which gradually diminishes in size but does not otherwise change its form. | | | | | | | |
| Feb. 7·459 | 25 | 109 | 28 | 124 | 195·3 | + 9·9 | −62·0 |
| 8·523 | 39 | 194 | 31 | 154 | 194·9 | + 9·5 | −48·4 |
| 9 | No photograph. | | (26 | 141 | 195·2 | + 9·2 | −38·0) |
| 10·073 | 36 | 218 | 21 | 128 | 195·4 | + 8·8 | −27·5 |
| 11 | No photograph. | | (22 | 127 | 195·4 | + 8·8 | −13·4) |
| 12 | No photograph. | | (24 | 126 | 195·4 | + 8·9 | + 0·7) |
| 13 | No photograph. | | (25 | 125 | 195·4 | + 8·9 | +14·8) |
| 14 | No photograph. | | (26 | 124 | 195·3 | + 8·9 | +28·9) |
| 15 | No photograph. | | (27 | 124 | 195·3 | + 9·0 | +43·0) |
| 16·508 | 29 | 127 | 28 | 123 | 195·3 | + 9·0 | +57·1 |
| 17·533 | 20 | 89 | 33 | 146 | 195·4 | + 9·0 | +70·7 |
| Means ... | ... | ... | 26 | 131 | 195·30 | + 9·08 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 236.** A group of three or four small spots. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Feb. 26·048 | 0 | 57 | 0 | 112 | 298·5 | + 7·8 | −74·0 |
| 27·546 | 40 | 146 | 36 | 133 | 298·0 | + 7·0 | −54·8 |
| 28 | No photograph. | | (23 | 88 | 298·5 | + 7·2 | −44·1) |
| Mar. 1·089 | 16 | 69 | 10 | 43 | 299·0 | + 7·4 | −33·4 |
| 2 | No photograph. | | (6 | 30 | 299·3 | + 7·2 | −20·4) |
| 3·027 | 0 | 31 | 2 | 16 | 299·5 | + 6·9 | − 7·4 |
| 4 | No photograph. | | (1 | 28 | 298·5 | + 8·3 | + 5·1) |
| 5·086 | 0 | 71 | 0 | 39 | 297·4 | + 9·6 | +17·6 |
| Means ... | ... | ... | 10 | 61 | 298·59 | + 7·68 | ... |
| **Group 236*.** A short stream of spots. | | | | | | | |
| Mar. 1·089 | 28 | 122 | 15 | 65 | 311·5 | − 8·2 | −20·9 |
| 2 | No photograph. | | (13 | 104 | 311·0 | − 8·5 | − 8·7) |
| 3·027 | 22 | 285 | 11 | 143 | 310·5 | − 8·7 | + 3·6 |
| 4 | No photograph. | | (11 | 148 | 309·9 | − 8·6 | +16·5) |
| 5·086 | 18 | 265 | 10 | 152 | 309·2 | − 8·5 | +29·4 |
| Means ... | ... | ... | 12 | 122 | 310·42 | − 8·50 | ... |
| **Group 237.** Faint ill-defined spot, which breaks up into several spots on March 10. | | | | | | | |
| Mar. 8·609 | 0 | 60 | 0 | 36 | 265·3 | −10·8 | +32·0 |
| 9·069 | 0 | 58 | 0 | 37 | 265·8 | −11·1 | +38·5 |
| 10·559 | 0 | 34 | 0 | 40 | 273·6 | − 9·8 | +65·9 |
| Means ... | ... | ... | 0 | 38 | 268·23 | −10·57 | ... |
| **Group 238.** A scattered group of ill-defined spots, which gradually condenses into two well-defined spots. On March 22, one of the spots has gone off the limb, and the other is only partly visible. | | | | | | | |
| Mar. 17·481 | 10 | 76 | 5 | 39 | 128·0 | −11·1 | +11·6 |
| 18·399 | 83 | 357 | 46 | 197 | 129·2 | −11·2 | +24·9 |
| 19·562 | 59 | 397 | 39 | 261 | 129·6 | −11·1 | +40·6 |
| 20 | No photograph. | | (32 | 249 | 129·2 | −11·2 | +50·8) |
| 21·169 | 25 | 236 | 25 | 238 | 128·8 | −11·2 | +61·0 |
| 22·465 | 18 | 61 | 50 | 173 | 131·8 | −11·6 | +81·1 |
| Means ... | ... | ... | 33 | 193 | 129·43 | −11·23 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 239.** One small well-defined spot. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Apr. 6·500 | 3 | 25 | 8 | 63 | 132·5 | −12·6 | −79·9 |
| 7·460 | 2 | 28 | 3 | 34 | 132·7 | −12·9 | −67·0 |
| Means ... | ... | ... | 6 | 49 | 132·60 | −12·75 | ... |
| **Group 240.** A group composed of three spots, of which the smallest gradually disappears. | | | | | | | |
| Apr. 16·123 | 87 | 685 | 47 | 368 | 104·3 | −15·0 | +18·9 |
| 17·476 | 111 | 634 | 70 | 401 | 104·5 | −15·0 | +37·0 |
| 18 | No photograph. | | (64 | 352 | 104·1 | −14·7 | +50·1) |
| 19·523 | 53 | 278 | 58 | 302 | 103·6 | −14·4 | +63·2 |
| 20·470 | 30 | 129 | 56 | 243 | 103·4 | −13·9 | +75·5 |
| Means ... | ... | ... | 59 | 333 | 103·98 | −14·60 | ... |
| **Group 241.** A group of small spots, which change greatly on April 23. | | | | | | | |
| Apr. 20·470 | 6 | 58 | 4 | 41 | 343·6 | + 0·4 | −44·3 |
| 21 | No photograph. | | (12 | 73 | 344·7 | + 0·9 | −30·2) |
| 22 | No photograph. | | (20 | 105 | 345·8 | + 1·4 | −16·1) |
| 23·408 | 53 | 271 | 27 | 137 | 347·0 | + 1·9 | − 2·1 |
| 24·423 | 44 | 133 | 23 | 69 | 347·7 | + 2·3 | +12·0 |
| 25·417 | 36 | 121 | 20 | 68 | 348·1 | + 2·4 | +25·5 |
| 26 | No photograph. | | (10 | 46 | 348·5 | + 3·0 | +40·1) |
| 27·560 | 0 | 26 | 0 | 23 | 348·9 | + 3·6 | +54·7 |
| Means ... | ... | ... | 15 | 70 | 346·79 | + 1·99 | ... |
| **Group 242.** A group consisting principally of two small spots, of which one disappears on April 27. | | | | | | | |
| Apr. 23·408 | 29 | 101 | 21 | 73 | 303·1 | − 7·6 | −46·0 |
| 24·423 | 19 | 69 | 11 | 41 | 303·5 | − 7·5 | −32·2 |
| 25·417 | 31 | 92 | 16 | 48 | 305·3 | − 8·1 | −17·3 |
| 26 | No photograph. | | (15 | 52 | 308·0 | − 7·4 | − 0·5) |
| 27·560 | 25 | 108 | 13 | 56 | 310·6 | − 6·6 | +16·4 |
| 28·062 | 0 | 60 | 0 | 33 | 310·8 | − 6·7 | +23·2 |
| 29 | No photograph. | | (6 | 33 | 314·4 | − 6·8 | +43·3) |
| 30·554 | 10 | 30 | 11 | 33 | 318·0 | − 6·8 | +63·3 |
| May 1·107 | 0 | 18 | 0 | 28 | 318·6 | − 7·5 | +71·3 |
| Means ... | ... | ... | 10 | 44 | 310·26 | − 7·22 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 243.

A scattered group of small faint spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1877. d | | | | | ° | ° | ° |
| Apr. 30·554 | 0 | 28 | 0 | 25 | 207·8 | +28·6 | −46·9 |
| May 1·107 | 0 | 60 | 0 | 47 | 208·0 | +28·8 | −39·3 |
| 2·075 | 6 | 101 | 4 | 68 | 207·5 | +29·2 | −27·0 |
| 3·428 | 21 | 79 | 13 | 48 | 208·6 | +30·1 | − 8·1 |
| 4·516 | 0 | 53 | 0 | 32 | 208·1 | +29·9 | + 5·8 |
| Means ... | ... | ... | 3 | 44 | 208·00 | +29·32 | ... |

### Group 244.

A scattered group of small faint spots, condensing on May 5 into a single spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 4·516 | 23 | 95 | 12 | 49 | 217·2 | − 2·6 | +14·9 |
| 5·447 | 17 | 54 | 10 | 31 | 219·3 | − 1·9 | +29·3 |
| 6 | No photograph. | | (7 | 21 | 220·0 | − 1·8 | +43·0) |
| 7·414 | 4 | 12 | 4 | 11 | 220·7 | − 1·7 | +56·7 |
| 8·411 | 0 | 14 | 0 | 20 | 221·1 | − 1·9 | +70·3 |
| Means ... | ... | ... | 7 | 26 | 219·66 | − 1·98 | ... |

### Group 245.

A single well-defined spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 7·414 | 35 | 151 | 35 | 151 | 103·8 | −14·2 | −60·2 |
| 8·411 | 42 | 186 | 31 | 139 | 103·7 | −14·2 | −47·1 |
| 9·455 | 28 | 100 | 17 | 61 | 103·6 | −14·1 | −33·4 |
| 10·469 | 35 | 125 | 19 | 68 | 103·5 | −14·0 | −20·1 |
| 11·591 | 27 | 118 | 14 | 61 | 103·6 | −14·0 | − 5·1 |
| Means ... | ... | ... | 23 | 96 | 103·64 | −14·10 | ... |

### Group 246.

One small well-defined spot. A second appears on May 10, but soon disappears again. Another distant companion is seen on May 17.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 9·455 | 13 | 40 | 11 | 35 | 82·9 | + 8·2 | −54·1 |
| 10·469 | 44 | 158 | 30 | 107 | 82·6 | + 8·4 | −41·0 |
| 11·591 | 47 | 249 | 26 | 139 | 85·3 | + 8·3 | −23·4 |
| 12 | No photograph. | | (25 | 131 | 85·5 | + 8·5 | −10·4) |
| 13 | No photograph. | | (24 | 122 | 85·7 | + 8·6 | + 2·6) |
| 14 | No photograph. | | (23 | 114 | 85·9 | + 8·7 | +15·7) |
| 15·549 | 39 | 179 | 23 | 105 | 86·0 | + 8·8 | +29·6 |
| 16·093 | 17 | 142 | 11 | 90 | 85·8 | + 8·6 | +36·6 |
| 17·051 | 11 | 117 | 9 | 93 | 86·4 | +10·2 | +49·9 |
| 18·418 | 0 | 10 | 0 | 14 | 86·4 | + 8·6 | +68·0 |
| Means ... | ... | ... | 18 | 95 | 85·25 | + 8·69 | ... |

### Group 247.

One small spot. A second appears on May 24, and a third on May 26.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1877. d | | | | | ° | ° | ° |
| May 17·051 | 0 | 12 | 0 | 25 | 320·4 | + 9·8 | −76·1 |
| 18·418 | 29 | 102 | 26 | 92 | 323·2 | +10·0 | −55·2 |
| 19 | No photograph. | | (25 | 92 | 323·5 | + 9·8 | −41·6) |
| 20 | No photograph. | | (24 | 91 | 323·7 | + 9·6 | −28·0) |
| 21 | No photograph. | | (23 | 90 | 324·0 | + 9·4 | −14·5) |
| 22 | No photograph. | | (21 | 90 | 324·2 | + 9·1 | − 0·9) |
| 23 | No photograph. | | (20 | 89 | 324·4 | + 8·9 | +12·7) |
| 24·470 | 33 | 157 | 19 | 89 | 324·7 | + 8·7 | +26·3 |
| 25·460 | 45 | 143 | 29 | 93 | 323·7 | + 9·1 | +38·4 |
| 26·441 | 8 | 74 | 7 | 61 | 324·2 | + 8·7 | +51·9 |
| Means ... | ... | ... | 19 | 81 | 323·60 | + 9·31 | ... |

### Group 248.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 26·441 | 23 | 83 | 15 | 53 | 310·1 | − 9·3 | +37·8 |
| Means ... | ... | ... | 15 | 53 | 310·1 | − 9·3 | ... |

### Group 249.

Two spots, one of them very small.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 3·499 | 11 | 36 | 11 | 37 | 108·2 | −10·5 | −57·5 |
| 4·432 | 51 | 328 | 37 | 238 | 107·8 | −10·3 | −45·5 |
| 5·441 | 70 | 334 | 42 | 200 | 108·0 | −10·2 | −32·0 |
| 6·464 | 62 | 267 | 33 | 143 | 109·0 | −10·3 | −17·4 |
| 7·413 | 70 | 281 | 36 | 144 | 108·6 | −10·3 | − 5·3 |
| 8·506 | 71 | 307 | 37 | 159 | 108·5 | −10·4 | + 9·1 |
| 9·419 | 90 | 404 | 49 | 221 | 108·4 | −10·3 | +21·1 |
| 10 | No photograph. | | (41 | 203 | 108·4 | −10·5 | +34·6) |
| 11·469 | 43 | 239 | 33 | 184 | 108·3 | −10·7 | +48·1 |
| Means ... | ... | ... | 35 | 170 | 108·36 | −10·39 | ... |

### Group 250.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 25·428 | 46 | 134 | 24 | 70 | 227·4 | −12·8 | − 8·0 |
| Means ... | ... | ... | 24 | 70 | 227·4 | −12·8 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 251.** A very close pair of well-defined small spots. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| June 28·490 | 16 | 49 | 10 | 30 | 227·8 | −12·0 | +32·9 |
| 29·459 | 43 | 129 | 32 | 97 | 228·1 | −12·7 | +46·5 |
| Means ... | ... | ... | 21 | 64 | 227·95 | −12·35 | ... |
| **Group 252.** One very small spot, which breaks up into two or three on July 4. | | | | | | | |
| July 3·442 | 16 | 48 | 10 | 31 | 91·1 | +10·6 | −38·2 |
| 4·440 | 5 | 57 | 3 | 31 | 93·3 | + 9·8 | −22·7 |
| 5·407 | 2 | 49 | 1 | 25 | 94·2 | + 9·6 | − 9·1 |
| Means ... | ... | ... | 5 | 29 | 92·87 | +10·00 | ... |
| **Group 252*.** Several small spots in a semicircle. | | | | | | | |
| July 14·063 | 10 | 49 | 5 | 26 | 358·4 | −11·2 | + 9·7 |
| Means ... | ... | ... | 5 | 26 | 358·4 | −11·2 | ... |
| **Group 253.** One very small spot. | | | | | | | |
| July 18·468 | 10 | 26 | 6 | 16 | 319·6 | −13·4 | +29·1 |
| Means ... | ... | ... | 6 | 16 | 319·6 | −13·4 | ... |
| **Group 254.** Two very small spots, one of which disappears on August 3. | | | | | | | |
| Aug. 2·523 | 30 | 74 | 19 | 47 | 129·2 | +12·4 | +37·9 |
| 3·503 | 0 | 24 | 0 | 20 | 130·9 | +12·1 | +52·5 |
| Means ... | ... | ... | 10 | 34 | 130·05 | +12·25 | ... |
| **Group 255.** A large spot, divided into three portions by bridges. On August 28 it has separated into two small spots, one of which disappears on August 29. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Aug. 22·506 | 8 | 32 | 27 | 116 | 104·5 | + 7·9 | −82·7 |
| 23·534 | 22 | 104 | 32 | 149 | 103·3 | + 8·6 | −70·3 |
| 24·440 | 32 | 246 | 30 | 230 | 103·2 | + 8·8 | −58·4 |
| 25 | No photograph. | | (26 | 183 | 103·4 | + 8·8 | −44·9) |
| 26 | No photograph. | | (22 | 135 | 103·5 | + 8·7 | −31·4) |
| 27 | No photograph. | | (18 | 88 | 103·7 | + 8·7 | −18·0) |
| 28·478 | 30 | 82 | 15 | 41 | 103·8 | + 8·7 | − 4·5 |
| 29·570 | 22 | 59 | 11 | 30 | 104·3 | + 8·4 | +10·4 |
| 30 | No photograph. | | (8 | 25 | 104·5 | + 8·2 | +22·8) |
| 31·406 | 7 | 31 | 4 | 19 | 104·7 | + 7·9 | +35·1 |
| Means ... | ... | ... | 19 | 102 | 103·89 | + 8·47 | ... |
| **Group 256.** Two spots; the following spot, which is small and faint, disappears on September 9; and the larger spot has greatly increased in size by September 5. | | | | | | | |
| Sept. 4·503 | 19 | 87 | 25 | 117 | 306·3 | + 9·5 | −69·2 |
| 5·474 | 52 | 246 | 46 | 216 | 306·5 | + 9·4 | −56·2 |
| 6·436 | 75 | 315 | 51 | 213 | 307·2 | + 9·2 | −42·8 |
| 7·392 | 77 | 428 | 45 | 249 | 306·4 | + 9·1 | −30·9 |
| 8 | No photograph. | | (40 | 204 | 307·3 | + 8·8 | −16·0) |
| 9·520 | 72 | 316 | 36 | 158 | 308·2 | + 8·6 | − 1·0 |
| 10 | No photograph. | | (33 | 140 | 308·4 | + 8·6 | +13·2) |
| 11 | No photograph | | (29 | 123 | 308·6 | + 8·6 | +25·4) |
| 12·405 | 42 | 170 | 26 | 106 | 308·7 | + 8·6 | +37·5 |
| Means ... | ... | ... | 37 | 170 | 307·51 | + 8·93 | ... |
| **Group 257.** One small spot. | | | | | | | |
| Sept. 12·405 | 23 | 92 | 19 | 75 | 222·5 | −11·4 | −48·7 |
| 13 | No photograph. | | (16 | 65 | 222·4 | −11·4 | −35·3) |
| 14 | No photograph. | | (13 | 55 | 222·3 | −11·3 | −22·0) |
| 15 | No photograph. | | (10 | 45 | 222·2 | −11·3 | − 8·6) |
| 16 | No photograph. | | (7 | 35 | 222·0 | −11·2 | + 4·7) |
| 17 | No photograph. | | (4 | 25 | 221·9 | −11·2 | +18·1) |
| 18·524 | 2 | 24 | 1 | 15 | 221·8 | −11·1 | +31·4 |
| Means ... | ... | ... | 10 | 45 | 222·16 | −11·27 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 258.** Two small faint spots. | | | | | | | |
| 1877.d | | | | | ° | ° | ° |
| Sept. 18·524 | 0 | 21 | 0 | 12 | 167·2 | − 4·4 | −22·9 |
| 19 | No photograph. | | (0 | 12 | 167·4 | − 4·4 | −12·6) |
| 20·087 | 0 | 24 | 0 | 12 | 167·5 | − 4·3 | − 2·2 |
| 21·463 | 2 | 22 | 1 | 12 | 167·8 | − 5·3 | +16·3 |
| Means ... | ... | ... | 0 | 12 | 167·48 | − 4·60 | ... |
| **Group 258*.** A very small spot. | | | | | | | |
| Sept. 25·111 | 0 | 8 | 0 | 5 | 135·9 | − 2·7 | +32·3 |
| Means ... | ... | ... | 0 | 5 | 135·9 | − 2·7 | ... |
| **Group 259.** One small spot. | | | | | | | |
| Sept. 25·111 | 0 | 35 | 0 | 133 | 22·1 | − 7·1 | −81·5 |
| 26·588 | 18 | 75 | 20 | 85 | 21·5 | − 7·6 | −62·5 |
| 27·506 | 10 | 41 | 8 | 33 | 22·1 | − 7·2 | −49·8 |
| 28·411 | 9 | 53 | 6 | 35 | 21·8 | − 7·0 | −38·1 |
| 29·521 | 5 | 16 | 3 | 9 | 21·7 | − 6·7 | −23·5 |
| Means ... | ... | ... | 7 | 59 | 21·84 | − 7·12 | ... |
| **Group 260.** One very small spot. | | | | | | | |
| Oct. 1·415 | 5 | 14 | 3 | 8 | 28·0 | −19·4 | + 7·8 |
| Means ... | ... | ... | 3 | 8 | 28·0 | −19·4 | ... |
| **Group 261.** A large well-defined spot, surrounded by several small fragments. | | | | | | | |
| Oct. 26·072 | 15 | 215 | 39 | 595 | 336·2 | − 8·1 | −78·8 |
| 27 | No photograph. | | (64 | 597 | 335·8 | − 8·1 | −64·5) |
| 28 | No photograph. | | (89 | 600 | 335·5 | − 8·1 | −50·2) |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 261 — *continued.*** | | | | | | | |
| 1877.d | | | | | ° | ° | ° |
| Oct. 29 | No photograph. | | (114 | 603 | 335·2 | − 8·0 | −35·9) |
| 30·513 | 252 | 1095 | 139 | 605 | 334·8 | − 8·0 | −21·6 |
| 31·448 | 238 | 1271 | 124 | 662 | 334·6 | − 8·0 | − 9·5 |
| Nov. 1·445 | 225 | 1509 | 116 | 778 | 334·5 | − 8·1 | + 3·5 |
| 2·131 | 199 | 1471 | 104 | 770 | 334·7 | − 7·7 | +12·8 |
| 3·482 | 202 | 944 | 120 | 562 | 334·4 | − 8·2 | +30·3 |
| 4·491 | 141 | 760 | 101 | 543 | 334·7 | − 8·2 | +44·1 |
| 5·442 | 107 | 544 | 100 | 508 | 334·6 | − 8·3 | +56·4 |
| 6 | No photograph. | | (95 | 544 | 334·3 | − 8·3 | +66·8) |
| 7·073 | 37 | 246 | 89 | 579 | 334·0 | − 8·4 | +77·2 |
| Means ... | ... | ... | 100 | 611 | 334·87 | − 8·12 | ... |
| **Group 262.** A somewhat scattered group of small spots. | | | | | | | |
| Oct. 30·513 | 28 | 170 | 20 | 120 | 312·4 | − 2·5 | −44·0 |
| 31·448 | 43 | 211 | 25 | 124 | 313·0 | − 2·2 | −31·1 |
| Nov. 1·445 | 47 | 263 | 25 | 139 | 313·3 | − 2·1 | −17·7 |
| 2·131 | 8 | 149 | 4 | 76 | 314·6 | − 2·5 | − 7·3 |
| 3·482 | 35 | 148 | 18 | 76 | 312·8 | − 2·4 | + 8·7 |
| 4·491 | 11 | 82 | 6 | 45 | 313·0 | − 2·5 | +22·4 |
| 5·442 | 0 | 39 | 0 | 24 | 313·6 | − 3·2 | +35·4 |
| Means ... | ... | ... | 14 | 86 | 313·24 | − 2·49 | ... |
| **Group 263.** Two small spots, the second of which moves more quickly than the first, and grows gradually smaller. | | | | | | | |
| Nov. 14·494 | 62 | 180 | 38 | 111 | 125·2 | − 9·7 | −33·7 |
| 15 | No photograph. | | (27 | 85 | 125·7 | − 9·7 | −19·7) |
| 16·548 | 31 | 113 | 16 | 58 | 126·2 | − 9·7 | − 5·7 |
| 17·586 | 29 | 52 | 15 | 27 | 126·9 | −10·3 | + 8·7 |
| Means ... | ... | ... | 24 | 70 | 126·00 | − 9·85 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 264.** A well-defined spot, closely surrounded by several smaller ones. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Nov. 22·508 | 35 | 123 | 86 | 301 | 335·5 | −10·1 | −77·8 |
| 23·436 | 62 | 306 | 79 | 392 | 334·9 | −10·3 | −66·2 |
| 24·103 | 53 | 590 | 50 | 562 | 335·1 | −10·8 | −57·2 |
| 25·218 | 73 | 753 | 51 | 522 | 335·3 | −10·7 | −42·3 |
| 26·552 | 168 | 828 | 95 | 468 | 334·9 | −10·3 | −25·2 |
| 27·221 | 94 | 759 | 50 | 403 | 335·4 | −10·7 | −15·8 |
| 28·469 | 142 | 669 | 73 | 343 | 334·9 | −10·1 | + 0·2 |
| 29·086 | 85 | 631 | 44 | 327 | 334·7 | −10·2 | + 8·1 |
| 30·428 | 120 | 459 | 68 | 261 | 335·0 | −10·0 | +26·1 |
| Dec. 1 | No photograph. | | (59 | 232 | 335·2 | −10·1 | +40·1) |
| 2·518 | 58 | 233 | 50 | 203 | 335·4 | −10·1 | +54·0 |
| 3·077 | 30 | 206 | 31 | 215 | 335·0 | −10·3 | +61·0 |
| Means ... | ... | ... | 61 | 352 | 335·11 | −10·31 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 264*.** A small spot. | | | | | | | |
| 1877. d | | | | | ° | ° | ° |
| Dec. 21·100 | 0 | 34 | 0 | 37 | 334·6 | −12·7 | −62·0 |
| Means ... | ... | ... | 0 | 37 | 334·6 | −12·7 | ... |
| **Group 265.** Two small spots. | | | | | | | |
| Dec. 31·466 | 0 | 23 | 0 | 34 | 329·9 | + 7·5 | +69·9 |
| Means ... | ... | ... | 0 | 34 | 329·9 | + 7·5 | ... |

Thanks for
landing us this
book.

Doug Hoyt

RECD WDC-STN MAR 12 '81

ROYAL OBSERVATORY, GREENWICH.

# LEDGERS

OF

# AREAS AND POSITIONS OF GROUPS OF SUN SPOTS

DEDUCED FROM THE MEASUREMENT

OF THE

# SOLAR PHOTOGRAPHS

FOR EACH DAY IN THE YEARS

# 1878-1881.

## AREAS AND HELIOGRAPHIC POSITIONS OF GROUPS OF SUN SPOTS DEDUCED FOR EACH DAY FROM THE MEASUREMENTS OF THE PHOTOGRAPHS TAKEN AT THE ROYAL OBSERVATORY, GREENWICH, AT DEHRA DÛN IN INDIA, AT THE MELBOURNE OBSERVATORY, AUSTRALIA, AND AT THE ROYAL ALFRED OBSERVATORY, MAURITIUS, IN THE YEARS 1878 TO 1881.

NOTE.—The Greenwich Civil Time at which the photograph was taken is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight.

In the second Column, "Where taken," the place where the photograph was taken is indicated. A photograph taken at Greenwich is indicated by the letter G, one taken in India by the letter I, one taken at Melbourne by the letters Me, and one taken in Mauritius by the letters Ma.

The Projected Area of the Umbræ and Whole Spots is the area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Column "Longitude from Central Meridian" gives the Mean Heliographic longitude of the group, reckoned from the meridian passing through the centre of the Sun's disk at the moment of observation; longitudes west of the centre being reckoned as positive.

Dates for which neither the decimal of the day nor the place are given indicate dates for which no photographic Record is at present available. In these cases the means have been taken of the areas and positions of the spot-groups as measured on the day immediately preceding and immediately following the day for which the photograph is lacking. These interpolated values are enclosed in brackets, but are used in taking the final means for each spot-group. A similar course has been adopted with respect to the positions of spot-groups on photographs taken in Mauritius. The photographs taken there not being provided with wires, it has not been possible to compute the heliographic co-ordinates of the spot-groups, and these have, therefore, been interpolated from the results obtained on the days immediately preceding and following that upon which the Mauritius photograph was taken. These interpolated values, like the others, are enclosed in brackets, but have been used in taking the final means for the spot-groups.

### Group 266.

A pair of regular, well-defined spots.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1878. d | | | | | | ° | ° | ° |
| Jan. 23·584 | G | 87 | 239 | 46 | 126 | 325·9 | + 7·7 | +10·3 |
| 24 | ... | No photograph. | | (36 | 119 | 327·6 | + 7·8 | +21·9) |
| 25·087 | Me | 43 | 180 | 27 | 112 | 329·3 | + 7·9 | +33·5 |
| 26·083 | Me | 0 | 136 | 0 | 104 | 330·0 | + 7·4 | +47·3 |
| Means ... | ... | ... | ... | 27 | 115 | 328·20 | + 7·70 | ... |

### Group 267.

A number of small spots in a short stream. A small regular spot alone remains on February 8.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Feb. 3·210 | Ma | 24 | 182 | 16 | 116 | (152·5 | − 7·6 | −23·1) |
| 4 | ... | No photograph. | | (9 | 71 | 152·5 | − 7·6 | −10·2) |
| 5·179 | Ma | 6 | 54 | 3 | 27 | (152·5 | − 7·6 | + 2·7) |
| 6 | ... | No photograph. | | (2 | 23 | 152·5 | − 7·6 | +17·5) |
| 7 | ... | No photograph. | | (1 | 19 | 152·5 | − 7·6 | +32·3) |
| 8·545 | G | 0 | 21 | 0 | 15 | 152·5 | − 7·6 | +47·0 |
| Means ... | ... | ... | ... | 5 | 45 | 152·5 | − 7·6 | ... |

### Group 268.

A number of small spots in an irregular stream. A small regular spot alone remains on February 8.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1878. d | | | | | | ° | ° | ° |
| Feb. 5·179 | Ma | 30 | 177 | 15 | 92 | (133·9 | − 9·1 | −15·9) |
| 6 | ... | No photograph. | | (10 | 68 | 133·9 | − 9·1 | − 1·1) |
| 7 | ... | No photograph. | | (5 | 44 | 133·9 | − 9·1 | +13·6) |
| 8·545 | G | 0 | 28 | 0 | 21 | 133·9 | − 9·1 | +28·4 |
| Means ... | ... | ... | ... | 8 | 56 | 133·9 | − 9·1 | ... |

### Group 268A.

A very small spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Feb. 26·150 | I | 0 | 7 | 0 | 4 | 258·3 | − 1·7 | +24·7 |
| Means ... | ... | ... | ... | 0 | 4 | 258·3 | − 1·7 | ... |

### Group 268B.

A very small spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Feb. 27·236 | I | 0 | 7 | 0 | 8 | 153·2 | −10·7 | −66·1 |
| Means ... | ... | ... | ... | 0 | 8 | 153·2 | −10·7 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 269.

A number of spots in a straight stream. The leader, *a*, is a regular well-defined spot; two or three small spots, *b*, follow; and, *c*, is the rear spot of the stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1878. d | | | | | | ° | ° | ° |
| Mar. 4·521 | G | 58 | 235 | 30 | 121 | 148·5 | + 4·0 | − 1·2 |
| 5·445 | G | 28 | 117 | 15 | 61 | 148·3 | + 4·1 | +10·8 |
| 6·129 | I | 0 | 32 | 0 | 18 | 151·1 | + 3·6 | +22·5 |
| Means ... | ... | ... | ... | 15 | 67 | 149·30 | + 3·90 | ... |

### Group 270.

One small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 4·521 | G | 4 | 22 | 4 | 21 | 92·8 | + 0·5 | −56·9 |
| 5·445 | G | 0 | 8 | 0 | 6 | 93·1 | + 0·7 | −44·4 |
| 6·129 | I | 3 | 18 | 2 | 11 | 93·5 | + 0·8 | −35·1 |
| Means ... | ... | ... | ... | 2 | 13 | 93·13 | + 0·67 | ... |

### Group 271.

A long straight spot, *a*, from which a considerable portion, *c*, has broken off by March 14. *a* is followed by *b*, a cluster of two or three small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 11·306 | I | 3 | 28 | 2 | 18 | 24·3 | + 5·9 | −36·0 |
| 12·491 | G | 69 | 308 | 37 | 168 | 27·1 | + 7·2 | −17·6 |
| 13·303 | I | 43 | 369 | 22 | 192 | 28·0 | + 7·1 | − 6·0 |
| 14·489 | G | 51 | 252 | 27 | 133 | 29·5 | + 7·3 | +11·2 |
| 15·286 | I | 91 | 514 | 51 | 287 | 28·8 | + 7·8 | +21·0 |
| 16·157 | I | 50 | 347 | 31 | 214 | 28·3 | + 7·9 | +32·0 |
| 17 | ... | No photograph. | | (24 | 150 | 30·0 | + 7·9 | +47·4) |
| 18·234 | I | 20 | 106 | 16 | 86 | 31·6 | + 7·8 | +62·7 |
| Means ... | ... | ... | ... | 26 | 156 | 28·45 | + 7·36 | ... |

### Group 271*.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 5·181 | I | 0 | 18 | 0 | 13 | 46·0 | + 0·6 | −46·2 |
| Means ... | ... | ... | ... | 0 | 13 | 46·0 | + 0·6 | ... |

### Group 272.

A small regular spot, *a*, followed by a much larger spot, *b*. *a* has disappeared by June 4.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| May 27·536 | G | 69 | 288 | 66 | 281 | 61·6 | + 7·9 | −58·6 |
| 28·128 | I | 54 | 442 | 45 | 351 | 62·2 | + 8·2 | −50·2 |
| 29·137 | I | 100 | 636 | 63 | 402 | 62·7 | + 8·1 | −36·3 |
| 30·116 | I | 83 | 492 | 46 | 272 | 63·2 | + 7·9 | −22·9 |
| 31·420 | G | 120 | 541 | 61 | 277 | 63·1 | + 9·0 | − 5·8 |
| June 1·088 | Me | 105 | 476 | 54 | 242 | 63·5 | + 8·8 | + 3·4 |
| 2·280 | I | 39 | 320 | 21 | 173 | 64·2 | + 8·9 | +19·9 |
| 3·285 | I | 40 | 143 | 25 | 87 | 64·8 | + 9·0 | +33·9 |
| 4·436 | G | 12 | 67 | 9 | 52 | 64·7 | + 8·6 | +49·0 |
| 5·089 | Me | 0 | 10 | 0 | 9 | 64·9 | + 7·7 | +57·8 |
| 6·505 | G | 0 | 12 | 0 | 27 | 65·9 | + 9·7 | +77·6 |
| Means ... | ... | ... | ... | 35 | 198 | 63·67 | + 8·53 | ... |

### Group 273.

A small faint spot, almost entirely hidden by faculæ on May 31.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1878. d | | | | | | ° | ° | ° |
| May 31·420 | G | 0 | 11 | 0 | 13 | 3·5 | + 4·4 | −65·4 |
| June 1·088 | Me | 0 | 13 | 0 | 12 | 4·0 | + 4·9 | −56·1 |
| 2·280 | I | 3 | 18 | 2 | 12 | 5·1 | + 4·6 | −39·2 |
| 3·285 | I | 5 | 14 | 3 | 8 | 5·1 | + 4·8 | −25·8 |
| Means ... | ... | ... | ... | 1 | 11 | 4·43 | + 4·68 | ... |

### Group 274.

Two small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 10·451 | G | 0 | 19 | 0 | 14 | 343·8 | − 6·7 | +47·7 |
| Means ... | ... | ... | ... | 0 | 14 | 343·8 | − 6·7 | ... |

### Group 275.

Two regular spots, *a* and *b*. They both increase in size, and *b* divides into two parts, *b* and *c*, on July 28.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 26·516 | G | 17 | 80 | 12 | 56 | 126·1 | +13·8 | +42·6 |
| 27·501 | G | 41 | 188 | 36 | 167 | 125·6 | +13·6 | +55·2 |
| 28·502 | G | 39 | 194 | 54 | 277 | 126·9 | +13·6 | +69·7 |
| 29·508 | G | 3 | 38 | 8 | 94 | 122·6 | +13·3 | +78·8 |
| Means ... | ... | ... | ... | 28 | 149 | 125·30 | +13·58 | ... |

### Group 276.

One small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 26·406 | G | 5 | 18 | 3 | 11 | 83·2 | +15·3 | +35·3 |
| Means ... | ... | ... | ... | 3 | 11 | 83·2 | +15·3 | ... |

### Group 277.

One regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sept. 2·552 | G | 11 | 64 | 24 | 141 | 186·3 | + 3·7 | −77·4 |
| 3·532 | G | 27 | 119 | 30 | 134 | 186·8 | + 3·6 | −64·0 |
| 4·405 | G | 38 | 201 | 31 | 165 | 187·2 | + 4·2 | −52·1 |
| 5·185 | Ma | 37 | 233 | 25 | 154 | (187·2 | + 4·1 | −41·8) |
| 6·543 | G | 71 | 259 | 39 | 142 | 187·2 | + 3·9 | −23·8 |
| 7·393 | G | 64 | 287 | 33 | 148 | 187·6 | + 4·1 | −12·2 |
| 8·281 | I | 70 | 354 | 35 | 178 | 188·1 | + 3·8 | 0·0 |
| 9·560 | G | 52 | 265 | 27 | 139 | 188·1 | + 3·4 | +16·9 |
| 10·561 | G | 55 | 249 | 32 | 145 | 188·6 | + 4·0 | +30·6 |
| 11·499 | G | 44 | 210 | 31 | 145 | 189·0 | + 4·0 | +43·4 |
| 12·399 | G | 36 | 144 | 32 | 126 | 189·2 | + 4·2 | +55·5 |
| 13·500 | G | 18 | 64 | 28 | 100 | 190·0 | + 4·1 | +70·9 |
| Means ... | ... | ... | ... | 31 | 143 | 187·94 | + 3·93 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date, Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 278.** One regular spot. | | | | | | | | |
| 1878. d | | | | | | ° | ° | ° |
| Oct. 29·305 | I | 8 | 66 | 13 | 103 | 163·1 | +10·3 | −71·7 |
| 30·182 | I | 13 | 94 | 13 | 91 | 163·4 | +10·6 | −59·9 |
| 31·204 | I | 24 | 146 | 17 | 105 | 163·9 | +10·6 | −45·9 |
| Nov. 1·495 | G | 33 | 158 | 19 | 91 | 163·4 | +10·6 | −29·4 |
| 2·283 | I | 26 | 149 | 14 | 79 | 163·3 | +10·6 | −19·1 |
| 3·304 | I | 26 | 140 | 13 | 71 | 163·0 | +10·4 | − 5·9 |
| 4·214 | I | 18 | 128 | 9 | 65 | 163·2 | + 9·9 | + 6·3 |
| 5·547 | G | 31 | 130 | 17 | 71 | 162·8 | +10·1 | +23·5 |
| 6·319 | I | 21 | 109 | 13 | 66 | 163·0 | +10·3 | +33·8 |
| 7·508 | G | 26 | 91 | 20 | 71 | 163·6 | +10·5 | +50·1 |
| 8·300 | I | 16 | 69 | 16 | 69 | 163·3 | +10·6 | +60·2 |
| 9·182 | I | 7 | 23 | 11 | 37 | 163·3 | +10·4 | +72·0 |
| Means ... | ... | ... | ... | 15 | 77 | 163·28 | +10·41 | ... |

| Date, Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 278A.** A small regular spot. | | | | | | | | |
| 1878. d | | | | | | ° | ° | ° |
| Nov. 20·290 | I | 3 | 20 | 8 | 50 | 226·1 | + 4·2 | −78·9 |
| 21·328 | I | 2 | 16 | 2 | 19 | 226·5 | + 3·9 | −64·8 |
| 22·214 | I | 0 | 23 | 0 | 19 | 226·7 | + 4·3 | −52·9 |
| Means ... | ... | ... | ... | 3 | 29 | 226·43 | + 4·14 | ... |
| **Group 278B.** A small regular spot. | | | | | | | | |
| Dec. 19·439 | I | 5 | 28 | 7 | 36 | 348·1 | − 1·7 | +67·3 |
| 20·168 | I | 4 | 11 | 9 | 26 | 348·4 | − 1·4 | +77·1 |
| Means ... | ... | ... | ... | 8 | 31 | 348·25 | − 1·55 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 278C.** A few very small spots in a compact cluster on January 30. A single small spot on January 31. | | | | | | | | |
| 1879. d | | | | | | ° | ° | ° |
| Jan. 30·304 | I | 6 | 43 | 4 | 29 | 129·9 | −23·7 | +40·3 |
| 31·290 | I | 0 | 8 | 0 | 7 | 130·5 | −23·9 | +53·9 |
| Means ... | ... | ... | ... | 2 | 18 | 130·20 | −23·8 | ... |
| **Group 279.** A stream of spots. The leader, *a*, is a large regular spot, followed by small spots, *b*, *c*, and *d*. *b* and *d* have disappeared by April 17, *c* by April 19. | | | | | | | | |
| Apr. 15·594 | G | 64 | 320 | 36 | 182 | 153·4 | −21·1 | −23·8 |
| 16·087 | Me | 58 | 413 | 32 | 227 | 152·0 | −20·8 | −18·6 |
| 17·595 | G | 64 | 276 | 33 | 144 | 153·0 | −20·8 | + 2·2 |
| 18·453 | G | 62 | 315 | 33 | 169 | 153·4 | −20·6 | +14·0 |
| 19·540 | G | 46 | 215 | 27 | 128 | 154·5 | −20·4 | +29·4 |
| 20·062 | Me | 36 | 204 | 23 | 130 | 154·3 | −20·3 | +36·1 |
| 21·128 | Me | 29 | 176 | 23 | 140 | 154·3 | −20·7 | +50·1 |
| 22·058 | Me | 29 | 166 | 31 | 178 | 154·2 | −20·7 | +62·3 |
| 23·098 | Me | 0 | 104 | 0 | 207 | 154·3 | −21·0 | +76·2 |
| Means ... | ... | ... | ... | 26 | 167 | 153·71 | −20·71 | ... |
| **Group 280.** A very small spot, surrounded by faculæ. | | | | | | | | |
| Apr. 18·453 | G | 0 | 8 | 0 | 9 | 77·1 | −26·4 | −62·4 |
| Means ... | ... | ... | ... | 0 | 9 | 77·1 | −26·4 | ... |
| **Group 281.** A small regular spot, *a*, with a very small faint companion, *b*, on May 10. | | | | | | | | |
| May 9·083 | Me | 0 | 111 | 0 | 84 | 181·2 | +14·4 | −45·6 |
| 10·425 | G | 25 | 80 | 15 | 48 | 180·6 | +14·2 | −28·5 |
| 11 | ... | No photograph. | | (10 | 32 | 181·2 | +13·9 | −13·9) |
| 12·504 | G | 7 | 30 | 4 | 16 | 181·9 | +13·6 | + 0·3 |
| Means ... | ... | ... | ... | 7 | 45 | 181·23 | +14·03 | ... |
| **Group 282.** | | | | | | | | |
| **Group 282—*continued.*** | | | | | | | | |
| 1879. d | | | | | | ° | ° | ° |
| July 1·122 | Me | 61 | 454 | 36 | 268 | 256·4 | −26·7 | +11·5 |
| 2·438 | G | 41 | 194 | 28 | 133 | 260·4 | −26·5 | +32·9 |
| 3·087 | Me | 39 | 216 | 31 | 165 | 259·3 | −26·8 | +40·3 |
| 4·496 | G | 17 | 75 | 20 | 90 | 261·0 | −26·3 | +60·7 |
| 5·439 | G | 4 | 34 | 8 | 74 | 261·0 | −26·5 | +73·2 |
| Means ... | ... | ... | ... | 30 | 146 | 258·43 | −26·44 | ... |
| **Group 283.** A small faint regular spot. | | | | | | | | |
| July 1·122 | Me | 0 | 10 | 0 | 20 | 170·0 | +28·1 | −74·9 |
| 2·438 | G | 3 | 10 | 3 | 10 | 169·7 | +27·7 | −57·8 |
| 3·087 | Me | 10 | 30 | 8 | 25 | 169·9 | +27·9 | −49·1 |
| 4·496 | G | 0 | 19 | 0 | 12 | 169·5 | +27·4 | −30·8 |
| 5·439 | G | 2 | 17 | 1 | 10 | 169·5 | +27·2 | −18·3 |
| Means ... | ... | ... | ... | 2 | 15 | 169·72 | +27·66 | ... |
| **Group 283A.** A large regular spot. | | | | | | | | |
| July 11·489 | Ma | 31 | 178 | 16 | 95 | (90·5 | + 5·5 | −17·2) |
| 12·420 | Ma | 45 | 410 | 22 | 206 | (90·5 | + 5·5 | − 5·0) |
| 13 | ... | No photograph. | | (17 | 163 | 90·5 | + 5·5 | + 8·3) |
| 14·417 | Ma | 24 | 227 | 13 | 121 | (90·5 | + 5·5 | +21·5) |
| 15·122 | Me | 40 | 222 | 23 | 129 | 90·5 | + 5·5 | +30·8 |
| 16·423 | Ma | 8 | 97 | 6 | 72 | (90·5 | + 5·5 | +48·0) |
| Means ... | ... | ... | ... | 16 | 131 | 90·5 | + 5·5 | ... |
| **Group 284.** A small regular spot. | | | | | | | | |
| Aug. 11·420 | Ma | 0 | 18 | 0 | 14 | (98·8 | −17·4 | +40·1) |
| 12·507 | G | 19 | 59 | 19 | 57 | 98·8 | −17·4 | +54·5 |
| 13·430 | G | 9 | 20 | 13 | 29 | 98·9 | −17·4 | +66·9 |
| Means ... | ... | ... | ... | 11 | 33 | 98·83 | −17·40 | ... |
| **Group 285.** A small spot on August 11. Four spots in an irregular group on August 12. | | | | | | | | |
| Aug. 11·420 | Ma | 8 | 79 | 6 | 55 | (94·1 | + 9·8 | +35·4) |
| 12·507 | G | 62 | 163 | 48 | 127 | 94·1 | + 9·8 | +49·8 |
| 13·430 | G | 50 | 132 | 52 | 138 | 94·2 | +10·2 | +62·2 |
| Means ... | ... | ... | ... | 35 | 107 | 94·13 | + 9·93 | ... |
| **Group 282.** | | | | | | | | |
| **Group 282—*continued.*** | | | | | | | | |
| 1879. d | | | | | | ° | ° | ° |
| July 1·122 | Me | 61 | 454 | 36 | 268 | 256·4 | −26·7 | +11·5 |
| 2·438 | G | 41 | 194 | 28 | 133 | 260·4 | −26·5 | +32·9 |
| 3·087 | Me | 39 | 216 | 31 | 165 | 259·3 | −26·8 | +40·3 |
| 4·496 | G | 17 | 75 | 20 | 90 | 261·0 | −26·3 | +60·7 |
| 5·439 | G | 4 | 34 | 8 | 74 | 261·0 | −26·5 | +73·2 |
| Means ... | ... | ... | ... | 30 | 146 | 258·43 | −26·44 | ... |
| **Group 283.** A small faint regular spot. | | | | | | | | |
| July 1·122 | Me | 0 | 10 | 0 | 20 | 170·0 | +28·1 | −74·9 |
| 2·438 | G | 3 | 10 | 3 | 10 | 169·7 | +27·7 | −57·8 |
| 3·087 | Me | 10 | 30 | 8 | 25 | 169·9 | +27·9 | −49·1 |
| 4·496 | G | 0 | 19 | 0 | 12 | 169·5 | +27·4 | −30·8 |
| 5·439 | G | 2 | 17 | 1 | 10 | 169·5 | +27·2 | −18·3 |
| Means ... | ... | ... | ... | 2 | 15 | 169·72 | +27·66 | ... |
| **Group 283A.** A large regular spot. | | | | | | | | |
| July 11·489 | Ma | 31 | 178 | 16 | 95 | (90·5 | + 5·5 | −17·2) |
| 12·420 | Ma | 45 | 410 | 22 | 206 | (90·5 | + 5·5 | − 5·0) |
| 13 | ... | No photograph. | | (17 | 163 | 90·5 | + 5·5 | + 8·3) |
| 14·417 | Ma | 24 | 227 | 13 | 121 | (90·5 | + 5·5 | +21·5) |
| 15·122 | Me | 40 | 222 | 23 | 129 | 90·5 | + 5·5 | +30·8 |
| 16·423 | Ma | 8 | 97 | 6 | 72 | (90·5 | + 5·5 | +48·0) |
| Means ... | ... | ... | ... | 16 | 131 | 90·5 | + 5·5 | ... |
| **Group 284.** A small regular spot. | | | | | | | | |
| Aug. 11·420 | Ma | 0 | 18 | 0 | 14 | (98·8 | −17·4 | +40·1) |
| 12·507 | G | 19 | 59 | 19 | 57 | 98·8 | −17·4 | +54·5 |
| 13·430 | G | 9 | 20 | 13 | 29 | 98·9 | −17·4 | +66·9 |
| Means ... | ... | ... | ... | 11 | 33 | 98·83 | −17·40 | ... |
| **Group 285.** A small spot on August 11. Four spots in an irregular group on August 12. | | | | | | | | |
| Aug. 11·420 | Ma | 8 | 79 | 6 | 55 | (94·1 | + 9·8 | +35·4) |
| 12·507 | G | 62 | 163 | 48 | 127 | 94·1 | + 9·8 | +49·8 |
| 13·430 | G | 50 | 132 | 52 | 138 | 94·2 | +10·2 | +62·2 |
| Means ... | ... | ... | ... | 35 | 107 | 94·13 | + 9·93 | ... |
| **Group 281.** A small regular spot, *a*, with a very small faint companion, *b*, on May 10. | | | | | | | | |
| May 9·083 | Me | 0 | 111 | 0 | 84 | 181·2 | +14·4 | −45·6 |
| 10·425 | G | 25 | 80 | 15 | 48 | 180·6 | +14·2 | −28·5 |
| 11 | ... | No photograph. | | (10 | 32 | 181·2 | +13·9 | −13·9) |
| 12·504 | G | 7 | 30 | 4 | 16 | 181·9 | +13·6 | + 0·3 |
| Means ... | ... | ... | ... | 7 | 45 | 181·23 | +14·03 | ... |
| **Group 282z.** A regular spot, *a*, followed by a fainter spot, *b*, which is surrounded by minute markings. *b* undergoes much change, and has disappeared by July 4. | | | | | | | | |
| June 27·404 | G | 55 | 142 | 40 | 105 | 255·1 | −26·3 | −39·1 |
| 28·526 | G | 65 | 232 | 41 | 143 | 257·4 | −25·9 | −21·9 |
| 29 | ... | No photograph. | | (37 | 161 | 257·6 | −26·3 | − 8·8) |
| 30·483 | G | 56 | 309 | 33 | 179 | 257·7 | −26·7 | + 4·3 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 285A.** A regular spot. | | | | | | | | |
| 1879. d | | | | | | ° | ° | ° |
| Aug. 28·092 | Me | 0 | 49 | 0 | 52 | 260·9 | +14·1 | +62·6 |
| Means ... | ... | ... | ... | 0 | 52 | 260·9 | +14·1 | ... |
| **Group 286.** A regular spot, *a*, followed by some small spots, *b* and *c*, in a short stream. | | | | | | | | |
| Aug. 28·092 | Me | 53 | 224 | 47 | 198 | 144·0 | +29·4 | −54·3 |
| 29 | ... | No photograph. | | (41 | 189 | 143·6 | +28·6 | −38·8) |
| 30·501 | G | 61 | 308 | 35 | 173 | 143·2 | +27·8 | −23·3 |
| 31·208 | Ma | 24 | 224 | 13 | 124 | (143·0 | +28·1 | −14·2) |
| Sept. 1·512 | G | 74 | 313 | 40 | 169 | 142·8 | +28·4 | + 2·9 |
| 2·512 | G | 54 | 277 | 30 | 155 | 142·4 | +28·4 | +15·7 |
| 3·464 | G | 51 | 289 | 31 | 174 | 141·6 | +28·4 | +27·5 |
| 4·407 | G | 50 | 245 | 34 | 168 | 141·5 | +28·6 | +39·8 |
| 5·218 | Ma | 24 | 115 | 19 | 90 | (141·5 | +28·6 | +50·5) |
| 6 | ... | No photograph. | | (24 | 119 | 141·5 | +28·6 | +63·5) |
| 7·190 | Ma | 18 | 96 | 28 | 148 | (141·5 | +28·6 | +76·5) |
| Means ... | ... | ... | ... | 31 | 155 | 142·42 | +28·50 | ... |
| **Group 287.** A regular spot. | | | | | | | | |
| Sept. 24·438 | G | 17 | 73 | 23 | 96 | 128·9 | +29·3 | −68·3 |
| 25·576 | G | 17 | 54 | 15 | 48 | 128·6 | +29·5 | −53·6 |
| 26·555 | G | 29 | 66 | 20 | 47 | 128·4 | +29·7 | −40·9 |
| 27·504 | G | 13 | 38 | 8 | 24 | 127·6 | +29·7 | −29·2 |
| Means ... | ... | ... | ... | 17 | 54 | 128·38 | +29·55 | ... |
| **Group 288.** A short stream. The leader, *a*, is a small spot crossed by a very narrow bridge, on October 2, and separated into a pair of small spots by October 3. The following part of the group consists of a cluster, *b*, of three or four very small spots. | | | | | | | | |
| Oct. 2·581 | G | 28 | 85 | 18 | 56 | 116·6 | −23·4 | +26·8 |
| 3·406 | G | 28 | 103 | 21 | 77 | 117·3 | −22·9 | +38·4 |
| Means ... | ... | ... | ... | 20 | 67 | 116·95 | −23·15 | ... |
| **Group 289.** A stream of spots, inclined at a considerable angle to the equator. | | | | | | | | |
| Oct. 7·481 | G | 6 | 34 | 14 | 72 | 307·5 | +17·0 | −77·6 |
| 8·116 | Me | 0 | 51 | 0 | 64 | 309·2 | +17·3 | −67·6 |
| 9 | ... | No photograph. | | (22 | 94 | 306·6 | +17·8 | −53·8) |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 289—*continued.*** | | | | | | | | |
| 1879. d | | | | | | ° | ° | ° |
| Oct. 10·597 | G | 63 | 188 | 43 | 124 | 304·0 | +18·3 | −40·0 |
| 11·549 | Ma | 0 | 161 | 0 | 92 | (304·0 | +18·3 | −27·5) |
| 12 | ... | No photograph. | | (0 | 65 | 304·0 | +18·3 | −14·8) |
| 13 | ... | No photograph. | | (1 | 39 | 304·0 | +18·3 | − 2·1) |
| 14·443 | Ma | 2 | 24 | 1 | 12 | (304·0 | +18·3 | +10·6) |
| Means ... | ... | ... | ... | 10 | 70 | 305·41 | +17·95 | ... |
| **Group 290.** Three small spots. The leader, *a*, and the last spot, *c*, are both regular spots. | | | | | | | | |
| Oct. 14·443 | Ma | 6 | 77 | 6 | 79 | (232·8 | +25·3 | −60·6) |
| 15·552 | G | 14 | 66 | 11 | 50 | 232·8 | +25·3 | −45·7 |
| Means ... | ... | ... | ... | 9 | 65 | 232·8 | +25·3 | ... |
| **Group 291.** Two very small spots on October 16, which have coalesced to form a large spot, *a*, by October 18. This spot is the leader of a fine stream, of which *b*, a large regular spot, is the last member. The smaller spots in the centre of the group are lettered *c*. | | | | | | | | |
| Oct. 16·522 | G | 0 | 34 | 0 | 19 | 261·1 | −22·0 | − 4·8 |
| 17·189 | Ma | 0 | 34 | 0 | 20 | (261·8 | −22·4 | + 4·6) |
| 18·512 | G | 163 | 666 | 102 | 412 | 262·5 | −22·8 | +22·9 |
| 19·206 | Ma | 70 | 609 | 47 | 410 | (262·8 | −22·8 | +32·3) |
| 20·433 | G | 126 | 519 | 114 | 464 | 263·0 | −22·8 | +48·7 |
| 21·483 | G | 48 | 266 | 71 | 377 | 265·3 | −23·2 | +64·8 |
| Means ... | ... | ... | ... | 56 | 284 | 262·75 | −22·67 | ... |
| **Group 292.** A few small spots. | | | | | | | | |
| Nov. 7·533 | G | 32 | 92 | 18 | 53 | 345·2 | +31·7 | + 9·6 |
| 8·182 | Ma | 11 | 69 | 6 | 42 | (345·2 | +31·7 | +18·2) |
| 9·206 | Ma | 0 | 54 | 0 | 36 | (345·2 | +31·7 | +31·7) |
| 10·205 | Ma | 0 | 19 | 0 | 15 | (345·2 | +31·7 | +44·8) |
| 11·205 | Ma | 0 | 78 | 0 | 86 | (345·2 | +31·7 | +58·0) |
| Means ... | ... | ... | ... | 5 | 46 | 345·2 | +31·7 | ... |
| **Group 293.** A very small spot. | | | | | | | | |
| Nov. 7·533 | G | 0 | 12 | 0 | 7 | 307·4 | +17·7 | −28·2 |
| Means ... | ... | ... | ... | 0 | 7 | 307·4 | +17·7 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 294.

A few small faint spots in two clusters, *a* and *b*.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1879. d | | | | | | ° | ° | ° |
| Nov. 7·533 | G | 11 | 42 | 7 | 37 | 282·7 | +26·4 | −52·9 |
| 8·182 | Ma | 0 | 26 | 0 | 19 | (282·7 | +26·4 | −44·3) |
| Means ... | ... | ... | ... | 3 | 28 | 282·7 | +26·4 | ... |

### Group 295.

A fine stream of spots, consisting chiefly at first of three regular spots, *a*, *b*, and *c*.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Nov. 7·533 | G | 56 | 293 | 81 | 435 | 268·6 | −22·7 | −67·0 |
| 8·182 | Ma | 63 | 402 | 71 | 440 | (268·1 | −22·6 | −58·9) |
| 9·206 | Ma | 58 | 416 | 47 | 335 | (267·6 | −22·4 | −45·9) |
| 10·205 | Ma | 62 | 467 | 42 | 304 | (267·1 | −22·3 | −33·3) |
| 11·205 | Ma | 49 | 490 | 28 | 279 | (266·7 | −22·1 | −20·5) |
| 12·571 | G | 152 | 487 | 85 | 270 | 266·2 | −22·0 | − 3·0 |
| 13·488 | G | 90 | 389 | 51 | 218 | 267·6 | −21·5 | +10·5 |
| 14·475 | G | 44 | 261 | 26 | 157 | 267·3 | −22·0 | +23·2 |
| 15·503 | G | 27 | 163 | 19 | 111 | 266·6 | −21·9 | +36·1 |
| 16·208 | Ma | 17 | 78 | 14 | 62 | (266·6 | −22·0 | +45·3) |
| 17·163 | Ma | 16 | 66 | 17 | 72 | (266·5 | −22·1 | +57·9) |
| 18·454 | G | 0 | 12 | 0 | 25 | 266·5 | −22·3 | +74·8 |
| Means ... | ... | ... | ... | 40 | 226 | 267·12 | −22·16 | ... |

### Group 296.

One small spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Nov. 25·554 | G | 3 | 15 | 5 | 23 | 27·1 | −12·2 | −70·9 |
| 26 | ... | No photograph. | | (7 | 24 | 25·6 | −12·6 | −59·2) |
| 27 | ... | No photograph. | | (9 | 24 | 24·0 | −12·9 | −47·6) |
| 28·547 | G | 17 | 39 | 11 | 25 | 22·5 | −13·3 | −36·1 |
| 29·174 | Ma | 0 | 26 | 0 | 15 | 22·5 | −13·3 | −27·8 |
| Means ... | ... | ... | ... | 6 | 22 | 24·34 | −12·86 | ... |

### Group 297.

One small spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1879. d | | | | | | ° | ° | ° |
| Nov. 28·547 | G | 0 | 10 | 0 | 10 | 111·5 | +30·3 | +52·9 |
| Means ... | ... | ... | ... | 0 | 10 | 111·5 | +30·3 | ... |

### Group 298.

Two small spots close together, which have coalesced by December 2.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Nov. 28·547 | G | 4 | 25 | 5 | 30 | 355·7 | −20·8 | −62·9 |
| 29·174 | Ma | 0 | 78 | 0 | 70 | (356·7 | −20·7 | −53·6) |
| 30 | ... | No photograph. | | (5 | 60 | 357·7 | −20·6 | −39·2) |
| Dec. 1·222 | Ma | 16 | 81 | 9 | 49 | (358·6 | −20·5 | −24·8) |
| 2·555 | G | 37 | 163 | 20 | 88 | 359·6 | −20·4 | − 6·2 |
| 3·537 | G | 19 | 102 | 10 | 55 | 0·3 | −20·4 | + 7·5 |
| 4·467 | G | 4 | 20 | 2 | 12 | 0·5 | −20·8 | +19·9 |
| Means ... | ... | ... | ... | 7 | 52 | 358·44 | −20·60 | ... |

### Group 299.

A small faint spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Dec. 1·222 | Ma | 0 | 19 | 0 | 15 | (350·0 | −22·3 | −33·4) |
| 2·555 | G | 5 | 32 | 3 | 18 | 350·0 | −22·3 | −15·8 |
| 3·537 | G | 0 | 18 | 0 | 10 | 349·8 | −22·3 | − 3·0 |
| Means ... | ... | ... | ... | 1 | 14 | 349·93 | −22·30 | ... |

### Group 300.

Three small spots close together.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Dec. 16·516 | G | 11 | 33 | 9 | 27 | 131·8 | −18·9 | −50·0 |
| 17·389 | I | 47 | 242 | 31 | 161 | 133·1 | −19·5 | −37·2 |
| 18·259 | I | 50 | 258 | 29 | 152 | 132·8 | −19·9 | −26·1 |
| 19·407 | I | 60 | 270 | 32 | 145 | 132·3 | −19·5 | −11·5 |
| 20·171 | I | 36 | 294 | 19 | 155 | 132·6 | −19·5 | − 1·1 |
| 21·191 | I | 48 | 297 | 26 | 160 | 133·3 | −19·4 | +13·0 |
| Means ... | ... | ... | ... | 24 | 133 | 132·65 | −19·45 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 301.** A small spot, gradually increasing in size as it approaches the central meridian. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Jan. 3·476 | G | 25 | 79 | 33 | 107 | 240·0 | +20·2 | −65·3 |
| 4·208 | I | 27 | 116 | 26 | 110 | 241·3 | +19·8 | −54·4 |
| 5·232 | I | 74 | 340 | 55 | 252 | 240·0 | +19·5 | −42·1 |
| 6·324 | I | 59 | 392 | 37 | 243 | 240·2 | +19·6 | −27·5 |
| 7·183 | I | 98 | 635 | 56 | 366 | 239·4 | +19·3 | −18·0 |
| 8 | ... | No photograph. | | (63 | 355 | 240·1 | +19·3 | − 4·2) |
| 9·109 | Me | 125 | 613 | 70 | 343 | 240·7 | +19·2 | + 9·6 |
| 10·285 | I | 111 | 612 | 68 | 373 | 241·5 | +19·0 | +26·0 |
| 11·269 | I | 92 | 459 | 65 | 323 | 241·3 | +19·1 | +38·7 |
| 12·475 | G | 59 | 318 | 57 | 307 | 241·8 | +19·0 | +55·0 |
| 13·307 | I | 42 | 254 | 59 | 353 | 241·5 | +19·1 | +65·7 |
| 14·285 | I | 19 | 93 | 58 | 291 | 241·4 | +19·6 | +78·5 |
| Means ... | ... | ... | ... | 54 | 285 | 240·77 | +19·39 | ... |
| **Group 301A.** A regular spot, followed by some small companions. The leader alone remains by January 6. | | | | | | | | |
| Jan. 4·208 | I | 6 | 45 | 9 | 63 | 226·6 | −18·8 | −73·1 |
| 5·232 | I | 32 | 122 | 28 | 108 | 227·5 | −18·9 | −54·6 |
| 6·324 | I | 21 | 96 | 14 | 63 | 229·4 | −17·6 | −38·3 |
| 7·183 | I | 23 | 116 | 13 | 66 | 230·7 | −17·4 | −26·7 |
| Means ... | ... | ... | ... | 16 | 75 | 228·55 | −18·18 | ... |
| **Group 301B.** A stream of small spots, forming *s* of Group 301. | | | | | | | | |
| Jan. 5·232 | I | 7 | 44 | 4 | 27 | 254·0 | +17·3 | −28·1 |
| 6·324 | I | 11 | 56 | 6 | 31 | 254·8 | +17·4 | −12·9 |
| 7·183 | I | 7 | 85 | 4 | 46 | 255·2 | +17·4 | − 2·2 |
| Means ... | ... | ... | ... | 5 | 35 | 254·67 | +17·37 | ... |
| **Group 301C.** A very small spot forming *s* of the place of Group 301A. | | | | | | | | |
| Jan. 10·285 | I | 0 | 14 | 0 | 8 | 238·0 | −23·8 | +22·5 |
| Means ... | ... | ... | ... | 0 | 8 | 238·0 | −23·8 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 302.** Two small spots with a few small faint markings near. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Jan. 12·475 | G | 55 | 126 | 37 | 86 | 228·1 | −17·2 | +41·3 |
| 13·307 | I | 31 | 178 | 26 | 146 | 228·0 | −17·2 | +52·2 |
| 14·285 | I | 102 | 506 | 119 | 592 | 227·9 | −16·4 | +65·0 |
| 15·207 | I | 40 | 208 | 86 | 444 | 228·2 | −15·5 | +77·4 |
| Means ... | ... | ... | ... | 67 | 317 | 228·05 | −16·58 | ... |
| **Group 303.** Three spots. The middle one is very small and faint, and has disappeared by January 13. The rear spot remains alone on January 15. | | | | | | | | |
| Jan. 9·109 | Me | 0 | 74 | 0 | 78 | 180·8 | +35·4 | −50·3 |
| 10·285 | I | 28 | 143 | 23 | 119 | 177·9 | +35·1 | −37·6 |
| 11·269 | I | 17 | 144 | 12 | 105 | 175·9 | +35·2 | −26·5 |
| 12·475 | G | 33 | 116 | 23 | 77 | 176·3 | +35·3 | −10·5 |
| 13·307 | I | 0 | 114 | 0 | 74 | 176·3 | +35·1 | + 0·5 |
| 14·285 | I | 10 | 64 | 7 | 43 | 174·5 | +35·2 | +11·6 |
| 15·207 | I | 0 | 27 | 0 | 19 | 171·3 | +35·1 | +20·5 |
| Means ... | ... | ... | ... | 9 | 74 | 176·14 | +35·20 | ... |
| **Group 304.** Two small faint spots. | | | | | | | | |
| Jan. 12·475 | G | 0 | 9 | 0 | 12 | 116·8 | −18·7 | −70·0 |
| Means ... | ... | ... | ... | 0 | 12 | 116·8 | −18·7 | ... |
| **Group 305.** A large irregular composite spot, preceded by a cluster of faint spots, which disappear before the group reaches the west limb. | | | | | | | | |
| Jan. 14·285 | I | 16 | 134 | 8 | 70 | 176·6 | −12·7 | +13·7 |
| 15·207 | I | 120 | 531 | 67 | 297 | 175·5 | −13·3 | +24·7 |
| 16·284 | I | 195 | 842 | 126 | 549 | 176·4 | −13·3 | +39·8 |
| 17·498 | G | 103 | 478 | 89 | 412 | 175·3 | −12·8 | +54·7 |
| 18 | ... | No photograph. | | (56 | 243 | 173·9 | −13·1 | +66·1) |
| 19·445 | G | 11 | 34 | 24 | 74 | 172·5 | −13·5 | +77·5 |
| Means ... | ... | ... | ... | 62 | 274 | 175·03 | −13·12 | ... |
| **Group 305*a*.** A small spot, *n*, of Group 305. | | | | | | | | |
| Jan. 14·285 | I | 0 | 27 | 0 | 14 | 173·5 | − 4·7 | +10·6 |
| 15·207 | I | 0 | 26 | 0 | 14 | 171·4 | − 4·9 | +20·6 |
| Means ... | ... | ... | ... | 0 | 14 | 172·45 | − 4·80 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 306.** Several small faint spots in a straggling group. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Jan. 16·284 | I | 8 | 58 | 4 | 31 | 140·6 | −24·0 | + 4·0 |
| 17·498 | G | 18 | 61 | 10 | 35 | 141·7 | −24·0 | +21·1 |
| 18 | ... | No photograph. | | (17 | 58 | 143·7 | −24·3 | +35·9) |
| 19·445 | G | 30 | 100 | 24 | 82 | 145·7 | −24·7 | +50·7 |
| 20·172 | I | 10 | 81 | 10 | 82 | 144·7 | −25·5 | +59·3 |
| 21·218 | I | 0 | 26 | 0 | 59 | 150·0 | −23·0 | +78·3 |
| Means ... | ... | ... | ... | 11 | 58 | 144·40 | −24·25 | ... |
| **Group 306A.** A very small spot. | | | | | | | | |
| Jan. 24·284 | I | 0 | 7 | 0 | 5 | 75·4 | +17·8 | +44·1 |
| Means ... | ... | ... | ... | 0 | 5 | 75·4 | +17·8 | ... |
| **Group 307.** Two small faint spots. | | | | | | | | |
| Jan. 26·451 | G | 0 | 20 | 0 | 14 | 323·7 | +17·9 | −39·1 |
| Means ... | ... | ... | ... | 0 | 14 | 323·7 | +17·9 | ... |
| **Group 308.** A large spot preceded by one small spot, and followed by another. The large spot has divided into two portions by February 2, and a third fragment has broken off by February 3. The stream thus formed diminishes in size, and only the leader spot remains by February 10. | | | | | | | | |
| Jan. 30·544 | G | 43 | 188 | 104 | 448 | 233·8 | +19·4 | −75·1 |
| 31·421 | G | 77 | 391 | 104 | 547 | 232·1 | +19·6 | −65·2 |
| Feb. 1·153 | I | 151 | 706 | 149 | 704 | 232·8 | +19·7 | −54·9 |
| 2·513 | G | 115 | 531 | 81 | 376 | 232·6 | +19·9 | −37·2 |
| 3·323 | I | 95 | 673 | 58 | 418 | 233·3 | +20·1 | −25·8 |
| 4·501 | G | 117 | 488 | 67 | 279 | 232·9 | +20·1 | −10·7 |
| 5·478 | G | 112 | 459 | 63 | 258 | 232·6 | +20·2 | + 1·9 |
| 6·250 | I | 96 | 413 | 55 | 237 | 232·9 | +20·3 | +12·3 |
| 7·242 | I | 66 | 347 | 41 | 217 | 232·9 | +20·8 | +25·4 |
| 8 | ... | No photograph. | | (36 | 192 | 232·4 | +20·7 | +39·0) |
| 9·382 | I | 33 | 176 | 32 | 167 | 231·9 | +20·7 | +52·6 |
| 10·116 | Me | 25 | 84 | 33 | 112 | 232·9 | +20·7 | +63·3 |
| 11·237 | I | 7 | 30 | 21 | 90 | 231·2 | +20·7 | +76·3 |
| Means ... | ... | ... | ... | 65 | 311 | 232·64 | +20·22 | ... |
| **Group 309.** A regular spot undergoing little or no change. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Jan. 30·544 | G | 20 | 102 | 38 | 194 | 233·1 | −15·4 | −75·8 |
| 31·421 | G | 23 | 181 | 25 | 199 | 233·7 | −15·1 | −63·6 |
| Feb. 1·153 | I | 65 | 234 | 55 | 198 | 233·6 | −15·5 | −54·1 |
| 2·513 | G | 48 | 252 | 30 | 157 | 233·3 | −15·6 | −36·5 |
| 3·323 | I | 61 | 306 | 34 | 172 | 233·5 | −15·3 | −25·6 |
| 4·501 | G | 64 | 262 | 33 | 136 | 233·3 | −15·4 | −10·3 |
| 5·478 | G | 65 | 283 | 33 | 144 | 233·4 | −15·4 | + 2·7 |
| 6·250 | I | 51 | 267 | 26 | 136 | 233·7 | −15·3 | +13·1 |
| 7·242 | I | 50 | 212 | 28 | 120 | 233·7 | −15·1 | +26·2 |
| 8 | ... | No photograph. | | (24 | 95 | 233·4 | −15·2 | +40·0) |
| 9·382 | I | 24 | 84 | 20 | 71 | 233·1 | −15·2 | +53·8 |
| 10·116 | Me | 0 | 43 | 0 | 48 | 233·5 | −15·8 | +63·9 |
| Means ... | ... | ... | ... | 29 | 139 | 233·44 | −15·36 | ... |
| **Group 310.** A large regular spot on February 3. This spot rapidly diminishes in size, and new spots form following it, and by February 12 the group has entirely changed its appearance, being then a stream of small faint spots. | | | | | | | | |
| Feb. 3·323 | I | 12 | 121 | 25 | 257 | 188·0 | +27·6 | −71·1 |
| 4·501 | G | 58 | 255 | 68 | 296 | 186·7 | +27·4 | −56·9 |
| 5·478 | G | 72 | 331 | 62 | 283 | 186·4 | +26·9 | −44·3 |
| 6·250 | I | 101 | 425 | 74 | 310 | 186·4 | +26·5 | −34·2 |
| 7·242 | I | 118 | 555 | 76 | 357 | 185·5 | +26·5 | −22·0 |
| 8 | ... | No photograph. | | (63 | 321 | 185·0 | +26·9 | − 8·4) |
| 9·382 | I | 84 | 472 | 51 | 286 | 184·5 | +27·4 | + 5·2 |
| 10·116 | Me | 38 | 245 | 24 | 154 | 185·4 | +27·6 | +15·8 |
| 11·237 | I | 49 | 361 | 34 | 250 | 181·1 | +28·0 | +26·2 |
| 12·536 | G | 45 | 156 | 36 | 133 | 180·1 | +28·3 | +42·3 |
| 13·446 | G | 1 | 75 | 1 | 79 | 178·7 | +28·2 | +52·9 |
| Means ... | ... | ... | ... | 47 | 248 | 184·35 | +27·39 | ... |
| **Group 311.** A stream of spots, of which the leader and last spots are the principal members. | | | | | | | | |
| Feb. 9·382 | I | 73 | 427 | 42 | 246 | 195·4 | +18·2 | +16·1 |
| 10·116 | Me | 75 | 406 | 46 | 250 | 195·8 | +17·9 | +26·2 |
| 11·237 | I | 77 | 401 | 59 | 304 | 196·4 | +18·1 | +41·5 |
| 12·536 | G | 24 | 186 | 27 | 212 | 197·6 | +18·3 | +59·8 |
| 13·446 | G | 20 | 81 | 41 | 162 | 198·2 | +18·0 | +72·4 |
| Means ... | ... | ... | ... | 43 | 235 | 196·68 | +18·10 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 312.

A spot which rapidly increases in size after February 21. A few small faint markings are seen near it on February 22 to 26.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Feb. 21·400 | G | 11 | 33 | 21 | 66 | 303·8 | −29·1 | −77·3 |
| 22·173 | I | 28 | 171 | 37 | 228 | 302·2 | −29·5 | −68·7 |
| 23·297 | I | 55 | 317 | 48 | 281 | 301·6 | −29·4 | −54·5 |
| 24·284 | I | 52 | 261 | 36 | 184 | 301·9 | −29·1 | −41·3 |
| 25·523 | G | 55 | 308 | 33 | 183 | 301·2 | −29·1 | −25·6 |
| 26·509 | G | 55 | 308 | 31 | 170 | 300·7 | −28·8 | −13·1 |
| 27·430 | G | 56 | 262 | 30 | 142 | 300·6 | −28·8 | − 1·1 |
| 28·221 | I | 99 | 280 | 54 | 153 | 300·9 | −28·6 | + 9·7 |
| 29·168 | I | 88 | 258 | 51 | 149 | 300·4 | −28·9 | +21·6 |
| Mar. 1·528 | G | 47 | 204 | 32 | 138 | 299·5 | −28·7 | +38·6 |
| 2·306 | I | 57 | 212 | 45 | 167 | 299·2 | −28·2 | +48·6 |
| 3·168 | I | 36 | 187 | 35 | 183 | 298·6 | −28·1 | +59·4 |
| 4·482 | G | 7 | 71 | 13 | 127 | 297·8 | −28·3 | +75·9 |
| Means ... | ... | ... | ... | 36 | 167 | 300·65 | −28·82 | ... |

### Group 312*.

Two small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 1·528 | G | 25 | 45 | 17 | 30 | 295·9 | +15·4 | +35·0 |
| 2·306 | I | 7 | 69 | 5 | 55 | 296·3 | +15·8 | +45·7 |
| 3·168 | I | 4 | 62 | 4 | 63 | 296·0 | +15·9 | +56·8 |
| Means ... | ... | ... | ... | 9 | 49 | 296·07 | +15·70 | ... |

### Group 312A.

A very small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 22·173 | I | 0 | 11 | 0 | 8 | 48·0 | +20·7 | +37·1 |
| Means ... | ... | ... | ... | 0 | 8 | 48·0 | +20·7 | ... |

### Group 312B.

A single spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 6·244 | I | 39 | 102 | 21 | 54 | 215·9 | −17·9 | +17·2 |
| 7·216 | I | 24 | 79 | 14 | 47 | 217·4 | −17·4 | +31·5 |
| 8·279 | I | 15 | 65 | 11 | 47 | 217·9 | −17·1 | +46·1 |
| 9·323 | I | 6 | 17 | 6 | 17 | 218·2 | −17·1 | +60·1 |
| Means ... | ... | ... | ... | 13 | 41 | 217·35 | −17·38 | ... |

### Group 313.

A pair of small faint spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Mar. 10·592 | G | 3 | 20 | 3 | 20 | 202·6 | −23·3 | +61·2 |
| 11·518 | G | 0 | 60 | 0 | 78 | 203·1 | −22·8 | +73·9 |
| Means ... | ... | ... | ... | 2 | 49 | 202·85 | −23·05 | ... |

### Group 314.

A regular spot, followed by a cluster of markings at a considerable distance. Both have broken up into two spots each by March 12.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 8·279 | I | 19 | 188 | 11 | 108 | 162·3 | +20·1 | − 9·5 |
| 9·323 | I | 77 | 368 | 44 | 210 | 164·5 | +20·1 | + 6·4 |
| 10·592 | G | 43 | 176 | 27 | 111 | 167·5 | +19·8 | +26·1 |
| 11·518 | G | 31 | 139 | 23 | 102 | 167·9 | +20·2 | +38·7 |
| 12·517 | G | 50 | 181 | 46 | 164 | 166·3 | +20·1 | +50·3 |
| 13·512 | G | 9 | 125 | 11 | 174 | 167·5 | +20·4 | +64·6 |
| 14·164 | I | 24 | 110 | 51 | 242 | 167·5 | +20·4 | +73·1 |
| Means ... | ... | ... | ... | 31 | 159 | 166·21 | +20·16 | ... |

### Group 315.

An irregular spot, surrounded by several smaller spots, which disappear before March 16.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 13·512 | G | 53 | 139 | 30 | 80 | 111·6 | +20·3 | + 8·7 |
| 14·164 | I | 71 | 437 | 43 | 266 | 111·4 | +20·8 | +17·0 |
| 15·175 | I | 85 | 425 | 57 | 286 | 113·1 | +20·6 | +32·1 |
| 16·564 | G | 30 | 169 | 28 | 157 | 114·1 | +20·2 | +51·4 |
| 17·455 | G | 17 | 93 | 23 | 123 | 114·1 | +20·1 | +63·1 |
| 18·607 | G | 0 | 49 | 0 | 174 | 114·5 | +20·4 | +78·7 |
| Means ... | ... | ... | ... | 30 | 180 | 113·13 | +20·40 | ... |

### Group 316.

A small regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 13·512 | G | 6 | 40 | 10 | 63 | 30·1 | −18·1 | −72·8 |
| 14·164 | I | 25 | 78 | 27 | 87 | 30·0 | −17·7 | −64·4 |
| 15·175 | I | 31 | 94 | 24 | 72 | 31·7 | −17·4 | −49·3 |
| 16·564 | G | 24 | 88 | 14 | 52 | 31·8 | −17·0 | −30·9 |
| 17·455 | G | 28 | 83 | 15 | 50 | 31·5 | −16·9 | −19·5 |
| 18·607 | G | 12 | 65 | 6 | 33 | 31·6 | −16·1 | − 4·2 |
| 19·491 | G | 0 | 25 | 0 | 13 | 31·8 | −16·2 | + 7·7 |
| Means ... | ... | ... | ... | 14 | 53 | 31·21 | −17·06 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 316A.

A few spots, mostly small, in a stream inclined at a considerable angle to the equator.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Mar. 27·217 | I | 9 | 33 | 5 | 18 | 287·1 | −30·8 | + 4·9 |
| 28 | ... | No photograph. | | (12 | 52 | 287·9 | −30·0 | +18·7) |
| 29·175 | I | 31 | 138 | 20 | 87 | 288·8 | −29·2 | +32·5 |
| 30·312 | I | 30 | 146 | 24 | 114 | 288·9 | −28·9 | +47·5 |
| 31·303 | I | 16 | 84 | 16 | 84 | 287·3 | −28·7 | +58·9 |
| Means ... | ... | ... | ... | 15 | 71 | 288·00 | −29·52 | ... |

### Group 317.

A large regular spot. Some smaller spots have formed near it by April 3, but have disappeared by April 7. The principal spot has divided into two parts by April 8.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 30·312 | I | 35 | 176 | 54 | 275 | 173·2 | +17·3 | −68·2 |
| 31·303 | I | 35 | 209 | 34 | 205 | 173·2 | +17·0 | −55·2 |
| Apr. 1·510 | G | 44 | 192 | 31 | 138 | 173·2 | +17·9 | −39·2 |
| 2·225 | I | 55 | 253 | 35 | 160 | 173·1 | +18·3 | −29·9 |
| 3·463 | G | 42 | 228 | 24 | 129 | 173·9 | +18·1 | −12·7 |
| 4 | ... | No photograph. | | (32 | 151 | 173·8 | +18·5 | + 0·8) |
| 5·518 | G | 71 | 302 | 41 | 173 | 173·7 | +19·0 | +14·2 |
| 6 | ... | No photograph. | | (40 | 176 | 174·0 | +18·9 | +27·2) |
| 7·447 | G | 54 | 246 | 39 | 179 | 174·3 | +18·8 | +40·2 |
| 8·527 | G | 21 | 105 | 21 | 183 | 174·6 | +19·0 | +54·8 |
| 9·254 | I | 13 | 59 | 17 | 78 | 174·7 | +18·5 | +64·5 |
| Means ... | ... | ... | ... | 33 | 161 | 173·79 | +18·30 | ... |

### Group 317*.

A very small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 1·518 | G | 0 | 10 | 0 | 16 | 283·9 | −33·5 | +71·5 |
| Means ... | ... | ... | ... | 0 | 16 | 283·9 | −33·5 | ... |

### Group 318.

Two small spots, followed on April 3 by a very small companion.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 2·225 | I | 4 | 60 | 2 | 33 | 199·6 | +17·0 | − 3·4 |
| 3·463 | G | 48 | 123 | 27 | 70 | 202·3 | +16·8 | +15·7 |
| 4 | ... | No photograph. | | (17 | 45 | 202·4 | +17·0 | +29·4) |
| 5·518 | G | 7 | 27 | 6 | 20 | 202·6 | +17·2 | +43·1 |
| Means ... | ... | ... | ... | 13 | 42 | 201·73 | +17·00 | ... |

### Group 319.

A stream of spots of which the principal member is a large regular spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Apr. 12·435 | G | 114 | 471 | 66 | 281 | 95·5 | −19·0 | +27·3 |
| 13·426 | G | 126 | 336 | 84 | 224 | 95·7 | −18·8 | +40·6 |
| 14·175 | I | 63 | 271 | 48 | 216 | 95·7 | −19·5 | +50·5 |
| 15·286 | I | 19 | 115 | 24 | 145 | 97·6 | −19·3 | +67·1 |
| 16·460 | G | 0 | 12 | 0 | 39 | 97·7 | −18·8 | +82·6 |
| Means ... | ... | ... | ... | 44 | 181 | 96·44 | −19·08 | ... |

### Group 320.

A number of spots, mostly small, in a long straight stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 25·284 | I | 53 | 388 | 100 | 900 | 183·5 | +20·6 | −74·9 |
| 26·306 | I | 142 | 634 | 174 | 741 | 184·8 | +21·1 | −60·1 |
| 27·572 | G | 170 | 994 | 132 | 765 | 184·8 | +19·9 | −43·4 |
| 28·300 | I | 295 | 1434 | 198 | 958 | 185·2 | +19·9 | −33·5 |
| 29·444 | G | 163 | 692 | 95 | 408 | 183·8 | +20·3 | −19·7 |
| 30·492 | G | 168 | 634 | 94 | 354 | 184·3 | +20·3 | − 5·6 |
| May 1·430 | G | 145 | 471 | 81 | 266 | 186·8 | +20·5 | + 9·5 |
| 2·293 | I | 98 | 348 | 58 | 212 | 188·4 | +21·7 | +22·6 |
| 3·503 | G | 36 | 237 | 27 | 173 | 189·3 | +22·7 | +39·4 |
| 4·224 | I | 27 | 150 | 22 | 123 | 187·4 | +21·0 | +47·1 |
| 5·310 | I | 4 | 43 | 5 | 52 | 188·2 | +21·8 | +62·2 |
| Means ... | ... | ... | ... | 90 | 450 | 186·05 | +20·89 | ... |

### Group 321.

A large spot, with one or two much smaller companions.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| May 2·293 | I | 35 | 237 | 82 | 549 | 91·6 | +26·0 | −74·2 |
| 3·503 | G | 105 | 394 | 123 | 461 | 90·3 | +26·2 | −59·6 |
| 4·224 | I | 71 | 466 | 65 | 422 | 90·7 | +25·6 | −49·6 |
| 5·310 | I | 93 | 575 | 67 | 410 | 90·0 | +25·5 | −36·0 |
| 6·550 | G | 129 | 700 | 79 | 429 | 89·3 | +25·6 | −20·3 |
| 7·415 | G | 117 | 602 | 68 | 350 | 89·0 | +25·7 | − 9·1 |
| 8·471 | G | 140 | 839 | 80 | 482 | 88·7 | +25·6 | + 4·5 |
| 9·217 | I | 155 | 713 | 92 | 422 | 88·2 | +26·1 | +13·9 |
| 10·186 | I | 181 | 847 | 116 | 543 | 87·6 | +26·5 | +26·2 |
| 11·500 | G | 105 | 524 | 85 | 423 | 88·1 | +26·4 | +44·0 |
| 12·451 | G | 97 | 367 | 101 | 383 | 87·6 | +26·4 | +56·1 |
| 13·420 | G | 72 | 265 | 119 | 438 | 87·8 | +25·9 | +69·0 |
| 14·433 | G | 0 | 81 | 0 | 494 | 88·9 | +25·8 | +83·6 |
| Means ... | ... | ... | ... | 83 | 447 | 88·99 | +25·95 | ... |

### Group 321A.

A small spot, *ef*, Group 320.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| May 5·310 | I | 0 | 20 | 0 | 14 | 168·3 | +11·4 | +42·3 |
| Means ... | ... | ... | ... | 0 | 14 | 168·3 | +11·4 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 322.** Two very small spots. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| May 7·415 | G | 6 | 35 | 4 | 20 | 80·4 | −28·1 | −17·7 |
| Means ... | ... | ... | ... | 4 | 20 | 80·4 | −28·1 | ... |
| **Group 323.** Two spots on May 10, of which only the preceding spot remains, much diminished in size, by May 11. | | | | | | | | |
| May 10·186 | I | 4 | 122 | 2 | 66 | 67·1 | +17·6 | + 5·7 |
| 11·500 | G | 8 | 17 | 5 | 10 | 70·4 | +17·3 | +26·3 |
| 12·451 | G | 4 | 13 | 3 | 9 | 70·9 | +16·9 | +39·4 |
| Means ... | ... | ... | ... | 3 | 28 | 69·47 | +17·27 | ... |
| **Group 324.** A pair of small spots, of which the preceding spot has disappeared by May 14. | | | | | | | | |
| May 13·420 | G | 12 | 54 | 9 | 37 | 54·2 | +23·0 | +35·4 |
| 14·433 | G | 0 | 21 | 0 | 18 | 52·0 | +24·1 | +46·7 |
| Means ... | ... | ... | ... | 5 | 28 | 53·10 | +23·55 | ... |
| **Group 325.** A pair of small spots, of which the following spot is very faint. | | | | | | | | |
| May 20·482 | G | 16 | 75 | 14 | 70 | 232·1 | +23·9 | −53·2 |
| 21·535 | G | 11 | 39 | 8 | 28 | 233·1 | +24·1 | −38·3 |
| Means ... | ... | ... | ... | 11 | 49 | 232·60 | +24·0 | ... |
| **Group 325A.** A number of very small spots in a short stream. | | | | | | | | |
| May 24·222 | I | 6 | 20 | 6 | 19 | 290·7 | +19·7 | +54·8 |
| Means ... | ... | ... | ... | 6 | 19 | 290·7 | +19·7 | ... |
| **Group 326.** A fine stream of spots. The group rapidly increases in size until it passes the central meridian on May 30, and diminishes again even more quickly later. | | | | | | | | |
| May 24·222 | I | 8 | 29 | 21 | 74 | 157·7 | +13·8 | −78·2 |
| 25·498 | G | 69 | 292 | 77 | 320 | 157·5 | +13·7 | −61·4 |
| 26·454 | G | 201 | 730 | 158 | 576 | 158·1 | +13·3 | −48·2 |
| 27·602 | G | 253 | 1111 | 156 | 691 | 157·9 | +14·1 | −33·2 |
| 28·507 | G | 324 | 1424 | 180 | 792 | 158·2 | +13·7 | −20·9 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 326—*continued.*** | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| May 29·427 | G | 305 | 1783 | 160 | 937 | 158·2 | +13·9 | − 8·7 |
| 30·280 | I | 455 | 2225 | 236 | 1155 | 158·6 | +14·1 | + 3·0 |
| 31·285 | I | 459 | 1924 | 249 | 1038 | 158·2 | +14·3 | +15·8 |
| June 1·366 | I | 256 | 1152 | 152 | 687 | 157·6 | +14·6 | +29·6 |
| 2·616 | G | 98 | 420 | 73 | 313 | 157·3 | +14·6 | +45·8 |
| 3·223 | I | 60 | 282 | 51 | 250 | 157·7 | +14·8 | +54·2 |
| 4·566 | G | 5 | 40 | 6 | 58 | 155·1 | +15·5 | +69·4 |
| Means ... | ... | ... | ... | 127 | 574 | 157·68 | +14·20 | ... |
| **Group 327.** A regular spot, with a small companion on May 31 and June 1. | | | | | | | | |
| May 30·280 | I | 9 | 48 | 16 | 82 | 84·6 | +25·0 | −71·0 |
| 31·285 | I | 23 | 85 | 25 | 90 | 83·9 | +24·8 | −58·5 |
| June 1·366 | I | 21 | 94 | 16 | 72 | 83·4 | +24·1 | −44·6 |
| 2·616 | G | 24 | 52 | 15 | 32 | 84·3 | +24·2 | −27·2 |
| 3·223 | I | 19 | 60 | 11 | 35 | 84·0 | +24·3 | −19·5 |
| 4·566 | G | 0 | 25 | 0 | 14 | 83·9 | +23·8 | − 1·8 |
| Means ... | ... | ... | ... | 14 | 54 | 84·02 | +24·37 | ... |
| **Group 328.** Several small spots in an irregular stream. | | | | | | | | |
| June 6·289 | I | 17 | 62 | 12 | 44 | 20·4 | +14·8 | −42·5 |
| 7·553 | G | 7 | 29 | 4 | 17 | 20·6 | +14·4 | −25·6 |
| 8·187 | I | 11 | 64 | 6 | 34 | 21·1 | +14·7 | −16·7 |
| 9·201 | I | 8 | 126 | 4 | 66 | 18·9 | +15·1 | − 5·3 |
| 10·485 | G | 39 | 201 | 21 | 106 | 18·2 | +14·6 | +10·9 |
| 11·212 | I | 29 | 87 | 16 | 48 | 18·7 | +14·6 | +21·0 |
| 12·433 | G | 30 | 104 | 19 | 66 | 17·5 | +15·1 | +36·0 |
| Means ... | ... | ... | ... | 12 | 54 | 19·34 | +14·76 | ... |
| **Group 329.** A small spot, with a very small companion on June 11. | | | | | | | | |
| June 8·187 | I | 0 | 12 | 0 | 42 | 316·6 | −21·4 | −81·2 |
| 9·201 | I | 11 | 33 | 15 | 47 | 316·7 | −21·4 | −67·6 |
| 10·485 | G | 16 | 33 | 14 | 28 | 316·8 | −21·6 | −50·5 |
| 11·212 | I | 13 | 39 | 10 | 29 | 315·8 | −21·7 | −41·9 |
| Means ... | ... | ... | ... | 10 | 37 | 316·48 | −21·53 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 330.

A regular spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| June 15·200 | I | 32 | 100 | 51 | 161 | 234·1 | +23·3 | −70·8 |
| 16·233 | I | 30 | 142 | 29 | 139 | 234·2 | +23·4 | −57·0 |
| 17·282 | I | 35 | 214 | 26 | 160 | 233·5 | +23·4 | −43·9 |
| 18·501 | G | 49 | 249 | 30 | 152 | 232·9 | +23·5 | −28·3 |
| 19·534 | G | 115 | 589 | 64 | 329 | 233·0 | +23·5 | −14·6 |
| 20·266 | I | 54 | 165 | 29 | 89 | 233·5 | +23·6 | − 4·4 |
| 21·469 | G | 35 | 193 | 19 | 106 | 232·8 | +23·4 | +10·8 |
| 22·234 | I | 29 | 111 | 17 | 64 | 233·0 | +23·3 | +21·2 |
| 23·464 | G | 28 | 122 | 19 | 82 | 232·8 | +23·6 | +37·3 |
| Means ... | ... | ... | ... | 32 | 142 | 233·31 | +23·44 | ... |

### Group 331.

A regular spot, with several small spots in a straggling stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 15·200 | I | 0 | 12 | 0 | 29 | 226·8 | +24·1 | −78·1 |
| 16·233 | I | 0 | 25 | 0 | 37 | 222·0 | +24·8 | −69·2 |
| 17·282 | I | 25 | 87 | 26 | 92 | 218·1 | +25·3 | −59·3 |
| 18·501 | G | 47 | 150 | 38 | 118 | 214·7 | +25·1 | −46·5 |
| 19·534 | G | 43 | 147 | 28 | 97 | 212·5 | +24·5 | −35·1 |
| 20·266 | I | 20 | 114 | 12 | 68 | 213·8 | +25·2 | −24·1 |
| 21·469 | G | 77 | 128 | 43 | 71 | 213·0 | +24·9 | − 9·0 |
| 22·234 | I | 26 | 93 | 14 | 51 | 212·0 | +25·4 | + 0·2 |
| 23·464 | G | 0 | 25 | 0 | 14 | 209·1 | +26·4 | +13·6 |
| Means ... | ... | ... | ... | 18 | 64 | 215·78 | +25·08 | ... |

### Group 332.

A very fine stream, consisting principally of two large spots with numerous companions.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 17·282 | I | 40 | 150 | 98 | 367 | 200·2 | −18·4 | −77·2 |
| 18·501 | G | 89 | 410 | 98 | 487 | 198·5 | −19·7 | −62·7 |
| 19·534 | G | 187 | 646 | 163 | 533 | 198·4 | −20·2 | −49·2 |
| 20·266 | I | 255 | 1092 | 176 | 755 | 200·1 | −21·3 | −37·8 |
| 21·469 | G | 290 | 1385 | 172 | 817 | 201·5 | −22·2 | −20·5 |
| 22·234 | I | 292 | 1327 | 165 | 750 | 201·5 | −22·9 | −10·3 |
| 23·464 | G | 457 | 1926 | 254 | 1071 | 200·1 | −22·5 | + 4·6 |
| 24·527 | G | 426 | 1854 | 249 | 1084 | 200·5 | −22·0 | +19·0 |
| 25·101 | Me | 201 | 1756 | 125 | 1076 | 199·7 | −22·0 | +25·8 |
| 26 | ... | No photograph. | | (188 | 1258 | 199·5 | −21·8 | +39·0) |
| 27·130 | I | 264 | 1585 | 251 | 1440 | 199·2 | −21·6 | +52·2 |
| 28·511 | G | 55 | 255 | 100 | 456 | 199·8 | −22·2 | +71·1 |
| 29·586 | G | 0 | 1 | 0 | 3 | 194·7 | −26·3 | +80·2 |
| Means ... | ... | ... | ... | 157 | 777 | 199·52 | −21·78 | ... |

### Group 333*.

A small spot, not seen on June 29.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| June 27·130 | I | 8 | 23 | 13 | 35 | 80·0 | −26·4 | −67·0 |
| 28·511 | G | 8 | 14 | 7 | 12 | 79·8 | −26·2 | −48·9 |
| 29·586 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 30·545 | G | 0 | 18 | 0 | 11 | 80·4 | −25·8 | −21·4 |
| Means ... | ... | ... | ... | 5 | 15 | 80·07 | −26·13 | ... |

### Group 333.

A few spots, mostly unstable and small at first, in an irregular stream. The group greatly increases in size when near the west limb.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 28·511 | I | 9 | 93 | 11 | 115 | 71·7 | −37·3 | −57·0 |
| 29·586 | G | 29 | 73 | 29 | 70 | 68·5 | −37·6 | −46·0 |
| 30·545 | G | 21 | 57 | 17 | 44 | 69·2 | −36·9 | −32·6 |
| July 1 | ... | No photograph. | | (17 | 53 | 69·3 | −36·5 | −20·3) |
| 2·402 | G | 26 | 95 | 17 | 62 | 69·3 | −36·1 | − 7·9 |
| 3·497 | G | 40 | 151 | 26 | 99 | 68·9 | −36·8 | + 6·1 |
| 4·371 | I | 56 | 172 | 39 | 119 | 69·1 | −36·8 | +17·9 |
| 5·438 | G | 37 | 128 | 29 | 101 | 70·3 | −36·4 | +33·3 |
| 6·131 | Me | 0 | 50 | 0 | 45 | 70·8 | −35·9 | +42·9 |
| 7 | ... | No photograph. | | (50 | 240 | 68·6 | −36·7 | +55·8) |
| 8·403 | G | 50 | 215 | 99 | 435 | 66·4 | −37·5 | +68·6 |
| 9·480 | G | 12 | 48 | 59 | 230 | 62·7 | −38·6 | +79·1 |
| Means ... | ... | ... | ... | 33 | 134 | 68·73 | −36·93 | ... |

### Group 334.

A regular spot followed by a few small spots. These latter have disappeared by July 2.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 29·586 | G | 64 | 344 | 36 | 194 | 132·5 | −17·5 | +18·0 |
| 30·545 | G | 78 | 322 | 48 | 200 | 132·5 | −17·3 | +30·7 |
| July 1 | ... | No photograph. | | (43 | 192 | 132·6 | −17·2 | +43·1) |
| 2·402 | G | 41 | 194 | 39 | 185 | 132·6 | −17·1 | +55·4 |
| 3·497 | G | 25 | 126 | 41 | 206 | 133·0 | −17·4 | +70·2 |
| 4·371 | I | 15 | 49 | 57 | 190 | 132·2 | −17·4 | +81·0 |
| Means ... | ... | ... | ... | 44 | 195 | 132·57 | −17·32 | ... |

### Group 335.

Two very small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 29·586 | G | 5 | 35 | 3 | 20 | 131·0 | +23·3 | +16·5 |
| Means ... | ... | ... | ... | 3 | 20 | 131·0 | +23·3 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 336.** A group of small spots, which suffers great change during the period of its visibility. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| July 4·371 | I | 16 | 61 | 11 | 42 | 13·5 | −19·0 | −37·7 |
| 5·438 | G | 49 | 161 | 29 | 95 | 14·5 | −19·6 | −22·6 |
| 6·131 | Me | 37 | 222 | 21 | 126 | 13·6 | −19·9 | −14·3 |
| 7 | ... | No photograph. | | (33 | 147 | 14·3 | −20·4 | + 1·5) |
| 8·403 | G | 77 | 290 | 45 | 168 | 15·0 | −20·8 | +17·2 |
| 9·480 | G | 36 | 152 | 23 | 98 | 14·5 | −20·6 | +30·9 |
| 10·397 | G | 7 | 21 | 6 | 17 | 18·4 | −20·6 | +47·0 |
| 11·138 | I | 3 | 10 | 3 | 10 | 19·1 | −20·8 | +57·5 |
| Means ... | ... | ... | ... | 21 | 88 | 15·36 | −20·21 | ... |
| **Group 337.** Two very small spots close together. | | | | | | | | |
| July 13·422 | G | 0 | 40 | 0 | 26 | 305·3 | −34·0 | +13·9 |
| Means ... | ... | ... | ... | 0 | 26 | 305·3 | −34·0 | ... |
| **Group 338.** Two clusters of small spots on July 20. The group increases in size on the succeeding days, and becomes a long irregular stream, in the middle of which a large regular spot forms. | | | | | | | | |
| July 20·587 | G | 58 | 368 | 31 | 199 | 181·7 | +20·6 | −14·9 |
| 21·507 | G | 141 | 672 | 74 | 352 | 181·9 | +21·7 | − 2·5 |
| 22·219 | I | 162 | 969 | 85 | 510 | 181·4 | +21·4 | + 6·4 |
| 23·573 | G | 177 | 981 | 101 | 563 | 180·8 | +22·6 | +23·7 |
| 24·583 | G | 124 | 661 | 80 | 447 | 182·8 | +22·9 | +39·1 |
| 25 | ... | No photograph. | | (61 | 357 | 181·8 | +23·1 | +51·1) |
| 26·553 | G | 38 | 241. | 42 | 267 | 180·7 | +23·2 | +63·0 |
| 27·446 | G | 15 | 127 | 29 | 229 | 180·6 | +23·8 | +74·7 |
| Means ... | ... | ... | ... | 63 | 366 | 181·46 | +22·41 | ... |
| **Group 339.** One small spot. | | | | | | | | |
| July 21·507 | G | 0 | 16 | 0 | 33 | 107·8 | +23·5 | −76·6 |
| 22·219 | I | 9 | 25 | 11 | 32 | 107·7 | +22·9 | −67·3 |
| 23·573 | G | 0 | 9 | 0 | 7 | 107·2 | +22·9 | −49·9 |
| Means ... | ... | ... | ... | 4 | 24 | 107·57 | +23·10 | ... |
| **Group 340.** A cluster of very small spots. | | | | | | | | |
| July 26·553 | G | 5 | 41 | 5 | 40 | 59·0 | +25·4 | −58·7 |
| 27·446 | G | 7 | 60 | 5 | 46 | 57·9 | +25·3 | −48·0 |
| 28·090 | I | 0 | 99 | 0 | 66 | 59·1 | +25·3 | −38·2 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 340—*continued.*** | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| July 29·526 | G | 18 | 53 | 10 | 30 | 59·5 | +25·1 | −18·9 |
| 30·509 | G | 9 | 70 | 5 | 37 | 59·9 | +24·9 | − 5·5 |
| 31·430 | G | 9 | 36 | 5 | 19 | 59·8 | +24·6 | + 6·6 |
| Means ... | ... | ... | ... | 5 | 40 | 59·20 | +25·10 | ... |
| **Group 341.** A cluster of very small spots. | | | | | | | | |
| July 26·553 | G | 0 | 4 | 0 | 8 | 43·0 | +13·1 | −74·7 |
| 27·446 | G | 6 | 27 | 6 | 30 | 42·0 | +12·9 | −63·9 |
| 28·090 | I | 41 | 215 | 37 | 192 | 41·0 | +13·8 | −57·3 |
| 29·526 | G | 14 | 59 | 9 | 38 | 40·0 | +13·0 | −37·4 |
| Means ... | ... | ... | ... | 13 | 67 | 41·50 | +13·20 | ... |
| **Group 342.** A large regular spot, followed by a somewhat straggling stream of smaller spots. | | | | | | | | |
| Aug. 2·293 | I | 82 | 661 | 97 | 762 | 323·7 | +11·6 | −64·8 |
| 3·593 | G | 187 | 977 | 135 | 727 | 323·2 | +11·6 | −48·1 |
| 4·235 | I | 262 | 1138 | 172 | 740 | 322·9 | +11·8 | −40·0 |
| 5·194 | I | 291 | 1422 | 165 | 806 | 322·8 | +11·6 | −27·4 |
| 6·094 | Me | 229 | 1159 | 120 | 609 | 322·3 | +11·8 | −15·9 |
| 7·149 | I | 303 | 1253 | 152 | 630 | 324·0 | +12·0 | − 0·4 |
| 8·234 | I | 277 | 1107 | 144 | 573 | 323·3 | +11·9 | +13·3 |
| 9·582 | G | 207 | 965 | 120 | 566 | 323·0 | +11·9 | +30·8 |
| 10·407 | G | 208 | 786 | 138 | 527 | 322·9 | +12·0 | +41·6 |
| 11·469 | G | 97 | 515 | 89 | 466 | 324·0 | +12·3 | +56·8 |
| 12·485 | G | 76 | 321 | 109 | 459 | 324·2 | +12·5 | +70·4 |
| 13·488 | G | 0 | 64 | 0 | 279 | 325·3 | +12·2 | +84·8 |
| Means ... | ... | ... | ... | 120 | 595 | 323·47 | +11·93 | ... |
| **Group 343.** A large regular spot. | | | | | | | | |
| Aug. 7·149 | I | 0 | 7 | 0 | 83 | 235·1 | +23·6 | −89·3 |
| 8·234 | I | 29 | 175 | 48 | 292 | 236·3 | +23·8 | −73·7 |
| 9·582 | G | 48 | 275 | 44 | 250 | 235·8 | +23·8 | −56·4 |
| 10·407 | G | 140 | 444 | 104 | 329 | 235·0 | +24·0 | −46·3 |
| 11·469 | G | 73 | 689 | 45 | 425 | 235·0 | +24·4 | −32·2 |
| 12·485 | G | 197 | 795 | 110 | 444 | 234·5 | +24·6 | −19·3 |
| 13·488 | G | 200 | 688 | 106 | 364 | 234·3 | +24·6 | − 6·2 |
| 14 | ... | No photograph. | | (85 | 340 | 234·5 | +24·7 | + 5·6) |
| 15 | ... | No photograph. | | (64 | 315 | 234·6 | +24·8 | +17·4) |
| 16·118 | Me | 72 | 484 | 43 | 290 | 234·8 | +24·9 | +29·1 |
| 17·562 | G | 50 | 280 | 39 | 217 | 235·0 | +25·3 | +48·3 |
| 18·241 | I | 37 | 243 | 35 | 227 | 235·3 | +24·8 | +57·6 |
| 19·508 | G | 20 | 78 | 34 | 133 | 235·2 | +25·6 | +74·2 |
| 20·218 | I | 8 | 35 | 25 | 107 | 234·2 | +25·0 | +82·6 |
| Means ... | ... | ... | ... | 56 | 273 | 234·97 | +24·56 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 343A.

A pair of small spots.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Aug. 8·234 | I | 11 | 45 | 12 | 49 | 8·8 | −16·9 | +58·8 |
| Means ... | ... | ... | ... | 12 | 49 | 8·8 | −16·9 | ... |

### Group 343B.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 8·234 | I | 10 | 45 | 6 | 27 | 329·1 | −21·9 | +19·1 |
| Means ... | ... | ... | ... | 6 | 27 | 329·1 | −21·9 | ... |

### Group 344.

A large regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 9·582 | G | 30 | 102 | 44 | 150 | 225·4 | −17·5 | −66·8 |
| 10·407 | G | 27 | 170 | 27 | 169 | 225·6 | −17·5 | −55·7 |
| 11·469 | G | 25 | 122 | 16 | 79 | 225·7 | −17·1 | −41·5 |
| 12·485 | G | 39 | 212 | 24 | 131 | 225·6 | −16·9 | −28·2 |
| 13·488 | G | 48 | 228 | 27 | 129 | 225·4 | −16·5 | −15·1 |
| 14 | ... | No photograph. | | (24 | 116 | 225·6 | −16·4 | − 3·3) |
| 15 | ... | No photograph. | | (22 | 104 | 225·8 | −16·3 | + 8·5) |
| 16·118 | Me | 33 | 157 | 19 | 91 | 226·0 | −16·2 | +20·3 |
| 17·562 | G | 44 | 147 | 32 | 106 | 226·7 | −16·2 | +40·0 |
| 18·241 | I | 20 | 130 | 17 | 110 | 227·0 | −16·3 | +49·3 |
| 19·508 | G | 9 | 50 | 13 | 69 | 226·7 | −16·1 | +65·7 |
| 20·218 | I | 9 | 37 | 25 | 101 | 228·4 | −16·6 | +76·8 |
| Means ... | ... | ... | ... | 24 | 113 | 226·16 | −16·63 | ... |

### Group 345.

A regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 9·582 | G | 20 | 73 | 45 | 166 | 213·5 | +21·6 | −78·7 |
| 10·407 | G | 22 | 184 | 28 | 239 | 213·0 | +21·3 | −68·3 |
| 11·469 | G | 44 | 287 | 38 | 245 | 213·1 | +20·9 | −54·1 |
| 12·485 | G | 90 | 396 | 60 | 264 | 213·5 | +21·0 | −40·3 |
| 13·488 | G | 80 | 365 | 46 | 211 | 213·3 | +21·0 | −27·2 |
| 14 | ... | No photograph. | | (40 | 199 | 213·2 | +21·1 | −15·7) |
| 15 | ... | No photograph. | | (35 | 188 | 213·1 | +21·3 | − 4·2) |
| 16·118 | Me | 56 | 338 | 29 | 176 | 213·0 | +21·4 | + 7·3 |
| 17·562 | G | 77 | 353 | 44 | 203 | 212·4 | +21·8 | +25·7 |
| 18·241 | I | 66 | 328 | 41 | 204 | 212·5 | +21·7 | +34·8 |
| 19·508 | G | 42 | 256 | 33 | 203 | 211·5 | +22·4 | +50·5 |
| 20·218 | I | 43 | 219 | 43 | 217 | 211·9 | +21·9 | +60·3 |
| 21·503 | G | 40 | 161 | 75 | 303 | 211·0 | +22·4 | +76·4 |
| Means ... | ... | ... | ... | 43 | 217 | 212·69 | +21·52 | ... |

### Group 346.

A regular spot. Several small spots appear near it on August 13, forming with it a long straight stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Aug. 9·582 | G | 0 | 19 | 0 | 48 | 216·7 | −19·2 | −75·5 |
| 10·407 | G | 6 | 50 | 8 | 70 | 216·4 | −19·1 | −64·9 |
| 11·469 | G | 18 | 63 | 16 | 57 | 216·3 | −19·3 | −50·9 |
| 12·485 | G | 24 | 127 | 17 | 90 | 216·0 | −18·9 | −37·8 |
| 13·488 | G | 53 | 267 | 33 | 165 | 215·4 | −19·2 | −25·1 |
| 14 | ... | No photograph. | | (35 | 194 | 214·6 | −19·0 | −14·3) |
| 15 | ... | No photograph. | | (37 | 223 | 213·9 | −18·9 | − 3·4) |
| 16·118 | Me | 71 | 450 | 40 | 252 | 213·1 | −18·7 | + 7·4 |
| 17·562 | G | 76 | 368 | 47 | 227 | 212·6 | −18·9 | +25·9 |
| 18·241 | I | 105 | 359 | 70 | 242 | 211·0 | −19·3 | +33·3 |
| 19·508 | G | 12 | 169 | 10 | 147 | 210·2 | −18·9 | +49·2 |
| 20·218 | I | 5 | 32 | 5 | 36 | 211·1 | −18·6 | +59·5 |
| Means ... | ... | ... | ... | 27 | 146 | 213·94 | −19·00 | ... |

### Group 347.

A small regular spot, with a companion on August 16.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 16·118 | Me | 13 | 114 | 10 | 85 | 252·6 | +21·4 | +46·9 |
| 17·562 | G | 23 | 55 | 31 | 76 | 256·4 | +20·6 | +69·7 |
| 18·241 | I | 8 | 44 | 20 | 105 | 257·4 | +19·9 | +79·7 |
| Means ... | ... | ... | ... | 20 | 89 | 255·47 | +20·63 | ... |

### Group 348.

A stream of small spots on August 18. The leader has become a large composite spot by August 19.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 18·241 | I | 40 | 154 | 21 | 81 | 186·9 | +22·8 | + 9·2 |
| 19·508 | G | 149 | 775 | 86 | 452 | 187·2 | +22·9 | +26·2 |
| 20·218 | I | 189 | 938 | 121 | 602 | 188·5 | +22·7 | +36·9 |
| 21·503 | G | 116 | 650 | 103 | 576 | 189·4 | +22·8 | +54·8 |
| 22·261 | I | 85 | 571 | 104 | 664 | 189·9 | +22·4 | +65·3 |
| 23·205 | I | 86 | 444 | 148 | 821 | 188·0 | +21·9 | +75·9 |
| 24·216 | I | 0 | 12 | 0 | 36 | 181·7 | +21·7 | +82·9 |
| Means ... | ... | ... | ... | 83 | 462 | 187·37 | +22·46 | ... |

### Group 349.

A small spot on August 21, not seen on August 22. The group has re-appeared as a pair of small spots by August 23. These both have greatly increased in size by August 30 and 31.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 21·503 | G | 17 | 33 | 19 | 36 | 71·2 | +23·1 | −63·4 |
| 22·261 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·205 | I | 17 | 65 | 12 | 46 | 67·8 | +22·2 | −44·3 |
| 24·216 | I | 35 | 122 | 21 | 72 | 69·8 | +22·7 | −29·0 |
| 25 | ... | No photograph. | | (16 | 59 | 69·0 | +22·6 | −15·6) |
| 26 | ... | No photograph. | | (11 | 47 | 68·3 | +22·4 | − 2·2) |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 349—*continued.*** | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Aug. 27 | ... | No photograph. | | (5 | 35 | 67·5 | +22·2 | +11·2) |
| 28·506 | G | 0 | 39 | 0 | 22 | 66·7 | +22·0 | +24·6 |
| 29·236 | I | 43 | 174 | 27 | 109 | 66·0 | +21·8 | +33·5 |
| 30·285 | I | 95 | 459 | 72 | 348 | 66·8 | +21·6 | +48·2 |
| 31·516 | G | 68 | 469 | 74 | 514 | 66·0 | +21·9 | +63·7 |
| Sept. 1·404 | G | 26 | 252 | 51 | 443 | 65·7 | +22·0 | +74·6 |
| 2·517 | G | 0 | 55 | 0 | 218 | 61·3 | +23·8 | +85·4 |
| Means ... | ... | ... | ... | 24 | 150 | 67·17 | +22·36 | ... |
| **Group 350.** Three very small spots; the first at a little distance from the other two which are close together. | | | | | | | | |
| Aug. 28·506 | G | 27 | 60 | 16 | 36 | 60·0 | −20·1 | +17·9 |
| Means ... | ... | ... | ... | 16 | 36 | 60·0 | −20·1 | ... |
| **Group 351.** A regular spot, with a small companion on August 28. | | | | | | | | |
| Aug. 28·506 | G | 26 | 100 | 49 | 189 | 326·7 | + 9·6 | −75·4 |
| 29·236 | I | 15 | 77 | 17 | 90 | 326·8 | + 9·7 | −65·7 |
| 30·285 | I | 30 | 126 | 24 | 100 | 327·2 | +10·0 | −51·4 |
| 31·516 | G | 54 | 256 | 33 | 155 | 327·2 | +10·1 | −35·1 |
| Sept. 1·404 | G | 35 | 205 | 19 | 112 | 327·3 | +10·0 | −23·3 |
| 2·517 | G | 55 | 223 | 28 | 113 | 327·3 | +10·4 | − 8·6 |
| 3·559 | G | 42 | 209 | 21 | 105 | 327·4 | +10·3 | + 5·3 |
| 4·402 | G | 40 | 208 | 21 | 109 | 327·5 | +10·6 | +16·5 |
| 5·171 | I | 39 | 180 | 22 | 101 | 327·7 | +10·5 | +26·9 |
| 6·281 | I | 36 | 151 | 24 | 100 | 327·7 | +10·5 | +41·5 |
| 7·583 | G | 19 | 112 | 18 | 105 | 327·5 | +10·7 | +58·5 |
| 8·480 | I | 23 | 82 | 32 | 115 | 327·4 | + 9·7 | +70·2 |
| Means ... | ... | ... | ... | 26 | 116 | 327·31 | +10·18 | ... |
| **Group 352.** Three small spots. | | | | | | | | |
| Sept. 2·517 | G | 13 | 74 | 11 | 69 | 30·3 | −12·9 | +54·4 |
| 3·559 | G | 0 | 12 | 0 | 16 | 27·4 | −12·2 | +65·3 |
| Means ... | ... | ... | ... | 6 | 43 | 28·85 | −12·55 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 353.** One small spot. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Sept. 2·517 | G | 0 | 17 | 0 | 34 | 258·9 | +18·7 | −77·0 |
| 3·559 | G | 9 | 19 | 10 | 21 | 258·6 | +18·5 | −63·5 |
| 4·402 | G | 10 | 20 | 8 | 16 | 258·5 | +18·6 | −52·5 |
| 5·171 | I | 7 | 24 | 5 | 16 | 259·1 | +18·4 | −41·7 |
| 6·281 | I | 7 | 32 | 4 | 18 | 259·3 | +18·3 | −26·9 |
| Means ... | ... | ... | ... | 5 | 21 | 258·88 | +18·50 | ... |
| **Group 354.** A regular spot. A pair of small spots is seen near it on September 10 and the succeeding days. | | | | | | | | |
| Sept. 4·402 | G | 20 | 54 | 49 | 134 | 230·2 | +25·0 | −80·7 |
| 5·171 | I | 28 | 105 | 40 | 148 | 230·4 | +24·8 | −70·4 |
| 6·281 | I | 35 | 183 | 31 | 163 | 230·5 | +25·2 | −55·7 |
| 7·583 | G | 48 | 176 | 32 | 117 | 230·0 | +25·2 | −39·0 |
| 8·480 | I | 64 | 224 | 37 | 130 | 231·3 | +25·0 | −25·9 |
| 9·418 | G | 57 | 252 | 31 | 137 | 230·5 | +25·4 | −14·3 |
| 10·600 | G | 44 | 174 | 23 | 92 | 230·5 | +25·4 | + 1·3 |
| 11·266 | I | 64 | 142 | 34 | 76 | 230·7 | +24·8 | +10·4 |
| 12·321 | I | 28 | 106 | 16 | 60 | 230·1 | +24·8 | +23·6 |
| 13·608 | G | 0 | 30 | 0 | 20 | 229·6 | +25·1 | +40·2 |
| Means ... | ... | ... | ... | 29 | 108 | 230·38 | +25·07 | ... |
| **Group 355.** A number of small spots in a straight stream. The group rapidly increases in size and becomes a very large stream by September 11. | | | | | | | | |
| Sept. 5·171 | I | 16 | 62 | 24 | 87 | 235·4 | −17·9 | −65·4 |
| 6·281 | I | 66 | 308 | 59 | 275 | 235·6 | −18·1 | −50·6 |
| 7·583 | G | 76 | 334 | 49 | 219 | 237·7 | −18·0 | −31·3 |
| 8·480 | I | 147 | 648 | 87 | 381 | 238·1 | −17·9 | −19·1 |
| 9·418 | G | 183 | 818 | 102 | 457 | 239·5 | −17·9 | − 5·3 |
| 10·600 | G | 345 | 1194 | 194 | 674 | 240·1 | −17·4 | +10·9 |
| 11·266 | I | 405 | 1584 | 239 | 935 | 240·3 | −17·7 | +20·0 |
| 12·321 | I | 354 | 1436 | 236 | 962 | 240·1 | −18·0 | +33·6 |
| 13·608 | G | 211 | 983 | 188 | 888 | 240·6 | −17·6 | +51·2 |
| 14·248 | I | 188 | 959 | 205 | 1058 | 239·6 | −17·6 | +58·7 |
| 15·241 | I | 66 | 350 | 153 | 824 | 242·4 | −17·7 | +74·5 |
| Means ... | ... | ... | ... | 140 | 615 | 239·04 | −17·80 | ... |
| **Group 356.** A diminishing spot on September 5, 6, and 7. The group has disappeared by September 8, but three very small spots have appeared near its place by September 10. | | | | | | | | |
| Sept. 5·171 | I | 11 | 49 | 22 | 102 | 222·7 | +24·2 | −78·1 |
| 6·281 | I | 8 | 45 | 9 | 49 | 222·9 | +24·3 | −63·3 |
| 7·583 | G | 8 | 27 | 6 | 19 | 222·5 | +23·9 | −46·5 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 356—*continued.*** | | | | | | | | |
| 1880.[d] | | | | | | ° | ° | ° |
| Sept. 8·480 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 9·418 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 10·600 | G | 0 | 22 | 0 | 11 | 225·3 | +22·9 | − 3·9 |
| Means ... | ... | ... | ... | 6 | 30 | 223·35 | +23·83 | ... |
| **Group 357.** A small spot on September 7. The group rapidly increases in size, and has become a fine large stream by September 11. | | | | | | | | |
| Sept. 7·583 | G | 9 | 25 | 9 | 25 | 213·9 | −17·7 | −55·1 |
| 8·480 | I | 84 | 309 | 61 | 225 | 216·7 | −16·2 | −40·5 |
| 9·418 | I | 181 | 772 | 111 | 473 | 218·8 | −16·4 | −26·0 |
| 10·600 | G | 351 | 1249 | 196 | 694 | 220·8 | −16·3 | − 8·4 |
| 11·266 | I | 453 | 1775 | 249 | 975 | 220·8 | −16·5 | + 0·5 |
| 12·321 | I | 469 | 1820 | 267 | 1036 | 221·7 | −16·5 | +15·2 |
| 13·608 | G | 362 | 1690 | 240 | 1101 | 221·5 | −16·6 | +32·1 |
| 14·248 | I | 313 | 1328 | 230 | 981 | 221·8 | −17·1 | +40·9 |
| 15·241 | I | 188 | 816 | 191 | 820 | 223·3 | −17·5 | +55·4 |
| 16·590 | G | 76 | 293 | 157 | 658 | 224·2 | −17·4 | +74·1 |
| Means ... | ... | ... | ... | 171 | 699 | 220·35 | −16·82 | ... |
| **Group 358.** A small regular spot, with a small companion on September 11. The group is not seen on September 12, but has re-appeared by September 13 as two close pairs of spots. | | | | | | | | |
| Sept. 7·583 | G | 12 | 30 | 13 | 31 | 207·0 | +23·0 | −62·0 |
| 8·480 | I | 17 | 51 | 13 | 40 | 207·0 | +23·2 | −50·2 |
| 9·418 | I | 11 | 48 | 7 | 32 | 206·1 | +23·6 | −38·7 |
| 10·600 | G | 9 | 23 | 5 | 13 | 206·6 | +23·4 | −22·6 |
| 11·266 | I | 0 | 37 | 0 | 20 | 206·5 | +24·7 | −13·8 |
| 12·321 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 13·608 | G | 22 | 50 | 12 | 27 | 205·9 | +23·8 | +16·5 |
| 14·248 | I | 48 | 179 | 27 | 103 | 205·2 | +24·2 | +24·3 |
| 15·241 | I | 23 | 68 | 15 | 45 | 206·5 | +24·5 | +38·6 |
| 16·590 | G | 0 | 9 | 0 | 8 | 205·6 | +24·4 | +55·5 |
| Means ... | ... | ... | ... | 9 | 32 | 206·27 | +23·87 | ... |
| **Group 359A.** Two small spots. | | | | | | | | |
| Sept. 9·418 | I | 18 | 66 | 9 | 33 | 248·2 | +12·4 | + 3·4 |
| Means ... | ... | ... | ... | 9 | 33 | 248·2 | +12·4 | ... |
| **Group 359.** A large regular spot, frequently with one or two companions. | | | | | | | | |
| Sept. 7·583 | G | 24 | 102 | 50 | 216 | 190·8 | +22·4 | −78·2 |
| 8·480 | I | 85 | 312 | 109 | 393 | 189·5 | +22·2 | − 67·7 |
| 9·418 | I | 109 | 376 | 94 | 326 | 190·0 | +21·9 | −54·8 |
| 10·600 | G | 122 | 411 | 81 | 275 | 189·1 | +21·5 | −40·1 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 359—*continued.*** | | | | | | | | |
| 1880.[d] | | | | | | ° | ° | ° |
| Sept. 11·266 | I | 142 | 410 | 85 | 244 | 190·0 | +21·8 | −30·3 |
| 12·321 | I | 87 | 411 | 47 | 222 | 190·4 | +22·1 | −16·1 |
| 13·608 | G | 85 | 336 | 44 | 174 | 189·9 | +22·3 | + 0·5 |
| 14·248 | I | 80 | 319 | 42 | 167 | 189·2 | +22·2 | + 8·3 |
| 15·241 | I | 80 | 331 | 45 | 186 | 190·7 | +22·0 | +22·8 |
| 16·590 | G | 52 | 280 | 34 | 184 | 189·0 | +22·3 | +38·9 |
| 17·479 | G | 76 | 268 | 60 | 213 | 188·8 | +22·4 | +50·5 |
| 18·564 | G | 71 | 187 | 81 | 212 | 188·6 | +22·2 | +64·6 |
| Means ... | ... | ... | ... | 64 | 234 | 189·67 | +22·11 | ... |
| **Group 360.** A small regular spot, with occasionally some very small companions. | | | | | | | | |
| Sept. 15·241 | I | 2 | 15 | 3 | 20 | 98·0 | +16·4 | −69·9 |
| 16·590 | G | 9 | 18 | 7 | 14 | 98·6 | +16·4 | −51·5 |
| 17·479 | G | 11 | 51 | 7 | 33 | 98·6 | +16·1 | −39·7 |
| 18·564 | G | 22 | 86 | 12 | 48 | 99·9 | +16·2 | −24·1 |
| 19 | ... | No photograph. | | (12 | 40 | 101·3 | +16·3 | −10·1) |
| 20·483 | G | 24 | 61 | 12 | 31 | 102·7 | +16·3 | + 4·0 |
| 21·214 | I | 27 | 119 | 14 | 62 | 101·8 | +15·3 | +12·8 |
| 22·530 | G | 3 | 12 | 2 | 7 | 105·0 | +16·2 | +33·3 |
| Means ... | ... | ... | ... | 8 | 32 | 100·74 | +16·15 | ... |
| **Group 361.** A small regular spot with double nucleus, frequently with some small companions. The group is not seen on September 25 and 26. | | | | | | | | |
| Sept. 15·241 | I | 12 | 35 | 24 | 68 | 91·0 | +18·0 | −76·9 |
| 16·590 | G | 21 | 79 | 21 | 78 | 89·7 | +17·9 | −60·4 |
| 17·479 | G | 28 | 82 | 21 | 62 | 89·8 | +17·8 | −48·5 |
| 18·564 | G | 20 | 112 | 12 | 68 | 90·1 | +17·3 | −33·9 |
| 19 | ... | No photograph. | | (12 | 45 | 89·7 | +17·6 | −21·6) |
| 20·483 | G | 21 | 42 | 11 | 22 | 89·4 | +17·9 | − 9·3 |
| 21·214 | I | 14 | 31 | 7 | 16 | 89·6 | +17·8 | + 0·6 |
| 22·530 | G | 6 | 42 | 3 | 22 | 88·5 | +17·6 | +16·8 |
| 23·285 | I | 0 | 32 | 0 | 18 | 89·0 | +17·3 | +27·3 |
| 24·412 | I | 11 | 38 | 8 | 27 | 93·0 | +17·8 | +46·2 |
| 25·436 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 26·300 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27·407 | G | 0 | 7 | 0 | 28 | 94·3 | +17·4 | +87·0 |
| Means ... | ... | ... | ... | 9 | 35 | 90·37 | +17·67 | ... |
| **Group 362.** A small spot. A second spot is seen near it on September 18. The group rapidly increases in size. | | | | | | | | |
| Sept. 17·479 | G | 20 | 42 | 13 | 27 | 176·0 | +21·3 | +37·7 |
| 18·564 | G | 21 | 120 | 16 | 95 | 173·4 | +20·8 | +49·4 |
| 19 | ... | No photograph. | | (22 | 153 | 174·3 | +21·2 | +63·0) |
| 20·483 | G | 15 | 110 | 29 | 211 | 175·3 | +21·7 | +76·6 |
| 21·214 | I | 11 | 74 | 46 | 322 | 172·2 | +20·7 | +83·2 |
| Means ... | ... | ... | ... | 25 | 162 | 174·24 | +21·14 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 363.** A small faint spot. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Sept. 18·564 | G | 0 | 17 | 0 | 11 | 89·8 | +25·2 | −34·2 |
| Means ... | ... | ... | ... | 0 | 11 | 89·8 | +25·2 | ... |
| **Group 364.** A number of small and unstable spots in an irregular straggling stream. | | | | | | | | |
| Sept. 18·564 | G | 0 | 48 | 0 | 49 | 63·2 | +19·4 | −60·8 |
| 19 | ... | No photograph. | | (3 | 39 | 62·6 | +19·4 | −48·8) |
| 20·483 | G | 9 | 46 | 6 | 29 | 61·9 | +19·3 | −36·8 |
| 21·214 | I | 51 | 182 | 29 | 105 | 61·9 | +19·4 | −27·1 |
| 22·530 | G | 31 | 208 | 16 | 108 | 63·1 | +19·5 | − 8·6 |
| 23·285 | I | 27 | 162 | 14 | 83 | 65·1 | +19·2 | + 3·4 |
| 24·412 | I | 31 | 189 | 17 | 103 | 64·5 | +19·3 | +17·7 |
| 25·436 | G | 25 | 123 | 15 | 74 | 65·3 | +19·4 | +32·0 |
| 26·300 | I | 34 | 126 | 24 | 91 | 67·5 | +19·5 | +45·6 |
| 27·407 | G | 11 | 97 | 14 | 113 | 71·0 | +19·0 | +63·7 |
| Means ... | ... | ... | ... | 14 | 79 | 64·61 | +19·34 | ... |
| **Group 365.** A small faint spot, not seen from September 21 to 24. | | | | | | | | |
| Sept. 20·483 | G | 0 | 25 | 0 | 18 | 53·3 | +23·7 | −45·4 |
| 21·214 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 22·530 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·285 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 24·412 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 25·436 | G | 0 | 8 | 0 | 5 | 57·7 | +22·3 | +24·4 |
| 26·300 | I | 0 | 22 | 0 | 14 | 57·3 | +21·4 | +35·4 |
| Means ... | ... | ... | ... | 0 | 5 | 56·10 | +22·47 | ... |
| **Group 366.** A regular spot, followed on September 2 by two smaller spots. The group diminishes day by day and has disappeared by September 26, but has appeared by September 27 as a short stream. | | | | | | | | |
| Sept. 22·530 | G | 11 | 64 | 15 | 79 | 10·3 | −19·5 | −61·4 |
| 23·285 | I | 20 | 53 | 17 | 45 | 13·3 | −19·3 | −48·4 |
| 24·412 | I | 8 | 52 | 5 | 35 | 13·6 | −18·7 | −33·2 |
| 25·436 | G | 9 | 27 | 5 | 16 | 14·8 | −18·8 | −18·5 |
| 26·300 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27·407 | G | 11 | 57 | 6 | 32 | 15·9 | −18·5 | + 8·6 |
| 28·308 | G | 7 | 50 | 4 | 30 | 16·6 | −19·0 | +21·2 |
| 29·577 | G | 0 | 43 | 0 | 28 | 9·6 | −19·8 | +30·9 |
| 30·304 | I | 21 | 159 | 16 | 120 | 10·2 | −19·8 | +41·1 |
| Oct. 1·521 | G | 2 | 77 | 2 | 86 | 12·0 | −19·2 | +59·0 |
| Means ... | ... | ... | ... | 7 | 47 | 12·92 | −19·18 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 367.** A small faint spot on September 25, not seen on September 26. The group has reappeared as a close cluster of very small spots by September 27, and has developed by September 29 into a fine stream, consisting of a large regular spot and a great number of smaller spots. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Sept. 25·436 | G | 0 | 21 | 0 | 16 | 352·3 | −20·9 | −41·0 |
| 26·300 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27·407 | G | 4 | 95 | 2 | 54 | 356·7 | −19·8 | −10·6 |
| 28·308 | I | 51 | 288 | 29 | 162 | 356·1 | −19·4 | + 0·7 |
| 29·577 | G | 196 | 1100 | 114 | 645 | 355·3 | −19·9 | +16·6 |
| 30·304 | I | 287 | 1204 | 181 | 758 | 356·0 | −19·8 | +26·9 |
| Oct. 1·521 | G | 191 | 1005 | 145 | 772 | 355·2 | −19·8 | +42·2 |
| 2·396 | G | 90 | 594 | 80 | 558 | 353·5 | −20·1 | +52·0 |
| 3·285 | I | 129 | 606 | 175 | 871 | 355·1 | −20·3 | +65·4 |
| 4·268 | I | 40 | 229 | 103 | 587 | 352·3 | −21·1 | +75·5 |
| Means ... | ... | ... | ... | 83 | 442 | 354·72 | −20·12 | ... |
| **Group 368.** A large regular spot, with occasionally one or two small companions. | | | | | | | | |
| Sept. 24·412 | I | 20 | 64 | 36 | 115 | 336·4 | −17·8 | −70·4 |
| 25·436 | G | 46 | 259 | 47 | 264 | 337·2 | −18·6 | −56·1 |
| 26·300 | I | 43 | 216 | 33 | 165 | 339·1 | −18·2 | −42·8 |
| 27·407 | G | 50 | 280 | 31 | 173 | 340·6 | −17·9 | −26·7 |
| 28·308 | I | 96 | 374 | 55 | 214 | 341·0 | −17·8 | −14·4 |
| 29·577 | G | 78 | 349 | 43 | 193 | 341·1 | −17·8 | + 2·4 |
| 30·304 | I | 76 | 428 | 43 | 242 | 341·6 | −17·8 | +12·5 |
| Oct. 1·521 | G | 64 | 301 | 40 | 189 | 341·8 | −17·3 | +28·8 |
| 2·396 | G | 23 | 245 | 17 | 178 | 341·7 | −17·5 | +40·2 |
| 3·285 | I | 61 | 292 | 55 | 268 | 341·8 | −17·9 | +52·1 |
| 4·268 | I | 30 | 12 | 42 | 170 | 342·3 | −18·0 | +65·5 |
| 5·238 | I | 13 | 62 | 40 | 195 | 342·1 | −18·1 | +78·1 |
| Means ... | ... | ... | .. | 40 | 197 | 340·56 | −17·89 | ... |
| **Group 369.** Some very small spots in a close cluster. The group changes its character very rapidly, increasing in size and distinctness until it reaches the central meridian on September 29, and then as speedily diminishing again. On September 29 the four groups, Nos. 366 to 369, almost touch one another, and form an almost continuous stream lying along the 19th parallel of south latitude for more than 40°. | | | | | | | | |
| Sept. 25·436 | G | 0 | 43 | 0 | 57 | 330·8 | −19·7 | −62·5 |
| 26·300 | I | 12 | 69 | 11 | 63 | 330·9 | −19·6 | −51·0 |
| 27·407 | G | 23 | 120 | 16 | 84 | 331·0 | −19·2 | −36·3 |
| 28·308 | I | 124 | 526 | 76 | 321 | 331·0 | −19·1 | −24·4 |
| 29·577 | G | 112 | 444 | 63 | 251 | 330·7 | −18·9 | − 8·0 |
| 30·304 | I | 53 | 251 | 30 | 140 | 330·9 | −19·1 | + 1·8 |
| Oct. 1·521 | G | 10 | 51 | 6 | 30 | 332·1 | −18·5 | +19·1 |
| 2·396 | G | 0 | 9 | 0 | 6 | 333·6 | −18·1 | +32·1 |
| 3·285 | I | 3 | 16 | 2 | 12 | 329·6 | −20·0 | +39·9 |
| 4·268 | I | 0 | 13 | 0 | 12 | 328·9 | −19·6 | +52·1 |
| Means ... | ... | ... | ... | 20 | 98 | 330·95 | −19·18 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 370.

A number of small spots in a close cluster on September 26. The group increases in size and distinctness very rapidly, forming on September 29 a fine stream, the leader of which is a large regular spot with double nucleus.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Sept. 26·300 | I | 13 | 61 | 14 | 64 | 319·3 | +16·6 | −62·6 |
| 27·407 | G | 36 | 101 | 27 | 75 | 319·6 | +16·3 | −47·7 |
| 28·308 | I | 64 | 256 | 40 | 159 | 319·6 | +16·3 | −35·8 |
| 29·577 | G | 169 | 996 | 89 | 530 | 321·6 | +16·6 | −17·1 |
| 30·304 | I | 187 | 832 | 97 | 425 | 324·1 | +16·6 | − 5·0 |
| Oct. 1·521 | G | 150 | 686 | 77 | 357 | 325·0 | +16·8 | +12·0 |
| 2·396 | G | 112 | 702 | 63 | 394 | 326·0 | +16·8 | +24·5 |
| 3·285 | I | 225 | 1077 | 140 | 669 | 325·3 | +16·2 | +35·6 |
| 4·268 | I | 103 | 562 | 80 | 436 | 326·6 | +16·1 | +49·8 |
| 5·238 | I | 105 | 330 | 112 | 351 | 326·6 | +16·1 | +62·6 |
| 6·286 | I | 32 | 176 | 62 | 339 | 326·4 | +16·3 | +76·2 |
| Means ... | ... | ... | ... | 73 | 345 | 323·65 | +16·43 | ... |

### Group 371.

Two small faint spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 1·521 | G | 9 | 19 | 5 | 11 | 287·5 | +21·5 | −25·5 |
| Means ... | ... | ... | ... | 5 | 11 | 287·5 | +21·5 | ... |

### Group 372.

A small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 7·575 | G | 0 | 11 | 0 | 10 | 284·7 | −18·7 | +51·6 |
| 8·551 | G | 0 | 6 | 0 | 8 | 285·6 | −19·4 | +65·3 |
| Means ... | ... | ... | ... | 0 | 9 | 285·15 | −19·05 | ... |

### Group 373.

A few small unstable spots in a compact cluster. The group is not seen on October 9, but a small spot is seen near its place on October 10.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 6·286 | I | 13 | 45 | 8 | 27 | 257·8 | −25·3 | + 7·6 |
| 7·575 | G | 23 | 133 | 15 | 86 | 256·2 | −26·0 | +23·1 |
| 8·551 | G | 0 | 22 | 0 | 17 | 259·2 | −26·7 | +38·9 |
| 9·332 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 10·284 | I | 0 | 9 | 0 | 10 | 254·0 | −26·6 | +56·6 |
| Means ... | ... | ... | ... | 5 | 28 | 256·80 | −26·15 | ... |

### Group 373*.

A small unstable spot, *f* Group 373.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Oct. 10·284 | I | 4 | 15 | 3 | 12 | 235·4 | −27·2 | +38·0 |
| 11·486 | G | 0 | 4 | 0 | 5 | 239·9 | −26·4 | +58·3 |
| Means ... | ... | ... | ... | 2 | 9 | 237·65 | −26·80 | ... |

### Group 374.

A few small unstable spots in a straggling stream. The group is not seen on October 10, but has broken out afresh by October 11.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 3·285 | I | 11 | 63 | 14 | 82 | 225·6 | −16·1 | − 64·1 |
| 4·268 | I | 9 | 39 | 8 | 34 | 225·6 | −15·8 | −51·2 |
| 5·238 | I | 11 | 36 | 8 | 25 | 225·5 | −16·0 | −38·5 |
| 6·286 | I | 10 | 39 | 6 | 23 | 225·4 | −15·7 | −24·8 |
| 7·575 | G | 17 | 73 | 9 | 40 | 224·6 | −16·0 | − 8·5 |
| 8·551 | G | 0 | 26 | 0 | 14 | 225·2 | −15·5 | + 4·9 |
| 9·332 | I | 7 | 21 | 4 | 12 | 225·3 | −14·8 | +15·4 |
| 10·284 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 11·486 | G | 0 | 18 | 0 | 15 | 229·4 | −15·3 | +47·8 |
| 12·431 | G | 1 | 24 | 1 | 26 | 228·9 | −15·2 | +59·8 |
| 13·556 | G | 0 | 37 | 0 | 90 | 230·0 | −16·3 | +75·8 |
| 14·212 | I | 4 | 14 | 19 | 69 | 227·8 | −17·6 | +82·2 |
| Means ... | ... | ... | ... | 6 | 36 | 226·69 | −15·85 | ... |

### Group 375.

A small regular spot with a small companion on October 6. The group has changed into a straggling stream of small spots by October 10.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 6·286 | I | 7 | 30 | 8 | 35 | 184·8 | +21·5 | −65·4 |
| 7·575 | G | 21 | 40 | 13 | 24 | 184·1 | +21·8 | −49·0 |
| 8·551 | G | 5 | 66 | 3 | 42 | 184·9 | +22·7 | −35·4 |
| 9·332 | I | 44 | 157 | 25 | 91 | 185·1 | +23·1 | −24·8 |
| 10·284 | I | 40 | 142 | 21 | 77 | 184·4 | +23·1 | −13·0 |
| 11·486 | G | 9 | 97 | 5 | 51 | 182·2 | +23·5 | + 0·6 |
| 12·431 | G | 4 | 29 | 2 | 16 | 186·7 | +22·3 | +17·6 |
| Means ... | ... | ... | ... | 11 | 48 | 184·60 | +22·57 | ... |

### Group 376.

A regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 7·575 | G | 0 | 48 | 0 | 59 | 171·9 | +16·9 | −61·2 |
| Means ... | ... | ... | ... | 0 | 59 | 171·9 | +16·9 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 377.** A small faint spot. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Oct. 8·551 | G | 0 | 8 | 0 | 10 | 154·1 | +28·0 | −66·2 |
| Means ... | ... | ... | ... | 0 | 10 | 154·1 | +28·0 | ... |
| **Group 378.** A few small spots, only one of which remains on October 12. Two spots on October 13 and 14. | | | | | | | | |
| Oct. 10·284 | I | 7 | 56 | 4 | 31 | 212·0 | −15·8 | +14·6 |
| 11·486 | G | 9 | 71 | 6 | 45 | 212·5 | −15·7 | +30·9 |
| 12·431 | G | 0 | 6 | 0 | 5 | 214·5 | −15·7 | +45·4 |
| 13·556 | G | 0 | 48 | 0 | 51 | 213·3 | −14·5 | +59·1 |
| 14·212 | I | 13 | 39 | 21 | 60 | 214·0 | −15·1 | +68·4 |
| Means ... | ... | ... | ... | 6 | 38 | 213·26 | −15·36 | ... |
| **Group 379.** Two small spots. | | | | | | | | |
| Oct. 12·431 | G | 0 | 13 | 0 | 9 | 210·2 | +30·3 | +41·1 |
| Means ... | ... | ... | ... | 0 | 9 | 210·2 | +30·3 | ... |
| **Group 380.** A large regular spot, with occasionally a small companion. | | | | | | | | |
| Oct. 12·431 | G | 16 | 104 | 31 | 196 | 93·1 | +23·1 | −76·0 |
| 13·556 | G | 44 | 172 | 46 | 179 | 92·8 | +23·2 | −61·4 |
| 14·212 | I | 63 | 300 | 53 | 254 | 92·5 | +23·3 | −53·1 |
| 15·197 | I | 65 | 303 | 44 | 205 | 92·7 | +23·4 | −39·8 |
| 16·249 | I | 63 | 302 | 37 | 177 | 92·3 | +23·8 | −26·4 |
| 17·288 | I | 63 | 311 | 34 | 168 | 92·1 | +24·1 | −12·9 |
| 18·556 | G | 51 | 257 | 27 | 136 | 91·8 | +24·4 | + 3·5 |
| 19·284 | I | 79 | 267 | 43 | 145 | 91·9 | +24·2 | +13·2 |
| 20 | ... | No photograph. | | (37 | 135 | 91·6 | +24·2 | +26·1) |
| 21·284 | I | 46 | 186 | 31 | 125 | 91·2 | +24·2 | +38·9 |
| 22·290 | I | 24 | 79 | 20 | 66 | 90·9 | +24·2 | +51·9 |
| 23·179 | I | 4 | 26 | 5 | 30 | 91·0 | +24·5 | +63·7 |
| Means ... | ... | ... | ... | 34 | 151 | 91·99 | +23·88 | ... |
| **Group 380*.** A few small spots, *f* Group 380. | | | | | | | | |
| Oct. 13·556 | G | 0 | 28 | 0 | 52 | 78·3 | +23·0 | −75·9 |
| 14·212 | I | 4 | 38 | 5 | 49 | 78·2 | +23·0 | −67·4 |
| Means ... | ... | ... | ... | 3 | 51 | 78·25 | +23·0 | ... |
| **Group 380†.** A few small spots, *sf* Group 380, and *sp* Group 380*. The group is not seen on October 17 or 18, but has revived again by October 19, and speedily becomes a fine large stream. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Oct. 15·197 | I | 0 | 10 | 0 | 7 | 89·1 | +19·6 | −43·4 |
| 16·249 | I | 0 | 12 | 0 | 7 | 89·1 | +20·3 | −29·6 |
| 17·288 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 18·556 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 19·284 | I | 97 | 315 | 50 | 165 | 90·3 | +18·2 | +11·6 |
| 20 | ... | No photograph. | | (71 | 312 | 91·2 | +18·5 | +25·7) |
| 21·284 | I | 140 | 691 | 93 | 459 | 92·1 | +18·9 | +39·8 |
| 22·290 | I | 76 | 346 | 66 | 300 | 93·4 | +18·5 | +54·4 |
| 23·179 | I | 40 | 245 | 52 | 315 | 95·0 | +18·0 | +67·7 |
| 24·283 | I | 12 | 42 | 43 | 151 | 96·1 | +17·6 | +83·3 |
| Means ... | ... | ... | ... | 38 | 172 | 92·04 | +18·70 | ... |
| **Group 380‡.** Two small spots, *p* Group 380. | | | | | | | | |
| Oct. 16·249 | I | 6 | 35 | 3 | 19 | 108·7 | +24·3 | −10·0 |
| Means ... | ... | ... | ... | 3 | 19 | 108·7 | +24·3 | ... |
| **Group 381.** A regular spot, with occasionally one or two small companions. | | | | | | | | |
| Oct. 14·212 | I | 9 | 44 | 26 | 128 | 64·1 | +21·2 | −81·5 |
| 15·197 | I | 9 | 59 | 12 | 86 | 61·7 | +21·1 | −70·8 |
| 16·249 | I | 22 | 98 | 20 | 90 | 62·3 | +21·4 | −56·4 |
| 17·288 | I | 31 | 119 | 21 | 81 | 64·0 | +21·4 | −41·0 |
| 18·556 | G | 32 | 126 | 18 | 72 | 63·9 | +21·5 | −24·4 |
| 19·284 | I | 50 | 139 | 27 | 75 | 64·1 | +21·2 | −14·6 |
| 20 | ... | No photograph. | | (26 | 80 | 63·8 | +21·1 | − 1·7) |
| 21·284 | I | 49 | 161 | 26 | 85 | 63·5 | +21·0 | +11·2 |
| 22·290 | I | 30 | 102 | 17 | 58 | 63·6 | +20·8 | +24·6 |
| 23·179 | I | 27 | 73 | 17 | 46 | 62·8 | +21·2 | +35·5 |
| 24·283 | I | 12 | 25 | 10 | 20 | 63·4 | +21·2 | +50·6 |
| 25·386 | I | 0 | 12 | 0 | 14 | 63·0 | +21·5 | +64·8 |
| Means ... | ... | ... | ... | 18 | 70 | 63·35 | +21·22 | ... |
| **Group 382.** A small faint spot. | | | | | | | | |
| Oct. 18·556 | G | 0 | 15 | 0 | 11 | 44·5 | +24·0 | −43·8 |
| Means ... | ... | ... | ... | 0 | 11 | 44·5 | +24·0 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 382A.

A large composite spot, with a number of companions, forming an irregular stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Oct. 19·284 | I | 4 | 103 | 19 | 463 | 357·5 | −20·3 | −81·2 |
| 20 | ... | No photograph. | | (40 | 429 | 357·8 | −20·6 | −67·7) |
| 21·284 | I | 64 | 407 | 62 | 396 | 358·1 | −20·9 | −54·2 |
| 22·290 | I | 93 | 396 | 69 | 297 | 358·0 | −21·5 | −41·0 |
| 23·179 | I | 139 | 696 | 90 | 449 | 358·1 | −21·9 | −29·2 |
| 24·283 | I | 165 | 729 | 95 | 423 | 358·1 | −21·9 | −14·7 |
| 25·386 | I | 108 | 530 | 61 | 297 | 357·9 | −21·8 | − 0·3 |
| 26·284 | I | 72 | 273 | 41 | 156 | 358·4 | −21·5 | +12·0 |
| 27·305 | I | 78 | 322 | 48 | 199 | 358·7 | −20·9 | +25·8 |
| 28·285 | I | 63 | 195 | 45 | 141 | 359·8 | −20·4 | +39·8 |
| 29·285 | I | 16 | 44 | 15 | 42 | 1·4 | −19·7 | +54·6 |
| Means ... | ... | ... | ... | 53 | 299 | 358·54 | −21·03 | ... |

### Group 382B.

A number of spots in a straight stream, *p* Group 381.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 21·284 | I | 35 | 161 | 19 | 87 | 69·6 | +18·7 | +17·3 |
| 22·290 | I | 79 | 376 | 47 | 224 | 70·2 | +18·6 | +31·2 |
| 23·179 | I | 109 | 504 | 77 | 355 | 70·8 | +18·7 | +43·5 |
| 24·283 | I | 96 | 449 | 92 | 432 | 71·5 | +18·2 | +58·7 |
| 25·386 | I | 45 | 153 | 78 | 263 | 72·1 | +17·7 | +73·9 |
| 26·284 | I | 10 | 42 | 47 | 199 | 71·4 | +18·2 | +85·0 |
| Means ... | ... | ... | ... | 60 | 260 | 70·93 | +18·35 | ... |

### Group 382C.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 22·290 | I | 0 | 26 | 0 | 40 | 327·3 | +16·1 | −71·7 |
| 23·179 | I | 4 | 17 | 4 | 17 | 327·5 | +15·8 | −59·8 |
| 24·283 | I | 8 | 24 | 6 | 17 | 327·7 | +16·0 | −45·1 |
| Means ... | ... | ... | ... | 3 | 25 | 327·5 | +15·97 | ... |

### Group 382D.

Two small spots, *nf* Group 382A.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 27·305 | I | 29 | 90 | 16 | 50 | 350·9 | −12·9 | +18·0 |
| Means ... | ... | ... | ... | 16 | 50 | 350·9 | −12·9 | ... |

### Group 382E.

A few small spots in a short stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 27·305 | I | 3 | 19 | 2 | 11 | 302·5 | +11·6 | −30·4 |
| 28·285 | I | 9 | 47 | 5 | 25 | 302·5 | +11·6 | −17·5 |
| 29·285 | I | 36 | 111 | 18 | 56 | 304·2 | +11·2 | − 2·6 |
| Means ... | ... | ... | ... | 8 | 31 | 303·07 | +11·47 | ... |

### Group 382F.

Two small spots, *p* the place of Group 382C.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Oct. 29·285 | I | 10 | 49 | 6 | 29 | 335·3 | +18·1 | +28·5 |
| Means ... | ... | ... | ... | 6 | 29 | 335·3 | +18·1 | ... |

### Group 383.

Three or four small spots in a compact cluster.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 30·563 | G | 0 | 41 | 0 | 40 | 235·8 | −22·6 | −54·2 |
| 31·293 | I | 29 | 59 | 23 | 47 | 235·5 | −22·7 | −44·8 |
| Nov. 1·283 | I | 15 | 60 | 10 | 40 | 234·8 | −22·8 | −32·5 |
| 2·478 | G | 0 | 24 | 0 | 14 | 234·7 | −22·4 | −16·8 |
| Means ... | ... | ... | ... | 8 | 35 | 235·2 | −22·63 | ... |

### Group 383A.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 1·283 | I | 0 | 32 | 0 | 31 | 326·1 | +21·6 | +58·8 |
| Means ... | ... | ... | ... | 0 | 31 | 326·1 | +21·6 | ... |

### Group 383B.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 1·283 | I | 3 | 9 | 2 | 7 | 220·0 | −9·1 | −47·3 |
| Means ... | ... | ... | ... | 2 | 7 | 220·0 | −9·1 | ... |

### Group 384.

A number of small unstable spots in a long irregular stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 1·283 | I | 48 | 155 | 30 | 96 | 301·7 | +16·3 | +34·4 |
| 2·478 | G | 44 | 218 | 35 | 179 | 303·3 | +16·3 | +51·8 |
| 3·469 | G | 9 | 59 | 12 | 68 | 302·8 | +15·2 | +64·3 |
| Means ... | ... | ... | ... | 26 | 114 | 302·60 | +15·93 | ... |

### Group 385.

A small spot on October 31, *n* of Group 383. New spots form behind the first on the succeeding days, making a scattered stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 31·293 | I | 12 | 28 | 9 | 21 | 236·0 | −17·0 | −44·3 |
| Nov. 1·283 | I | 3 | 26 | 2 | 16 | 236·7 | −17·1 | −30·6 |
| 2·478 | G | 20 | 190 | 11 | 105 | 236·4 | −16·3 | −15·1 |
| 3·469 | G | 43 | 179 | 23 | 97 | 234·6 | −17·1 | − 3·9 |
| 4·575 | G | 36 | 119 | 20 | 65 | 234·2 | −17·3 | +10·3 |
| 5·250 | I | 33 | 110 | 19 | 62 | 233·8 | −17·2 | +18·9 |
| Means ... | ... | ... | ... | 14 | 61 | 235·28 | −17·00 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 386.** A small regular spot. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Nov. 1·283 | I | 9 | 35 | 13 | 49 | 201·0 | −19·1 | −66·3 |
| 2·478 | G | 5 | 24 | 4 | 21 | 200·8 | −18·4 | −50·7 |
| 3·469 | G | 7 | 34 | 5 | 24 | 200·0 | −18·7 | −38·5 |
| 4·575 | G | 12 | 35 | 7 | 21 | 199·9 | −18·7 | −24·0 |
| 5·250 | I | 12 | 34 | 7 | 19 | 200·2 | −18·7 | −14·7 |
| Means ... | ... | ... | ... | 7 | 27 | 200·38 | −18·72 | ... |
| **Group 387.** A small spot. | | | | | | | | |
| Nov. 2·478 | G | 0 | 7 | 0 | 9 | 185·4 | −14·8 | −66·1 |
| 3·469 | G | 3 | 11 | 3 | 10 | 185·0 | −15·7 | −53·5 |
| 4·575 | G | 0 | 7 | 0 | 5 | 185·0 | −15·8 | −38·9 |
| Means ... | ... | ... | ... | 1 | 8 | 185·13 | −15·43 | ... |
| **Group 388.** A small spot. | | | | | | | | |
| Nov. 4·575 | G | 4 | 14 | 2 | 8 | 206·7 | +22·4 | −17·2 |
| Means ... | ... | ... | ... | 2 | 8 | 206·7 | +22·4 | ... |
| **Group 389.** Two small faint spots. | | | | | | | | |
| Nov. 8·404 | G | 0 | 15 | 0 | 30 | 245·0 | +29·1 | +71·7 |
| Means ... | ... | ... | ... | 0 | 30 | 245·0 | +29·1 | ... |
| **Group 390.** A small spot. | | | | | | | | |
| Nov. 9·404 | G | 0 | 19 | 0 | 11 | 136·1 | −12·7 | −24·1 |
| Means ... | ... | ... | ... | 0 | 11 | 136·1 | −12·7 | ... |
| **Group 391.** Some very small spots in a compact cluster. | | | | | | | | |
| Nov. 9·404 | G | 3 | 16 | 2 | 11 | 116·6 | + 9·1 | −43·6 |
| Means ... | ... | ... | ... | 2 | 11 | 116·6 | + 9·1 | ... |
| **Group 392A.** A small spot. | | | | | | | | |
| Nov. 14·344 | I | 0 | 6 | 0 | 7 | 32·0 | −15·8 | −63·0 |
| Means ... | ... | ... | ... | 0 | 7 | 32·0 | −15·8 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 392.** Two spots, of which the preceding rapidly increases in size, and coalesces with the following spot, to form on November 15 one very large spot very irregular in form. It diminishes in size after November 15, and breaks up into several fragments. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Nov. 13·283 | I | 17 | 71 | 15 | 64 | 54·5 | +21·2 | −54·6 |
| 14·344 | I | 103 | 324 | 69 | 220 | 56·2 | +21·9 | −38·8 |
| 15·300 | G | 291 | 934 | 171 | 548 | 56·5 | +21·7 | −26·0 |
| 16·448 | G | 126 | 775 | 68 | 419 | 57·0 | +22·0 | −10·4 |
| 17·295 | I | 164 | 662 | 88 | 356 | 56·8 | +21·9 | + 0·6 |
| 18·076 | Me | 40 | 520 | 22 | 283 | 56·0 | +22·5 | +10·1 |
| 19·545 | G | 64 | 375 | 39 | 230 | 56·3 | +22·2 | +29·8 |
| 20·558 | G | 32 | 328 | 23 | 238 | 55·9 | +22·0 | +42·7 |
| 21 | ... | No photograph. | | (42 | 240 | 55·6 | +22·0 | +54·4) |
| 22·384 | I | 47 | 186 | 61 | 242 | 55·2 | +22·0 | +66·1 |
| 23·309 | I | 22 | 41 | 60 | 111 | 56·2 | +21·9 | +79·3 |
| Means ... | ... | ... | ... | 60 | 268 | 56·02 | +21·94 | ... |
| **Group 393.** *Two spots on November 18. The group has greatly increased by November 19, and consists of two large regular spots with one or two very small companions.* | | | | | | | | |
| Nov. 18·076 | Me | 0 | 127 | 0 | 66 | 52·6 | − 9·4 | + 6·7 |
| 19·545 | G | 81 | 540 | 48 | 315 | 55·0 | − 9·9 | +28·5 |
| 20·558 | G | 103 | 592 | 72 | 411 | 55·5 | − 9·7 | +42·3 |
| 21 | ... | No photograph. | | (80 | 342 | 55·6 | − 9·6 | +54·5) |
| 22·384 | I | 68 | 212 | 87 | 274 | 55·7 | − 9·4 | +66·6 |
| 23·309 | I | 25 | 101 | 65 | 278 | 56·2 | − 9·4 | +79·3 |
| Means ... | ... | .. | ... | 59 | 281 | 55·10 | − 9·57 | ... |
| **Group 394.** A few small spots in a short stream. | | | | | | | | |
| Nov. 17·295 | I | 60 | 157 | 33 | 86 | 38·8 | −13·2 | −17·4 |
| 18·076 | Me | 30 | 238 | 16 | 125 | 37·5 | −13·7 | − 8·4 |
| 19·545 | G | 43 | 287 | 23 | 153 | 39·4 | −13·2 | +12·9 |
| 20·558 | G | 78 | 230 | 45 | 133 | 39·2 | −13·0 | +26·0 |
| Means ... | ... | ... | ... | 29 | 124 | 38·73 | −13·28 | ... |
| **Group 395.** A small faint spot; it is not seen from November 20 to November 24, nor on November 26. | | | | | | | | |
| Nov. 19·545 | G | 0 | 8 | 0 | 6 | 342·7 | +20·8 | −43·8 |
| 20·558 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 21 | ... | No photograph. | | (0 | 0) | ... | ... | ... |
| 22·384 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·309 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 24·302 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 25·515 | G | 9 | 42 | 6 | 27 | 341·7 | +20·8 | +33·9 |
| 26·182 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27·552 | G | 0 | 14 | 0 | 15 | 342·1 | +21·4 | +61·1 |
| Means ... | ... | ... | ... | 1 | 5 | 342·17 | +21·00 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 396.

A few small spots in a short stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Nov. 24·302 | I | 9 | 44 | 10 | 46 | 264·3 | −17·0 | −59·5 |
| 25·515 | G | 48 | 154 | 35 | 112 | 264·7 | −17·4 | −43·1 |
| 26·182 | I | 52 | 174 | 33 | 113 | 264·1 | −18·0 | −34·9 |
| 27·552 | G | 6 | 37 | 3 | 20 | 267·2 | −17·4 | −13·8 |
| Means ... | ... | ... | ... | 20 | 73 | 265·08 | −17·45 | ... |

### Group 397.

A very fine stream, the principal members of which are two very large composite spots on November 25. A great number of small spots form on all sides of the two principal spots. The following spot of the two has broken up by November 27, and rapidly diminishes on the succeeding days.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 24·302 | I | 149 | 653 | 247 | 1074 | 252·4 | +22·0 | −71·4 |
| 25·515 | G | 216 | 1334 | 198 | 1238 | 252·6 | +21·7 | −55·2 |
| 26·182 | I | 343 | 1871 | 269 | 1449 | 252·4 | +21·3 | −46·6 |
| 27·552 | G | 300 | 2015 | 182 | 1215 | 253·1 | +20·8 | −27·9 |
| 28·284 | I | 521 | 2123 | 293 | 1191 | 253·9 | +20·8 | −17·4 |
| 29·403 | G | 436 | 1854 | 233 | 989 | 253·9 | +20·6 | − 2·7 |
| 30·488 | G | 236 | 1347 | 129 | 738 | 254·6 | +20·5 | +12·3 |
| Dec. 1·185 | I | 201 | 1232 | 115 | 704 | 255·0 | +19·9 | +21·9 |
| 2 | ... | No photograph. | | (97 | 575 | 255·6 | +20·0 | +35·6) |
| 3·185 | I | 96 | 544 | 79 | 446 | 256·1 | +20·1 | +49·3 |
| 4·288 | I | 71 | 433 | 83 | 504 | 255·1 | +19·8 | +62·9 |
| Means ... | ... | ... | ... | 175 | 920 | 254·06 | +20·68 | ... |

### Group 398.

A small faint spot with a faint companion on November 28.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 25·515 | G | 0 | 10 | 0 | 20 | 234·2 | −24·4 | −73·6 |
| 26·182 | I | 3 | 31 | 4 | 40 | 235·0 | −24·5 | −64·0 |
| 27·552 | G | 9 | 20 | 7 | 16 | 234·9 | −24·6 | −46·1 |
| 28·284 | I | 3 | 31 | 2 | 21 | 235·9 | −24·2 | −35·4 |
| 29·403 | G | 8 | 14 | 5 | 8 | 236·2 | −24·4 | −20·4 |
| Means ... | ... | ... | ... | 4 | 21 | 235·24 | −24·42 | ... |

### Group 399.

Two small spots very close together.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 27·552 | G | 0 | 15 | 0 | 15 | 337·4 | −21·9 | +56·4 |
| Means ... | ... | ... | ... | 0 | 15 | 337·4 | −21·9 | ... |

### Group 400.

A large spot, followed by a number of small spots in a long stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1880. d | | | | | | ° | ° | ° |
| Dec. 3·185 | I | 56 | 326 | 82 | 571 | 135·2 | −14·4 | −71·6 |
| 4·288 | I | 102 | 675 | 109 | 675 | 133·5 | −14·0 | −58·7 |
| 5 | ... | No photograph. | | (114 | 627 | 133·3 | −14·0 | −46·5) |
| 6·187 | I | 190 | 929 | 120 | 579 | 133·0 | −13·9 | −34·2 |
| 7·186 | I | 194 | 1113 | 107 | 606 | 135·1 | −13·9 | −18·9 |
| 8 | ... | No photograph. | | (97 | 600 | 135·8 | −14·0 | − 4·4) |
| 9·284 | I | 166 | 1136 | 87 | 595 | 136·5 | −14·0 | +10·1 |
| 10·479 | G | 155 | 926 | 89 | 531 | 136·7 | −13·8 | +26·0 |
| 11·465 | G | 182 | 807 | 120 | 532 | 136·8 | −13·1 | +39·1 |
| 12·275 | I | 110 | 566 | 88 | 447 | 136·5 | −13·7 | +49·6 |
| 13·324 | I | 99 | 430 | 111 | 481 | 136·1 | −13·8 | +62·9 |
| Means ... | ... | ... | ... | 102 | 568 | 135·32 | −13·87 | ... |

### Group 400A.

A small spot, *np* Group 397.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. 4·288 | I | 0 | 9 | 0 | 15 | 267·2 | +23·2 | +75·0 |
| Means ... | ... | ... | ... | 0 | 15 | 267·2 | +23·2 | ... |

### Group 400B.

A number of spots, mostly small, in a straight stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. 6·187 | I | 44 | 256 | 24 | 138 | 155·4 | +18·3 | −11·8 |
| 7·186 | I | 61 | 252 | 32 | 133 | 156·2 | +18·0 | + 2·2 |
| Means ... | ... | ... | ... | 28 | 136 | 155·80 | +18·15 | ... |

### Group 400C.

A pair of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. 7·186 | I | 21 | 74 | 20 | 70 | 209·9 | +19·1 | +55·9 |
| Means ... | ... | ... | ... | 20 | 70 | 209·9 | +19·1 | ... |

### Group 400D.

A small spot, *f* Group 400.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. 7·186 | I | 3 | 24 | 2 | 17 | 112·3 | −16·8 | −41·7 |
| Means ... | ... | ... | ... | 2 | 17 | 112·3 | −16·8 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 401.** A few small spots in a straight stream. Only one spot remains on December 24. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Dec. 17·274 | I | 21 | 90 | 26 | 110 | 317·9 | +22·7 | −63·2 |
| 18·279 | I | 28 | 110 | 24 | 94 | 318·4 | +23·7 | −49·5 |
| 19·182 | I | 31 | 124 | 21 | 84 | 320·9 | +23·8 | −35·1 |
| 20·187 | I | 30 | 148 | 18 | 88 | 321·9 | +23·8 | −20·8 |
| 21·391 | I | 28 | 50 | 16 | 28 | 322·7 | +24·2 | − 4·1 |
| 22·284 | I | 16 | 42 | 9 | 24 | 322·0 | +24·2 | + 6·9 |
| 23·411 | G | 12 | 57 | 7 | 34 | 320·1 | +24·9 | +19·8 |
| 24·439 | G | 6 | 31 | 4 | 21 | 320·8 | +24·5 | +34·0 |
| Means ... | ... | ... | ... | 16 | 60 | 320·59 | +23·98 | ... |
| **Group 402.** A single spot on December 17. A few small spots have formed behind it by December 23, making with it a short stream. The group has increased in size by December 24. | | | | | | | | |
| Dec. 16·234 | I | 19 | 55 | 29 | 86 | 324·4 | +13·8 | −70·4 |
| 17·274 | I | 25 | 71 | 24 | 68 | 323·8 | +13·6 | −57·3 |
| 18·279 | I | 31 | 62 | 22 | 44 | 324·8 | +13·8 | −43·1 |
| 19·182 | I | 31 | 124 | 19 | 75 | 325·3 | +13·8 | −30·7 |
| 20·187 | I | 33 | 147 | 18 | 80 | 325·5 | +13·5 | −17·2 |
| 21·391 | I | 46 | 146 | 24 | 76 | 327·1 | +13·6 | + 0·3 |
| 22·284 | I | 30 | 64 | 16 | 34 | 326·9 | +13·6 | +11·8 |
| 23·411 | G | 23 | 81 | 13 | 47 | 324·0 | +14·2 | +23·7 |
| 24·439 | G | 58 | 185 | 38 | 119 | 321·8 | +13·6 | +35·0 |
| Means ... | ... | ... | ... | 23 | 70 | 324·84 | +13·72 | ... |
| **Group 403.** A large regular spot. It is eclipsed on the photograph taken on December 31 during the Solar Eclipse. | | | | | | | | |
| Dec. 21·391 | I | 31 | 133 | 64 | 277 | 252·2 | +20·6 | −74·6 |
| 22·284 | I | 59 | 294 | 75 | 377 | 250·5 | +20·8 | −64·6 |
| 23·411 | G | 82 | 406 | 69 | 341 | 250·9 | +20·8 | −49·4 |
| 24·439 | G | 117 | 496 | 79 | 335 | 250·7 | +20·6 | −36·1 |
| 25 | ... | No photograph. | | (60 | 280 | 250·5 | +20·7 | −25·0) |
| 26·164 | I | 74 | 398 | 42 | 225 | 250·2 | +20·8 | −13·8 |
| 27·279 | I | 113 | 617 | 62 | 337 | 250·3 | +20·8 | + 1·0 |
| 28·272 | I | 75 | 363 | 42 | 204 | 249·0 | +21·0 | +12·8 |
| 29·243 | I | 92 | 434 | 56 | 263 | 249·7 | +20·1 | +26·2 |
| 30·289 | I | 59 | 355 | 42 | 252 | 249·4 | +19·9 | +39·7 |
| 31·578 | G | (44 | 277 | 38 | 233 | 248·8 | +20·4 | +56·1) |
| 1881. | | | | | | | | |
| Jan. 1·493 | G | 23 | 146 | 34 | 214 | 248·1 | +20·9 | +67·4 |
| Means ... | ... | ... | ... | 55 | 278 | 250·03 | +20·62 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 404.** A large regular spot, with occasionally a small attendant. | | | | | | | | |
| 1880. d | | | | | | ° | ° | ° |
| Dec. 31·578 | G | 87 | 274 | 47 | 148 | 209·9 | −17·6 | +17·2 |
| 1881. | | | | | | | | |
| Jan. 1·493 | G | 45 | 193 | 27 | 116 | 211·8 | −17·4 | +31·1 |
| 2 | ... | No photograph. | | (44 | 190 | 212·6 | −17·3 | +43·2) |
| 3·209 | I | 68 | 296 | 61 | 264 | 213·3 | −17·1 | +55·3 |
| 4·179 | I | 34 | 194 | 46 | 262 | 213·6 | −17·1 | +68·3 |
| Means ... | ... | ... | ... | 45 | 196 | 212·24 | −17·30 | ... |
| **Group 405.** Three small spots. The last of these increases in size and becomes a large regular spot with occasionally a small attendant. | | | | | | | | |
| 1880. | | | | | | | | |
| Dec. 30·289 | 1 | 21 | 110 | 11 | 57 | 206·2 | −18·4 | − 3·5 |
| 31·578 | G | 86 | 246 | 46 | 131 | 204·6 | −19·4 | +11·9 |
| 1881. | | | | | | | | |
| Jan. 1·493 | G | 35 | 132 | 20 | 75 | 204·2 | −19·6 | +23·5 |
| 2 | ... | No photograph. | | (32 | 135 | 204·4 | −19·4 | +35·1) |
| 3·209 | I | 59 | 260 | 44 | 194 | 204·6 | −19·1 | +46·6 |
| 4·179 | I | 22 | 142 | 21 | 140 | 204·1 | −19·4 | +58·8 |
| 5·546 | G | 0 | 27 | 0 | 54 | 203·2 | −19·2 | +75·9 |
| Means ... | ... | ... | ... | 25 | 112 | 204·47 | −19·21 | ... |
| **Group 406.** A large regular spot, with occasionally a small attendant. | | | | | | | | |
| 1880. | | | | | | | | |
| Dec. 27·279 | I | 59 | 294 | 61 | 316 | 190·1 | −30·1 | −59·2 |
| 28·272 | I | 31 | 118 | 24 | 92 | 192·2 | −31·1 | −44·0 |
| 29·243 | I | 59 | 155 | 39 | 103 | 190·9 | −30·7 | −32·6 |
| 30·289 | I | 77 | 309 | 46 | 185 | 190·7 | −31·1 | −19·0 |
| 31·578 | G | 53 | 289 | 30 | 165 | 190·0 | −31·9 | − 2·7 |
| 1881. | | | | | | | | |
| Jan. 1·493 | G | 61 | 123 | 35 | 71 | 188·0 | −31·5 | + 7·3 |
| 2 | ... | No photograph. | | (37 | 131 | 188·4 | −31·4 | +19·0) |
| 3·209 | I | 61 | 294 | 40 | 192 | 188·7 | −31·3 | +30·7 |
| 4·179 | I | 68 | 215 | 52 | 165 | 188·8 | −30·8 | +43·5 |
| 5·546 | G | 20 | 77 | 23 | 88 | 189·1 | −31·0 | +61·8 |
| 6·429 | G | 8 | 43 | 14 | 73 | 188·0 | −30·7 | +72·3 |
| Means ... | ... | ... | ... | 36 | 144 | 189·54 | −31·05 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 407.

A very large regular spot, with some companions on January 6 and 7. The great spot has broken up by January 9.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Jan. 3·209 | I | 86 | 334 | 115 | 445 | 94·4 | +25·2 | −63·6 |
| 4·179 | I | 118 | 589 | 110 | 550 | 93·5 | +25·1 | −51·8 |
| 5·546 | G | 133 | 559 | 93 | 391 | 92·7 | +25·3 | −34·6 |
| 6·429 | G | 154 | 771 | 96 | 482 | 92·5 | +25·4 | −23·2 |
| 7·492 | G | 104 | 768 | 61 | 449 | 92·0 | +25·5 | − 9·7 |
| 8 | ... | No photograph. | | (68 | 373 | 91·9 | +25·3 | + 1·0) |
| 9·134 | I | 130 | 509 | 76 | 298 | 91·7 | +25·0 | +11·6 |
| 10·216 | I | 174 | 467 | 111 | 298 | 90·9 | +25·6 | +25·1 |
| 11·282 | I | 102 | 364 | 77 | 274 | 90·7 | +25·4 | +39·0 |
| 12·283 | I | 55 | 188 | 51 | 171 | 89·4 | +25·8 | +50·8 |
| 13·276 | I | 40 | 149 | 53 | 200 | 89·0 | +25·0 | +63·5 |
| 14·275 | I | 21 | 91 | 52 | 229 | 87·1 | +24·8 | +74·7 |
| Means ... | ... | ... | ... | 80 | 347 | 91·32 | +25·28 | ... |

### Group 407A.

A spot, *sf* Group 407.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 13·276 | I | 0 | 44 | 0 | 42 | 78·4 | +23·3 | +52·9 |
| Means ... | ... | ... | ... | 0 | 42 | 78·4 | +23·3 | ... |

### Group 408.

A stream of spots of the usual type, the first and last spots being the largest and most stable.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 17·265 | I | 85 | 369 | 48 | 210 | 349·5 | +17·7 | +16·5 |
| 18·284 | I | 41 | 433 | 25 | 272 | 349·5 | +17·7 | +29·9 |
| 19·386 | I | 114 | 680 | 89 | 531 | 350·0 | +18·1 | +44·9 |
| 20·321 | I | 111 | 614 | 112 | 638 | 349·8 | +18·7 | +57·1 |
| 21·470 | G | 85 | 305 | 190 | 645 | 351·0 | +19·2 | +73·4 |
| 22·220 | I | 9 | 61 | 27 | 181 | 345·3 | +20·3 | +77·5 |
| Means ... | ... | ... | ... | 82 | 413 | 349·18 | +18·62 | ... |

### Group 409.

A pair of spots. Only one small faint spot remains on January 9.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 17·265 | I | 35 | 201 | 19 | 109 | 350·7 | −19·5 | +17·7 |
| 18·284 | I | 0 | 287 | 0 | 172 | 350·3 | −20·1 | +30·7 |
| 19·386 | I | 31 | 209 | 23 | 151 | 350·2 | −19·9 | +45·1 |
| 20·321 | I | 16 | 117 | 14 | 111 | 350·6 | −19·0 | +57·9 |
| 21·470 | G | 3 | 17 | 5 | 25 | 348·1 | −18·4 | +70·5 |
| Means ... | ... | ... | ... | 12 | 114 | 349·98 | −19·38 | ... |

### Group 409A.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Jan. 17·265 | I | 10 | 43 | 6 | 26 | 320·7 | +27·7 | −12·3 |
| 18·284 | I | 0 | 62 | 0 | 37 | 321·6 | +28·0 | + 2·0 |
| Means ... | ... | ... | ... | 3 | 32 | 321·15 | +27·85 | ... |

### Group 410.

A number of small unstable spots in a short stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 19·386 | I | 4 | 58 | 2 | 30 | 312·9 | −20·6 | + 7·8 |
| 20·321 | I | 22 | 161 | 12 | 89 | 313·2 | −20·3 | +20·5 |
| 21·470 | G | 26 | 93 | 17 | 60 | 314·9 | −20·2 | +37·3 |
| 22·220 | I | 12 | 77 | 8 | 57 | 314·4 | −20·3 | +46·6 |
| 23·159 | I | 0 | 15 | 0 | 16 | 317·4 | −19·5 | +62·0 |
| Means ... | ... | ... | ... | 8 | 50 | 314·56 | −20·18 | ... |

### Group 410A.

A pair of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 19·386 | I | 0 | 89 | 0 | 54 | 317·7 | +26·4 | +12·6 |
| 20·321 | I | 6 | 45 | 4 | 28 | 315·7 | +25·3 | +23·0 |
| Means ... | ... | ... | ... | 2 | 41 | 316·70 | +25·85 | ... |

### Group 410B.

A stream of spots, mostly small.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 19·386 | I | 3 | 71 | 5 | 121 | 234·4 | +15·0 | −70·7 |
| 20·321 | I | 0 | 47 | 0 | 48 | 234·4 | +14·4 | −58·3 |
| 21·470 | G | 0 | 53 | 0 | 38 | 236·2 | +13·9 | −41·4 |
| 22·220 | I | 3 | 104 | 2 | 66 | 235·2 | +14·0 | −32·6 |
| 23·159 | I | 0 | 74 | 0 | 42 | 235·6 | +14·4 | −19·8 |
| 24·286 | I | 0 | 62 | 0 | 33 | 236·1 | +14·1 | − 4·5 |
| 25·175 | I | 15 | 52 | 8 | 28 | 237·1 | +13·4 | + 8·2 |
| Means ... | ... | ... | ... | 2 | 54 | 235·57 | +14·17 | ... |

### Group 410C.

Several small spots in an irregular cluster.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 20·321 | I | 0 | 37 | 0 | 19 | 291·3 | −16·5 | − 1·4 |
| Means ... | ... | ... | ... | 0 | 19 | 291·3 | −16·5 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 410D.** A pair of small spots on January 23. The group quickly expands into a fine stream, of which the first and last spots are the principal members. The leader becomes a large regular spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Jan. 23·159 | I | 12 | 60 | 7 | 34 | 231·9 | −19·4 | −23·5 |
| 24·286 | I | 114 | 456 | 59 | 237 | 232·8 | −19·1 | − 7·8 |
| 25·175 | I | 193 | 893 | 100 | 463 | 234·0 | −18·6 | + 5·1 |
| 26·307 | I | 439 | 1315 | 239 | 724 | 234·3 | −18·4 | +20·4 |
| 27·172 | I | 337 | 1156 | 204 | 706 | 235·9 | −18·1 | +33·4 |
| 28·175 | I | 228 | 911 | 171 | 694 | 237·6 | −18·3 | +48·3 |
| 29·190 | I | 182 | 651 | 205 | 725 | 239·9 | −18·1 | +63·9 |
| 30·193 | I | 86 | 337 | 164 | 639 | 238·6 | −18·5 | +75·8 |
| Means ... | ... | ... | ... | 144 | 528 | 235·63 | −18·56 | ... |
| **Group 410E.** One or two small spots. | | | | | | | | |
| Jan. 24·286 | I | 0 | 72 | 0 | 91 | 173·6 | −25·1 | −67·0 |
| 25·175 | I | 0 | 60 | 0 | 52 | 174·6 | −24·2 | −54·3 |
| 26·307 | I | 0 | 22 | 0 | 15 | 174·6 | −24·2 | −39·3 |
| 27·172 | I | 13 | 22 | 8 | 14 | 170·7 | −26·2 | −31·8 |
| Means ... | ... | ... | ... | 2 | 43 | 173·38 | −24·93 | ... |
| **Group 410F.** A stream of spots, mostly small. | | | | | | | | |
| Jan. 26·307 | I | 0 | 25 | 0 | 14 | 228·1 | +14·4 | +14·2 |
| 27·172 | I | 69 | 164 | 41 | 98 | 229·0 | +14·4 | +26·5 |
| 28·175 | I | 67 | 128 | 47 | 89 | 228·8 | +14·1 | +39·5 |
| Means ... | ... | ... | ... | 29 | 67 | 228·63 | +14·30 | ... |
| **Group 411.** A short compact stream of irregular spots. | | | | | | | | |
| Jan. 28·175 | I | 86 | 231 | 50 | 133 | 168·1 | +15·1 | −21·2 |
| 29·190 | I | 225 | 795 | 122 | 431 | 169·3 | +15·3 | − 6·7 |
| 30·193 | I | 255 | 1015 | 138 | 549 | 169·2 | +15·0 | + 6·4 |
| 31·452 | G | 77 | 617 | 45 | 360 | 168·8 | +15·2 | +22·6 |
| Feb. 1·287 | I | 103 | 294 | 67 | 189 | 168·5 | +14·5 | +33·3 |
| Means ... | ... | ... | ... | 84 | 332 | 168·78 | +15·02 | ... |
| **Group 412.** Two clusters, each very compact, and composed of irregular spots. | | | | | | | | |
| Jan. 29·190 | I | 123 | 301 | 64 | 155 | 164·9 | −13·0 | −11·1 |
| 30·193 | I | 406 | 1015 | 205 | 515 | 165·5 | −13·1 | + 2·7 |
| 31·452 | G | 222 | 1083 | 119 | 581 | 165·9 | −12·9 | +19·7 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 412—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Feb. 1·287 | I | 229 | 934 | 133 | 547 | 165·6 | −13·3 | +30·4 |
| 2 | ... | No photograph. | | (109 | 449 | 165·7 | −13·3 | +43·7) |
| 3·288 | I | 94 | 391 | 85 | 352 | 165·7 | −13·2 | +56·9 |
| 4·277 | I | 69 | 215 | 105 | 324 | 167·1 | −12·5 | +71·3 |
| Means ... | ... | ... | ... | 117 | 418 | 165·77 | −13·04 | ... |
| **Group 413.** A regular spot with a small companion on January 30. | | | | | | | | |
| Jan. 28·175 | I | 3 | 22 | 6 | 42 | 113·2 | −16·6 | −76·1 |
| 29·190 | I | 31 | 109 | 32 | 112 | 114·3 | −16·1 | −61·7 |
| 30·193 | I | 35 | 108 | 26 | 81 | 114·8 | −17·0 | −48·0 |
| 31·452 | G | 21 | 96 | 12 | 56 | 116·2 | −16·6 | −30·0 |
| Feb. 1·287 | I | 24 | 58 | 13 | 31 | 117·0 | −16·6 | −18·2 |
| 2 | ... | No photograph. | | (9 | 22 | 117·4 | −16·5 | − 4·6) |
| 3·288 | I | 12 | 25 | 6 | 13 | 117·7 | −16·4 | + 8·9 |
| 4·277 | I | 9 | 27 | 5 | 15 | 118·2 | −16·2 | +22·4 |
| Means ... | ... | ... | ... | 14 | 47 | 116·10 | −16·50 | ... |
| **Group 414.** A small faint spot. | | | | | | | | |
| Jan. 29·190 | I | 0 | 13 | 0 | 16 | 108·6 | −16·4 | −67·4 |
| 30·193 | I | 4 | 15 | 3 | 13 | 108·6 | −15·4 | −54·2 |
| 31·452 | G | 0 | 12 | 0 | 8 | 107·1 | −14·5 | −39·1 |
| Means ... | ... | ... | ... | 1 | 12 | 108·10 | −15·43 | ... |
| **Group 415.** A fine stream of the usual type, the first and last spots being the largest and most stable. The leader spot alone remains by February 10. | | | | | | | | |
| Jan. 31·452 | G | 8 | 37 | 21 | 92 | 70·5 | +18·8 | −75·7 |
| Feb. 1·287 | I | 31 | 92 | 40 | 120 | 72·0 | +19·3 | −63·2 |
| 2 | ... | No photograph. | | (103 | 395 | 71·1 | +19·2 | −50·9) |
| 3·288 | I | 228 | 933 | 167 | 669 | 70·2 | +19·0 | −38·6 |
| 4·277 | I | 242 | 1191 | 151 | 737 | 70·4 | +19·2 | −25·4 |
| 5·419 | G | 226 | 1086 | 129 | 618 | 70·5 | +19·4 | −10·2 |
| 6·168 | I | 199 | 937 | 112 | 525 | 70·6 | +19·3 | − 0·3 |
| 7·273 | I | 232 | 908 | 134 | 525 | 71·1 | +19·0 | +14·7 |
| 8·328 | I | 128 | 766 | 82 | 497 | 73·1 | +19·1 | +30·6 |
| 9·446 | G | 112 | 516 | 90 | 415 | 73·2 | +18·7 | +45·4 |
| 10·546 | G | 36 | 323 | 41 | 371 | 73·2 | +18·4 | +59·9 |
| 11·125 | I | 46 | 155 | 71 | 238 | 73·0 | +18·6 | +67·4 |
| Means ... | ... | ... | ... | 95 | 434 | 71·58 | +19·00 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 415A.

A pair of very small spots.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Feb. 3·288 | I | 5 | 29 | 3 | 16 | 111·0 | −32·3 | + 2·2 |
| Means ... | ... | ... | ... | 3 | 16 | 111·0 | −32·3 | ... |

### Group 416.

A small faint spot on February 5. The group rapidly increases in size after February 6.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 5·491 | G | 7 | 22 | 5 | 15 | 112·9 | +21·7 | +32·2 |
| 6·168 | I | 9 | 15 | 7 | 12 | 114·3 | +21·4 | +43·4 |
| 7·273 | I | 124 | 283 | 139 | 318 | 114·7 | +21·5 | +58·3 |
| 8·328 | I | 53 | 165 | 128 | 389 | 116·7 | +21·7 | +74·2 |
| Means ... | ... | ... | ... | 70 | 184 | 114·65 | +21·58 | ... |

### Group 417.

A few spots, mostly small and unstable, in an irregular stream. The leader spot is the largest and most stable.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 6·168 | I | 13 | 29 | 8 | 18 | 42·3 | +18·0 | −28·6 |
| 7·273 | I | 67 | 202 | 38 | 115 | 42·9 | +17·9 | −13·5 |
| 8·328 | I | 62 | 128 | 34 | 71 | 44·4 | +18·3 | + 1·9 |
| 9·446 | G | 17 | 135 | 10 | 77 | 42·3 | +17·5 | +14·5 |
| 10·546 | G | 17 | 56 | 11 | 36 | 43·9 | +17·9 | +30·6 |
| 11·125 | I | 41 | 133 | 29 | 95 | 44·2 | +18·2 | +38·6 |
| 12·475 | G | 27 | 98 | 26 | 96 | 42·6 | +18·0 | +54·7 |
| 13·146 | I | 12 | 47 | 16 | 62 | 43·1 | +18·8 | +64·0 |
| Means ... | ... | ... | ... | 22 | 71 | 43·21 | +18·08 | ... |

### Group 418.

A few very small faint spots. Only the leader remains on February 11.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 9·446 | G | 11 | 30 | 6 | 17 | 33·0 | +20·7 | + 5·2 |
| 10·546 | G | 16 | 39 | 10 | 24 | 35·0 | +20·8 | +21·7 |
| 11·125 | I | 32 | 92 | 21 | 61 | 36·8 | +20·8 | +31·2 |
| 12·475 | G | 11 | 20 | 10 | 18 | 37·3 | +21·0 | +49·4 |
| Means ... | ... | ... | ... | 12 | 30 | 35·53 | +20·83 | ... |

### Group 419.

A large regular spot, with a small companion on February 8.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 6·168 | I | 32 | 142 | 77 | 346 | 355·0 | +16·2 | −75·9 |
| 7·273 | I | 86 | 231 | 100 | 269 | 355·3 | +15·7 | −61·1 |
| 8·328 | I | 92 | 461 | 76 | 382 | 354·5 | +15·8 | −48·0 |
| 9·446 | G | 90 | 415 | 59 | 271 | 354·1 | +15·8 | −33·7 |

### Group 419—*continued.*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Feb. 10·546 | G | 100 | 465 | 58 | 269 | 353·5 | +15·7 | −19·8 |
| 11·125 | I | 148 | 477 | 82 | 265 | 353·9 | +15·9 | −11·7 |
| 12·475 | G | 92 | 456 | 50 | 249 | 353·4 | +15·7 | + 5·5 |
| 13·146 | I | 117 | 477 | 66 | 268 | 353·6 | +15·9 | +14·5 |
| 14·341 | I | 93 | 390 | 59 | 247 | 354·4 | +15·9 | +31·1 |
| 15·313 | I | 93 | 281 | 70 | 211 | 353·5 | +16·2 | +43·0 |
| 16·361 | I | 62 | 172 | 63 | 174 | 353·3 | +16·2 | +56·6 |
| 17·256 | I | 16 | 77 | 25 | 123 | 353·5 | +16·0 | +68·5 |
| Means ... | ... | ... | ... | 65 | 256 | 354·00 | +15·92 | ... |

### Group 420.

A close pair of small faint spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 9·446 | G | 0 | 14 | 0 | 12 | 339·3 | +17·9 | −48·5 |
| Means ... | ... | ... | ... | 0 | 12 | 339·3 | +17·9 | ... |

### Group 421.

A small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 9·446 | G | 0 | 7 | 0 | 9 | 319·6 | −19·8 | −68·2 |
| Means ... | ... | ... | ... | 0 | 9 | 319·6 | −19·8 | ... |

### Group 422.

Two small spots. Only one of them is seen on February 13.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 12·475 | G | 22 | 62 | 13 | 35 | 321·9 | −20·3 | −26·0 |
| 13·146 | I | 24 | 38 | 13 | 20 | 323·0 | −19·3 | −16·1 |
| 14·341 | I | 10 | 56 | 5 | 29 | 321·5 | −20·2 | − 1·8 |
| Means ... | ... | ... | ... | 10 | 28 | 322·13 | −19·93 | ... |

### Group 423.

A large regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 14·341 | I | 10 | 47 | 24 | 118 | 248·7 | +19·7 | −74·6 |
| 15·313 | I | 31 | 93 | 42 | 127 | 246·4 | +20·0 | −64·1 |
| 16·361 | I | 31 | 140 | 28 | 127 | 246·3 | +20·0 | −50·4 |
| 17·256 | I | 38 | 166 | 28 | 122 | 245·9 | +20·1 | −39·1 |
| 18·253 | I | 53 | 229 | 33 | 143 | 245·4 | +19·9 | −26·4 |
| 19·261 | I | 46 | 248 | 27 | 144 | 244·8 | +20·0 | −13·7 |
| 20·270 | I | 53 | 186 | 30 | 105 | 244·6 | +20·2 | − 0·6 |
| 21·409 | I | 50 | 202 | 29 | 118 | 244·8 | +20·4 | +14·5 |
| 22·097 | Me | 31 | 152 | 19 | 93 | 243·9 | +20·3 | +22·7 |
| 23·167 | I | 47 | 155 | 33 | 110 | 243·7 | +19·8 | +36·7 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 423—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Feb. 24·316 | I | 31 | 137 | 29 | 130 | 244·1 | +20·3 | +52·2 |
| 25·423 | I | 32 | 107 | 46 | 155 | 243·0 | +20·0 | +65·7 |
| 26·512 | G | 2 | 12 | 7 | 50 | 243·4 | +20·2 | +80·3 |
| Means ... | ... | ... | ... | 29 | 119 | 245·0 | +20·07 | ... |
| **Group 424.** A large regular spot. | | | | | | | | |
| Feb. 14·341 | I | 25 | 77 | 70 | 220 | 242·3 | −20·1 | −81·0 |
| 15·313 | I | 68 | 218 | 92 | 294 | 241·2 | −19·8 | −69·3 |
| 16·361 | I | 55 | 264 | 49 | 234 | 241·2 | −19·8 | −55·5 |
| 17·256 | I | 72 | 390 | 50 | 273 | 241·1 | −19·9 | −43·9 |
| 18·253 | I | 124 | 467 | 74 | 278 | 240·7 | −20·4 | −31·1 |
| 19·261 | I | 124 | 529 | 67 | 286 | 240·4 | −20·3 | −18·1 |
| 20·270 | I | 108 | 498 | 56 | 258 | 240·2 | −20·3 | − 5·0 |
| 21·409 | I | 115 | 501 | 60 | 261 | 240·3 | −20·5 | + 7·0 |
| 22·097 | Me | 76 | 403 | 41 | 218 | 239·6 | −20·4 | +18·4 |
| 23·167 | I | 140 | 526 | 75 | 283 | 239·5 | −20·8 | +32·5 |
| 24·316 | I | 53 | 406 | 39 | 301 | 239·2 | −20·4 | +47·3 |
| 25·423 | I | 59 | 219 | 61 | 226 | 239·1 | −20·6 | +61·8 |
| 26·512 | G | 31 | 113 | 59 | 214 | 239·2 | −20·3 | +76·1 |
| 27·107 | I | 16 | 72 | 47 | 217 | 237·7 | −20·3 | +82·6 |
| Means ... | ... | ... | ... | 60 | 255 | 240·12 | −20·28 | ... |
| **Group 424A.** A few unstable spots in a short irregular stream. | | | | | | | | |
| Feb. 16·361 | I | 34 | 106 | 22 | 70 | 336·5 | −20·5 | +39·8 |
| 17·256 | I | 75 | 147 | 59 | 116 | 335·5 | −20·6 | +50·5 |
| 18·253 | I | 59 | 125 | 61 | 133 | 336·5 | −20·7 | +64·7 |
| 19·261 | I | 9 | 34 | 16 | 67 | 335·4 | −20·7 | +76·9 |
| Means ... | ... | ... | ... | 40 | 97 | 335·98 | −20·63 | ... |
| **Group 424B.** A few small spots in a sparse stream. | | | | | | | | |
| Feb. 18·253 | I | 25 | 47 | 14 | 26 | 282·8 | +16·2 | +11·0 |
| Means ... | ... | ... | ... | 14 | 26 | 282·8 | +16·2 | ... |
| **Group 425.** A number of spots, mostly small, in a straight stream. | | | | | | | | |
| Feb. 19·261 | I | 6 | 22 | 6 | 21 | 198·7 | −16·7 | −59·8 |
| 20·270 | I | 16 | 49 | 11 | 36 | 199·1 | −16·4 | −46·1 |
| 21·409 | I | 117 | 342 | 69 | 203 | 198·8 | −16·1 | −34·5 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 425—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Feb. 22·097 | Me | 0 | 264 | 0 | 145 | 198·8 | −16·1 | −22·4 |
| 23·167 | I | 71 | 177 | 36 | 91 | 198·2 | −16·0 | − 8·8 |
| 24·316 | I | 56 | 103 | 29 | 53 | 201·3 | −15·9 | + 9·4 |
| 25·423 | I | 42 | 109 | 24 | 63 | 205·9 | −15·6 | +28·6 |
| 26·512 | G | 14 | 40 | 10 | 28 | 207·3 | −15·4 | +44·3 |
| 27·107 | I | 12 | 31 | 10 | 26 | 208·9 | −15·2 | +53·8 |
| Means ... | ... | ... | ... | 22 | 74 | 201·89 | −15·93 | ... |
| **Group 426.** A regular spot, with a small companion on February 23. | | | | | | | | |
| Feb. 20·270 | I | 22 | 110 | 31 | 153 | 175·1 | −14·1 | −70·1 |
| 21·409 | I | 37 | 109 | 32 | 94 | 175·1 | −14·4 | −55·2 |
| 22·097 | Me | 0 | 75 | 0 | 55 | 174·3 | −14·6 | −46·9 |
| 23·167 | I | 47 | 144 | 28 | 86 | 174·6 | −14·7 | −32·4 |
| 24·316 | I | 47 | 125 | 25 | 66 | 174·6 | −15·2 | −17·3 |
| 25·423 | I | 37 | 134 | 19 | 68 | 175·2 | −15·3 | − 1·9 |
| 26·512 | G | 17 | 37 | 9 | 19 | 174·6 | −15·4 | +11·6 |
| 27·107 | I | 19 | 24 | 10 | 13 | 174·6 | −15·4 | +19·5 |
| Means ... | ... | ... | ... | 19 | 69 | 174·76 | −14·89 | ... |
| **Group 426B.** A cluster of small spots. | | | | | | | | |
| Feb. 21·409 | I | 25 | 85 | 14 | 48 | 221·0 | +18·0 | − 9·3 |
| 22·097 | Me | 0 | 89 | 0 | 49 | 220·8 | +18·2 | − 0·4 |
| 23·167 | I | 3 | 29 | 2 | 17 | 221·6 | +16·9 | +14·6 |
| Means ... | ... | ... | ... | 5 | 38 | 221·13 | +17·70 | ... |
| **Group 427.** A regular spot, with several small faint attendants. | | | | | | | | |
| Feb. 24·316 | I | 28 | 63 | 67 | 150 | 117·8 | +21·9 | −74·1 |
| 25·423 | I | 12 | 44 | 15 | 53 | 117·2 | +22·0 | −60·1 |
| 26·512 | G | 21 | 73 | 18 | 62 | 116·6 | +21·9 | −46·4 |
| 27·107 | I | 22 | 44 | 16 | 32 | 117·1 | +21·7 | −38·0 |
| 28·212 | I | 0 | 54 | 0 | 34 | 116·1 | +22·9 | −24·6 |
| Mar. 1·283 | I | 22 | 56 | 13 | 33 | 115·5 | +23·3 | −11·0 |
| Means ... | ... | ... | ... | 22 | 61 | 116·72 | +22·28 | ... |
| **Group 427A.** A spot only seen close to the West limb. | | | | | | | | |
| Feb. 27·107 | I | 9 | 31 | 11 | 37 | 216·9 | +15·7 | +61·8 |
| Means ... | ... | ... | ... | 11 | 37 | 216·9 | +15·7 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 427B.

A number of very small spots in a short stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Feb. 27·107 | I | 6 | 57 | 4 | 36 | 185·3 | +17·2 | +30·2 |
| Means ... | ... | ... | ... | 4 | 36 | 185·3 | +17·2 | ... |

### Group 428.

A regular spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 3·271 | I | 16 | 41 | 20 | 52 | 38·0 | +20·4 | −62·4 |
| 4·184 | I | 24 | 59 | 22 | 54 | 38·1 | +20·1 | −50·2 |
| 5·278 | I | 47 | 124 | 33 | 88 | 37·7 | +20·2 | −36·2 |
| 6·190 | I | 32 | 126 | 20 | 78 | 37·9 | +20·5 | −24·0 |
| 7·510 | G | 14 | 53 | 8 | 30 | 37·2 | +20·4 | − 7·3 |
| 8·418 | G | 12 | 48 | 7 | 27 | 36·7 | +20·6 | + 4·2 |
| 9·284 | I | 10 | 19 | 6 | 11 | 36·4 | +20·4 | +15·3 |
| 10·284 | I | 12 | 22 | 8 | 14 | 36·2 | +20·4 | +28·3 |
| Means ... | ... | ... | ... | 16 | 44 | 37·28 | +20·38 | ... |

### Group 429.

A small faint spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 7·510 | G | 0 | 3 | 0 | 6 | 329·9 | −17·9 | −74·6 |
| 8·418 | G | 0 | 9 | 0 | 9 | 331·7 | −18·0 | −60·8 |
| Means ... | ... | ... | ... | 0 | 8 | 330·80 | −17·95 | ... |

### Group 430.

A number of small faint spots in a straight stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 8·418 | G | 0 | 36 | 0 | 113 | 313·8 | +13·8 | −78·7 |
| 9·284 | I | 0 | 112 | 0 | 197 | 310·3 | +15·0 | −70·8 |
| 10·284 | I | 71 | 233 | 72 | 241 | 309·1 | +14·5 | −58·8 |
| 11·496 | G | 46 | 179 | 33 | 131 | 310·4 | +14·6 | −41·6 |
| 12·395 | I | 53 | 147 | 33 | 91 | 311·8 | +14·3 | −28·3 |
| 13·164 | I | 63 | 208 | 36 | 120 | 309·6 | +14·5 | −20·3 |
| 14·464 | G | 20 | 52 | 11 | 28 | 313·2 | +13·7 | + 0·4 |
| 15·516 | G | 32 | 142 | 18 | 79 | 311·5 | +14·6 | +12·5 |
| 16·430 | G | 7 | 43 | 4 | 26 | 311·0 | +15·2 | +24·0 |
| Means ... | ... | ... | ... | 23 | 114 | 311·19 | +14·47 | ... |

### Group 431.

A number of small spots in a straight stream. The group fluctuates considerably in size until reaching the central meridian, after which it rapidly diminishes, and has nearly disappeared before reaching the West limb.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 8·418 | G | 0 | 33 | 0 | 108 | 309·1 | −21·5 | −83·4 |
| 9·284 | I | 0 | 154 | 0 | 228 | 309·6 | −21·4 | −71·5 |
| 10·284 | I | 78 | 163 | 102 | 234 | 310·1 | −21·6 | −57·8 |

### Group 431—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Mar. 11·496 | G | 31 | 215 | 25 | 148 | 310·2 | −21·2 | −41·8 |
| 12·395 | I | 60 | 155 | 35 | 91 | 311·3 | −21·1 | −28·8 |
| 13·164 | I | 69 | 251 | 38 | 137 | 311·7 | −21·2 | −18·2 |
| 14·464 | G | 26 | 317 | 14 | 165 | 312·2 | −21·6 | − 0·6 |
| 15·516 | G | 52 | 155 | 28 | 84 | 316·8 | −20·4 | +17·8 |
| 16·430 | G | 27 | 153 | 16 | 87 | 312·0 | −21·6 | +25·0 |
| 17·465 | G | 29 | 92 | 19 | 61 | 313·6 | −20·3 | +40·3 |
| 18·544 | G | 14 | 34 | 12 | 30 | 314·6 | −20·5 | +55·5 |
| 19·548 | G | 0 | 3 | 0 | 5 | 318·1 | −19·0 | +72·3 |
| Means ... | ... | ... | ... | 24 | 115 | 312·44 | −20·95 | ... |

### Group 432.

A small faint spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 9·284 | I | 5 | 18 | 3 | 10 | 44·5 | −18·7 | +23·4 |
| 10·284 | I | 13 | 22 | 8 | 14 | 45·6 | −18·6 | +37·7 |
| 11·496 | G | 0 | 14 | 0 | 12 | 47·2 | −18·5 | +55 2 |
| Means ... | ... | ... | ... | 4 | 12 | 45·77 | −18·60 | ... |

### Group 433.

A number of spots in a straight stream, inclined at a considerable angle to the equator. As with groups 430 and 431, and other groups of this usual type, the leading spot is the largest, the last spot the next in size, and the smaller spots which lie between these gradually diminish in size and disappear. The last spot also diminishes, but less rapidly than the smaller spots.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 9·284 | I | 31 | 164 | 24 | 135 | 336·8 | +22·6 | −44·3 |
| 10·284 | I | 147 | 686 | 99 | 457 | 338·1 | +21·7 | −29·8 |
| 11·496 | G | 177 | 869 | 105 | 517 | 337·6 | +21·9 | −14·4 |
| 12·395 | I | 227 | 826 | 131 | 473 | 339·1 | +21·6 | − 1·0 |
| 13·164 | I | 198 | 770 | 115 | 448 | 338·4 | +21·7 | + 8·5 |
| 14·464 | G | 133 | 624 | 86 | 404 | 342·3 | +21·4 | +29·5 |
| 15·516 | G | 83 | 443 | 65 | 348 | 341·2 | +21·2 | +42·2 |
| 16·430 | G | 47 | 209 | 50 | 222 | 343·2 | +20·8 | +56·2 |
| 17·465 | G | 20 | 95 | 37 | 179 | 343·8 | +20·7 | +70·5 |
| Means ... | ... | ... | ... | 79 | 354 | 340·06 | +21·51 | ... |

### Group 434.

A small spot, not seen on March 12 and 13.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| Mar. 11·496 | G | 0 | 9 | 0 | 22 | 277·1 | +18·0 | −74·9 |
| 12·395 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 13·164 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 14·464 | G | 0 | 14 | 0 | 10 | 277·7 | +17·9 | −35·1 |
| Means ... | ... | ... | ... | 0 | 8 | 277·40 | +17·95 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 435.

A large regular spot, followed by a number of small spots at a considerable distance.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Mar. 12·395 | I | 111 | 277 | 58 | 144 | 328·9 | −17·2 | −11·2 |
| 13·164 | I | 103 | 642 | 53 | 329 | 328·3 | −17·9 | − 1·6 |
| 14·464 | G | 108 | 614 | 58 | 329 | 330·4 | −18·4 | +17·6 |
| 15·516 | G | 69 | 435 | 42 | 262 | 331·7 | −18·3 | +32·7 |
| 16·430 | G | 76 | 335 | 55 | 239 | 332·1 | −18·7 | +45·1 |
| 17·465 | G | 33 | 199 | 32 | 193 | 333·0 | −18·8 | +59·7 |
| 18·544 | G | 28 | 111 | 49 | 192 | 333·5 | −19·2 | +74·4 |
| Means ... | ... | ... | ... | 50 | 241 | 331·13 | −18·36 | ... |

### Group 436.

A compact cluster, composed of a number of small spots. The group opens out, and the leading spot increases in size, whilst the following spots diminish.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 12·395 | I | 0 | 16 | 0 | 28 | 265·1 | −15·8 | −75·0 |
| 13·164 | I | 45 | 155 | 53 | 188 | 263·1 | −16·4 | −66·8 |
| 14·464 | G | 75 | 536 | 56 | 409 | 263·6 | −16·8 | −49·2 |
| 15·516 | G | 182 | 945 | 111 | 582 | 262·3 | −16·4 | −36·7 |
| 16·430 | G | 268 | 1393 | 146 | 761 | 265·3 | −16·4 | −21·7 |
| 17·465 | G | 277 | 1128 | 142 | 579 | 266·7 | −16·3 | − 6·6 |
| 18·544 | G | 217 | 1217 | 112 | 627 | 267·9 | −16·2 | + 8·8 |
| 19·548 | G | 173 | 1026 | 96 | 567 | 268·8 | −16·5 | +23·0 |
| 20·223 | I | 107 | 753 | 65 | 452 | 269·7 | −16·2 | +32·8 |
| 21·303 | I | 98 | 438 | 75 | 338 | 272·5 | −16·1 | +49·8 |
| 22·643 | G | 97 | 347 | 122 | 424 | 271·8 | −16·3 | +66·8 |
| 23·175 | I | 35 | 137 | 59 | 227 | 271·9 | −16·2 | +74·0 |
| Means ... | ... | ... | ... | 86 | 432 | 267·39 | −16·30 | ... |

### Group 437.

A large regular spot which breaks up to form a compact cluster of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 13·164 | I | 16 | 84 | 32 | 172 | 255·9 | +10·5 | −74·0 |
| 14·464 | G | 34 | 180 | 33 | 176 | 255·7 | +10·2 | −57·1 |
| 15·516 | G | 49 | 296 | 36 | 218 | 255·1 | +10·4 | −43·9 |
| 16·430 | G | 61 | 231 | 37 | 141 | 256·1 | +10·2 | −30·9 |
| 17·465 | G | 40 | 266 | 22 | 146 | 256·2 | +10·1 | −17·1 |
| 18·544 | G | 27 | 170 | 14 | 89 | 256·7 | +10·0 | − 2·4 |
| 19·548 | G | 11 | 82 | 6 | 44 | 257·2 | +10·0 | +11·4 |
| 20·223 | I | 32 | 119 | 18 | 67 | 257·7 | + 9·8 | +20·8 |
| 21·303 | I | 6 | 31 | 4 | 20 | 258·2 | + 9·3 | +35·5 |
| Means ... | ... | ... | ... | 22 | 119 | 256·53 | +10·06 | ... |

### Group 438.

A small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 18·544 | G | 9 | 24 | 5 | 14 | 284·2 | + 9·6 | +25·1 |
| Means ... | ... | ... | ... | 5 | 14 | 284·2 | + 9·6 | ... |

### Group 439.

Two spots on March 19. The group rapidly increases in size, and forms on March 22 a very large double spot. The great spot has broken up by March 25, to form a compact cluster.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Mar. 19·548 | G | 78 | 272 | 45 | 157 | 224·7 | +14·1 | −21·1 |
| 20·223 | I | 277 | 1051 | 152 | 577 | 226·0 | +14·2 | −10·9 |
| 21·303 | I | 283 | 1413 | 153 | 762 | 224·9 | +14·2 | + 2·2 |
| 22·643 | G | 341 | 1608 | 195 | 919 | 224·1 | +14·4 | +19·1 |
| 23·175 | I | 283 | 1337 | 170 | 804 | 223·9 | +14·3 | +26·0 |
| 24·286 | I | 240 | 954 | 172 | 675 | 223·4 | +14·2 | +40·1 |
| 25·405 | G | 117 | 652 | 108 | 608 | 222·6 | +14·0 | +54·0 |
| 26·055 | Me | 32 | 274 | 37 | 343 | 223·6 | +14·0 | +63·6 |
| 27·251 | I | 32 | 80 | 76 | 191 | 220·3 | +12·7 | +76·1 |
| Means ... | ... | ... | ... | 123 | 560 | 223·72 | +14·01 | ... |

### Group 440.

A spot seen only close to the East limb.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 19·548 | G | 0 | 18 | 0 | 45 | 164·7 | −28·2 | −81·1 |
| Means ... | ... | ... | ... | 0 | 45 | 164·7 | −28·2 | ... |

### Group 440A.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 20·223 | I | 9 | 16 | 10 | 17 | 290·2 | +28·8 | +53·3 |
| Means ... | ... | ... | ... | 10 | 17 | 290·2 | +28·8 | ... |

### Group 440B.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 21·303 | I | 0 | 32 | 0 | 23 | 175·6 | −14·0 | −47·1 |
| Means ... | ... | ... | ... | 0 | 23 | 175·6 | −14·0 | ... |

### Group 441.

Two small spots close together.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 22·643 | G | 12 | 47 | 8 | 31 | 166·9 | + 7·3 | −38·1 |
| Means ... | ... | ... | ... | 8 | 31 | 166·9 | + 7·3 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 441*.

Several very small spots in a straggling stream.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Mar. 23·175 | I | 32 | 94 | 19 | 56 | 171·1 | +12·3 | −26·8 |
| 24·286 | I | 38 | 200 | 21 | 109 | 170·8 | +13·7 | −12·5 |
| 25·405 | G | 19 | 78 | 10 | 41 | 168·0 | +13·6 | − 0·6 |
| 26·055 | Me | 0 | 44 | 0 | 24 | 170·1 | +13·5 | +10·1 |
| Means ... | ... | ... | ... | 13 | 58 | 170·0 | +13·28 | ... |

### Group 442.

A small spot, which divides into two, becomes fainter and gradually fades away.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 28·457 | G | 9 | 15 | 8 | 14 | 70·6 | −19·0 | −57·7 |
| 29·516 | G | 9 | 24 | 6 | 17 | 71·1 | −19·1 | −43·2 |
| 30·410 | G | 0 | 70 | 0 | 42 | 71·1 | −19·2 | −31·5 |
| 31·464 | G | 0 | 13 | 0 | 7 | 72·6 | −19·5 | −16·1 |
| Apr. 1·408 | G | 0 | 41 | 0 | 21 | 72·4 | −19·5 | − 3·8 |
| Means ... | ... | ... | ... | 3 | 20 | 71·56 | −19·26 | ... |

### Group 443.

A spot which breaks up into several faint spots and gradually fades away.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 28·457 | G | 7 | 51 | 8 | 55 | 70·0 | +17·3 | −58·3 |
| 29·516 | G | 20 | 121 | 16 | 95 | 69·2 | +17·7 | −45·1 |
| 30·410 | G | 9 | 88 | 6 | 59 | 69·0 | +18·7 | −33·6 |
| 31·464 | G | 0 | 44 | 0 | 26 | 68·7 | +19·1 | −20·0 |
| Means ... | ... | ... | ... | 8 | 59 | 69·23 | +18·20 | ... |

### Group 444.

A very small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 29·516 | G | 2 | 7 | 2 | 7 | 171·0 | +14·6 | +56·7 |
| Means ... | ... | ... | ... | 2 | 7 | 171·0 | +14·6 | ... |

### Group 445.

Two small spots which are near together when they first break out, but gradually separate, increasing in size at the same time, whilst smaller spots appear between them. As usual in spots of the type, the preceding spot increases in size, whilst the following spots diminish.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 31·464 | G | 64 | 240 | 36 | 137 | 80·7 | −33·3 | − 8·0 |
| Apr. 1·408 | G | 86 | 601 | 48 | 339 | 81·0 | −32·7 | + 4·8 |
| 2·519 | G | 113 | 573 | 67 | 339 | 80·5 | −32·6 | +19·0 |
| 3·254 | I | 118 | 424 | 75 | 268 | 80·8 | −32·6 | +29·0 |

### Group 445—*continued.*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Apr. 4·584 | G | 119 | 405 | 95 | 322 | 81·0 | −31·6 | +46·7 |
| 5·285 | I | 44 | 274 | 43 | 271 | 82·4 | −30·7 | +57·4 |
| 6·509 | G | 21 | 131 | 39 | 248 | 84·6 | −29·6 | +75·7 |
| Means ... | ... | ... | ... | 58 | 275 | 81·57 | −31·87 | ... |

### Group 446.

A small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 1·408 | G | 0 | 13 | 0 | 11 | 130·0 | −25·0 | +53·8 |
| Means ... | ... | ... | ... | 0 | 11 | 130·0 | −25·0 | ... |

### Group 447.

A small faint spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 1·408 | G | 0 | 16 | 0 | 27 | 6·0 | +15·0 | −70·2 |
| 2·519 | G | 2 | 6 | 2 | 6 | 6·7 | +15·1 | −54·8 |
| Means ... | ... | ... | ... | 1 | 17 | 6·35 | +15·05 | ... |

### Group 448.

A small regular spot, rapidly diminishing in size.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 1·408 | G | 12 | 48 | 23 | 95 | 359·4 | −21·5 | −76·8 |
| 2·519 | G | 17 | 87 | 18 | 91 | 359·8 | −20·9 | −61·7 |
| 3·254 | I | 12 | 80 | 10 | 65 | 0·1 | −20·5 | −51·7 |
| 4·584 | G | 15 | 42 | 9 | 26 | 0·0 | −19·7 | −34·3 |
| 5·285 | I | 16 | 25 | 9 | 14 | 359·9 | −19·7 | −25·1 |
| Means ... | ... | ... | ... | 14 | 58 | 359·84 | −20·46 | ... |

### Group 449.

Three very small spots close together.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 2·519 | G | 0 | 32 | 0 | 21 | 96·3 | +16·8 | +34·8 |
| Means ... | ... | ... | ... | 0 | 21 | 96·3 | +16·8 | ... |

### Group 450.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 4·584 | G | 0 | 111 | 0 | 59 | 50·9 | −17·6 | +16·6 |
| 5·285 | I | 48 | 114 | 27 | 65 | 51·1 | −18·0 | +26·1 |
| 6·509 | G | 10 | 71 | 7 | 51 | 54·1 | −17·6 | +45·2 |
| 7·425 | G | 0 | 17 | 0 | 16 | 53·9 | −18·3 | +57·1 |
| Means ... | ... | ... | ... | 9 | 48 | 52·50 | −17·88 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Group. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 451.** A regular spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Apr. 3·254 | I | 9 | 44 | 21 | 100 | 338·3 | +21·2 | −73·5 |
| 4·584 | G | 16 | 117 | 17 | 126 | 337·3 | +21·4 | −57·0 |
| 5·285 | I | 32 | 111 | 27 | 95 | 337·5 | +21·7 | −47·5 |
| 6·509 | G | 28 | 142 | 19 | 96 | 336·4 | +21·8 | −32·5 |
| 7·425 | G | 33 | 102 | 20 | 62 | 335·7 | +22·2 | −21·1 |
| 8·513 | G | 19 | 99 | 11 | 57 | 335·3 | +22·2 | − 7·1 |
| 9·512 | G | 32 | 98 | 18 | 56 | 335·1 | +22·3 | + 5·9 |
| 10·222 | I | 19 | 54 | 11 | 32 | 334·9 | +22·4 | +15·0 |
| 11·309 | I | 26 | 44 | 17 | 29 | 334·3 | +22·8 | +28·8 |
| 12·230 | I | 7 | 22 | 5 | 17 | 333·9 | +22·7 | +40·5 |
| 13·411 | G | 0 | 25 | 0 | 26 | 333·1 | +23·1 | +55·3 |
| Means ... | ... | ... | ... | 15 | 63 | 335·62 | +22·16 | ... |
| **Group 452.** Two small spots which gradually separate from each other. Two other smaller spots appear between them on April 9. | | | | | | | | |
| Apr. 6·509 | G | 9 | 30 | 15 | 51 | 295·1 | −23·3 | −73·8 |
| 7·425 | G | 0 | 55 | 0 | 55 | 296·6 | −23·7 | −60·2 |
| 8·513 | G | 11 | 57 | 8 | 42 | 297·0 | −23·3 | −45·4 |
| 9·512 | G | 27 | 82 | 17 | 52 | 295·0 | −22·9 | −34·2 |
| 10·222 | I | 0 | 15 | 0 | 9 | 293·5 | −22·7 | −26·4 |
| Means ... | ... | ... | ... | 8 | 42 | 295·44 | −23·18 | ... |
| **Group 453.** A large regular spot. | | | | | | | | |
| Apr. 7·425 | G | 0 | 76 | 0 | 401 | 270·5 | −15·9 | −86·3 |
| 8·513 | G | 34 | 148 | 52 | 224 | 270·9 | −16·0 | −71·5 |
| 9·512 | G | 41 | 310 | 38 | 290 | 271·2 | −15·3 | −58·0 |
| 10·222 | I | 45 | 240 | 34 | 182 | 271·2 | −15·2 | −48·7 |
| 11·309 | I | 48 | 267 | 29 | 162 | 271·6 | −15·0 | −33·9 |
| 12·230 | I | 68 | 370 | 37 | 202 | 271·5 | −14·8 | −21·9 |
| 13·411 | G | 72 | 355 | 37 | 182 | 271·1 | −14·7 | − 6·7 |
| 14·228 | I | 76 | 319 | 39 | 163 | 271·1 | −14·3 | + 4·2 |
| 15·172 | I | 51 | 289 | 27 | 153 | 271·5 | −14·1 | +17·0 |
| 16·198 | I | 48 | 272 | 28 | 160 | 271·5 | −14·0 | +30·5 |
| 17·199 | I | 80 | 219 | 55 | 150 | 270·8 | −13·7 | +43·1 |
| 18·513 | G | 38 | 186 | 38 | 184 | 270·7 | −13·4 | +60·3 |
| 19·200 | I | 26 | 90 | 35 | 123 | 270·6 | −13·5 | +69·3 |
| Means ... | ... | ... | ... | 35 | 198 | 271·09 | −14·61 | ... |
| **Group 454.** One or two small spots. The group is not seen from April 10 to April 17. | | | | | | | | |
| Apr. 8·513 | G | 0 | 17 | 0 | 31 | 273·5 | +26·6 | −68·9 |
| 9·512 | G | 0 | 19 | 0 | 19 | 276·9 | +26·6 | −52·3 |
| 10·222 | I | 0 | 0 | 0 | 0 | ... | ... | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 454—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Apr. 11·309 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 12·230 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 13·411 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 14·228 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 15·172 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 16·198 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 17·199 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 18·513 | G | 3 | 18 | 4 | 28 | 276·7 | +26·2 | +66·3 |
| 19·200 | I | 0 | 32 | 0 | 81 | 276·1 | +25·9 | +74·8 |
| Means ... | ... | ... | ... | 0 | 13 | 275·80 | +26·33 | ... |
| **Group 454A.** A small spot. | | | | | | | | |
| Apr. 11·309 | I | 0 | 22 | 0 | 13 | 274·9 | −20·1 | −30·6 |
| 12·230 | I | 4 | 17 | 2 | 9 | 276·1 | −19·2 | −17·3 |
| Means ... | ... | ... | ... | 1 | 11 | 275·50 | −19·65 | ... |
| **Group 455.** A group of spots measured in two clusters. | | | | | | | | |
| Apr. 12·230 | I | 13 | 45 | 8 | 28 | 261·5 | −24·7 | −31·9 |
| 13·411 | G | 41 | 74 | 22 | 40 | 263·9 | −24·0 | −13·9 |
| 14·228 | I | 64 | 219 | 34 | 116 | 263·2 | −24·0 | − 3·7 |
| 15·172 | I | 32 | 231 | 17 | 124 | 264·8 | −23·5 | +10·3 |
| 16·198 | I | 57 | 403 | 33 | 231 | 264·6 | −23·3 | +23·6 |
| 17·199 | I | 49 | 348 | 32 | 222 | 263·2 | −22·9 | +35·5 |
| 18·513 | G | 45 | 184 | 40 | 167 | 265·9 | −22·7 | +55·5 |
| 19·200 | I | 31 | 137 | 35 | 155 | 264·5 | −22·6 | +63·2 |
| 20·285 | I | 0 | 95 | 0 | 194 | 263·5 | −23·2 | +76·5 |
| Means ... | ... | ... | ... | 25 | 142 | 263·90 | −23·43 | ... |
| **Group 456.** A cluster of small spots. | | | | | | | | |
| Apr. 12·230 | I | 0 | 10 | 0 | 18 | 220·5 | +13·1 | −72·9 |
| 13·411 | G | 18 | 87 | 19 | 90 | 219·2 | +13·4 | −58·6 |
| 14·228 | I | 20 | 107 | 16 | 86 | 218·4 | +13·8 | −48·5 |
| 15·172 | I | 23 | 52 | 15 | 34 | 219·2 | +14·0 | −35·3 |
| 16·198 | I | 16 | 32 | 9 | 18 | 219·9 | +14·2 | −21·1 |
| Means ... | ... | ... | ... | 12 | 49 | 219·44 | +13·70 | .. |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 457.

A large spot forming suddenly.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Apr. 15·172 | I | 77 | 251 | 48 | 156 | 290·0 | −17·5 | +35·5 |
| 16·198 | I | 48 | 194 | 38 | 153 | 291·6 | −17·3 | +50·6 |
| 17·199 | I | 32 | 112 | 38 | 132 | 292·9 | −17·7 | +65·2 |
| 18·513 | G | 0 | 14 | 0 | 59 | 295·2 | −18·0 | +84·8 |
| Means ... | ... | ... | ... | 31 | 125 | 292·43 | −17·63 | ... |

### Group 457A.

Two spots *f*, Group 457.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 17·199 | I | 64 | 193 | 48 | 144 | 274·8 | −18·5 | +47·1 |
| Means ... | ... | ... | ... | 48 | 144 | 274·8 | −18·5 | ... |

### Group 458.

A cluster of several small spots, not seen on April 19 and 20.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 18·513 | G | 0 | 31 | 0 | 17 | 220·7 | −23·1 | +10·3 |
| 19·200 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 20·285 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 21·227 | I | 13 | 39 | 10 | 29 | 221·4 | −22·8 | +46·8 |
| 22·203 | I | 62 | 282 | 61 | 280 | 221·1 | −22·6 | +59·5 |
| 23·432 | G | 3 | 44 | 5 | 82 | 220·3 | −23·2 | +74·9 |
| Means ... | ... | ... | ... | 13 | 68 | 220·88 | −22·93 | ... |

### Group 458*.

A very small spot *f*, Group 458.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 18·513 | G | 0 | 8 | 0 | 4 | 213·2 | −21·7 | + 2·8 |
| Means ... | ... | ... | ... | 0 | 4 | 213·2 | −21·7 | ... |

### Group 459.

Two spots with several smaller attendants. The group rapidly increases in size up to April 20, and then diminishes again as quickly.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 18·513 | G | 47 | 134 | 30 | 85 | 182·2 | +20·8 | −28·2 |
| 19·200 | I | 101 | 337 | 60 | 198 | 182·7 | +20·2 | −18·6 |
| 20·285 | I | 222 | 601 | 124 | 336 | 183·2 | +20·6 | − 3·8 |
| 21·227 | I | 64 | 322 | 36 | 181 | 183·4 | +20·0 | + 8·8 |
| 22·203 | I | 17 | 170 | 10 | 101 | 182·8 | +20·0 | +21·2 |
| 23·432 | G | 7 | 33 | 5 | 24 | 185·0 | +19·9 | +39·6 |
| Means ... | ... | ... | ... | 44 | 154 | 183·22 | +20·25 | ... |

### Group 460.

A number of small unstable spots. The group undergoes continual changes.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Apr. 18·513 | G | 21 | 71 | 16 | 56 | 159·9 | −16·8 | −50·5 |
| 19·200 | I | 32 | 71 | 21 | 48 | 159·9 | −16·9 | −41·4 |
| 20·285 | I | 32 | 127 | 19 | 75 | 156·4 | −17·4 | −30·6 |
| 21·227 | I | 113 | 401 | 60 | 213 | 159·4 | −17·2 | −15·2 |
| 22·203 | I | 107 | 602 | 55 | 311 | 160·5 | −17·7 | − 1·1 |
| 23·432 | G | 150 | 694 | 80 | 371 | 161·3 | −17·2 | +15·9 |
| 24· | ... | No photograph. | | (45 | 272 | 161·1 | −17·2 | +27·8) |
| 25·254 | I | 16 | 264 | 10 | 174 | 160·9 | −17·2 | +39·6 |
| 26·555 | G | 43 | 227 | 41 | 214 | 161·9 | −16·8 | +57·8 |
| 27·293 | I | 7 | 187 | 8 | 242 | 162·0 | −16·5 | +67·7 |
| Means ... | ... | ... | ... | 36 | 198 | 160·33 | −17·09 | ... |

### Group 461.

A large regular spot on April 18. A stream of small spots form behind it on the succeeding days, the rear spot finally becoming nearly as large as the leader.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 18·513 | G | 13 | 116 | 15 | 136 | 146·7 | + 7·3 | −63·7 |
| 19·200 | I | 72 | 285 | 65 | 258 | 146·1 | + 7·8 | −55·2 |
| 20·285 | I | 142 | 611 | 97 | 408 | 147·6 | + 7·0 | −39·4 |
| 21·227 | I | 109 | 479 | 63 | 274 | 147·0 | + 7·8 | −27·6 |
| 22·203 | I | 122 | 345 | 64 | 181 | 150·9 | + 7·6 | −10·7 |
| 23·432 | G | 120 | 490 | 62 | 254 | 151·4 | + 7·8 | + 6·0 |
| 24· | ... | No photograph. | | (58 | 264 | 152·8 | + 7·4 | +19·4) |
| 25·254 | I | 89 | 450 | 54 | 274 | 154·1 | + 7·0 | +32·8 |
| 26·555 | G | 111 | 567 | 89 | 449 | 153·5 | + 7·1 | +49·4 |
| 27·293 | I | 114 | 386 | 121 | 405 | 154·9 | + 7·0 | +60·6 |
| 28·399 | G | 49 | 352 | 90 | 617 | 152·4 | + 6·8 | +72·6 |
| 29·307 | I | 0 | 59 | 0 | 160 | 146·5 | + 8·0 | +78·7 |
| Means ... | ... | ... | ... | 65 | 307 | 150·33 | +7·38 | ... |

### Group 462.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 18·513 | G | 0 | 6 | 0 | 8 | 142·5 | − 9·0 | −67·9 |
| 19·200 | I | 0 | 3 | 0 | 3 | 143·2 | −10·2 | −58·1 |
| 20·285 | I | 0 | 23 | 0 | 16 | 142·5 | −12·7 | −44·5 |
| Means ... | ... | ... | ... | 0 | 9 | 142·73 | −10·63 | ... |

### Group 462A.

A short stream of small spots, *n.f.*, Group 460.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 21·227 | I | 16 | 116 | 9 | 65 | 148·9 | −10·2 | −25·7 |
| Means ... | ... | ... | ... | 9 | 65 | 148·9 | −10·2 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 463.** A small spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Apr. 18·513 | G | 0 | 13 | 0 | 30 | 131·2 | −26·6 | −79·2 |
| 19·200 | I | 6 | 16 | 9 | 23 | 131·5 | −26·2 | −69·8 |
| Means ... | ... | ... | ... | 5 | 27 | 131·35 | −26·4 | ... |
| **Group 464.** A small spot on April 20. A second is seen near it on April 21. | | | | | | | | |
| Apr. 20·285 | I | 10 | 61 | 5 | 31 | 185·3 | −14·9 | − 1·7 |
| 21·227 | I | 0 | 26 | 0 | 13 | 183·4 | −15·4 | + 8·8 |
| Means ... | ... | ... | ... | 3 | 22 | 184·35 | −15·15 | ... |
| **Group 465.** Two large spots seen only near the West limb. The preceding spot of the two is no longer seen on April 26. | | | | | | | | |
| Apr. 25·254 | I | 42 | 333 | 41 | 336 | 177·2 | +20·3 | +55·9 |
| 26·555 | G | 0 | 86 | 0 | 149 | 174·1 | +20·9 | +70·0 |
| Means ... | ... | ... | ... | 21 | 243 | 175·65 | +20·60 | ... |
| **Group 465*.** Two small spots. | | | | | | | | |
| Apr. 26·555 | G | 9 | 48 | 5 | 26 | 111·4 | +15·5 | + 7·3 |
| Means ... | ... | ... | ... | 5 | 26 | 111·4 | +15·5 | ... |
| **Group 466.** A small spot. | | | | | | | | |
| Apr. 30·420 | G | 10 | 26 | 12 | 30 | 352·1 | +21·4 | −61·0 |
| May 1·242 | I | 7 | 42 | 6 | 36 | 352·8 | +21·1 | −49·4 |
| 2·262 | I | 0 | 49 | 0 | 34 | 352·3 | +21·9 | −36·4 |
| Means ... | ... | ... | ... | 6 | 33 | 352·40 | +21·47 | ... |
| **Group 466A.** A spot, *n.f.*, Group 466. | | | | | | | | |
| May 1·242 | I | 10 | 43 | 10 | 43 | 347·2 | +24·5 | −55·0 |
| Means ... | ... | ... | ... | 10 | 43 | 347·2 | +24·5 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 467.** A regular spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| May 3·398 | G | 0 | 21 | 0 | 60 | 293·2 | −23·5 | −80·5 |
| 4·256 | G | 26 | 66 | 37 | 94 | 293·0 | −23·2 | −69·4 |
| 5·546 | G | 27 | 113 | 23 | 97 | 292·9 | −23·0 | −52·4 |
| 6·402 | G | 27 | 140 | 19 | 97 | 293·3 | −23·0 | −40·7 |
| 7·394 | G | 17 | 122 | 10 | 73 | 293·2 | −22·8 | −27·7 |
| 8·207 | G | 20 | 98 | 11 | 55 | 292·9 | −23·0 | −17·2 |
| 9·483 | G | 17 | 58 | 9 | 31 | 293·1 | −22·7 | − 0·2 |
| Means ... | ... | ... | ... | 16 | 72 | 293·09 | −23·03 | ... |
| **Group 468.** Two very small spots. | | | | | | | | |
| May 5·546 | G | 3 | 16 | 2 | 11 | 27·4 | −11·8 | +42·1 |
| Means ... | ... | ... | ... | 2 | 11 | 27·4 | −11·8 | ... |
| **Group 469.** Several very small spots arranged in two compact little clusters. The preceding cluster has disappeared before May 9, and the spots of the other cluster coalesce. | | | | | | | | |
| May 5·546 | G | 17 | 70 | 9 | 37 | 348·8 | −22·2 | + 3·5 |
| 6·402 | G | 0 | 51 | 0 | 28 | 349·4 | −21·4 | +15·4 |
| 7·394 | G | 3 | 22 | 2 | 13 | 347·1 | −22·3 | +26·2 |
| 8·207 | G | 22 | 83 | 15 | 57 | 349·1 | −21·4 | +39·0 |
| 9·483 | G | 0 | 40 | 0 | 36 | 348·3 | −21·4 | +55·0 |
| 10·321 | I | 0 | 29 | 0 | 35 | 346·8 | −21·9 | +64·7 |
| 11·435 | G | 0 | 21 | 0 | 53 | 346·5 | −22·4 | +79·1 |
| Means ... | ... | ... | ... | 4 | 37 | 348·00 | −21·86 | ... |
| **Group 470.** Three small faint spots. The group is not seen on May 6. | | | | | | | | |
| May 5·546 | G | 0 | 20 | 0 | 11 | 335·3 | +24·4 | −10·0 |
| 6·402 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 7·394 | G | 7 | 43 | 4 | 25 | 335·4 | +24·5 | +14·5 |
| 8·207 | G | 16 | 113 | 10 | 70 | 335·1 | +24·3 | +25·0 |
| 9·483 | G | 26 | 168 | 19 | 126 | 333·5 | +24·9 | +40·2 |
| 10·321 | I | 32 | 75 | 29 | 67 | 332·0 | +24·7 | +49·9 |
| Means ... | ... | ... | ... | 10 | 50 | 334·26 | +24·56 | ... |
| **Group 471.** A regular spot, with two companions on May 9. | | | | | | | | |
| May 5·546 | G | 8 | 32 | 16 | 61 | 270·1 | −13·7 | −75·2 |
| 6·402 | G | 28 | 63 | 31 | 71 | 270·3 | −13·9 | −63·7 |
| 7·394 | G | 14 | 62 | 11 | 49 | 270·6 | −13·8 | −50·3 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 471—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| May 8·207 | G | 17 | 48 | 11 | 32 | 270·3 | −14·0 | −39·8 |
| 9·483 | G | 29 | 153 | 17 | 88 | 267·9 | −18·3 | −25·4 |
| 10·321 | I | 26 | 72 | 14 | 38 | 268·7 | −16·3 | −13·4 |
| Means ... | ... | ... | ... | 17 | 57 | 269·65 | −15·00 | ... |
| **Group 472.** A regular spot followed by a stream of small spots, of which the last is the largest. These following spots, however, have all disappeared before May 15, leaving the leader alone. The faculæ connected with the group on May 20 form a straggling group of intricate shape. | | | | | | | | |
| May 10·321 | I | 13 | 43 | 35 | 113 | 204·0 | +12·5 | −78·1 |
| 11·435 | G | 33 | 188 | 39 | 235 | 202·5 | +13·8 | −64·9 |
| 12·487 | G | 79 | 410 | 63 | 333 | 203·9 | +13·5 | −49·6 |
| 13·403 | G | 90 | 398 | 59 | 260 | 204·5 | +13·8 | −36·9 |
| 14·472 | G | 66 | 377 | 37 | 213 | 205·5 | +13·8 | −21·8 |
| 15·163 | I | 58 | 357 | 31 | 190 | 207·0 | +13·7 | −11·1 |
| 16·266 | I | 60 | 371 | 31 | 193 | 207·1 | +13·7 | + 3·6 |
| 17·200 | I | 59 | 261 | 32 | 142 | 207·2 | +14·0 | +16·1 |
| 18·555 | G | 50 | 237 | 31 | 148 | 207·0 | +14·0 | +33·8 |
| 19·441 | G | 50 | 212 | 37 | 157 | 207·0 | +14·4 | +45·5 |
| 20·431 | G | 28 | 164 | 28 | 164 | 207·0 | +14·6 | +58·6 |
| 21·417 | G | 4 | 56 | 7 | 98 | 207·9 | +14·5 | +72·5 |
| Means ... | ... | ... | ... | 36 | 187 | 205·88 | +13·86 | ... |
| **Group 472A.** A small spot. | | | | | | | | |
| May 10·321 | I | 16 | 33 | 9 | 18 | 287·8 | +20·2 | + 5·7 |
| Means ... | ... | ... | ... | 9 | 18 | 287·8 | +20·2 | ... |
| **Group 473.** A small spot. | | | | | | | | |
| May 13·403 | G | 5 | 10 | 5 | 10 | 184·0 | +18·5 | −57·4 |
| Means ... | ... | ... | ... | 5 | 10 | 184·0 | +18·5 | ... |
| **Group 474.** A small spot. | | | | | | | | |
| May 13·403 | G | 7 | 14 | 14 | 28 | 166·1 | + 5·7 | −75·3 |
| 14·472 | G | 0 | 12 | 0 | 12 | 167·0 | + 6·2 | −60·3 |
| 15·163 | I | 6 | 30 | 5 | 24 | 167·5 | + 6·5 | −50·6 |
| 16·266 | I | 10 | 32 | 6 | 20 | 168·0 | + 6·6 | −35·5 |
| Means ... | ... | ... | ... | 6 | 21 | 167·15 | + 6·25 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 475.** A small spot, *p*, of the place of Group 473. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| May 18·555 | G | 0 | 51 | 0 | 29 | 186·4 | +22·1 | +13·2 |
| 19·441 | G | 5 | 13 | 3 | 8 | 187·0 | +22·3 | +25·5 |
| Means ... | ... | ... | ... | 2 | 19 | 186·70 | +22·20 | ... |
| **Group 476.** Two small spots. | | | | | | | | |
| May 19·441 | G | 8 | 22 | 8 | 21 | 215·8 | +24·8 | +54·3 |
| Means ... | ... | ... | ... | 8 | 21 | 215·8 | +24·8 | ... |
| **Group 477.** A scattered group composed of a number of small unstable spots that undergo continual changes. | | | | | | | | |
| May 19·441 | G | 19 | 60 | 11 | 35 | 174·3 | −30·7 | +12·8 |
| 20·431 | G | 58 | 225 | 37 | 142 | 174·5 | −30·3 | +26·1 |
| 21·417 | G | 23 | 113 | 17 | 86 | 176·8 | −30·2 | +41·4 |
| 22·191 | I | 20 | 50 | 19 | 47 | 178·8 | −30·1 | +53·6 |
| 23·563 | G | 24 | 70 | 33 | 102 | 174·0 | −30·4 | +67·0 |
| 24·386 | G | 0 | 16 | 0 | 32 | 169·5 | −31·6 | +73·4 |
| Means ... | ... | ... | ... | 20 | 74 | 174·65 | −30·55 | ... |
| **Group 478.** A small faint spot. | | | | | | | | |
| May 19·441 | G | 2 | 9 | 1 | 5 | 176·6 | +21·0 | +15·1 |
| 20·431 | G | 0 | 10 | 0 | 6 | 176·3 | +20·9 | +27·9 |
| Means ... | ... | ... | ... | 1 | 6 | 176·45 | +20·95 | ... |
| **Group 479.** A small spot. | | | | | | | | |
| May 21·417 | G | 0 | 12 | 0 | 7 | 164·2 | −16·3 | +28·8 |
| Means ... | ... | ... | ... | 0 | 7 | 164·2 | −16·3 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 480.** Two spots. The following spot diminishes rapidly and has disappeared before May 25. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| May 21·417 | G | 80 | 247 | 48 | 148 | 158·0 | −27·1 | +22·6 |
| 22·191 | I | 66 | 229 | 43 | 151 | 158·3 | −26·7 | +33·1 |
| 23·563 | G | 27 | 77 | 25 | 69 | 159·3 | −25·5 | +52·3 |
| 24·386 | G | 12 | 48 | 15 | 57 | 159·1 | −25·3 | +63·0 |
| 25·396 | G | 0 | 14 | 0 | 35 | 161·1 | −24·6 | +78·4 |
| Means ... | ... | ... | ... | 26 | 92 | 159·16 | −25·84 | ... |
| **Group 481.** Two regular spots. A third spot is seen between them on May 25. The following spots disappear before May 30. | | | | | | | | |
| May 22·191 | I | 9 | 68 | 6 | 48 | 88·1 | −28·0 | −37·1 |
| 23·563 | G | 73 | 268 | 43 | 157 | 89·1 | −27·9 | −17·9 |
| 24·386 | G | 58 | 249 | 33 | 141 | 90·3 | −28·0 | − 5·8 |
| 25·396 | G | 109 | 454 | 62 | 258 | 90·4 | −27·9 | + 7·7 |
| 26·283 | I | 79 | 385 | 47 | 230 | 90·7 | −27·8 | +19·7 |
| 27·284 | I | 66 | 444 | 44 | 296 | 90·4 | −27·7 | +32·7 |
| 28·192 | I | 60 | 404 | 47 | 314 | 90·0 | −27·5 | +44·3 |
| 29·101 | I | 46 | 277 | 47 | 276 | 90·1 | −27·0 | +56·4 |
| 30·492 | G | 37 | 140 | 83 | 318 | 91·3 | −26·8 | +76·0 |
| Means ... | ... | ... | ... | 46 | 226 | 90·04 | −27·62 | ... |
| **Group 482.** A regular spot, followed by two small spots. These latter disappear, and the leader spot has broken up into several portions by May 30. | | | | | | | | |
| May 23·563 | G | 59 | 118 | 57 | 118 | 49·8 | +19·5 | −57·2 |
| 24·386 | G | 48 | 201 | 36 | 155 | 49·5 | +19·6 | −46·6 |
| 25·396 | G | 116 | 324 | 75 | 208 | 49·4 | +19·8 | −33·3 |
| 26·283 | I | 65 | 291 | 37 | 167 | 50·9 | +20·1 | −20·1 |
| 27·284 | I | 63 | 344 | 35 | 188 | 49·1 | +20·5 | − 8·6 |
| 28·192 | I | 39 | 283 | 21 | 152 | 49·2 | +20·1 | + 3·5 |
| 29·101 | I | 46 | 229 | 26 | 128 | 50·5 | +20·0 | +16·8 |
| 30·492 | G | 21 | 134 | 14 | 90 | 52·5 | +20·1 | +37·2 |
| 31·396 | G | 13 | 51 | 11 | 42 | 52·7 | +20·0 | +49·1 |
| Means ... | ... | ... | ... | 35 | 139 | 50·40 | +19·97 | ... |
| **Group 483.** Two small spots. | | | | | | | | |
| May 30·492 | G | 0 | 42 | 0 | 27 | 35·5 | +31·9 | +20·2 |
| Means ... | ... | ... | ... | 0 | 27 | 35·5 | +31·9 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 484.** A small spot, with a very small companion on May 29. The principal spot has divided into two by May 30. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| May 28·192 | I | 0 | 36 | 0 | 32 | 351·8 | −19·1 | −53·9 |
| 29·101 | I | 0 | 37 | 0 | 26 | 352·2 | −18·8 | −41·5 |
| 30·492 | G | 0 | 10 | 0 | 6 | 352·0 | −19·0 | −23·3 |
| Means ... | ... | ... | ... | 0 | 21 | 352·0 | −18·97 | ... |
| **Group 485.** A very fine stream of spots, some of them of considerable size and the last very large. | | | | | | | | |
| May 27·284 | I | 37 | 251 | 82 | 546 | 341·0 | −10·7 | −76·7 |
| 28·192 | I | 189 | 523 | 224 | 611 | 341·3 | −10·1 | −64·4 |
| 29·101 | I | 203 | 739 | 173 | 616 | 341·3 | −10·2 | −52·4 |
| 30·492 | G | 234 | 1247 | 146 | 770 | 340·9 | −10·8 | −34·4 |
| 31·396 | G | 292 | 1595 | 162 | 885 | 340·1 | −10·5 | −23·3 |
| June 1·418 | G | 360 | 2148 | 186 | 1110 | 340·3 | −10·2 | − 9·5 |
| 2·404 | G | 285 | 1602 | 146 | 820 | 340·6 | − 9·9 | + 3·5 |
| 3·438 | G | 291 | 1315 | 155 | 701 | 340·8 | − 9·1 | +17·7 |
| 4·401 | G | 172 | 881 | 102 | 521 | 341·2 | − 8·6 | +30·9 |
| 5·094 | Me | 116 | 454 | 77 | 302 | 341·5 | − 8·7 | +40·3 |
| 6·540 | G | 34 | 98 | 34 | 100 | 342·0 | − 8·3 | +60·0 |
| Means ... | ... | ... | ... | 135 | 635 | 341·00 | − 9·74 | ... |
| **Group 486.** Two small spots. | | | | | | | | |
| May 31·396 | G | 0 | 13 | 0 | 9 | 324·5 | −25·7 | −38·9 |
| Means ... | ... | ... | ... | 0 | 9 | 324·5 | −25·7 | ... |
| **Group 487.** Two spots. Other smaller spots form around these, making two compact clusters. | | | | | | | | |
| May 31·396 | G | 4 | 16 | 9 | 33 | 289·1 | +22·8 | −74·3 |
| June 1·418 | G | 21 | 82 | 21 | 86 | 291·0 | +22·2 | −58·8 |
| 2·404 | G | 80 | 272 | 60 | 206 | 292·4 | +21·6 | −44·4 |
| 3·438 | G | 83 | 386 | 52 | 243 | 291·9 | +21·2 | −31·2 |
| 4·401 | G | 95 | 576 | 54 | 327 | 292·0 | +20·9 | −18·3 |
| 5·094 | Me | 97 | 400 | 53 | 218 | 292·7 | +20·9 | − 8·5 |
| 6·540 | G | 56 | 206 | 31 | 113 | 290·6 | +21·4 | + 8·6 |
| 7 | ... | No photograph. | | (26 | 96 | 286·4 | +22·5 | +17·6) |
| 8·532 | G | 36 | 130 | 22 | 79 | 282·2 | +23·6 | +26·5 |
| 9·198 | I | 43 | 775 | 28 | 117 | 281·7 | +23·6 | +34·9 |
| 10·437 | G | 17 | 71 | 15 | 62 | 282·2 | +23·6 | +51·8 |
| 11·411 | G | 0 | 8 | 0 | 10 | 283·8 | +23·2 | +66·2 |
| Means ... | ... | ... | ... | 31 | 133 | 288·00 | +22·29 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 488.

Two spots.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| June 8·532 | G | 11 | 55 | 6 | 31 | 233·1 | +16·9 | −22·6 |
| 9·198 | I | 0 | 33 | 0 | 18 | 231·1 | +18·0 | −15·7 |
| Means ... | ... | ... | ... | 3 | 25 | 232·10 | +17·5 | ... |

### Group 489.

A large regular spot with a small attendant. The latter rapidly increases in size.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 9·198 | I | 30 | 208 | 39 | 270 | 180·1 | +14·5 | −66·7 |
| 10·437 | G | 100 | 403 | 82 | 332 | 179·4 | +14·8 | −51·0 |
| 11·411 | G | 90 | 535 | 59 | 354 | 178·6 | +14·8 | −39·0 |
| 12 | ... | No photograph. | | (58 | 342 | 178·4 | +14·9 | −25·9) |
| 13·417 | G | 110 | 626 | 58 | 331 | 178·2 | +14·9 | −12·8 |
| 14·401 | G | 76 | 521 | 39 | 270 | 178·5 | +15·2 | + 0·5 |
| 15·211 | I | 61 | 440 | 32 | 231 | 178·5 | +15·2 | +11·1 |
| 16·205 | I | 44 | 308 | 25 | 176 | 179·2 | +15·5 | +25·1 |
| 17·247 | I | 47 | 281 | 31 | 187 | 179·5 | +15·7 | +39·2 |
| 18·191 | I | 40 | 158 | 33 | 132 | 179·8 | +15·9 | +51·8 |
| Means ... | ... | ... | ... | 46 | 263 | 179·02 | +15·14 | ... |

### Group 490.

A straggling stream of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 10·437 | G | 15 | 60 | 15 | 65 | 172·7 | −29·4 | −57·7 |
| 11·411 | G | 20 | 91 | 15 | 75 | 172·7 | −29·3 | −54·9 |
| 12 | ... | No photograph. | | (10 | 80 | 172·2 | −29·3 | −37·2) |
| 13·417 | G | 8 | 140 | 5 | 86 | 171·6 | −29·2 | −19·4 |
| 14·401 | G | 0 | 62 | 0 | 36 | 174·7 | −28·9 | − 3·3 |
| 15·211 | I | 0 | 76 | 0 | 44 | 175·0 | −28·2 | + 7·6 |
| Means ... | ... | ... | ... | 8 | 64 | 173·15 | −29·05 | ... |

### Group 491.

A straggling stream of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 10·437 | G | 10 | 50 | 14 | 67 | 162·5 | − 9·5 | −67·9 |
| 11·411 | G | 21 | 205 | 21 | 199 | 159·3 | − 9·8 | −58·3 |
| 12 | ... | No photograph. | | (19 | 155 | 159·5 | − 9·6 | −44·8) |
| 13·417 | G | 28 | 188 | 17 | 112 | 159·7 | − 9·3 | −31·3 |
| 14·401 | G | 27 | 75 | 14 | 40 | 162·0 | − 9·4 | −16·0 |
| 15·211 | I | 6 | 147 | 3 | 76 | 159·8 | − 9·3 | − 7·6 |
| Means ... | ... | ... | ... | 15 | 108 | 160·47 | − 9·48 | ... |

### Group 492.

Two small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| June 13·417 | G | 0 | 14 | 0 | 8 | 210·6 | +15·9 | +19·6 |
| 14·401 | G | 8 | 38 | 5 | 23 | 210·3 | +16·3 | +32·3 |
| 15·211 | I | 13 | 104 | 9 | 74 | 210·6 | +16·5 | +43·2 |
| Means ... | ... | ... | ... | 5 | 35 | 210·50 | +16·23 | ... |

### Group 493.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 13·417 | G | 11 | 28 | 6 | 15 | 168·7 | +22·6 | −22·3 |
| Means ... | ... | ... | ... | 6 | 15 | 168·7 | +22·6 | ... |

### Group 494.

A small regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 13·417 | G | 25 | 107 | 40 | 172 | 121·0 | −22·2 | −70·0 |
| 14·401 | G | 16 | 109 | 16 | 108 | 121·3 | −21·8 | −56·7 |
| 15·211 | I | 37 | 133 | 29 | 105 | 121·1 | −22·2 | −46·3 |
| 16·205 | I | 23 | 148 | 15 | 97 | 121·2 | −22·2 | −32·9 |
| 17·247 | I | 40 | 126 | 23 | 73 | 121·2 | −22·3 | −19·1 |
| 18·191 | I | 40 | 141 | 22 | 78 | 121·3 | −22·4 | − 6·7 |
| 19 | ... | No photograph. | | (15 | 53 | 121·2 | −22·6 | + 7·9) |
| 20·404 | G | 15 | 47 | 9 | 28 | 121·0 | −22·7 | +22·5 |
| 21·482 | G | 3 | 18 | 2 | 12 | 120·8 | −22·0 | +36·5 |
| Means ... | ... | ... | ... | 19 | 81 | 121·12 | −22·27 | ... |

### Group 495.

Two small spots, of which the following has disappeared by June 20. The group is not seen on June 22.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| June 14·401 | G | 13 | 59 | 9 | 41 | 137·8 | −18·4 | −40·2 |
| 15·211 | I | 68 | 147 | 41 | 89 | 138·0 | −18·7 | −29·4 |
| 16·205 | I | 67 | 264 | 37 | 147 | 138·7 | −19·0 | −15·4 |
| 17·247 | I | 66 | 198 | 36 | 106 | 139·1 | −19·2 | − 1·2 |
| 18·191 | I | 36 | 155 | 20 | 86 | 141·9 | −19·4 | +13·9 |
| 19 | ... | No photograph. | | (10 | 56 | 143·1 | −19·5 | +29·9) |
| 20·404 | G | 0 | 35 | 0 | 27 | 144·3 | −19·5 | +45·8 |
| 21·482 | G | 12 | 17 | 13 | 19 | 144·6 | −19·0 | +60·3 |
| 22·438 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·461 | G | 0 | 5 | 0 | 21 | 139·8 | −18·8 | +81·7 |
| Means ... | ... | ... | ... | 17 | 59 | 140·81 | −19·06 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 495A.** *A spot seen only close to the East limb.* | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| June 15·211 | I | 10 | 27 | 27 | 73 | 87·7 | + 4·3 | −79·7 |
| Means ... | ... | ... | ... | 27 | 73 | 87·7 | + 4·3 | ... |
| **Group 496.** *A small regular spot.* | | | | | | | | |
| June 15·211 | I | 0 | 33 | 0 | 159 | 84·2 | −27·0 | −83·2 |
| 16·205 | I | 23 | 79 | 39 | 134 | 84·4 | −27·2 | −69·7 |
| 17·247 | I | 17 | 151 | 17 | 151 | 84·9 | −26·9 | −55·4 |
| 18·191 | I | 43 | 202 | 34 | 160 | 84·2 | −27·1 | −43·8 |
| 19 | ... | No photograph. | | (26 | 122 | 84·2 | −26·8 | −29·1) |
| 20·404 | G | 31 | 141 | 18 | 83 | 84·1 | −26·4 | −14·4 |
| 21·482 | G | 23 | 82 | 13 | 47 | 84·1 | −26·3 | − 0·2 |
| 22·438 | G | 12 | 55 | 7 | 32 | 83·2 | −26·5 | +11·6 |
| 23·461 | G | 21 | 35 | 13 | 22 | 83·0 | −26·5 | +24·9 |
| 24·475 | G | 12 | 38 | 9 | 28 | 82·8 | −26·9 | +38·2 |
| 25·212 | I | 0 | 46 | 0 | 40 | 82·1 | −27·1 | +47·2 |
| Means ... | ... | ... | ... | 16 | 89 | 83·75 | −26·79 | ... |
| **Group 497.** *Two very small spots.* | | | | | | | | |
| June 20·404 | G | 0 | 14 | 0 | 8 | 70·0 | +16·2 | −28·5 |
| Means ... | ... | ... | ... | 0 | 8 | 70·0 | +16·2 | ... |
| **Group 498.** *Two small spots, first seen near the West limb. The group has developed into a fine stream by the second day of observation.* | | | | | | | | |
| June 23·461 | G | 10 | 33 | 7 | 24 | 106·2 | +14·4 | +48·1 |
| 24·475 | G | 126 | 313 | 125 | 312 | 104·1 | +15·3 | +59·5 |
| 25·212 | I | 49 | 247 | 72 | 368 | 105·3 | +14·7 | +70·4 |
| Means ... | ... | ... | ... | 68 | 235 | 105·20 | +14·80 | ... |
| **Group 499.** *A small spot.* | | | | | | | | |
| June 23·461 | G | 0 | 11 | 0 | 6 | 42·0 | −19·6 | −16·1 |
| Means ... | ... | ... | ... | 0 | 6 | 42·0 | −19·6 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 500.** *Two small spots, of which the following has disappeared by June 25.* | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| June 23·461 | G | 5 | 33 | 8 | 50 | 348·4 | −10·0 | −69·7 |
| 24·475 | G | 0 | 54 | 0 | 45 | 352·6 | −10·4 | −52·0 |
| 25·212 | I | 3 | 27 | 2 | 18 | 354·2 | − 8·6 | −40·7 |
| Means ... | ... | ... | ... | 3 | 38 | 351·73 | − 9·67 | ... |
| **Group 501.** *Two large spots. The following spot greatly diminishes in size.* | | | | | | | | |
| June 23·461 | G | 15 | 72 | 108 | 515 | 331·3 | +25·8 | −86·8 |
| 24·475 | G | 40 | 210 | 73 | 381 | 331·5 | +26·1 | −73·1 |
| 25·212 | I | 47 | 177 | 54 | 206 | 332·0 | +26·4 | −62·9 |
| 26 | ... | No photograph. | | (53 | 211 | 332·0 | +26·2 | −49·3) |
| 27·280 | I | 77 | 326 | 51 | 217 | 331·9 | +25·9 | −35·6 |
| 28·527 | G | 71 | 361 | 41 | 209 | 331·0 | +25·9 | −20·0 |
| 29·416 | G | 76 | 334 | 42 | 185 | 331·2 | +26·4 | − 8·0 |
| 30·481 | G | 45 | 217 | 25 | 120 | 331·3 | +27·2 | + 6·2 |
| July 1·522 | G | 57 | 265 | 33 | 154 | 330·5 | +27·1 | +19·2 |
| 2·419 | G | 39 | 109 | 25 | 70 | 330·7 | +27·7 | +31·4 |
| 3·115 | I | 29 | 117 | 21 | 84 | 331·5 | +27·1 | +41·3 |
| 4·444 | G | 34 | 95 | 34 | 95 | 330·3 | +27·5 | +57·6 |
| 5·460 | G | 12 | 40 | 19 | 63 | 330·3 | +27·5 | +71·1 |
| Means ... | ... | ... | ... | 45 | 193 | 331·19 | +26·68 | ... |
| **Group 502.** *Two spots, which rapidly diminish in size and become small and faint.* | | | | | | | | |
| June 24·475 | G | 0 | 25 | 0 | 110 | 320·8 | +28·5 | −83·8 |
| 25·212 | I | 0 | 46 | 0 | 86 | 321·5 | +28·8 | −73·4 |
| 26 | ... | No photograph. | | (6 | 70 | 320·9 | +28·6 | −60·3) |
| 27·280 | I | 16 | 67 | 13 | 54 | 320·3 | +28·4 | −47·2 |
| 28·527 | G | 17 | 60 | 11 | 39 | 319·0 | +28·0 | −32·0 |
| 29·416 | G | 14 | 40 | 8 | 23 | 320·6 | +27·6 | −18·6 |
| 30·481 | G | 0 | 25 | 0 | 14 | 318·4 | +28·6 | − 7·1 |
| July 1·522 | G | 14 | 33 | 8 | 18 | 318·0 | +27·1 | + 6·7 |
| 2·419 | G | 5 | 18 | 3 | 10 | 317·8 | +25·7 | +18·5 |
| Means ... | ... | ... | ... | 5 | 47 | 319·70 | +27·92 | ... |
| **Group 503.** *A fine group, consisting principally of two large spots. The following spot breaks up into a number of fragments.* | | | | | | | | |
| June 27·280 | I | 103 | 478 | 55 | 255 | 358·0 | −14·8 | − 9·5 |
| 28·527 | G | 212 | 950 | 112 | 501 | 357·4 | −14·5 | + 6·4 |
| 29·416 | G | 253 | 930 | 141 | 518 | 357·9 | −14·6 | +18·7 |
| 30·481 | G | 138 | 711 | 86 | 444 | 357·7 | −14·4 | +32·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 503—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| July 1·522 | G | 179 | 665 | 137 | 509 | 357·6 | −14·4 | +46·3 |
| 2·419 | G | 42 | 486 | 43 | 498 | 358·0 | −14·4 | +58·7 |
| 3·115 | I | 83 | 385 | 111 | 512 | 356·4 | −14·7 | +66·2 |
| Means ... | ... | ... | ... | 98 | 462 | 357·57 | −14·54 | ... |
| **Group 504.** A large spot with several small attendants. The group rapidly diminishes to become a cluster of three or four small faint spots. | | | | | | | | |
| June 27·280 | I | 47 | 248 | 36 | 193 | 318·2 | +12·6 | −49·3 |
| 28·527 | G | 65 | 343 | 39 | 205 | 319·3 | +12·6 | −31·7 |
| 29·416 | G | 54 | 219 | 29 | 118 | 320·2 | +12·5 | −19·0 |
| 30·481 | G | 20 | 65 | 10 | 33 | 319·6 | +12·3 | − 5·5 |
| July 1·522 | G | 12 | 53 | 6 | 27 | 318·9 | +12·4 | + 7·6 |
| 2·419 | G | 0 | 71 | 0 | 38 | 318·4 | +12·7 | +19·1 |
| 3·115 | I | 3 | 47 | 2 | 27 | 318·4 | +13·4 | +28·2 |
| 4·444 | G | 0 | 11 | 0 | 8 | 318·5 | +13·3 | +45·8 |
| Means ... | ... | ... | ... | 15 | 81 | 318·94 | +12·73 | ... |
| **Group 505.** A great number of small spots in a struggling stream. The group changes into a straight stream of the usual type, the first and last spots being the largest. All but the leader spot rapidly diminish and disappear. | | | | | | | | |
| June 27·280 | I | 26 | 266 | 25 | 254 | 309·5 | +14·3 | −58·0 |
| 28·527 | G | 46 | 373 | 32 | 261 | 307·9 | +15·0 | −43·1 |
| 29·416 | G | 85 | 479 | 51 | 287 | 307·7 | +15·2 | −31·5 |
| 30·481 | G | 77 | 362 | 41 | 194 | 307·7 | +15·4 | −17·4 |
| July 1·522 | G | 45 | 217 | 23 | 112 | 309·6 | +15·4 | − 1·7 |
| 2·419 | G | 35 | 231 | 18 | 120 | 310·1 | +15·2 | +10·8 |
| 3·115 | I | 33 | 100 | 18 | 55 | 312·0 | +15·0 | +21·8 |
| 4·444 | G | 15 | 29 | 10 | 19 | 311·6 | +15·2 | +38·9 |
| Means ... | ... | ... | ... | 27 | 163 | 309·51 | +15·09 | ... |
| **Group 506.** A regular spot, with two or three short-lived companions. | | | | | | | | |
| June 28·527 | G | 23 | 129 | 30 | 181 | 282·5 | +23·4 | −68·5 |
| 29·416 | G | 41 | 233 | 38 | 228 | 281·6 | +23·6 | −57·6 |
| 30·481 | G | 32 | 170 | 23 | 120 | 283·5 | +22·9 | −41·6 |
| July 1·522 | G | 45 | 156 | 27 | 94 | 282·9 | +23·8 | −28·4 |
| 2·419 | G | 30 | 128 | 17 | 72 | 282·1 | +23·9 | −17·2 |
| 3·115 | I | 37 | 181 | 20 | 98 | 282·8 | +23·9 | − 7·4 |
| 4·444 | G | 28 | 151 | 15 | 82 | 281·7 | +23·8 | + 9·0 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 506—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| July 5·460 | G | 22 | 106 | 13 | 61 | 281·5 | +24·0 | +22·3 |
| 6·449 | I | 17 | 66 | 11 | 43 | 281·2 | +24·2 | +35·1 |
| 7·108 | Me | 0 | 39 | 0 | 29 | 281·3 | +24·2 | +43·9 |
| Means ... | ... | ... | ... | 19 | 101 | 282·11 | +23·77 | ... |
| **Group 507.** A large spot. | | | | | | | | |
| July 1·522 | G | 0 | 57 | 0 | 135 | 233·0 | +23·0 | −78·3 |
| 2·419 | G | 17 | 106 | 22 | 134 | 233·0 | +22·5 | −66·3 |
| 3·115 | I | 40 | 133 | 37 | 123 | 234·5 | +22·8 | −55·7 |
| 4·444 | G | 20 | 116 | 14 | 80 | 232·4 | +22·6 | −40·3 |
| 5·460 | G | 17 | 54 | 10 | 32 | 232·2 | +23·1 | −27·0 |
| Means ... | ... | ... | ... | 17 | 101 | 233·02 | +22·80 | ... |
| **Group 508.** A cluster of very small spots. | | | | | | | | |
| July 4·444 | G | 37 | 74 | 47 | 95 | 206·2 | +24·3 | −66·5 |
| 5·460 | G | 0 | 64 | 0 | 54 | 207·7 | +23·1 | −51·5 |
| 6·449 | I | 0 | 29 | 0 | 19 | 209·9 | +23·4 | −36·2 |
| 7·108 | Me | 0 | 77 | 0 | 46 | 209·5 | +23·1 | −27·9 |
| 8 | ... | No photograph. | | (3 | 38 | 209·4 | +23·4 | −12·7) |
| 9·426 | G | 11 | 58 | 6 | 31 | 209·2 | +23·6 | + 2·5 |
| Means ... | ... | ... | ... | 9 | 47 | 208·65 | +23·48 | ... |
| **Group 509.** A small spot. | | | | | | | | |
| July 4·444 | G | 0 | 18 | 0 | 27 | 202·4 | +20·7 | −70·3 |
| 5·460 | G | 0 | 24 | 0 | 23 | 202·3 | +20·5 | −56·9 |
| 6·449 | I | 7 | 33 | 5 | 24 | 202·2 | +20·7 | −43·9 |
| 7·108 | Me | 9 | 44 | 6 | 28 | 201·7 | +20·6 | −35·7 |
| 8 | ... | No photograph. | | (3 | 18 | 201·5 | +20·9 | −20·6) |
| 9·426 | G | 0 | 15 | 0 | 8 | 201·2 | +21·1 | − 5·5 |
| Means ... | ... | ... | ... | 2 | 21 | 201·88 | +20·75 | ... |
| **Group 510.** Two very small spots. | | | | | | | | |
| July 4·444 | G | 0 | 4 | 0 | 8 | 200·2 | −19·7 | −72·5 |
| 5·460 | G | 0 | 14 | 0 | 15 | 200·7 | −19·4 | −58·5 |
| Means ... | ... | ... | ... | 0 | 12 | 200·45 | −19·55 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 511.** A regular spot forming with Groups 514, 515, and 517 a remarkable line of disturbance. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| July 4·444 | G | 0 | 10 | 0 | 25 | 192·9 | +16·7 | −79·8 |
| 5·460 | G | 20 | 66 | 25 | 82 | 192·8 | +16·9 | −66·4 |
| 6·449 | I | 43 | 143 | 37 | 122 | 192·4 | +17·2 | −53·7 |
| 7·108 | Me | 30 | 181 | 22 | 131 | 192·1 | +16·8 | −45·3 |
| 8 | ... | No photograph. | | (17 | 103 | 192·3 | +16·8 | −29·8) |
| 9·426 | G | 23 | 142 | 12 | 75 | 192·5 | +16·7 | −14·2 |
| 10 | ... | No photograph. | | (10 | 66 | 194·5 | +16·7 | + 1·7) |
| 11·527 | G | 17 | 108 | 9 | 58 | 196·5 | +16·7 | +17·6 |
| 12·490 | G | 10 | 55 | 6 | 33 | 196·7 | +16·8 | +30·5 |
| Means ... | ... | ... | ... | 15 | 77 | 193·63 | +16·81 | ... |
| **Group 512.** Three small spots. | | | | | | | | |
| July 5·460 | G | 7 | 22 | 4 | 12 | 243·1 | −14·7 | −16·1 |
| Means ... | ... | ... | ... | 4 | 12 | 243·1 | −14·7 | ... |
| **Group 513.** Two small spots. | | | | | | | | |
| July 5·460 | G | 7 | 27 | 8 | 33 | 198·2 | −25·8 | −61·0 |
| Means ... | ... | ... | ... | 8 | 33 | 198·2 | −25·8 | ... |
| **Group 514.** Three or four small spots. Only one remains on July 11. | | | | | | | | |
| July 7·108 | Me | 29 | 76 | 15 | 39 | 237·3 | +15·2 | − 0·1 |
| 8 | ... | No photograph. | | (14 | 42 | 237·2 | +15·4 | +15·2) |
| 9·426 | G | 24 | 77 | 14 | 45 | 237·1 | +15·6 | +30·4 |
| 10 | ... | No photograph. | | (9 | 31 | 238·2 | +15·3 | +45·4 |
| 11·527 | G | 4 | 18 | 4 | 18 | 239·4 | +15·0 | +60·5 |
| Means ... | ... | ... | ... | 11 | 35 | 237·84 | +15·30 | ... |
| **Group 515.** A large regular spot, with large proper motion, and following it a large composite spot. | | | | | | | | |
| July 4·444 | G | 5 | 27 | 9 | 47 | 198·8 | +16·0 | −73·8 |
| 5·460 | G | 21 | 126 | 21 | 124 | 200·2 | +15·9 | −59·0 |
| 6·449 | I | 69 | 235 | 49 | 168 | 201·6 | +15·9 | −44·5 |
| 7·108 | Me | 53 | 259 | 33 | 160 | 202·5 | +15·1 | −34·9 |
| 8 | ... | No photograph. | | (26 | 164 | 203·3 | +14·4 | −18·7) |
| 9·426 | G | 39 | 331 | 20 | 169 | 204·1 | +13·7 | − 2·6 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 515—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| July 10 | ... | No photograph. | | (44 | 282 | 203·8 | +14·2 | +11·0) |
| 11·527 | G | 123 | 707 | 69 | 396 | 203·5 | +14·7 | +24·6 |
| 12·490 | G | 113 | 505 | 73 | 327 | 204·9 | +15·0 | +38·7 |
| 13·485 | G | 58 | 388 | 47 | 317 | 204·9 | +14·4 | +51·9 |
| 14·478 | G | 59 | 239 | 71 | 285 | 205·5 | +14·5 | +65·6 |
| 15·400 | G | 16 | 114 | 37 | 264 | 206·1 | +14·0 | +78·4 |
| Means ... | ... | ... | ... | 42 | 225 | 203·27 | +14·82 | ... |
| **Group 515A.** A regular spot, *n.f.*, Group 509. | | | | | | | | |
| July 7·108 | Me | 0 | 70 | 0 | 46 | 198·9 | +17·2 | −38·5 |
| Means ... | ... | ... | ... | 0 | 46 | 198·9 | +17·2 | ... |
| **Group 516.** Two large spots which soon coalesce. | | | | | | | | |
| July 9·426 | G | 61 | 334 | 79 | 432 | 142·5 | −19·3 | −64·2 |
| 10 | ... | No photograph. | | (81 | 420 | 142·4 | −19·6 | −50·4) |
| 11·527 | G | 123 | 595 | 84 | 409 | 142·3 | −19·8 | −36·6 |
| 12·490 | G | 124 | 656 | 74 | 393 | 142·4 | −19·7 | −23·8 |
| 13·485 | G | 127 | 729 | 71 | 407 | 142·3 | −19·7 | −10·7 |
| 14·478 | G | 95 | 770 | 52 | 423 | 142·2 | −19·8 | + 2·3 |
| 15·400 | G | 128 | 748 | 73 | 425 | 142·3 | −19·6 | +14·6 |
| 16·395 | G | 133 | 633 | 83 | 392 | 142·4 | −19·3 | +27·9 |
| 17·141 | I | 73 | 264 | 51 | 184 | 142·2 | −19·3 | +37·6 |
| 18·481 | G | 18 | 78 | 17 | 76 | 141·6 | −19·6 | +54·7 |
| 19·526 | G | 13 | 60 | 21 | 97 | 142·0 | −19·3 | +68·9 |
| Means ... | ... | ... | ... | 62 | 333 | 142·24 | −19·55 | ... |
| **Group 517.** A regular spot. | | | | | | | | |
| July 11·527 | G | 21 | 106 | 25 | 125 | 113·5 | +13·9 | −65·4 |
| 12·490 | G | 24 | 123 | 20 | 101 | 113·9 | +13·8 | −52·3 |
| 13·485 | G | 29 | 119 | 19 | 77 | 114·2 | +14·2 | −38·8 |
| 14·478 | G | 42 | 147 | 24 | 83 | 114·4 | +14·3 | −25·5 |
| 15·400 | G | 31 | 63 | 16 | 33 | 114·9 | +14·3 | −12·8 |
| 16·395 | G | 8 | 27 | 4 | 14 | 115·1 | +14·6 | + 0·6 |
| 17·141 | I | 4 | 17 | 2 | 9 | 115·9 | +14·8 | +11·3 |
| Means ... | ... | ... | ... | 16 | 63 | 114·56 | +14·27 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 518.

A compact cluster of small faint spots, which have coalesced by July 13 to form one faint spot. A second spot has formed, following it by July 16. The group is not seen on July 17.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| July 12·490 | G | 0 | 60 | 0 | 48 | 118·7 | −14·7 | −47·5 |
| 13·485 | G | 11 | 51 | 7 | 32 | 120·2 | −14·2 | −32·8 |
| 14·478 | G | 7 | 27 | 4 | 15 | 121·1 | −13·8 | −18·8 |
| 15·400 | G | 11 | 43 | 6 | 23 | 121·0 | −13·9 | − 6·7 |
| 16·395 | G | 0 | 27 | 0 | 14 | 120·5 | −13·9 | + 6·0 |
| 17·141 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 18·481 | G | 17 | 51 | 11 | 33 | 121·1 | −14·6 | +34·2 |
| 19·526 | G | 14 | 47 | 12 | 39 | 122·6 | −13·8 | +49·5 |
| Means ... | ... | ... | ... | 5 | 26 | 120·74 | −14·13 | ... |

### Group 519.

A very small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 13·485 | G | 0 | 7 | 0 | 5 | 196·7 | −18·4 | +43·7 |
| Means ... | ... | ... | ... | 0 | 5 | 196·7 | −18·4 | ... |

### Group 520.

A compact cluster of small faint spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 13·485 | G | 0 | 22 | 0 | 13 | 135·0 | −22·3 | −18·0 |
| 14·478 | G | 2 | 30 | 1 | 17 | 134·6 | −22·2 | − 5·3 |
| 15·400 | G | 0 | 111 | 0 | 63 | 134·6 | −22·4 | + 6·9 |
| Means ... | ... | ... | ... | 0 | 31 | 134·73 | −22·30 | ... |

### Group 521.

A regular spot with a few faint markings, *s.f.*, which rapidly increase in size and form a chain of spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 18·481 | G | 29 | 188 | 26 | 174 | 29·5 | +14·1 | −57·4 |
| 19·526 | G | 83 | 370 | 56 | 254 | 30·2 | +14·2 | −42·9 |
| 20·087 | Me | 80 | 373 | 49 | 228 | 31·3 | +14·6 | −34·4 |
| 21·442 | G | 65 | 308 | 34 | 163 | 30·7 | +14·4 | −17·0 |
| 22 | ... | No photograph. | | (28 | 144 | 31·1 | +14·7 | − 5·8) |
| 23·083 | Me | 43 | 244 | 22 | 125 | 31·5 | +14·9 | + 5·4 |
| 24·420 | I | 70 | 328 | 38 | 178 | 30·2 | +12·7 | +21·8 |
| 25·466 | G | 72 | 290 | 44 | 179 | 30·3 | +12·2 | +35·8 |
| 26·535 | G | 47 | 211 | 38 | 168 | 31·8 | +12·3 | +51·4 |
| 27·215 | I | 10 | 56 | 10 | 56 | 31·5 | +11·8 | +60·2 |
| 28·412 | G | 12 | 88 | 28 | 192 | 33·0 | +10·8 | +77·4 |
| Means ... | ... | ... | ... | 34 | 169 | 31·01 | +13·34 | ... |

### Group 522.

A large regular spot, which diminishes in size very quickly after passing the central meridian.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| July 18·481 | G | 54 | 180 | 115 | 382 | 9·6 | +18·5 | −77·3 |
| 19·526 | G | 78 | 316 | 86 | 347 | 9·9 | +18·7 | −63·2 |
| 20·087 | Me | 96 | 374 | 85 | 331 | 10·4 | +19·3 | −55·3 |
| 21·442 | G | 174 | 615 | 114 | 402 | 9·4 | +19·3 | −38·3 |
| 22 | ... | No photograph. | | (91 | 365 | 9·4 | +19·5 | −27·6) |
| 23·083 | Me | 126 | 607 | 68 | 328 | 9·3 | +19·6 | −16·8 |
| 24·420 | I | 98 | 553 | 51 | 287 | 9·1 | +19·5 | + 0·7 |
| 25·466 | G | 99 | 553 | 53 | 296 | 9·5 | +19·6 | +15·0 |
| 26·535 | G | 65 | 418 | 38 | 246 | 9·2 | +19·6 | +28·8 |
| 27·215 | I | 64 | 178 | 41 | 115 | 8·9 | +19·3 | +37·6 |
| 28·412 | G | 17 | 69 | 14 | 58 | 8·4 | +19·8 | +52·8 |
| 29·398 | G | 5 | 13 | 6 | 15 | 7·8 | +19·9 | +65·3 |
| Means ... | ... | ... | ... | 64 | 264 | 9·24 | +19·38 | ... |

### Group 523.

A small spot on July 19. The group is not seen on July 20, but has reappeared as a pair of spots by July 21. The preceding spot has disappeared by July 23.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 19·526 | G | 0 | 19 | 0 | 11 | 98·8 | +14·5 | +25·7 |
| 20·087 | Me | 0 | 0 | 0 | 0 | ... | ... | ... |
| 21·442 | G | 71 | 254 | 57 | 206 | 100·3 | +14·4 | +52·6 |
| 22 | ... | No photograph. | | (28 | 136 | 98·9 | +14·4 | +62·0) |
| 23·083 | Me | 0 | 50 | 0 | 75 | 97·5 | +14·3 | +71·4 |
| Means ... | ... | ... | ... | 17 | 86 | 98·88 | +14·40 | ... |

### Group 524.

A few spots in a stream, which steadily increases in size.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 24·420 | I | 16 | 115 | 11 | 80 | 51·3 | +17·7 | +42·9 |
| 25·466 | G | 50 | 190 | 46 | 174 | 51·4 | +16·6 | +56·9 |
| 26·535 | G | 52 | 151 | 83 | 241 | 53·0 | +17·2 | +72·6 |
| Means ... | ... | ... | ... | 47 | 165 | 51·90 | +17·17 | ... |

### Group 525.

A large regular spot with a number of small companions. The companions soon disappear, leaving the chief spot alone.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 23·083 | Me | 53 | 191 | 70 | 251 | 318·3 | +24·3 | −67·8 |
| 24·420 | I | 70 | 530 | 56 | 420 | 319·3 | +24·6 | −49·1 |
| 25·466 | G | 147 | 707 | 94 | 455 | 319·1 | +24·4 | −35·4 |
| 26·535 | G | 187 | 721 | 106 | 408 | 319·5 | +23·9 | −20·9 |
| 27·215 | I | 130 | 648 | 70 | 351 | 318·6 | +24·3 | −12·7 |
| 28·412 | G | 115 | 621 | 61 | 329 | 319·1 | +24·0 | + 3·5 |
| 29·398 | G | 127 | 570 | 70 | 313 | 318·9 | +23·8 | +16·4 |
| 30·453 | I | 69 | 403 | 42 | 244 | 318·9 | +23·7 | +30·4 |
| 31 | ... | No photograph. | | (59 | 255 | 318·4 | +24·0 | +43·0) |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 525—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Aug. 1·435 | G | 84 | 294 | 76 | 265 | 317·9 | +24·2 | +55·6 |
| 2·501 | G | 76 | 207 | 106 | 288 | 317·9 | +23·9 | +69·7 |
| 3·116 | I | 33 | 98 | 73 | 218 | 318·5 | +23·7 | +78·4 |
| Means ... | ... | ... | ... | 74 | 316 | 318·70 | +24·07 | ... |
| **Group 526.** A large regular spot, crossed by a fine bridge. | | | | | | | | |
| July 23·083 | Me | 0 | 66 | 0 | 130 | 309·9 | +26·2 | −76·2 |
| 24·420 | I | 36 | 316 | 36 | 313 | 309·6 | +26·5 | −58·8 |
| 25·466 | G | 130 | 573 | 97 | 428 | 309·5 | +26·8 | −45·0 |
| 26·535 | G | 216 | 883 | 135 | 552 | 308·7 | +26·9 | −31·7 |
| 27·215 | I | 162 | 755 | 94 | 439 | 308·4 | +26·8 | −22·9 |
| 28·412 | G | 237 | 940 | 129 | 511 | 307·2 | +27·1 | − 8·4 |
| 29·398 | G | 233 | 907 | 126 | 490 | 306·7 | +27·3 | + 4·2 |
| 30·453 | I | 172 | 842 | 97 | 476 | 306·1 | +27·3 | +17·6 |
| 31 | ... | No photograph. | | (114 | 524 | 305·3 | +27·6 | +29·9) |
| Aug. 1·435 | G | 185 | 802 | 132 | 573 | 304·5 | +27·8 | +42·2 |
| 2·501 | G | 129 | 569 | 118 | 522 | 304·0 | +27·7 | +55·8 |
| 3·116 | I | 76 | 339 | 88 | 394 | 304·8 | +27·3 | +64·7 |
| 4·451 | G | 33 | 157 | 95 | 449 | 304·1 | +27·2 | +81·7 |
| Means ... | ... | ... | ... | 97 | 446 | 306·83 | +27·12 | ... |
| **Group 527.** A cluster of small spots. | | | | | | | | |
| July 24·420 | I | 0 | 66 | 0 | 64 | 312·1 | −13·7 | −56·3 |
| 25·466 | G | 9 | 40 | 6 | 28 | 313·7 | −13·4 | −40·8 |
| 26·535 | G | 9 | 31 | 5 | 18 | 314·5 | −13·4 | −25·9 |
| 27·215 | I | 0 | 66 | 0 | 37 | 312·7 | −13·3 | −18·6 |
| 28·412 | G | 0 | 38 | 0 | 20 | 313·0 | −13·9 | − 2·6 |
| Means ... | ... | ... | ... | 2 | 33 | 313·20 | −13·54 | ... |
| **Group 528.** A cluster of small spots. | | | | | | | | |
| July 24·420 | I | 10 | 66 | 12 | 83 | 304·4 | −14·3 | −64·0 |
| 25·466 | G | 130 | 498 | 125 | 476 | 299·4 | −15·5 | −55·1 |
| 26·535 | G | 96 | 565 | 67 | 405 | 299·6 | −15·5 | −40·8 |
| 27·215 | I | 166 | 485 | 106 | 310 | 299·0 | −15·4 | −32·3 |
| 28·412 | G | 92 | 452 | 51 | 252 | 300·3 | −15·3 | −15·3 |
| 29·398 | G | 94 | 433 | 51 | 232 | 300·9 | −15·2 | − 1·6 |
| 30·453 | I | 89 | 362 | 49 | 199 | 300·9 | −15·5 | +12·4 |
| 31 | ... | No photograph. | | (34 | 156 | 300·8 | −15·7 | +25·4) |
| Aug. 1·435 | G | 26 | 161 | 19 | 112 | 300·7 | −15·8 | +38·4 |
| 2·501 | G | 4 | 58 | 3 | 511 | 299·9 | −15·8 | +51·7 |
| Means ... | ... | ... | ... | 52 | 274 | 300·59 | −15·40 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 528A.** A small spot, *s.p.*, Group 525. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| July 24·420 | I | 7 | 39 | 5 | 28 | 322·8 | +13·0 | −45·6 |
| Means ... | ... | ... | ... | 5 | 28 | 322·8 | +13·0 | ... |
| **Group 529.** A faint spot. | | | | | | | | |
| July 26·535 | G | 9 | 44 | 5 | 24 | 318·2 | +13·7 | −22·2 |
| 27·215 | I | 13 | 50 | 7 | 26 | 318·5 | +14·4 | −12·8 |
| 28·412 | G | 4 | 24 | 2 | 12 | 318·2 | +13·0 | + 2·6 |
| Means ... | ... | ... | ... | 5 | 21 | 318·30 | +13·70 | ... |
| **Group 530.** A small spot. | | | | | | | | |
| July 28·412 | G | 0 | 15 | 0 | 8 | 322·6 | + 9·9 | + 7·0 |
| Means ... | .. | ... | ... | 0 | 8 | 322·6 | + 9·9 | ... |
| **Group 531.** A large spot, with occasionally one or two small companions. | | | | | | | | |
| July 28·412 | G | 57 | 290 | 31 | 157 | 296·9 | +17·8 | −18·7 |
| 29·398 | G | 87 | 390 | 45 | 201 | 298·1 | +17·9 | − 4·4 |
| 30·453 | I | 185 | 656 | 96 | 341 | 297·4 | +17·9 | + 8·9 |
| 31 | ... | No photograph. | | (72 | 279 | 298·4 | +18·6 | +23·0) |
| Aug. 1·435 | G | 77 | 341 | 49 | 217 | 299·3 | +19·3 | +37·0 |
| 2·501 | G | 44 | 224 | 36 | 185 | 300·7 | +19·6 | +52·5 |
| 3·116 | I | 46 | 197 | 48 | 207 | 302·3 | +19·3 | +62·2 |
| 4·451 | G | 13 | 64 | 31 | 153 | 301·8 | +18·8 | +79·4 |
| Means ... | ... | ... | ... | 51 | 218 | 299·36 | +18·65 | ... |
| **Group 532.** A large spot of irregular outline. | | | | | | | | |
| July 28·412 | G | 32 | 190 | 18 | 106 | 292·2 | +18·6 | −23·4 |
| 29·398 | G | 84 | 401 | 44 | 209 | 292·3 | +18·4 | −10·2 |
| 30·453 | I | 49 | 264 | 25 | 136 | 291·8 | +18·1 | + 3·3 |
| 31 ... | ... | No photograph. | | (30 | 176 | 291·7 | +18·6 | +16·3) |
| Aug. 1·435 | G | 60 | 367 | 35 | 216 | 291·5 | +19·1 | +29·2 |
| 2·501 | G | 17 | 168 | 12 | 117 | 291·0 | +19·4 | +42·8 |
| 3·116 | I | 26 | 98 | 21 | 80 | 291·9 | +19·1 | +51·8 |
| 4·451 | G | 0 | 60 | 0 | 79 | 290·8 | +18·6 | +68·4 |
| Means ... | ... | ... | ... | 23 | 140 | 291·65 | +18·74 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 533.

A small spot, followed on July 29 by another similar spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| July 28·412 | G | 5 | 14 | 7 | 19 | 246·0 | +17·7 | −69·6 |
| 29·398 | G | 8 | 33 | 7 | 31 | 244·0 | +18·5 | −58·5 |
| 30·453 | I | 0 | 20 | 0 | 14 | 246·1 | +18·3 | −42·4 |
| Means ... | ... | ... | ... | 5 | 21 | 245·37 | +18·17 | ... |

### Group 534.

A small spot on July 29. A second has appeared preceding it by July 30, and the one first seen has disappeared by August 1.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 29·398 | G | 14 | 42 | 8 | 24 | 317·3 | −18·7 | +14·8 |
| 30·453 | I | 12 | 81 | 8 | 52 | 319·7 | −18·8 | +31·2 |
| 31 | ... | No photograph. | | (30 | 98 | 321·0 | −18·1 | +45·6) |
| Aug. 1·435 | G | 47 | 129 | 53 | 145 | 322·2 | −17·3 | +59·9 |
| 2·501 | G | 0 | 43 | 0 | 94 | 322·3 | −16·9 | +74·1 |
| Means ... | ... | ... | ... | 20 | 83 | 320·50 | −17·96 | ... |

### Group 535.

Some small spots in a straggling stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 30·453 | I | 3 | 63 | 3 | 63 | 233·6 | −19·9 | −54·9 |
| 31 ... | ... | No photograph. | | (7 | 65 | 234·4 | −19·6 | −41·0 |
| Aug. 1·435 | G | 19 | 107 | 12 | 67 | 235·2 | −19·3 | −27·1 |
| 2·501 | G | 18 | 46 | 10 | 26 | 237·9 | −19·0 | −10·3 |
| Means ... | ... | ... | ... | 8 | 55 | 235·28 | −19·45 | ... |

### Group 536.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 30·453 | I | 0 | 54 | 0 | 44 | 237·5 | +25·0 | −51·0 |
| 31 .. | ... | No photograph. | | (0 | 33 | 236·9 | +25·8 | −38·6) |
| Aug. 1·435 | G | 0 | 39 | 0 | 23 | 236·2 | +26·5 | −26·1 |
| 2·501 | G | 2 | 9 | 1 | 5 | 236·7 | +24·6 | −11·5 |
| Means ... | ... | ... | ... | 0 | 26 | 236·83 | +25·48 | ... |

### Group 537.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 1·435 | G | 0 | 18 | 0 | 21 | 197·4 | +15·2 | −64·9 |
| 2·501 | G | 0 | 25 | 0 | 20 | 197·3 | +15·5 | −50·9 |
| Means ... | ... | ... | ... | 0 | 21 | 197·35 | +15·35 | ... |

### Group 538.

A large regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Aug. 1·435 | G | 0 | 70 | 0 | 218 | 180·4 | +13·7 | −81·9 |
| 2·501 | G | 68 | 459 | 87 | 588 | 180·4 | +13·2 | −67·8 |
| 3·116 | I | 65 | 435 | 61 | 407 | 182·1 | +13·3 | −58·0 |
| 4·451 | G | 84 | 589 | 57 | 398 | 180·3 | +13·3 | −42·1 |
| 5·561 | G | 116 | 574 | 66 | 327 | 180·0 | +12·6 | −27·8 |
| 6·498 | G | 84 | 544 | 44 | 284 | 180·3 | +12·4 | −15·1 |
| 7 | ... | No photograph. | | (45 | 252 | 180·4 | +12·5 | − 1·4) |
| 8·556 | G | 89 | 426 | 46 | 220 | 180·5 | +12·6 | +12·3 |
| 9·568 | G | 72 | 353 | 40 | 197 | 180·4 | +12·9 | +25·6 |
| 10·594 | G | 80 | 279 | 51 | 179 | 180·0 | +13·1 | +38·8 |
| 11·389 | G | 39 | 225 | 30 | 172 | 179·9 | +13·1 | +49·1 |
| 12·280 | I | 49 | 173 | 49 | 171 | 179·7 | +12·8 | +60·7 |
| 13·271 | I | 26 | 76 | 44 | 128 | 179·8 | +12·6 | +74·0 |
| Means ... | ... | ... | ... | 48 | 272 | 180·32 | +12·93 | ... |

### Group 539.

Two small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 3·116 | I | 0 | 30 | 0 | 27 | 193·3 | −27·1 | −46·8 |
| 4·451 | G | 1 | 10 | 1 | 7 | 192·5 | −27·3 | −29·9 |
| Means ... | ... | ... | ... | 1 | 17 | 192 90 | −27·20 | ... |

### Group 540.

A cluster of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 3·116 | I | 0 | 27 | 0 | 30 | 180·2 | −18·7 | −59·9 |
| 4·451 | G | 28 | 73 | 21 | 54 | 181·3 | −18·7 | −41·1 |
| 5·561 | G | 23 | 111 | 14 | 68 | 182·0 | −18·6 | −25·8 |
| 6·498 | G | 26 | 182 | 15 | 104 | 182·0 | −18·7 | −13·4 |
| 7 | ... | No photograph. | | (15 | 100 | 183·4 | −18·4 | + 1·6) |
| 8·556 | G | 26 | 172 | 15 | 95 | 184·8 | −18·1 | +16·6 |
| 9·568 | G | 6 | 66 | 4 | 42 | 185·7 | −17·9 | +30·9 |
| Means ... | ... | ... | ... | 12 | 70 | 182·77 | −18·44 | ... |

### Group 541.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 5·561 | G | 6 | 18 | 3 | 10 | 221·7 | +24·3 | +13·9 |
| 6·498 | G | 3 | 28 | 2 | 16 | 221·4 | +24·1 | +26·0 |
| Means ... | ... | ... | ... | 3 | 13 | 221·55 | +24·20 | ... |

### Group 542.

A small spot not seen on August 10.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 6·498 | G | 0 | 12 | 0 | 41 | 116·5 | −18·6 | −78·9 |
| 7 | ... | No photograph. | | (2 | 26 | 116·2 | −18·8 | −65·7) |
| 8·556 | G | 5 | 13 | 5 | 12 | 115·8 | −19·0 | −52·4 |
| 9·568 | G | 8 | 18 | 6 | 13 | 115·6 | −19·1 | −39·2 |
| 10·594 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 11·389 | G | 0 | 10 | 0 | 6 | 115·3 | −19·0 | −15·5 |
| Means ... | ... | ... | ... | 2 | 16 | 115·88 | −18·90 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 543.** A large spot, which has broken up into a number of small fragments by August 9. Of these only one remains by August 11. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Aug. 8·556 | G | 51 | 280 | 29 | 158 | 179·0 | −18·6 | +10·8 |
| 9·568 | G | 23 | 102 | 14 | 62 | 178·3 | −18·4 | +23·5 |
| 10·594 | G | 17 | 126 | 12 | 89 | 178·9 | −18·6 | +37·7 |
| 11·389 | G | 0 | 8 | 0 | 7 | 178·1 | −17·4 | +47·3 |
| Means ... | ... | ... | ... | 14 | 79 | 178·58 | −18·25 | ... |
| **Group 544.** A small spot. | | | | | | | | |
| Aug. 10·594 | G | 0 | 6 | 0 | 4 | 106·4 | −24·0 | −34·8 |
| Means ... | ... | ... | ... | 0 | 4 | 106·4 | −24·0 | ... |
| **Group 545.** A small spot. | | | | | | | | |
| Aug. 11·389 | G | 0 | 8 | 0 | 5 | 131·1 | −28·6 | + 0·3 |
| Means ... | ... | ... | ... | 0 | 5 | 131·1 | −28·6 | ... |
| **Group 546.** A straggling group of small spots. | | | | | | | | |
| Aug. 11·389 | G | 42 | 93 | 26 | 57 | 126·7 | −29·3 | − 4·1 |
| 12·280 | I | 16 | 83 | 10 | 51 | 125·9 | −28·8 | + 6·9 |
| 13·271 | I | 3 | 99 | 2 | 64 | 124·0 | −28·7 | +18·2 |
| Means ... | ... | ... | ... | 13 | 57 | 125·53 | −28·93 | ... |
| **Group 547.** A straggling group of small faint spots. | | | | | | | | |
| Aug. 17·423 | G | 27 | 69 | 14 | 36 | 40·7 | +16·8 | −10·3 |
| 18·284 | I | 0 | 153 | 0 | 78 | 39·9 | +16·5 | + 0·3 |
| 19·316 | I | 4 | 65 | 2 | 34 | 38·9 | +17·3 | +12·9 |
| 20·540 | G | 9 | 33 | 5 | 19 | 38·9 | +17·6 | +29·1 |
| Means ... | ... | ... | ... | 5 | 42 | 39·60 | +17·05 | ... |
| **Group 548.** A small spot. | | | | | | | | |
| Aug. 20·540 | G | 0 | 8 | 0 | 11 | 305·2 | −14·0 | −64·6 |
| Means ... | ... | ... | ... | 0 | 11 | 305·2 | −14·0 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 549.** A large regular spot, frequently surrounded by a number of small attendants. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Aug. 20·540 | G | 30 | 113 | 51 | 194 | 295·3 | +28·7 | −74·5 |
| 21 | ... | No photograph. | | (49 | 200 | 295·4 | +28·4 | −62·6) |
| 22·391 | G | 58 | 258 | 47 | 207 | 295·6 | +28·0 | −49·7 |
| 23·402 | G | 47 | 273 | 31 | 180 | 294·8 | +28·6 | −37·2 |
| 24·399 | G | 104 | 558 | 61 | 327 | 294·5 | +28·3 | −24·3 |
| 25·271 | I | 103 | 583 | 57 | 321 | 294·0 | +28·0 | −13·3 |
| 26·376 | G | 80 | 478 | 43 | 258 | 293·9 | +28·6 | + 1·2 |
| 27·390 | G | 86 | 454 | 48 | 252 | 293·1 | +28·6 | +13·8 |
| 28·399 | G | 55 | 301 | 33 | 179 | 292·5 | +28·5 | +26·6 |
| 29·312 | I | 39 | 226 | 26 | 152 | 291·8 | +28·4 | +37·9 |
| 30·525 | G | 29 | 182 | 25 | 157 | 291·4 | +28·4 | +53·5 |
| 31 | ... | No photograph. | | (32 | 151 | 291·0 | +28·5 | +65·6) |
| Sept. 1·407 | G | 19 | 71 | 39 | 144 | 290·6 | +28·6 | +77·6 |
| Means ... | ... | ... | ... | 42 | 209 | 293·38 | +28·43 | ... |
| **Group 550.** Several small spots in a somewhat scattered group, which undergoes frequent and rapid changes. | | | | | | | | |
| Aug. 22·391 | G | 28 | 138 | 44 | 215 | 273·0 | +13·9 | −72·3 |
| 23·402 | G | 36 | 141 | 34 | 134 | 273·0 | +13·6 | −59·0 |
| 24·399 | G | 42 | 214 | 30 | 154 | 272·7 | +13·4 | −46·1 |
| 25·271 | I | 30 | 230 | 18 | 140 | 272·8 | +13·4 | −34·5 |
| 26·376 | G | 44 | 202 | 23 | 108 | 272·8 | +13·1 | −19·4 |
| 27·390 | G | 57 | 263 | 29 | 134 | 272·5 | +13·4 | − 6·8 |
| 28·399 | G | 51 | 317 | 26 | 161 | 271·8 | +13·1 | + 5·9 |
| 29·312 | I | 61 | 246 | 32 | 130 | 271·3 | +14·0 | +17·4 |
| 30·525 | G | 8 | 77 | 5 | 46 | 271·3 | +12·6 | +33·4 |
| Means ... | ... | ... | ... | 27 | 136 | 272·41 | +13·38 | ... |
| **Group 551.** A small spot. | | | | | | | | |
| Aug. 23·402 | G | 0 | 5 | 0 | 6 | 267·3 | +18·0 | −64·7 |
| Means ... | ... | ... | ... | 0 | 6 | 267·3 | +18·0 | ... |
| **Group 552.** A large composite spot, with a number of small companions. The group undergoes frequent and rapid changes. | | | | | | | | |
| Aug. 23·402 | G | 22 | 95 | 26 | 111 | 266·3 | +15·4 | −65·7 |
| 24·399 | G | 31 | 171 | 25 | 140 | 266·0 | +15·0 | −52·8 |
| 25·271 | I | 52 | 302 | 35 | 201 | 266·0 | +14·9 | −41·3 |
| 26·376 | G | 52 | 246 | 30 | 140 | 265·1 | +14·8 | −27·6 |
| 27·390 | G | 87 | 446 | 45 | 232 | 265·5 | +14·7 | −13·8 |
| 28·399 | G | 143 | 824 | 72 | 416 | 266·5 | +13·9 | + 0·6 |
| 29·312 | I | 198 | 756 | 103 | 392 | 266·6 | +14·3 | +12·7 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 552—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Aug. 30·525 | G | 136 | 1032 | 78 | 593 | 266·7 | +14·3 | +28·8 |
| 31 | ... | No photograph. | | (71 | 556 | 266·7 | +14·6 | +41·2) |
| Sept. 1·407 | G | 78 | 624 | 65 | 520 | 266·7 | +14·8 | +53·7 |
| 2 | ... | No photograph. | | (32 | 389 | 266·7 | +15·4 | +64·6) |
| 3·049 | Me | 0 | 142 | 0 | 258 | 266·7 | +15·9 | +75·4 |
| Means ... | ... | ... | ... | 49 | 329 | 266·29 | +14·83 | ... |
| **Group 553.** A large regular spot. A second spot of considerable size has formed, following the first by August 26. | | | | | | | | |
| Aug. 23·402 | G | 53 | 202 | 73 | 277 | 262·3 | +19·7 | −69·7 |
| 24·399 | G | 68 | 338 | 60 | 299 | 263·2 | +20·3 | −55·6 |
| 25·271 | I | 65 | 423 | 45 | 292 | 264·5 | +20·8 | −42·8 |
| 26·376 | G | 192 | 721 | 113 | 424 | 263·2 | +20·5 | −29·5 |
| 27·390 | G | 181 | 783 | 97 | 419 | 263·6 | +20·8 | −15·7 |
| 28·399 | G | 186 | 728 | 96 | 376 | 263·7 | +20·6 | − 2·2 |
| 29·312 | I | 82 | 706 | 43 | 367 | 262·6 | +20·4 | + 8·7 |
| 30·525 | G | 121 | 683 | 69 | 388 | 263·5 | +20·3 | +25·6 |
| 31 | ... | No photograph. | | (78 | 376 | 263·4 | +20·2 | +37·9) |
| Sept. 1·407 | G | 113 | 466 | 88 | 364 | 263·2 | +20·1 | +50·2 |
| 2 | ... | No photograph. | | (78 | 312 | 263·2 | +20·5 | +61·1) |
| 3·049 | Me | 46 | 175 | 69 | 261 | 263·2 | +20·9 | +71·9 |
| Means ... | ... | ... | ... | 76 | 346 | 263·30 | +20·43 | ... |
| **Group 554.** One or two small spots. | | | | | | | | |
| Aug. 23·402 | G | 0 | 37 | 0 | 64 | 257·3 | +20·0 | −74·7 |
| 24·399 | G | 6 | 38 | 6 | 41 | 255·7 | +20·5 | −63·1 |
| 25·271 | I | 0 | 61 | 0 | 47 | 258·4 | +21·5 | −48·9 |
| 26·376 | G | 28 | 90 | 18 | 57 | 256·0 | +20·9 | −36·7 |
| 27·390 | G | 16 | 76 | 9 | 43 | 255·2 | +21·1 | −24·1 |
| Means ... | ... | ... | ... | 7 | 50 | 256·52 | +20·80 | ... |
| **Group 554A.** A small spot. | | | | | | | | |
| Aug. 25·271 | I | 0 | 46 | 0 | 24 | 309·4 | −8·5 | + 2·1 |
| Means ... | ... | ... | ... | 0 | 24 | 309·4 | −8·5 | ... |
| **Group 555.** A small spot. | | | | | | | | |
| Aug. 26·376 | G | 8 | 23 | 4 | 12 | 307·1 | +15·9 | +14·4 |
| Means ... | ... | ... | ... | 4 | 12 | 307·1 | +15·9 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 556.** A small spot on August 26, with a few faint markings near it. The disturbance rapidly develops, and on August 27 the group is composed of a number of small but dark spots in an irregular stream. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Aug. 26·376 | G | 16 | 50 | 9 | 27 | 276·2 | +24·0 | −16·5 |
| 27·390 | G | 155 | 557 | 82 | 293 | 275·8 | +24·5 | − 3·5 |
| 28·399 | G | 102 | 405 | 54 | 215 | 275·2 | +24·3 | + 9·3 |
| 29·312 | I | 68 | 334 | 38 | 188 | 275·6 | +23·8 | +21·7 |
| 30·525 | G | 64 | 379 | 43 | 254 | 277·8 | +23·4 | +39·9 |
| 31 | ... | No photograph. | | (26 | 153 | 277·9 | +23·2 | +52·5) |
| Sept. 1·407 | G | 9 | 46 | 10 | 53 | 278·0 | +22·9 | +65·0 |
| Means ... | ... | ... | ... | 37 | 169 | 276·64 | +23·73 | ... |
| **Group 557.** A single spot. | | | | | | | | |
| Aug. 26·376 | G | 5 | 21 | 25 | 98 | 211·3 | −17·4 | −81·4 |
| 27·390 | G | 27 | 62 | 39 | 91 | 212·7 | −17·1 | −66·6 |
| 28·399 | G | 21 | 102 | 20 | 95 | 213·1 | −17·0 | −52·8 |
| 29·312 | I | 3 | 65 | 2 | 48 | 213·0 | −17·6 | −40·9 |
| 30·525 | G | 8 | 33 | 5 | 20 | 212·8 | −17·9 | −25·1 |
| Means ... | ... | ... | ... | 18 | 70 | 212·58 | −17·40 | ... |
| **Group 558.** Four small spots. | | | | | | | | |
| Aug. 30·525 | G | 42 | 212 | 23 | 116 | 259·7 | +16·1 | +21·8 |
| Means ... | ... | ... | ... | 23 | 116 | 259·7 | +16·1 | ... |
| **Group 559.** A few small spots. Only one of these remains on September 1, but that one has greatly increased in size. | | | | | | | | |
| Aug. 29·312 | I | 4 | 57 | 2 | 32 | 255·1 | −18·0 | + 1·2 |
| 30·525 | G | 7 | 28 | 4 | 16 | 254·5 | −17·9 | +16·6 |
| 31 | ... | No photograph. | | (10 | 44 | 254·0 | −18·4 | +28·5) |
| Sept. 1·407 | G | 23 | 99 | 17 | 73 | 253·4 | −18·9 | +40·4 |
| Means ... | ... | ... | ... | 8 | 41 | 254·25 | −18·30 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 560.** A small spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Aug. 30·525 | G | 9 | 50 | 9 | 50 | 176·9 | +13·5 | −61·0 |
| 31 | ... | No photograph. | | (7 | 37 | 176·8 | +13·5 | −48·7) |
| Sept. 1·407 | G | 8 | 39 | 5 | 24 | 176·6 | +13·4 | −36·4 |
| Means ... | ... | ... | ... | 7 | 37 | 176·77 | +13·47 | ... |
| **Group 561.** A large composite spot, divided by a bright bridge, and followed by several smaller spots. | | | | | | | | |
| Aug. 29·312 | I | 0 | 43 | 0 | 139 | 177·2 | −25·5 | −76·7 |
| 30·525 | G | 79 | 338 | 105 | 451 | 176·5 | −25·2 | −61·4 |
| 31 | ... | No photograph. | | (120 | 563 | 178·8 | −25·2 | −46·7) |
| Sept. 1·407 | G | 189 | 935 | 136 | 675 | 181·0 | −25·1 | −32·0 |
| 2 | ... | No photograph. | | (113 | 586 | 180·6 | −25·2 | −21·6) |
| 3·049 | Me | 148 | 818 | 89 | 497 | 180·2 | −25·3 | −11·1 |
| 4·655 | G | 159 | 978 | 96 | 591 | 179·5 | −25·4 | + 9·4 |
| 5·289 | I | 196 | 1008 | 123 | 629 | 179·1 | −25·4 | +17·4 |
| 6·436 | G | 120 | 724 | 86 | 517 | 178·7 | −25·0 | +32·1 |
| 7·567 | G | 99 | 535 | 92 | 482 | 178·8 | −25·3 | +47·1 |
| 8·238 | I | 71 | 260 | 78 | 284 | 179·0 | −25·1 | +56·2 |
| 9·269 | I | 33 | 97 | 65 | 194 | 179·5 | −24·9 | +70·3 |
| Means ... | ... | ... | ... | 92 | 467 | 179·08 | −25·22 | ... |
| **Group 562.** A small faint spot. | | | | | | | | |
| Sept. 1·407 | G | 0 | 28 | 0 | 22 | 168·9 | −20·2 | −44·1 |
| Means ... | ... | ... | ... | 0 | 22 | 168·9 | −20·2 | ... |
| **Group 563.** A small spot followed on September 5 and 6 by a small companion. | | | | | | | | |
| Sept. 4·655 | G | 0 | 32 | 0 | 17 | 173·2 | −10·4 | + 3·1 |
| 5·289 | I | 61 | 159 | 33 | 86 | 174·2 | −10·4 | +12·5 |
| 6·436 | G | 27 | 125 | 16 | 76 | 175·7 | −10·3 | +29·1 |
| 7·567 | G | 13 | 33 | 10 | 25 | 177·7 | − 9·5 | +46·0 |
| Means ... | ... | ... | ... | 15 | 51 | 175·20 | −10·15 | ... |
| **Group 564.** A small faint spot. | | | | | | | | |
| Sept. 6·436 | G | 9 | 28 | 15 | 45 | 219·6 | +21·1 | +73·0 |
| Means ... | ... | ... | ... | 15 | 45 | 219·6 | +21·1 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 565.** A cluster of small spots on September 6. Only one small spot remains by September 7. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Sept. 6·436 | G | 17 | 38 | 11 | 25 | 188·0 | +14·3 | +41·4 |
| 7·567 | G | 0 | 10 | 0 | 9 | 190·5 | +14·4 | +58·8 |
| Means ... | ... | ... | ... | 6 | 17 | 189·25 | +14·35 | ... |
| **Group 566.** A small regular spot on September 6. The group rapidly develops into a fine stream, the leader of which is much the largest member. | | | | | | | | |
| Sept. 6·436 | G | 18 | 55 | 13 | 40 | 99·7 | +13·5 | −46·9 |
| 7·567 | G | 121 | 413 | 71 | 244 | 100·0 | +13·7 | −31·7 |
| 8·238 | I | 122 | 494 | 67 | 270 | 99·9 | +13·5 | −22·9 |
| 9·269 | I | 136 | 1067 | 70 | 547 | 99·5 | +13·8 | − 9·7 |
| 10·188 | I | 245 | 1187 | 124 | 601 | 99·5 | +14·1 | + 2·4 |
| 11·166 | I | 241 | 1633 | 127 | 860 | 100·8 | +14·1 | +16·6 |
| 12·287 | I | 207 | 1214 | 123 | 718 | 101·2 | +14·1 | +31·8 |
| 13·583 | G | 221 | 1016 | 170 | 777 | 101·6 | +13·7 | +49·4 |
| 14·443 | G | 120 | 646 | 120 | 655 | 102·0 | +13·0 | +61·1 |
| 15·559 | G | 50 | 234 | 101 | 479 | 103·0 | +12·2 | +76·9 |
| Means ... | ... | ... | ... | 99 | 519 | 100·72 | +13·57 | ... |
| **Group 567.** A small faint spot. | | | | | | | | |
| Sept. 7·567 | G | 3 | 25 | 2 | 18 | 86·2 | +16·2 | −45·5 |
| 8·238 | I | 0 | 23 | 0 | 14 | 86·2 | +15·6 | −36·6 |
| Means ... | ... | ... | ... | 1 | 16 | 86·20 | +15·90 | ... |
| **Group 568.** Two regular spots, with occasionally some very small attendants. | | | | | | | | |
| Sept. 12·287 | I | 82 | 277 | 44 | 148 | 87·2 | − 3·0 | +17·8 |
| 13·583 | G | 101 | 342 | 63 | 216 | 88·4 | − 3·3 | +36·2 |
| 14·443 | G | 64 | 281 | 49 | 216 | 89·1 | − 3·7 | +48·2 |
| 15·559 | G | 52 | 159 | 60 | 188 | 90·4 | − 3·6 | +64·3 |
| 16·602 | G | 0 | 25 | 0 | 87 | 93·4 | − 3·6 | +81·0 |
| Means ... | ... | ... | ... | 43 | 171 | 89·70 | − 3·44 | ... |
| **Group 569.** A small spot. | | | | | | | | |
| Sept. 11·166 | I | 13 | 35 | 12 | 32 | 27·2 | +17·7 | −57·0 |
| 12·287 | I | 6 | 36 | 4 | 24 | 27·7 | +17·0 | −41·7 |
| 13·583 | G | 9 | 23 | 5 | 13 | 27·4 | +17·2 | −24·8 |
| 14·443 | G | 0 | 4 | 0 | 2 | 27·4 | +17·6 | −13·5 |
| Means ... | ... | ... | ... | 5 | 18 | 27·43 | +17·38 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 570.

Three or four small spots.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Sept. 11·166 | I | 10 | 48 | 10 | 48 | 23·9 | +19·8 | −60·3 |
| 12·287 | I | 16 | 49 | 12 | 36 | 22·5 | +18·9 | −46·9 |
| 13·583 | G | 17 | 51 | 10 | 30 | 21·5 | +19·6 | −30·7 |
| 14·443 | G | 20 | 54 | 11 | 29 | 21·9 | +19·7 | −19·0 |
| 15·559 | G | 8 | 39 | 4 | 20 | 22·1 | +19·6 | − 4·0 |
| Means ... | ... | ... | ... | 9 | 33 | 22·38 | +19·52 | ... |

### Group 571.

Two large regular spots on September 12. These have united by September 15, but have broken up again by September 18.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sept. 12·287 | I | 0 | 125 | 0 | 270 | 351·4 | +16·2 | −78·0 |
| 13·583 | G | 78 | 228 | 76 | 224 | 351·9 | +17·0 | −60·3 |
| 14·443 | G | 69 | 297 | 52 | 225 | 352·0 | +17·4 | −48·9 |
| 15·559 | G | 92 | 392 | 56 | 239 | 352·2 | +17·5 | −33·9 |
| 16·602 | G | 105 | 431 | 57 | 234 | 352·1 | +17·7 | −20·3 |
| 17·452 | G | 95 | 479 | 49 | 248 | 351·9 | +17·9 | − 9·3 |
| 18·238 | I | 90 | 298 | 46 | 152 | 351·8 | +17·5 | + 1·1 |
| 19·222 | I | 86 | 373 | 45 | 195 | 352·1 | +17·6 | +14·3 |
| 20·461 | G | 73 | 284 | 43 | 167 | 351·6 | +17·8 | +30·2 |
| 21·284 | I | 45 | 258 | 30 | 173 | 352·0 | +17·9 | +41·5 |
| 22·287 | I | 32 | 112 | 27 | 95 | 351·6 | +18·0 | +54·3 |
| 23·287 | I | 17 | 75 | 21 | 95 | 352·0 | +18·0 | +67·9 |
| 24·423 | G | 8 | 25 | 30 | 91 | 353·0 | +17·5 | +83·8 |
| Means ... | ... | ... | ... | 41 | 185 | 351·97 | +17·55 | ... |

### Group 572.

Two large regular spots on September 12. These have united by September 15 to form a very large composite spot, the *s.f.* portion of which afterwards seems to break up into a number of small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sept. 12·287 | I | 0 | 123 | 0 | 310 | 349·0 | +20·5 | −80·4 |
| 13·583 | G | 139 | 421 | 155 | 473 | 348·0 | +22·1 | −64·2 |
| 14·443 | G | 112 | 602 | 94 | 507 | 347·7 | +22·4 | −53·2 |
| 15·559 | G | 137 | 818 | 90 | 538 | 347·3 | +22·6 | −38·8 |
| 16·602 | G | 133 | 779 | 76 | 446 | 347·1 | +22·8 | −25·3 |
| 17·452 | G | 146 | 856 | 78 | 460 | 346·8 | +23·3 | −14·4 |
| 18·238 | I | 126 | 849 | 66 | 443 | 346·5 | +22·9 | − 4·2 |
| 19·222 | I | 101 | 765 | 53 | 403 | 346·5 | +23·0 | + 8·7 |
| 20·461 | G | 107 | 471 | 61 | 269 | 345·8 | +23·5 | +24·4 |
| 21·284 | I | 57 | 367 | 36 | 231 | 345·8 | +23·3 | +35·3 |
| 22·287 | I | 58 | 275 | 44 | 209 | 345·1 | +23·7 | +47·8 |
| 23·287 | I | 49 | 194 | 49 | 196 | 344·8 | +23·8 | +60·7 |
| 24·423 | G | 17 | 109 | 32 | 205 | 345·6 | +23·3 | +76·4 |
| Means ... | ... | ... | ... | 64 | 361 | 346·62 | +22·86 | ... |

### Group 573.

A small spot.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Sept. 13·583 | G | 0 | 27 | 0 | 37 | 344·2 | +17·8 | −68·0 |
| 14·443 | G | 14 | 30 | 13 | 27 | 343·8 | +18·0 | −57·1 |
| 15·559 | G | 15 | 28 | 10 | 19 | 344·1 | +17·6 | −42·0 |
| 16·602 | G | 7 | 23 | 4 | 13 | 344·3 | +17·1 | −28·1 |
| 17·452 | G | 0 | 9 | 0 | 5 | 344·1 | +17·2 | −17·1 |
| Means ... | ... | ... | .. | 5 | 20 | 344·10 | +17·54 | ... |

### Group 573A.

A spot seen only close to the West limb.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sept. 18·238 | I | 16 | 61 | 18 | 69 | 55·2 | +11·0 | +64·5 |
| 19·222 | I | 13 | 64 | 27 | 134 | 55·0 | +10·7 | +77·2 |
| Means ... | ... | ... | ... | 23 | 102 | 55·10 | +10·85 | ... |

### Group 574.

A regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sept. 19·222 | I | 23 | 64 | 38 | 107 | 264·1 | +15·1 | −73·7 |
| 20·461 | G | 21 | 100 | 19 | 92 | 264·0 | +15·0 | −57·4 |
| 21·284 | I | 17 | 56 | 12 | 40 | 264·3 | +14·6 | −46·2 |
| 22·287 | I | 17 | 58 | 10 | 35 | 263·8 | +14·1 | −33·5 |
| 23·287 | I | 17 | 56 | 9 | 30 | 263·3 | +14·5 | −20·8 |
| 24·423 | G | 16 | 47 | 8 | 24 | 263·7 | +14·6 | − 5·5 |
| 25·452 | G | 12 | 27 | 6 | 14 | 263·2 | +14·5 | + 7·6 |
| 26·488 | G | 19 | 30 | 10 | 16 | 263·1 | +14·4 | +21·2 |
| 27·557 | G | 0 | 8 | 0 | 5 | 262·5 | +14·5 | +34·7 |
| 28·461 | G | 0 | 7 | 0 | 5 | 262·7 | +14·6 | +46·9 |
| Means ... | ... | ... | ... | 11 | 37 | 263·47 | +14·59 | ... |

### Group 575.

A large regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sept. 19·222 | I | 16 | 91 | 39 | 217 | 257·8 | +21·4 | −80·0 |
| 20·461 | G | 47 | 243 | 51 | 264 | 257·9 | +21·5 | −63·5 |
| 21·284 | I | 58 | 276 | 48 | 228 | 257·8 | +21·0 | −52·7 |
| 22·287 | I | 54 | 304 | 36 | 201 | 257·7 | +20·7 | −39·6 |
| 23·287 | I | 61 | 416 | 35 | 239 | 257·7 | +20·8 | −26·4 |
| 24·423 | G | 96 | 462 | 50 | 242 | 258·1 | +20·9 | −11·1 |
| 25·452 | G | 68 | 500 | 35 | 259 | 257·6 | +20·7 | + 2·0 |
| 26·488 | G | 62 | 408 | 33 | 218 | 257·5 | +20·5 | +15·6 |
| 27·557 | G | 71 | 401 | 42 | 236 | 257·0 | +20·4 | +29·2 |
| 28·461 | G | 80 | 377 | 54 | 255 | 256·9 | +20·5 | +41·1 |
| 29·499 | G | 67 | 306 | 58 | 264 | 256·5 | +20·7 | +54·5 |
| 30·544 | G | 49 | 169 | 65 | 223 | 256·8 | +20·2 | +68·4 |
| Oct. 1·396 | G | 17 | 96 | 37 | 213 | 255·6 | +20·6 | +78·5 |
| Means ... | ... | ... | ... | 45 | 235 | 257·30 | +20·76 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 575A.** A small spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Sept. 22·287 | I | 0 | 49 | 0 | 26 | 307·8 | +22·6 | +10·5 |
| Means ... | ... | ... | ... | 0 | 26 | 307·8 | +22·6 | ... |
| **Group 576.** A large regular spot. | | | | | | | | |
| Sept. 25·452 | G | 18 | 87 | 72 | 348 | 171·1 | +15·1 | −84·5 |
| 26·488 | G | 44 | 212 | 65 | 312 | 170·7 | +14·8 | −71·2 |
| 27·557 | G | 53 | 288 | 49 | 264 | 170·2 | +14·6 | −57·6 |
| 28·461 | G | 85 | 405 | 61 | 289 | 170·0 | +14·8 | −45·8 |
| 29·499 | G | 104 | 486 | 62 | 289 | 170·0 | +15·1 | −32·0 |
| 30·544 | G | 126 | 427 | 67 | 227 | 170·1 | +14·6 | −18·3 |
| Oct. 1·396 | G | 71 | 437 | 36 | 223 | 169·9 | +14·5 | − 7·2 |
| 2·579 | G | 74 | 411 | 38 | 211 | 170·4 | +14·5 | + 8·9 |
| 3·420 | G | 52 | 294 | 28 | 158 | 170·2 | +14·5 | +19·8 |
| 4·462 | G | 40 | 234 | 24 | 141 | 170·2 | +14·4 | +33·6 |
| 5·286 | I | 29 | 122 | 20 | 85 | 170·2 | +14·1 | +44·4 |
| 6·291 | I | 29 | 122 | 27 | 113 | 170·5 | +14·3 | +57·9 |
| 7·399 | G | 18 | 50 | 29 | 79 | 170·5 | +14·3 | +72·6 |
| Means ... | ... | ... | ... | 44 | 211 | 170·31 | +14·59 | ... |
| **Group 577.** A small regular spot. | | | | | | | | |
| Sept. 26·488 | G | 0 | 5 | 0 | 9 | 174·2 | −25·2 | −67·7 |
| 27·557 | G | 0 | 16 | 0 | 16 | 174·3 | −25·3 | −53·5 |
| 28·461 | G | 10 | 18 | 8 | 15 | 173·0 | −25·0 | −42·8 |
| 29·499 | G | 10 | 37 | 7 | 25 | 172·5 | −25·1 | −29·5 |
| 30·544 | G | 5 | 13 | 3 | 8 | 172·3 | −25·0 | −16·1 |
| Oct. 1·396 | G | 5 | 14 | 3 | 8 | 172·2 | −25·0 | − 4·9 |
| Means ... | ... | ... | ... | 4 | 14 | 173·08 | −25·10 | ... |
| **Group 578.** A small spot. | | | | | | | | |
| Sept. 27·557 | G | 10 | 25 | 5 | 13 | 226·5 | − 8·7 | − 1·3 |
| 28·461 | G | 8 | 13 | 4 | 7 | 228·7 | − 8·1 | +12·9 |
| 29·499 | G | 2 | 15 | 1 | 9 | 230·1 | − 7·9 | +28·1 |
| Means ... | ... | ... | ... | 3 | 10 | 228·43 | − 8·23 | ... |
| **Group 579.** Two small spots on September 29, which on the succeeding days approach each other and coalesce. | | | | | | | | |
| Sept. 29·499 | G | 11 | 49 | 6 | 27 | 209·1 | −16·7 | + 7·1 |
| 30·544 | G | 5 | 18 | 3 | 11 | 211·7 | −16·2 | +23·3 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 579—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Oct. 1·396 | G | 0 | 3 | 0 | 2 | 212·7 | −16·0 | +35·6 |
| 2·579 | G | 0 | 0 | 0 | 0 | ... | ... | ... |
| 3·420 | G | 8 | 17 | 9 | 20 | 212·9 | −15·7 | +62·5 |
| Means ... | ... | ... | ... | 4 | 12 | 211·60 | −16·15 | ... |
| **Group 580.** Three or four small spots in a compact cluster. The group increases in size as it approaches the West limb. | | | | | | | | |
| Sept. 29·499 | G | 0 | 29 | 0 | 15 | 195·0 | +15·6 | − 7·0 |
| 30·544 | G | 18 | 27 | 9 | 14 | 192·5 | +15·7 | + 4·1 |
| Oct. 1·396 | G | 13 | 38 | 7 | 20 | 194·8 | +15·9 | +17·7 |
| 2·579 | G | 8 | 39 | 5 | 24 | 195·9 | +15·8 | +34·4 |
| 3·420 | G | 18 | 65 | 13 | 46 | 194·9 | +15·8 | +44·5 |
| 4·462 | G | 8 | 58 | 8 | 56 | 195·8 | +15·4 | +59·2 |
| 5·286 | I | 6 | 104 | 8 | 150 | 196·6 | +14·8 | +70·8 |
| Means ... | ... | ... | ... | 7 | 46 | 195·07 | +15·57 | ... |
| **Group 581.** A cluster of small spots, increasing rapidly in size during the period of observation. | | | | | | | | |
| Oct. 1·396 | G | 8 | 21 | 7 | 19 | 128·1 | −20·9 | −49·0 |
| 2·579 | G | 19 | 64 | 13 | 43 | 127·9 | −20·0 | −33·6 |
| 3·420 | G | 15 | 77 | 9 | 47 | 128·1 | −20·5 | −22·3 |
| 4·462 | G | 44 | 164 | 25 | 93 | 127·7 | −20·3 | − 9·0 |
| 5·286 | I | 64 | 360 | 36 | 203 | 128·7 | −20·3 | + 2·9 |
| 6·291 | I | 77 | 443 | 45 | 260 | 129·7 | −19·8 | +17·1 |
| 7·399 | G | 78 | 418 | 51 | 274 | 129·3 | −19·5 | +31·4 |
| 8·296 | I | 53 | 340 | 42 | 265 | 129·1 | −20·1 | +43·1 |
| 9·300 | I | 26 | 282 | 27 | 292 | 129·1 | −20·2 | +56·3 |
| 10·293 | I | 0 | 190 | 0 | 333 | 129·5 | −20·0 | +69·8 |
| Means ... | ... | ... | ... | 26 | 183 | 128·72 | −20·16 | ... |
| **Group 582.** A single spot. | | | | | | | | |
| Oct. 1·396 | G | 5 | 19 | 9 | 34 | 102·0 | +12·1 | −75·1 |
| 2·579 | G | 4 | 17 | 4 | 16 | 102·3 | +11·9 | −59·2 |
| 3·420 | G | 11 | 15 | 8 | 11 | 102·5 | +12·1 | −47·9 |
| 4·462 | G | 13 | 22 | 8 | 13 | 102·7 | +11·9 | −34·0 |
| 5·286 | I | 7 | 33 | 4 | 18 | 102·9 | +12·1 | −22·9 |
| Means ... | ... | ... | ... | 7 | 18 | 102·48 | +12·02 | ... |
| **Group 583.** A cluster of small spots. | | | | | | | | |
| Oct. 2·579 | G | 16 | 60 | 15 | 57 | 220·2 | +19·4 | +58·7 |
| 3·420 | G | 8 | 40 | 11 | 53 | 218·9 | +19·6 | +68·5 |
| 4·462 | G | 17 | 59 | 40 | 141 | 216·3 | +20·8 | +79·6 |
| Means ... | ... | ... | ... | 22 | 84 | 218·47 | +19·93 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 584.

Two very small spots close together.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Oct. 3·420 | G | 0 | 17 | 0 | 14 | 96·4 | +14·2 | −54·0 |
| 4·462 | G | 0 | 8 | 0 | 5 | 97·0 | +14·2 | −39·7 |
| Means ... | ... | ... | ... | 0 | 10 | 96·70 | +14·20 | ... |

### Group 585.

A single spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 6·291 | I | 6 | 64 | 5 | 54 | 165·8 | +19·0 | +53·2 |
| 7·399 | G | 0 | 36 | 0 | 50 | 168·1 | +20·4 | +70·2 |
| Means ... | ... | ... | ... | 3 | 52 | 166·95 | +19·70 | ... |

### Group 586.

A large regular spot, usually with a few companions.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 6·291 | I | 45 | 155 | 78 | 267 | 38·2 | +14·6 | −74·4 |
| 7·399 | G | 101 | 551 | 99 | 547 | 37·4 | +14·0 | −60·5 |
| 8·296 | I | 83 | 535 | 63 | 401 | 37·7 | +14·0 | −48·3 |
| 9·300 | I | 69 | 537 | 42 | 326 | 38·3 | +13·9 | −34·5 |
| 10·293 | I | 80 | 596 | 43 | 323 | 38·2 | +14·3 | −21·5 |
| 11·284 | I | 80 | 483 | 41 | 248 | 38·7 | +14·0 | − 7·9 |
| 12·296 | I | 100 | 562 | 51 | 287 | 38·8 | +13·8 | + 5·5 |
| 13·280 | I | 64 | 484 | 34 | 259 | 39·2 | +13·8 | +18·9 |
| 14·398 | G | 92 | 403 | 56 | 244 | 39·5 | +13·7 | +33·9 |
| 15·398 | G | 75 | 363 | 55 | 265 | 39·1 | +14·5 | +46·7 |
| 16·287 | I | 45 | 191 | 43 | 184 | 39·9 | +14·0 | +59·2 |
| 17·423 | G | 29 | 169 | 53 | 308 | 40·4 | +13·3 | +74·7 |
| Means ... | ... | ... | ... | 55 | 305 | 38·78 | +13·99 | ... |

### Group 586A.

A faint group *s.f.* Group 581.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 9·300 | I | 0 | 92 | 0 | 67 | 106·0 | −27·4 | +33·2 |
| Means ... | ... | ... | ... | 0 | 67 | 106·0 | −27·4 | ... |

### Group 587.

A number of spots in a straight stream.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 10·293 | I | 33 | 201 | 19 | 118 | 33·5 | −11·8 | −26·2 |
| 11·284 | I | 63 | 453 | 34 | 245 | 33·8 | −11·7 | −12·8 |
| 12·296 | I | 82 | 460 | 43 | 242 | 34·6 | −11·9 | + 1·3 |
| 13·280 | I | 44 | 273 | 24 | 148 | 33·7 | −11·6 | +13·4 |
| 14·398 | G | 23 | 46 | 14 | 28 | 34·1 | −11·7 | +28·7 |
| Means ... | ... | ... | ... | 27 | 156 | 33·94 | −11·74 | ... |

### Group 588.

A group steadily diminishing in size.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ″ |
| Oct. 10·293 | I | 0 | 67 | 0 | 142 | 341·9 | +24·3 | −77·8 |
| 11·284 | I | 3 | 89 | 4 | 109 | 340·4 | +24·3 | −66·2 |
| 12·296 | I | 16 | 74 | 14 | 63 | 340·1 | +24·5 | −53·2 |
| 13·280 | I | 0 | 35 | 0 | 24 | 339·1 | +25·0 | −41·2 |
| 14·398 | G | 12 | 32 | 7 | 19 | 338·5 | +24·6 | −27·1 |
| Means ... | ... | ... | ... | 5 | 71 | 340·00 | +24·54 | ... |

### Group 589.

A large spot, frequently with some close companions which eventually coalesce with it.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 14·398 | G | 16 | 166 | 30 | 314 | 289·8 | +16·1 | −75·8 |
| 15·398 | G | 45 | 276 | 47 | 288 | 290·4 | +15·9 | −62·0 |
| 16·287 | I | 48 | 241 | 38 | 193 | 289·5 | +15·7 | −51·2 |
| 17·423 | G | 105 | 602 | 66 | 381 | 288·9 | +16·0 | −36·8 |
| 18·396 | G | 140 | 600 | 78 | 335 | 288·9 | +16·9 | −24·0 |
| 19·522 | G | 178 | 855 | 92 | 443 | 288·9 | +15·9 | − 9·1 |
| 20·478 | G | 183 | 1061 | 94 | 544 | 289·0 | +16·1 | + 3·6 |
| 21·275 | I | 205 | 909 | 107 | 476 | 289·3 | +16·0 | +14·5 |
| 22·284 | I | 80 | 665 | 46 | 382 | 288·9 | +16·2 | +27·3 |
| 23·288 | I | 95 | 506 | 63 | 337 | 289·2 | +15·9 | +40·9 |
| 24·280 | I | 63 | 425 | 53 | 357 | 288·6 | +16·1 | +53·3 |
| 25·430 | G | 80 | 300 | 104 | 390 | 287·8 | +15·9 | +67·7 |
| 26·406 | G | 0 | 64 | 0 | 207 | 289·5 | +14·9 | +82·3 |
| Means ... | ... | ... | ... | 63 | 357 | 289·13 | +15·97 | ... |

### Group 590.

A large regular spot, frequently with some small companions.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 16·287 | I | 0 | 80 | 0 | 196 | 261·4 | +12·9 | −79·3 |
| 17·423 | G | 30 | 205 | 32 | 220 | 262·7 | +13·5 | −63·0 |
| 18·396 | G | 59 | 288 | 46 | 225 | 262·8 | +14·4 | −50·1 |
| 19·522 | G | 55 | 289 | 34 | 177 | 262·7 | +13·7 | −35·3 |
| 20·478 | G | 117 | 479 | 64 | 262 | 262·8 | +13·6 | −22·6 |
| 21·275 | I | 77 | 461 | 40 | 239 | 262·9 | +13·6 | −11·9 |
| 22·284 | I | 63 | 358 | 32 | 182 | 262·6 | +14·0 | + 1·0 |
| 23·288 | I | 51 | 266 | 27 | 139 | 262·4 | +14·4 | +14·1 |
| 24·280 | I | 32 | 197 | 18 | 112 | 262·1 | +14·7 | +26·8 |
| 25·430 | G | 66 | 213 | 44 | 142 | 261·0 | +15·1 | +40·9 |
| 26·406 | G | 30 | 178 | 26 | 152 | 261·3 | +14·7 | +54·1 |
| 27·285 | I | 0 | 89 | 0 | 105 | 261·2 | +14·9 | +65·6 |
| 28·275 | I | 0 | 31 | 0 | 72 | 260·7 | +15·0 | +78·2 |
| Means ... | ... | ... | ... | 28 | 171 | 262·05 | +14·19 | ... |

### Group 591.

A large regular spot, frequently with some small companions.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. 16·287 | I | 0 | 63 | 0 | 143 | 262·1 | +20·9 | −78·6 |
| 17·423 | G | 27 | 100 | 30 | 110 | 262·5 | +21·0 | −63·2 |
| 18·396 | G | 34 | 158 | 27 | 126 | 262·3 | +20·8 | −50·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 591—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Oct. 19·522 | G | 41 | 232 | 26 | 147 | 262·2 | +20·8 | −35·8 |
| 20·478 | G | 51 | 227 | 29 | 129 | 262·0 | +21·1 | −23·4 |
| 21·275 | I | 49 | 285 | 26 | 153 | 261·7 | +21·3 | −13·1 |
| 22·284 | I | 33 | 207 | 17 | 108 | 262·0 | +21·1 | + 0·4 |
| 23·288 | I | 47 | 173 | 25 | 93 | 262·0 | +21·1 | +13·7 |
| 24·280 | I | 41 | 151 | 24 | 88 | 262·1 | +21·2 | +26·8 |
| 25·430 | G | 37 | 147 | 26 | 102 | 261·9 | +21·2 | +41·8 |
| 26·406 | G | 8 | 38 | 7 | 34 | 262·9 | +20·7 | +55·7 |
| Means ... | ... | ... | ... | 22 | 112 | 262·15 | +21·02 | ... |
| **Group 592.** A large regular spot followed by a very small companion. The group develops into a short stream. | | | | | | | | |
| Oct. 17·423 | G | 42 | 146 | 57 | 198 | 260·7 | −19·0 | −65·0 |
| 18·396 | G | 45 | 211 | 41 | 190 | 261·6 | −19·4 | −51·3 |
| 19·522 | G | 58 | 536 | 41 | 378 | 260·2 | −19·5 | −37·8 |
| 20·478 | G | 138 | 714 | 84 | 436 | 260·0 | −19·4 | −25·4 |
| 21·275 | I | 96 | 501 | 55 | 287 | 259·8 | −19·2 | −15·0 |
| 22·284 | I | 130 | 587 | 72 | 325 | 259·0 | −19·5 | − 2·6 |
| 23·288 | I | 103 | 391 | 58 | 220 | 259·0 | −19·5 | +10·7 |
| 24·280 | I | 79 | 420 | 47 | 251 | 258·6 | −19·2 | +23·3 |
| 25·430 | G | 89 | 306 | 63 | 218 | 258·8 | −19·8 | +38·7 |
| 26·406 | G | 61 | 220 | 55 | 200 | 258·9 | −19·7 | +51·7 |
| 27·285 | I | 19 | 132 | 25 | 172 | 259·6 | −20·1 | +64·0 |
| 28·275 | I | 6 | 38 | 16 | 98 | 258·8 | −19·8 | +76·3 |
| Means ... | ... | .. | ... | 51 | 248 | 259·58 | −19·51 | ... |
| **Group 593.** A few small unstable spots in a scattered stream. | | | | | | | | |
| Oct. 20·478 | G | 22 | 61 | 32 | 90 | 214·5 | +20·3 | −70·9 |
| 21·275 | I | 0 | 62 | 0 | 65 | 213·5 | +20·5 | −61·3 |
| 22·284 | I | 0 | 60 | 0 | 46 | 213·6 | +20·5 | −48·0 |
| 23·288 | I | 0 | 30 | 0 | 20 | 210·9 | +20·6 | −37·4 |
| 24·280 | I | 0 | 56 | 0 | 32 | 212·3 | +20·8 | −23·0 |
| 25·430 | G | 9 | 19 | 5 | 10 | 209·6 | +21·6 | −10·5 |
| 26·406 | G | 0 | 11 | 0 | 6 | 209·7 | +21·5 | + 2·5 |
| Means ... | ... | ... | ... | 5 | 38 | 212·01 | +20·83 | ... |
| **Group 594.** A large spot preceded by a few spots in a short stream. | | | | | | | | |
| Oct. 22·284 | I | 19 | 235 | 10 | 124 | 250·8 | +19·9 | −10·8 |
| 23·288 | I | 114 | 527 | 59 | 274 | 250·0 | +20·2 | + 1·7 |
| 24·280 | I | 125 | 607 | 67 | 326 | 250·5 | +20·3 | +15·2 |
| 25·430 | G | 116 | 595 | 69 | 352 | 248·1 | +20·5 | +28·0 |
| 26·406 | G | 53 | 364 | 36 | 249 | 248·6 | +20·3 | +41·4 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 594—*continued.*** | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Oct. 27·285 | I | 4 | 156 | 3 | 131 | 247·9 | +20·7 | +52·3 |
| 28·275 | I | 0 | 31 | 0 | 36 | 246·5 | +21·2 | +64·0 |
| 29·486 | G | 0 | 30 | 0 | 102 | 249·3 | +21·9 | +82·7 |
| Means ... | ... | ... | ... | 31 | 199 | 248·96 | +20·63 | ... |
| **Group 595.** A small spot. | | | | | | | | |
| Oct. 26·406 | G | 4 | 17 | 9 | 37 | 133·4 | −18·8 | −73·8 |
| 27·285 | I | 0 | 32 | 0 | 38 | 133·7 | −19·3 | −61·9 |
| 28·275 | I | 15 | 38 | 13 | 32 | 133·4 | −19·4 | −49·1 |
| 29·486 | G | 9 | 38 | 6 | 25 | 132·9 | −19·5 | −33·7 |
| Means ... | ... | ... | ... | 7 | 33 | 133·35 | −19·25 | ... |
| **Group 595A.** A compact cluster of small spots. | | | | | | | | |
| Oct. 27·285 | I | 0 | 109 | 0 | 56 | 141·5 | +15·6 | −54·1 |
| Means ... | ... | ... | ... | 0 | 56 | 141·5 | +15·6 | ... |
| **Group 596.** Three small spots. | | | | | | | | |
| Oct. 30·568 | G | 0 | 34 | 0 | 23 | 190·0 | −13·7 | +37·7 |
| Means ... | ... | ... | ... | 0 | 23 | 190·0 | −13·7 | ... |
| **Group 596A.** A pair of spots. | | | | | | | | |
| Nov. 1·153 | I | 0 | 57 | 0 | 62 | 194·2 | +15·3 | +62·8 |
| Means ... | ... | ... | ... | 0 | 62 | 194·2 | +15·3 | ... |
| **Group 597.** A small spot. | | | | | | | | |
| Nov. 5·498 | G | 2 | 8 | 2 | 7 | 127·3 | +10·7 | +53·1 |
| Means ... | ... | ... | ... | 2 | 7 | 127·3 | +10·7 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 598.** A regular spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Nov. 2·260 | I | 0 | 50 | 0 | 99 | 40·9 | +14·2 | −76·1 |
| 3·289 | I | 28 | 111 | 30 | 119 | 40·9 | +14·1 | −62·3 |
| 4·264 | I | 28 | 151 | 22 | 117 | 40·9 | +14·0 | −49·5 |
| 5·498 | G | 48 | 189 | 29 | 115 | 40·6 | +14·1 | −33·6 |
| 6·289 | I | 43 | 188 | 24 | 104 | 41·4 | +14·3 | −22·3 |
| 7·293 | I | 37 | 187 | 19 | 97 | 41·6 | +14·4 | − 8·8 |
| 8·264 | I | 35 | 189 | 18 | 97 | 41·9 | +14·6 | + 4·2 |
| 9·475 | G | 44 | 205 | 24 | 112 | 42·0 | +14·8 | +20·3 |
| 10·156 | I | 34 | 188 | 20 | 110 | 41·6 | +14·5 | +28·9 |
| 11·284 | I | 31 | 102 | 22 | 72 | 41·5 | +14·5 | +43·7 |
| 12·440 | G | 24 | 99 | 24 | 97 | 41·8 | +13·9 | +59·2 |
| 13·547 | G | 11 | 42 | 20 | 77 | 42·3 | +13·9 | +74·3 |
| Means ... | ... | ... | ... | 21 | 101 | 41·45 | +14·28 | ... |
| **Group 599.** A small spot on November 9. New spots have broken out by November 10, and the group becomes a straight stream. | | | | | | | | |
| Nov. 9·475 | G | 13 | 27 | 7 | 14 | 13·2 | +19·7 | − 8·5 |
| 10·156 | I | 49 | 195 | 26 | 102 | 12·6 | +18·9 | − 0·1 |
| 11·284 | I | 63 | 381 | 34 | 206 | 12·7 | +19·1 | +14·9 |
| 12·440 | G | 58 | 317 | 35 | 192 | 13·7 | +19·0 | +31·1 |
| 13·547 | G | 36 | 266 | 26 | 198 | 14·3 | +18·8 | +46·3 |
| 14·286 | I | 0 | 110 | 0 | 99 | 13·9 | +18·8 | +55·7 |
| Means ... | ... | ... | ... | 21 | 135 | 13·40 | +19·05 | ... |
| **Group 600.** Several small spots in a straight stream. The group slowly diminishes in size. | | | | | | | | |
| Nov. 7·293 | I | 0 | 98 | 0 | 97 | 351·1 | +16·2 | −59·3 |
| 8·264 | I | 7 | 124 | 5 | 92 | 351·4 | +15·4 | −46·3 |
| 9·475 | G | 36 | 133 | 21 | 79 | 350·9 | +15·5 | −30·8 |
| 10·156 | I | 12 | 93 | 7 | 51 | 350·6 | +15·2 | −22·1 |
| 11·284 | I | 0 | 120 | 0 | 62 | 351·3 | +17·4 | − 6·5 |
| 12·440 | G | 8 | 60 | 4 | 31 | 349·7 | +16·4 | + 7·1 |
| Means ... | ... | ... | ... | 6 | 69 | 350·83 | +16·02 | ... |
| **Group 601.** Two spots, of which the following rapidly diminishes in size. The group is not seen on November 15. | | | | | | | | |
| Nov. 7·293 | I | 0 | 116 | 0 | 205 | 338·2 | −12·1 | −72·2 |
| 8·264 | I | 0 | 167 | 0 | 179 | 337·3 | −12·5 | −60·4 |
| 9·475 | G | 52 | 231 | 37 | 164 | 339·1 | −12·1 | −42·6 |
| 10·156 | I | 43 | 230 | 26 | 144 | 339·4 | −12·4 | −33·3 |
| 11·284 | I | 45 | 202 | 24 | 110 | 341·0 | −11·6 | −16·8 |
| 12·440 | G | 37 | 138 | 19 | 72 | 342·6 | −11·3 | 0·0 |
| 13·547 | G | 35 | 128 | 19 | 69 | 343·8 | −11·0 | +15·8 |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 601**—*continued.* | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Nov. 14·286 | I | 28 | 63 | 16 | 36 | 343·7 | −11·2 | +25·5 |
| 15·295 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 16·135 | I | 0 | 8 | 0 | 6 | (343·6 | −12·1 | +49·7) |
| 17·467 | G | 0 | 7 | 0 | 9 | 343·6 | −12·1 | +67·2 |
| Means ... | ... | ... | ... | 13 | 90 | 341·23 | −11·84 | ... |
| **Group 601A.** A double spot with a small companion. | | | | | | | | |
| Nov. 7·293 | I | 0 | 69 | 0 | 41 | 25·7 | +24·5 | −24·7 |
| Means ... | ... | ... | ... | 0 | 41 | 25·7 | +24·5 | ... |
| **Group 602.** Two spots. | | | | | | | | |
| Nov. 12·440 | G | 20 | 75 | 13 | 48 | 305·6 | +14·7 | −37·0 |
| 13·547 | G | 17 | 66 | 9 | 37 | 305·5 | +14·9 | −22·5 |
| Means ... | ... | ... | ... | 11 | 43 | 305·55 | +14·80 | ... |
| **Group 603.** A large regular spot with several attendants. The attendants are few and small at first, and are south of the large spot. They rapidly increase in size, and develop to a considerable distance in front of the chief spot. Finally, all the attendant spots except the leader, which is the largest of them, disappear. | | | | | | | | |
| Nov. 11·284 | I | 71 | 248 | 109 | 381 | 286·7 | +16·5 | −71·1 |
| 12·440 | G | 138 | 502 | 124 | 450 | 287·3 | +16·1 | −55·3 |
| 13·547 | G | 203 | 840 | 135 | 560 | 288·3 | +15·7 | −39·7 |
| 14·286 | I | 104 | 849 | 62 | 502 | 288·6 | +15·4 | −29·6 |
| 15·295 | I | 109 | 944 | 59 | 506 | 289·0 | +15·4 | −15·9 |
| 16·135 | I | 199 | 917 | 103 | 475 | 289·3 | +15·7 | − 4·6 |
| 17·467 | G | 213 | 894 | 113 | 476 | 290·0 | +16·0 | +13·6 |
| 18·472 | G | 158 | 747 | 91 | 432 | 289·5 | +16·2 | +26·4 |
| 19·501 | G | 126 | 571 | 87 | 390 | 290·5 | +16·1 | +40·9 |
| 20·536 | G | 125 | 527 | 116 | 464 | 290·1 | +16·0 | +54·2 |
| 21·450 | G | 58 | 283 | 73 | 357 | 289·9 | +15·7 | +66·0 |
| 22·293 | I | 28 | 102 | 51 | 186 | 286·5 | +17·0 | +73·7 |
| Means ... | ... | ... | ... | 94 | 432 | 288·81 | +15·98 | ... |
| **Group 604.** Two large irregular spots. | | | | | | | | |
| Nov. 13·547 | G | 30 | 208 | 38 | 257 | 28·9 | −28·6 | +60·9 |
| 14·286 | I | 24 | 99 | 45 | 182 | 28·7 | −27·9 | +70·5 |
| Means ... | ... | ... | ... | 42 | 220 | 28·80 | −28·25 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 605.

A regular spot, with two or three very small attendants.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Nov. 13·547 | G | 9 | 27 | 19 | 57 | 251·6 | +23·7 | −76·4 |
| 14·286 | I | 0 | 44 | 0 | 58 | 251·1 | +23·5 | −67·1 |
| 15·295 | I | 0 | 59 | 0 | 53 | 251·1 | +22·9 | −53·8 |
| 16·135 | I | 15 | 63 | 11 | 45 | 251·4 | +22·8 | −42·5 |
| 17·467 | G | 24 | 71 | 14 | 42 | 251·2 | +22·9 | −25·2 |
| 18·472 | G | 9 | 38 | 5 | 21 | 250·8 | +23·1 | −12·3 |
| Means ... | ... | ... | ... | 8 | 46 | 251·20 | +23·15 | ... |

### Group 606.

A number of small spots which soon arrange themselves in a straight stream, the leader of which is the largest member of the group.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 15·295 | I | 0 | 31 | 0 | 91 | 224·6 | +16·3 | −80·3 |
| 16·135 | I | 32 | 136 | 33 | 150 | 231·2 | +17·6 | −62·7 |
| 17·467 | G | 120 | 588 | 86 | 418 | 233·2 | +17·8 | −43·2 |
| 18·472 | G | 117 | 522 | 70 | 312 | 233·4 | +17·9 | −29·7 |
| 19·501 | G | 104 | 477 | 56 | 257 | 235·1 | +17·9 | −14·5 |
| 20·536 | G | 77 | 309 | 40 | 161 | 236·4 | +18·0 | + 0·5 |
| 21·450 | G | 45 | 293 | 24 | 156 | 236·0 | +17·6 | +12·1 |
| 22·293 | I | 44 | 189 | 25 | 106 | 233·7 | +17·7 | +20·9 |
| 23·504 | G | 39 | 283 | 26 | 183 | 233·7 | +17·1 | +36·9 |
| 24·284 | I | 50 | 205 | 38 | 156 | 233·7 | +16·9 | +47·2 |
| 25·298 | I | 28 | 367 | 28 | 384 | 233·5 | +17·0 | +60·3 |
| 26·438 | G | 52 | 318 | 116 | 692 | 234·5 | +16·8 | +76·4 |
| Means ... | ... | ... | ... | 45 | 256 | 233·25 | +17·38 | ... |

### Group 607.

A large number of spots which soon arrange themselves to form a very fine straight stream. The first and last spots are the largest, the latter being very large on November 21, 22, and 23.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 15·295 | I | 0 | 62 | 0 | 130 | 228·6 | +11·2 | −76·3 |
| 16·135 | I | 55 | 281 | 76 | 435 | 222·7 | +10·8 | −71·2 |
| 17·467 | G | 166 | 884 | 147 | 778 | 221·4 | +11·2 | −55·0 |
| 18·472 | G | 306 | 1185 | 210 | 811 | 221·0 | +11·5 | −42·1 |
| 19·501 | G | 257 | 1152 | 150 | 669 | 221·0 | +11·5 | −28·6 |
| 20·536 | G | 354 | 1417 | 187 | 749 | 221·2 | +11·3 | −14·7 |
| 21·450 | G | 420 | 2207 | 214 | 1125 | 220·5 | +10·9 | − 3·4 |
| 22·293 | I | 313 | 1991 | 161 | 1026 | 220·8 | +10·8 | + 8·0 |
| 23·504 | G | 366 | 2203 | 203 | 1227 | 220·8 | +11·2 | +24·0 |
| 24·284 | I | 230 | 1531 | 141 | 932 | 220·0 | +10·6 | +33·5 |
| 25·298 | I | 222 | 969 | 162 | 719 | 220·2 | +10·6 | +47·0 |
| 26·438 | G | 188 | 610 | 197 | 643 | 219·7 | +10·1 | +61·6 |
| 27·550 | G | 66 | 340 | 134 | 693 | 219·3 | + 9·8 | +75·8 |
| Means ... | ... | ... | ... | 152 | 764 | 221·32 | +10·88 | ... |

### Group 608.

A small spot, seen only on the Greenwich photograph of November 16, not on the Indian.

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| 1881. d | | | | | | ° | ° | ° |
| Nov. 16·394 | G | 0 | 8 | 0 | 6 | 241·1 | −20·3 | −49·4 |
| Means ... | ... | ... | ... | 0 | 6 | 241·1 | −20·3 | ... |

### Group 609.

A small spot, which is joined by other spots to form a straight stream. The several spots ultimately coalesce to form a single spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 20·536 | G | 9 | 26 | 8 | 24 | 180·5 | −14·1 | −55·4 |
| 21·450 | G | 0 | 21 | 0 | 15 | 179·9 | −15·3 | −44·0 |
| 22·293 | I | 6 | 29 | 4 | 18 | 179·9 | −15·7 | −32·9 |
| 23·504 | G | 31 | 175 | 17 | 95 | 181·7 | −15·8 | −15·1 |
| 24·284 | I | 19 | 159 | 10 | 84 | 181·9 | −15·7 | − 4·6 |
| 25·298 | I | 0 | 102 | 0 | 54 | 180·0 | −16·3 | + 6·8 |
| 26·438 | G | 9 | 69 | 5 | 39 | 179·7 | −16·5 | +21·6 |
| 27·550 | G | 3 | 21 | 2 | 14 | 183·9 | −14·1 | +40·4 |
| 28·454 | G | 6 | 19 | 5 | 16 | 183·4 | −13·9 | +51·8 |
| Means ... | ... | ... | ... | 6 | 40 | 181·21 | −15·27 | ... |

### Group 610.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 21·450 | G | 0 | 6 | 0 | 3 | 209·2 | +16·1 | −14·7 |
| Means ... | ... | ... | ... | 0 | 3 | 209·2 | +16·1 | ... |

### Group 611.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 21·450 | G | 0 | 22 | 0 | 13 | 198·8 | +22·0 | −25·1 |
| Means ... | ... | ... | ... | 0 | 13 | 198·8 | +22·0 | ... |

### Group 612.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. 23·504 | G | 0 | 12 | 0 | 6 | 195·9 | +13·2 | − 0·9 |
| Means ... | ... | ... | ... | 0 | 6 | 195·9 | +13·2 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 613.** Two or three small spots close together. The group is not seen from November 30 to December 2. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Nov. 27·550 | G | 4 | 11 | 8 | 20 | 70·3 | −19·0 | −73·2 |
| 28·454 | G | 15 | 44 | 16 | 48 | 70·9 | −19·1 | −60·7 |
| 29·495 | G | 22 | 90 | 17 | 71 | 70·9 | −18·8 | −47·0 |
| 30·108 | Me | 0 | 0 | 0 | 0 | ... | .. | ... |
| Dec. 1·283 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 2·404 | G | 0 | 0 | 0 | 0 | ... | ... | .. |
| 3·476 | G | 0 | 13 | 0 | 7 | 70·8 | −19·3 | + 5·4 |
| Means ... | ... | ... | ... | 6 | 21 | 70·73 | −19·05 | ... |
| **Group 614.** A very large spot, with occasionally several small companions. | | | | | | | | |
| Nov. 27·550 | G | 4 | 84 | 16 | 322 | 61·7 | −19·6 | −81·8 |
| 28·454 | G | 86 | 361 | 143 | 601 | 60·6 | −19·9 | −71·0 |
| 29·495 | G | 95 | 748 | 93 | 730 | 61·1 | −19·9 | −56·8 |
| 30·108 | Me | 187 | 531 | 151 | 428 | 61·0 | −19·3 | −48·7 |
| Dec. 1·283 | I | 134 | 766 | 86 | 491 | 60·5 | −19·7 | −33·8 |
| 2·404 | G | 300 | 915 | 170 | 519 | 60·3 | −19·5 | −19·3 |
| 3·476 | G | 193 | 700 | 103 | 375 | 59·2 | −19·6 | − 6·2 |
| 4·166 | I | 180 | 624 | 96 | 332 | 59·2 | −19·4 | + 2·9 |
| 5·280 | I | 186 | 482 | 104 | 269 | 59·0 | −19·3 | +17·4 |
| 6·430 | G | 106 | 307 | 67 | 194 | 59·6 | −19·4 | +33·1 |
| 7·302 | I | 94 | 329 | 69 | 243 | 59·5 | −18·9 | +44·5 |
| 8·280 | I | 62 | 282 | 60 | 271 | 59·1 | −18·7 | +57·0 |
| 9·291 | I | 28 | 87 | 44 | 138 | 59·4 | −18·9 | +70·6 |
| Means ... | ... | ... | ... | 92 | 378 | 60·15 | −19·39 | ... |
| **Group 615.** A small spot. | | | | | | | | |
| Nov. 28·454 | G | 0 | 8 | 0 | 10 | 198·7 | −13·5 | +67·1 |
| Means ... | ... | ... | ... | 0 | 10 | 198·7 | −13·5 | ... |
| **Group 616.** Two small and compact clusters of very small spots. | | | | | | | | |
| Nov. 28·454 | G | 11 | 44 | 8 | 34 | 86·8 | +24·6 | −44·8 |
| 29·495 | G | 19 | 40 | 12 | 25 | 88·7 | +25·0 | −29·2 |
| Means ... | ... | ... | ... | 10 | 30 | 87·75 | +24·80 | ... |
| **Group 617.** Two small spots. | | | | | | | | |
| Nov. 29·495 | G | 8 | 20 | 5 | 12 | 87·0 | +10·8 | −30·9 |
| Means ... | ... | ... | ... | 5 | 12 | 87·0 | +10·8 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 618.** Two spots. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Dec. 2·404 | G | 84 | 163 | 70 | 135 | 129·6 | −18·8 | +50·0 |
| 3·476 | G | 79 | 415 | 98 | 512 | 129·8 | −19·7 | +64·4 |
| 4·166 | I | 3 | 243 | 5 | 477 | 131·0 | −19·5 | +74·7 |
| Means ... | ... | ... | ... | 58 | 375 | 130·13 | −19·33 | ... |
| **Group 619.** A fine stream of spots, of which the leader is by far the largest. | | | | | | | | |
| Dec. 1·283 | I | 0 | 142 | 0 | 94 | 23·0 | +24·1 | −71·3 |
| 2·404 | G | 151 | 684 | 149 | 679 | 23·1 | +25·3 | −56·5 |
| 3·476 | G | 157 | 1091 | 114 | 796 | 24·6 | +24·8 | −40·8 |
| 4·166 | I | 156 | 1060 | 100 | 681 | 25·2 | +25·0 | −31·1 |
| 5·280 | I | 171 | 1305 | 98 | 756 | 25·0 | +24·9 | −16·6 |
| 6·430 | G | 272 | 1404 | 151 | 782 | 26·0 | +25·2 | − 0·5 |
| 7·302 | I | 238 | 1186 | 135 | 674 | 26·4 | +25·1 | +11·4 |
| 8·280 | I | 172 | 972 | 104 | 589 | 26·4 | +25·0 | +24·3 |
| 9·291 | I | 88 | 524 | 63 | 368 | 26·5 | +24·9 | +37·7 |
| 10·331 | I | 44 | 259 | 41 | 227 | 25·4 | +24·8 | +50·4 |
| 11·228 | I | 31 | 109 | 41 | 143 | 28·2 | +23·7 | +65·0 |
| 12·280 | I | 12 | 40 | 35 | 114 | 28·1 | +23·7 | +78·7 |
| Means ... | ... | ... | ... | 86 | 492 | 25·66 | +24·71 | ... |
| **Group 620.** A small spot on December 4. A second has formed by December 5. The first has disappeared by December 6. | | | | | | | | |
| Dec. 4·166 | I | 0 | 62 | 0 | 35 | 75·1 | +21·2 | +18·8 |
| 5·280 | I | 0 | 78 | 0 | 49 | 74·1 | +20·9 | +32·5 |
| 6·430 | G | 7 | 13 | 5 | 10 | 72·4 | +20·9 | +45·9 |
| Means ... | ... | ... | ... | 2 | 31 | 73·87 | +21·00 | ... |
| **Group 621.** A single spot. | | | | | | | | |
| Dec. 9·291 | I | 0 | 28 | 0 | 66 | 272·7 | +27·5 | −76·1 |
| 10·331 | I | 6 | 104 | 8 | 128 | 272·2 | +27·3 | −62·8 |
| 11·228 | I | 15 | 78 | 14 | 71 | 271·6 | +27·0 | −51·6 |
| 12·280 | I | 15 | 71 | 11 | 51 | 271·4 | +26·4 | −38·0 |
| 13·281 | I | 16 | 135 | 10 | 84 | 270·8 | +26·4 | −25·4 |
| 14·454 | G | 23 | 85 | 13 | 49 | 269·9 | +26·2 | −10·8 |
| 15·282 | I | 4 | 57 | 2 | 32 | 270·2 | +26·1 | + 0·4 |
| 16·349 | I | 0 | 62 | 0 | 36 | 269·2 | +26·2 | +13·4 |
| Means ... | ... | ... | ... | 7 | 65 | 271·00 | +26·64 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 622.** A single spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Dec. 10·331 | I | 15 | 74 | 8 | 40 | 349·8 | +15·8 | +14·8 |
| 11·228 | I | 15 | 103 | 9 | 59 | 348·6 | +13·5 | +25·4 |
| 12·280 | I | 0 | 60 | 0 | 41 | 349·9 | +13·3 | +40·5 |
| 13·281 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 14·454 | G | 0 | 15 | 0 | 24 | 351·3 | +13·8 | +70·6 |
| Means ... | ... | ... | ... | 3 | 33 | 349·90 | +14·10 | ... |
| **Group 623.** Four spots on December 14. Only one remains on December 16. | | | | | | | | |
| Dec. 14·454 | G | 32 | 126 | 20 | 79 | 315·0 | +14·3 | +34·3 |
| 15·282 | I | 12 | 172 | 9 | 129 | 316·3 | +14·1 | +46·5 |
| 16·349 | I | 0 | 125 | 0 | 147 | 319·4 | +14·8 | +63·6 |
| 17·458 | G | 0 | 31 | 0 | 80 | 319·2 | +14·6 | +78·0 |
| Means ... | ... | ... | ... | 7 | 109 | 317·48 | +14·45 | ... |
| **Group 624.** A very small spot. | | | | | | | | |
| Dec. 14·454 | G | 0 | 8 | 0 | 4 | 290·3 | −14·6 | + 9·6 |
| Means ... | ... | ... | ... | 0 | 4 | 290·3 | −14·6 | ... |
| **Group 625.** A single spot. | | | | | | | | |
| Dec. 9·291 | I | 12 | 56 | 16 | 73 | 282·7 | +16·6 | −66·1 |
| 10·331 | I | 13 | 46 | 11 | 40 | 282·3 | +16·6 | −52·7 |
| 11·228 | I | 19 | 72 | 13 | 50 | 282·4 | +16·5 | −40·8 |
| 12·280 | I | 22 | 63 | 13 | 37 | 282·0 | +16·6 | −27·4 |
| 13·281 | I | 6 | 46 | 3 | 25 | 282·0 | +16·3 | −14·2 |
| 14·454 | G | 15 | 61 | 8 | 32 | 281·6 | +16·7 | + 0·9 |
| 15·282 | I | 0 | 37 | 0 | 20 | 281·7 | +16·6 | +11·9 |
| 16·349 | I | 0 | 27 | 0 | 16 | 281·3 | +16·3 | +25·5 |
| Means ... | ... | ... | ... | 8 | 37 | 282·00 | +16·53 | ... |
| **Group 626.** A single spot. | | | | | | | | |
| Dec. 14·454 | G | 9 | 28 | 5 | 15 | 265·1 | +15·9 | −15·6 |
| 15·282 | I | 6 | 46 | 3 | 24 | 267·1 | +14·8 | − 2·7 |
| 16·349 | I | 0 | 47 | 0 | 25 | 267·5 | +14·4 | +11·7 |
| Means ... | ... | ... | ... | 3 | 31 | 266·57 | +15·03 | ... |

| Date. Greenwich Civil Time. | Where taken. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| | | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 627.** A large regular spot, followed by a stream of small spots. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Dec. 11·228 | I | 6 | 78 | 13 | 166 | 248·7 | +26·0 | −74·5 |
| 12·280 | I | 99 | 346 | 118 | 409 | 248·1 | +26·5 | −61·3 |
| 13·281 | I | 77 | 670 | 64 | 579 | 247·3 | +26·6 | −48·9 |
| 14·454 | G | 144 | 830 | 98 | 572 | 247·8 | +27·1 | −32·9 |
| 15·282 | I | 106 | 726 | 66 | 450 | 246·8 | +27·4 | −23·0 |
| 16·349 | I | 136 | 733 | 79 | 427 | 246·0 | +27·7 | − 9·8 |
| 17·458 | G | 145 | 729 | 84 | 421 | 246·2 | +28·1 | + 5·0 |
| 18·475 | G | 182 | 712 | 111 | 434 | 246·6 | +27·9 | +18·9 |
| 19·504 | G | 110 | 533 | 75 | 365 | 246·4 | +28·0 | +32·2 |
| 20·554 | G | 106 | 475 | 89 | 397 | 246·3 | +27·4 | +45·9 |
| 21·450 | G | 141 | 439 | 154 | 476 | 245·7 | +28·3 | +57·1 |
| 22·278 | I | 35 | 238 | 55 | 377 | 245·4 | +28·2 | +67·7 |
| 23·186 | I | 3 | 117 | 10 | 365 | 244·1 | +28·7 | +78·4 |
| Means ... | ... | ... | ... | 78 | 418 | 246·57 | +27·53 | ... |
| **Group 627A.** A single spot. | | | | | | | | |
| Dec. 11·228 | I | 0 | 32 | 0 | 33 | 262·5 | −14·4 | −60·7 |
| 12·280 | I | 0 | 16 | 0 | 12 | 262·8 | −14·7 | −46·6 |
| Means ... | ... | ... | ... | 0 | 23 | 262·65 | −14·55 | ... |
| **Group 628.** A regular spot. | | | | | | | | |
| Dec. 12·280 | I | 12 | 62 | 22 | 111 | 236·6 | +17·1 | −72·8 |
| 13·281 | I | 31 | 110 | 31 | 110 | 237·7 | +16·6 | −58·5 |
| 14·454 | G | 29 | 175 | 21 | 126 | 237·8 | +16·8 | −42·9 |
| 15·282 | I | 44 | 212 | 27 | 131 | 238·0 | +16·4 | −31·8 |
| 16·349 | I | 56 | 228 | 31 | 126 | 238·0 | +16·4 | −17·8 |
| 17·458 | G | 32 | 158 | 17 | 83 | 238·6 | +16·3 | − 2·6 |
| 18·475 | G | 41 | 205 | 22 | 110 | 238·8 | +16·2 | +11·1 |
| 19·504 | G | 50 | 165 | 29 | 96 | 239·0 | +16·1 | +24·8 |
| 20·554 | G | 15 | 68 | 10 | 46 | 239·0 | +15·9 | +38·6 |
| 21·450 | G | 39 | 58 | 33 | 49 | 239·4 | +16·1 | +50·8 |
| 22·278 | I | 0 | 15 | 0 | 16 | 238·8 | +16·1 | +61·1 |
| Means ... | ... | ... | ... | 22 | 91 | 238·34 | +16·36 | ... |
| **Group 629.** A number of unstable spots. The group undergoes frequent and violent changes. | | | | | | | | |
| Dec. 13·281 | I | 6 | 75 | 11 | 154 | 220·7 | +10·7 | −75·5 |
| 14·454 | G | 24 | 178 | 23 | 186 | 220·0 | +11·2 | −60·7 |
| 15·282 | I | 34 | 192 | 28 | 155 | 219·6 | +11·9 | −47·1 |
| 16·349 | I | 23 | 144 | 15 | 90 | 221·2 | +11·9 | −36·2 |
| 17·458 | G | 20 | 58 | 11 | 31 | 223·1 | +10·2 | −20·0 |
| 18·475 | G | 21 | 85 | 11 | 44 | 224·8 | +12·2 | − 2·9 |
| 19·504 | G | 0 | 58 | 0 | 31 | 223·6 | +13·2 | + 9·4 |
| Means ... | ... | ... | ... | 14 | 99 | 221·86 | +11·61 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Where taken. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|---|
| **Group 629A.** A single spot. | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Dec. 13·281 | I | 0 | 25 | 0 | 48 | 10·3 | +16·8 | +74·1 |
| Means ... | ... | ... | ... | 0 | 48 | 10·3 | +16·8 | ... |
| **Group 630.** Two small spots. | | | | | | | | |
| Dec. 20·554 | G | 0 | 25 | 0 | 34 | 132·9 | −19·8 | −67·5 |
| 21·450 | G | 7 | 33 | 7 | 31 | 132·6 | −20·0 | −56·0 |
| 22·278 | I | 1 | 30 | 1 | 22 | 132·1 | −20·2 | −45·6 |
| Means ... | ... | ... | ... | 3 | 29 | 132·53 | −20·00 | ... |
| **Group 631.** A number of small faint spots. The group undergoes many changes, and is not seen on December 24. | | | | | | | | |
| Dec. 22·278 | I | 4 | 56 | 2 | 31 | 187·7 | −25·3 | +10·0 |
| 23·186 | I | 3 | 15 | 2 | 9 | 187·1 | −25·9 | +21·4 |
| 24·257 | I | 0 | 0 | 0 | 0 | ... | ... | ... |
| 25·184 | I | 8 | 54 | 7 | 45 | 189·2 | −24·0 | +49·9 |
| 26·200 | I | 0 | 65 | 0 | 72 | 187·6 | −24·7 | +61·6 |
| Means ... | ... | ... | ... | 2 | 31 | 187·90 | −24·98 | ... |
| **Group 632.** Several very small faint spots in a straight stream. | | | | | | | | |
| Dec. 22·278 | I | 5 | 27 | 3 | 16 | 151·9 | +16·9 | −25·8 |
| 23·186 | I | 0 | 15 | 0 | 8 | 151·6 | +16·1 | −14·1 |
| Means ... | ... | ... | ... | 2 | 12 | 151·75 | +16·50 | ... |
| **Group 633.** Several very small scattered spots. | | | | | | | | |
| Dec. 23·186 | I | 7 | 54 | 4 | 29 | 148·8 | +11·2 | −16·9 |
| Means ... | ... | ... | ... | 4 | 29 | 148·8 | +11·2 | ... |
| **Group 634.** Two spots. The following spot has divided into two portions by December 27, of which the southern has disappeared by December 31, and the northern by January 1. | | | | | | | | |
| Dec. 26·200 | I | 31 | 71 | 18 | 41 | 107·9 | −27·1 | −18·1 |
| 27·190 | I | 67 | 299 | 37 | 166 | 107·7 | −27·1 | − 5·3 |
| 28·205 | I | 43 | 321 | 24 | 178 | 107·3 | −26·7 | + 7·7 |
| **Group 634**—*continued.* | | | | | | | | |
| 1881. d | | | | | | ° | ° | ° |
| Dec. 29·118 | Me | 55 | 246 | 32 | 143 | 107·4 | −26·7 | +19·9 |
| 30·166 | I | 47 | 195 | 30 | 128 | 108·6 | −26·0 | +34·8 |
| 31·262 | I | 12 | 143 | 10 | 117 | 108·7 | −25·7 | +49·4 |
| 1882. | | | | | | | | |
| Jan. 1·172 | I | 10 | 55 | 11 | 63 | 110·0 | −25·5 | +62 7 |
| 2·190 | I | 18 | 41 | 37 | 84 | 109·9 | −25·4 | +75·9 |
| Means ... | ... | ... | ... | 25 | 115 | 108·44 | −26·28 | ... |
| **Group 635.** A small faint spot, seen only as it is about to pass off at the West limb. | | | | | | | | |
| Dec. 28·205 | I | 0 | 11 | 0 | 31 | 178·4 | +17·1 | +78·8 |
| Means ... | ... | ... | ... | 0 | 31 | 178·4 | +17·1 | ... |
| **Group 636.** A small faint spot. | | | | | | | | |
| Dec. 30·166 | I | 0 | 12 | 0 | 11 | 21·6 | +25·5 | −52·2 |
| Means ... | ... | ... | ... | 0 | 11 | 21·6 | +25·5 | ... |
| **Group 637.** Two small spots, with two or three very small markings near them. | | | | | | | | |
| Dec. 31·262 | I | 5 | 23 | 3 | 14 | 82·2 | +25·2 | +22·9 |
| 1882. | | | | | | | | |
| Jan. 1·172 | I | 0 | 22 | 0 | 15 | 81·8 | +25·1 | +34·5 |
| Means ... | ... | ... | ... | 2 | 15 | 82·00 | +25·15 | ... |
| **Group 638.** An irregular cluster of many very small spots on December 31. These fluctuate in size until January 5 and 6, after which they decrease. | | | | | | | | |
| Dec. 31·262 | I | 0 | 126 | 0 | 87 | 19·6 | +15·8 | −39·7 |
| 1882. | | | | | | | | |
| Jan. 1·172 | I | 43 | 151 | 25 | 90 | 20·0 | +16·1 | −27·3 |
| 2·190 | I | 66 | 276 | 36 | 151 | 20·8 | +16·0 | −13·2 |
| 3·512 | G | 70 | 436 | 37 | 232 | 21·1 | +15·9 | + 4·6 |
| 4·169 | I | 40 | 190 | 22 | 103 | 21·3 | +15·7 | +13·4 |
| 5·217 | I | 87 | 351 | 51 | 208 | 20·6 | +15·5 | +26·6 |
| 6·166 | I | 60 | 312 | 94 | 211 | 20·2 | +15·0 | +38·6 |
| 7·441 | G | 15 | 201 | 14 | 193 | 20·7 | +15·0 | +55·9 |
| 8·209 | I | 0 | 83 | 0 | 116 | 21·9 | +14·9 | +67·2 |
| Means ... | ... | ... | ... | 31 | 155 | 20·69 | +15·54 | ... |

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ROYAL OBSERVATORY, GREENWICH.

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# LEDGERS

OF

# AREAS AND POSITIONS OF GROUPS OF SUN SPOTS

DEDUCED FROM THE MEASUREMENT

OF THE

# SOLAR PHOTOGRAPHS

FOR EACH DAY IN THE YEARS

# 1882-1885.

## AREAS AND HELIOGRAPHIC POSITIONS OF GROUPS OF SUN SPOTS DEDUCED FOR EACH DAY FROM THE MEASUREMENTS OF THE PHOTOGRAPHS TAKEN AT THE ROYAL OBSERVATORY, GREENWICH, AT DEHRA DÛN IN INDIA, AND AT THE ROYAL ALFRED OBSERVATORY, MAURITIUS, IN THE YEARS 1882 TO 1885.

NOTE.—The Greenwich Civil Time at which the photograph was taken is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight.

The Projected Area of the Umbræ and Whole Spots is the area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Column "Longitude from Central Meridian" gives the Mean Heliographic longitude of the group, reckoned from the meridian passing through the centre of the Sun's disk at the moment of observation; longitudes west of the centre being reckoned as positive.

Dates for which the decimal of the day is not given indicate dates for which no photographic Record is at present available. In these cases the means have been taken of the areas and positions of the spot-groups as measured on the day immediately preceding, and that immediately following the day for which the photograph is lacking. These interpolated values are enclosed in brackets, but are used in taking the final means for each spot-group.

### Group 639.

One faint spot when first seen on January 1. A second, smaller and fainter, appears behind it on January 2. Both disappear before January 4.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | | | | | ° | ° | ° |
| 1882. d | | | | | | | |
| Jan. 1·172 | 0 | 14 | 0 | 18 | 340·7 | −28·3 | −66·6 |
| 2·190 | 0 | 22 | 0 | 20 | 339·7 | −28·8 | −54·3 |
| 3·512 | 6 | 25 | 4 | 17 | 340·2 | −28·1 | −36·3 |
| Means ... | ... | ... | 1 | 18 | 340·20 | −28·40 | ... |

### Group 640.

Small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 4·169 | 0 | 9 | 0 | 7 | 313·4 | −13·3 | −54·5 |
| Means ... | ... | ... | 0 | 7 | 313·4 | −13·3 | ... |

### Group 641.

Small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 5·217 | 5 | 26 | 5 | 24 | 50·3 | −20·8 | +56·3 |
| 6·166 | 11 | 22 | 15 | 30 | 49·7 | −20·6 | +68·1 |
| Means ... | ... | ... | 10 | 27 | 50·00 | −20·70 | ... |

### Group 642.

Several small spots in a straight line. The preceding spot rapidly increases in size until January 8. The rest of the group gradually disappears.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | ° | ° | ° |
| 1882. d | | | | | | | |
| Jan. 5·217 | 15 | 41 | 9 | 23 | 8·5 | +16·6 | +14·5 |
| 6·166 | 46 | 307 | 31 | 187 | 10·6 | +16·7 | +29·0 |
| 7·441 | 105 | 471 | 83 | 371 | 11·3 | +16·8 | +46·5 |
| 8·209 | 39 | 259 | 40 | 265 | 12·4 | +17·2 | +57·7 |
| 9·439 | 9 | 43 | 20 | 94 | 13·4 | +17·1 | +74·9 |
| Means ... | ... | ... | 37 | 188 | 11·24 | +16·88 | ... |

### Group 643.

Two spots. These both diminish in size on the following days, the following spot disappearing before January 7, the preceding before January 8.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 5·217 | 7 | 75 | 5 | 51 | 316·5 | +18·5 | −37·5 |
| 6·166 | 15 | 47 | 9 | 28 | 317·3 | +18·0 | −24·3 |
| 7·441 | 0 | 41 | 0 | 22 | 317·4 | +18·1 | − 7·4 |
| Means ... | ... | ... | 5 | 34 | 317·07 | +18·20 | ... |

### Group 644.

A single spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 6·166 | 2 | 20 | 1 | 11 | 0·1 | −17·7 | +18·5 |
| Means ... | ... | ... | 1 | 11 | 0·1 | −17·7 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 645.

Small spot on January 8. A smaller one appears close to it on January 9.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Jan. 8·209 | 2 | 12 | 8 | 38 | 237·1 | +28·5 | −77·6 |
| 9·439 | 9 | 46 | 11 | 59 | 236·7 | +27·9 | −61·8 |
| Means ... | ... | ... | 10 | 49 | 236·90 | +28·20 | ... |

### Group 646.

Two small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 9·439 | 5 | 38 | 5 | 37 | 355·7 | −28·3 | +57·2 |
| Means ... | ... | ... | 5 | 37 | 355·7 | −28·3 | ... |

### Group 647.

A cluster of several irregular spots. The group changes very much on the following days.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 13·493 | 19 | 111 | 14 | 86 | 287·5 | +22·7 | +42·5 |
| 14·187 | 9 | 40 | 9 | 38 | 289·1 | +22·6 | +53·2 |
| 15·201 | 2 | 19 | 2 | 23 | 283·9 | +23·5 | +61·3 |
| 16·166 | 0 | 29 | 0 | 61 | 282·5 | +23·8 | +72·6 |
| Means ... | ... | ... | 6 | 52 | 285·75 | +23·15 | ... |

### Group 648.

A dark spot with several faint spots following. The spot undergoes very great changes, diminishing in size to January 15, and then increasing again; the leading spot divides into two portions on January 18, and one of the smaller fragments greatly increases in size on January 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 13·493 | 46 | 194 | 25 | 104 | 236·4 | +15·1 | − 8·6 |
| 14·187 | 35 | 129 | 18 | 69 | 237·3 | +15·0 | + 1·4 |
| 15·201 | 17 | 95 | 10 | 52 | 237·2 | +14·4 | +14·6 |
| 16·166 | 28 | 106 | 17 | 64 | 237·7 | +14·3 | +27·8 |
| 17·158 | 23 | 173 | 18 | 123 | 238·4 | +14·5 | +41·5 |
| 18·163 | 17 | 126 | 16 | 119 | 238·9 | +14·4 | +55·3 |
| 19·288 | 16 | 186 | 29 | 307 | 239·2 | +14·2 | +70·4 |
| 20·162 | 20 | 132 | 71 | 473 | 237·9 | +14·2 | +80·6 |
| Means ... | ... | ... | 26 | 164 | 237·88 | +14·51 | ... |

### Group 649.

Small faint spot, probably the same as Group 645.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 13·493 | 7 | 32 | 4 | 20 | 234·4 | +28·6 | −10·6 |
| 14·187 | 0 | 31 | 0 | 19 | 234·9 | +28·9 | − 1·0 |
| 15·201 | 4 | 9 | 2 | 6 | 234·2 | +29·1 | +11·6 |
| Means ... | ... | ... | 2 | 15 | 234·50 | +28·87 | ... |

### Group 650.

Irregular spot, breaking up into three on January 16. The following portions are much smaller than the preceding, and disappear before January 20.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Jan. 13·493 | 42 | 363 | 44 | 382 | 186·3 | +15·7 | −58·7 |
| 14·187 | 46 | 280 | 37 | 231 | 186·4 | +15·5 | −49·5 |
| 15·201 | 60 | 237 | 39 | 156 | 187·2 | +15·7 | −35·4 |
| 16·166 | 45 | 259 | 26 | 149 | 187·7 | +15·8 | −22·2 |
| 17·158 | 34 | 185 | 19 | 98 | 188·1 | +15·2 | − 8·8 |
| 18·163 | 23 | 147 | 12 | 78 | 188·2 | +15·1 | + 4·6 |
| 19·288 | 16 | 160 | 9 | 90 | 187·9 | +15·3 | +19·1 |
| 20·162 | 26 | 136 | 16 | 85 | 188·2 | +15·0 | +30·9 |
| 21·470 | 41 | 114 | 33 | 92 | 188·5 | +14·9 | +48·4 |
| 22·396 | 10 | 49 | 12 | 56 | 189·1 | +15·5 | +61·2 |
| 23·267 | 0 | 16 | 0 | 28 | 188·2 | +15·7 | +71·8 |
| Means ... | ... | ... | 22 | 131 | 187·80 | +15·40 | ... |

### Group 651.

Two small spots, of which the following is only seen on January 18.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 18·163 | 9 | 27 | 7 | 16 | 164·0 | +23·6 | −19·6 |
| 19·288 | 0 | 28 | 0 | 16 | 165·5 | +24·6 | − 3·3 |
| 20·162 | 9 | 11 | 5 | 6 | 165·3 | +24·5 | + 8·0 |
| 21·470 | 8 | 16 | 5 | 10 | 164·7 | +24·2 | +24·6 |
| Means ... | ... | ... | 4 | 12 | 164·88 | +24·23 | ... |

### Group 652.

Two very faint small spots; each divides into two parts on January 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 19·288 | 0 | 11 | 0 | 6 | 170·7 | −21·0 | + 1·9 |
| 20·162 | 0 | 29 | 0 | 16 | 171·1 | −20·2 | +13·8 |
| Means ... | ... | ... | 0 | 11 | 170·90 | −20·60 | ... |

### Group 653.

Small regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 19·288 | 9 | 95 | 14 | 145 | 97·4 | −17·2 | −71·4 |
| 20·162 | 19 | 198 | 19 | 198 | 97·4 | −17·5 | −59·9 |
| 21·470 | 88 | 364 | 61 | 252 | 97·0 | −17·2 | −43·1 |
| 22·396 | 27 | 274 | 16 | 162 | 97·5 | −17·2 | −30·4 |
| 23·267 | 36 | 303 | 19 | 164 | 97·8 | −17·2 | −18·6 |
| 24·592 | 122 | 356 | 62 | 181 | 97·9 | −17·3 | − 1·0 |
| 25·258 | 43 | 166 | 22 | 86 | 98·2 | −17·6 | + 8·0 |
| 26·284 | 21 | 256 | 12 | 141 | 98·0 | −17·6 | +21·3 |
| 27·162 | 27 | 209 | 16 | 127 | 98·0 | −17·4 | +32·8 |
| 28·432 | 52 | 234 | 40 | 181 | 98·0 | −18·0 | +49·5 |
| 29·179 | 14 | 72 | 14 | 71 | 98·0 | −17·2 | +59·4 |
| Means ... | ... | ... | 27 | 155 | 97·75 | −17·40 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 654.** Two small spots. They break up into several small fragments on January 23, but the parts of the preceding spot coalesce on January 24, and the following spot remains divided into two small portions. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Jan. 21·470 | 24 | 65 | 19 | 50 | 93·6 | −26·7 | −46·5 |
| 22·396 | 9 | 85 | 6 | 55 | 93·8 | −28·2 | −34·1 |
| 23·267 | 25 | 98 | 14 | 61 | 94·8 | −27·8 | −21·6 |
| 24·592 | 62 | 131 | 33 | 70 | 96·4 | −27·0 | − 2·5 |
| 25·258 | 0 | 110 | 0 | 60 | 98·5 | −26·5 | + 8·3 |
| 26·284 | 3 | 40 | 2 | 23 | 95·5 | −26·8 | +18·8 |
| Means ... | ... | ... | 12 | 53 | 95·43 | −27·17 | ... |
| **Group 655.** Several very small spots. Only one fragment is left on January 23. | | | | | | | |
| Jan. 22·396 | 12 | 36 | 7 | 20 | 143·1 | +15·9 | +15·2 |
| 23·267 | 0 | 9 | 0 | 6 | 145·2 | +15·9 | +28·8 |
| Means ... | ... | ... | 4 | 13 | 144·15 | +15·90 | ... |
| **Group 656.** Two small spots; both gradually diminish in size, and the following spot disappears before January 27. | | | | | | | |
| Jan. 24·592 | 20 | 66 | 20 | 68 | 38·4 | −25·2 | −60·5 |
| 25·258 | 9 | 66 | 8 | 58 | 37·1 | −25·9 | −53·1 |
| 26·284 | 12 | 55 | 9 | 38 | 35·9 | −25·9 | −40·8 |
| 27·162 | 3 | 14 | 2 | 8 | 38·6 | −25·4 | −26·6 |
| 28·432 | 1 | 11 | 1 | 6 | 32·0 | −26·2 | −16·5 |
| Means ... | ... | ... | 8 | 36 | 36·40 | −25·72 | ... |
| **Group 657.** Small spot. | | | | | | | |
| Jan. 25·258 | 0 | 18 | 0 | 27 | 22·8 | +16·9 | −67·4 |
| 26·284 | 4 | 19 | 4 | 18 | 24·6 | +17·4 | −52·1 |
| 27·162 | 9 | 28 | 7 | 20 | 25·0 | +17·3 | −40·2 |
| 28·432 | 10 | 22 | 6 | 13 | 25·2 | +17·1 | −23·3 |
| 29·179 | 2 | 16 | 1 | 9 | 25·7 | +17·4 | −12·9 |
| Means ... | ... | ... | 4 | 17 | 24·66 | +17·22 | ... |
| **Group 658.** Regular spot. Several small spots break out in its neighbourhood on January 27. | | | | | | | |
| Jan. 25·258 | 0 | 97 | 0 | 180 | 18·2 | +15·8 | −72·0 |
| 26·284 | 20 | 198 | 21 | 206 | 18·8 | +15·6 | −57·9 |
| 27·162 | 36 | 315 | 28 | 251 | 18·4 | +16·1 | −46·8 |
| 28·432 | 75 | 406 | 47 | 255 | 18·2 | +16·3 | −30·3 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 658**—*continued.* | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Jan. 29·179 | 52 | 409 | 30 | 237 | 18·4 | +16·4 | −20·2 |
| 30 | No photograph. | | (37 | 249 | 18·5 | +16·3 | − 5·8) |
| 31 | No photograph. | | (45 | 260 | 18·5 | +16·3 | + 8·6) |
| Feb. 1·444 | 89 | 463 | 52 | 272 | 18·6 | +16·2 | +23·0 |
| 2·162 | 75 | 594 | 48 | 387 | 19·3 | +15·9 | +33·1 |
| 3·487 | 90 | 471 | 79 | 409 | 19·2 | +16·2 | +50·5 |
| 4·191 | 45 | 327 | 50 | 364 | 19·1 | +16·3 | +59·7 |
| 5·188 | 10 | 101 | 20 | 199 | 18·8 | +15·8 | +72·6 |
| Means ... | ... | ... | 38 | 272 | 18·67 | +16·10 | ... |
| **Group 659.** Three or four very small spots, arranged in a straight line. | | | | | | | |
| Jan. 27·162 | 10 | 34 | 5 | 18 | 57·8 | +10·8 | − 7·4 |
| 28·432 | 32 | 215 | 17 | 114 | 59·0 | + 9·7 | +10·5 |
| 29·179 | 30 | 123 | 16 | 69 | 60·4 | + 9·8 | +21·8 |
| 30 | No photograph. | | (17 | 75 | 61·5 | + 9·7 | +37·2) |
| 31 | No photograph. | | (19 | 82 | 62·6 | + 9·6 | +52·7) |
| Feb. 1·444 | 15 | 67 | 20 | 88 | 63·7 | + 9·5 | +68·1 |
| 2·162 | 0 | 31 | 0 | 83 | 64·1 | +10·1 | +77·9 |
| Means ... | ... | ... | 13 | 76 | 61·30 | +9·89 | ... |
| **Group 660.** Several very small spots, arranged in three close and small clusters. | | | | | | | |
| Jan. 29·179 | 3 | 42 | 2 | 30 | 82·3 | −20·3 | +43·7 |
| Means ... | ... | ... | 2 | 30 | 82·3 | −20·3 | ... |
| **Group 661.** Two small spots. | | | | | | | |
| Feb. 1·444 | 0 | 31 | 0 | 16 | 6·4 | − 9·2 | +10·8 |
| 2·162 | 1 | 26 | 0 | 14 | 8·0 | − 9·0 | +21·8 |
| Means ... | ... | ... | 0 | 15 | 7·20 | − 9·10 | ... |
| **Group 662.** A small spot, with a very small one near it on February 1 and 2. | | | | | | | |
| Feb. 1·444 | 31 | 127 | 26 | 106 | 308·1 | +19·3 | −47·5 |
| 2·162 | 29 | 67 | 14 | 48 | 308·8 | +19·1 | −37·4 |
| 3·487 | 8 | 55 | 5 | 33 | 309·0 | +18·9 | −19·7 |
| 4·191 | 3 | 25 | 2 | 14 | 309·2 | +18·3 | −10·2 |
| 5·188 | 0 | 10 | 0 | 6 | 309·3 | +18·7 | + 3·1 |
| Means ... | ... | ... | 9 | 41 | 308·88 | +18·86 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 663.** A small spot. | | | | | | | |
| 1882. d | | ν | | | ° | ° | ° |
| Feb. 2·162 | 0 | 3 | 0 | 2 | 299·0 | +12·5 | −47·2 |
| Means ... | ... | ... | 0 | 2 | 299·0 | +12·5 | ... |
| **Group 664.** One very small faint spot when first seen on the East limb on February 2. The group rapidly increases in size, expanding into a long line of spots, of which the preceding one is the largest. The group undergoes constant change, and is largest shortly after passing the central meridian. | | | | | | | |
| Feb. 2·162 | 0 | 12 | 0 | 13 | 283·1 | −13·4 | −63·1 |
| 3·487 | 16 | 92 | 12 | 67 | 281·3 | −13·4 | −47·4 |
| 4·191 | 31 | 195 | 19 | 125 | 281·1 | −13·6 | −38·3 |
| 5·188 | 51 | 382 | 28 | 209 | 282·7 | −13·2 | −23·5 |
| 6·158 | 53 | 434 | 27 | 222 | 284·2 | −13·6 | − 9·3 |
| 7·293 | 76 | 779 | 39 | 394 | 284·1 | −13·6 | + 5·5 |
| 8·335 | 139 | 1083 | 75 | 587 | 286·1 | −13·5 | +21·3 |
| 9 | No photograph. | | (77 | 560 | 287·5 | −13·9 | +36·8) |
| 10·474 | 98 | 659 | 79 | 533 | 288·9 | −14·2 | +52·2 |
| 11·474 | 59 | 391 | 80 | 499 | 291·6 | −14·1 | +68·0 |
| 12·515 | 0 | 94 | 0 | 497 | 296·0 | −13·7 | +86·2 |
| Means ... | ... | ... | 40 | 337 | 286·05 | −13·65 | ... |
| **Group 665.** A close cluster of very small spots, which gradually diminishes in size. | | | | | | | |
| Feb. 3·487 | 15 | 32 | 8 | 17 | 349·7 | −18·3 | +21·0 |
| 4·191 | 5 | 30 | 3 | 18 | 350·7 | −17·5 | +31·3 |
| 5·188 | 0 | 23 | 0 | 16 | 351·5 | −17·2 | +45·3 |
| 6·158 | 2 | 31 | 2 | 36 | 357·2 | −15·4 | +63·7 |
| Means ... | ... | ... | 3 | 22 | 352·28 | −17·10 | ... |
| **Group 666.** A small spot on February 4. The spot somewhat increases in size on February 5 and 6, and several small spots form behind it. The group undergoes constant change, and is largest shortly after passing the central meridian. | | | | | | | |
| Feb. 4·191 | 0 | 30 | 0 | 44 | 251·1 | +12·6 | −68·3 |
| 5·188 | 6 | 19 | 6 | 17 | 252·8 | +13·2 | −53·4 |
| 6·158 | 51 | 117 | 34 | 78 | 252·4 | +12·4 | −41·1 |
| 7·293 | 14 | 97 | 8 | 54 | 259·2 | +11·6 | −19·4 |
| 8·335 | 22 | 151 | 11 | 81 | 258·9 | +12·5 | − 5·9 |
| 9 | No photograph. | | (10 | 103 | 259·2 | +12·6 | + 8·4) |
| 10·474 | 13 | 217 | 8 | 124 | 259·4 | +12·7 | +22·7 |
| 11·474 | 15 | 78 | 11 | 52 | 259·7 | +13·0 | +36·1 |
| 12·515 | 0 | 16 | 0 | 14 | 261·2 | +11·5 | +51·4 |
| Means ... | ... | ... | 10 | 63 | 257·10 | +12·46 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 667.** One spot, which slowly diminishes until its disappearance on February 10. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Feb. 4·191 | 1 | 29 | 0 | 84 | 241·3 | +14·0 | −78·1 |
| 5·188 | 5 | 22 | 6 | 27 | 242·5 | +13·9 | −63·7 |
| 6·158 | 4 | 10 | 3 | 9 | 241·6 | +14·3 | −51·9 |
| 7·293 | 0 | 16 | 0 | 11 | 241·3 | +14·5 | −37·3 |
| 8·335 | 0 | 7 | 0 | 4 | 241·3 | +14·3 | −23·5 |
| 9 | No photograph. | | (0 | 4 | 241·9 | +14·2 | − 8·9) |
| 10·474 | 0 | 7 | 0 | 4 | 242·5 | +14·1 | + 5·8 |
| Means ... | ... | ... | 1 | 20 | 241·77 | +14·18 | ... |
| **Group 668.** Three spots. The middle spot disappears before February 7, and the other spots increase somewhat in size, the preceding spot becoming eventually the larger. | | | | | | | |
| Feb. 5·188 | 7 | 55 | 11 | 101 | 233·2 | + 9·1 | −73·0 |
| 6·158 | 6 | 136 | 6 | 139 | 234·5 | + 8·5 | −59·0 |
| 7·293 | 31 | 275 | 22 | 204 | 233·4 | + 8·4 | −45·2 |
| 8·335 | 47 | 238 | 28 | 142 | 234·9 | + 7·8 | −29·9 |
| 9 | No photograph. | | (38 | 183 | 235·4 | + 7·9 | −15·4) |
| 10·474 | 90 | 433 | 47 | 223 | 235·9 | + 7·9 | − 0·8 |
| 11·474 | 90 | 336 | 44 | 179 | 236·7 | + 7·8 | +13·1 |
| 12·515 | 41 | 230 | 24 | 136 | 238·6 | + 7·6 | +28·8 |
| 13·143 | 11 | 117 | 7 | 77 | 239·5 | + 7·9 | +38·0 |
| 14·452 | 20 | 123 | 19 | 113 | 239·8 | + 7·4 | +55·5 |
| 15·497 | 8 | 51 | 12 | 74 | 239·4 | + 7·1 | +68·9 |
| Means ... | ... | ... | 23 | 143 | 236·48 | + 7·95 | ... |
| **Group 669.** Two very small spots. | | | | | | | |
| Feb. 8·335 | 0 | 19 | 0 | 10 | 250·5 | −22·0 | −14·3 |
| Means ... | ... | ... | 0 | 10 | 250·5 | −22·0 | ... |
| **Group 670.** A fine group, consisting of a number of spots arranged in three clusters in a straight line. The middle portion disappears before February 15. The group decreases after passing the central meridian, the preceding spot less rapidly than the others. | | | | | | | |
| Feb. 10·474 | 48 | 394 | 62 | 544 | 169·9 | +11·1 | −66·8 |
| 11·474 | 152 | 668 | 134 | 613 | 169·1 | +10·7 | −54·5 |
| 12·515 | 227 | 823 | 155 | 571 | 169·6 | +10·8 | −40·2 |
| 13·143 | 96 | 630 | 59 | 393 | 169·5 | +10·9 | −32·0 |
| 14·452 | 215 | 835 | 117 | 453 | 170·2 | +10·8 | −14·1 |
| 15·497 | 119 | 707 | 62 | 372 | 171·4 | +10·9 | + 0·9 |
| 16·440 | 103 | 517 | 56 | 280 | 171·9 | +10·7 | +13·8 |
| 17·583 | 90 | 311 | 54 | 190 | 173·5 | +10·7 | +30·5 |
| 18·493 | 51 | 222 | 37 | 159 | 173·8 | +10·7 | +42·7 |
| 19·578 | 16 | 66 | 17 | 71 | 176·8 | +10·4 | +60·0 |
| 20·264 | 6 | 50 | 9 | 74 | 176·0 | +10·4 | +68·2 |
| Means ... | ... | ... | 69 | 338 | 171·97 | +10·74 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 671.** Two small spots. Some very small spots appear between them on February 12. The members of the group increase in size until the central meridian is passed, and then diminish rapidly. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Feb. 11·474 | 9 | 25 | 4 | 13 | 207·2 | −17·6 | −16·4 |
| 12·515 | 76 | 278 | 38 | 142 | 207·5 | −17·6 | − 2·3 |
| 13·143 | 42 | 288 | 21 | 146 | 206·2 | −17·4 | + 4·7 |
| 14·452 | 26 | 131 | 14 | 71 | 206·1 | −17·3 | +21·8 |
| 15·497 | 17 | 90 | 10 | 54 | 203·7 | −17·3 | +33·2 |
| 16·440 | 22 | 49 | 16 | 35 | 203·6 | −17·1 | +45·5 |
| 17·583 | 0 | 10 | 0 | 10 | 203·7 | −16·9 | +60·7 |
| Means ... | ... | ... | 15 | 67 | 205·43 | −17·31 | ... |
| **Group 672.** A small regular spot, followed by a number of small spots, which, however, disappear soon after the central meridian is passed. | | | | | | | |
| Feb. 12·515 | 24 | 222 | 39 | 424 | 133·4 | −19·3 | −76·4 |
| 13·143 | 24 | 192 | 29 | 251 | 133·1 | −20·0 | −68·4 |
| 14·452 | 68 | 420 | 51 | 322 | 134·9 | −18·9 | −49·4 |
| 15·497 | 123 | 537 | 75 | 329 | 135·9 | −18·4 | −34·6 |
| 16·440 | 97 | 416 | 53 | 226 | 137·3 | −18·8 | −20·8 |
| 17·583 | 126 | 483 | 65 | 247 | 137·8 | −18·8 | − 5·2 |
| 18·493 | 91 | 466 | 47 | 238 | 137·9 | −18·7 | + 6·8 |
| 19·578 | 69 | 350 | 38 | 191 | 137·9 | −18·9 | +21·1 |
| 20·264 | 33 | 302 | 19 | 175 | 136·5 | −18·7 | +28·7 |
| 21 | No photograph. | | (31 | 185 | 137·7 | −18·4 | +44·2) |
| 22·412 | 44 | 202 | 43 | 195 | 138·8 | −18·1 | +59·6 |
| 23·287 | 20 | 102 | 28 | 144 | 138·3 | −18·6 | +70·4 |
| 24·175 | 13 | 39 | 36 | 109 | 137·9 | −18·7 | +81·7 |
| Means ... | ... | ... | 43 | 234 | 136·72 | −18·79 | ... |
| **Group 673.** A small spot. | | | | | | | |
| Feb. 13·143 | 0 | 11 | 0 | 7 | 234·4 | +15·9 | +32·9 |
| Means ... | ... | ... | 0 | 7 | 234·4 | +15·9 | ... |
| **Group 674.** Two small spots. | | | | | | | |
| Feb. 13·143 | 3 | 17 | 2 | 9 | 199·0 | + 5·1 | − 2·5 |
| Means ... | ... | ... | 2 | 9 | 199·0 | + 5·1 | ... |
| **Group 675.** A cluster of very small spots. | | | | | | | |
| Feb. 13·143 | 0 | 35 | 0 | 29 | 157·0 | +23·0 | −44·5 |
| 14·452 | 0 | 31 | 0 | 21 | 156·8 | +23·3 | −27·5 |
| 15·497 | 0 | 11 | 0 | 6 | 158·2 | +22·4 | −12·3 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 675—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Feb. 16·440 | 0 | 5 | 0 | 3 | 158·9 | +21·7 | + 0·8 |
| 17·583 | 2 | 41 | 1 | 24 | 156·3 | +23·0 | +13·3 |
| 18·493 | 11 | 70 | 7 | 45 | 157·1 | +22·2 | +26·0 |
| Means ... | ... | ... | 1 | 21 | 157·38 | +22·60 | ... |
| **Group 676.** Two small spots. Several small spots form round the following spot, and the preceding spot increases in size as the group approaches the W. limb. | | | | | | | |
| Feb. 14·452 | 31 | 77 | 17 | 44 | 212·3 | + 1·8 | +28·0 |
| 15·497 | 52 | 305 | 36 | 211 | 213·7 | + 2·2 | +43·2 |
| 16·440 | 40 | 350 | 38 | 325 | 215·0 | + 2·2 | +56·9 |
| 17·583 | 53 | 153 | 95 | 263 | 215·8 | + 2·3 | +72·8 |
| 18·493 | 11 | 33 | 30 | 94 | 210·7 | + 1·1 | +79·6 |
| Means ... | ... | .... | 43 | 187 | 213·50 | + 1·92 | ... |
| **Group 677.** An irregular spot, with several small spots near it. | | | | | | | |
| Feb. 15·497 | 15 | 45 | 19 | 54 | 104·2 | −18·3 | −66·3 |
| 16·440 | 25 | 98 | 21 | 82 | 104·2 | −18·4 | −53·9 |
| 17·583 | 31 | 102 | 21 | 68 | 102·4 | −18·0 | −40·6 |
| 18·493 | 29 | 144 | 17 | 83 | 101·8 | −17·3 | −29·3 |
| 19·578 | 35 | 88 | 18 | 46 | 102·4 | −17·7 | −14·4 |
| 20·264 | 13 | 158 | 7 | 81 | 101·5 | −17·3 | − 6·3 |
| 21 | No photograph. | | (26 | 114 | 101·9 | −17·5 | + 8·3) |
| 22·412 | 82 | 268 | 45 | 147 | 102·2 | −17·7 | +22·8 |
| 23·287 | 6 | 165 | 4 | 100 | 101·0 | −17·6 | +33·1 |
| 24·175 | 13 | 120 | 9 | 86 | 101·8 | −17·9 | +45·6 |
| 25·211 | 9 | 57 | 8 | 55 | 101·9 | −18·3 | +59·3 |
| Means ... | ... | ... | 18 | 83 | 102·30 | −17·82 | ... |
| **Group 678.** Two small spots. | | | | | | | |
| Feb. 15·497 | 13 | 87 | 2 | 15 | 96·4 | −20·1 | −74·1 |
| 16·440 | 8 | 42 | 9 | 46 | 95·0 | −20·9 | −63·1 |
| 17·583 | 4 | 49 | 3 | 36 | 95·7 | −20·2 | −47·3 |
| 18·493 | 7 | 26 | 4 | 16 | 96·8 | −19·7 | −34·3 |
| 19·578 | 0 | 49 | 0 | 27 | 97·2 | −19·3 | −19·6 |
| 20·264 | 0 | 52 | 0 | 27 | 96·6 | −19·2 | −11·2 |
| 21 | No photograph. | | (7 | 39 | 97·6 | −19·6 | + 4·0) |
| 22·412 | 25 | 93 | 14 | 50 | 98·5 | −19·9 | +19·1 |
| 23·287 | 10 | 89 | 6 | 53 | 98·6 | −20·0 | +30·7 |
| 24·175 | 6 | 61 | 4 | 41 | 97·4 | −20·1 | +41·2 |
| 25·211 | 0 | 9 | 0 | 8 | 97·5 | −20·6 | +54·9 |
| Means ... | ... | ... | 4 | 32 | 97·03 | −19·96 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 679.** A small spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Feb. 16·440 | 0 | 24 | 0 | 17 | 196·8 | +20·9 | +38·7 |
| Means ... | ... | ... | 0 | 17 | 196·8 | +20·9 | ... |
| **Group 680.** A small spot. | | | | | | | |
| Feb. 18·493 | 1 | 8 | 1 | 8 | 184·3 | +15·9 | +53·2 |
| Means ... | ... | ... | 1 | 8 | 184·3 | +15·9 | ... |
| **Group 681.** Two small spots. | | | | | | | |
| Feb. 18·493 | 4 | 17 | 2 | 10 | 164·3 | −15·9 | +33·2 |
| Means ... | ... | ... | 2 | 10 | 164·3 | −15·9 | ... |
| **Group 682.** A small spot. | | | | | | | |
| Feb. 18·493 | 0 | 8 | 0 | 10 | 69·7 | +20·8 | −61·4 |
| Means ... | ... | ... | 0 | 10 | 69·7 | +20·8 | ... |
| **Group 683.** Several small spots. The group is not seen on February 19. | | | | | | | |
| Feb. 18·493 | 0 | 12 | 0 | 32 | 51·0 | −13·4 | −80·1 |
| 19·578 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 20·264 | 0 | 42 | 0 | 39 | 50·1 | −13·6 | −57·7 |
| 21 | No photograph. | | (4 | 36 | 50·5 | −13·6 | −43·0) |
| 22·412 | 14 | 57 | 8 | 32 | 51·0 | −13·6 | −28·4 |
| 23·287 | 3 | 39 | 2 | 21 | 53·1 | −13·6 | −14·8 |
| 24·175 | 15 | 75 | 8 | 38 | 50·6 | −13·2 | − 5·6 |
| 25·211 | 3 | 78 | 2 | 40 | 54·2 | −12·8 | +11·6 |
| Means ... | ... | ... | 3 | 30 | 51·50 | −13·40 | ... |
| **Group 684.** A small spot. | | | | | | | |
| Feb. 22·412 | 10 | 26 | 10 | 27 | 17·5 | −14·9 | −61·9 |
| 23·287 | 0 | 10 | 0 | 8 | 18·3 | −14·9 | −49·6 |
| 24·175 | 0 | 10 | 0 | 6 | 18·3 | −14·9 | −37·9 |
| 25·211 | 0 | 10 | 0 | 6 | 18·7 | −14·8 | −23·9 |
| 26·522 | 3 | 6 | 2 | 3 | 18·3 | −14·6 | − 7·0 |
| Means ... | ... | ... | 2 | 10 | 18·22 | −14·82 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 685.** A spot which slowly divides into two portions about February 27. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Feb. 22·412 | 16 | 50 | 28 | 86 | 5·1 | −13·0 | −74·3 |
| 23·287 | 19 | 43 | 19 | 44 | 6·4 | −12·4 | −61·5 |
| 24·175 | 14 | 85 | 11 | 66 | 6·0 | −12·4 | −50·2 |
| 25·211 | 13 | 105 | 8 | 65 | 5·9 | −12·5 | −36·7 |
| 26·522 | 19 | 130 | 10 | 69 | 5·8 | −12·7 | −19·5 |
| 27·433 | 21 | 88 | 11 | 45 | 6·3 | −13·1 | − 7·0 |
| 28·273 | 20 | 41 | 10 | 21 | 6·8 | −13·2 | + 4·5 |
| Means ... | ... | ... | 14 | 57 | 6·04 | −12·76 | ... |
| **Group 686.** Two very small spots. | | | | | | | |
| Feb. 27·433 | 0 | 8 | 0 | 7 | 56·6 | +21·8 | +43·3 |
| Means ... | ... | ... | 0 | 7 | 56·6 | +21·8 | ... |
| **Group 687.** A regular spot. Another spot breaks out to the north of it, and some small spots appear before it on March 2. The group undergoes several changes during its course. | | | | | | | |
| Feb. 27·433 | 25 | 78 | 65 | 207 | 292·6 | −14·0 | −80·7 |
| 28·273 | 39 | 114 | 53 | 154 | 293·1 | −13·7 | −69·2 |
| Mar. 1·444 | 55 | 273 | 46 | 227 | 293·0 | −13·5 | −53·8 |
| 2·397 | 98 | 500 | 64 | 328 | 293·5 | −12·8 | −40·8 |
| 3·610 | 179 | 862 | 98 | 472 | 294·7 | −13·3 | −23·7 |
| 4·544 | 238 | 982 | 122 | 501 | 294·9 | −12·4 | −11·1 |
| 5·211 | 105 | 617 | 53 | 310 | 295·2 | −12·6 | − 2·1 |
| 6·201 | 86 | 712 | 43 | 365 | 295·3 | −12·4 | +11·1 |
| 7·291 | 83 | 622 | 47 | 347 | 295·9 | −12·7 | +26·1 |
| 8·187 | 80 | 668 | 50 | 423 | 295·9 | −12·1 | +37·9 |
| 9·305 | 94 | 498 | 76 | 403 | 295·8 | −12·3 | +52·5 |
| 10·197 | 47 | 260 | 49 | 283 | 294·9 | −12·1 | +63·4 |
| 11·172 | 21 | 137 | 35 | 237 | 293·3 | −13·3 | +74·6 |
| Means ... | ... | ... | 62 | 327 | 294·47 | −12·86 | ... |
| **Group 688.** Two small spots. | | | | | | | |
| Feb. 28·273 | 0 | 25 | 0 | 13 | 353·5 | −18·3 | − 8·8 |
| Means ... | ... | ... | 0 | 13 | 353·5 | −18·3 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 689.** Two small spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 3·610 | 0 | 67 | 0 | 36 | 299·8 | + 8·3 | −18·6 |
| 4·544 | 24 | 79 | 12 | 41 | 300·0 | + 8·1 | − 6·0 |
| 5·211 | 0 | 103 | 0 | 54 | 300·6 | + 9·1 | + 3·3 |
| Means ... | ... | .. | 4 | 44 | 300·13 | + 8·50 | ... |
| **Group 689*.** A small spot. | | | | | | | |
| Mar. 4·544 | 3 | 18 | 2 | 12 | 346·6 | − 9·9 | +40·6 |
| Means ... | ... | ... | 2 | 12 | 346·6 | − 9·9 | ... |
| **Group 690.** A small spot. | | | | | | | |
| Mar. 5·211 | 0 | 13 | 0 | 14 | 240·2 | +19·7 | −57·1 |
| 6·201 | 0 | 11 | 0 | 9 | 240·5 | +19·8 | −43·7 |
| Means ... | ... | ... | 0 | 12 | 240·35 | +19·75 | ... |
| **Group 691.** A regular spot. | | | | | | | |
| Mar. 5·211 | 39 | 81 | 89 | 182 | 220·2 | + 0·1 | −77·1 |
| 6·201 | 37 | 205 | 41 | 226 | 221·4 | − 0·4 | −62·8 |
| 7·291 | 55 | 383 | 42 | 290 | 221·3 | − 0·5 | −48·5 |
| 8·187 | 75 | 453 | 47 | 285 | 221·0 | − 0·9 | −37·0 |
| 9·305 | 95 | 553 | 51 | 299 | 221·7 | − 0·5 | −21·6 |
| 10·197 | 92 | 541 | 47 | 276 | 221·3 | − 0·7 | −10·2 |
| 11·172 | 111 | 530 | 56 | 266 | 221·8 | − 0·7 | + 3·1 |
| 12·256 | 93 | 481 | 49 | 253 | 221·9 | − 0·6 | +17·5 |
| 13·551 | 140 | 481 | 86 | 296 | 222·3 | − 0·4 | +34·9 |
| 14·401 | 147 | 415 | 108 | 303 | 222·4 | − 0·4 | +46·3 |
| 15·571 | 70 | 296 | 75 | 317 | 222·7 | − 0·4 | +62·0 |
| 16·400 | 31 | 146 | 55 | 260 | 223·3 | − 0·3 | +73·6 |
| Means ... | ... | ... | 62 | 271 | 221·78 | − 0·48 | ... |
| **Group 692.** A number of small spots. The group undergoes constant change. | | | | | | | |
| Mar. 8·187 | 40 | 48 | 21 | 25 | 277·7 | −15·3 | +19·7 |
| 9·305 | 18 | 81 | 11 | 49 | 278·8 | −15·1 | +35·5 |
| 10·197 | 15 | 67 | 11 | 49 | 278·1 | −14·6 | +46·6 |
| 11·172 | 4 | 66 | 4 | 66 | 279·5 | −15·3 | +60·8 |
| Means ... | ... | ... | 12 | 47 | 278·53 | −15·08 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 693.** A number of small spots in a straight line. The preceding spot increases in size. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 8·187 | 8 | 49 | 5 | 28 | 268·2 | +23·6 | +10·2 |
| 9·305 | 29 | 119 | 18 | 75 | 268·0 | +23·2 | +24·7 |
| 10·197 | 51 | 210 | 38 | 152 | 266·9 | +23·4 | +35·4 |
| 11·172 | 36 | 176 | 33 | 164 | 268·8 | +23·0 | +50·1 |
| 12·256 | 10 | 100 | 17 | 151 | 269·7 | +23·5 | +65·3 |
| Means ... | ... | ... | 22 | 114 | 268·32 | +23·34 | ... |
| **Group 694.** Two small spots. The preceding spot increases in size, and the following spot diminishes. | | | | | | | |
| Mar. 8·187 | 0 | 14 | 0 | 18 | 189·7 | −14·7 | −68·3 |
| 9·305 | 10 | 87 | 8 | 73 | 188·8 | −14·3 | −54·5 |
| 10·197 | 24 | 108 | 16 | 74 | 188·7 | −14·6 | −42·8 |
| 11·172 | 28 | 96 | 16 | 55 | 188·7 | −13·9 | −30·0 |
| 12·256 | 16 | 119 | 8 | 62 | 189·2 | −14·3 | −15·2 |
| 13·551 | 19 | 137 | 10 | 69 | 189·2 | −14·6 | + 1·8 |
| 14·401 | 20 | 99 | 10 | 51 | 189·4 | −14·5 | +13·3 |
| 15·571 | 17 | 50 | 10 | 29 | 189·7 | −14·7 | +29·0 |
| 16·400 | 6 | 17 | 4 | 11 | 190·3 | −14·8 | +40·6 |
| Means ... | ... | ... | 9 | 49 | 189·30 | −14·49 | ... |
| **Group 695.** A very small spot. It greatly increases in size, and other small spots appear behind it. | | | | | | | |
| Mar. 8·187 | 0 | 7 | 0 | 20 | 179·4 | + 8·5 | −78·6 |
| 9·305 | 0 | 30 | 0 | 33 | 181·9 | + 9·1 | −61·4 |
| 10·197 | 2 | 17 | 1 | 14 | 183·1 | + 8·7 | −48·4 |
| 11·172 | 20 | 79 | 13 | 51 | 183·8 | + 9·9 | −34·9 |
| 12·256 | 32 | 198 | 18 | 109 | 185·8 | + 9·4 | −18·6 |
| 13·551 | 112 | 407 | 59 | 212 | 187·2 | + 9·1 | − 0·2 |
| 14·401 | 94 | 348 | 50 | 185 | 187·5 | + 9·4 | +11·4 |
| 15·571 | 36 | 134 | 21 | 79 | 187·5 | + 9·8 | +26·8 |
| 16·400 | 22 | 149 | 15 | 97 | 187·5 | +10·0 | +37·8 |
| 17·613 | 11 | 25 | 10 | 22 | 187·3 | +10·0 | +53·6 |
| Means ... | ... | ... | 19 | 82 | 185·10 | + 9·39 | ... |
| **Group 696.** Two very small spots. | | | | | | | |
| Mar. 9·305 | 0 | 17 | 0 | 9 | 270·5 | − 9·8 | +27·2 |
| Means ... | ... | ... | 0 | 9 | 270·5 | − 9·8 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 697.

A number of small spots arranged in two straight lines at right angles to the Sun's Equator on March 10. The group alters its shape, forming one straight line nearly parallel to the Sun's Equator on March 11. The first and last spots are then the largest. The intermediate spots disappear on March 12.

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 10·197 | 28 | 148 | 14 | 76 | 243·4 | −17·2 | +11·9 |
| 11·172 | 62 | 543 | 35 | 304 | 244·7 | −16·5 | +26·0 |
| 12·256 | 67 | 605 | 44 | 400 | 245·3 | −15·7 | +40·9 |
| 13·551 | 93 | 393 | 89 | 374 | 246·3 | −15·1 | +58·9 |
| 14·401 | 86 | 265 | 129 | 406 | 248·0 | −14·6 | +71·9 |
| 15·571 | 0 | 15 | 0 | 42 | 242·1 | −16·0 | +81·4 |
| Means ... | ... | ... | 52 | 267 | 244·97 | −15·85 | ... |

### Group 698.

Two very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 10·197 | 0 | 11 | 0 | 6 | 219·3 | − 8·8 | −12·2 |
| Means ... | ... | ... | 0 | 6 | 219·3 | − 8·8 | ... |

### Group 699.

A small regular spot, followed by several smaller spots. It becomes a large irregular cluster of many spots on March 17, quite unlike its appearance on March 16.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 11·172 | 0 | 59 | 0 | 179 | 136·5 | −16·9 | −82·2 |
| 12·256 | 14 | 89 | 18 | 115 | 136·0 | −17·6 | −68·4 |
| 13·551 | 62 | 203 | 50 | 167 | 134·7 | −18·2 | −52·7 |
| 14·401 | 70 | 319 | 48 | 218 | 133·1 | −17·8 | −43·0 |
| 15·571 | 33 | 292 | 19 | 166 | 134·0 | −18·3 | −26·7 |
| 16·400 | 45 | 268 | 24 | 143 | 133·6 | −18·3 | −16·1 |
| 17·613 | 51 | 363 | 26 | 186 | 135·5 | −19·8 | + 1·8 |
| 18·488 | 50 | 315 | 26 | 165 | 135·7 | −19·2 | +13·5 |
| 19·517 | 25 | 226 | 14 | 129 | 135·2 | −18·9 | +26·6 |
| 20·400 | 62 | 288 | 40 | 185 | 134·9 | −18·6 | +37·9 |
| 21·476 | 27 | 140 | 22 | 113 | 134·4 | −18·6 | +51·6 |
| 22·416 | 5 | 42 | 5 | 45 | 133·6 | −17·7 | +63·2 |
| Means ... | ... | ... | 24 | 151 | 134·77 | −18·33 | ... |

### Group 700.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 13·551 | 0 | 13 | 0 | 8 | 156·1 | +11·7 | −31·3 |
| Means ... | ... | ... | 0 | 8 | 156·1 | +11·7 | ... |

### Group 701.

Two or three very small spots.

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 14·401 | 0 | 27 | 0 | 25 | 124·0 | +17·4 | −52·1 |
| 15·571 | 5 | 17 | 3 | 11 | 124·9 | +17·4 | −35·8 |
| 16·400 | 0 | 14 | 0 | 9 | 124·3 | +17·8 | −25·4 |
| Means ... | ... | ... | 1 | 15 | 124·40 | +17·53 | ... |

### Group 702.

A large regular spot, with several small spots close behind it. One of these finally becomes nearly as large as the first spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 15·571 | 21 | 86 | 75 | 312 | 76·6 | −22·8 | −84·1 |
| 16·400 | 55 | 196 | 89 | 325 | 75·8 | −22·8 | −73·9 |
| 17·613 | 70 | 303 | 66 | 282 | 76·0 | −23·1 | −57·7 |
| 18·488 | 126 | 463 | 92 | 342 | 75·7 | −23·0 | −46·5 |
| 19·517 | 116 | 512 | 71 | 315 | 75·5 | −22·9 | −33·1 |
| 20·400 | 153 | 752 | 86 | 420 | 74·7 | −22·5 | −22·3 |
| 21·476 | 219 | 1164 | 114 | 610 | 73·4 | −22·3 | − 9·4 |
| 22·416 | 228 | 911 | 118 | 473 | 74·8 | −22·4 | + 4·4 |
| 23·495 | 168 | 888 | 91 | 482 | 74·5 | −22·0 | +18·3 |
| 24·351 | 119 | 768 | 70 | 450 | 73·7 | −21·6 | +28·7 |
| 25·418 | 192 | 853 | 133 | 595 | 74·1 | −21·6 | +43·3 |
| 26·497 | 108 | 694 | 101 | 642 | 74·2 | −20·8 | +57·6 |
| 27·398 | 57 | 317 | 81 | 445 | 75·0 | −20·9 | +70·3 |
| 28·223 | 12 | 146 | 31 | 380 | 74·6 | −21·1 | +80·6 |
| Means ... | ... | ... | 87 | 434 | 74·90 | −22·13 | ... |

### Group 703.

Two spots. These spots become much larger, and several smaller spots appear between and around them on March 21 and following days.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 19·517 | 19 | 119 | 10 | 60 | 108·3 | − 5·6 | − 0·3 |
| 20·400 | 43 | 353 | 22 | 180 | 108·0 | − 5·1 | +11·0 |
| 21·476 | 130 | 734 | 72 | 409 | 108·7 | − 5·6 | +25·9 |
| 22·416 | 224 | 939 | 147 | 612 | 110·5 | − 5·3 | +40·1 |
| 23·495 | 164 | 762 | 140 | 657 | 111·0 | − 5·4 | +54·8 |
| 24·351 | 39 | 292 | 46 | 359 | 111·4 | − 5·3 | +66·4 |
| 25·418 | 32 | 138 | 69 | 300 | 109·8 | − 5·4 | +79·0 |
| Means ... | ... | ... | 72 | 368 | 109·67 | − 5·39 | ... |

### Group 704.

Two spots, and two or three small markings near them.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 20·400 | 56 | 182 | 61 | 202 | 154·7 | +20·6 | +57·7 |
| 21·476 | 18 | 92 | 35 | 174 | 153·3 | +21·8 | +70·5 |
| Means ... | ... | ... | 48 | 188 | 154·00 | +21·20 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 705.** A large regular spot, with some small companions. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 21·476 | 20 | 119 | 60 | 361 | 1·2 | −10·3 | −81·6 |
| 22·416 | 74 | 439 | 103 | 615 | 0·6 | −10·3 | −69·8 |
| 23·495 | 119 | 550 | 100 | 462 | 2·2 | −10·7 | −54·0 |
| 24·351 | 68 | 542 | 46 | 364 | 2·6 | −10·2 | −42·4 |
| 25·418 | 159 | 745 | 89 | 421 | 2·4 | −10·4 | −28·4 |
| 26·497 | 160 | 643 | 81 | 329 | 3·0 | −10·0 | −13·4 |
| 27·398 | 156 | 650 | 78 | 324 | 3·3 | −10·2 | − 1·4 |
| 28·223 | 76 | 551 | 38 | 279 | 3·5 | −10·1 | + 9·7 |
| 29·164 | 80 | 559 | 44 | 301 | 3·4 | −10·3 | +22·0 |
| 30·386 | 100 | 554 | 65 | 354 | 4·0 | −10·3 | +38·6 |
| 31·437 | 131 | 498 | 111 | 415 | 5·0 | −10·4 | +53·5 |
| Apr. 1·410 | 75 | 347 | 92 | 437 | 6·0 | −10·5 | +65·3 |
| 2·565 | 22 | 85 | 60 | 234 | 3·8 | − 9·6 | +80·4 |
| Means ... | ... | ... | 74 | 377 | 3·15 | −10·25 | ... |
| **Group 706.** A very small spot. | | | | | | | |
| Mar. 22·416 | 0 | 18 | 0 | 9 | 76·7 | −14·0 | + 6·3 |
| Means ... | ... | ... | 0 | 9 | 76·7 | −14·0 | ... |
| **Group 707.** A small spot. | | | | | | | |
| Mar. 22·416 | 6 | 20 | 3 | 12 | 40·3 | −20·1 | −30·1 |
| 23·495 | 16 | 62 | 8 | 33 | 41·0 | −20·9 | −15·2 |
| 24·351 | 0 | 18 | 0 | 9 | 41·5 | −20·5 | − 3·5 |
| 25·418 | 3 | 17 | 2 | 9 | 41·6 | −20·6 | +10·8 |
| 26·497 | 0 | 8 | 0 | 5 | 41·5 | −20·6 | +24·9 |
| Means ... | ... | ... | 3 | 14 | 41·18 | −20·54 | ... |
| **Group 708.** A small spot. A second appears on March 24. | | | | | | | |
| Mar. 23·495 | 17 | 31 | 11 | 20 | 95·3 | −15·7 | +39·1 |
| 24·351 | 14 | 61 | 11 | 47 | 95·5 | −15·8 | +50·5 |
| 25·418 | 23 | 46 | 28 | 55 | 97·3 | −14·6 | +66·5 |
| 26·497 | 5 | 61 | 14 | 172 | 97·9 | −14·7 | +81·3 |
| Means ... | ... | ... | 16 | 74 | 96·50 | −15·20 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 709.** Two spots, which rapidly increase up to March 25. Other small spots appear near them on March 25 and following days. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 23·495 | 12 | 36 | 7 | 19 | 50·1 | +12·8 | − 6·1 |
| 24·351 | 14 | 120 | 7 | 63 | 49·5 | +12·2 | + 4·5 |
| 25·418 | 71 | 210 | 40 | 117 | 49·8 | +11·7 | +19·0 |
| 26·497 | 110 | 577 | 69 | 367 | 50·7 | +11·5 | +34·1 |
| 27·398 | 91 | 522 | 70 | 400 | 51·0 | +11·2 | +46·3 |
| 28·223 | 42 | 370 | 42 | 374 | 51·9 | +10·8 | +58·1 |
| 29·164 | 32 | 192 | 50 | 306 | 51·5 | +10·3 | +70·1 |
| 30·386 | 0 | 23 | 0 | 172 | 50·1 | +11·3 | +84·7 |
| Means ... | ... | ... | 36 | 227 | 50·58 | +11·48 | ... |
| **Group 710.** A small spot, not detected on March 26, 27, and 28. | | | | | | | |
| Mar. 25·418 | 15 | 18 | 9 | 10 | 20·2 | +20·6 | −10·6 |
| 26·497 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 27·398 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 28·223 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 29·164 | 0 | 22 | 0 | 17 | 21·9 | +20·3 | +40·5 |
| 30·386 | 0 | 9 | 0 | 10 | 22·9 | +21·1 | +57·5 |
| 31·437 | 0 | 10 | 0 | 19 | 22·7 | +21·1 | +71·2 |
| Means ... | ... | ... | 1 | 8 | 21·93 | +20·78 | ... |
| **Group 711.** A very small spot on March 26 and 27. The spot shows a large proper motion on the following days, and several smaller spots appear near it. | | | | | | | |
| Mar. 26·497 | 2 | 11 | 2 | 10 | 317·7 | −12·5 | −58·9 |
| 27·398 | 2 | 7 | 2 | 5 | 318·4 | −12·8 | −46·3 |
| 28·223 | 0 | 14 | 0 | 9 | 320·2 | −12·3 | −33·6 |
| 29·164 | 0 | 9 | 0 | 5 | 319·6 | −12·1 | −21·8 |
| 30·386 | 0 | 7 | 0 | 3 | 318·7 | −13·8 | − 6·7 |
| 31·437 | 8 | 17 | 4 | 9 | 321·7 | −12·8 | +10·2 |
| Apr. 1·410 | 8 | 29 | 4 | 16 | 324·8 | −11·8 | +26·1 |
| 2·565 | 0 | 59 | 0 | 40 | 326·1 | −10·8 | +42·7 |
| 3·571 | 3 | 14 | 3 | 13 | 326·4 | −10·5 | +56·3 |
| 4·486 | 0 | 4 | 0 | 6 | 326·3 | −10·5 | +68·3 |
| Means ... | ... | ... | 2 | 12 | 321·99 | −11·99 | ... |
| **Group 712.** Two or three very small spots. | | | | | | | |
| Mar. 27·398 | 5 | 18 | 3 | 10 | 19·5 | +10·6 | +14·8 |
| Means ... | ... | ... | 3 | 10 | 19·5 | +10·6 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 713.** A small regular spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Mar. 29·164 | 0 | 33 | 0 | 77 | 268·6 | +25·4 | −72·8 |
| 30·386 | 13 | 78 | 16 | 91 | 267·4 | +25·1 | −58·0 |
| 31·437 | 28 | 114 | 23 | 96 | 267·2 | +24·9 | −44·3 |
| Apr. 1·410 | 26 | 119 | 18 | 83 | 267·3 | +25·0 | −31·4 |
| 2·565 | 42 | 104 | 26 | 64 | 267·0 | +25·3 | −16·4 |
| 3·571 | 21 | 92 | 12 | 54 | 266·8 | +25·4 | − 3·3 |
| 4·486 | 20 | 67 | 12 | 40 | 266·5 | +26·0 | + 8·5 |
| 5·562 | 8 | 26 | 5 | 17 | 266·3 | +25·9 | +22·5 |
| Means ... | ... | ... | 14 | 65 | 267·14 | +25·38 | ... |
| **Group 714.** Several small spots close together. | | | | | | | |
| Mar. 30·386 | 8 | 78 | 5 | 43 | 328·5 | +15·9 | + 3·1 |
| 31·437 | 23 | 79 | 13 | 44 | 327·4 | +15·3 | +15·9 |
| Apr. 1·410 | 0 | 37 | 0 | 23 | 328·1 | +15·1 | +29·4 |
| 2·565 | 0 | 28 | 0 | 21 | 326·9 | +15·5 | +43·5 |
| 3·571 | 17 | 52 | 19 | 57 | 329·7 | +14·3 | +59·6 |
| 4·486 | 3 | 10 | 7 | 20 | 331·0 | +14·3 | +73·0 |
| Means ... | ... | ... | 7 | 35 | 328·60 | +15·07 | ... |
| **Group 715.** A small regular spot. | | | | | | | |
| Mar. 30·386 | 5 | 23 | 8 | 38 | 251·8 | −14·4 | −73·6 |
| 31·437 | 12 | 43 | 11 | 42 | 252·0 | −14·4 | −59·5 |
| Apr. 1·410 | 8 | 23 | 6 | 16 | 252·5 | −14·3 | −46·2 |
| 2·565 | 0 | 34 | 0 | 20 | 252·4 | −14·2 | −31·0 |
| 3·571 | 3 | 19 | 2 | 10 | 252·5 | −14·4 | −17·6 |
| 4·486 | 0 | 11 | 0 | 6 | 252·3 | −14·3 | − 5·7 |
| Means ... | ... | ... | 5 | 22 | 252·25 | −14·33 | ... |
| **Group 716.** Two spots. The following and smaller spot disappears before April 8. | | | | | | | |
| Apr. 1·410 | 3 | 16 | 4 | 18 | 233·9 | −19·7 | −64·8 |
| 2·565 | 0 | 49 | 0 | 40 | 231·6 | −20·1 | −51·8 |
| 3·571 | 30 | 115 | 19 | 74 | 233·2 | −19·8 | −36·9 |
| 4·486 | 44 | 101 | 25 | 57 | 232·9 | −19·6 | −25·1 |
| 5·562 | 17 | 68 | 9 | 36 | 233·5 | −18·9 | −10·3 |
| 6·569 | 12 | 38 | 6 | 19 | 233·8 | −19·0 | + 3·2 |
| 7·336 | 10 | 58 | 5 | 30 | 233·3 | −18·9 | +12·9 |
| **Group 716—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 8·397 | 13 | 29 | 7 | 17 | 233·5 | −18·9 | +27·1 |
| 9·474 | 0 | 17 | 0 | 11 | 233·3 | −19·0 | +41·1 |
| 10·146 | 3 | 11 | 3 | 9 | 233·4 | −18·9 | +50·1 |
| Means ... | ... | ... | 8 | 31 | 233·24 | −19·28 | ... |
| **Group 717.** Two small spots on April 1. Other spots appear on the following days, and the group increases in size, and forms a long straight line of spots, of which the preceding spot is the largest. | | | | | | | |
| Apr. 1·410 | 0 | 17 | 0 | 21 | 236·7 | +19·0 | −62·0 |
| 2·565 | 0 | 31 | 0 | 28 | 231·4 | +19·4 | −52·0 |
| 3·571 | 22 | 65 | 16 | 48 | 231·5 | +18·9 | −38·6 |
| 4·486 | 83 | 400 | 52 | 250 | 231·3 | +19·3 | −26·7 |
| 5·562 | 76 | 479 | 44 | 273 | 233·4 | +19·8 | −10·4 |
| 6·569 | 64 | 522 | 35 | 291 | 233·3 | +19·3 | + 2·7 |
| 7·336 | 100 | 471 | 58 | 269 | 233·1 | +19·5 | +12·7 |
| 8·397 | 70 | 300 | 44 | 191 | 234·9 | +19·0 | +28·5 |
| 9·474 | 14 | 62 | 11 | 49 | 237·9 | +18·1 | +45·7 |
| 10·146 | 9 | 32 | 9 | 31 | 238·0 | +18·3 | +54·7 |
| Means ... | ... | ... | 27 | 145 | 234·15 | +19·06 | ... |
| **Group 718.** A regular spot. | | | | | | | |
| Apr. 1·410 | 16 | 73 | 30 | 140 | 224·0 | − 0·1 | −74·7 |
| 2·565 | 28 | 193 | 28 | 191 | 223·9 | − 0·2 | −59·5 |
| 3·571 | 35 | 192 | 25 | 139 | 224·2 | + 0·1 | −45·9 |
| 4·486 | 61 | 297 | 37 | 181 | 224·0 | + 0·6 | −34·0 |
| 5·562 | 77 | 284 | 41 | 152 | 224·7 | + 1·1 | −19·1 |
| 6·569 | 67 | 337 | 34 | 171 | 225·1 | + 0·8 | − 5·5 |
| 7·336 | 74 | 317 | 37 | 161 | 225·1 | + 1·3 | + 4·7 |
| 8·397 | 49 | 293 | 26 | 156 | 225·4 | + 1·5 | +19·0 |
| 9·474 | 41 | 235 | 25 | 142 | 225·4 | + 1·7 | +33·2 |
| 10·146 | 24 | 161 | 16 | 110 | 225·2 | + 1·7 | +41·9 |
| 11·502 | 25 | 148 | 25 | 148 | 225·2 | + 2·0 | +59·8 |
| 12·131 | 12 | 69 | 16 | 94 | 225·4 | + 2·2 | +68·3 |
| 13·153 | 2 | 35 | 6 | 121 | 224·9 | + 2·5 | +81·3 |
| Means ... | ... | ... | 27 | 147 | 224·81 | + 1·17 | ... |
| **Group 719.** A very small spot. | | | | | | | |
| Apr. 4·486 | 2 | 4 | 1 | 3 | 208·9 | + 6·0 | −49·1 |
| Means ... | ... | ... | 1 | 3 | 208·9 | + 6·0 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 720.** A small regular spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 5·562 | 0 | 18 | 0 | 12 | 199·6 | −10·4 | −44·2 |
| 6·569 | 8 | 28 | 5 | 16 | 201·1 | −10·3 | −29·5 |
| 7·336 | 9 | 35 | 5 | 19 | 202·3 | − 9·3 | −18·1 |
| 8·397 | 11 | 29 | 5 | 15 | 204·0 | − 9·2 | − 2·4 |
| 9·474 | 8 | 17 | 4 | 9 | 205·2 | − 9·3 | +13·0 |
| 10·146 | 0 | 11 | 0 | 6 | 205·3 | − 8·9 | +22·0 |
| 11·502 | 13 | 48 | 9 | 31 | 206·1 | − 8·2 | +40·7 |
| 12·131 | 0 | 17 | 0 | 13 | 206·5 | − 7·9 | +49·4 |
| 13·153 | 0 | 7 | 0 | 8 | 206·9 | − 7·3 | +63·3 |
| Means ... | ... | ... | 3 | 14 | 204·11 | − 8·98 | ... |
| **Group 721.** Several very small spots in a straight line, of which the preceding spot is the largest. The following spots disappear before April 10. | | | | | | | |
| Apr. 6·569 | 0 | 26 | 0 | 20 | 186·9 | +16·6 | −43·7 |
| 7·336 | 47 | 127 | 30 | 84 | 186·5 | +16·1 | −33·9 |
| 8·397 | 47 | 147 | 27 | 82 | 188·9 | +15·9 | −17·5 |
| 9·474 | 13 | 110 | 7 | 59 | 189·7 | +15·9 | − 2·5 |
| 10·146 | 10 | 37 | 6 | 20 | 191·3 | +16·1 | + 8·0 |
| 11·502 | 8 | 18 | 4 | 11 | 191·4 | +15·4 | +26·0 |
| Means ... | ... | ... | 12 | 46 | 189·12 | +16·00 | ... |
| **Group 722.** A regular spot. | | | | | | | |
| Apr. 6·569 | 17 | 118 | 27 | 192 | 162·3 | +20·1 | −68·3 |
| 7·336 | 40 | 130 | 48 | 154 | 159·8 | +20·4 | −60·6 |
| 8·397 | 68 | 236 | 55 | 191 | 161·2 | +20·6 | −45·2 |
| 9·474 | 69 | 254 | 45 | 166 | 161·2 | +20·6 | −31·0 |
| 10·146 | 38 | 266 | 23 | 161 | 161·4 | +20·9 | −21·9 |
| 11·502 | 68 | 320 | 38 | 179 | 160·6 | +20·9 | − 4·8 |
| 12·131 | 46 | 296 | 26 | 166 | 160·7 | +20·9 | + 3·6 |
| 13·153 | 34 | 251 | 20 | 146 | 160·6 | +21·0 | +17·0 |
| 14·462 | 67 | 257 | 46 | 175 | 160·3 | +21·1 | +34·0 |
| 15·283 | 26 | 178 | 21 | 141 | 160·4 | +20·6 | +44·9 |
| 16·546 | 24 | 146 | 30 | 178 | 160·5 | +21·1 | +61·6 |
| 17·587 | 0 | 115 | 0 | 285 | 160·3 | +21·1 | +75·2 |
| Means ... | ... | ... | 32 | 178 | 160·78 | +20·78 | ... |
| **Group 723.** A small spot on April 7. A second is seen near the first on April 8. | | | | | | | |
| Apr. 7·336 | 4 | 14 | 2 | 8 | 203·4 | −16·0 | −17·0 |
| 8·397 | 15 | 73 | 8 | 37 | 202·9 | −16·0 | − 3·5 |
| Means ... | ... | ... | 5 | 23 | 203·15 | −16·00 | ... |
| **Group 724.** A small spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 8·397 | 4 | 15 | 2 | 8 | 175·4 | −14·9 | −31·0 |
| Means ... | ... | ... | 2 | 8 | 175·4 | −14·9 | ... |
| **Group 725.** A somewhat scattered group of small spots. | | | | | | | |
| Apr. 9·474 | 3 | 39 | 6 | 69 | 118·4 | − 8·7 | −73·8 |
| 10·146 | 2 | 50 | 3 | 58 | 118·2 | − 8·6 | −65·1 |
| 11·502 | 62 | 284 | 47 | 213 | 116·8 | − 9·1 | −48·6 |
| 12·131 | 9 | 116 | 6 | 75 | 117·0 | − 9·2 | −40·1 |
| 13·153 | 0 | 188 | 0 | 105 | 117·5 | − 9·0 | −26·1 |
| 14·462 | 49 | 180 | 24 | 92 | 117·2 | − 8·7 | − 9·1 |
| Means ... | ... | ... | 14 | 102 | 117·52 | − 8·88 | ... |
| **Group 726.** Three small spots when first seen on E. limb. The group undergoes very great and violent changes, and increases in size very rapidly indeed. The most striking changes occur on April 16, 17, 18, and 19. | | | | | | | |
| Apr. 10·146 | 0 | 22 | 0 | 89 | 99·3 | −21·3 | −84·0 |
| 11·502 | 32 | 263 | 48 | 417 | 93·0 | −20·5 | −72·4 |
| 12·131 | 27 | 165 | 29 | 186 | 93·0 | −20·8 | −64·1 |
| 13·153 | 31 | 291 | 25 | 226 | 94·7 | −21·4 | −48·9 |
| 14·462 | 64 | 436 | 40 | 270 | 92·9 | −21·1 | −33·4 |
| 15·283 | 45 | 311 | 25 | 219 | 92·7 | −21·2 | −22·8 |
| 16·546 | 45 | 298 | 24 | 156 | 93·2 | −19·6 | − 5·7 |
| 17·587 | 396 | 1693 | 204 | 880 | 92·5 | −18·3 | + 7·4 |
| 18·542 | 445 | 2510 | 244 | 1371 | 92·3 | −18·0 | +19·9 |
| 19·165 | 275 | 2063 | 160 | 1207 | 92·9 | −17·5 | +28·7 |
| 20·421 | 412 | 2517 | 294 | 1808 | 92·6 | −17·7 | +45·0 |
| 21·409 | 457 | 2404 | 436 | 2258 | 92·3 | −17·5 | +57·7 |
| 22·164 | 149 | 1133 | 202 | 1487 | 92·6 | −17·2 | +68·0 |
| 23·512 | 59 | 375 | 173 | 1094 | 87·9 | −18·2 | +81·1 |
| Means ... | ... | ... | 136 | 833 | 92·99 | −19·31 | ... |
| **Group 727.** A small spot. | | | | | | | |
| Apr. 11·502 | 9 | 23 | 5 | 14 | 182·2 | +19·8 | +16·8 |
| Means ... | ... | ... | 5 | 14 | 182·2 | +19·8 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 728.** A V-shaped group of spots on April 11 and 12. The group changes very rapidly, increasing in size between April 11 and 12. On April 13 it forms a straight line, the first and last spots being the largest. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 11·502 | 127 | 530 | 71 | 294 | 142·2 | −18·6 | −23·2 |
| 12·131 | 101 | 594 | 53 | 314 | 142·4 | −18·6 | −14·7 |
| 13·153 | 81 | 767 | 45 | 393 | 143·0 | −18·3 | − 0·6 |
| 14·462 | 152 | 878 | 82 | 472 | 143·1 | −18·2 | +16·8 |
| 15·283 | 53 | 642 | 31 | 373 | 144·0 | −18·6 | +28·5 |
| 16·546 | 123 | 1057 | 89 | 769 | 144·5 | −18·0 | +45·6 |
| 17·587 | 192 | 970 | 190 | 940 | 144·0 | −17·8 | +58·9 |
| 18·542 | 47 | 488 | 77 | 795 | 145·4 | −17·7 | +73·0 |
| 19·165 | 11 | 117 | 20 | 223 | 139·9 | −17·1 | +75·7 |
| Means ... | ... | ... | 73 | 508 | 143·17 | −18·10 | ... |
| **Group 729.** A very large spot, with three or four spots following it. The great spot undergoes constant change, especially after passing the central meridian. | | | | | | | |
| Apr. 13·153 | 69 | 602 | 130 | 1138 | 67·8 | −27·8 | −75·8 |
| 14·462 | 317 | 2002 | 340 | 2123 | 65·5 | −28·1 | −60·8 |
| 15·283 | 236 | 2175 | 191 | 1757 | 66·1 | −28·1 | −49·4 |
| 16·546 | 371 | 3208 | 239 | 2059 | 66·3 | −28·4 | −32·6 |
| 17·587 | 663 | 3388 | 384 | 1963 | 65·3 | −28·7 | −19·8 |
| 18·542 | 846 | 3693 | 465 | 2031 | 64·7 | −28·6 | − 7·7 |
| 19·165 | 279 | 3635 | 152 | 1988 | 64·6 | −28·5 | + 0·4 |
| 20·421 | 593 | 3343 | 339 | 1908 | 64·2 | −28·8 | +16·6 |
| 21·409 | 688 | 3388 | 428 | 2109 | 64·0 | −28·7 | +29·4 |
| 22·164 | 237 | 1960 | 165 | 1372 | 64·0 | −28·5 | +39·4 |
| 23·512 | 275 | 1846 | 264 | 1771 | 63·5 | −28·4 | +56·7 |
| 24·546 | 216 | 1176 | 319 | 1734 | 63·4 | −28·6 | +70·2 |
| 25·166 | 41 | 331 | 90 | 718 | 62·4 | −28·6 | +77·4 |
| Means ... | ... | ... | 270 | 1744 | 64·75 | −28·45 | ... |
| **Group 730.** A small spot. | | | | | | | |
| Apr. 14·462 | 0 | 18 | 0 | 17 | 178·9 | +20·8 | +52·6 |
| Means ... | ... | ... | 0 | 17 | 178·9 | +20·8 | ... |
| **Group 731.** A disturbed area, in which small spots appear and disappear at irregular intervals. No spots are seen on April 17. | | | | | | | |
| Apr. 14·462 | 8 | 60 | 5 | 33 | 107·5 | −21·9 | −18·8 |
| 15·283 | 2 | 27 | 1 | 14 | 108·4 | −21·5 | − 7·1 |
| 16·546 | 0 | 10 | 0 | 5 | 109·8 | −17·9 | +10·9 |
| 17·587 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 18·542 | 5 | 35 | 3 | 22 | 109·8 | −20·8 | +37·4 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 731—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 19·165 | 3 | 54 | 2 | 41 | 111·2 | −19·9 | +47·0 |
| 20·421 | 17 | 74 | 19 | 86 | 112·4 | −19·2 | +64·8 |
| 21·409 | 0 | 28 | 0 | 70 | 113·9 | −18·7 | +79·3 |
| Means ... | ... | ... | 4 | 34 | 110·43 | −19·99 | ... |
| **Group 732.** A small spot. | | | | | | | |
| Apr. 14·462 | 8 | 76 | 7 | 65 | 72·6 | −21·4 | −53·7 |
| 15·283 | 13 | 58 | 9 | 40 | 72·9 | −21·4 | −42·6 |
| 16·546 | 0 | 42 | 0 | 25 | 72·4 | −22·0 | −26·5 |
| 17·587 | 15 | 35 | 8 | 19 | 72·2 | −21·9 | −12·9 |
| 18·542 | 0 | 12 | 0 | 6 | 71·9 | −21·8 | − 0·5 |
| Means ... | ... | ... | 5 | 31 | 72·40 | −21·70 | ... |
| **Group 733.** Two small spots. The group increases in size on April 16, 17, and 18, and forms an irregular group of small spots. On the following days all but two of these spots disappear. | | | | | | | |
| Apr. 15·283 | 7 | 42 | 6 | 37 | 59·5 | −13·6 | −56·0 |
| 16·546 | 41 | 194 | 27 | 126 | 59·9 | −12·9 | −39·0 |
| 17·587 | 85 | 317 | 47 | 177 | 60·4 | −13·8 | −24·7 |
| 18·542 | 84 | 354 | 44 | 183 | 61·5 | −13·8 | −10·9 |
| 19·165 | 0 | 145 | 0 | 74 | 62·4 | −13·5 | − 1·8 |
| 20·421 | 52 | 244 | 27 | 127 | 61·8 | −13·3 | +14·2 |
| 21·409 | 37 | 221 | 21 | 125 | 62·2 | −13·2 | +27·6 |
| 22·164 | 8 | 77 | 5 | 49 | 61·7 | −13·7 | +37·1 |
| 23·512 | 13 | 23 | 12 | 21 | 63·5 | −13·3 | +56·7 |
| 24·546 | 0 | 3 | 0 | 4 | 64·5 | −12·8 | +71·3 |
| Means ... | ... | ... | 19 | 92 | 61·74 | −13·39 | ... |
| **Group 734.** A regular spot, with a small companion. | | | | | | | |
| Apr. 16·546 | 10 | 70 | 27 | 186 | 21·0 | +10·7 | −77·9 |
| 17·587 | 37 | 160 | 46 | 200 | 20·6 | +10·9 | −64·5 |
| 18·542 | 68 | 380 | 57 | 323 | 20·6 | +10·6 | −51·8 |
| 19·165 | 37 | 313 | 27 | 224 | 21·4 | +10·9 | −42·8 |
| 20·421 | 55 | 326 | 32 | 189 | 22·0 | +10·7 | −25·6 |
| 21·409 | 75 | 444 | 40 | 237 | 22·7 | +11·4 | −11·9 |
| 22·164 | 41 | 300 | 21 | 157 | 23·3 | +11·4 | − 1·3 |
| 23·512 | 69 | 352 | 38 | 192 | 24·0 | +11·6 | +17·2 |
| 24·546 | 52 | 245 | 31 | 149 | 24·3 | +11·4 | +31·1 |
| 25·166 | 12 | 158 | 8 | 109 | 25·1 | +12·1 | +40·1 |
| 26·353 | 22 | 80 | 20 | 74 | 24·5 | +11·7 | +55·3 |
| 27·161 | 4 | 102 | 5 | 134 | 24·7 | +11·7 | +66·1 |
| Means ... | ... | ... | 29 | 181 | 22·85 | +11·26 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 735.** A regular spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 17·587 | 0 | 72 | 0 | 203 | 4·4 | −11·6 | −80·7 |
| 18·542 | 38 | 150 | 47 | 187 | 5·6 | −11·3 | −66·8 |
| 19·165 | 33 | 154 | 31 | 144 | 6·3 | −11·2 | −57·9 |
| 20·421 | 46 | 259 | 30 | 172 | 6·7 | −11·1 | −40·9 |
| 21·409 | 96 | 339 | 54 | 193 | 6·6 | −10·2 | −28·0 |
| 22·164 | 52 | 296 | 27 | 157 | 6·9 | −10·4 | −17·7 |
| 23·512 | 64 | 364 | 32 | 183 | 6·9 | −10·4 | + 0·1 |
| 24·546 | 63 | 307 | 32 | 158 | 6·9 | −10·6 | +13·7 |
| 25·166 | 43 | 259 | 23 | 141 | 7·7 | −10·3 | +22·7 |
| 26·353 | 32 | 257 | 20 | 163 | 6·8 | −11·3 | +37·6 |
| 27·161 | 27 | 244 | 20 | 182 | 6·8 | −10·1 | +48·2 |
| 28·550 | 47 | 178 | 59 | 225 | 7·3 | −10·3 | +67·1 |
| Means ... | ... | ... | 31 | 176 | 6·58 | −10·73 | ... |
| **Group 736.** Two or three very small spots, which disappear before April 21. | | | | | | | |
| Apr. 18·542 | 2 | 16 | 1 | 11 | 36·0 | +15·1 | −36·4 |
| 19·165 | 0 | 56 | 0 | 33 | 37·8 | +14·7 | −26·4 |
| 20·421 | 0 | 45 | 0 | 24 | 37·0 | +14·9 | −10·6 |
| Means ... | ... | ... | 0 | 23 | 36·93 | +14·90 | ... |
| **Group 737.** Several very small spots, which break out in the same area of disturbance as Group 736. | | | | | | | |
| Apr. 22·164 | 0 | 21 | 0 | 12 | 39·2 | +15·2 | +14·6 |
| 23·512 | 26 | 71 | 16 | 44 | 37·2 | +15·0 | +30·4 |
| 24·546 | 10 | 44 | 7 | 33 | 37·3 | +15·2 | +44·1 |
| 25·166 | 0 | 11 | 0 | 9 | 32·8 | +14·6 | +47·8 |
| 26·353 | 19 | 85 | 22 | 103 | 33·0 | +14·6 | +63·8 |
| 27·161 | 19 | 127 | 35 | 284 | 34·1 | +15·1 | +75·5 |
| Means ... | ... | ... | 13 | 81 | 35·60 | +14·95 | ... |
| **Group 738.** A small regular spot, which rapidly diminishes in size. | | | | | | | |
| Apr. 21·409 | 11 | 68 | 20 | 124 | 321·3 | + 7·1 | −73·3 |
| 22·164 | 3 | 52 | 4 | 59 | 321·7 | + 6·7 | −62·9 |
| 23·512 | 7 | 23 | 5 | 16 | 322·1 | + 6·8 | −44·7 |
| Means ... | ... | ... | 10 | 66 | 321·70 | +6·87 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 739.** Several very small spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Apr. 23·512 | 3 | 20 | 1 | 11 | 16·5 | +10·8 | + 9·7 |
| 24·546 | 30 | 63 | 17 | 35 | 16·7 | + 9·7 | +23·5 |
| 25·166 | 3 | 32 | 2 | 20 | 18·0 | + 9·9 | +33·0 |
| 26·353 | 2 | 27 | 1 | 21 | 17·7 | + 9·6 | +48·5 |
| 27·161 | 0 | 20 | 0 | 24 | 20·2 | +10·7 | +61·6 |
| Means ... | ... | ... | 4 | 22 | 17·82 | +10·14 | ... |
| **Group 740.** Several very small spots. The group shows frequent changes. | | | | | | | |
| Apr. 26·353 | 0 | 10 | 0 | 5 | 344·8 | +14·5 | +15·6 |
| 27·161 | 2 | 92 | 1 | 53 | 343·2 | +14·7 | +24·6 |
| 28·550 | 32 | 141 | 24 | 104 | 344·3 | +14·8 | +44·1 |
| 29 | No photograph. | | (12 | 65 | 343·3 | +15·1 | +56·5) |
| 30·581 | 0 | 17 | 0 | 26 | 342·2 | +15·4 | +68·8 |
| Means ... | ... | ... | 7 | 51 | 343·56 | +14·90 | ... |
| **Group 741.** A small spot. | | | | | | | |
| Apr. 27·161 | 0 | 11 | 0 | 9 | 269·3 | +12·0 | −49·3 |
| 28·550 | 15 | 46 | 9 | 27 | 270·3 | +11·0 | −29·9 |
| Means ... | ... | ... | 5 | 18 | 269·80 | +11·50 | ... |
| **Group 742.** A small spot. | | | | | | | |
| Apr. 28·550 | 24 | 98 | 14 | 56 | 281·6 | +19·7 | −18·6 |
| 29 | No photograph. | | (13 | 49 | 283·0 | +19·5 | − 3·8) |
| 30·581 | 20 | 76 | 11 | 42 | 284·5 | +19·3 | +11·1 |
| May 1·530 | 7 | 22 | 4 | 13 | 284·5 | +19·1 | +23·7 |
| 2·549 | 9 | 34 | 6 | 25 | 288·9 | +19·3 | +41·5 |
| 3·605 | 0 | 4 | 0 | 4 | 287·9 | +19·2 | +54·5 |
| Means ... | ... | ... | 8 | 32 | 285·07 | +19·35 | ... |
| **Group 743.** An irregular spot with a small companion. | | | | | | | |
| Apr. 30·581 | 34 | 76 | 26 | 58 | 228·1 | +14·9 | −45·3 |
| May 1·530 | 47 | 181 | 30 | 115 | 227·0 | +14·9 | −33·8 |
| 2·549 | 41 | 212 | 23 | 119 | 227·2 | +15·0 | −20·2 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 743—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| May 3·605 | 10 | 71 | 5 | 38 | 227·9 | +15·6 | − 5·5 |
| 4·314 | 0 | 8 | 0 | 4 | 229·0 | +15·7 | + 5·0 |
| 5·549 | 11 | 29 | 6 | 17 | 229·7 | +15·7 | +22·0 |
| Means ... | ... | ... | 15 | 59 | 228·15 | +15·30 | ... |

### Group 744.

A large regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 1·530 | 29 | 117 | 292 | 1184 | 175·6 | +23·5 | −85·2 |
| 2·549 | 60 | 329 | 101 | 557 | 177·9 | +23·1 | −69·5 |
| 3·605 | 179 | 532 | 182 | 543 | 177·8 | +23·5 | −55·6 |
| 4·314 | 108 | 530 | 87 | 428 | 178·3 | +23·0 | −45·7 |
| 5·549 | 213 | 745 | 139 | 485 | 177·4 | +23·0 | −30·3 |
| 6·495 | 231 | 836 | 137 | 494 | 176·9 | +23·3 | −18·3 |
| 7·451 | 222 | 900 | 125 | 506 | 176·3 | +23·1 | − 6·2 |
| 8·401 | 201 | 831 | 113 | 468 | 176·2 | +23·1 | + 6·2 |
| 9·113 | 126 | 788 | 73 | 456 | 176·4 | +22·8 | +15·8 |
| 10·486 | 219 | 801 | 147 | 537 | 175·9 | +23·2 | +33·5 |
| 11·456 | 160 | 578 | 130 | 468 | 176·0 | +22·8 | +46·4 |
| 12·597 | 105 | 387 | 125 | 462 | 176·1 | +23·1 | +61·6 |
| 13·439 | 0 | 255 | 0 | 498 | 176·2 | +22·5 | +72·8 |
| Means ... | ... | ... | 127 | 545 | 176·69 | +23·08 | ... |

### Group 745.

A small spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 2·549 | 0 | 13 | 0 | 8 | 211·8 | +15·4 | −35·6 |
| Means ... | ... | ... | 0 | 8 | 211·8 | +15·4 | ... |

### Group 746.

Two or three small spots close together.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 2·549 | 0 | 26 | 0 | 77 | 169·3 | +22·0 | −78·1 |
| 3·605 | 8 | 37 | 11 | 53 | 167·5 | +23·5 | −65·9 |
| 4·314 | 0 | 28 | 0 | 29 | 167·7 | +23·8 | −56·3 |
| 5·549 | 28 | 53 | 21 | 40 | 167·4 | +24·6 | −40·3 |
| 6·495 | 20 | 43 | 13 | 28 | 167·1 | +24·7 | −28·1 |
| 7·451 | 10 | 29 | 6 | 17 | 166·8 | +24·6 | −15·7 |
| 8·401 | 14 | 43 | 8 | 25 | 165·7 | +24·9 | − 4·3 |
| 9·113 | 0 | 27 | 0 | 15 | 166·7 | +24·5 | + 6·1 |
| 10·486 | 9 | 62 | 5 | 38 | 165·8 | +25·0 | +23·4 |
| Means ... | ... | ... | 7 | 36 | 167·11 | +24·18 | ... |

### Group 747.

Two very small faint spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| May 3·605 | 5 | 25 | 3 | 13 | 234·0 | +18·7 | + 0·6 |
| 4·314 | 0 | 8 | 0 | 4 | 235·2 | +18·6 | +11·2 |
| Means ... | ... | ... | 2 | 9 | 234·60 | +18·65 | ... |

### Group 748.

Two very small faint spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 3·605 | 9 | 18 | 4 | 9 | 218·6 | + 5·5 | −14·8 |
| Means ... | ... | ... | 4 | 9 | 218·6 | + 5·5 | ... |

### Group 749.

A regular spot, with several small spots near it. The group undergoes several small changes.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 3·605 | 0 | 43 | 0 | 127 | 155·3 | +20·4 | −78·1 |
| 4·314 | 14 | 70 | 21 | 102 | 157·0 | +20·1 | −67·0 |
| 5·549 | 66 | 225 | 59 | 199 | 156·7 | +20·3 | −51·0 |
| 6·495 | 103 | 430 | 73 | 304 | 156·5 | +20·6 | −38·7 |
| 7·451 | 83 | 356 | 52 | 219 | 156·1 | +20·5 | −26·4 |
| 8·401 | 88 | 379 | 50 | 216 | 155·6 | +21·2 | −14·4 |
| 9·113 | 43 | 300 | 23 | 166 | 156·5 | +21·3 | − 4·1 |
| 10·486 | 96 | 424 | 55 | 241 | 156·6 | +21·6 | +14·2 |
| 11·456 | 62 | 372 | 38 | 229 | 156·5 | +21·3 | +26·9 |
| 12·597 | 45 | 280 | 33 | 207 | 155·9 | +21·8 | +41·4 |
| 13·439 | 33 | 134 | 30 | 119 | 155·1 | +20·7 | +51·7 |
| 14·528 | 8 | 37 | 10 | 48 | 153·6 | +21·1 | +64·7 |
| Means ... | ... | ... | 37 | 181 | 155·95 | +20·91 | ... |

### Group 750.

A small spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 4·314 | 0 | 19 | 0 | 36 | 148·6 | −19·3 | −75·4 |
| 5·549 | 0 | 12 | 0 | 12 | 149·4 | −19·4 | −58·3 |
| Means ... | ... | ... | 0 | 24 | 149·00 | −19·35 | ... |

### Group 751.

A small spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| May 5·549 | 0 | 10 | 0 | 15 | 277·2 | −16·0 | +69·5 |
| Means ... | ... | ... | 0 | 15 | 277·2 | −16·0 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 752.** A regular spot, with some smaller spots following it. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| May 5·549 | 9 | 28 | 14 | 47 | 135·2 | − 4·8 | −72·5 |
| 6·495 | 62 | 256 | 62 | 254 | 135·4 | − 4·4 | −59·8 |
| 7·451 | 106 | 452 | 77 | 337 | 134·7 | − 5·0 | −47·8 |
| 8·401 | 106 | 456 | 64 | 276 | 136·3 | − 4·7 | −33·7 |
| 9·113 | 41 | 396 | 22 | 215 | 138·4 | − 4·7 | −22·2 |
| 10·486 | 89 | 338 | 45 | 169 | 140·4 | − 4·6 | − 2·0 |
| 11·456 | 57 | 286 | 29 | 147 | 142·6 | − 4·2 | +13·0 |
| 12·597 | 40 | 259 | 23 | 148 | 143·3 | − 4·7 | +28·8 |
| 13·439 | 52 | 204 | 35 | 137 | 145·2 | − 4·7 | +41·8 |
| 14·528 | 50 | 167 | 48 | 157 | 146·9 | − 3·8 | +58·0 |
| 15·441 | 17 | 64 | 27 | 101 | 148·4 | − 3·7 | +71·5 |
| Means ... | ... | ... | 41 | 181 | 140·62 | − 4·48 | ... |
| **Group 753.** Two very small spots close together, and a third at a little distance. | | | | | | | |
| May 7·451 | 0 | 17 | 0 | 9 | 198·7 | − 6·7 | +16·2 |
| 8·401 | 0 | 10 | 0 | 5 | 199·6 | − 6·4 | +29·6 |
| Means ... | ... | ... | 0 | 7 | 199·15 | − 6·55 | ... |
| **Group 754.** A regular spot, followed by a close cluster of small spots. The latter disappear before May 13. | | | | | | | |
| May 7·451 | 23 | 94 | 44 | 178 | 108·9 | +13·5 | −73·6 |
| 8·401 | 69 | 353 | 87 | 425 | 106·3 | +13·9 | −63·7 |
| 9·113 | 34 | 334 | 30 | 291 | 108·0 | +13·9 | −52·6 |
| 10·486 | 94 | 481 | 60 | 307 | 107·3 | +13·7 | −35·1 |
| 11·456 | 57 | 390 | 32 | 220 | 108·0 | +13·7 | −21·6 |
| 12·597 | 48 | 318 | 25 | 166 | 109·0 | +14·0 | − 5·5 |
| 13·439 | 50 | 226 | 26 | 118 | 110·8 | +13·3 | + 7·4 |
| 14·528 | 43 | 234 | 24 | 131 | 111·1 | +13·4 | +22·2 |
| 15·441 | 32 | 152 | 20 | 96 | 111·6 | +13·7 | +34·7 |
| 16·525 | 37 | 96 | 30 | 77 | 112·1 | +13·7 | +49·6 |
| 17·569 | 0 | 45 | 0 | 54 | 112·6 | +13·7 | +63 9 |
| Means ... | ... | ... | 34 | 188 | 109·61 | +13·68 | ... |
| **Group 755.** Two very small spots. | | | | | | | |
| May 8·401 | 15 | 33 | 9 | 20 | 138·9 | −14·1 | −31·1 |
| 9·113 | 22 | 63 | 12 | 35 | 138·7 | −14·2 | −21·9 |
| 10·486 | 20 | 53 | 10 | 27 | 138·1 | −14·8 | − 4·3 |
| 11·456 | 0 | 50 | 0 | 26 | 138·6 | −14·3 | + 9·0 |
| 12·597 | 0 | 28 | 0 | 16 | 140·3 | −13·9 | +25·8 |
| Means ... | ... | ... | 6 | 25 | 138·92 | −14·26 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 756.** A small regular spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| May 8·401 | 22 | 51 | 32 | 73 | 100·4 | −13·7 | −69·6 |
| 9·113 | 2 | 45 | 2 | 45 | 100·8 | −13·5 | −59·8 |
| 10·486 | 9 | 35 | 6 | 24 | 100·4 | −14·0 | −42·0 |
| Means ... | ... | ... | 13 | 47 | 100·53 | −13·73 | ... |
| **Group 757.** A small spot on May 9, but much larger on May 10. It is partly hidden by the wire on May 9. | | | | | | | |
| May 9·113 | 2 | 8 | 2 | 9 | 222·6 | +14·2 | +62·0 |
| 10·486 | 16 | 81 | 43 | 216 | 220·2 | +16·6 | +77·8 |
| Means ... | ... | ... | 23 | 113 | 221·40 | +15·40 | ... |
| **Group 758.** Three very small spots. | | | | | | | |
| May 10·486 | 0 | 24 | 0 | 16 | 180·3 | −16·5 | +37·9 |
| Means ... | ... | ... | 0 | 16 | 180·3 | −16·5 | ... |
| **Group 759.** Two very large spots of irregular outline. The preceding spot breaks up into a number of fragments after passing the central meridian. | | | | | | | |
| May 10·486 | 43 | 171 | 140 | 560 | 60·6 | −28·1 | −81·8 |
| 11·456 | 145 | 790 | 256 | 1331 | 57·7 | −28·7 | −71·9 |
| 12·597 | 342 | 1643 | 366 | 1723 | 55·8 | −28·9 | −58·7 |
| 13·439 | 550 | 1966 | 467 | 1620 | 55·2 | −28·5 | −48·2 |
| 14·528 | 521 | 2567 | 351 | 1701 | 55·6 | −28·5 | −33·3 |
| 15·441 | 502 | 2380 | 306 | 1440 | 54·2 | −28·9 | −22·7 |
| 16·525 | 729 | 2803 | 416 | 1595 | 52·8 | −29·1 | − 9·7 |
| 17·569 | 456 | 2462 | 256 | 1385 | 51·5 | −29·2 | + 2·8 |
| 18·428 | 463 | 2477 | 268 | 1433 | 50·8 | −29·4 | +13·4 |
| 19·572 | 228 | 1449 | 143 | 916 | 49·4 | −29·5 | +27·1 |
| 20·402 | 172 | 1064 | 121 | 755 | 49·0 | −29·5 | +37·8 |
| 21·510 | 231 | 676 | 206 | 611 | 48·4 | −29·4 | +51·8 |
| 22·118 | 43 | 323 | 47 | 355 | 48·1 | −29·6 | +59·5 |
| 23·092 | 27 | 131 | 43 | 211 | 45·6 | −29·8 | +69·9 |
| 24·100 | 15 | 69 | 60 | 281 | 44·9 | −30·1 | +82·5 |
| Means ... | ... | ... | 230 | 1061 | 51·97 | −29·15 | ... |
| **Group 760.** A number of spots in a straight line. The group gradually diminishes, and only the preceding spot is left on May 22. | | | | | | | |
| May 12·597 | 9 | 135 | 17 | 404 | 34·7 | + 9·8 | −79·8 |
| 13·439 | 116 | 459 | 168 | 682 | 34·0 | +10·7 | −69·4 |
| 14·528 | 105 | 609 | 91 | 556 | 33·4 | +10·2 | −55·5 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 760—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| May 15·441 | 167 | 767 | 119 | 551 | 32·8 | +10·5 | −44·1 |
| 16·525 | 122 | 691 | 72 | 405 | 33·8 | +10·6 | −28·7 |
| 17·569 | 147 | 624 | 78 | 331 | 34·5 | +10·8 | −14·2 |
| 18·428 | 97 | 387 | 49 | 199 | 37·0 | +10·8 | − 0·4 |
| 19·572 | 34 | 169 | 19 | 91 | 39·9 | +10·7 | +17·6 |
| 20·402 | 19 | 81 | 11 | 49 | 43·2 | +10·4 | +32·0 |
| 21·510 | 0 | 21 | 0 | 16 | 44·0 | +10·2 | +47·4 |
| 22·118 | 0 | 10 | 0 | 9 | 44·1 | +11·8 | +55·5 |
| Means ... | ... | ... | 57 | 299 | 37·40 | +10·59 | ... |

### Group 761.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 13·439 | 0 | 24 | 0 | 13 | 99·9 | −20·4 | − 3·5 |
| Means ... | ... | ... | 0 | 13 | 99·9 | −20·4 | ... |

### Group 762.

Two large regular spots, with a number of small spots between and around them.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 14·528 | 74 | 395 | 119 | 658 | 16·3 | −16·4 | −72·6 |
| 15·441 | 175 | 805 | 189 | 867 | 15·1 | −16·3 | −61·8 |
| 16·525 | 295 | 1171 | 222 | 890 | 14·8 | −16·1 | −47·7 |
| 17·569 | 371 | 1777 | 227 | 1086 | 15·7 | −15·5 | −33·0 |
| 18·428 | 313 | 2194 | 172 | 1218 | 15·1 | −15·7 | −22·3 |
| 19·572 | 316 | 2109 | 162 | 1084 | 16·2 | −15·1 | − 6·1 |
| 20·402 | 270 | 1958 | 139 | 1008 | 16·3 | −15·2 | + 5·1 |
| 21·510 | 355 | 1785 | 195 | 975 | 16·8 | −15·0 | +20·2 |
| 22·118 | 160 | 1343 | 94 | 788 | 17·3 | −15·1 | +28·7 |
| 23·092 | 95 | 1005 | 67 | 692 | 17·6 | −14·8 | +41·9 |
| 24·100 | 67 | 757 | 60 | 670 | 17·1 | −14·8 | +54·7 |
| 25·098 | 35 | 412 | 47 | 549 | 16·7 | −14·5 | +67·6 |
| 26·480 | 9 | 52 | 41 | 252 | 14·9 | −14·3 | +84·1 |
| Means ... | ... | ... | 133 | 826 | 16·15 | −15·29 | ... |

### Group 763.

Two very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 16·525 | 13 | 31 | 7 | 17 | 61·5 | +19·1 | − 1·0 |
| 17·569 | 0 | 18 | 0 | 10 | 63·4 | +19·8 | +14·7 |
| 18·428 | 0 | 46 | 0 | 27 | 60·9 | +18·9 | +23·5 |
| Means ... | ... | ... | 2 | 18 | 61·93 | +19·27 | ... |

### Group 764.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 20·402 | 0 | 11 | 0 | 6 | 0·5 | +11·4 | −10·7 |
| Means ... | ... | ... | 0 | 6 | 0·5 | +11·4 | ... |

### Group 765.

A regular spot, with a small companion.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| May 25·098 | 8 | 72 | 23 | 201 | 230·0 | +13·7 | −79·1 |
| 26·480 | 68 | 218 | 73 | 242 | 229·0 | +13·7 | −61·8 |
| 27·403 | 72 | 292 | 57 | 230 | 229·9 | +13·8 | −48·7 |
| 28·112 | 52 | 298 | 34 | 198 | 230·3 | +13·7 | −39·0 |
| 29·474 | 81 | 381 | 45 | 212 | 230·3 | +13·8 | −20·9 |
| 30·397 | 72 | 393 | 38 | 206 | 230·3 | +13·8 | − 8·8 |
| 31·402 | 95 | 403 | 49 | 210 | 230·3 | +14·1 | + 4·6 |
| June 1·291 | 64 | 320 | 34 | 172 | 230·4 | +14·2 | +16·4 |
| 2·284 | 49 | 269 | 29 | 159 | 230·2 | +14·4 | +29·4 |
| 3·416 | 64 | 257 | 47 | 187 | 230·5 | +15·0 | +44·7 |
| 4·513 | 29 | 161 | 30 | 165 | 230·8 | +15·4 | +59·5 |
| 5·495 | 22 | 77 | 36 | 131 | 230·5 | +14·9 | +72·1 |
| 6·122 | 7 | 44 | 22 | 129 | 230·0 | +15·3 | +79·9 |
| Means ... | ... | ... | 40 | 188 | 230·19 | +14·29 | ... |

### Group 766.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 29·474 | 0 | 10 | 0 | 10 | 192·3 | −14·6 | −58·9 |
| 30·397 | 0 | 15 | 0 | 11 | 193·3 | −14·4 | −45·8 |
| 31·402 | 0 | 15 | 0 | 9 | 193·9 | −14·1 | −31·8 |
| June 1·291 | 6 | 10 | 3 | 5 | 193·1 | −12·3 | −20·9 |
| Means ... | ... | ... | 1 | 9 | 193·15 | −13·85 | ... |

### Group 767.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 29·474 | 17 | 87 | 70 | 356 | 169·2 | +21·4 | −82·0 |
| 30·397 | 52 | 207 | 81 | 324 | 169·5 | +21·5 | −69·6 |
| 31·402 | 84 | 294 | 83 | 290 | 169·1 | +21·5 | −56·6 |
| June 1·291 | 55 | 334 | 42 | 253 | 169·4 | +21·5 | −44·6 |
| 2·284 | 75 | 451 | 47 | 285 | 168·9 | +21·5 | −31·9 |
| 3·416 | 108 | 368 | 61 | 208 | 168·1 | +21·4 | −17·7 |
| 4·513 | 87 | 404 | 47 | 218 | 168·0 | +21·4 | − 3·3 |
| 5·495 | 74 | 370 | 40 | 202 | 168·5 | +20·8 | +10·1 |
| 6·122 | 67 | 356 | 37 | 199 | 167·9 | +21·1 | +17·8 |
| 7·451 | 38 | 221 | 25 | 145 | 167·5 | +21·0 | +35·1 |
| 8·130 | 32 | 139 | 24 | 102 | 167·4 | +20·4 | +43·9 |
| 9·470 | 15 | 40 | 16 | 45 | 167·2 | +20·8 | +61·5 |
| Means ... | ... | ... | 48 | 219 | 168·39 | +21·19 | ... |

### Group 768.

Two very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 1·291 | 0 | 12 | 0 | 14 | 277·3 | +25·7 | +63·3 |
| Means ... | ... | ... | 0 | 14 | 277·3 | +25·7 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 769.** A very small faint spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| June 3·416 | 1 | 11 | 0 | 6 | 189·6 | −16·6 | + 3·8 |
| Means ... | ... | ... | 0 | 6 | 189·6 | −16·6 | ... |
| **Group 770.** A small spot. | | | | | | | |
| June 3·416 | 4 | 16 | 4 | 15 | 129·6 | +16·6 | −56·2 |
| 4·513 | 8 | 15 | 5 | 10 | 131·0 | +16·6 | −40·3 |
| Means ... | ... | ... | 5 | 13 | 130·30 | +16·60 | ... |
| **Group 771.** A very small spot. | | | | | | | |
| June 3·416 | 0 | 20 | 0 | 26 | 119·4 | +16·3 | −66·4 |
| 4·513 | 3 | 8 | 2 | 7 | 119·6 | +16·1 | −51·7 |
| Means ... | ... | ... | 1 | 17 | 119·50 | +16·20 | ... |
| **Group 772.** Two small spots. | | | | | | | |
| June 3·416 | 0 | 7 | 0 | 10 | 116·9 | +14·9 | −68·9 |
| Means ... | ... | ... | 0 | 10 | 116·9 | +14·9 | ... |
| **Group 773.** A small faint spot. | | | | | | | |
| June 4·513 | 0 | 3 | 0 | 2 | 125·1 | +17·1 | −46·2 |
| Means ... | ... | ... | 0 | 2 | 125·1 | +17·1 | ... |
| **Group 774.** A small spot. | | | | | | | |
| June 7·451 | 0 | 21 | 0 | 11 | 152·5 | − 8·6 | +20·1 |
| 8·130 | 0 | 15 | 0 | 9 | 155·2 | − 7·7 | +31·7 |
| 9·470 | 1 | 7 | 1 | 6 | 157·1 | − 7·2 | +51·4 |
| Means ... | ... | ... | 0 | 9 | 154·93 | − 7·83 | ... |
| **Group 775.** A very small faint spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| June 7·451 | 0 | 13 | 0 | 7 | 124·6 | −13·0 | − 7·8 |
| Means ... | ... | ... | 0 | 7 | 124·6 | −13·0 | ... |
| **Group 776.** A very small faint spot. | | | | | | | |
| June 7·451 | 3 | 9 | 2 | 6 | 93·9 | −16·3 | −38·5 |
| Means ... | ... | ... | 2 | 6 | 93·9 | −16·3 | ... |
| **Group 777.** A large spot, with several small spots following it. The group undergoes great and frequent changes. | | | | | | | |
| June 9·470 | 63 | 299 | 92 | 439 | 36·4 | −12·8 | −69·3 |
| 10·200 | 59 | 291 | 58 | 287 | 37·7 | −12·2 | −58·3 |
| 11·429 | 99 | 662 | 70 | 464 | 37·1 | −12·4 | −42·7 |
| 12·411 | 162 | 824 | 96 | 487 | 37·5 | −12·3 | −29·3 |
| 13·294 | 97 | 906 | 53 | 493 | 36·6 | −12·3 | −18·5 |
| 14·512 | 240 | 1478 | 124 | 766 | 37·6 | −13·3 | − 1·4 |
| 15·538 | 263 | 1452 | 140 | 770 | 38·0 | −12·9 | +12·6 |
| 16·399 | 293 | 1587 | 167 | 901 | 38·2 | −12·7 | +24·2 |
| 17·489 | 277 | 1307 | 186 | 873 | 38·8 | −12·4 | +39·3 |
| 18 | No photograph. | | (135 | 643 | 39·6 | −12·2 | +53·0) |
| 19 | No photograph. | | (84 | 413 | 40·3 | −12·1 | +66·8) |
| 20·433 | 11 | 56 | 33 | 183 | 41·1 | −11·9 | +80·5 |
| Means ... | ... | ... | 103 | 560 | 38·24 | −12·46 | ... |
| **Group 778.** Two small spots. | | | | | | | |
| June 10·200 | 0 | 21 | 0 | 12 | 83·7 | +26·0 | −12·3 |
| 11·429 | 11 | 33 | 6 | 18 | 83·3 | +26·1 | + 3·5 |
| 12·411 | 0 | 9 | 0 | 5 | 84·3 | +25·3 | +17·5 |
| Means ... | ... | ... | 2 | 12 | 83·77 | +25·80 | ... |
| **Group 779.** Two or three small spots. | | | | | | | |
| June 11·429 | 10 | 41 | 12 | 47 | 16·2 | −13·2 | −63·6 |
| 12·411 | 49 | 115 | 39 | 92 | 17·2 | −13·4 | −49·6 |
| 13·294 | 2 | 40 | 2 | 27 | 17·3 | −11·7 | −37·8 |
| Means ... | ... | ... | 18 | 55 | 16·90 | −12·77 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 780.** A number of spots arranged in a straight line. The group undergoes great and frequent changes. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| June 14·512 | 19 | 53 | 21 | 62 | 335·6 | +21·5 | −63·4 |
| 15·538 | 17 | 101 | 14 | 86 | 334·2 | +21·7 | −51·2 |
| 16·399 | 37 | 168 | 25 | 114 | 335·6 | +21·3 | −38·4 |
| 17·489 | 156 | 535 | 96 | 327 | 331·2 | +22·4 | −28·3 |
| 18 | No photograph. | | (79 | 344 | 331·0 | +22·6 | −15·5) |
| 19 | No photograph. | | (63 | 361 | 330·9 | +22·7 | − 2·7) |
| 20·433 | 85 | 693 | 46 | 378 | 330·7 | +22·9 | +10·1 |
| 21·291 | 24 | 529 | 14 | 306 | 331·6 | +21·8 | +22·4 |
| 22·185 | 38 | 365 | 24 | 233 | 330·9 | +22·4 | +33·5 |
| 23·402 | 37 | 196 | 30 | 159 | 330·6 | +22·7 | +49·3 |
| 24·408 | 0 | 16 | 0 | 17 | 329·4 | +22·6 | +61·4 |
| Means ... | ... | ... | 37 | 217 | 331·97 | +22·24 | ... |
| **Group 781.** A small regular spot, followed by some smaller spots. | | | | | | | |
| June 20·433 | 42 | 214 | 25 | 125 | 292·5 | +15·6 | −28·1 |
| 21·291 | 13 | 91 | 7 | 49 | 292·7 | +15·4 | −16·5 |
| 22·185 | 20 | 207 | 10 | 106 | 292·7 | +15·2 | − 4·7 |
| 23·402 | 49 | 254 | 26 | 133 | 292·3 | +15·4 | +11·0 |
| 24·408 | 34 | 160 | 19 | 90 | 292·8 | +15·1 | +24·8 |
| 25·529 | 7 | 65 | 5 | 43 | 292·7 | +15·5 | +39·5 |
| 26·417 | 18 | 72 | 15 | 58 | 292·6 | +14·9 | +51·2 |
| Means ... | ... | ... | 15 | 86 | 292·61 | +15·30 | ... |
| **Group 782.** A small spot. | | | | | | | |
| June 23·402 | 0 | 13 | 0 | 11 | 229·7 | +14·0 | −51·6 |
| 24·408 | 0 | 13 | 0 | 8 | 229·8 | +14·6 | −38·2 |
| Means ... | ... | ... | 0 | 10 | 229·75 | +14·30 | ... |
| **Group 783.** A small regular spot. | | | | | | | |
| June 23·402 | 13 | 56 | 19 | 84 | 210·9 | +14·6 | −70·4 |
| 24·408 | 24 | 95 | 23 | 91 | 210·1 | +15·1 | −57·9 |
| 25·529 | 16 | 101 | 11 | 69 | 211·5 | +14·6 | −41·7 |
| 26·417 | 22 | 104 | 13 | 61 | 211·7 | +14·6 | −29·7 |
| 27·527 | 25 | 111 | 13 | 59 | 212·0 | +14·9 | −14·7 |
| 28·373 | 30 | 89 | 15 | 45 | 212·2 | +14·7 | − 3·3 |
| 29·245 | 11 | 93 | 6 | 48 | 212·0 | +14·6 | + 8·1 |
| 30·343 | 14 | 64 | 8 | 35 | 211·8 | +15·0 | +22·2 |
| July 1·443 | 9 | 95 | 6 | 61 | 212·7 | +14·1 | +37·8 |
| 2·463 | 0 | 28 | 0 | 23 | 213·3 | +13·7 | +52·0 |
| Means ... | ... | ... | 11 | 58 | 211·82 | +14·59 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 784.** A small spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| June 24·408 | 0 | 11 | 0 | 14 | 201·8 | +16·2 | −66·2 |
| Means ... | ... | ... | 0 | 14 | 201·8 | +16·2 | ... |
| **Group 785.** A small spot when first seen on the East limb. The group increases in size, and becomes a long line of spots, of which the first spot is the largest. | | | | | | | |
| June 25·529 | 0 | 8 | 0 | 8 | 192·2 | +10·6 | −61·0 |
| 26·417 | 11 | 27 | 8 | 20 | 193·1 | +10·6 | −48·3 |
| 27·527 | 74 | 218 | 44 | 130 | 194·5 | +10·9 | −32·2 |
| 28·373 | 54 | 488 | 29 | 262 | 195·7 | +10·8 | −19·7 |
| 29·245 | 50 | 266 | 26 | 136 | 196·8 | +10·4 | − 7·1 |
| 30·343 | 52 | 376 | 27 | 192 | 197·8 | +10·4 | + 8·2 |
| July 1·443 | 123 | 529 | 67 | 289 | 196·9 | +10·7 | +22·0 |
| 2·463 | 102 | 406 | 63 | 255 | 198·3 | +10·2 | +37·0 |
| 3·457 | 58 | 281 | 46 | 222 | 199·0 | + 9·5 | +50·8 |
| 4 | No photograph. | | (25 | 123 | 199·8 | + 9·5 | +64·9) |
| 5·474 | 2 | 9 | 4 | 24 | 200·5 | + 9·4 | +79·0 |
| Means ... | ... | ... | 31 | 151 | 196·78 | +10·27 | ... |
| **Group 786.** A very small faint spot. | | | | | | | |
| June 25·529 | 3 | 6 | 1 | 3 | 250·4 | +24·9 | − 2·8 |
| 26·417 | 0 | 21 | 0 | 11 | 250·4 | +24·1 | +11·5 |
| 27·527 | 12 | 34 | 7 | 20 | 251·4 | +23·5 | +24·7 |
| 28·373 | 0 | 17 | 0 | 12 | 252·2 | +23·2 | +36·7 |
| Means ... | ... | ... | 2 | 12 | 251·10 | +23·93 | ... |
| **Group 787.** Two very small close clusters of spots when first seen. The group develops into a line of spots, the middle spots of which soon disappear, whilst the first and last increase in size. | | | | | | | |
| June 25·529 | 26 | 84 | 14 | 45 | 247·5 | −19·3 | − 5·7 |
| 26·417 | 3 | 20 | 2 | 11 | 246·1 | −18·8 | + 4·7 |
| 27·527 | 127 | 349 | 73 | 199 | 245·8 | −19·4 | +19·1 |
| 28·373 | 79 | 745 | 50 | 466 | 245·1 | −19·3 | +29·7 |
| 29·245 | 81 | 664 | 58 | 482 | 245·2 | −19·1 | +41·3 |
| 30·343 | 36 | 525 | 37 | 517 | 245·6 | −19·2 | +56·0 |
| July 1·443 | 43 | 311 | 62 | 553 | 246·4 | −18·9 | +71·5 |
| 2·463 | 0 | 39 | 0 | 207 | 244·5 | −20·1 | +83·2 |
| Means ... | ... | ... | 37 | 310 | 245·78 | −19·26 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 788.** Two irregular spots, and two or three very small spots close to them. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| June 26·417 | 0 | 35 | 0 | 67 | 167·7 | −15·1 | −73·7 |
| 27·527 | 38 | 184 | 39 | 195 | 167·1 | −15·5 | −59·6 |
| 28·373 | 17 | 270 | 14 | 212 | 167·8 | −15·1 | −47·6 |
| 29·245 | 22 | 339 | 14 | 219 | 168·6 | −15·1 | −35·3 |
| 30·343 | 27 | 377 | 16 | 212 | 169·7 | −15·0 | −19·9 |
| July 1·443 | 105 | 419 | 56 | 222 | 169·4 | −15·1 | − 5·5 |
| 2·463 | 80 | 306 | 43 | 163 | 169·5 | −15·0 | + 8·2 |
| 3·457 | 102 | 312 | 58 | 177 | 169·6 | −14·8 | +21·4 |
| 4 | No photograph. | | (54 | 199 | 170·4 | −14·4 | +35·6) |
| 5·474 | 60 | 268 | 50 | 220 | 171·2 | −14·0 | +49·7 |
| Means ... | ... | ... | 34 | 189 | 169·10 | −14·91 | ... |
| **Group 789.** A small spot. | | | | | | | |
| June 29·245 | 2 | 36 | 3 | 42 | 140·2 | − 4·7 | −63·7 |
| 30·343 | 6 | 55 | 4 | 41 | 141·9 | − 4·6 | −47·7 |
| July 1·443 | 19 | 63 | 11 | 37 | 144·8 | − 4·6 | −30·1 |
| 2·463 | 14 | 47 | 7 | 25 | 145·6 | − 4·6 | −15·7 |
| 3·457 | 8 | 23 | 4 | 12 | 145·6 | − 4·6 | − 2·6 |
| 4 | No photograph. | | (5 | 23 | 144·9 | − 4·2 | +10·0) |
| 5·474 | 9 | 62 | 5 | 34 | 144·2 | − 3·8 | +22·7 |
| 6 | No photograph. | | (8 | 27 | 144·8 | − 4·3 | +36·1) |
| 7·416 | 12 | 24 | 10 | 19 | 145·3 | − 4·8 | +49·5 |
| 8·106 | 6 | 12 | 6 | 12 | 146·3 | − 4·6 | +59·6 |
| Means ... | ... | ... | 6 | 27 | 144·36 | − 4·48 | ... |
| **Group 790.** A very small spot. | | | | | | | |
| June 29·245 | 0 | 10 | 0 | 13 | 136·1 | +15·0 | −67·8 |
| 30·343 | 0 | 17 | 0 | 15 | 137·0 | +15·0 | −52·6 |
| July 1·443 | 3 | 22 | 2 | 14 | 137·0 | +15·0 | −37·9 |
| 2·463 | 0 | 3 | 0 | 1 | 136·1 | +14·0 | −25·2 |
| 3·457 | 0 | 16 | 0 | 8 | 136·5 | +15·2 | −11·7 |
| Means ... | ... | ... | 0 | 10 | 136·54 | +14·84 | ... |
| **Group 791.** A small spot. | | | | | | | |
| June 30·343 | 0 | 17 | 0 | 35 | 116·8 | −22·7 | −72·8 |
| July 1·443 | 11 | 42 | 12 | 46 | 116·3 | −23·2 | −58·6 |
| 2·463 | 11 | 50 | 9 | 40 | 116·4 | −23·2 | −44·9 |
| 3·457 | 3 | 13 | 2 | 9 | 115·3 | −23·0 | −32·9 |
| Means ... | ... | ... | 6 | 33 | 116·20 | −23·03 | ... |
| **Group 792.** A very small faint spot. The group as it approaches the central meridian, and forms three or four spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| July 1·443 | 2 | 11 | 1 | 7 | 138·9 | − 5·5 | −36·0 |
| 2·463 | 0 | 16 | 0 | 8 | 139·4 | − 5·6 | −21·9 |
| 3·457 | 30 | 167 | 15 | 86 | 139·8 | − 4·6 | − 8·4 |
| 4 | No photograph. | | (25 | 92 | 139·8 | − 4·9 | + 4·9) |
| 5·474 | 63 | 185 | 34 | 98 | 139·7 | − 5·1 | +18·2 |
| 6 | No photograph. | | (25 | 90 | 139·6 | − 5·2 | +30·9) |
| 7·416 | 23 | 116 | 16 | 82 | 139·4 | − 5·3 | +43·6 |
| 8·106 | 12 | 58 | 10 | 49 | 139·3 | − 5·5 | +52·6 |
| Means ... | ... | ... | 16 | 64 | 139·49 | − 5·21 | ... |
| **Group 793.** A small spot, not seen on July 2. | | | | | | | |
| July 1·443 | 11 | 54 | 8 | 40 | 127·8 | +18·1 | −47·1 |
| 2·463 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 3·457 | 0 | 14 | 0 | 8 | 126·2 | +17·6 | −22·0 |
| Means ... | ... | ... | 3 | 16 | 127·00 | +17·85 | ... |
| **Group 794.** A number of small spots. Before disappearing at the West limb they have almost all coalesced to form one large spot. | | | | | | | |
| July 10·438 | 26 | 91 | 13 | 47 | 55·0 | +16·2 | − 0·8 |
| 11·294 | 39 | 219 | 20 | 113 | 52·2 | +16·3 | + 7·7 |
| 12·472 | 110 | 499 | 62 | 281 | 53·5 | +15·8 | +24·6 |
| 13·249 | 55 | 447 | 34 | 278 | 53·9 | +15·6 | +35·3 |
| 14·476 | 70 | 327 | 57 | 265 | 53·8 | +15·7 | +51·5 |
| 15·557 | 24 | 400 | 31 | 503 | 55·0 | +15·9 | +66·9 |
| 16·518 | 12 | 41 | 34 | 117 | 56·1 | +16·3 | +80·7 |
| Means ... | ... | ... | 36 | 229 | 54·21 | +15·97 | ... |
| **Group 795.** Two very small spots, not seen on July 13 and 14. | | | | | | | |
| July 12·472 | 0 | 16 | 0 | 14 | 335·6 | +11·3 | −53·3 |
| 13·249 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 14·476 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 15·557 | 0 | 43 | 0 | 24 | 334·9 | +11·1 | −13·2 |
| 16·518 | 4 | 49 | 2 | 25 | 334·5 | +11·4 | − 0·9 |
| 17·440 | 0 | 20 | 0 | 11 | 336·2 | +11·5 | +13·0 |
| Means ... | ... | ... | 0 | 12 | 335·30 | +11·33 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 796.

Two close pairs of very small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| July 14·476 | 42 | 87 | 22 | 44 | 7·8 | + 8·7 | + 5·5 |
| 15·557 | 22 | 119 | 12 | 63 | 8·6 | + 9·0 | +20·5 |
| 16·518 | 3 | 14 | 2 | 8 | 6·2 | + 8·4 | +30·8 |
| 17·440 | 0 | 10 | 0 | 7 | 7·4 | + 8·1 | +44·2 |
| Means ... | ... | ... | 9 | 31 | 7·50 | + 8·55 | ... |

### Group 797.

A large regular spot, with several small spots following it. These smaller spots disappear before July 22.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 14·476 | 56 | 348 | 90 | 568 | 289·5 | +14·1 | −72·8 |
| 15·557 | 148 | 652 | 138 | 608 | 290·4 | +14·0 | −57·7 |
| 16·518 | 94 | 908 | 66 | 645 | 290·6 | +14·4 | −44·8 |
| 17·440 | 135 | 855 | 81 | 509 | 291·4 | +14·8 | −31·8 |
| 18·452 | 202 | 986 | 109 | 527 | 291·7 | +14·9 | −18·0 |
| 19·506 | 225 | 885 | 114 | 452 | 292·7 | +15·2 | − 3·1 |
| 20·532 | 157 | 785 | 81 | 407 | 292·8 | +14·8 | +10·6 |
| 21·533 | 132 | 716 | 74 | 399 | 293·5 | +14·7 | +24·5 |
| 22·106 | 87 | 570 | 52 | 343 | 294·1 | +14·4 | +32·7 |
| 23·579 | 115 | 539 | 94 | 443 | 294·5 | +13·9 | +52·6 |
| 24·397 | 99 | 420 | 110 | 466 | 294·7 | +13·9 | +63·6 |
| 25·189 | 35 | 178 | 60 | 309 | 294·6 | +14·1 | +73·9 |
| Means ... | ... | ... | 89 | 473 | 292·54 | +14·43 | ... |

### Group 798.

A close cluster of very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 15·557 | 4 | 34 | 6 | 50 | 277·4 | +18·6 | −70·7 |
| 16·518 | 2 | 11 | 2 | 10 | 279·4 | +19·4 | −56·0 |
| 17·440 | 0 | 12 | 0 | 8 | 280·2 | +19·3 | −43·0 |
| 18·452 | 0 | 60 | 0 | 37 | 277·5 | +19·6 | −32·2 |
| 19·506 | 14 | 78 | 8 | 42 | 276·2 | +18·7 | −19·6 |
| 20·532 | 9 | 67 | 4 | 35 | 277·8 | +19·3 | − 4·4 |
| 21·533 | 3 | 42 | 2 | 22 | 278·2 | +18·9 | + 9·2 |
| Means ... | ... | ... | 3 | 29 | 278·10 | +19·11 | ... |

### Group 799.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 17·440 | 0 | 9 | 0 | 6 | 282·9 | −11·1 | −40·3 |
| Means ... | ... | ... | 0 | 6 | 282·9 | −11·1 | ... |

### Group 800.

Three small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| July 17·440 | 0 | 17 | 0 | 20 | 261·3 | −11·8 | −61·9 |
| 18·452 | 24 | 59 | 19 | 49 | 260·2 | −11·6 | −49·5 |
| 19·506 | 9 | 45 | 6 | 29 | 259·7 | −11·8 | −36·1 |
| Means ... | ... | ... | 8 | 33 | 260·40 | −11·73 | ... |

### Group 801.

A very small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 18·452 | 0 | 7 | 0 | 11 | 17·8 | −20·3 | +68·1 |
| Means ... | ... | ... | 0 | 11 | 17·8 | −20·3 | ... |

### Group 802.

Two small spots. Other small spots appear and form a V-shaped group, the preceding spot, which is also the largest, forming the angle of the V.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 18·452 | 0 | 28 | 0 | 29 | 252·6 | −18·9 | −57·1 |
| 19·506 | 8 | 52 | 6 | 39 | 253·9 | −19·6 | −41·9 |
| 20·532 | 28 | 128 | 17 | 80 | 254·8 | −19·4 | −27·4 |
| 21·533 | 44 | 264 | 26 | 151 | 254·6 | −19·8 | −14·4 |
| 22·106 | 45 | 268 | 25 | 150 | 254·7 | −20·2 | − 6·7 |
| 23·579 | 40 | 228 | 22 | 132 | 256·7 | −20·2 | +14·8 |
| 24·397 | 41 | 211 | 26 | 133 | 257·8 | −20·2 | +26·7 |
| 25·189 | 16 | 102 | 11 | 74 | 259·1 | −20·1 | +38·4 |
| 26·406 | 26 | 65 | 26 | 64 | 259·8 | −19·3 | +55·3 |
| 27·406 | 2 | 16 | 3 | 26 | 260·1 | −19·1 | +68·8 |
| Means ... | ... | ... | 16 | 88 | 256·41 | −19·68 | ... |

### Group 803.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 18·452 | 0 | 16 | 0 | 41 | 232·7 | −17·5 | −77·0 |
| 19·506 | 0 | 25 | 0 | 33 | 231·2 | −18·3 | −64·6 |
| 20·532 | 16 | 37 | 15 | 33 | 230·8 | −17·8 | −51·4 |
| 21·533 | 12 | 30 | 8 | 21 | 230·4 | −18·1 | −38·6 |
| 22·106 | 3 | 21 | 2 | 13 | 230·5 | −18·2 | −30·9 |
| Means ... | ... | ... | 5 | 28 | 231·12 | −17·98 | ... |

### Group 804.

Three or four small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 20·532 | 0 | 15 | 0 | 18 | 216·0 | +18·4 | −66·2 |
| 21·533 | 9 | 48 | 7 | 41 | 215·5 | +19·3 | −53·5 |
| 22·106 | 0 | 26 | 0 | 19 | 215·6 | +19·5 | −45·8 |
| Means ... | ... | ... | 2 | 26 | 215·70 | +19·07 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 805.** A close cluster of small spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| July 21·533 | 0 | 18 | 0 | 9 | 262·2 | + 7·6 | − 6·8 |
| 22·106 | 0 | 37 | 0 | 19 | 262·9 | + 7·7 | + 1·5 |
| Means ... | ... | ... | 0 | 14 | 262·55 | + 7·65 | ... |
| **Group 806.** A small spot, with two or three small faint spots near it. | | | | | | | |
| July 21·533 | 0 | 32 | 0 | 59 | 194·2 | +10·7 | −74·8 |
| 22·106 | 2 | 32 | 3 | 34 | 199·3 | + 9·8 | −62·1 |
| 23·579 | 27 | 137 | 18 | 96 | 197·4 | +10·5 | −44·5 |
| 24·397 | 7 | 59 | 4 | 36 | 197·4 | +10·4 | −33·7 |
| 25·189 | 10 | 33 | 5 | 18 | 199·9 | +10·4 | −20·8 |
| 26·406 | 6 | 46 | 3 | 24 | 196·1 | +11·3 | − 8·4 |
| 27·406 | 9 | 77 | 4 | 39 | 194·8 | +10·2 | + 3·5 |
| Means ... | ... | ... | 5 | 44 | 197·01 | +10·47 | ... |
| **Group 807.** Two or three small spots. | | | | | | | |
| July 23·579 | 4 | 68 | 3 | 44 | 204·2 | +16·3 | −37·7 |
| 24·397 | 23 | 83 | 14 | 47 | 203·2 | +15·8 | −27·9 |
| 25·189 | 0 | 30 | 0 | 16 | 205·7 | +15·9 | −15·0 |
| 26·406 | 49 | 191 | 25 | 97 | 203·4 | +15·9 | − 1·1 |
| 27·406 | 31 | 145 | 16 | 75 | 203·7 | +16·1 | +12·4 |
| 28·170 | 0 | 51 | 0 | 28 | 203·5 | +15·1 | +22·3 |
| 29·427 | 0 | 89 | 0 | 61 | 208·0 | +10·3 | +43·4 |
| Means ... | ... | ... | 8 | 53 | 204·53 | +15·06 | ... |
| **Group 808.** A close cluster of small faint spots. The group develops into a large V-shaped group, the preceding spot, which is also the largest, forming the angle of the V. | | | | | | | |
| July 27·406 | 17 | 60 | 32 | 113 | 118·3 | −11·3 | −73·0 |
| 28·170 | 0 | 119 | 0 | 140 | 118·1 | −11·0 | −63·1 |
| 29·427 | 34 | 310 | 25 | 233 | 118·9 | −10·4 | −45·7 |
| 30 | No photograph. | | (26 | 285 | 120·4 | −11·0 | −30·2) |
| 31·549 | 48 | 617 | 26 | 337 | 121·9 | −11·5 | −14·7 |
| Aug. 1 | No photograph. | | (68 | 416 | 123·7 | −11·9 | − 0·7) |
| 2·395 | 200 | 908 | 109 | 495 | 125·5 | −12·3 | +13·4 |
| 3·576 | 108 | 720 | 67 | 443 | 126·5 | −12·6 | +30·0 |
| 4·547 | 84 | 673 | 62 | 489 | 126·8 | −12·5 | +43·1 |
| 5 | No photograph. | | (62 | 463 | 127·0 | −12·4 | +56·5) |
| 6·538 | 39 | 271 | 62 | 436 | 127·2 | −12·2 | +69·9 |
| Means ... | ... | ... | 49 | 350 | 123·12 | −11·74 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 809.** A small spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Aug. 3·576 | 3 | 15 | 2 | 10 | 57·9 | +16·6 | −38·6 |
| Means ... | ... | ... | 2 | 10 | 57·9 | +16·6 | ... |
| **Group 810.** A small spot. | | | | | | | |
| Aug. 8·604 | 0 | 15 | 0 | 29 | 313·2 | +21·7 | −76·8 |
| 9·625 | 6 | 15 | 6 | 16 | 314·1 | +21·8 | −62·4 |
| 10·378 | 2 | 25 | 2 | 21 | 314·2 | +22·4 | −52·3 |
| 11·616 | 0 | 35 | 0 | 22 | 314·7 | +22·4 | −35·5 |
| Means ... | ... | ... | 2 | 22 | 314·05 | +22·08 | ... |
| **Group 811.** Two spots, which rapidly increase in size on August 10 and 11. | | | | | | | |
| Aug. 9·625 | 31 | 120 | 16 | 62 | 10·1 | +20·7 | − 6·4 |
| 10·378 | 73 | 500 | 37 | 258 | 11·1 | +20·0 | + 4·6 |
| 11·616 | 205 | 981 | 112 | 533 | 9·6 | +19·8 | +19·4 |
| 12·399 | 174 | 849 | 102 | 496 | 9·1 | +19·8 | +29·2 |
| 13 | No photograph. | | (82 | 399 | 9·6 | +19·6 | +43·7) |
| 14·516 | 66 | 322 | 61 | 302 | 10·0 | +19·3 | +58·1 |
| 15·537 | 62 | 256 | 86 | 364 | 8·8 | +19·6 | +70·4 |
| 16·570 | 0 | 28 | 0 | 69 | 4·6 | +20·3 | +79·9 |
| Means ... | ... | ... | 62 | 310 | 9·11 | +19·89 | ... |
| **Group 812.** A regular spot. | | | | | | | |
| Aug. 9·625 | 15 | 64 | 37 | 154 | 297·2 | +15·1 | −79·3 |
| 10·378 | 13 | 114 | 18 | 155 | 297·1 | +15·6 | −69·4 |
| 11·616 | 58 | 245 | 48 | 202 | 296·9 | +15·1 | −53·3 |
| 12·399 | 63 | 269 | 43 | 183 | 296·9 | +14·2 | −43·0 |
| 13 | No photograph. | | (40 | 177 | 296·8 | +14·9 | −29·1) |
| 14·516 | 72 | 326 | 38 | 170 | 296·7 | +15·6 | −15·2 |
| 15·537 | 70 | 292 | 35 | 148 | 296·7 | +15·6 | − 1·7 |
| 16·570 | 42 | 243 | 22 | 125 | 296·6 | +15·4 | +11·9 |
| 17·160 | 16 | 194 | 9 | 104 | 296·4 | +15·4 | +19·6 |
| 18·136 | 25 | 165 | 15 | 99 | 296·4 | +15·4 | +32·4 |
| 19 | No photograph. | | (14 | 89 | 296·5 | +15·5 | +48·3) |
| 20·529 | 11 | 70 | 12 | 78 | 296·5 | +15·5 | +64·1 |
| Means ... | ... | ... | 28 | 140 | 296·73 | +15·28 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 813.

A very small faint spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Aug. 10·378 | 0 | 7 | 0 | 8 | 305·3 | −17·4 | −61·2 |
| Means ... | ... | ... | 0 | 8 | 305·3 | −17·4 | ... |

### Group 814.

Three or four small spots in a straight line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 17·160 | 0 | 5 | 0 | 3 | 241·7 | −20·9 | −35·1 |
| 18·136 | 20 | 67 | 13 | 41 | 243·1 | −20·6 | −20·9 |
| 19 | No photograph. | | (9 | 27 | 245·0 | −20·7 | − 3·3) |
| 20·529 | 9 | 23 | 5 | 13 | 246·8 | −20·8 | +14·4 |
| 21·541 | 11 | 30 | 7 | 19 | 246·3 | −20·8 | +27·3 |
| 22·391 | 9 | 20 | 7 | 14 | 246·1 | −21·0 | +38·3 |
| 23·454 | 0 | 18 | 0 | 17 | 246·0 | −20·8 | +52·2 |
| Means ... | ... | ... | 6 | 19 | 245·00 | −20·80 | ... |

### Group 815.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 18·136 | 0 | 3 | 0 | 4 | 203·2 | − 6·6 | −60·8 |
| 19 | No photograph. | | (4 | 14 | 205·2 | − 7·1 | −43·1) |
| 20·529 | 14 | 43 | 8 | 24 | 207·1 | − 7·5 | −25·3 |
| 21·541 | 8 | 33 | 4 | 18 | 208·3 | − 7·6 | −10·7 |
| 22·391 | 10 | 31 | 5 | 16 | 209·2 | − 7·3 | + 1·4 |
| 23·454 | 12 | 16 | 6 | 9 | 210·3 | − 6·9 | +16·5 |
| 24·579 | 3 | 13 | 2 | 8 | 210·7 | − 7·0 | +31·8 |
| Means ... | ... | ... | 4 | 13 | 207·71 | − 7·14 | ... |

### Group 816.

Two regular spots, with several small spots between them.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 18·136 | 16 | 90 | 38 | 198 | 185·9 | +13·0 | −78·1 |
| 19 | No photograph. | | (104 | 535 | 188·1 | +13·0 | −60·1) |
| 20·529 | 251 | 1300 | 169 | 872 | 190·3 | +13·0 | −42·1 |
| 21·541 | 304 | 1190 | 174 | 680 | 190·5 | +13·5 | −28·5 |
| 22·391 | 280 | 1536 | 148 | 809 | 190·7 | +13·3 | −17·1 |
| 23·454 | 286 | 1560 | 144 | 787 | 191·4 | +13·6 | − 2·4 |
| 24·579 | 256 | 1522 | 131 | 781 | 190·3 | +13·2 | +11·4 |
| 25·600 | 283 | 1232 | 158 | 683 | 190·2 | +13·2 | +24·9 |
| 26·426 | 218 | 840 | 136 | 525 | 191·2 | +13·2 | +36·7 |
| 27·393 | 83 | 619 | 63 | 464 | 190·4 | +13·0 | +48·7 |
| 28 | No photograph. | | (101 | 480 | 190·4 | +13·1 | +61·9) |
| 29·394 | 80 | 272 | 138 | 495 | 190·3 | +13·1 | +75·1 |
| Means ... | ... | ... | 125 | 609 | 189·98 | +13·18 | ... |

### Group 817.

A close cluster of three or four spots. Two coalesce and form a large spot before August 21.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Aug. 20·529 | 49 | 203 | 31 | 128 | 258·0 | −20·9 | +25·6 |
| 21·541 | 109 | 562 | 80 | 411 | 257·4 | −21·1 | +38·4 |
| 22·391 | 189 | 884 | 175 | 814 | 258·2 | −21·2 | +50·4 |
| 23·454 | 109 | 490 | 165 | 719 | 259·1 | −21·2 | +65·3 |
| 24·579 | 12 | 90 | 27 | 329 | 257·4 | −22·3 | +78·5 |
| Means ... | ... | ... | 96 | 480 | 258·02 | −21·34 | ... |

### Group 818.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 20·529 | 0 | 7 | 0 | 4 | 244·9 | −17·4 | +12·5 |
| Means ... | ... | ... | 0 | 4 | 244·9 | −17·4 | ... |

### Group 819.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 20·529 | 4 | 10 | 2 | 6 | 204·1 | +10·9 | −28·3 |
| 21·541 | 0 | 9 | 0 | 5 | 205·1 | +11·3 | −13·9 |
| Means ... | ... | ... | 1 | 6 | 204·60 | +11·10 | ... |

### Group 820.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 20·529 | 0 | 7 | 0 | 4 | 200·3 | +12·0 | −32·1 |
| 21·541 | 0 | 20 | 0 | 10 | 199·1 | +11·9 | −19·9 |
| Means ... | ... | ... | 0 | 7 | 199·70 | +11·95 | ... |

### Group 821.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 22·391 | 0 | 34 | 0 | 131 | 126·8 | −11·1 | −81·0 |
| 23·454 | 27 | 105 | 35 | 139 | 128·0 | −11·0 | −65·8 |
| 24·579 | 35 | 157 | 29 | 132 | 128·2 | −10·6 | −50·7 |
| 25·600 | 43 | 164 | 28 | 109 | 128·1 | −10·9 | −37·2 |
| 26·426 | 53 | 212 | 31 | 124 | 129·0 | −11·1 | −25·5 |
| 27·393 | 37 | 220 | 20 | 119 | 128·5 | −11·0 | −13·2 |
| 28 | No photograph. | | (22 | 110 | 128·9 | −11·5 | + 0·5) |
| 29·394 | 44 | 183 | 24 | 100 | 129·3 | −11·9 | +14·1 |
| 30·550 | 32 | 162 | 19 | 99 | 129·1 | −11·3 | +29·1 |
| 31·374 | 11 | 50 | 7 | 34 | 128·9 | −11·2 | +39·8 |
| Sept. 1·291 | 10 | 79 | 8 | 69 | 129·0 | −11·4 | +52·0 |
| 2·428 | 8 | 46 | 11 | 64 | 128·8 | −11·3 | +66·8 |
| Means ... | ... | ... | 20 | 103 | 128·55 | −11·19 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued*.

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 822.** Several small spots irregularly arranged. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Aug. 23·454 | 25 | 64 | 21 | 55 | 139·6 | +11·1 | −54·2 |
| 24·579 | 7 | 31 | 4 | 20 | 141·8 | +11·4 | −37·1 |
| 25·600 | 16 | 61 | 9 | 34 | 139·1 | +11·5 | −26·2 |
| 26·426 | 16 | 80 | 9 | 42 | 140·4 | +11·4 | −14·1 |
| 27·393 | 3 | 104 | 2 | 52 | 140·4 | +11·1 | − 1·3 |
| 28 | No photograph. | | (8 | 49 | 140·9 | +10·9 | +12·4) |
| 29·394 | 22 | 80 | 13 | 45 | 141·3 | +10·7 | +26·1 |
| 30·550 | 5 | 52 | 3 | 35 | 141·6 | +12·0 | +41·6 |
| Means ... | ... | ... | 9 | 42 | 140·64 | +11·26 | ... |
| **Group 823.** Several very small spots. | | | | | | | |
| Aug. 29·394 | 11 | 40 | 7 | 25 | 121·4 | −30·1 | + 6·2 |
| Means ... | ... | ... | 7 | 25 | 121·4 | −30·1 | ... |
| **Group 824.** Several small spots in a straight line. | | | | | | | |
| Aug. 29·394 | 0 | 41 | 0 | 21 | 98·7 | +16·6 | −16·5 |
| 30·550 | 6 | 107 | 3 | 55 | 98·6 | +17·0 | − 1·4 |
| 31·374 | 11 | 55 | 6 | 28 | 99·8 | +17·5 | +10·7 |
| Sept. 1·291 | 7 | 14 | 4 | 7 | 96·6 | +17·0 | +19·6 |
| Means ... | ... | ... | 3 | 28 | 98·43 | +17·03 | ... |
| **Group 825.** A very small faint spot. | | | | | | | |
| Aug. 30·550 | 0 | 18 | 0 | 9 | 106·8 | +17·2 | + 6·8 |
| Means ... | ... | ... | 0 | 9 | 106·8 | +17·2 | ... |
| **Group 826.** Two very small faint spots. | | | | | | | |
| Aug. 31·374 | 0 | 8 | 0 | 14 | 18·5 | −11·6 | −70·6 |
| Sept. 1·291 | 0 | 10 | 0 | 11 | 14·9 | −11·3 | −62·1 |
| 2·428 | 0 | 17 | 0 | 13 | 16·0 | −12·0 | −46·0 |
| Means ... | ... | ... | 0 | 13 | 16·47 | −11·63 | ... |
| **Group 827.** A regular spot, with some smaller spots close to it. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Aug. 31·374 | 0 | 72 | 0 | 273 | 4·3 | +20·6 | −84·8 |
| Sept. 1·291 | 11 | 98 | 17 | 160 | 3·4 | +20·6 | −73·6 |
| 2·428 | 83 | 363 | 80 | 350 | 2·9 | +20·1 | −59·1 |
| 3·600 | 89 | 370 | 63 | 262 | 2·1 | +20·1 | −44·4 |
| 4·541 | 89 | 446 | 53 | 267 | 2·0 | +20·1 | −32·0 |
| 5·336 | 122 | 525 | 67 | 289 | 2·1 | +20·3 | −21·4 |
| 6·512 | 75 | 428 | 38 | 220 | 2·1 | +20·7 | − 6·0 |
| 7·398 | 73 | 310 | 38 | 160 | 2·3 | +20·9 | + 6·0 |
| 8·400 | 48 | 259 | 26 | 140 | 2·3 | +20·7 | +19·2 |
| 9·530 | 68 | 227 | 42 | 140 | 2·5 | +20·7 | +34·3 |
| 10 | No photograph. | | (24 | 82 | 2·3 | +20·8 | +46·2) |
| 11·356 | 6 | 25 | 6 | 24 | 2·1 | +20·8 | +58·1 |
| Means ... | ... | ... | 38 | 197 | 2·53 | +20·53 | ... |
| **Group 828.** Two regular spots, with a number of very small spots between them. | | | | | | | |
| Sept. 1·291 | 30 | 66 | 21 | 46 | 117·6 | −12·0 | +40·6 |
| 2·428 | 163 | 606 | 155 | 582 | 117·4 | −12·2 | +55·4 |
| 3·600 | 53 | 250 | 95 | 449 | 118·0 | −12·4 | +71·5 |
| Means ... | ... | ... | 90 | 359 | 117·67 | −12·20 | ... |
| **Group 829.** Several very small spots. | | | | | | | |
| Sept. 2·428 | 2 | 17 | 1 | 9 | 64·8 | + 5·4 | + 2·8 |
| 3·600 | 3 | 16 | 2 | 9 | 65·5 | + 6·2 | +19·0 |
| Means ... | ... | ... | 2 | 9 | 65·15 | + 5·80 | ... |
| **Group 830.** Two small spots on September 2. These develop before September 4 into two large regular spots, with several very small spots near them. | | | | | | | |
| Sept. 2·428 | 5 | 31 | 3 | 16 | 64·8 | +20·8 | + 2·8 |
| 3·600 | 98 | 370 | 53 | 202 | 66·4 | +20·4 | +19·9 |
| 4·541 | 239 | 864 | 145 | 521 | 66·7 | +20·8 | +32·7 |
| 5·336 | 443 | 1644 | 306 | 1142 | 66·5 | +20·9 | +43·0 |
| 6·512 | 180 | 1053 | 176 | 1006 | 67·1 | +21·3 | +59·0 |
| 7·398 | 178 | 618 | 249 | 841 | 65·8 | +21·4 | +69·5 |
| 8·400 | 44 | 118 | 116 | 310 | 64·1 | +21·4 | +81·0 |
| Means ... | ... | ... | 150 | 577 | 65·91 | +21·00 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 831.

Two small spots. The smaller of the two disappears before September 4.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Sept. 2·428 | 31 | 81 | 18 | 48 | 63·2 | −23·0 | + 1·2 |
| 3·600 | 28 | 60 | 18 | 37 | 64·5 | −22·7 | +18·0 |
| 4·541 | 10 | 30 | 7 | 20 | 66·7 | −21·5 | +32·7 |
| 5·336 | 12 | 34 | 10 | 27 | 66·9 | −21·7 | +43·4 |
| Means ... | ... | ... | 13 | 33 | 65·33 | −22·23 | ... |

### Group 832.

Two very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 2·428 | 0 | 5 | 0 | 3 | 39·9 | −25·2 | −22·1 |
| Means ... | ... | ... | 0 | 3 | 39·9 | −25·2 | ... |

### Group 833.

A number of spots, arranged in a straight line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 2·428 | 14 | 59 | 19 | 89 | 350·6 | + 7·2 | −71·4 |
| 3·600 | 66 | 193 | 57 | 167 | 351·6 | + 7·0 | −54·9 |
| 4·541 | 66 | 327 | 45 | 221 | 351·3 | + 6·8 | −42·7 |
| 5·336 | 199 | 794 | 117 | 468 | 351·9 | + 6·9 | −31·6 |
| 6·512 | 144 | 638 | 76 | 331 | 351·2 | + 7·1 | −16·9 |
| 7·398 | 153 | 488 | 76 | 243 | 352·6 | + 7·4 | − 3·7 |
| 8·400 | 78 | 321 | 40 | 163 | 353·7 | + 7·7 | +10·6 |
| 9·530 | 56 | 248 | 31 | 138 | 354·6 | + 8·0 | +26·4 |
| 10 | No photograph. | | (24 | 156 | 355·5 | + 8·1 | +39·4) |
| 11·356 | 20 | 215 | 16 | 174 | 356·3 | + 8·2 | +52·3 |
| 12·544 | 25 | 189 | 34 | 249 | 356·9 | + 8·7 | +68·5 |
| Means ... | ... | ... | 49 | 218 | 353·29 | + 7·55 | ... |

### Group 834.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 2·428 | 7 | 19 | 4 | 10 | 50·2 | −12·7 | −11·8 |
| Means ... | ... | ... | 4 | 10 | 50·2 | −12·7 | ... |

### Group 835.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 9·530 | 9 | 31 | 17 | 56 | 253·0 | +10·8 | −75·2 |
| 10 | No photograph. | | (9 | 31 | 253·2 | +11·0 | −63·0) |
| 11·356 | 0 | 7 | 0 | 6 | 253·3 | +11·2 | −50·7 |
| Means ... | ... | ... | 9 | 31 | 253·17 | +11·00 | ... |

### Group 836.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Sept. 9·530 | 0 | 8 | 0 | 27 | 245·5 | +18·9 | −82·7 |
| Means ... | ... | ... | 0 | 27 | 245·5 | +18·9 | ... |

### Group 837.

A small spot on September 12. Three or four small spots, arranged in a straight line, on September 13.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 12·544 | 17 | 50 | 11 | 31 | 323·8 | +22·2 | +35·4 |
| 13·540 | 39 | 144 | 29 | 107 | 322·0 | +23·1 | +46·7 |
| 14 | No photograph. | | (31 | 115 | 323·9 | +22·6 | +60·8) |
| 15·396 | 19 | 72 | 33 | 123 | 325·7 | +22·0 | +74·9 |
| 16·229 | 0 | 43 | 0 | 262 | 327·1 | +21·0 | +87·4 |
| Means ... | ... | ... | 21 | 128 | 324·50 | +22·18 | ... |

### Group 838.

A large regular spot, followed by a number of smaller spots arranged in a straight line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 13·540 | 45 | 339 | 79 | 815 | 196·2 | +11·3 | −79·1 |
| 14 | No photograph. | | (111 | 812 | 196·7 | +11·3 | −66·4) |
| 15·396 | 167 | 969 | 143 | 809 | 197·2 | +11·3 | −53·6 |
| 16·229 | 85 | 858 | 58 | 581 | 197·2 | +12·2 | −42·5 |
| 17 | No photograph. | | (112 | 642 | 197·6 | +12·0 | −27·8) |
| 18·406 | 318 | 1359 | 165 | 703 | 198·0 | +11·7 | −13·0 |
| 19·138 | 149 | 1041 | 75 | 521 | 198·0 | +11·5 | − 3·4 |
| 20·411 | 205 | 924 | 110 | 482 | 199·4 | +11·4 | +14·9 |
| 21·285 | 107 | 839 | 60 | 470 | 199·8 | +11·3 | +26·8 |
| 22·585 | 133 | 610 | 91 | 424 | 200·4 | +11·0 | +44·5 |
| 23·200 | 67 | 463 | 54 | 384 | 201·3 | +10·9 | +53·5 |
| 24·214 | 40 | 231 | 51 | 290 | 201·7 | +11·2 | +67·3 |
| 25·567 | 4 | 24 | 14 | 80 | 198·9 | +10·9 | +82·4 |
| Means ... | ... | ... | 86 | 539 | 198·65 | +11·38 | ... |

### Group 839.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 15·396 | 7 | 14 | 6 | 11 | 300·7 | −13·5 | +49·9 |
| Means ... | ... | ... | 6 | 11 | 300·7 | −13·5 | ... |

### Group 840.

Two small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 16·229 | 0 | 26 | 0 | 47 | 315·3 | +18·8 | +75·6 |
| Means ... | ... | ... | 0 | 47 | 315·3 | +18·8 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 841.** Two very small spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Sept. 18·406 | 8 | 20 | 4 | 12 | 220·0 | −20·9 | + 9·0 |
| 19·138 | 0 | 11 | 0 | 6 | 220·9 | −20·2 | +19·5 |
| Means ... | ... | ... | 2 | 9 | 220·45 | −20·55 | ... |
| **Group 842.** A small regular spot. | | | | | | | |
| Sept. 18·406 | 16 | 89 | 9 | 52 | 215·2 | −23·2 | + 4·2 |
| 19·138 | 13 | 83 | 8 | 49 | 214·5 | −23·3 | +13·1 |
| 20·411 | 8 | 35 | 5 | 23 | 213·1 | −23·2 | +28·6 |
| Means ... | ... | ... | 7 | 41 | 214·27 | −23·23 | ... |
| **Group 843.** Several small spots in a straight line. | | | | | | | |
| Sept. 21·285 | 0 | 35 | 0 | 18 | 152·2 | +11·5 | −20·8 |
| 22·585 | 20 | 77 | 11 | 39 | 150·9 | +11·7 | − 5·0 |
| 23·200 | 23 | 131 | 12 | 65 | 151·4 | +11·8 | + 3·6 |
| 24·214 | 43 | 171 | 23 | 90 | 151·7 | +11·4 | +17·3 |
| 25·567 | 48 | 154 | 30 | 95 | 152·6 | +11·1 | +36·1 |
| 26·447 | 35 | 155 | 25 | 111 | 151·3 | +11·2 | +46·4 |
| 27·410 | 15 | 71 | 14 | 66 | 150·1 | +11·5 | +58·0 |
| Means ... | ... | ... | 16 | 69 | 151·46 | +11·46 | ... |
| **Group 844.** Three or four small spots, in the same straight line as 838. | | | | | | | |
| Sept. 22·585 | 32 | 101 | 18 | 56 | 181·3 | +12·0 | +25·4 |
| 23·200 | 8 | 47 | 4 | 28 | 181·8 | +12·2 | +34·0 |
| Means ... | ... | ... | 11 | 42 | 181·55 | +12·10 | ... |
| **Group 845.** *A small spot.* | | | | | | | |
| Sept. 23·200 | 0 | 25 | 0 | 60 | 68·1 | +21·2 | −79·7 |
| 24·214 | 0 | 15 | 0 | 19 | 67·9 | +20·8 | −66·5 |
| 25·567 | 0 | 32 | 0 | 24 | 67·6 | +21·1 | −48·9 |
| 26·447 | 0 | 27 | 0 | 17 | 67·2 | +21·1 | −37·7 |
| 27·410 | 4 | 19 | 2 | 11 | 67·2 | +21·7 | −24·9 |
| 28·410 | 45 | 112 | 24 | 59 | 68·1 | +21·7 | −10·9 |
| 29·168 | 25 | 92 | 13 | 47 | 67·6 | +21·6 | − 1·4 |
| **Group 845—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Sept. 30·405 | 12 | 74 | 6 | 39 | 66·4 | +21·6 | +13·7 |
| Oct. 1·491 | 24 | 74 | 14 | 43 | 66·8 | +20·9 | +28·4 |
| 2·560 | 3 | 16 | 2 | 11 | 66·3 | +21·0 | +42·1 |
| Means ... | ... | ... | 6 | 33 | 67·32 | +21·27 | ... |
| **Group 846.** A very fine large regular spot. | | | | | | | |
| Sept. 25·567 | 120 | 696 | 177 | 1029 | 50·9 | −21·4 | −65·6 |
| 26·447 | 210 | 944 | 208 | 936 | 50·9 | −20·8 | −54·0 |
| 27·410 | 260 | 1212 | 198 | 923 | 51·2 | −21·4 | −40·9 |
| 28·410 | 315 | 1279 | 233 | 949 | 50·9 | −21·7 | −28·1 |
| 29·168 | 275 | 1546 | 165 | 928 | 50·6 | −21·7 | −18·4 |
| 30·405 | 347 | 1758 | 198 | 1002 | 50·5 | −21·7 | − 2·2 |
| Oct. 1·491 | 410 | 1704 | 239 | 993 | 50·5 | −21·7 | +12·1 |
| 2·560 | 431 | 1647 | 273 | 1046 | 50·0 | −21·7 | +25·8 |
| 3·399 | 405 | 1359 | 290 | 972 | 49·7 | −21·7 | +36·5 |
| 4·145 | 247 | 1226 | 205 | 1023 | 49·1 | −21·7 | +45·8 |
| 5·285 | 163 | 821 | 201 | 1015 | 49·0 | −22·2 | +60·8 |
| 6·146 | 149 | 481 | 307 | 990 | 48·9 | −22·1 | +72·0 |
| Means ... | ... | ... | 225 | 984 | 50·18 | −21·65 | ... |
| **Group 847.** Two small spots. | | | | | | | |
| Sept. 25·567 | 25 | 189 | 49 | 365 | 40·1 | +18·4 | −76·4 |
| 26·447 | 57 | 208 | 62 | 226 | 41·5 | +18·6 | −63·4 |
| 27·410 | 42 | 222 | 33 | 176 | 41·3 | +18·7 | −50·8 |
| 28·410 | 57 | 189 | 37 | 121 | 41·1 | +18·9 | −37·9 |
| 29·168 | 31 | 199 | 18 | 115 | 41·0 | +19·2 | −28·0 |
| 30·405 | 36 | 193 | 19 | 101 | 40·7 | +19·4 | −12·0 |
| Oct. 1·491 | 29 | 180 | 15 | 93 | 40·8 | +19·8 | + 2·4 |
| 2·560 | 31 | 119 | 17 | 64 | 40·4 | +20·3 | +16·2 |
| 3·399 | 28 | 70 | 16 | 40 | 40·2 | +20·2 | +27·0 |
| 4·145 | 7 | 28 | 5 | 18 | 40·0 | +20·0 | +36·7 |
| 5·285 | 5 | 20 | 4 | 16 | 39·9 | +19·8 | +51·7 |
| Means ... | ... | ... | 25 | 121 | 40·64 | +19·39 | ... |
| **Group 848.** A fine group of very irregular shape. The preceding spot is regular, but the following spots undergo constant change. | | | | | | | |
| Sept. 25·567 | 40 | 260 | 164 | 1057 | 37·2 | −23·2 | −79·3 |
| 26·447 | 126 | 357 | 209 | 591 | 37·1 | −22·5 | −67·8 |
| 27·410 | 151 | 566 | 159 | 595 | 36·7 | −22·7 | −55·4 |
| 28·410 | 154 | 631 | 123 | 507 | 35·7 | −22·6 | −43·3 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 848—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Sept. 29·168 | 98 | 679 | 68 | 474 | 35·3 | −22·7 | −33·7 |
| 30·405 | 218 | 915 | 133 | 554 | 34·9 | −22·7 | −17·8 |
| Oct. 1·491 | 242 | 1035 | 140 | 597 | 35·0 | −22·7 | − 3·4 |
| 2·560 | 199 | 911 | 117 | 534 | 34·6 | −22·9 | +10·4 |
| 3·399 | 255 | 869 | 158 | 537 | 34·5 | −22·7 | +21·3 |
| 4·145 | 92 | 724 | 63 | 489 | 34·0 | −22·9 | +30·7 |
| 5·285 | 65 | 466 | 55 | 398 | 34·4 | −23·1 | +46·2 |
| 6·146 | 46 | 284 | 50 | 312 | 33·7 | −22·8 | +56·8 |
| 7·537 | 0 | 73 | 0 | 227 | 35·7 | −23·5 | +77·1 |
| Means ... | ... | ... | 111 | 529 | 35·29 | −28·85 | ... |
| **Group 849.** An irregular spot, with several small spots close to it. | | | | | | | |
| Sept. 27·410 | 38 | 202 | 38 | 203 | 31·5 | + 6·7 | −60·6 |
| 28·410 | 161 | 502 | 120 | 372 | 31·0 | + 6·9 | −48·0 |
| 29·168 | 98 | 632 | 62 | 398 | 31·4 | + 7·0 | −37·6 |
| 30·405 | 160 | 722 | 85 | 386 | 32·2 | + 7·0 | −20·5 |
| Oct. 1·491 | 217 | 936 | 109 | 472 | 32·7 | + 7·4 | − 5·7 |
| 2·560 | 176 | 823 | 89 | 418 | 32·7 | + 8·0 | + 8·5 |
| 3·399 | 166 | 723 | 88 | 384 | 32·6 | + 7·7 | +19·4 |
| 4·145 | 83 | 555 | 48 | 318 | 32·2 | + 7·6 | +28·9 |
| 5·285 | 42 | 320 | 29 | 222 | 32·2 | + 7·1 | +44·0 |
| 6·146 | 11 | 116 | 10 | 103 | 32·8 | + 6·9 | +55·9 |
| 7·537 | 14 | 63 | 27 | 118 | 33·7 | + 6·4 | +75·1 |
| Means ... | ... | ... | 64 | 309 | 32·27 | + 7·15 | ... |
| **Group 850.** A small spot. | | | | | | | |
| Sept. 30·405 | + | 33 | 6 | 44 | 343·8 | + 6·6 | −68·9 |
| Oct. 1·491 | 4 | 20 | 3 | 16 | 347·9 | + 6·7 | −50·5 |
| 2·560 | 16 | 45 | 10 | 28 | 348·3 | + 6·6 | −35·9 |
| 3·399 | 21 | 71 | 11 | 39 | 349·3 | + 6·7 | −23·9 |
| 4·145 | 14 | 30 | 7 | 15 | 349·7 | + 6·7 | −13·6 |
| 5·285 | 10 | 23 | 5 | 12 | 350·1 | + 6·4 | + 1·9 |
| 6·146 | 14 | 45 | 7 | 23 | 350·7 | + 6·4 | +13·8 |
| 7·537 | 8 | 24 | 4 | 14 | 351·2 | + 6·5 | +32·6 |
| Means ... | ... | ... | 7 | 24 | 348·88 | + 6·58 | ... |
| **Group 851.** A very small faint spot. | | | | | | | |
| Oct. 3·399 | 3 | 28 | 3 | 23 | 323·0 | +22·7 | −50·2 |
| 4·145 | 3 | 12 | 2 | 8 | 323·2 | +22·7 | −40·1 |
| 5·285 | 0 | 10 | 0 | 6 | 322·1 | +21·3 | −26·1 |
| 6·146 | 0 | 9 | 0 | 5 | 322·5 | +21·2 | −14·4 |
| Means ... | ... | ... | 1 | 11 | 322·70 | +21·98 | ... |
| **Group 852.** Two small spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Oct. 4·145 | 0 | 32 | 0 | 18 | 9·9 | −17·4 | + 6·6 |
| 5·285 | 2 | 44 | 1 | 26 | 10·8 | −18·0 | +22·6 |
| Means ... | ... | ... | 1 | 22 | 10·35 | −17·70 | ... |
| **Group 853.** A small spot. Other spots appear on October 5, forming a group of small spots, arranged in a straight line. | | | | | | | |
| Oct. 4·145 | 3 | 26 | 2 | 14 | 339·2 | + 7·4 | −24·1 |
| 5·285 | 14 | 90 | 7 | 46 | 339·6 | + 7·2 | − 8·6 |
| 6·146 | 40 | 162 | 20 | 81 | 339·9 | + 7·5 | + 3·0 |
| 7·537 | 23 | 110 | 12 | 59 | 338·6 | + 7·9 | +20·0 |
| 8·464 | 28 | 85 | 16 | 50 | 338·2 | + 8·3 | +31·9 |
| 9·398 | 7 | 38 | 5 | 26 | 337·4 | + 8·1 | +43·4 |
| Means ... | ... | ... | 10 | 46 | 338·82 | + 7·73 | ... |
| **Group 854.** A very small spot. | | | | | | | |
| Oct. 5·285 | 0 | 10 | 0 | 10 | 285·6 | + 8·4 | −62·6 |
| 6·146 | 0 | 10 | 0 | 8 | 286·7 | + 5·7 | −50·2 |
| Means ... | ... | ... | 0 | 9 | 286·15 | + 7·05 | ... |
| **Group 855.** One or two small faint spots. | | | | | | | |
| Oct. 10·171 | 0 | 18 | 0 | 11 | 318·4 | +17·1 | +34·6 |
| 11·157 | 0 | 10 | 0 | 7 | 320·3 | +16·2 | +49·4 |
| 12·152 | 3 | 17 | 3 | 18 | 319·2 | +16·5 | +61·6 |
| Means ... | ... | ... | 1 | 12 | 319·30 | +16·60 | ... |
| **Group 856.** A regular spot. | | | | | | | |
| Oct. 10·171 | 17 | 98 | 45 | 261 | 203·6 | +12·5 | −80·2 |
| 11·157 | 22 | 137 | 27 | 169 | 204·1 | +12·4 | −66·8 |
| 12·152 | 31 | 243 | 26 | 204 | 203·6 | +12·4 | −54·0 |
| 13·424 | 96 | 320 | 60 | 201 | 203·6 | +12·6 | −37·3 |
| 14·285 | 45 | 336 | 26 | 189 | 202·6 | +12·5 | −27·0 |
| 15·217 | 60 | 335 | 31 | 173 | 203·4 | +12·4 | −13·9 |
| 16·191 | 54 | 358 | 27 | 180 | 203·0 | +12·4 | − 1·3 |
| 17·323 | 60 | 326 | 31 | 169 | 202·9 | +12·3 | +13·4 |
| 18·336 | 52 | 284 | 29 | 160 | 202·6 | +12·6 | +26·5 |
| 19·309 | 37 | 258 | 24 | 168 | 202·8 | +12·6 | +39·5 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 856—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Oct. 20·491 | 55 | 207 | 49 | 183 | 203·4 | +12·3 | +55·8 |
| 21·196 | 31 | 126 | 36 | 145 | 203·1 | +12·3 | +64·7 |
| 22·635 | 0 | 49 | 0 | 214 | 203·9 | +12·7 | +84·5 |
| Means ... | ... | ... | 32 | 186 | 203·28 | +12·46 | ... |
| **Group 857.** A very fine extensive group, composed of a great number of small spots. The group undergoes great and frequent changes. | | | | | | | |
| Oct. 13·424 | 19 | 199 | 56 | 487 | 161·4 | +17·5 | −79·5 |
| 14·285 | 46 | 447 | 63 | 619 | 160·0 | +18·5 | −69·6 |
| 15·217 | 70 | 514 | 59 | 457 | 161·5 | +18·3 | −55·8 |
| 16·191 | 64 | 637 | 42 | 442 | 161·1 | +18·4 | −43·2 |
| 17·323 | 158 | 708 | 91 | 409 | 161·9 | +18·2 | −27·6 |
| 18·336 | 162 | 1270 | 85 | 673 | 162·8 | +18·7 | −13·3 |
| 19·309 | 164 | 1228 | 85 | 636 | 163·5 | +19·0 | + 0·2 |
| 20·491 | 241 | 955 | 130 | 513 | 164·1 | +19·2 | +16·5 |
| 21·196 | 95 | 612 | 56 | 354 | 164·7 | +19·1 | +26·3 |
| 22·635 | 55 | 290 | 42 | 225 | 168·4 | +18·9 | +49·0 |
| 23·535 | 78 | 209 | 84 | 226 | 170·2 | +18·5 | +62·5 |
| 24·157 | 37 | 163 | 51 | 225 | 168·5 | +18·7 | +69·1 |
| Means ... | ... | ... | 70 | 439 | 164·01 | +18·58 | ... |
| **Group 858.** Two small spots. | | | | | | | |
| Oct. 16·191 | 0 | 72 | 0 | 55 | 194·4 | +12·1 | − 9·9 |
| 17·323 | 18 | 37 | 9 | 19 | 194·3 | +12·0 | + 4·8 |
| 18·336 | 0 | 6 | 0 | 3 | 193·6 | +12·1 | +17·5 |
| Means ... | ... | ... | 3 | 26 | 194·10 | +12·07 | ... |
| **Group 859.** Four or five small spots, arranged in a straight line. | | | | | | | |
| Oct. 16·191 | 0 | 98 | 0 | 50 | 193·6 | +15·2 | −10·7 |
| 17·323 | 15 | 132 | 8 | 67 | 195·3 | +15·1 | + 5·8 |
| 18·336 | 34 | 69 | 18 | 37 | 194·3 | +15·0 | +18·2 |
| 19·309 | 13 | 77 | 8 | 46 | 194·7 | +15·7 | +31·4 |
| 20·491 | 8 | 75 | 6 | 56 | 195·7 | +15·6 | +48·1 |
| 21·196 | 0 | 33 | 0 | 25 | 196·8 | +13·6 | +58·4 |
| 22·635 | 2 | 24 | 4 | 43 | 193·8 | + 9·7 | +74·4 |
| Means ... | ... | ... | 6 | 46 | 194·89 | +14·27 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 860.** A very small spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Oct. 18·336 | 0 | 19 | 0 | 13 | 212·0 | −21·5 | +35·9 |
| 19·309 | 0 | 6 | 0 | 6 | 214·7 | −21·9 | +51·4 |
| Means ... | ... | ... | 0 | 10 | 213·35 | −21·70 | ... |
| **Group 861.** An irregular spot, with two or three small spots close to it. | | | | | | | |
| Oct. 18·336 | 25 | 138 | 14 | 77 | 200·5 | +15·3 | +24·4 |
| 19·309 | 32 | 216 | 20 | 138 | 201·1 | +15·4 | +37·8 |
| 20·491 | 71 | 279 | 62 | 243 | 202·7 | +15·0 | +55·1 |
| 21·196 | 33 | 163 | 38 | 188 | 203·2 | +15·0 | +64·8 |
| 22·635 | 0 | 50 | 0 | 303 | 205·7 | +14·6 | +86·3 |
| Means ... | ... | ... | 27 | 190 | 202·64 | +15·06 | ... |
| **Group 862.** An irregular group, undergoing several changes. On October 21 it consists of two principal spots and a number of small spots, arranged in a straight line. The small spots disappear before October 22. | | | | | | | |
| Oct. 19·309 | 15 | 59 | 8 | 30 | 167·3 | +10·9 | + 4·0 |
| 20·491 | 142 | 602 | 76 | 321 | 167·7 | +10·6 | +20·1 |
| 21·196 | 120 | 557 | 69 | 322 | 167·5 | +10·2 | +29·1 |
| 22·635 | 37 | 202 | 28 | 155 | 169·0 | +10·8 | +49·6 |
| 23·525 | 30 | 113 | 33 | 119 | 169·8 | +10·9 | +62·1 |
| 24·157 | 5 | 50 | 8 | 73 | 170·0 | +10·7 | +70·6 |
| Means ... | ... | ... | 37 | 170 | 168·55 | +10·68 | ... |
| **Group 863.** Two very small spots. | | | | | | | |
| Oct. 19·309 | 4 | 11 | 2 | 7 | 147·1 | −27·9 | −16·2 |
| 20·491 | 0 | 13 | 0 | 8 | 145·9 | −27·7 | − 1·7 |
| Means ... | ... | ... | 1 | 8 | 146·50 | −27·80 | ... |
| **Group 864.** A rectangular group of small spots on October 22. The group greatly increases in size on the following days, and on October 25 and 26, consists almost entirely of two large spots. | | | | | | | |
| Oct. 20·491 | 6 | 35 | 3 | 20 | 121·6 | +20·4 | −26·0 |
| 21·196 | 59 | 255 | 32 | 137 | 122·5 | +19·7 | −15·9 |
| 22·635 | 125 | 776 | 65 | 402 | 124·1 | +19·7 | + 4·7 |
| 23·525 | 384 | 1631 | 209 | 886 | 124·9 | +20·1 | +17·2 |
| 24·157 | 164 | 1382 | 95 | 792 | 124·6 | +20·0 | +25·2 |
| 25·491 | 285 | 1485 | 193 | 994 | 121·5 | +18·9 | +39·8 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 864—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Oct. 26·535 | 293 | 1196 | 269 | 1101 | 124·5 | +19·6 | +56·5 |
| 27·307 | 118 | 660 | 148 | 840 | 125·0 | +19·6 | +67·2 |
| 28·171 | 55 | 429 | 135 | 1028 | 125·3 | +19·4 | +78·9 |
| Means ... | ... | ... | 128 | 689 | 123·78 | +19·71 | ... |
| **Group 865.** A small spot. It is not seen on October 24. | | | | | | | |
| Oct. 22·635 | 0 | 9 | 0 | 5 | 134·4 | − 7·6 | +15·0 |
| 23·525 | 0 | 15 | 0 | 9 | 133·2 | − 6·7 | +25·5 |
| 24·157 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 25·491 | 0 | 45 | 0 | 40 | 135·9 | − 8·9 | +54·2 |
| 26·535 | 0 | 16 | 0 | 25 | 138·2 | − 8·7 | +70·2 |
| 27·307 | 1 | 31 | 2 | 29 | 131·9 | − 8·2 | +74·1 |
| Means ... | ... | ... | 0 | 18 | 134·72 | − 8·02 | ... |
| **Group 866.** Two very small spots. | | | | | | | |
| Oct. 22·635 | 0 | 16 | 0 | 8 | 133·7 | +13·2 | +14·3 |
| 23·525 | 34 | 124 | 19 | 70 | 134·8 | +12·8 | +27·1 |
| 24·157 | 31 | 59 | 19 | 36 | 134·7 | +12·5 | +35·3 |
| 25·491 | 6 | 30 | 5 | 27 | 137·9 | + 9·8 | +56·2 |
| 26·535 | 0 | 8 | 0 | 13 | 139·7 | +10·0 | +71·7 |
| Means ... | ... | ... | 9 | 31 | 136·16 | +11·66 | ... |
| **Group 867.** A very small faint spot. | | | | | | | |
| Oct. 22·635 | 0 | 7 | 0 | 6 | 72·5 | +18·9 | −46·9 |
| Means ... | ... | ... | 0 | 6 | 72·5 | +18·9 | ... |
| **Group 868.** A very fine large regular spot. | | | | | | | |
| Oct. 22·635 | 151 | 511 | 389 | 1318 | 43·6 | −22·4 | −75·8 |
| 23·525 | 237 | 896 | 319 | 1204 | 44·0 | −22·5 | −63·7 |
| 24·157 | 154 | 998 | 156 | 1012 | 44·3 | −22·0 | −55·1 |
| 25·491 | 297 | 1473 | 216 | 1071 | 43·4 | −22·4 | −38·3 |
| 26·535 | 351 | 1625 | 218 | 1013 | 43·4 | −22·4 | −24·6 |
| 27·307 | 301 | 1732 | 173 | 999 | 43·7 | −22·2 | −14·1 |
| 28·171 | 277 | 1695 | 155 | 948 | 42·8 | −22·2 | − 3·6 |
| 29·558 | 428 | 1961 | 247 | 1131 | 42·8 | −22·3 | +14·7 |
| 30·154 | 307 | 1658 | 186 | 1005 | 42·6 | −22·2 | +22·4 |
| 31·402 | 325 | 1529 | 237 | 1112 | 42·9 | −22·7 | +39·1 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 868—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 1·623 | 243 | 953 | 244 | 954 | 42·6 | −22·8 | +54·9 |
| 2·447 | 132 | 612 | 189 | 879 | 43·0 | −22·4 | +66·1 |
| 3·402 | 0 | 255 | 0 | 741 | 41·9 | −22·4 | +77·7 |
| Means ... | ... | ... | 210 | 1030 | 43·15 | −22·38 | ... |
| **Group 869.** Two small spots. | | | | | | | |
| Oct. 26·535 | 13 | 68 | 9 | 46 | 109·9 | +14·6 | +41·9 |
| 27·307 | 22 | 41 | 18 | 34 | 111·7 | +14·0 | +53·9 |
| 28·171 | 0 | 13 | 0 | 14 | 107·3 | +14·1 | +60·9 |
| Means ... | ... | ... | 9 | 31 | 109·63 | +14·23 | ... |
| **Group 870.** A large regular spot, followed by two clusters of small spots. The small spots disappear before November 4. | | | | | | | |
| Oct. 27·307 | 10 | 106 | 39 | 403 | 334·2 | +16·3 | −83·6 |
| 28·171 | 41 | 404 | 68 | 799 | 330·3 | +15·8 | −76·1 |
| 29·558 | 309 | 1154 | 284 | 1080 | 330·3 | +15·7 | −57·8 |
| 30·154 | 144 | 887 | 110 | 687 | 330·9 | +15·9 | −49·3 |
| 31·402 | 251 | 1079 | 151 | 650 | 331·1 | +15·8 | −32·7 |
| Nov. 1·623 | 175 | 705 | 93 | 375 | 332·5 | +15·7 | −15·2 |
| 2·447 | 152 | 584 | 78 | 299 | 332·6 | +16·0 | − 4·3 |
| 3·402 | 86 | 470 | 45 | 243 | 333·9 | +16·1 | + 9·7 |
| 4·413 | 71 | 415 | 39 | 230 | 333·8 | +16·0 | +22·9 |
| 5·180 | 74 | 381 | 45 | 231 | 333·5 | +15·9 | +32·7 |
| 6·412 | 63 | 295 | 49 | 228 | 333·4 | +16·3 | +48·9 |
| 7·174 | 44 | 214 | 43 | 209 | 333·3 | +16·3 | +58·8 |
| 8·563 | 10 | 95 | 21 | 200 | 333·6 | +16·2 | +77·4 |
| Means ... | ... | ... | 82 | 433 | 332·57 | +16·00 | ... |
| **Group 871.** Three very small spots. Two of these disappear before October 30. The group is not seen on October 31 and November 1. | | | | | | | |
| Oct. 29·558 | 12 | 59 | 6 | 33 | 8·0 | −13·6 | −20·1 |
| 30·154 | 5 | 14 | 3 | 8 | 9·6 | −14·1 | −10·6 |
| 31·402 | 0 | 0 | 0 | 0 | ... | ... | ... |
| Nov. 1·623 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 2·447 | 0 | 20 | 0 | 12 | 7·2 | −13·0 | +30·3 |
| Means ... | ... | ... | 2 | 11 | 8·27 | −13·57 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 872.** Several small spots in a straight line. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Oct. 30·154 | 2 | 7 | 1 | 4 | 5·1 | −20·1 | −15·1 |
| 31·402 | 10 | 32 | 5 | 18 | 5·1 | −19·9 | + 1·3 |
| Nov. 1·623 | 33 | 152 | 19 | 88 | 5·1 | −19·5 | +17·4 |
| 2·447 | 38 | 184 | 24 | 114 | 4·9 | −19·4 | −28·0 |
| 3·402 | 41 | 209 | 30 | 153 | 5·9 | −19·5 | +41·7 |
| 4·413 | 34 | 245 | 33 | 240 | 6·4 | −19·5 | +55·5 |
| 5·180 | 27 | 158 | 38 | 208 | 5·4 | −19·6 | +64·6 |
| 6·412 | 2 | 21 | 4 | 48 | 0·1 | −20·0 | +75·6 |
| Means ... | ... | ... | 19 | 109 | 4·75 | −19·69 | ... |
| **Group 873.** A very small spot. | | | | | | | |
| Oct. 31·402 | 24 | 74 | 15 | 48 | 333·0 | −21·6 | −30·8 |
| Nov. 1·623 | 0 | 20 | 0 | 11 | 334·6 | −21·6 | −13·1 |
| 2·447 | 0 | 7 | 0 | 4 | 334·7 | −21·4 | − 2·2 |
| Means ... | ... | ... | 5 | 21 | 334·10 | −21·53 | ... |
| **Group 874.** A number of spots in a straight line. The middle spots disappear, and the spots at the beginning and end of the line coalesce to form two spots before November 3. | | | | | | | |
| Nov. 1·623 | 58 | 331 | 31 | 177 | 2·0 | +19·0 | +14·3 |
| 2·447 | 80 | 457 | 45 | 259 | 1·7 | +19·2 | +24·8 |
| 3·402 | 96 | 539 | 64 | 352 | 2·3 | +19·0 | +38·1 |
| 4·413 | 71 | 355 | 59 | 291 | 2·3 | +19·4 | +51·4 |
| 5·180 | 61 | 238 | 66 | 261 | 3·4 | +18·5 | +62·6 |
| 6·412 | 0 | 44 | 0 | 125 | 5·0 | +18·8 | +80·5 |
| Means ... | ... | ... | 44 | 244 | 2·78 | +18·98 | ... |
| **Group 875.** Several small spots on November 4. On November 6 two small regular spots, with several smaller spots between them. | | | | | | | |
| Nov. 4·413 | 12 | 60 | 8 | 37 | 344·2 | − 9·9 | +33·3 |
| 5·180 | 56 | 263 | 40 | 191 | 345·2 | −10·0 | +44·4 |
| 6·412 | 68 | 320 | 71 | 336 | 344·8 | − 9·6 | +60·3 |
| 7·174 | 6 | 127 | 12 | 201 | 345·2 | −10·0 | +70·7 |
| Means ... | ... | ... | 33 | 191 | 344·85 | − 9·88 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 876.** A very fine spot, and a number of spots arrranged in a straight line above it. These spots undergo several changes, and by November 14 only two regular spots remain. The whole group, therefore, then consists of three regular spots, one of them very large, and another large. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 4·413 | 66 | 493 | 120 | 1163 | 235·3 | −19·6 | −75·6 |
| 5·180 | 120 | 623 | 155 | 814 | 236·4 | −19·5 | −64·4 |
| 6·412 | 147 | 1038 | 119 | 862 | 236·1 | −19·7 | −48·4 |
| 7·174 | 164 | 941 | 113 | 653 | 236·8 | −19·6 | −37·7 |
| 8·563 | 330 | 1337 | 191 | 771 | 236·8 | −19·3 | −19·4 |
| 9·398 | 327 | 1574 | 178 | 858 | 237·8 | −19·0 | − 7·4 |
| 10·575 | 412 | 970 | 225 | 531 | 238·4 | −18·8 | + 8·7 |
| 11·549 | 404 | 1665 | 234 | 969 | 238·1 | −19·1 | +21·2 |
| 12·181 | 194 | 1215 | 122 | 760 | 237·9 | −19·2 | +29·3 |
| 13·157 | 159 | 967 | 116 | 707 | 237·9 | −18·8 | +42·2 |
| 14·163 | 79 | 740 | 77 | 710 | 237·8 | −19·4 | +55·4 |
| 15·155 | 75 | 342 | 107 | 485 | 236·3 | −19·6 | +67·0 |
| 16·147 | 14 | 92 | 52 | 331 | 236·9 | −19·5 | +80·6 |
| Means ... | ... | ... | 139 | 740 | 237·12 | −19·32 | ... |
| **Group 877.** A regular spot, followed by several smaller spots. Of these latter, all but one disappear before November 9, and that one disappears before November 14. | | | | | | | |
| Nov. 6·412 | 11 | 98 | 18 | 161 | 215·3 | −23·0 | −69·2 |
| 7·174 | 77 | 352 | 90 | 403 | 214·6 | −22·8 | −59·9 |
| 8·563 | 94 | 483 | 69 | 361 | 214·8 | −22·2 | −41·4 |
| 9·398 | 99 | 599 | 64 | 385 | 215·9 | −23·0 | −29·3 |
| 10·575 | 102 | 541 | 58 | 311 | 217·7 | −23·7 | −12·0 |
| 11·549 | 119 | 525 | 67 | 295 | 218·1 | −23·6 | + 1·2 |
| 12·181 | 78 | 489 | 45 | 284 | 218·1 | −23·5 | + 9·5 |
| 13·157 | 64 | 401 | 38 | 241 | 218·0 | −22·8 | +22·3 |
| 14·163 | 62 | 333 | 43 | 232 | 218·4 | −24·0 | +36·0 |
| 15·155 | 32 | 220 | 27 | 188 | 218·2 | −24·0 | +48·9 |
| 16·147 | 23 | 120 | 28 | 146 | 218·1 | −24·1 | +61·8 |
| 17·173* | 7 | 42 | 17 | 100 | (218·3) | −24·4 | +75·6 |
| Means ... | ... | ... | 47 | 259 | 217·13 | −23·43 | ... |
| **Group 878.** Several small spots. | | | | | | | |
| Nov. 6·412 | 3 | 13 | 7 | 26 | 208·6 | +15·1 | −75·9 |
| 7·174 | 9 | 30 | 11 | 37 | 208·3 | +15·1 | −66·2 |
| 8·563 | 25 | 57 | 18 | 43 | 208·7 | +15·3 | −47·5 |
| 9·398 | 21 | 49 | 13 | 31 | 208·6 | +15·1 | −36·6 |
| 10·575 | 20 | 48 | 11 | 26 | 208·7 | +15·1 | −21·0 |
| 11·549 | 24 | 60 | 12 | 31 | 207·8 | +15·0 | − 9·1 |

* The photograph taken at Dehra Dûn, India, on November 17 appears to be wrongly timed. From a comparison of all the groups of spots common to the photographs of November 16, 17 and 18, it would seem that the photograph on November 17 was taken two hours and a half earlier than the time marked upon it, corresponding to a difference of 1°·4 in longitude. The time of the photograph and the corresponding longitudes of the groups of spots have, therefore, been altered from these given in the *Greenwich Observations* for 1882, by these amounts respectively; the decimal of the day being diminished by 0d·104, and the longitudes of the spots increased by 1°·4.

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 878—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Nov. 12·181 | 14 | 38 | 7 | 19 | 208·2 | +14·0 | − 0·4 |
| 13·157 | 6 | 53 | 3 | 27 | 206·8 | +12·5 | +11·1 |
| 14·163 | 4 | 13 | 2 | 8 | 208·7 | +14·7 | +26·3 |
| Means ... | ... | ... | 9 | 28 | 208·27 | +14·66 | ... |

### Group 879.

Two very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 8·563 | 2 | 23 | 1 | 13 | 233·0 | +20·4 | −23·2 |
| Means ... | ... | ... | 1 | 13 | 233·0 | +20·4 | |

### Group 880.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 9·398 | 2 | 8 | 3 | 9 | 184·7 | −10·3 | −60·5 |
| 10·575 | 0 | 11 | 0 | 8 | 186·8 | −10·3 | −42·9 |
| 11·549 | 14 | 34 | 8 | 20 | 188·0 | − 9·9 | −28·9 |
| Means ... | ... | ... | 4 | 12 | 186·50 | −10·17 | ... |

### Group 881.

A very small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 11·549 | 0 | 7 | 0 | 4 | 245·3 | +22·0 | +28·4 |
| Means ... | ... | ... | 0 | 4 | 245·3 | +22·0 | ... |

### Group 882.

Two small spots. The group is not seen on November 10.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 11·549 | 7 | 29 | 5 | 20 | 173·1 | +18·3 | −43·8 |
| 12·181 | 0 | 19 | 0 | 12 | 174·0 | +19·3 | −34·6 |
| Means ... | ... | ... | 3 | 16 | 173·55 | +18·80 | ... |

### Group 883.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. d | | | | | ° | ° | ° |
| Nov. 11·549 | 10 | 39 | 6 | 22 | 228·9 | −21·2 | +12·0 |
| 12·181 | 0 | 10 | 0 | 6 | 228·3 | −21·0 | +19·7 |
| Means ... | ... | ... | 3 | 14 | 228·60 | −21·10 | ... |

### Group 884.

A small regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 11·549 | 17 | 62 | 25 | 89 | 148·0 | − 7·0 | −68·9 |
| 12·181 | 8 | 36 | 8 | 37 | 148·2 | − 6·5 | −60·4 |
| 13·157 | 15 | 79 | 11 | 59 | 148·7 | − 7·0 | −47·0 |
| 14·163 | 15 | 108 | 9 | 66 | 148·7 | − 7·2 | −33·7 |
| 15·155 | 19 | 105 | 10 | 57 | 148·9 | − 7·4 | −20·4 |
| 16·147 | 20 | 88 | 10 | 45 | 149·4 | − 7·5 | − 6·9 |
| 17·173* | 19 | 86 | 10 | 44 | (149·5) | − 7·8 | + 6·8 |
| 18·485 | 34 | 103 | 19 | 57 | 149·4 | − 7·4 | +24·0 |
| 19·590 | 30 | 58 | 20 | 38 | 150·0 | − 7·4 | +39·2 |
| Means ... | ... | ... | 14 | 55 | 148·98 | − 7·24 | ... |

### Group 885.

A very fine large spot. On November 18 a large portion becomes detached from the principal spot. Smaller portions become detached on the following days.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 12·181 | 0 | 82 | 0 | 500 | 122·6 | +20·4 | −86·0 |
| 13·157 | 238 | 807 | 422 | 1433 | 121·9 | +19·5 | −73·8 |
| 14·163 | 449 | 1690 | 468 | 1761 | 121·8 | +19·1 | −60·6 |
| 15·155 | 672 | 2621 | 515 | 2008 | 121·7 | +19·2 | −47·6 |
| 16·147 | 785 | 3549 | 497 | 2249 | 121·8 | +19·2 | −34·5 |
| 17·173* | 721 | 4194 | 404 | 2352 | (121·5) | +19·1 | −21·2 |
| 18·485 | 1411 | 4667 | 733 | 2425 | 121·1 | +18·8 | − 4·3 |
| 19·590 | 1105 | 4518 | 588 | 2401 | 120·4 | +19·0 | + 9·6 |
| 20·439 | 619 | 3475 | 345 | 1934 | 120·8 | +19·1 | +21·1 |
| 21·525 | 412 | 2702 | 262 | 1719 | 120·4 | +19·2 | +35·0 |
| 22·334 | 247 | 2559 | 183 | 1899 | 120·4 | +18·7 | +45·7 |
| 23·377 | 191 | 1705 | 194 | 1723 | 119·7 | +19·7 | +58·8 |
| 24·523 | 139 | 649 | 267 | 1226 | 120·1 | +19·2 | +74·3 |
| 25·431 | 0 | 73 | 0 | 320 | 117·6 | +18·9 | +83·7 |
| Means ... | ... | ... | 348 | 1711 | 120·84 | +19·22 | ... |

### Group 886.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 14·163 | 0 | 3 | 0 | 2 | 193·8 | +10·6 | +11·4 |
| Means ... | ... | ... | 0 | 2 | 193·8 | +10·6 | ... |

* The photograph taken at Dehra Dûn, India, on November 17 appears to be wrongly timed. From a comparison of all the groups of spots common to the photographs of November 16, 17 and 18, it would seem that the photograph on November 17 was taken two hours and a half earlier than the time marked upon it, corresponding to a difference of 1°·4 in longitude. The time of the photograph and the corresponding longitudes of the groups of spots have, therefore, been altered from those given in the *Greenwich Observations* for 1882, by these amounts respectively; the decimal of the day being diminished by 0d·104, and the longitudes of the spots increased by 1°·4.

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 887.** Several small faint spots. The preceding spot becomes larger and darker by November 19, and the other spots disappear. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 15·155 | 8 | 54 | 4 | 28 | 174·5 | +18·8 | + 5·2 |
| 16·147 | 8 | 33 | 4 | 18 | 175·0 | +19·0 | +18·7 |
| 17·173* | 5 | 56 | 3 | 35 | (174·7) | +19·2 | +32·0 |
| 18·485 | 67 | 215 | 54 | 172 | 175·2 | +18·9 | +49·8 |
| 19·590 | 0 | 97 | 0 | 124 | 177·1 | +19·2 | +66·3 |
| 20·439 | 11 | 44 | 24 | 99 | 176·9 | +19·4 | +77·2 |
| Means ... | ... | ... | 15 | 79 | 175·57 | +19·08 | ... |
| **Group 888.** Two small spots. | | | | | | | |
| Nov. 16·147 | 7 | 37 | 10 | 49 | 89·0 | − 6·0 | −67·3 |
| 17·173* | 13 | 124 | 11 | 104 | (89·9) | − 6·3 | −52·8 |
| 18·485 | 64 | 223 | 39 | 137 | 90·6 | − 6·2 | −34·8 |
| 19·590 | 61 | 133 | 33 | 72 | 91·1 | − 7·1 | −19·7 |
| 20·439 | 12 | 73 | 6 | 38 | 90·2 | − 7·0 | − 9·5 |
| 21·525 | 0 | 73 | 0 | 38 | 90·6 | − 6·9 | + 5·2 |
| 22·334 | 0 | 71 | 0 | 37 | 89·0 | − 8·4 | +14·3 |
| 23·377 | 0 | 9 | 0 | 5 | 91·7 | −10·5 | +30·8 |
| 24·523 | 6 | 33 | 4 | 24 | 90·6 | −10·6 | +44·8 |
| 25·431 | 0 | 23 | 0 | 22 | 91·7 | −10·8 | +57·8 |
| Means ... | ... | ... | 10 | 53 | 90·44 | − 7·98 | ... |
| **Group 889.** A regular spot. | | | | | | | |
| Nov. 16·147 | 15 | 86 | 27 | 150 | 82·8 | +11·2 | −73·5 |
| 17·173* | 18 | 137 | 18 | 136 | (82·9) | +10·9 | −59·8 |
| 18·485 | 73 | 215 | 50 | 146 | 83·0 | +10·8 | −42·4 |
| 19·590 | 55 | 215 | 31 | 123 | 82·7 | + 9·9 | −28·1 |
| 20·439 | 44 | 182 | 23 | 96 | 82·9 | +10·3 | −16·8 |
| 21·525 | 27 | 108 | 14 | 55 | 82·9 | +10·6 | − 2·5 |
| 22·334 | 26 | 166 | 13 | 85 | 83·0 | +10·6 | + 8·3 |
| 23·377 | 17 | 167 | 9 | 92 | 83·0 | +10·7 | +22·1 |
| 24·523 | 30 | 140 | 19 | 89 | 83·4 | +10·9 | +37·6 |
| 25·431 | 28 | 88 | 22 | 69 | 83·7 | +10·9 | +49·8 |
| 26·478 | 14 | 42 | 16 | 48 | 83·7 | +11·0 | +63·7 |
| 27·547 | 2 | 26 | 6 | 61 | 83·7 | +11·3 | +77·7 |
| Means ... | ... | ... | 21 | 96 | 83·14 | +10·76 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 890.** Two regular spots close together. The preceding spot shows a tendency to break up, and several small spots form round the group on November 25 and following days. The smaller spots disappear before December 1, leaving only the second of the two original spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 19·590 | 73 | 350 | 135 | 649 | 38·8 | −22·7 | −72·0 |
| 20·439 | 70 | 455 | 80 | 517 | 38·9 | −22·5 | −60·8 |
| 21·525 | 90 | 377 | 73 | 308 | 37·9 | −22·5 | −47·5 |
| 22·334 | 89 | 573 | 61 | 395 | 37·2 | −22·2 | −37·5 |
| 23·377 | 71 | 579 | 42 | 346 | 37·1 | −22·3 | −23·8 |
| 24·523 | 116 | 507 | 64 | 281 | 36·7 | −22·8 | − 9·1 |
| 25·431 | 126 | 467 | 69 | 255 | 36·4 | −22·7 | + 2·5 |
| 26·478 | 69 | 362 | 39 | 206 | 36·1 | −22·8 | +16·1 |
| 27·547 | 72 | 344 | 45 | 217 | 35·5 | −23·3 | +29·5 |
| 28·539 | 68 | 224 | 50 | 166 | 34·9 | −23·8 | +42·0 |
| 29·159 | 36 | 167 | 30 | 141 | 33·8 | −23·6 | +49·1 |
| 30·177† | 11 | 97 | 13 | 115 | (33·5) | −23·0 | +62·1 |
| Dec. 1·175 | 8 | 39 | 17 | 82 | 32·8 | −22·8 | +74·6 |
| Means ... | ... | ... | 55 | 283 | 36·12 | −22·85 | ... |
| **Group 891.** Three or four small spots. On November 24 two regular spots, of which the following one disappears before November 29. | | | | | | | |
| Nov. 22·334 | 0 | 18 | 0 | 27 | 5·1 | −19·2 | −69·6 |
| 23·377 | 7 | 70 | 7 | 70 | 4·0 | −20·3 | −56·9 |
| 24·523 | 43 | 136 | 32 | 98 | 4·3 | −20·6 | −41·5 |
| 25·431 | 34 | 102 | 22 | 64 | 3·2 | −20·7 | −30·7 |
| 26·478 | 9 | 105 | 5 | 58 | 6·4 | −20·6 | −13·6 |
| 27·547 | 4 | 15 | 2 | 8 | 1·4 | −21·8 | − 4·6 |
| 28·539 | 17 | 56 | 9 | 31 | 3·8 | −20·9 | +10·9 |
| 29·159 | 8 | 46 | 5 | 26 | 5·3 | −20·1 | +20·6 |
| 30·177† | 0 | 19 | 0 | 12 | (3·5) | −22·3 | +32·1 |
| Means ... | ... | ... | 9 | 44 | 4·11 | −20·72 | ... |
| **Group 892.** Three or four small faint spots. | | | | | | | |
| Nov. 22·334 | 6 | 56 | 10 | 99 | 1·0 | +13·8 | −73·7 |
| 23·377 | 40 | 274 | 41 | 279 | 0·8 | +13·7 | −60·1 |
| 24·523 | 80 | 326 | 56 | 232 | 1·2 | +13·3 | −44·6 |
| 25·431 | 48 | 275 | 29 | 165 | 1·6 | +13·3 | −32·3 |

* The photograph taken at Dehra Dûn, India, on November 17 appears to be wrongly timed. From a comparison of all the groups of spots common to the photographs of November 16, 17 and 18, it would seem that the photograph on November 17 was taken two hours and a half earlier than the time marked upon it, corresponding to a difference of 1°·4 in longitude. The time of the photograph and the corresponding longitudes of the groups of spots have, therefore, been altered from those given in the *Greenwich Observations* for 1882, by these amounts respectively; the decimal of the day being diminished by 0d·104, and the longitudes of the spots increased by 1°·4.

† The photograph taken at Dehra Dûn, India, on November 30 appears to be wrongly timed. From a comparison of all the groups of spots common to the photographs of November 29, 30 and December 1, it would seem that the photograph on November 30, was taken two hours and a half earlier than the time marked upon it, corresponding to a difference of 1°·4 in longitude. The time of the photograph and the corresponding longitudes of the groups of spots have, therefore, been altered from those given in the *Greenwich Observations* for 1882, by these amounts respectively; the decimal of the day being diminished by 0d·104, and the longitudes of the spots increased by 1°·4.

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 892—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 26·478 | 15 | 90 | 8 | 47 | 4·2 | +12·8 | −15·8 |
| 27·547 | 20 | 56 | 10 | 29 | 4·5 | +12·8 | − 1·5 |
| 28·539 | 23 | 112 | 12 | 58 | 4·8 | +12·6 | +11·9 |
| 29·159 | 13 | 50 | 7 | 27 | 4·5 | +12·9 | +19·8 |
| 30·177* | 0 | 15 | 0 | 9 | (4·9) | +12·9 | +33·5 |
| Means ... | ... | ... | 19 | 105 | 3·06 | +13·12 | ... |
| **Group 893.** Three or four small spots. On November 26 only one spot remains. | | | | | | | |
| Nov. 23·377 | 11 | 46 | 6 | 25 | 64·5 | +24·3 | + 3·6 |
| 24·523 | 0 | 9 | 0 | 5 | 66·9 | +24·1 | +21·1 |
| 25·431 | 26 | 55 | 17 | 35 | 66·4 | +24·0 | +32·5 |
| 26·478 | 7 | 15 | 5 | 12 | 67·2 | +24·0 | +47·2 |
| 27·547 | 6 | 10 | 6 | 11 | 67·7 | +23·5 | +61·7 |
| Means ... | ... | ... | 7 | 18 | 66·54 | +23·98 | ... |
| **Group 894.** A fine group, composed of a great number of spots very irregularly arranged. The group undergoes constant changes, the preceding portion tending to increase, the following to diminish. | | | | | | | |
| Nov. 23·377 | 0 | 3 | 0 | 5 | 349·3 | − 9·7 | −71·6 |
| 24·523 | 61 | 324 | 61 | 320 | 346·7 | − 8·6 | −59·1 |
| 25·431 | 208 | 800 | 153 | 590 | 347·2 | − 8·0 | −46·7 |
| 26·478 | 175 | 812 | 104 | 481 | 348·6 | − 8·1 | −31·4 |
| 27·547 | 190 | 942 | 100 | 498 | 349·4 | − 8·2 | −16·6 |
| 28·539 | 131 | 910 | 66 | 462 | 349·3 | − 8·1 | − 3·6 |
| 29·159 | 60 | 647 | 31 | 329 | 349·5 | − 8·0 | + 4·8 |
| 30·177* | 36 | 668 | 19 | 359 | (350·6) | − 7·9 | +19·2 |
| Dec. 1·175 | 65 | 658 | 40 | 402 | 351·6 | − 8·1 | +33·4 |
| 2·252 | 28 | 250 | 21 | 185 | 350·9 | − 8·3 | +47·0 |
| 3·180 | 0 | 78 | 0 | 82 | 352·9 | − 8·7 | +61·1 |
| Means ... | ... | ... | 54 | 338 | 349·64 | − 8·34 | ... |
| **Group 895.** A small regular spot. | | | | | | | |
| Nov. 24·523 | 0 | 35 | 0 | 68 | 330·9 | +15 5 | −74·9 |
| 25·431 | 8 | 64 | 9 | 72 | 330·8 | +15·8 | −63·1 |
| 26·478 | 8 | 27 | 6 | 21 | 330·6 | +15·7 | −49·4 |
| 27·547 | 4 | 17 | 3 | 11 | 331·0 | +15·7 | −35·0 |
| **Group 895—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 28·539 | 18 | 33 | 10 | 18 | 330·7 | +15·4 | −22·2 |
| 29·159 | 13 | 17 | 7 | 9 | 330·6 | +15·8 | −14·1 |
| 30·177* | 6 | 13 | 3 | 7 | (331·1) | +15·7 | − 0·3 |
| Dec. 1·175 | 9 | 13 | 5 | 7 | 331·1 | +15·8 | +12·9 |
| 2·252 | 0 | 7 | 0 | 4 | 330·2 | +15·8 | +26·3 |
| Means ... | ... | ... | 5 | 24 | 330·78 | +15·69 | ... |
| **Group 896.** A small spot. | | | | | | | |
| Nov. 26·478 | 10 | 35 | 7 | 26 | 66·3 | +10·9 | +46·3 |
| 27·547 | 2 | 20 | 2 | 21 | 67·4 | +11·1 | +61·4 |
| Means ... | ... | ... | 5 | 24 | 66·78 | +11·00 | ... |
| **Group 897.** Four or five small spots on November 26. The group rapidly increases in size on the following days, and on November 29 forms a long straight line of spots, of which the last is the largest. On December 3 only the last spot remains. | | | | | | | |
| Nov. 26·478 | 56 | 177 | 35 | 111 | 343·4 | + 9·8 | −36·6 |
| 27·547 | 64 | 405 | 36 | 221 | 344·0 | +10·1 | −22·0 |
| 28·539 | 91 | 422 | 47 | 217 | 342·9 | +10·6 | −10·0 |
| 29·159 | 47 | 285 | 24 | 146 | 343·0 | +10·7 | − 1·7 |
| 30·177* | 19 | 248 | 10 | 129 | (342·7) | +11·2 | +11·3 |
| Dec. 1·175 | 14 | 232 | 8 | 129 | 342·2 | +11·3 | +24·0 |
| 2·252 | 15 | 75 | 10 | 48 | 340·7 | +12·0 | +36·8 |
| 3·180 | 4 | 14 | 3 | 11 | 341·2 | +12·1 | +49·4 |
| Means ... | ... | ... | 22 | 127 | 342·51 | +10·98 | ... |
| **Group 898.** Two considerable spots, with several small spots between them. | | | | | | | |
| Nov. 27·547 | 90 | 205 | 50 | 114 | 24·7 | −17·5 | +18·7 |
| 28·539 | 177 | 431 | 113 | 273 | 26·8 | −17·2 | +33·9 |
| 29·159 | 86 | 515 | 63 | 370 | 27·2 | −17·2 | +42·5 |
| 30·177* | 40 | 350 | 39 | 337 | (27·2) | −17·5 | +55·8 |
| Dec. 1·175 | 18 | 114 | 34 | 210 | 31·5 | −16·5 | +73·3 |
| Means ... | ... | ... | 60 | 261 | 27·48 | −17·18 | ... |

* The photograph taken at Dehra Dûn, India, on November 30 appears to be wrongly timed. From a comparison of all the groups of spots common to the photographs of November 29, 30 and December 1, it would seem that the photograph on November 30, was taken two hours and a half earlier than the time marked upon it, corresponding to a difference of 1°·4′ in longitude. The time of the photograph and the corresponding longitudes of the groups of spots have, therefore, been altered from those given in the *Greenwich Observations* for 1882, by these amounts respectively; the decimal of the day being diminished by 0d·104, and the longitudes of the spots increased by 1°·4.

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 899.** Several very small spots in a straight line. Only the first and last remain on November 29, and of these the first disappears before December 1. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Nov. 27·547 | 0 | 39 | 0 | 49 | 300·9 | −17·2 | −65·1 |
| 28·539 | 25 | 104 | 20 | 89 | 301·2 | −17·3 | −51·7 |
| 29·159 | 9 | 69 | 7 | 52 | 299·0 | −17·3 | −45·7 |
| 30·177* | 13 | 36 | 8 | 23 | (300·3) | −17·4 | −31·1 |
| Dec. 1·175 | 4 | 22 | 2 | 12 | 296·7 | −18·0 | −21·5 |
| 2·252 | 0 | 15 | 0 | 8 | 296·1 | −18·6 | − 7·8 |
| Means ... | ... | ... | 6 | 39 | 299·03 | −17·63 | ... |
| **Group 900.** Six spots in two clusters on November 30. Three spots on December 1. | | | | | | | |
| Nov. 29·159 | 3 | 13 | 2 | 10 | 26·1 | −26·0 | +41·4 |
| 30·177* | 7 | 74 | 6 | 69 | (24·7) | −24·7 | +53·3 |
| Dec. 1·175 | 15 | 83 | 19 | 111 | 23·9 | −23·9 | +65·7 |
| Means ... | ... | ... | 9 | 63 | 24·90 | −24·87 | ... |
| **Group 901.** Several very faint small spots. | | | | | | | |
| Nov. 30·177* | 0 | 14 | 0 | 28 | 333·5 | +11·5 | + 2·1 |
| Means ... | ... | ... | 0 | 28 | 333·5 | +11·5 | ... |
| **Group 902.** A very small spot. | | | | | | | |
| Dec. 2·252 | 0 | 5 | 0 | 8 | 233·6 | +20·0 | −70·3 |
| Means ... | ... | ... | 0 | 8 | 233·6 | +20·0 | ... |
| **Group 903.** Several small spots. The group undergoes constant changes. | | | | | | | |
| Dec. 5·160 | 0 | 44 | 0 | 23 | 256·1 | −14·7 | − 9·6 |
| 6·168 | 0 | 58 | 0 | 30 | 258·7 | −15·3 | + 6·3 |
| 7·160 | 23 | 73 | 12 | 40 | 262·3 | −14·9 | +23·0 |
| 8·179 | 8 | 53 | 5 | 34 | 262·7 | −14·9 | +36·8 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 903—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Dec. 9·502 | 19 | 283 | 17 | 257 | 263·8 | −13·5 | +55·4 |
| 10·175 | 35 | 228 | 44 | 284 | 265·4 | −14·1 | +65·7 |
| 11·169 | 6 | 126 | 23 | 380 | 266·7 | −14·1 | +80·3 |
| Means ... | ... | ... | 14 | 150 | 262·24 | −14·50 | ... |
| **Group 904.** A small regular spot. | | | | | | | |
| Dec. 6·168 | 7 | 31 | 12 | 54 | 180·1 | +18·7 | −72·3 |
| 7·160 | 8 | 39 | 8 | 40 | 181·9 | +18·5 | −57·4 |
| 8·179 | 9 | 41 | 7 | 31 | 180·4 | +18·4 | −45·5 |
| 9·502 | 9 | 19 | 5 | 11 | 180·8 | +17·9 | −27·6 |
| 10·175 | 0 | 6 | 0 | 3 | 180·9 | +18·1 | −18·8 |
| Means ... | ... | ... | 6 | 28 | 180·82 | +18·32 | ... |
| **Group 905.** Two very small spots close together. | | | | | | | |
| Dec. 7·160 | 0 | 6 | 0 | 3 | 214·7 | + 7·5 | −24·6 |
| Means ... | ... | ... | 0 | 3 | 214·7 | + 7·5 | ... |
| **Group 906.** Two spots. The following spot disappears before December 11. | | | | | | | |
| Dec. 8·179 | 15 | 61 | 8 | 31 | 218·2 | − 7·1 | − 7·7 |
| 9·502 | 34 | 89 | 18 | 46 | 219·6 | − 7·2 | +11·2 |
| 10·175 | 8 | 46 | 4 | 25 | 220·9 | − 7·1 | +21·2 |
| 11·169 | 5 | 22 | 3 | 13 | 221·5 | − 6·7 | +35·1 |
| 12·262 | 0 | 6 | 0 | 5 | 221·9 | − 7·0 | +49·9 |
| Means ... | ... | ... | 7 | 24 | 220·42 | − 7·02 | ... |
| **Group 907.** A regular spot, followed by several smaller spots. These latter have all disappeared before December 14. | | | | | | | |
| Dec. 8·179 | 4 | 16 | 4 | 17 | 163·5 | +10·2 | −62·4 |
| 9·502 | 59 | 167 | 41 | 117 | 165·3 | + 9·9 | −43·1 |
| 10·175 | 42 | 253 | 26 | 156 | 165·6 | +10·6 | −34·1 |
| 11·169 | 29 | 284 | 16 | 155 | 165·7 | +11·1 | −20·7 |
| 12·262 | 40 | 280 | 21 | 144 | 165·4 | +11·0 | − 6·6 |
| 13·433 | 15 | 142 | 8 | 74 | 165·0 | +10·7 | + 8·4 |

* The photograph taken at Dehra Dûn, India, on November 30 appears to be wrongly timed. From a comparison of all the groups of spots common to the photographs of November 29, 30, and December 1, it would seem that the photograph on November 30 was taken two hours and a half earlier than the time marked upon it, corresponding to a difference of 1°·4 in longitude. The time of the photograph and the corresponding longitudes of the groups of spots have, therefore, been altered from those given in the *Greenwich Observations* for 1882, by these amounts respectively; the decimal of the day being diminished by 0d·104, and the longitudes of the spots increased by 1°·4.

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 907—*continued.*** | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Dec. 14·289 | 0 | 44 | 0 | 24 | 166·6 | +11·1 | +21·2 |
| 15·273 | 8 | 39 | 5 | 24 | 166·0 | +11·6 | +33·6 |
| 16·158 | 4 | 13 | 3 | 10 | 166·9 | +11·2 | +46·1 |
| Means ... | ... | ... | 14 | 80 | 165·56 | +10·82 | ... |
| **Group 908.** A large spot, with two companions slightly smaller. Other spots appear both preceding and following the large spots on December 13 and following days, and the group forms a very long straight line of spots. The spots in the middle of the line disappear before December 16. The preceding cluster disappears before December 20. | | | | | | | |
| Dec. 10·175 | 13 | 127 | 42 | 417 | 119·1 | +18·8 | −80·6 |
| 11·169 | 38 | 315 | 52 | 437 | 119·1 | +19·0 | −67·3 |
| 12·262 | 74 | 481 | 66 | 428 | 118·7 | +19·1 | −53·3 |
| 13·433 | 125 | 535 | 86 | 366 | 118·0 | +19·4 | −38·6 |
| 14·289 | 31 | 454 | 19 | 273 | 118·1 | +19·8 | −27·3 |
| 15·273 | 30 | 611 | 17 | 333 | 119·8 | +17·7 | −12·6 |
| 16·158 | 59 | 635 | 31 | 335 | 121·8 | +16·7 | + 1·0 |
| 17·191 | 33 | 363 | 18 | 200 | 123·2 | +15·4 | +16·1 |
| 18·208 | 33 | 335 | 20 | 202 | 123·1 | +15·3 | +29·3 |
| 19·452 | 29 | 137 | 22 | 105 | 124·1 | +14·9 | +46·8 |
| 20·422 | 0 | 40 | 0 | 35 | 117·9 | +18·0 | +53·3 |
| Means ... | ... | ... | 34 | 285 | 120·26 | +17·65 | ... |
| **Group 909.** Three small spots. | | | | | | | |
| Dec. 12·262 | 4 | 44 | 4 | 38 | 221·8 | +24·8 | +49·8 |
| 13·433 | 0 | 8 | 0 | 10 | 219·8 | +25·1 | +63·2 |
| Means ... | ... | ... | 2 | 24 | 220·80 | +24·95 | ... |
| **Group 910.** Several small spots. The group undergoes frequent changes. | | | | | | | |
| Dec. 12·262 | 0 | 6 | 0 | 3 | 173·5 | + 8·7 | + 1·5 |
| 13·433 | 5 | 45 | 3 | 24 | 174·8 | + 9·5 | +18·2 |
| 14·289 | 9 | 92 | 5 | 54 | 174·7 | + 9·9 | +29·3 |
| 15·273 | 13 | 81 | 9 | 56 | 174·3 | +10·5 | +41·9 |
| 16·158 | 11 | 33 | 10 | 30 | 176·6 | +10·1 | +55·8 |
| Means ... | ... | ... | 5 | 33 | 174·78 | + 9·74 | ... |
| **Group 911.** A small spot. | | | | | | | |
| Dec. 13·433 | 0 | 16 | 0 | 14 | 209·3 | −23·7 | +52·7 |
| 14·289 | 0 | 18 | 0 | 23 | 210·2 | −24·2 | +64·8 |
| Means ... | ... | ... | 0 | 19 | 209·75 | −23·95 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 912.** Two very small faint spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Dec. 15·273 | 0 | 4 | 0 | 3 | 180·2 | + 2·7 | +47·8 |
| 16·158 | 0 | 14 | 0 | 13 | 178·8 | + 2·1 | +58·0 |
| 17·191 | 0 | 16 | 0 | 32 | 182·3 | + 2·0 | +75·2 |
| Means ... | ... | ... | 0 | 16 | 180·43 | + 2·27 | ... |
| **Group 913.** A group of four or five spots irregularly disposed. The group diminishes in size after December 18, and only two small spots remain on December 21. | | | | | | | |
| Dec. 16·158 | 5 | 27 | 4 | 21 | 72·2 | +10·1 | −48·6 |
| 17·191 | 29 | 244 | 18 | 155 | 70·2 | +10·4 | −36·9 |
| 18·208 | 43 | 368 | 25 | 205 | 70·2 | +10·3 | −23·6 |
| 19·452 | 77 | 276 | 40 | 141 | 69·9 | + 9·8 | − 7·4 |
| 20·422 | 40 | 205 | 20 | 105 | 71·7 | + 9·9 | + 7·1 |
| 21·506 | 15 | 45 | 8 | 25 | 73·8 | + 8·9 | +23·5 |
| 22·508 | 7 | 72 | 5 | 45 | 72·9 | + 9·8 | +35·8 |
| Means ... | ... | ... | 17 | 100 | 71·56 | + 9·89 | ... |
| **Group 914.** A small regular spot. | | | | | | | |
| Dec. 19·452 | 0 | 61 | 0 | 113 | 2·8 | −15·3 | −74·5 |
| 20·422 | 19 | 148 | 20 | 157 | 3·2 | −15·5 | −61·4 |
| 21·506 | 30 | 136 | 23 | 103 | 2·4 | −15·1 | −47·9 |
| 22·508 | 48 | 132 | 29 | 81 | 3·5 | −15·2 | −33·6 |
| 23·530 | 31 | 95 | 17 | 52 | 2·6 | −15·4 | −21·0 |
| 24·183 | 23 | 67 | 12 | 35 | 2·6 | −15·3 | −12·4 |
| 25·158 | 23 | 84 | 12 | 43 | 3·0 | −15·4 | + 0·8 |
| 26·314 | 3 | 64 | 2 | 34 | 3·5 | −15·7 | +16·6 |
| 27·162 | 8 | 27 | 5 | 16 | 3·7 | −15·9 | +27·9 |
| 28·178 | 0 | 9 | 0 | 6 | 1·6 | −12·0 | +39·2 |
| 29·302 | 9 | 26 | 8 | 23 | 3·1 | −12·0 | +55·5 |
| 30·238 | 47 | 116 | 61 | 152 | 3·0 | −11·3 | +67·7 |
| 31·198 | 4 | 8 | 8 | 16 | 359·4 | −11·6 | +76·8 |
| Means ... | ... | ... | 15 | 64 | 2·65 | −14·28 | ... |
| **Group 915.** A very small spot. | | | | | | | |
| Dec. 21·506 | 8 | 18 | 5 | 10 | 19·1 | + 6·9 | −31·2 |
| Means ... | ... | ... | 5 | 10 | 19·1 | + 6·9 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 916.** Two small spots. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Dec. 21·506 | 0 | 31 | 0 | 21 | 8·3 | −14·7 | −42·0 |
| 22·508 | 15 | 40 | 9 | 22 | 11·6 | −14·3 | −25·5 |
| 23·530 | 7 | 27 | 4 | 14 | 12·6 | −14·2 | −11·0 |
| 24·183 | 0 | 35 | 0 | 18 | 13·1 | −13·8 | − 1·9 |
| Means ... | ... | ... | 3 | 19 | 11·4 | −14·25 | ... |
| **Group 917.** Two small faint spots. | | | | | | | |
| Dec. 22·508 | 7 | 61 | 5 | 40 | 359·9 | +12·1 | −37·2 |
| Means ... | ... | ... | 5 | 40 | 359·9 | +12·1 | ... |
| **Group 918.** A close cluster of very faint small spots. | | | | | | | |
| Dec. 24·183 | 0 | 140 | 0 | 77 | 352·1 | + 6·6 | −22·9 |
| 25·158 | 13 | 58 | 7 | 30 | 352·2 | + 7·6 | −10·0 |
| Means ... | ... | ... | 4 | 54 | 352·15 | + 7·10 | ... |
| **Group 919.** Three small faint spots. | | | | | | | |
| Dec. 26·314 | 0 | 30 | 0 | 16 | 359·8 | −11·4 | +12·9 |
| Means ... | ... | ... | 0 | 16 | 359·8 | −11·4 | ... |
| **Group 920.** A regular spot. | | | | | | | |
| Dec. 26·314 | 38 | 150 | 89 | 349 | 268·9 | −13·8 | −78·0 |
| 27·162 | 33 | 183 | 42 | 230 | 269·4 | −13·8 | −66·4 |
| 28·178 | 48 | 342 | 40 | 285 | 270·0 | −14·2 | −52·4 |
| 29·302 | 61 | 371 | 39 | 237 | 270·0 | −14·2 | −37·6 |
| 30·238 | 88 | 473 | 49 | 265 | 270·3 | −14·3 | −25·0 |
| 31·198 | 93 | 504 | 48 | 262 | 270·2 | −14·1 | −12·4 |
| 1883. | | | | | | | |
| Jan. 1·156 | 93 | 559 | 48 | 286 | 270·2 | −14·3 | + 0·2 |
| 2·429 | 137 | 510 | 73 | 271 | 270·0 | −14·7 | +16·8 |
| 3·155 | 69 | 482 | 39 | 275 | 270·1 | −14·4 | +26·4 |
| 4·190 | 68 | 372 | 45 | 246 | 270·2 | −14·5 | +40·2 |
| 5·170 | 57 | 311 | 47 | 259 | 269·8 | −14·1 | +52·7 |
| 6·463 | 55 | 184 | 78 | 262 | 269·9 | −14·3 | +69·8 |
| 7·181 | 15 | 106 | 37 | 270 | 269·9 | −14·6 | +79·2 |
| Means ... | .. | ... | 52 | 269 | 269·92 | −14·25 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 921.** A small regular spot. | | | | | | | |
| 1882. d | | | | | ° | ° | ° |
| Dec. 27·162 | 7 | 16 | 10 | 24 | 266·3 | +10·2 | −69·5 |
| 28·178 | 8 | 19 | 7 | 18 | 267·1 | +10·3 | −55·3 |
| 29·302 | 12 | 16 | 8 | 10 | 267·5 | +10·4 | −40·1 |
| 30·238 | 7 | 11 | 4 | 6 | 267·5 | +10·1 | −27·8 |
| 31·198 | 0 | 2 | 0 | 1 | 268·0 | +10·2 | −14·6 |
| 1883. | | | | | | | |
| Jan. 1·156 | 0 | 7 | 0 | 4 | 268·6 | +10·2 | − 1·4 |
| Means ... | ... | ... | 5 | 11 | 267·50 | +10·23 | ... |
| **Group 922.** A small spot. | | | | | | | |
| Dec. 28·178 | 8 | 17 | 4 | 9 | 328·4 | −12·8 | + 6·0 |
| Means ... | ... | ... | 4 | 9 | 328·4 | −12·8 | ... |
| **Group 923.** Two very small spots on December 29. Only one remains on December 30. | | | | | | | |
| Dec. 29·302 | 6 | 19 | 5 | 15 | 356·9 | + 7·0 | +49·3 |
| 30·238 | 0 | 8 | 0 | 9 | 358·4 | + 7·7 | +63·1 |
| Means ... | ... | ... | 3 | 12 | 357·65 | +7·35 | ... |
| **Group 924.** Several very small spots. | | | | | | | |
| Dec. 30·238 | 14 | 50 | 9 | 30 | 328·9 | −17·1 | +33·6 |
| 31·198 | 54 | 190 | 41 | 145 | 330·7 | −16·4 | +48·1 |
| 1883. | | | | | | | |
| Jan. 1·156 | 23 | 113 | 26 | 124 | 332·4 | −16·4 | +62·4 |
| Means ... | ... | ... | 25 | 100 | 300·67 | −16·63 | ... |
| **Group 925.** Two regular spots, with, on some days, smaller spots in their neighbourhood. | | | | | | | |
| Dec. 30·238 | 21 | 78 | 12 | 44 | 284·1 | −29·0 | −11·2 |
| 31·198 | 97 | 376 | 54 | 209 | 285·2 | −28·9 | + 2·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 925—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Jan. 1·156 | 114 | 614 | 65 | 351 | 283·8 | −28·7 | +13·8 |
| 2·429 | 162 | 591 | 102 | 373 | 283·2 | −28·5 | +30·0 |
| 3·155 | 76 | 519 | 54 | 365 | 282·5 | −28·3 | +38·8 |
| 4·190 | 45 | 361 | 39 | 313 | 282·0 | −27·9 | +52·0 |
| 5·170 | 37 | 191 | 47 | 246 | 283·1 | −27·9 | +66·0 |
| 6·463 | 0 | 20 | 0 | 88 | 285·2 | −27·7 | +85·1 |
| Means ... | ... | ... | 47 | 249 | 283·64 | −283·6 | ... |

### Group 926.

A very small spot on 1882 December 30. Other spots appear on the following days, and the group rapidly increases in size until 1883 January 3. After passing the central meridian on 1883 January 4, the group begins to decrease, and entirely disappears before January 8.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. | | | | | | | |
| Dec. 30·238 | 0 | 8 | 0 | 9 | 231·4 | − 9·5 | −63·9 |
| 31·198 | 8 | 66 | 6 | 54 | 230·1 | − 9·9 | −52·5 |
| 1883. | | | | | | | |
| Jan. 1·156 | 52 | 215 | 34 | 139 | 231·1 | −10·0 | −38·9 |
| 2·429 | 102 | 453 | 55 | 245 | 231·9 | −10·2 | −21·3 |
| 3·155 | 63 | 336 | 33 | 173 | 232·9 | − 9·8 | −10·8 |
| 4·190 | 49 | 233 | 24 | 117 | 233·1 | −10·1 | + 3·1 |
| 5·170 | 71 | 228 | 37 | 121 | 233·0 | −10·1 | +15·9 |
| 6·463 | 15 | 72 | 9 | 43 | 233·4 | −10·7 | +33·3 |
| 7·181 | 12 | 44 | 9 | 30 | 233·5 | −10·8 | +42·8 |
| Means ... | ... | ... | 23 | 103 | 232·27 | −10·12 | ... |

### Group 927.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. | | | | | | | |
| Dec. 30.238 | 19 | 57 | 57 | 167 | 214·8 | −18·4 | −80·5 |
| 31·198 | 26 | 171 | 35 | 227 | 214·7 | −18·1 | −67·9 |
| 1883. | | | | | | | |
| Jan. 1·156 | 27 | 205 | 24 | 183 | 214·9 | −17·4 | −55·1 |
| 2·429 | 65 | 287 | 42 | 189 | 214·1 | −17·5 | −39·1 |
| 3·155 | 48 | 296 | 29 | 176 | 214·1 | −17·2 | −29·6 |
| 4·190 | 54 | 342 | 29 | 183 | 213·9 | −17·5 | −16·1 |

### Group 927—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Jan. 5·170 | 62 | 396 | 32 | 205 | 213·6 | −17·2 | − 3·5 |
| 6·463 | 90 | 307 | 47 | 163 | 213·6 | −18·0 | +13·5 |
| 7·181 | 35 | 272 | 20 | 153 | 213·7 | −18·0 | +23·0 |
| 8·423 | 32 | 209 | 21 | 139 | 213·7 | −18·1 | +39·4 |
| 9·435 | 28 | 163 | 23 | 135 | 213·3 | −18·5 | +52·3 |
| 10·257 | 19 | 93 | 21 | 104 | 213·8 | −18·5 | +63·6 |
| 11·168 | 15 | 78 | 27 | 144 | 213·0 | −18·7 | +74·9 |
| Means ... | ... | ... | 31 | 167 | 213·94 | −17·93 | ... |

### Group 928.

Two small spots on 1882 December 31. The preceding spot has disappeared before 1883 January 1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. | | | | | | | |
| Dec. 31·198 | 9 | 74 | 9 | 74 | 340·3 | +13·9 | +57·7 |
| 1883. | | | | | | | |
| Jan. 1·156 | 0 | 19 | 0 | 29 | 338·9 | +14·1 | +68·9 |
| Means ... | ... | ... | 5 | 52 | 339·60 | +14·00 | ... |

### Group 929.

A small regular spot on 1882 December 31. It gradually becomes elongated in the direction of the solar equator, breaks up into several small spots on 1883 January 4, and gradually disappears.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1882. | | | | | | | |
| Dec. 31·198 | 11 | 70 | 25 | 159 | 204·8 | −20·9 | −77·8 |
| 1883. | | | | | | | |
| Jan. 1·156 | 18 | 101 | 22 | 123 | 204·8 | −20·8 | −65·2 |
| 2·429 | 39 | 172 | 31 | 135 | 204·2 | −21·2 | −49·0 |
| 3·155 | 24 | 109 | 16 | 74 | 204·3 | −20·8 | −39·4 |
| 4·190 | 9 | 54 | 5 | 31 | 204·0 | −20·9 | −26·0 |
| 5·170 | 0 | 8 | 0 | 4 | 203·9 | −20·6 | −13·2 |
| 6·463 | 0 | 36 | 0 | 19 | 206·0 | −20·4 | + 5·9 |
| 7·181 | 0 | 7 | 0 | 4 | 203·9 | −22·0 | +13·2 |
| Means ... | ... | ... | 12 | 69 | 204·49 | −20·95 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 930.** A large group composed of a great number of spots very irregularly disposed. It decreases rapidly after it has passed the central meridian. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Jan. 1·156 | 32 | 186 | 79 | 461 | 192·0 | + 5·2 | −78·0 |
| 2·429 | 140 | 745 | 144 | 802 | 191·2 | + 4·9 | −62·0 |
| 3·155 | 104 | 733 | 84 | 602 | 192·1 | + 5·3 | −51·6 |
| 4·190 | 105 | 1001 | 66 | 633 | 193·0 | + 5·0 | −37·0 |
| 5·170 | 127 | 1061 | 71 | 593 | 193·2 | + 5·3 | −23·9 |
| 6·463 | 140 | 880 | 71 | 447 | 194·8 | + 5·0 | − 5·3 |
| 7·181 | 83 | 585 | 43 | 299 | 194·4 | + 4·7 | + 3·7 |
| 8·423 | 22 | 129 | 12 | 72 | 197·4 | + 4·8 | +23·1 |
| 9·435 | 53 | 155 | 34 | 97 | 197·5 | + 4·9 | +36·5 |
| 10·257 | 23 | 220 | 16 | 162 | 196·7 | + 4·4 | +46·5 |
| 11·168 | 11 | 25 | 11 | 24 | 196·3 | + 4·9 | +58·2 |
| Means ... | ... | ... | 57 | 381 | 194·42 | + 4·95 | ... |
| **Group 931.** Two small spots. | | | | | | | |
| Jan. 9·435 | 0 | 11 | 0 | 5 | 152·7 | +10·2 | − 8·3 |
| 10·257 | 23 | 36 | 12 | 19 | 151·9 | +10·0 | + 1·7 |
| 11·168 | 5 | 21 | 3 | 11 | 152·0 | + 9·7 | +13·9 |
| Means ... | ... | ... | 5 | 12 | 152·20 | + 9·97 | ... |
| **Group 932.** Two very small spots close together. | | | | | | | |
| Jan. 10·257 | 2 | 4 | 1 | 3 | 108·1 | +25·5 | −42·1 |
| Means ... | ... | ... | 1 | 3 | 108·1 | +25·5 | ... |
| **Group 933.** A large regular spot, followed by a number of smaller spots. | | | | | | | |
| Jan. 10·257 | 39 | 359 | 67 | 620 | 76·5 | − 8·3 | −73·7 |
| 11·168 | 71 | 505 | 75 | 540 | 75·8 | − 8·6 | −62·3 |
| 12·159 | 115 | 711 | 88 | 541 | 76·1 | − 8·6 | −49·0 |
| 13·156 | 149 | 1023 | 92 | 633 | 76·1 | − 8·7 | −35·9 |
| 14·160 | 176 | 1256 | 95 | 682 | 76·6 | − 8·7 | −22·2 |
| 15·521 | 194 | 1190 | 97 | 599 | 75·8 | − 9·5 | − 5·0 |
| 16·598 | 276 | 1578 | 140 | 805 | 75·3 | − 9·4 | + 8·6 |
| 17·159 | 129 | 1563 | 67 | 818 | 75·2 | − 9·3 | +16·0 |
| 18·157 | 125 | 1269 | 72 | 735 | 75·9 | − 9·4 | +29·8 |
| 19·183 | 179 | 1148 | 126 | 797 | 76·5 | − 9·7 | +43·9 |
| 20· | No photograph. | | (93 | 646 | 76·5 | − 9·4 | +57·0) |
| 21·179 | 39 | 343 | 60 | 494 | 76·5 | − 9·1 | +70·2 |
| Means ... | ... | ... | 89 | 659 | 76·07 | − 9·06 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 934.** Irregular spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Jan. 12·159 | 19 | 92 | 45 | 221 | 48·7 | +13·8 | −76·4 |
| 13·156 | 28 | 237 | 34 | 283 | 48·9 | +13·8 | −63·1 |
| 14·160 | 40 | 300 | 33 | 249 | 48·7 | +13·6 | −50·1 |
| 15·521 | 90 | 428 | 56 | 265 | 48·8 | +13·3 | −32·0 |
| 16·598 | 70 | 515 | 39 | 285 | 49·1 | +12·7 | −17·6 |
| 17·159 | 55 | 419 | 30 | 224 | 49·3 | +13·3 | − 9·9 |
| 18·157 | 64 | 489 | 34 | 258 | 49·5 | +13·2 | + 3·4 |
| 19·183 | 86 | 483 | 47 | 268 | 49·6 | +13·4 | +17·0 |
| 20· | No photograph. | | (49 | 270 | 49·5 | +13·4 | +30·0) |
| 21·179 | 68 | 372 | 50 | 272 | 49·3 | +13·4 | +43·0 |
| 22·350 | 40 | 245 | 42 | 255 | 49·5 | +13·8 | +58·6 |
| 23·425 | 0 | 53 | 0 | 98 | 49·1 | +13·8 | +72·3 |
| Means ... | ... | ... | 38 | 246 | 49·17 | +13·46 | ... |
| **Group 935.** A small faint spot. | | | | | | | |
| Jan. 13·156 | 0 | 7 | 0 | 4 | 113·2 | +24·6 | + 1·2 |
| Means ... | ... | ... | 0 | 4 | 113·20 | +24·60 | ... |
| **Group 936.** Two small spots on January 14. The following spot disappears before January 15, and the preceding spot is much reduced in size. | | | | | | | |
| Jan. 14·160 | 33 | 75 | 19 | 42 | 73·0 | + 8·7 | −25·8 |
| 15·521 | 0 | 12 | 0 | 6 | 76·5 | + 8·4 | − 4·3 |
| 16·598 | 0 | 11 | 0 | 6 | 77·6 | + 8·5 | +10·9 |
| 17·159 | 0 | 4 | 0 | 2 | 78·3 | + 8·6 | +19·1 |
| Means ... | ... | ... | 5 | 14 | 76·35 | + 8·55 | ... |
| **Group 937.** A small spot. | | | | | | | |
| Jan. 16·598 | 0 | 16 | 0 | 10 | 100·2 | + 3·2 | +33·5 |
| Means ... | ... | ... | 0 | 10 | 100·2 | + 3·2 | ... |
| **Group 938.** Two spots. The following spot breaks up into three or four divisions on January 19. The preceding spot has divided into two portions by January 21, and the following portion disappears before January 23. | | | | | | | |
| Jan. 16·598 | 54 | 317 | 54 | 315 | 6·6 | −10·2 | −60·1 |
| 17·159 | 54 | 356 | 45 | 292 | 6·7 | − 9·9 | −52·5 |
| 18·157 | 45 | 539 | 30 | 351 | 6·4 | −10·0 | −39·7 |
| 19·183 | 98 | 489 | 55 | 273 | 7·0 | − 9·9 | −25·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued*

### Group 938—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Jan. 20 | No photograph. | | (36 | 178 | 6·7 | −10·2 | −12·7) |
| 21·179 | 31 | 166 | 16 | 83 | 6·4 | −10·4 | + 0·1 |
| 22·350 | 16 | 120 | 8 | 64 | 8·2 | −11·3 | +17·3 |
| 23·425 | 17 | 75 | 10 | 46 | 10·3 | −11·4 | +33·5 |
| Means ... | ... | ... | 32 | 200 | 7·29 | −10·41 | ... |

### Group 939.

Two small spots close to each other on January 21. They tend to separate on the following days.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 21·179 | 12 | 47 | 7 | 27 | 355·0 | +18·3 | −11·3 |
| 22·350 | 19 | 138 | 10 | 75 | 353·1 | +18·9 | + 2·2 |
| 23·425 | 16 | 66 | 9 | 38 | 353·0 | +18·9 | +16·2 |
| Means ... | ... | ... | 9 | 47 | 353·7 | +18·7 | ... |

### Group 940.

A group of five or six spots arranged in a circle on January 22. The preceding spot alone remains on January 23.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 22·350 | 38 | 149 | 31 | 118 | 41·5 | −12·0 | +50·6 |
| 23·425 | 15 | 65 | 19 | 83 | 44·2 | −11·1 | +67·4 |
| Means ... | ... | ... | 25 | 101 | 42·85 | −11·55 | ... |

### Group 941.

A regular spot. Several very small spots are seen close to it on January 26.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 22·350 | 23 | 74 | 39 | 129 | 276·9 | −27·8 | −74·0 |
| 23·425 | 26 | 123 | 27 | 128 | 276·4 | −27·6 | −60·4 |
| 24 | No photograph. | | (29 | 137 | 276·1 | −27·5 | −47·5) |
| 25 | No photograph. | | (31 | 145 | 275·8 | −27·3 | −34·6) |
| 26·430 | 57 | 266 | 33 | 154 | 275·5 | −27·2 | −21·7 |
| 27·200 | 28 | 217 | 15 | 119 | 275·8 | −27·2 | −11·2 |
| 28·199 | 38 | 192 | 21 | 103 | 275·1 | −27·2 | + 1·1 |
| 29·201 | 36 | 167 | 20 | 92 | 274·5 | −26·8 | +13·8 |
| 30·430 | 36 | 203 | 22 | 124 | 273·6 | −26·9 | +29·1 |
| 31·422 | 28 | 109 | 19 | 77 | 272·9 | −26·8 | +41·5 |
| Feb. 1·162 | 37 | 129 | 30 | 107 | 273·0 | −26·8 | +51·3 |
| 2·194 | 19 | 99 | 22 | 115 | 272·6 | −27·0 | +64·5 |
| 3·427 | 5 | 23 | 12 | 57 | 271·8 | −27·6 | +79·9 |
| Means ... | ... | ... | 25 | 114 | 274·62 | −27·21 | ... |

### Group 942.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 23·425 | 0 | 8 | 0 | 11 | 268·6 | −14·1 | −68·2 |
| Means ... | ... | ... | 0 | 11 | 268·60 | −14·10 | ... |

### Group 943.

Three small spots on January 26. Their size and distance from each other have increased by January 27, and they disappear before January 28.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Jan. 26·430 | 9 | 53 | 7 | 41 | 346·4 | −13·3 | +49·2 |
| 27·200 | 13 | 148 | 13 | 149 | 347·8 | −13·1 | +60·8 |
| Means ... | ... | ... | 10 | 95 | 347·10 | −13·20 | ... |

### Group 944.

A number of very small spots following one another in a somewhat curved line. The group undergoes many minute changes.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 26·430 | 28 | 134 | 19 | 93 | 257·1 | +10·4 | −40·1 |
| 27·200 | 20 | 112 | 13 | 68 | 256·8 | +11·1 | −30·2 |
| 28·199 | 0 | 104 | 0 | 59 | 254·5 | +12·9 | −19·5 |
| 29·201 | 0 | 37 | 0 | 19 | 254·0 | +12·0 | − 6·7 |
| Means ... | ... | ... | 8 | 60 | 255·60 | +11·60 | ... |

### Group 945.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 26·430 | 0 | 11 | 0 | 9 | 240·9 | − 9·2 | −56·3 |
| Means ... | ... | ... | 0 | 9 | 240·90 | − 9·20 | ... |

### Group 946.

A small regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 27·200 | 7 | 37 | 13 | 68 | 212·1 | −19·3 | −74·9 |
| 28·199 | 19 | 70 | 20 | 75 | 211·6 | −19·3 | −62·4 |
| 29·201 | 33 | 120 | 25 | 92 | 211·7 | −19·1 | −49·0 |
| 30·430 | 20 | 147 | 12 | 90 | 210·9 | −19·3 | −33·6 |
| 31·422 | 23 | 90 | 13 | 49 | 210·7 | −19·5 | −20·7 |
| Feb. 1·162 | 20 | 73 | 11 | 38 | 210·9 | −19·5 | −10·8 |
| 2·194 | 9 | 36 | 4 | 18 | 210·2 | −19·8 | + 2·1 |
| 3·427 | 0 | 11 | 0 | 6 | 210·2 | −19·8 | +18·3 |
| Means ... | ... | ... | 12 | 55 | 211·04 | −19·45 | ... |

### Group 947.

A cluster of very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 28·199 | 0 | 19 | 0 | 10 | 266·7 | −14·5 | − 7·3 |
| Means ... | ... | ... | 0 | 10 | 266·70 | −14·50 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 948.** Two small spots on January 29. A third is seen on January 30, and the first two disappear before January 31. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Jan. 28·199 | 0 | 19 | 0 | 10 | 274·9 | +11·4 | + 0·9 |
| 29·201 | 21 | 93 | 11 | 51 | 274·2 | +12·9 | +13·5 |
| 30·430 | 23 | 96 | 15 | 60 | 275·8 | +12·4 | +31·3 |
| 31·422 | 4 | 19 | 3 | 16 | 279·8 | +11·9 | +48·4 |
| Feb. 1·162 | 0 | 25 | 0 | 26 | 281·0 | +12·1 | +59·3 |
| Means ... | ... | ... | 6 | 33 | 277·14 | +12·14 | ... |
| **Group 949.** Three small spots. One of them disappears before January 30. | | | | | | | |
| Jan. 29·201 | 0 | 86 | 0 | 46 | 263·5 | +15·0 | + 2·8 |
| 30·430 | 3 | 15 | 2 | 8 | 263·7 | +14·3 | +19·2 |
| Means ... | ... | ... | 1 | 27 | 263·60 | +14·65 | ... |
| **Group 950.** Two small spots. | | | | | | | |
| Jan. 30·430 | 0 | 11 | 0 | 13 | 311·1 | −16·3 | +66·6 |
| Means ... | ... | ... | 0 | 13 | 311·10 | −16·3 | ... |
| **Group 951.** Two very small faint spots. | | | | | | | |
| Jan. 30·430 | 0 | 15 | 0 | 8 | 267·1 | −13·1 | +22·6 |
| Means ... | ... | ... | 0 | 8 | 267·10 | −13·10 | ... |
| **Group 952.** Two small faint spots. | | | | | | | |
| Jan. 30·430 | 0 | 19 | 0 | 12 | 203·7 | − 3·9 | −40·8 |
| Means ... | ... | .. | 0 | 12 | 203·70 | − 3·90 | ... |
| **Group 953.** A small faint spot. | | | | | | | |
| Jan. 30·430 | 0 | 11 | 0 | 8 | 197·7 | − 8·2 | −46·8 |
| Means ... | ... | ... | 0 | 8 | 197·70 | − 8·20 | ... |
| **Group 954.** A regular spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Jan. 31·422 | 0 | 77 | 0 | 174 | 155·8 | +11·8 | −75·6 |
| Feb. 1·162 | 49 | 232 | 64 | 304 | 156·2 | +11·7 | −65·5 |
| 2·194 | 54 | 234 | 46 | 202 | 156·2 | +11·6 | −51·9 |
| 3·427 | 83 | 318 | 54 | 208 | 155·8 | +11·5 | −36·1 |
| 4·509 | 73 | 339 | 41 | 193 | 155·6 | +11·4 | −22·1 |
| 5·562 | 98 | 382 | 52 | 204 | 155·2 | +11·5 | − 8·6 |
| 6·520 | 65 | 369 | 34 | 195 | 155·1 | +11·2 | + 4·0 |
| 7·160 | 60 | 358 | 32 | 192 | 155·5 | +11·3 | +12·7 |
| 8·164 | 39 | 284 | 23 | 166 | 155·6 | +11·2 | +26·1 |
| 9·545 | 65 | 272 | 48 | 199 | 155·2 | +10·6 | +43·8 |
| 10·172 | 35 | 169 | 31 | 148 | 155·8 | +10·8 | +52·7 |
| 11·547 | 16 | 107 | 27 | 181 | 155·8 | +11·2 | +70·8 |
| 12·164 | 7 | 80 | 20 | 231 | 156·5 | +11·5 | +79·6 |
| Means ... | ... | ... | 36 | 200 | 155·71 | +11·33 | ... |
| **Group 955.** Three or four small spots on February 1. The group increases in size in the following days, and lengthens out into a long line of spots. It begins to diminish after crossing the central meridian, and gradually fades away. | | | | | | | |
| Feb. 1·162 | 18 | 117 | 14 | 86 | 175·4 | −23·3 | −46·3 |
| 2·194 | 42 | 215 | 26 | 131 | 176·3 | −22·7 | −31·8 |
| 3·427 | 57 | 469 | 31 | 255 | 176·5 | −22·3 | −15·4 |
| 4·509 | 84 | 442 | 44 | 232 | 177·4 | −23·2 | − 0·3 |
| 5·562 | 88 | 433 | 48 | 233 | 177·1 | −23·2 | +13·3 |
| 6·520 | 101 | 437 | 57 | 252 | 176·3 | −23·2 | +25·2 |
| 7·160 | 45 | 307 | 28 | 192 | 177·0 | −23·1 | +34·2 |
| 8·164 | 13 | 121 | 10 | 91 | 176·6 | −23·0 | +47·1 |
| Means ... | ... | ... | 32 | 184 | 176·58 | −23·00 | ... |
| **Group 956.** Three small spots on February 2, of which only the largest remains on February 3. | | | | | | | |
| Feb. 2·194 | 0 | 50 | 0 | 50 | 268·1 | −21·0 | +60·0 |
| 3·427 | 3 | 24 | 6 | 48 | 268·5 | −21·3 | +76·6 |
| Means ... | ... | ... | 3 | 49 | 268·30 | −21·15 | ... |
| **Group 957.** A faint spot of irregular outline. | | | | | | | |
| Feb. 2·194 | 0 | 20 | 0 | 10 | 201·3 | − 5·3 | − 6·8 |
| Means ... | ... | ... | 0 | 10 | 201·30 | − 5·30 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 958.

A small faint spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Feb. 6·520 | 0 | 16 | 0 | 13 | 101·2 | + 4·8 | −49·9 |
| Means ... | ... | ... | 0 | 13 | 101·20 | + 4·80 | ... |

### Group 959.

Two large spots. A small spot is detached from the following spot on February 7. The group rapidly diminishes in size after passing the central meridian, and the preceding spot also breaks up, so that on February 12 the preceding spot has divided into two separate portions, and on February 13 the group is composed of several small faint spots scattered over a wide area.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 6·520 | 127 | 372 | 139 | 400 | 89·8 | + 5·3 | −61·3 |
| 7·160 | 103 | 719 | 90 | 618 | 89·6 | + 5·9 | −53·2 |
| 8·164 | 90 | 733 | 60 | 489 | 89·7 | + 5·7 | −39·8 |
| 9·545 | 150 | 798 | 83 | 438 | 90·8 | + 5·5 | −20·6 |
| 10·172 | 71 | 618 | 44 | 321 | 92·3 | + 4·8 | −10·8 |
| 11·547 | 76 | 396 | 40 | 204 | 93·5 | + 4·5 | + 8·5 |
| 12·164 | 21 | 314 | 12 | 167 | 93·7 | + 4·1 | +16·8 |
| 13·436 | 16 | 181 | 10 | 110 | 94·1 | + 3·9 | +34·0 |
| 14·159 | 0 | 17 | 0 | 13 | 98·8 | + 2·7 | +48·2 |
| Means ... | ... | ... | 53 | 307 | 92·48 | + 4·71 | ... |

### Group 960.

A very small regular spot. A second spot appears near it on February 11, the two being measured together on that day.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 6·520 | 0 | 41 | 0 | 67 | 78·1 | − 8·4 | −73·0 |
| 7·160 | 9 | 33 | 10 | 36 | 78·9 | − 8·5 | −63·9 |
| 8·164 | 0 | 27 | 0 | 21 | 78·8 | − 8·7 | −50·7 |
| 9·545 | 9 | 30 | 5 | 18 | 78·8 | − 8·2 | −32·6 |
| 10·172 | 0 | 14 | 0 | 8 | 79·4 | − 8·3 | −23·7 |
| 11·547 | 0 | 19 | 0 | 10 | 81·1 | − 7·0 | − 3·9 |
| 12·164 | 0 | 27 | 0 | 14 | 80·7 | − 8·2 | + 3·8 |
| Means ... | ... | ... | 2 | 25 | 79·40 | − 8·19 | ... |

### Group 961.

A regular spot. Small spots are seen from time to time in its immediate neighbourhood.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 7·160 | 0 | 16 | 0 | 31 | 66·2 | −17·3 | −76·6 |
| 8·164 | 34 | 228 | 53 | 326 | 59·0 | −17·8 | −70·5 |
| 9·545 | 36 | 375 | 31 | 313 | 58·1 | −17·2 | −53·3 |
| 10·172 | 43 | 285 | 31 | 204 | 57·4 | −17·5 | −45·7 |
| 11·547 | 80 | 325 | 46 | 186 | 57·4 | −17·8 | −27·6 |
| 12·164 | 49 | 321 | 26 | 172 | 57·8 | −17·7 | −19·1 |
| 13·436 | 71 | 360 | 37 | 183 | 57·1 | −18·5 | − 3·0 |
| 14·159 | 44 | 271 | 22 | 139 | 57·6 | −18·3 | + 7·0 |
| 15·163 | 42 | 267 | 23 | 144 | 58·2 | −18·1 | +20·8 |
| 16·582 | 51 | 221 | 33 | 143 | 57·4 | −17·5 | +38·7 |
| 17·320 | 23 | 161 | 18 | 120 | 57·1 | −17·4 | +48·2 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 961—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Feb. 18·243 | 20 | 98 | 19 | 96 | 57·0 | −17·4 | +60·1 |
| 19·204 | 11 | 110 | 17 | 169 | 56·6 | −17·4 | +72·4 |
| 20·157 | 0 | 12 | 0 | 48 | 56·2 | −17·5 | +84·6 |
| Means ... | ... | ... | 25 | 162 | 58·88 | −17·67 | ... |

### Group 962.

Two small spots on February 7 and 9, but only one is seen on February 8.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 7·160 | 5 | 63 | 4 | 41 | 182·5 | + 2·4 | +39·7 |
| 8·164 | 7 | 33 | 7 | 30 | 186·3 | + 2·7 | +56·8 |
| 9·545 | 0 | 25 | 0 | 69 | 190·2 | + 4·4 | +78·8 |
| Means ... | ... | ... | 4 | 47 | 186·33 | + 3·17 | ... |

### Group 963.

Three very small spots on February 8. By February 9 the group has expanded into a very fine group composed of two large spots and several smaller spots between them. The smaller spots gradually disappear, and on February 11 only the two principal components remain, and of these the following spot gradually diminishes on the succeeding days, and disappears before February 15.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 8·164 | 7 | 109 | 4 | 64 | 98·7 | − 5·2 | − 30·8 |
| 9·545 | 113 | 734 | 58 | 377 | 99·2 | − 5·4 | −12·2 |
| 10·172 | 80 | 844 | 40 | 422 | 99·8 | − 5·2 | − 3·3 |
| 11·547 | 97 | 618 | 50 | 323 | 101·4 | − 4·9 | +16·4 |
| 12·164 | 67 | 525 | 37 | 290 | 102·5 | − 5·2 | +25·6 |
| 13·436 | 46 | 288 | 31 | 199 | 103·8 | − 5·6 | +43·7 |
| 14·159 | 22 | 191 | 19 | 163 | 105·1 | − 5·7 | +54·5 |
| 15·163 | 8 | 132 | 11 | 183 | 106·7 | − 5·9 | +69·3 |
| Means ... | ... | ... | 31 | 253 | 102·15 | − 5·39 | ... |

### Group 964.

A very large spot of irregular shape. It divides into two on February 13, the preceding portion being the more compact. The following portion breaks up into a great number of small spots, and diminishes in size on the following days, until on February 21 the preceding spot alone remains.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 11·547 | 19 | 311 | 29 | 463 | 16·0 | + 7·5 | −69·0 |
| 12·164 | 60 | 589 | 64 | 635 | 15·9 | + 7·5 | −61·0 |
| 13·436 | 174 | 1267 | 129 | 941 | 14·6 | + 7·9 | −45·5 |
| 14·159 | 146 | 1456 | 91 | 925 | 15·1 | + 7·6 | −35·5 |
| 15·163 | 152 | 1715 | 84 | 955 | 15·3 | + 7·4 | −22·1 |
| 16·582 | 303 | 1336 | 157 | 689 | 16·7 | + 7·3 | − 2·0 |
| 17·320 | 207 | 1285 | 107 | 669 | 16·9 | + 7·3 | + 8·0 |
| 18·243 | 151 | 1048 | 83 | 573 | 16·8 | + 7·4 | +19·9 |
| 19·204 | 100 | 906 | 62 | 555 | 17·0 | + 7·5 | +32·8 |
| 20·157 | 84 | 565 | 62 | 418 | 16·8 | + 7·4 | +45·2 |
| 21·155 | 56 | 411 | 56 | 413 | 17·1 | + 7·5 | +58·6 |
| 22·193 | 43 | 365 | 73 | 614 | 16·2 | + 7·8 | +71·4 |
| Means ... | ... | ... | 83 | 654 | 16·20 | + 7·51 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 965.** A small faint spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Feb. 13·436 | 0 | 20 | 0 | 12 | 91·1 | −17·7 | +31·0 |
| Means ... | ... | ... | 0 | 12 | 91·10 | −17·70 | ... |
| **Group 966.** Two small spots. | | | | | | | |
| Feb. 13·436 | 0 | 38 | 0 | 22 | 43·4 | +15·5 | −16·7 |
| Means ... | ... | ... | 0 | 22 | 43·40 | +15·50 | ... |
| **Group 967.** Two small spots. Two or three smaller spots are seen between them on February 16. The following spot of the pair disappears before February 19. | | | | | | | |
| Feb. 14·159 | 0 | 8 | 0 | 9 | 346·3 | −15·7 | −64·3 |
| 15·163 | 14 | 64 | 10 | 47 | 350·5 | −16·0 | −46·9 |
| 16·582 | 28 | 109 | 15 | 61 | 351·8 | −15·7 | −26·9 |
| 17·320 | 16 | 53 | 8 | 27 | 353·4 | −15·6 | −15·5 |
| 18·243 | 20 | 55 | 10 | 28 | 353·6 | −15·7 | − 3·3 |
| 19·204 | 7 | 22 | 4 | 11 | 355·3 | −15·7 | +11·1 |
| 20·157 | 9 | 55 | 5 | 30 | 355·9 | −15·4 | +24·3 |
| 21·155 | 0 | 34 | 0 | 21 | 356·4 | −15·4 | +37·9 |
| Means ... | ... | ... | 7 | 29 | 352·90 | −15·65 | ... |
| **Group 968.** A small faint spot. | | | | | | | |
| Feb. 16·582 | 0 | 11 | 0 | 6 | 26·0 | +15·1 | + 7·3 |
| Means ... | ... | ... | 0 | 6 | 26·00 | +15·10 | ... |
| **Group 969.** Two or three small faint spots, showing a marked southerly drift in latitude. | | | | | | | |
| Feb. 18·243 | 5 | 24 | 4 | 17 | 309·2 | −17·7 | −47·7 |
| 19·204 | 4 | 63 | 2 | 39 | 307·9 | −19·7 | −36·3 |
| 20·157 | 0 | 13 | 0 | 7 | 309·4 | −20·1 | −22·2 |
| Means ... | ... | ... | 2 | 21 | 308·83 | −19·17 | ... |
| **Group 970.** A small faint spot. | | | | | | | |
| Feb. 19·204 | 0 | 19 | 0 | 19 | 39·6 | +17·2 | +55·4 |
| Means ... | ... | ... | 0 | 19 | 39·60 | +17·20 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 971.** A close cluster of very small spots. It rapidly increases in size between February 25 and 26, and on the latter date forms a group composed of a regular spot followed by a long line of small spots. These smaller spots all disappear before March 2. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Feb. 24·165 | 0 | 55 | 0 | 34 | 244·1 | −12·9 | −34·8 |
| 25·224 | 9 | 63 | 5 | 34 | 244·2 | −13·0 | −20·6 |
| 26·545 | 69 | 303 | 35 | 152 | 245·9 | −12·5 | − 1·6 |
| 27·589 | 45 | 333 | 23 | 172 | 247·1 | −12·1 | +13·4 |
| 28·540 | 55 | 274 | 30 | 153 | 247·5 | −12·1 | +26·3 |
| Mar. 1·161 | 36 | 198 | 22 | 121 | 247·7 | −12·3 | +34·7 |
| 2·609 | 32 | 88 | 27 | 74 | 247·6 | −12·1 | +53·6 |
| 3·519 | 0 | 38 | 0 | 46 | 247·9 | −12·4 | +65·9 |
| 4·473 | 0 | 21 | 0 | 48 | 248·4 | −12·3 | +79·0 |
| Means ... | ... | ... | 16 | 93 | 246·71 | −12·41 | ... |
| **Group 972.** A small faint spot. A second spot is seen on February 27 to 28. | | | | | | | |
| Feb. 26·545 | 0 | 16 | 0 | 16 | 187·6 | + 4·7 | −59·9 |
| 27·589 | 8 | 39 | 6 | 29 | 189·3 | + 4·7 | −44·4 |
| 28·540 | 0 | 43 | 0 | 26 | 189·9 | + 5·0 | −31·3 |
| Mar. 1·161 | 0 | 24 | 0 | 13 | 188·9 | + 5·2 | −24·1 |
| Means ... | ... | ... | 2 | 21 | 188·93 | + 4·90 | ... |
| **Group 973.** A regular spot. A small spot follows it closely on March 7. | | | | | | | |
| Mar. 7·456 | 27 | 125 | 36 | 170 | 60·4 | −13·2 | −69·7 |
| 8·592 | 17 | 130 | 14 | 109 | 61·1 | −13·8 | −54·0 |
| 9·413 | 48 | 90 | 33 | 61 | 60·8 | −13·4 | −43·5 |
| 10·413 | 16 | 81 | 10 | 47 | 60·4 | −13·2 | −30·8 |
| 11 | ... | ... | 5 | 30 | 60·6 | −13·0 | −16·3 |
| 12·588 | 0 | 25 | 0 | 12 | 60·7 | −12·7 | − 1·8 |
| Means ... | ... | ... | 16 | 72 | 60·67 | −13·22 | ... |
| **Group 974.** Two or three very small spots. | | | | | | | |
| Mar. 8·592 | 9 | 61 | 5 | 32 | 100·4 | −17·5 | −14·7 |
| 9·413 | 24 | 60 | 12 | 30 | 102·1 | −17·4 | − 2·2 |
| 10·413 | 7 | 68 | 4 | 36 | 102·1 | −17·2 | +10·9 |
| Means ... | ... | ... | 7 | 33 | 101·53 | −17·37 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 975.

Two small spots. The preceding spot disappears before March 9.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Mar. 8·592 | 8 | 36 | 5 | 21 | 86·3 | +11·8 | −28·8 |
| 9·413 | 3 | 7 | 2 | 4 | 85·9 | +12·4 | −18·4 |
| Means ... | ... | ... | 4 | 13 | 86·10 | +12·10 | ... |

### Group 976.

A small spot. A number of other small spots appear close to it after March 10, and form with it a compact cluster.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 8·592 | 2 | 28 | 4 | 42 | 47·5 | +15·4 | −67·6 |
| 9·413 | 11 | 27 | 11 | 28 | 47·3 | +16·3 | −57·0 |
| 10·413 | 0 | 38 | 0 | 29 | 48·0 | +16·9 | −43·2 |
| 11· | No photograph. | | (0 | 50 | 48·9 | +16·1 | −28·0) |
| 12·588 | 0 | 130 | 0 | 72 | 49·8 | +15·3 | −12·7 |
| 13·447 | 33 | 202 | 18 | 109 | 50·1 | +15·4 | − 1·0 |
| 14·177 | 21 | 209 | 12 | 114 | 49·9 | +15·4 | + 8·4 |
| 15·399 | 27 | 124 | 16 | 74 | 50·7 | +15·3 | +25·3 |
| 16·490 | 0 | 133 | 0 | 95 | 51·2 | +15·2 | +40·1 |
| 17·405 | 0 | 37 | 0 | 34 | 51·0 | +16·4 | +52·0 |
| Means ... | ... | ... | 6 | 65 | 49·44 | +15·77 | ... |

### Group 977.

Two or three very small faint spots near together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 10·413 | 4 | 53 | 2 | 28 | 79·5 | −21·4 | −11·7 |
| 11· | No photograph. | | (1 | 33 | 80·0 | −21·3 | + 3·1) |
| 12·588 | 0 | 71 | 0 | 38 | 80·4 | −21·2 | +17·9 |
| 13·447 | 8 | 60 | 5 | 35 | 79·9 | −20·6 | +28·8 |
| Means ... | ... | ... | 2 | 34 | 79·95 | −21·25 | ... |

### Group 978.

A regular spot, with a number of smaller spots following it closely. These latter diminish in size, and fade out one by one, until on March 20 the preceding spot of the group alone remains.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 10·413 | 0 | 119 | 0 | 233 | 14·8 | −12·6 | −76·4 |
| 11· | No photograph. | | (12 | 226 | 15·3 | −12·7 | −61·6) |
| 12·588 | 33 | 303 | 23 | 219 | 15·8 | −12·7 | −46·7 |
| 13·447 | 88 | 541 | 53 | 328 | 16·1 | −13·1 | −35·0 |
| 14·177 | 75 | 525 | 42 | 289 | 17·0 | −12·6 | −24·5 |
| 15·399 | 110 | 630 | 56 | 319 | 17·3 | −13·0 | − 8·1 |
| 16·490 | 88 | 530 | 44 | 267 | 17·9 | −13·2 | + 6·8 |
| 17·405 | 76 | 455 | 40 | 243 | 18·4 | −13·2 | +19·4 |
| 18·200 | 49 | 350 | 29 | 202 | 18·5 | −13·1 | +30·1 |
| 19·153 | 25 | 242 | 17 | 166 | 19·0 | −13·0 | +43·1 |
| 20·161 | 12 | 155 | 11 | 137 | 18·8 | −13·1 | +56·2 |
| 21·152 | 9 | 60 | 12 | 83 | 19·3 | −12·8 | +69·8 |
| Means ... | ... | ... | 28 | 226 | 17·35 | −12·93 | ... |

### Group 979.

A straggling group, composed of about half-a-dozen small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Mar. 12·588 | 39 | 218 | 19 | 112 | 60·3 | −19·5 | − 2·2 |
| 13·447 | 35 | 170 | 19 | 88 | 59·9 | −19·5 | + 8·8 |
| 14·177 | 12 | 119 | 6 | 64 | 60·0 | −18·9 | +18·5 |
| Means ... | ... | ... | 15 | 88 | 60·07 | −19·30 | ... |

### Group 980.

A regular spot, rapidly diminishing in size after it has passed the central meridian. Two or three very small spots are seen near it on March 16, 17, and 18.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 12·588 | 13 | 72 | 17 | 96 | 357·5 | +13·7 | −65·0 |
| 13·447 | 25 | 72 | 23 | 67 | 356·7 | +13·6 | −54·4 |
| 14·177 | 13 | 122 | 10 | 93 | 356·6 | +13·3 | −44·9 |
| 15·399 | 59 | 169 | 36 | 103 | 356·3 | +13·0 | −29·1 |
| 16·490 | 30 | 154 | 16 | 85 | 356·2 | +13·3 | −14·9 |
| 17·405 | 25 | 164 | 13 | 88 | 356·6 | +12·6 | − 2·4 |
| 18·200 | 17 | 67 | 9 | 36 | 356·4 | +12·8 | + 8·0 |
| 19·153 | 10 | 67 | 6 | 38 | 356·8 | +13·0 | +20·9 |
| 20·161 | 6 | 30 | 4 | 20 | 356·8 | +13·0 | +34·2 |
| 21·152 | 0 | 23 | 0 | 18 | 357·0 | +13·0 | +47·5 |
| Means ... | ... | ... | 13 | 64 | 356·69 | +13·13 | ... |

### Group 981.

A very fine spot, with a number of very small spots following it. The spot is nearly divided into two by a brilliant bridge, and the two parts are measured separately on March 17, 22, 23, and 24. The spot diminishes in size very rapidly after March 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 16·490 | 33 | 284 | 56 | 480 | 297·5 | − 8·0 | −73·6 |
| 17·405 | 85 | 511 | 85 | 533 | 297·2 | − 8·3 | −61·8 |
| 18·200 | 71 | 883 | 55 | 706 | 296·8 | − 8·2 | −51·6 |
| 19·153 | 98 | 1002 | 62 | 644 | 296·9 | − 7·9 | −39·0 |
| 20·161 | 99 | 939 | 55 | 521 | 297·5 | − 7·8 | −25·1 |
| 21·152 | 100 | 1004 | 51 | 516 | 296·9 | − 7·7 | −12·6 |
| 22·589 | 163 | 1074 | 82 | 540 | 296·0 | − 7·7 | + 5·3 |
| 23·461 | 125 | 920 | 65 | 480 | 295·9 | − 7·7 | +16·8 |
| 24·493 | 114 | 798 | 66 | 465 | 296·6 | − 7·7 | +31·1 |
| 25·591 | 57 | 371 | 41 | 265 | 296·8 | − 8·2 | +45·8 |
| 26·481 | 49 | 269 | 44 | 242 | 296·0 | − 8·3 | +56·8 |
| 27·417 | 0 | 90 | 0 | 123 | 296·2 | − 8·3 | +69·2 |
| Means ... | ... | .. | 55 | 460 | 296·69 | − 7·98 | ... |

### Group 982.

A scattered group of very small spots when first seen on March 19. It rapidly increases in size on the following days, and forms a long straight line of spots, of which the first and last are the largest. The intermediate spots disappear before March 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 19·153 | 0 | 11 | 0 | 8 | 289·7 | −19·1 | −46·2 |
| 20·161 | 9 | 71 | 5 | 43 | 289·2 | −19·1 | −33·4 |
| 21·152 | 16 | 159 | 9 | 86 | 290·5 | −18·9 | −19·0 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 982—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Mar. 22·589 | 75 | 473 | 38 | 242 | 288·9 | −19·2 | − 1·8 |
| 23·461 | 67 | 440 | 35 | 228 | 291·3 | −18·0 | +12·2 |
| 24·493 | 69 | 497 | 39 | 286 | 293·2 | −17·6 | +27·7 |
| 25·591 | 33 | 221 | 24 | 149 | 292·6 | −17·7 | +41·6 |
| 26·481 | 0 | 163 | 0 | 146 | 297·4 | −16·7 | +58·2 |
| Means ... | ... | ... | 19 | 149 | 291·60 | −18·29 | ... |
| **Group 983.** Two small faint spots. | | | | | | | |
| Mar. 22·589 | 0 | 56 | 0 | 43 | 333·9 | +17·8 | +43·2 |
| Means ... | ... | ... | 0 | 43 | 333·90 | +17·80 | ... |
| **Group 984.** A group of several very small spots on March 22, which increases in size very rapidly on the following days, and forms a long line of spots, of which the preceding spot is the largest. The group rapidly diminishes in size after passing the central meridian, the following spots disappearing the first, so that on March 31 the preceding spot is left alone. | | | | | | | |
| Mar. 22·589 | 21 | 135 | 15 | 93 | 249·2 | −24·2 | −41·5 |
| 23·461 | 46 | 352 | 29 | 214 | 248·1 | −24·5 | −31·0 |
| 24·493 | 142 | 682 | 78 | 374 | 248·3 | −24·3 | −17·2 |
| 25·591 | 107 | 639 | 55 | 335 | 249·7 | −24·2 | − 1·3 |
| 26·481 | 109 | 593 | 59 | 317 | 250·7 | −24·0 | +11·5 |
| 27·417 | 51 | 432 | 30 | 249 | 252·0 | −23·8 | +25·0 |
| 28·424 | 63 | 426 | 41 | 280 | 252·0 | −23·9 | +38·3 |
| 29·443 | 45 | 338 | 38 | 280 | 252·4 | −24·1 | +52·2 |
| 30·150 | 23 | 150 | 26 | 168 | 254·8 | −24·0 | +63·9 |
| 31·571 | 17 | 67 | 50 | 201 | 254·7 | −24·0 | +82·6 |
| Means ... | ... | ... | 42 | 251 | 251·19 | −24·10 | ... |
| **Group 985.** A regular spot, followed by a few small spots on March 27, 28, 29, and 30. | | | | | | | |
| Mar. 26·481 | 0 | 111 | 0 | 143 | 171·5 | − 7·9 | −67·7 |
| 27·417 | 0 | 221 | 0 | 195 | 171·1 | − 8·8 | −55·9 |
| 28·424 | 56 | 320 | 37 | 215 | 171·2 | − 8·1 | −42·5 |
| 29·443 | 62 | 414 | 35 | 236 | 171·0 | − 7·9 | −29·2 |
| 30·150 | 53 | 369 | 28 | 195 | 171·7 | − 8·1 | −19·2 |
| 31·571 | 54 | 387 | 27 | 193 | 171·8 | − 8·2 | − 0·3 |
| April 1·475 | 37 | 387 | 19 | 196 | 171·5 | − 8·2 | +11·3 |
| 2·411 | 27 | 187 | 15 | 101 | 171·4 | − 8·3 | +23·6 |
| 3·406 | 30 | 180 | 19 | 112 | 171·8 | − 8·2 | +37·1 |
| 4·137 | 23 | 112 | 17 | 82 | 171·9 | − 8·2 | +46·8 |
| 5·556 | 0 | 99 | 0 | 115 | 171·2 | − 8·5 | +64·9 |
| 6·406 | 0 | 52 | 0 | 110 | 172·3 | − 8·4 | +77·1 |
| Means ... | ... | ... | 16 | 158 | 171·53 | − 8·23 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 986.** A small faint spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Mar. 28·424 | 0 | 36 | 0 | 34 | 272·0 | −18·7 | +58·3 |
| 29·443 | 0 | 47 | 0 | 68 | 275·2 | −19·3 | +75·0 |
| 30·150 | 0 | 9 | 0 | 21 | 270·2 | −19·7 | +79·3 |
| Means ... | .. | ... | 0 | 41 | 272·47 | −19·23 | ... |
| **Group 987.** A very large regular spot, with two or three small spots near it. These disappear before April 2. | | | | | | | |
| Mar. 28·424 | 25 | 185 | 90 | 669 | 133·6 | +13·4 | −80·1 |
| 29·443 | 58 | 513 | 75 | 674 | 135·2 | +13·2 | −65·0 |
| 30·150 | 124 | 747 | 119 | 719 | 135·1 | +13·0 | −55·8 |
| 31·571 | 171 | 857 | 114 | 572 | 134·9 | +13·0 | −37·2 |
| Apr. 1·475 | 202 | 1028 | 118 | 602 | 135·0 | +13·3 | −25·2 |
| 2·411 | 192 | 1012 | 104 | 547 | 135·6 | +13·3 | −12·2 |
| 3·406 | 196 | 973 | 103 | 514 | 136·0 | +13·6 | + 1·3 |
| 4·137 | 139 | 928 | 75 | 505 | 135·5 | +13·6 | +10·4 |
| 5·556 | 158 | 880 | 97 | 541 | 135·7 | +13·6 | +29·4 |
| 6·406 | 134 | 817 | 94 | 575 | 135·7 | +13·3 | +40·5 |
| 7·453 | 84 | 447 | 78 | 417 | 135·6 | +13·8 | +54·3 |
| 8·556 | 42 | 200 | 64 | 305 | 135·5 | +13·1 | +68·7 |
| 9·421 | 15 | 90 | 55 | 327 | 135·7 | +13·3 | +80·4 |
| Means ... | ... | ... | 91 | 536 | 135·32 | +13·35 | ... |
| **Group 988.** A small regular spot. | | | | | | | |
| Mar. 29·443 | 4 | 62 | 9 | 133 | 122·7 | −12·9 | −77·5 |
| 30·150 | 20 | 98 | 26 | 125 | 122·9 | −13·1 | −68·0 |
| 31·571 | 35 | 200 | 26 | 151 | 123·0 | −13·2 | −49·1 |
| Apr. 1·475 | 36 | 241 | 22 | 150 | 123·7 | −13·6 | −36·5 |
| 2·411 | 42 | 237 | 23 | 130 | 123·9 | −13·6 | −23·9 |
| 3·406 | 27 | 185 | 14 | 94 | 124·2 | −13·8 | −10·5 |
| 4·137 | 29 | 100 | 15 | 51 | 124·5 | −13·8 | − 0·6 |
| 5·556 | 36 | 144 | 19 | 77 | 124·5 | −14·0 | +18·2 |
| 6·406 | 21 | 142 | 12 | 83 | 125·1 | −14·3 | +29·9 |
| 7·453 | 0 | 100 | 0 | 69 | 125·0 | −13·8 | +43·7 |
| 8·556 | 0 | 33 | 0 | 31 | 125·2 | −14·7 | +58·4 |
| Means ... | ... | ... | 15 | 99 | 124·06 | −13·71 | ... |
| **Group 989.** Two or three small spots close together. | | | | | | | |
| Mar. 30·150 | 22 | 168 | 31 | 242 | 123·5 | +13·5 | −67·4 |
| 31·571 | 12 | 106 | 10 | 85 | 124·0 | +12·4 | −48·1 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 989—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Apr. 1·475 | 0 | 121 | 0 | 79 | 123·6 | +12·2 | −36·6 |
| 2·411 | 0 | 100 | 0 | 58 | 123·8 | +12·5 | −24·0 |
| 3·406 | 0 | 73 | 0 | 40 | 122·8 | +13·3 | −11·9 |
| Means ... | ... | ... | 8 | 101 | 123·54 | +12·78 | ... |
| **Group 990.** A small faint spot. | | | | | | | |
| Mar. 30·150 | 0 | 22 | 0 | 51 | 114·5 | + 7·3 | −76·4 |
| 31·571 | 0 | 23 | 0 | 22 | 115·2 | + 7·4 | − 56·9 |
| Apr. 1·475 | 0 | 25 | 0 | 18 | 115·4 | + 7·2 | −44·8 |
| Means ... | ... | ... | 0 | 30 | 115·03 | + 7·30 | ... |
| **Group 991.** A small spot on April 1. Other small spots appear following it on the following days, and the group increases in size until it passes the central meridian. The following spots then disappear very quickly, and the preceding spot alone remains on April 7. | | | | | | | |
| Apr. 1·475 | 12 | 69 | 12 | 70 | 100·3 | + 2·1 | −59·9 |
| 2·411 | 37 | 234 | 28 | 179 | 99·1 | + 2·3 | −48·7 |
| 3·406 | 16 | 217 | 9 | 134 | 100·2 | + 2·7 | −34·5 |
| 4·137 | 57 | 221 | 33 | 125 | 99·0 | + 2·5 | −26·1 |
| 5·556 | 68 | 378 | 35 | 194 | 99·2 | + 2·8 | − 7·1 |
| 6·406 | 36 | 349 | 18 | 178 | 100·8 | + 2·8 | + 5·6 |
| 7·453 | 0 | 78 | 0 | 44 | 106·3 | + 3·6 | +25·0 |
| 8·556 | 17 | 75 | 11 | 50 | 107·0 | + 3·5 | +40·2 |
| 9·421 | 10 | 45 | 8 | 38 | 107·7 | + 3·9 | +52·4 |
| Means ... | ... | ... | 17 | 112 | 102·18 | + 2·91 | ... |
| **Group 992.** A small spot on April 1, which rapidly increases in size on the following days. A second spot appears following it on April 2, and smaller spots are formed between the two on April 4 and 5. The group diminishes in size soon after passing the central meridian, and the preceding spot alone remains on April 11. | | | | | | | |
| Apr. 1·475 | 0 | 58 | 0 | 85 | 89·1 | −18·1 | −71·1 |
| 2·411 | 30 | 275 | 27 | 271 | 87·5 | −17·3 | −60·3 |
| 3·406 | 82 | 575 | 58 | 411 | 89·2 | −17·5 | −45·5 |
| 4·137 | 71 | 462 | 44 | 292 | 89·0 | −17·3 | −36·1 |
| 5·556 | 143 | 879 | 77 | 470 | 89·4 | −17·3 | −16·9 |
| 6·406 | 157 | 1062 | 81 | 550 | 88·1 | −17·1 | − 7·1 |
| 7·453 | 54 | 643 | 28 | 332 | 88·4 | −17·1 | + 7·1 |
| 8·556 | 99 | 541 | 55 | 299 | 88·7 | −17·4 | +21·9 |
| 9·421 | 68 | 445 | 44 | 282 | 91·8 | −16·8 | +36·5 |
| 10·552 | 40 | 231 | 35 | 195 | 94·3 | −16·1 | +53·9 |
| 11·139 | 15 | 161 | 16 | 171 | 95·0 | −15·7 | +62·4 |
| 12·431 | 0 | 54 | 0 | 134 | 95·0 | −16·1 | +79·4 |
| Means ... | ... | ... | 39 | 291 | 90·46 | −16·98 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 993.** A very small faint spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Apr. 2·411 | 0 | 19 | 0 | 11 | 126·8 | + 8·9 | −21·0 |
| Means ... | ... | ... | 0 | 11 | 126·80 | + 8·90 | ... |
| **Group 994.** Two small spots. | | | | | | | |
| Apr. 5·556 | 0 | 23 | 0 | 18 | 154·6 | + 7·5 | +48·3 |
| 6·406 | 0 | 104 | 0 | 112 | 156·0 | + 7·8 | +60·8 |
| Means ... | ... | ... | 0 | 65 | 155·3 | + 7·65 | ... |
| **Group 995.** A small faint spot. | | | | | | | |
| Apr. 6·406 | 0 | 20 | 0 | 12 | 64·9 | − 8·6 | −30·3 |
| Means ... | ... | ... | 0 | 12 | 64·90 | − 8·60 | ... |
| **Group 996.** A small faint spot on April 7. It rapidly increases in size on the two following days, and other spots appear. The group begins to decrease as it passes the central meridian. The following spots disappear and the preceding spot alone remains on April 13. | | | | | | | |
| Apr. 7·453 | 0 | 92 | 0 | 67 | 34·3 | −14·1 | −47·0 |
| 8·556 | 76 | 365 | 46 | 219 | 33·9 | −13·7 | −32·9 |
| 9·421 | 107 | 517 | 57 | 279 | 34·8 | −13·6 | −20·5 |
| 10·552 | 84 | 498 | 43 | 254 | 32·2 | −13·6 | − 8·2 |
| 11·139 | 45 | 283 | 23 | 143 | 35·2 | −13·4 | + 2·6 |
| 12·431 | 30 | 105 | 16 | 56 | 35·3 | −13·5 | +19·7 |
| 13·285 | 15 | 52 | 9 | 31 | 36·3 | −13·2 | +32·0 |
| 14·168 | 3 | 17 | 2 | 12 | 36·4 | −13·4 | +43·7 |
| Means ... | ... | ... | 25 | 133 | 34·80 | −13·56 | ... |
| **Group 997.** Two very small faint spots. | | | | | | | |
| Apr. 9·421 | 0 | 28 | 0 | 19 | 27·8 | +29·9 | −27·5 |
| 10·552 | 0 | 69 | 0 | 44 | 26·8 | +30·1 | −13·6 |
| 11·139 | 8 | 43 | 5 | 27 | 26·0 | +30·6 | − 6·6 |
| Means ... | ... | ... | 2 | 30 | 26·87 | +30·20 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 998.

A small spot on April 10 and 11. It has greatly increased in size by April 12, and forms a large group of very irregular shape. It continues to change with great rapidity on the following days, breaking up into a great number of small and somewhat scattered spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Apr. 10·552 | 13 | 48 | 10 | 39 | 351·2 | +11·5 | −49·2 |
| 11·139 | 6 | 42 | 5 | 29 | 351·3 | +12·0 | −41·3 |
| 12·431 | 163 | 788 | 96 | 460 | 350·5 | +12·3 | −25·1 |
| 13·285 | 134 | 1013 | 73 | 551 | 350·2 | +12·7 | −14·1 |
| 14·168 | 150 | 1108 | 79 | 584 | 350·4 | +12·6 | − 2·3 |
| 15· | No photograph. | | (68 | 423 | 351·9 | +11·6 | +14·5) |
| 16·486 | 95 | 430 | 57 | 262 | 353·4 | +10·6 | +31·3 |
| 17·147 | 90 | 606 | 62 | 414 | 353·3 | +11·0 | +40·0 |
| 18·391 | 8 | 565 | 7 | 528 | 352·2 | +12·5 | +55·2 |
| 19·141 | 44 | 359 | 59 | 444 | 351·6 | +10·5 | +64·6 |
| Means ... | ... | ... | 52 | 373 | 351·60 | +11·73 | ... |

### Group 999.

A large regular spot, followed by a large spot of irregular outline. Several small spots cluster round each of the large spots, and are measured with them. The following spot divides into two portions on April 14, and breaks up yet further on the following days. Only two small spots of this portion of the group remain on April 20, and only one on April 21; and this last disappears before April 22. Two new spots (which are measured together as one on April 21 and 22) appear on April 21.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 12·431 | 46 | 153 | 65 | 222 | 305·2 | −22·7 | −70·4 |
| 13·285 | 73 | 582 | 71 | 564 | 305·8 | −23·0 | −58·5 |
| 14·168 | 107 | 757 | 81 | 570 | 305·9 | −22·9 | −46·8 |
| 15· | No photograph. | | (92 | 643 | 305·9 | −22·7 | −31·5) |
| 16·486 | 190 | 1313 | 103 | 715 | 305·9 | −22·5 | −16·2 |
| 17·147 | 156 | 1162 | 82 | 612 | 306·1 | −22·4 | − 7·2 |
| 18·391 | 126 | 1177 | 67 | 622 | 306·1 | −22·1 | + 9·1 |
| 19·141 | 124 | 1033 | 69 | 568 | 305·1 | −22·3 | +18·1 |
| 20·538 | 102 | 815 | 67 | 531 | 306·1 | −22·1 | +37·6 |
| 21·439 | 80 | 578 | 63 | 446 | 304·7 | −21·9 | +48·1 |
| 22·433 | 41 | 408 | 46 | 403 | 302·6 | −22·4 | +59·1 |
| 23·603 | 16 | 144 | 37 | 294 | 304·6 | −21·3 | +76·5 |
| Means ... | ... | ... | 70 | 516 | 305·33 | −22·36 | ... |

### Group 1000.

A very fine spot of irregular outline, with a number of small spots close to it. The group greatly diminishes in size between April 14 and 16.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 12·431 | 49 | 406 | 76 | 631 | 303·5 | −15·2 | −72·1 |
| 13·285 | 92 | 776 | 93 | 783 | 303·6 | −15·9 | −60·7 |
| 14·168 | 109 | 1087 | 85 | 846 | 302·7 | −16·0 | −50·0 |
| 15· | No photograph. | | (88 | 613 | 302·8 | −15·8 | −34·1) |
| 16·486 | 169 | 711 | 90 | 379 | 303·9 | −15·5 | −18·2 |
| 17·147 | 115 | 918 | 59 | 471 | 303·9 | −15·5 | − 9·4 |
| 18·391 | 96 | 946 | 49 | 485 | 304·3 | −16·0 | + 7·3 |
| 19·141 | 137 | 824 | 73 | 437 | 304·0 | −15·7 | +17·0 |
| 20·538 | 62 | 525 | 39 | 326 | 304·0 | −16·2 | +35·5 |

### Group 1000—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Apr. 21·439 | 78 | 349 | 58 | 257 | 303·6 | −16·4 | +47·0 |
| 22·433 | 29 | 167 | 30 | 167 | 303·8 | −17·0 | +60·3 |
| 23·603 | 0 | 33 | 0 | 65 | 304·1 | −16·9 | +76·0 |
| Means ... | ... | ... | 62 | 455 | 303·68 | −16·01 | ... |

### Group 1001.

Several spots in a compact cluster, followed by a number of spots, most of them small and arranged in a straight line. The group diminishes rapidly after passing the central meridian, the following spots disappearing before April 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 13·285 | 7 | 127 | 26 | 458 | 280·9 | −16·4 | −83·4 |
| 14·168 | 23 | 370 | 37 | 614 | 279·3 | −17·5 | −73·4 |
| 15· | No photograph. | | (47 | 470 | 280·0 | −16·9 | −57·4) |
| 16·486 | 82 | 483 | 56 | 325 | 280·7 | −16·3 | −41·4 |
| 17·147 | 58 | 597 | 35 | 355 | 281·5 | −15·9 | −31·8 |
| 18·391 | 44 | 696 | 23 | 365 | 282·2 | −16·1 | −14·8 |
| 19·141 | 61 | 712 | 32 | 362 | 282·5 | −15·8 | − 4·5 |
| 20·538 | 0 | 267 | 0 | 141 | 285·1 | −15·3 | +16·6 |
| 21·439 | 32 | 250 | 18 | 142 | 282·7 | −15·8 | +26·1 |
| 22·433 | 25 | 160 | 17 | 103 | 281·6 | −16·0 | +38·1 |
| 23·603 | 45 | 106 | 42 | 98 | 285·2 | −15·4 | +57·1 |
| 24·610 | 0 | 15 | 0 | 23 | 285·6 | −15·3 | +70·8 |
| Means ... | ... | ... | 28 | 288 | 282·28 | −16·06 | ... |

### Group 1002.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 16·486 | 16 | 33 | 21 | 43 | 254·3 | −24·7 | −67·8 |
| 17·147 | 2 | 12 | 2 | 12 | 254·0 | −24·5 | −59·3 |
| Means ... | ... | ... | 12 | 28 | 254·15 | −24·60 | ... |

### Group 1003.

Two small spots. The following spot is only seen on April 17.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 17·147 | 0 | 36 | 0 | 19 | 298·9 | + 8·3 | −14·4 |
| 18·391 | 0 | 22 | 0 | 11 | 301·4 | + 7·5 | + 4·4 |
| 19·141 | 0 | 5 | 0 | 3 | 300·4 | + 7·3 | +13·4 |
| Means ... | ... | ... | 0 | 11 | 300·23 | + 7·70 | ... |

### Group 1004.

Three or four very small spots arranged in a straight line. The group greatly increases in size before April 21, and forms a straight line of spots, of which the preceding spot is the largest. The following spots diminish after April 22, and disappear before April 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 18·391 | 0 | 26 | 0 | 15 | 265·9 | − 6·1 | −31·1 |
| 19·141 | 2 | 38 | 1 | 21 | 266·1 | − 6·0 | −20·9 |
| 20·538 | 0 | 25 | 0 | 13 | 266·3 | − 6·0 | − 2·2 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1004—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Apr. 21·439 | 32 | 225 | 16 | 115 | 268·3 | − 5·6 | +11·7 |
| 22·433 | 42 | 442 | 24 | 243 | 268·7 | − 5·1 | +25·2 |
| 23·603 | 40 | 224 | 27 | 148 | 268·8 | − 5·1 | +40·7 |
| 24·610 | 30 | 97 | 26 | 84 | 269·5 | − 4·6 | +54·7 |
| 25·533 | 40 | 105 | 52 | 135 | 269·8 | − 4·1 | +67·2 |
| 26·418 | 0 | 30 | 0 | 76 | 269·9 | − 4·1 | +79·1 |
| Means ... | ... | ... | 16 | 94 | 268·14 | − 5·19 | ... |
| **Group 1005.** Two small spots. | | | | | | | |
| Apr. 22·433 | 0 | 34 | 0 | 31 | 299·1 | + 7·8 | +55·6 |
| Means ... | ... | ... | 0 | 31 | 299·10 | + 7·80 | ... |
| **Group 1006.** Two small spots. | | | | | | | |
| Apr. 22·433 | 0 | 20 | 0 | 17 | 189·4 | + 5·5 | −54·1 |
| Means ... | ... | ... | 0 | 17 | 189·40 | + 5·50 | ... |
| **Group 1007.** A small faint spot. A second is seen near it on April 23. | | | | | | | |
| Apr. 22·433 | 0 | 38 | 0 | 39 | 182·0 | −15·9 | −61·5 |
| 23·603 | 0 | 40 | 0 | 30 | 180·3 | −16·1 | −47·8 |
| Means ... | ... | ... | 0 | 35 | 181·15 | −16·00 | ... |
| **Group 1008.** A regular spot. | | | | | | | |
| Apr. 22·433 | 0 | 70 | 0 | 118 | 171·5 | + 7·3 | −72·0 |
| 23·603 | 16 | 114 | 15 | 106 | 172·0 | + 7·4 | −56·1 |
| 24·610 | 49 | 211 | 34 | 147 | 172·3 | + 7·7 | −42·5 |
| 25·533 | 50 | 370 | 30 | 240 | 172·8 | + 8·1 | −29·8 |
| 26·418 | 61 | 371 | 33 | 201 | 172·9 | + 8·2 | −17·9 |
| 27·202 | 45 | 324 | 23 | 168 | 173·6 | + 8·0 | − 6·9 |
| 28·182 | 45 | 317 | 23 | 163 | 173·3 | + 7·8 | + 5·8 |
| 29·136 | 37 | 246 | 20 | 133 | 173·9 | + 7·4 | +18·9 |
| 30·541 | 36 | 123 | 24 | 79 | 174·2 | + 7·6 | +37·9 |
| May 1·416 | 24 | 89 | 19 | 70 | 174·1 | + 7·8 | +49·3 |
| 2·190 | 17 | 68 | 18 | 71 | 174·7 | + 7·6 | +60·2 |
| 3·416 | 0 | 48 | 0 | 107 | 174·6 | + 7·7 | +76·2 |
| Means ... | ... | ... | 20 | 134 | 173·33 | + 7·72 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1009.** A small spot. A very small spot is seen near it on April 25, but disappears before April 26. Another very small spot appears on April 26, and others (which are measured with it) form in the neighbourhood on April 27. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Apr. 23·603 | 0 | 16 | 0 | 29 | 154·6 | + 4·2 | −73·5 |
| 24·610 | 0 | 11 | 0 | 11 | 155·2 | + 4·6 | −59·6 |
| 25·533 | 16 | 41 | 12 | 31 | 156·0 | + 3·8 | −46·6 |
| 26·418 | 16 | 45 | 10 | 27 | 155·6 | + 5·5 | −35·2 |
| 27·202 | 26 | 71 | 15 | 40 | 156·7 | + 6·4 | −23·8 |
| 28·182 | 28 | 91 | 15 | 47 | 155·6 | + 5·8 | −11·9 |
| 29·136 | 16 | 51 | 8 | 26 | 155·6 | + 5·7 | + 0·6 |
| Means ... | ... | ... | 9 | 30 | 155·61 | + 5·14 | ... |
| **Group 1010.** A small spot. Two other small spots are seen near it on April 24 and 25. | | | | | | | |
| Apr. 24·610 | 24 | 83 | 12 | 43 | 209·9 | + 6·2 | − 4·9 |
| 25·533 | 25 | 114 | 13 | 59 | 211·3 | + 5·5 | + 8·7 |
| 26·418 | 0 | 39 | 0 | 21 | 213·0 | + 4·5 | +22·2 |
| 27·202 | 8 | 24 | 5 | 15 | 214·0 | + 4·8 | +33·5 |
| 28·182 | 5 | 19 | 4 | 14 | 213·8 | + 4·6 | +46·3 |
| 29·136 | 0 | 11 | 0 | 11 | 214·4 | + 4·4 | +59·4 |
| Means ... | ... | ... | 6 | 27 | 212·73 | + 5·00 | ... |
| **Group 1011.** A small spot disappearing before May 1. Several other small spots are seen in its neighbourhood on April 29 to May 1. | | | | | | | |
| Apr. 24·610 | 0 | 14 | 0 | 26 | 142·2 | +12·7 | −72·6 |
| 25·533 | 11 | 37 | 12 | 40 | 142·6 | +12·5 | −60·0 |
| 26·418 | 12 | 47 | 9 | 38 | 142·1 | +12·9 | −48·7 |
| 27·202 | 6 | 28 | 4 | 19 | 142·7 | +12·7 | −37·8 |
| 28·182 | 12 | 49 | 7 | 28 | 142·4 | +12·9 | −25·1 |
| 29·136 | 41 | 107 | 24 | 60 | 136·3 | +14·1 | −18·7 |
| 30·541 | 8 | 166 | 4 | 86 | 137·1 | +12·8 | + 0·8 |
| May 1·416 | 0 | 54 | 0 | 29 | 136·4 | +13·0 | +11·6 |
| Means ... | ... | ... | 8 | 41 | 140·23 | +12·95 | ... |
| **Group 1012.** Two small spots. Other small spots appear in their neighbourhood on April 26. The group has greatly diminished on April 27. | | | | | | | |
| Apr. 25·533 | 65 | 148 | 33 | 76 | 203·9 | −17·8 | + 1·3 |
| 26·418 | 31 | 173 | 16 | 92 | 203·7 | −17·2 | +12·9 |
| 27·202 | 8 | 34 | 5 | 20 | 206·2 | −16·1 | +25·7 |
| Means ... | ... | ... | 18 | 63 | 204·60 | −17·03 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1013.** Two small spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Apr. 28·182 | 8 | 28 | 5 | 19 | 208·8 | −15·1 | +41·3 |
| 29·136 | 8 | 25 | 7 | 22 | 209·7 | −15·0 | +54·7 |
| Means ... | ... | ... | 6 | 21 | 209·25 | −15·05 | ... |
| **Group 1014.** A small spot. A second is seen near it on April 29. | | | | | | | |
| Apr. 28·182 | 3 | 15 | 4 | 21 | 99·0 | −15·6 | −68·5 |
| 29·136 | 11 | 41 | 10 | 39 | 97·4 | −17·3 | −57·6 |
| Means ... | ... | ... | 7 | 30 | 98·20 | −16·45 | ... |
| **Group 1015.** *A small spot. A second is seen near it on May 1.* | | | | | | | |
| Apr. 29·136 | 8 | 14 | 7 | 12 | 103·8 | +13·6 | −51·2 |
| 30·541 | 4 | 25 | 3 | 16 | 105·2 | +13·6 | −31·1 |
| Mav 1·416 | 4 | 58 | 2 | 33 | 104·1 | +14·0 | −20·7 |
| 2·190 | 4 | 24 | 2 | 13 | 105·9 | +14·4 | − 8·6 |
| Means ... | ... | ... | 4 | 19 | 104·75 | +13·90 | ... |
| **Group 1016.** A number of very small faint spots arranged in a straight line. Only the last spot is left on May 4. | | | | | | | |
| May 1·416 | 7 | 62 | 4 | 33 | 107·6 | + 6·0 | −17·2 |
| 2·190 | 21 | 67 | 10 | 34 | 108·5 | + 6·2 | − 6·0 |
| 3·416 | 10 | 54 | 5 | 28 | 108·4 | + 6·1 | +10·0 |
| 4·491 | 0 | 21 | 0 | 12 | 106·5 | + 7·5 | +22·3 |
| Means ... | ... | ... | 5 | 27 | 107·75 | + 6·45 | ... |
| **Group 1017.** A very small spot. | | | | | | | |
| May 1·416 | 0 | 34 | 0 | 18 | 109·5 | +13·5 | −15·3 |
| 2·190 | 0 | 49 | 0 | 26 | 110·5 | +13·6 | − 4·0 |
| Means ... | ... | ... | 0 | 22 | 110·00 | +13·55 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1018.** Two small spots. The preceding spot disappears before May 4. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| May 3·416 | 0 | 59 | 0 | 51 | 151·9 | +10·7 | +53·5 |
| 4·491 | 0 | 36 | 0 | 46 | 150·3 | +10·4 | +66·1 |
| Means ... | ... | ... | 0 | 49 | 151·10 | +10·55 | ... |
| **Group 1019.** Two small faint spots. | | | | | | | |
| May 3·416 | 1 | 24 | 0 | 13 | 116·3 | −19·4 | +17·9 |
| Means ... | ... | ... | 0 | 13 | 116·30 | −19·40 | ... |
| **Group 1020.** A small faint spot. | | | | | | | |
| May 3·416 | 0 | 7 | 0 | 9 | 31·3 | −16·3 | −67·1 |
| Means ... | ... | ... | 0 | 9 | 31·30 | −16·30 | ... |
| **Group 1021.** A regular spot, with sometimes two or three very small spots close to it. | | | | | | | |
| May 4·491 | 15 | 82 | 28 | 148 | 10·0 | −18·3 | −74·2 |
| 5·516 | 17 | 142 | 18 | 150 | 9·4 | −18·4 | −61·2 |
| 6·430 | 20 | 124 | 16 | 97 | 9·3 | −18·3 | −49·2 |
| 7·133 | 26 | 217 | 18 | 146 | 9·2 | −18·3 | −40·0 |
| 8·143 | 32 | 192 | 18 | 111 | 9·4 | −18·1 | −26·5 |
| 9·141 | 34 | 156 | 18 | 83 | 9·5 | −18·1 | −13·1 |
| 10·128 | 32 | 221 | 17 | 115 | 9·7 | −18·0 | + 0·0 |
| 11·409 | 43 | 194 | 23 | 104 | 9·7 | −17·8 | +17·0 |
| 12·162 | 21 | 132 | 12 | 77 | 9·9 | −18·0 | +27·2 |
| 13·517 | 14 | 74 | 10 | 54 | 9·9 | −18·4 | +45·1 |
| 14·161 | 11 | 62 | 10 | 54 | 9·6 | −18·4 | +53·4 |
| Means ... | ... | ... | 17 | 104 | 9·60 | −18·19 | ... |
| **Group 1022.** Two small spots. The following spot disappears before May 9, and the preceding spot increases in size, breaking up into several portions on the following day. | | | | | | | |
| May 6·430 | 0 | 36 | 0 | 23 | 24·8 | +11·0 | −33·7 |
| 7·133 | 12 | 97 | 7 | 55 | 26·4 | +11·0 | −22·8 |
| 8·143 | 22 | 122 | 12 | 64 | 28·4 | +10·9 | − 7·5 |
| 9·141 | 14 | 287 | 7 | 149 | 28·0 | +11·1 | + 5·4 |
| 10·128 | 8 | 111 | 4 | 60 | 26·6 | +11·4 | +16·9 |
| 11·409 | 0 | 78 | 0 | 49 | 28·5 | +11·5 | +35·8 |
| 12·162 | 8 | 12 | 6 | 9 | 30·5 | +10·7 | +47·8 |
| Means ... | ... | ... | 5 | 58 | 27·60 | +11·09 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1023.** A small faint spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| May 6·430 | 0 | 8 | 0 | 8 | 359·0 | −16·1 | −59·5 |
| Means ... | ... | ... | 0 | 8 | 359·00 | −16·10 | ... |
| **Group 1024.** Two small faint spots. | | | | | | | |
| May 7·133 | 0 | 23 | 0 | 25 | 111·9 | +13·4 | +62·7 |
| Means ... | ... | ... | 0 | 25 | 111·90 | +13·40 | ... |
| **Group 1025.** A regular spot, followed by a curved cluster of small spots. These latter spots form a straight line on May 9, and disappear before May 10. | | | | | | | |
| May 8·143 | 34 | 179 | 19 | 95 | 38·1 | +14·9 | + 2·2 |
| 9·141 | 32 | 233 | 18 | 129 | 38·4 | +15·4 | +15·8 |
| 10·128 | 4 | 25 | 3 | 15 | 40·8 | +14·3 | +31·1 |
| 11·409 | 0 | 24 | 0 | 20 | 40·6 | +14·6 | +47·9 |
| Means ... | ... | ... | 10 | 65 | 39·48 | +14·80 | ... |
| **Group 1026.** A small spot. | | | | | | | |
| May 9·141 | 0 | 5 | 0 | 13 | 303·0 | −15·7 | −79·6 |
| 10·128 | 0 | 12 | 0 | 15 | 303·6 | −15·5 | −66·1 |
| 11·409 | 0 | 17 | 0 | 13 | 303·2 | −15·7 | −49·5 |
| 12·162 | 7 | 13 | 5 | 9 | 303·4 | −15·4 | −39·3 |
| 13·517 | 3 | 14 | 1 | 8 | 302·9 | −15·2 | −21·9 |
| 14·161 | 0 | 13 | 0 | 7 | 302·8 | −15·3 | −13·4 |
| Means ... | ... | ... | 1 | 11 | 303·15 | −15·47 | ... |
| **Group 1027.** *A large regular spot. A small spot is seen near it on May 11.* | | | | | | | |
| May 9·141 | 43 | 147 | 119 | 403 | 302·6 | −22·3 | −80·0 |
| 10·128 | 35 | 205 | 46 | 270 | 302·5 | −22·4 | −67·2 |
| 11·409 | 75 | 408 | 62 | 337 | 301·8 | −22·6 | −50·9 |
| 12·162 | 76 | 459 | 53 | 320 | 301·9 | −22·3 | −40·8 |
| 13·517 | 93 | 660 | 53 | 380 | 301·3 | −22·2 | −23·5 |
| 14·161 | 98 | 623 | 54 | 342 | 301·6 | −22·2 | −14·6 |
| 15·427 | 147 | 553 | 79 | 295 | 301·0 | −22·0 | + 1·4 |
| 16·489 | 103 | 535 | 57 | 296 | 300·7 | −22·0 | +15·2 |
| 17·406 | 103 | 475 | 62 | 284 | 300·4 | −21·9 | +27·1 |
| 18·460 | 77 | 362 | 54 | 253 | 299·9 | −22·4 | +40·4 |
| **Group 1027**—*continued.* | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| May 19·514 | 48 | 251 | 44 | 229 | 299·9 | −22·7 | +54·4 |
| 20·132 | 33 | 173 | 37 | 196 | 299·9 | −22·1 | +62·6 |
| 21·407 | 9 | 67 | 26 | 183 | 299·7 | −22·7 | +79·3 |
| Means ... | ... | ... | 57 | 291 | 301·02 | −22·29 | ... |
| **Group 1028.** A large regular spot. Two or three small faint spots are occasionally seen in its neighbourhood. | | | | | | | |
| May 10·128 | 24 | 215 | 56 | 508 | 292·8 | +11·0 | −76·9 |
| 11·409 | 54 | 304 | 57 | 318 | 292·4 | +11·0 | −60·3 |
| 12·162 | 53 | 305 | 43 | 246 | 292·7 | +11·0 | −50·0 |
| 13·517 | 83 | 518 | 51 | 314 | 292·5 | +11·1 | −32·3 |
| 14·161 | 70 | 484 | 39 | 271 | 292·2 | +10·5 | −24·0 |
| 15·427 | 40 | 258 | 21 | 134 | 292·3 | +10·9 | − 7·3 |
| 16·489 | 70 | 351 | 37 | 182 | 292·5 | +10·8 | + 7·0 |
| 17·406 | 83 | 304 | 45 | 166 | 292·2 | +11·1 | +18·9 |
| 18·460 | 37 | 257 | 23½ | 158 | 292·3 | +10·8 | +32·8 |
| 19·514 | 37 | 243 | 28 | 183 | 292·3 | +10·7 | +46·8 |
| 20·132 | 25 | 156 | 23 | 141 | 292·4 | +11·5 | +55·1 |
| 21·407 | 20 | 69 | 35 | 117 | 292·5 | +11·1 | +72·1 |
| Means ... | ... | ... | 38 | 228 | 292·43 | +10·96 | ... |
| **Group 1029.** A small spot. | | | | | | | |
| May 12·162 | 2 | 11 | 2 | 10 | 285·9 | +12·0 | −56·8 |
| Means ... | ... | ... | 2 | 10 | 285·90 | +12·00 | ... |
| **Group 1030.** Two small spots. Only one of these is seen on May 15 and 16. The group increases in size very suddenly, and on May 17 consists of a regular spot with a smaller one following it. | | | | | | | |
| May 14·161 | 10 | 25 | 5 | 13 | 315·6 | −15·0 | − 0·6 |
| 15·427 | 0 | 16 | 0 | 9 | 318·9 | −14·4 | +19·3 |
| 16·489 | 9 | 62 | 5 | 39 | 321·8 | −14·2 | +36·3 |
| 17·406 | 60 | 296 | 47 | 230 | 322·2 | −14·6 | +48·9 |
| 18·460 | 23 | 136 | 24 | 147 | 321·3 | −15·2 | +61·8 |
| 19·514 | 15 | 88 | 35 | 176 | 321·1 | −15·2 | +75·6 |
| 20·132 | 2 | 22 | 5 | 69 | 318·4 | −14·8 | +81·1 |
| Means ... | ... | ... | 17 | 98 | 319·90 | −14·77 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1031.** Three small faint spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| May 15·427 | 0 | 91 | 0 | 48 | 318·1 | − 5·4 | +18·5 |
| Means ... | ... | ... | 0 | 48 | 318·1 | − 5·4 | ... |
| **Group 1032.** A small spot. A second spot is seen near it on May 20. The two are measured together on May 21 and 22. | | | | | | | |
| May 17·406 | 0 | 24 | 0 | 20 | 224·5 | +20·3 | −48·8 |
| 18·460 | 0 | 21 | 0 | 14 | 225·9 | +21·0 | −33·6 |
| 19·514 | 0 | 20 | 0 | 11 | 227·5 | +20·6 | −18·0 |
| 20·132 | 0 | 52 | 0 | 29 | 222·5 | +21·1 | −14·8 |
| 21·407 | 0 | 24 | 0 | 13 | 225·2 | +21·1 | + 4·8 |
| 22·404 | 0 | 12 | 0 | 7 | 225·8 | +20·9 | +18·6 |
| Means ... | ... | ... | 0 | 16 | 225·23 | +20·83 | ... |
| **Group 1033.** Two small spots. The preceding spot disappears before May 20. | | | | | | | |
| May 19·514 | 13 | 49 | 8 | 32 | 281·8 | −22·3 | +36·3 |
| 20·132 | 6 | 53 | 4 | 40 | 281·8 | −22·0 | +44·5 |
| Means .. | ... | .. | 6 | 36 | 281·80 | −22·15 | ... |
| **Group 1034.** A small spot. | | | | | | | |
| May 19·514 | 0 | 33 | 0 | 18 | 227·7 | +16·0 | −17·8 |
| Means ... | ... | ... | 0 | 18 | 227·70 | +16·00 | ... |
| **Group 1035.** A small spot. | | | | | | | |
| May 23·401 | 3 | 25 | 2 | 14 | 224·1 | − 5·9 | +30·0 |
| Means ... | ... | ... | 2 | 14 | 224·10 | − 5·90 | ... |
| **Group 1036.** Two small spots. The following spot disappears before May 24. | | | | | | | |
| May 23·401 | 15 | 85 | 8 | 46 | 212·9 | +10·8 | +18·8 |
| 24·504 | 0 | 15 | 0 | 10 | 214·6 | + 9·9 | +35·2 |
| Means ... | ... | ... | 4 | 28 | 213·75 | +10·35 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1037.** A small spot on May 24. A second appears near it on May 25. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| May 24·504 | 0 | 32 | 0 | 36 | 117·1 | +12·8 | −62·3 |
| 25·402 | 0 | 36 | 0 | 30 | 115·6 | +13·3 | −52·0 |
| Means ... | ... | ... | 0 | 33 | 116·35 | +13·05 | ... |
| **Group 1038.** A small faint spot. | | | | | | | |
| May 29·412 | 0 | 8 | 0 | 9 | 49·2 | + 9·2 | −65·3 |
| Means ... | ... | ... | 0 | 9 | 49·20 | + 9·20 | ... |
| **Group 1039.** Two spots. Several small spots are seen near the preceding spot on June 2–4. On June 7 small spots accompany the following spot. The following spot and its companions disappear before June 8, leaving the preceding spot alone. | | | | | | | |
| May 30·598 | 9 | 31 | 27 | 90 | 19·0 | +14·5 | −79·8 |
| 31·395 | 26 | 185 | 44 | 336 | 14·9 | +14·0 | −73·4 |
| June 1·399 | 37 | 183 | 37 | 185 | 15·7 | +14·2 | −59·4 |
| 2·492 | 92 | 417 | 67 | 307 | 15·0 | +14·4 | −45·5 |
| 3·445 | 77 | 405 | 47 | 247 | 15·3 | +14·4 | −32·7 |
| 4·429 | 96 | 418 | 52 | 229 | 15·3 | +14·3 | −19·6 |
| 5·396 | 57 | 268 | 29 | 138 | 15·7 | +14·1 | − 6·4 |
| 6·400 | 63 | 239 | 32 | 123 | 15·3 | +14·3 | + 6·5 |
| 7·138 | 27 | 184 | 15 | 101 | 16·0 | +14·6 | +17·0 |
| 8·582 | 33 | 56 | 22 | 36 | 17·5 | +14·6 | +37·5 |
| 9·426 | 26 | 76 | 20 | 58 | 16·9 | +15·0 | +48·1 |
| 10·149 | 15 | 42 | 14 | 41 | 17·5 | +14·9 | +58·3 |
| 11·144 | 0 | 16 | 0 | 26 | 17·3 | +14·9 | +71·3 |
| Means ... | ... | ... | 31 | 147 | 16·26 | +14·48 | ... |
| **Group 1040.** A fine group breaking out suddenly on June 1 near the centre of the Sun. It consists at first of a large spot followed by an irregular group of small spots. The last of these develop on the following days into a large spot, showing much detail. The other small spots tend to coalesce, and on June 5 the group consists of five spots. Two of these disappear before June 6. | | | | | | | |
| June 1·399 | 67 | 300 | 34 | 151 | 70·4 | − 6·4 | − 4·7 |
| 2·492 | 267 | 1433 | 136 | 731 | 70·2 | − 7·0 | + 9·7 |
| 3·445 | 251 | 1497 | 137 | 813 | 70·0 | − 7·4 | +22·0 |
| 4·429 | 256 | 1783 | 161 | 1098 | 70·0 | − 7·6 | +35·1 |
| 5·396 | 185 | 1222 | 139 | 919 | 70·3 | − 8·4 | +48·2 |
| 6·400 | 94 | 666 | 102 | 722 | 70·9 | − 8·5 | +62·1 |
| 7·138 | 28 | 303 | 56 | 494 | 70·8 | − 8·8 | +71·8 |
| Means ... | ... | ... | 109 | 704 | 70·37 | − 7·73 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1041.

A large spot of irregular shape. Several small spots follow it on June 4, and succeeding days. The group gradually diminishes in size, only one small spot remaining on June 8. This breaks up into yet smaller spots on June 9 and 10.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| June 2·492 | 41 | 174 | 71 | 298 | 347·6 | −10·7 | −72·9 |
| 3·445 | 51 | 416 | 53 | 425 | 347·7 | −10·6 | −60·3 |
| 4·429 | 76 | 469 | 57 | 353 | 347·0 | −10·4 | −47·9 |
| 5·396 | 76 | 488 | 47 | 308 | 345·6 | −11·1 | −36·5 |
| 6·400 | 33 | 505 | 18 | 279 | 345·6 | −10·9 | −23·2 |
| 7·138 | 15 | 227 | 8 | 119 | 346·4 | −10·8 | −12·6 |
| 8·582 | 11 | 42 | 6 | 21 | 346·6 | −10·8 | + 6·6 |
| 9·426 | 0 | 26 | 0 | 14 | 345·2 | −11·3 | +16·4 |
| 10·149 | 0 | 26 | 0 | 16 | 346·8 | −11·4 | +27·6 |
| Means .. | ... | ... | 29 | 204 | 346·50 | −10·89 | ... |

### Group 1042.

A small spot. A second is seen on June 5, and the following days. The group undergoes several slight changes, and the following spot disappears before June 9.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 3·445 | 5 | 14 | 4 | 12 | 353·8 | − 8·3 | −54·2 |
| 4·429 | 0 | 47 | 0 | 32 | 353·1 | − 7·8 | −41·8 |
| 5·396 | 0 | 31 | 0 | 18 | 354·2 | − 7·9 | −27·9 |
| 6·400 | 0 | 25 | 0 | 13 | 352·7 | − 8·1 | −16·1 |
| 7·138 | 0 | 34 | 0 | 17 | 351·0 | − 9·6 | − 8·0 |
| 8·582 | 8 | 52 | 4 | 27 | 353·2 | − 8·0 | +13·2 |
| 9·426 | 0 | 17 | 0 | 10 | 354·9 | − 7·5 | +26·1 |
| 10·149 | 0 | 8 | 0 | 5 | 352·1 | − 8·6 | +32·9 |
| Means ... | ... | ... | 1 | 17 | 353·13 | − 8·23 | ... |

### Group 1043.

A small regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 3·445 | 0 | 18 | 0 | 56 | 327·4 | −16·5 | −80·6 |
| 4·429 | 9 | 66 | 13 | 89 | 327·5 | −16·2 | −67·4 |
| 5·396 | 13 | 47 | 11 | 42 | 327·6 | −16·5 | −54·5 |
| 6·400 | 37 | 95 | 26 | 66 | 327·0 | −16·2 | −41·8 |
| 7·138 | 22 | 81 | 14 | 50 | 326·9 | −16·2 | −32·1 |
| 8·582 | 27 | 60 | 14 | 32 | 327·0 | −16·2 | −13·0 |
| 9·426 | 0 | 16 | 0 | 8 | 327·1 | −16·3 | − 1·7 |
| 10·149 | 2 | 17 | 1 | 9 | 326·9 | −16·6 | + 7·7 |
| 11·144 | 5 | 16 | 3 | 9 | 326·7 | −16·7 | +20·7 |
| Means ... | ... | ... | 9 | 40 | 327·12 | −16·38 | ... |

### Group 1044.

Three spots close together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 4·429 | 33 | 164 | 37 | 188 | 97·9 | +15·7 | +63·0 |
| 5·396 | 0 | 33 | 0 | 68 | 97·6 | +15·2 | +75·5 |
| Means ... | ... | ... | 19 | 128 | 97·75 | +15·45 | ... |

### Group 1045.

A small faint spot on June 4. Several other spots appear following it on June 5.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| June 4·429 | 0 | 9 | 0 | 5 | 14·3 | −11·7 | −20·6 |
| 5·396 | 9 | 110 | 5 | 57 | 14·1 | −11·5 | − 8·0 |
| 6·400 | 0 | 99 | 0 | 50 | 14·1 | −11·4 | + 5·3 |
| 7·138 | 22 | 132 | 12 | 70 | 14·3 | −11·5 | +15·3 |
| 8·582 | 36 | 266 | 22 | 165 | 14·7 | −11·8 | +34·7 |
| 9·426 | 0 | 48 | 0 | 37 | 17·6 | −10·9 | +48·8 |
| 10·149 | 7 | 37 | 7 | 38 | 18·9 | −11·1 | +59·7 |
| 11·144 | 0 | 40 | 0 | 58 | 15·1 | −11·7 | +69·1 |
| Means ... | ... | ... | 6 | 60 | 15·39 | −11·45 | ... |

### Group 1046.

A large spot of irregular outline. It undergoes many changes both in shape and size during the period of its appearance.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 6·400 | 0 | 116 | 0 | 229 | 294·6 | −23·1 | −74·2 |
| 7·138 | 17 | 245 | 21 | 306 | 295·0 | −23·3 | −64·0 |
| 8·582 | 68 | 474 | 51 | 362 | 295·2 | −22·6 | −44·8 |
| 9·426 | 39 | 507 | 25 | 331 | 294·9 | −22·8 | −33·9 |
| 10·149 | 23 | 335 | 14 | 203 | 294·7 | −23·2 | −24·5 |
| 11·144 | 19 | 365 | 10 | 202 | 294·6 | −22·7 | −11·4 |
| 12·537 | 37 | 514 | 20 | 281 | 294·6 | −22·8 | + 7·0 |
| 13·407 | 73 | 930 | 42 | 537 | 294·3 | −23·7 | +18·3 |
| 14·482 | 125 | 1095 | 81 | 713 | 294·4 | −23·7 | +32·5 |
| 15·359 | 52 | 844 | 39 | 641 | 293·8 | −23·5 | +43·6 |
| 16·523 | 60 | 635 | 65 | 690 | 293·7 | −23·9 | +58·9 |
| 17·413 | 60 | 557 | 102 | 940 | 293·4 | −23·6 | +70·4 |
| Means ... | ... | ... | 39 | 453 | 294·43 | −23·24 | ... |

### Group 1047.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 7·138 | 1 | 18 | 1 | 22 | 64·2 | +17·4 | +65·2 |
| Means ... | ... | ... | 1 | 22 | 64·2 | +17·4 | ... |

### Group 1048.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 7·138 | 18 | 131 | 9 | 66 | 352·2 | + 7·3 | − 6·8 |
| 8·582 | 45 | 152 | 22 | 78 | 352·4 | + 6·9 | +12·4 |
| 9·426 | 0 | 58 | 0 | 32 | 351·9 | + 6·9 | +23·1 |
| 10·149 | 2 | 27 | 1 | 16 | 353·2 | + 7·1 | +34·0 |
| Means ... | ... | ... | 8 | 48 | 352·43 | + 7·05 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1049.** A small regular spot followed by some smaller spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| June 11·144 | 5 | 37 | 6 | 48 | 240·9 | −24·2 | −65·1 |
| 12·537 | 50 | 210 | 40 | 169 | 240·9 | −24·3 | −46·7 |
| 13·407 | 28 | 168 | 19 | 113 | 240·8 | −24·6 | −35·2 |
| 14·482 | 33 | 121 | 19 | 72 | 240·3 | −24·4 | −21·6 |
| 15·359 | 14 | 57 | 8 | 32 | 240·3 | −24·6 | − 9·9 |
| 16·523 | 0 | 18 | 0 | 10 | 240·6 | −24·5 | + 5·8 |
| Means ... | ... | ... | 15 | 74 | 240·63 | −24·43 | ... |
| **Group 1050.** A small faint spot. | | | | | | | |
| June 13·407 | 0 | 20 | 0 | 11 | 256·9 | − 8·2 | −19·1 |
| Means ... | ... | ... | 0 | 11 | 256·9 | − 8·2 | ... |
| **Group 1051.** A regular spot followed by several very small faint spots on June 15, which disappear before June 16. | | | | | | | |
| June 13·407 | 9 | 52 | 20 | 111 | 199·9 | +20·9 | −76·1 |
| 14·482 | 17 | 99 | 18 | 106 | 201·2 | +20·6 | −60·7 |
| 15·359 | 9 | 97 | 7 | 82 | 199·8 | +21·4 | −50·4 |
| 16·523 | 9 | 28 | 6 | 18 | 200·5 | +20·9 | −34·3 |
| 17·413 | 9 | 13 | 5 | 7 | 200·2 | +20·7 | −22·8 |
| 18·554 | 5 | 26 | 3 | 14 | 199·6 | +21·2 | − 8·3 |
| Means ... | ... | ... | 10 | 56 | 200·20 | +20·95 | ... |
| **Group 1052.** Two small spots on June 17. These have greatly increased in size by June 18. On June 19 they form two lines each composed of a great number of spots, the first spot in each line being the largest. The following spots in each line are measured as one cluster on June 19–21, but are divided into two clusters on June 22. The following portion of the more northerly line disappears before June 23. The individual spots of the whole group show large proper motion. | | | | | | | |
| June 17·413 | 10 | 41 | 6 | 24 | 212·3 | −25·6 | −10·7 |
| 18·554 | 159 | 867 | 90 | 487 | 211·8 | −24·6 | + 3·9 |
| 19·201 | 84 | 821 | 48 | 469 | 212·2 | −24·3 | +12·9 |
| 20·593 | 186 | 1172 | 122 | 781 | 213·2 | −24·1 | +32·2 |
| 21·435 | 213 | 952 | 163 | 740 | 213·4 | −23·9 | +43·7 |
| 22·226 | 58 | 531 | 58 | 528 | 214·4 | −24·8 | +55·1 |
| 23·389 | 20 | 167 | 39 | 319 | 215·4 | −24·6 | +71·5 |
| 24·179 | 0 | 41 | 0 | 142 | 213·5 | −23·3 | +80·1 |
| Means ... | ... | ... | 66 | 436 | 213·28 | −24·40 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1053.** Two small spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| June 17·413 | 0 | 17 | 0 | 15 | 168·2 | + 4·7 | −54·8 |
| 18·554 | 0 | 22 | 0 | 14 | 168·3 | + 5·0 | −39·6 |
| 19·201 | 6 | 33 | 3 | 18 | 168·6 | + 5·4 | −30·7 |
| 20·593 | 3 | 27 | 2 | 14 | 169·7 | + 5·1 | −11·3 |
| Means ... | ... | ... | 1 | 15 | 168·70 | + 5·05 | ... |
| **Group 1054.** A fine regular spot followed by a great number of small spots. The group undergoes many changes. | | | | | | | |
| June 17·413 | 9 | 41 | 19 | 93 | 146·8 | −16·2 | −76·2 |
| 18·554 | 33 | 218 | 39 | 257 | 144·5 | −14·3 | −63·4 |
| 19·201 | 21 | 251 | 19 | 239 | 142·8 | −14·9 | −56·5 |
| 20·593 | 92 | 545 | 61 | 361 | 143·9 | −15·7 | −37·1 |
| 21·435 | 99 | 700 | 58 | 409 | 144·9 | −16·7 | −24·8 |
| 22·226 | 62 | 617 | 34 | 337 | 145·3 | −16·4 | −14·0 |
| 23·389 | 102 | 590 | 54 | 311 | 143·9 | −16·0 | + 0·0 |
| 24·179 | 38 | 428 | 20 | 229 | 143·9 | −15·9 | +10·5 |
| 25·554 | 46 | 500 | 28 | 302 | 143·6 | −16·4 | +28·4 |
| 26·393 | 46 | 317 | 32 | 217 | 143·3 | −15·6 | +39·2 |
| 27·439 | 10 | 98 | 9 | 87 | 143·6 | −15·7 | +53·3 |
| 28·372 | 4 | 25 | 5 | 31 | 142·9 | −16·2 | +64·9 |
| Means ... | ... | ... | 32 | 239 | 144·12 | −15·83 | ... |
| **Group 1055.** A small faint spot. | | | | | | | |
| June 19·201 | 1 | 14 | 1 | 14 | 259·4 | −15·4 | +60·1 |
| Means ... | ... | ... | 1 | 14 | 259·4 | −15·4 | ... |
| **Group 1056.** An irregular group, first seen on June 20 not far from the centre of the Sun. It rapidly increases in size on the following days, the smaller spots of the group disappearing or coalescing with the larger spots, so that on June 23 and the following days the group consists almost entirely of three large regular spots. | | | | | | | |
| June 20·593 | 77 | 296 | 40 | 155 | 168·8 | −10·6 | −12·2 |
| 21·435 | 176 | 874 | 91 | 449 | 169·7 | −10·4 | − 0·0 |
| 22·226 | 185 | 1574 | 96 | 822 | 169·5 | −10·5 | +10·2 |
| 23·389 | 333 | 1935 | 189 | 1104 | 169·2 | −10·3 | +25·3 |
| 24·179 | 142 | 1330 | 92 | 856 | 169·9 | −10·1 | +36·5 |
| 25·554 | 182 | 915 | 175 | 855 | 171·4 | −10·2 | +56·2 |
| 26·393 | 71 | 373 | 92 | 484 | 170·5 | − 9·6 | +66·4 |
| 27·439 | 0 | 116 | 0 | 457 | 172·5 | −10·0 | +82·2 |
| Means ... | ... | ... | 97 | 648 | 170·19 | −10·21 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1057.

A small regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| June 21·435 | 9 | 46 | 5 | 25 | 166·2 | −19·3 | − 3·5 |
| Means ... | ... | ... | 5 | 25 | 166·2 | −19·3 | ... |

### Group 1058.

A very fine large spot with a great number of small spots preceding it. The large spot is very irregular in outline, is crossed by bridges in various directions, and has a large number of separate nuclei. It undergoes many changes, and breaks up into a number of small spots after passing the central meridian on June 28.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 22·226 | 2 | 9 | 5 | 18 | 84·1 | − 8·5 | −75·2 |
| 23·389 | 40 | 330 | 62 | 516 | 73·3 | − 9·6 | −70·6 |
| 24·179 | 51 | 572 | 53 | 586 | 73·5 | − 9·5 | −59·9 |
| 25·554 | 135 | 1124 | 94 | 782 | 73·0 | − 9·8 | −42·2 |
| 26·393 | 167 | 1585 | 100 | 953 | 73·2 | −10·0 | −30·9 |
| 27·439 | 316 | 1919 | 169 | 1031 | 73·5 | − 9·7 | −16·8 |
| 28·372 | 299 | 1992 | 154 | 1025 | 73·5 | − 9·4 | − 4·5 |
| 29·415 | 307 | 1571 | 159 | 820 | 74·1 | − 9·3 | + 9·9 |
| 30·396 | 171 | 1195 | 97 | 673 | 75·0 | − 9·3 | +23·9 |
| July 1·431 | 115 | 703 | 76 | 460 | 75·3 | − 9·5 | +37·8 |
| 2·148 | 52 | 602 | 42 | 470 | 76·4 | − 9·8 | +48·4 |
| 3·164 | 37 | 300 | 41 | 329 | 76·3 | −10·4 | +61·7 |
| 4·506 | 25 | 139 | 50 | 275 | 71·2 | −11·5 | +74·4 |
| Means ... | ... | ... | 85 | 611 | 74·80 | − 9·72 | ... |

### Group 1059.

Four small faint spots in a straight line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 24·179 | 0 | 21 | 0 | 10 | 120·0 | +10·2 | −13·4 |
| Means ... | ... | ... | 0 | 10 | 120·0 | +10·2 | ... |

### Group 1060.

Three small spots. The photograph of June 25 is badly defined, being taken through cloud.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 25·554 | 9 | 34 | 4 | 18 | 109·3 | +13·8 | − 5·9 |
| Means ... | ... | ... | 4 | 18 | 109·3 | +13·8 | ... |

### Group 1061.

Two small spots. The following spot disappears before June 27, and another small spot is seen on that day.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| June 25·554 | 0 | 31 | 0 | 32 | 54·3 | + 6·2 | −60·9 |
| 26·393 | 2 | 32 | 1 | 24 | 55·4 | + 5·9 | −48·7 |
| 27·439 | 7 | 59 | 4 | 36 | 55·3 | + 5·7 | −35·0 |
| 28·372 | 0 | 20 | 0 | 11 | 55·8 | + 6·6 | −22·2 |
| Means ... | ... | ... | 1 | 26 | 55·20 | + 6·10 | ... |

### Group 1062.

Two very fine spots when first seen on June 25. A third appears on June 27. The three spots tend to coalesce on the following days, and form one magnificent spot on June 29. By July 1 this has broken up to form two large spots and several smaller spots. The large spots break up further on the following days.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 25·554 | 63 | 291 | 137 | 751 | 36·1 | + 9·6 | −79·1 |
| 26·393 | 106 | 713 | 143 | 972 | 35·6 | + 9·0 | −68·5 |
| 27·439 | 257 | 1555 | 209 | 1227 | 34·5 | + 9·7 | −55·8 |
| 28·372 | 327 | 2190 | 223 | 1505 | 35·4 | +10·6 | −42·6 |
| 29·415 | 581 | 3014 | 334 | 1733 | 35·8 | +10·4 | −28·4 |
| 30·396 | 646 | 3573 | 339 | 1876 | 35·3 | +10·9 | −15·8 |
| July 1·431 | 610 | 3131 | 309 | 1589 | 35·8 | +10·9 | − 1·7 |
| 2·148 | 385 | 2948 | 197 | 1510 | 36·4 | +10·7 | + 8·4 |
| 3·164 | 427 | 2809 | 233 | 1532 | 36·8 | +10·9 | +22·2 |
| 4·506 | 411 | 2274 | 272 | 1503 | 36·9 | +11·0 | +40·1 |
| 5·393 | 294 | 1617 | 240 | 1323 | 37·1 | +11·4 | +52·0 |
| 6·418 | 164 | 914 | 203 | 1129 | 37·6 | +10·9 | +66·2 |
| 7·531 | 0 | 336 | 0 | 939 | 37·0 | +10·4 | +80·3 |
| Means ... | ... | ... | 218 | 1353 | 36·18 | +10·49 | ... |

### Group 1063.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 27·439 | 0 | 7 | 0 | 10 | 160·7 | −16·2 | +70·4 |
| Means ... | ... | ... | 0 | 10 | 160·7 | −16·2 | ... |

### Group 1064.

Three small spots on June 27. The group increases in size very rapidly on the following days, and entirely changes in appearance. It consists of two spots with a few small spots near them on June 28 and 29. Only one large spot is seen on June 30.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 27·439 | 0 | 44 | 0 | 28 | 125·0 | −10·8 | +34·7 |
| 28·372 | 33 | 202 | 25 | 153 | 125·0 | −10·0 | +47·1 |
| 29·415 | 69 | 360 | 77 | 397 | 126·2 | − 9·0 | +62·0 |
| 30·396 | 20 | 138 | 48 | 331 | 128·5 | − 8·8 | +77·4 |
| Means ... | ... | ... | 38 | 227 | 126·18 | − 9·65 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1065.

Several small spots arranged in two compact clusters.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| June 29·415 | 47 | 145 | 24 | 74 | 76·1 | + 5·0 | +11·9 |
| 30·396 | 88 | 390 | 48 | 216 | 76·0 | + 5·5 | +24·9 |
| July 1·431 | 42 | 278 | 28 | 180 | 76·6 | + 5·6 | +39·1 |
| 2·148 | 30 | 277 | 24 | 211 | 76·8 | + 5·8 | +48·8 |
| 3·164 | 8 | 154 | 11 | 172 | 78·4 | + 5·5 | +63·8 |
| Means ... | ... | ... | 27 | 171 | 76·78 | + 5·48 | ... |

### Group 1066.

Two spots which are measured together on July 3 and 4. A small spot is seen near them on July 5. The spots coalesce and form one long irregular spot on July 6 and 7, which, for the sake of convenience, is measured in two portions. This spot breaks up on the following days, and the group rapidly diminishes in size after July 11.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July | 3·164 | 0 | 73 | 0 | 445 | 291·0 | −22·4 | −83·6 |
| | 4·506 | 65 | 443 | 89 | 608 | 291·4 | −22·0 | −65·4 |
| | 5·393 | 117 | 611 | 111 | 582 | 291·8 | −22·6 | −53·3 |
| | 6·418 | 148 | 756 | 109 | 564 | 290·3 | −22·5 | −41·1 |
| | 7·531 | 147 | 1137 | 92 | 711 | 290·2 | −22·0 | −26·5 |
| | 8 | No photograph. | | (82 | 630 | 290·5 | −22·2 | −12·7) |
| | 9·581 | 127 | 982 | 72 | 551 | 290·8 | −22·4 | + 1·1 |
| | 10·394 | 140 | 906 | 80 | 519 | 290·3 | −22·6 | +11·5 |
| | 11·525 | 83 | 648 | 52 | 408 | 289·5 | −23·3 | +25·6 |
| | 12·294 | 46 | 331 | 31 | 235 | 290·1 | −23·2 | +36·4 |
| | 13·400 | 28 | 159 | 26 | 142 | 289·1 | −22·9 | +50·0 |
| Means ... | | ... | ... | 68 | 490 | 290·45 | −22·55 | ... |

### Group 1067.

A very large spot. A number of small spots appear in its neighbourhood from time to time. The group diminishes rapidly after passing the central meridian on July 14, and breaks up into three portions before July 19.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July | 9·581 | 24 | 219 | 62 | 566 | 214·2 | −26·2 | −75·5 |
| | 10·394 | 90 | 486 | 133 | 718 | 213·3 | −26·2 | −65·5 |
| | 11·525 | 158 | 806 | 148 | 755 | 212·9 | −25·7 | −51·0 |
| | 12·294 | 69 | 961 | 53 | 751 | 212·5 | −26·1 | −41·2 |
| | 13·400 | 121 | 1210 | 79 | 792 | 212·0 | −26·1 | −27·1 |
| | 14 | No photograph. | | (92 | 679 | 211·8 | −26·0 | −13·6) |
| | 15·478 | 181 | 974 | 105 | 566 | 211·5 | −25·9 | − 0·1 |
| | 16·153 | 51 | 659 | 30 | 389 | 210·8 | −26·1 | + 8·2 |
| | 17 | No photograph. | | (33 | 330 | 210·8 | −26·0 | +23·3) |
| | 18 | No photograph. | | (36 | 270 | 210·7 | −25·9 | +38·4) |
| | 19·586 | 40 | 210 | 39 | 211 | 210·7 | −25·8 | +53·5 |
| | 20·150 | 24 | 162 | 30 | 203 | 210·5 | −26·6 | +60·7 |
| | 21·497 | 0 | 58 | 0 | 183 | 209·0 | −25·8 | +77·1 |
| Means ... | | ... | ... | 65 | 493 | 211·59 | −26·03 | ... |

### Group 1068.

Two spots on July 10. The group increases rapidly and forms a long line of spots on July 12, the first spot being the largest. The group diminishes rapidly after passing the central meridian, the following part of the group disappearing first. The preceding spot shows a rapid forward movement in longitude.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| July 10·394 | 5 | 93 | 6 | 107 | 216·1 | −11·0 | −62·7 |
| 11·525 | 76 | 452 | 57 | 341 | 217·5 | − 9·8 | −46·4 |
| 12·294 | 68 | 583 | 43 | 371 | 218·3 | −10·3 | −35·4 |
| 13·400 | 83 | 552 | 45 | 303 | 220·4 | −10·0 | −18·7 |
| 14 | No photograph. | | (41 | 303 | 222·5 | −10·0 | − 2·9) |
| 15·478 | 70 | 567 | 37 | 302 | 224·6 | − 9·9 | +13·0 |
| 16·153 | 34 | 360 | 20 | 204 | 225·7 | −10·0 | +23·1 |
| 17 | No photograph. | | (13 | 155 | 226·9 | − 9·6 | +39·5) |
| 18 | No photograph. | | (7 | 105 | 228·2 | − 9·1 | +55·8) |
| 19·586 | 0 | 33 | 0 | 56 | 229·4 | − 8·7 | +72·2 |
| 20·150 | 2 | 9 | 5 | 31 | 230·1 | − 9·3 | +80·3 |
| Means ... | ... | ... | 25 | 207 | 223·61 | − 9·79 | ... |

### Group 1069.

Two very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 11·525 | 0 | 31 | 0 | 22 | 305·6 | −13·6 | +41·7 |
| Means ... | ... | ... | 0 | 22 | 305·6 | −13·6 | ... |

### Group 1070.

Three small spots. The first two spots are measured together on July 11, 12, and 13. On July 13 the following spot has disappeared, but three spots are again seen on July 14. The group shows considerable proper motion.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July | 11·525 | 0 | 56 | 0 | 72 | 196·4 | +11·9 | −67·5 |
| | 12·294 | 10 | 120 | 8 | 105 | 198·4 | +10·7 | −55·3 |
| | 13·400 | 52 | 201 | 33 | 128 | 200·8 | +10·3 | −38·3 |
| | 14 | No photograph. | | (28 | 100 | 201·9 | +10·6 | −23·5) |
| | 15·478 | 43 | 138 | 22 | 71 | 202·9 | +10·8 | − 8·7 |
| | 16·153 | 17 | 60 | 8 | 31 | 203·6 | +11·0 | + 1·0 |
| Means ... | | ... | ... | 17 | 85 | 200·67 | +10·88 | ... |

### Group 1071.

A regular spot. Some small spots appear in its immediate neighbourhood on July 16. These increase in size and number on the following days.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July | 12·294 | 17 | 95 | 45 | 251 | 175·6 | −11·0 | −78·1 |
| | 13·400 | 57 | 330 | 66 | 382 | 176·3 | −11·3 | −62·8 |
| | 14 | No photograph. | | (75 | 365 | 176·4 | −11·2 | −49·0) |
| | 15·478 | 132 | 542 | 84 | 347 | 176·4 | −11·1 | −35·2 |
| | 16·153 | 99 | 545 | 57 | 317 | 176·1 | −11·1 | −26·5 |
| | 17 | No photograph. | | (65 | 354 | 176·4 | −11·0 | −11·1) |
| | 18 | No photograph. | | (72 | 392 | 176·7 | −10·8 | + 4·3) |
| | 19·586 | 146 | 779 | 80 | 429 | 177·0 | −10·7 | +19·8 |
| | 20·150 | 95 | 759 | 55 | 446 | 177·5 | −10·9 | +27·7 |
| | 21·497 | 58 | 519 | 42 | 383 | 176·6 | −10·4 | +44·7 |
| Means ... | | ... | ... | 64 | 367 | 176·50 | −10·95 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1072.** A great number of very small spots irregularly distributed over a somewhat wide area. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| July 13·400 | 24 | 197 | 13 | 104 | 230·9 | +19·7 | − 8·2 |
| 14 | No photograph. | | (20 | 100 | 230·5 | +19·7 | + 5·2) |
| 15·478 | 45 | 175 | 24 | 96 | 230·1 | +19·7 | +18·5 |
| 16·153 | 18 | 134 | 10 | 79 | 231·3 | +19·5 | +28·7 |
| Means ... | ... | ... | 17 | 95 | 230·70 | +19·65 | ... |
| **Group 1073.** Several very small spots in a straight line. On July 19 the following spots have disappeared and the preceding spots have increased in size. These coalesce on the following days, forming a nearly circular spot on July 21. | | | | | | | |
| July 15·478 | 0 | 52 | 0 | 36 | 169·2 | + 8·2 | −42·4 |
| 16·153 | 0 | 27 | 0 | 16 | 171·2 | + 8·6 | −31·4 |
| 17 | No photograph. | | (3 | 32 | 171·6 | + 8·8 | −15·9) |
| 18 | No photograph. | | (6 | 47 | 172·0 | + 9·0 | − 0·3) |
| 19·586 | 18 | 123 | 9 | 63 | 172·4 | + 9·2 | +15·2 |
| 20·150 | 17 | 101 | 9 | 55 | 174·7 | + 8·6 | +24·9 |
| 21·497 | 24 | 135 | 17 | 95 | 176·4 | + 8·4 | +44·5 |
| Means ... | ... | ... | 6 | 49 | 172·50 | +8·69 | ... |
| **Group 1074.** A very fine group of spots, consisting chiefly of a large and nearly circular spot followed at a little interval by a large cluster of spots arranged in a roughly circular manner. These latter spots have greatly decreased in size by July 25, but by July 26 a number of other small spots have formed in their neighbourhood. | | | | | | | |
| July 15·478 | 0 | 84 | 0 | 219 | 134·4 | −15·0 | −77·2 |
| 16·153 | 29 | 293 | 53 | 547 | 130·0 | −14·7 | −72·6 |
| 17 | No photograph. | | (89 | 683 | 130·6 | −14·8 | −56·9) |
| 18 | No photograph. | | (125 | 819 | 131·1 | −15·0 | −41·2) |
| 19·586 | 277 | 1635 | 161 | 955 | 131·7 | −15·1 | −25·5 |
| 20·150 | 176 | 1468 | 97 | 823 | 133·0 | −15·4 | −16·8 |
| 21·497 | 205 | 1350 | 110 | 724 | 133·6 | −14·7 | + 1·7 |
| 22 | No photograph. | | (119 | 790 | 134·0 | −15·0 | +14·9) |
| 23 | No photograph. | | (128 | 855 | 134·4 | −15·2 | +28·0) |
| 24·394 | 188 | 1287 | 137 | 921 | 134·8 | −15·5 | +41·2 |
| 25·561 | 111 | 844 | 117 | 876 | 136·4 | −15·7 | +58·2 |
| 26·405 | 37 | 393 | 60 | 581 | 134·7 | −15·8 | +67·7 |
| 27·444 | 0 | 80 | 0 | 333 | 134·5 | −16·0 | +81·2 |
| Means ... | ... | ... | 92 | 702 | 133·32 | −15·22 | ... |
| **Group 1075.** Several small spots. The preceding spot increases in size on the following days, and becomes circular in shape; the other spots diminish and gradually disappear. | | | | | | | |
| July 16·153 | 8 | 38 | 7 | 30 | 152·4 | −10·2 | −50·2 |
| 17 | No photograph. | | (21 | 77 | 153·3 | −10·3 | −34·2) |
| 18 | No photograph. | | (24 | 124 | 154·1 | −10·5 | −18·2) |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1075—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| July 19·586 | 54 | 333 | 28 | 171 | 155·0 | −10·6 | − 2·2 |
| 20·150 | 32 | 287 | 16 | 150 | 155·5 | −10·7 | + 5·7 |
| 21·497 | 59 | 200 | 34 | 114 | 155·5 | −10·6 | +23·6 |
| 22 | No photograph. | | (28 | 96 | 155·7 | −10·4 | +36·6) |
| 23 | No photograph. | | (22 | 78 | 156·0 | −10·7 | +49·6) |
| 24·394 | 14 | 52 | 16 | 60 | 156·2 | −11·1 | +62·6 |
| Means ... | ... | ... | 22 | 100 | 154·86 | −10·50 | ... |
| **Group 1076.** A small faint spot. | | | | | | | |
| July 19·586 | 4 | 25 | 3 | 17 | 197·3 | −11·7 | +40·1 |
| 20·150 | 1 | 7 | 1 | 5 | 198·1 | −12·2 | +48·3 |
| Means ... | ... | ... | 2 | 11 | 197·70 | −11·95 | ... |
| **Group 1077.** A small faint spot. | | | | | | | |
| July 19·586 | 0 | 26 | 0 | 17 | 193·5 | −14·4 | +36·3 |
| 20·150 | 0 | 5 | 0 | 4 | 193·7 | −15·1 | +43·9 |
| Means ... | ... | ... | 0 | 11 | 193·60 | −14·75 | ... |
| **Group 1078.** A small faint spot. | | | | | | | |
| July 19·586 | 0 | 16 | 0 | 8 | 171·7 | + 5·1 | +14·5 |
| Means ... | ... | ... | 0 | 8 | 171·7 | + 5·1 | ... |
| **Group 1079.** A number of spots arranged in a straight line. The following spots diminish in size and gradually disappear before July 25. | | | | | | | |
| July 19·586 | 84 | 508 | 67 | 406 | 109·4 | −15·7 | −47·8 |
| 20·150 | 54 | 343 | 38 | 242 | 109·4 | −15·6 | −40·4 |
| 21·497 | 41 | 353 | 23 | 205 | 110·0 | −15·2 | −21·9 |
| 22 | No photograph. | | (28 | 186 | 110·5 | −15·3 | − 8·7) |
| 23 | No photograph. | | (32 | 166 | 110·9 | −15·3 | + 4·6) |
| 24·394 | 58 | 261 | 37 | 147 | 111·4 | −15·4 | +17·8 |
| 25·561 | 23 | 196 | 15 | 126 | 111·5 | −15·9 | +33·3 |
| 26·405 | 21 | 80 | 16 | 61 | 111·7 | −15·9 | +44·7 |
| 27·444 | 9 | 33 | 9 | 34 | 111·8 | −16·2 | +58·5 |
| 28·400 | 0 | 24 | 0 | 42 | 111·5 | −16·2 | +70·9 |
| Means ... | ... | ... | 27 | 162 | 110·81 | −15·67 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1080.** A very fine group consisting of a very large spot showing much intricate detail, with a great number of small spots preceding it. These small spots, which are irregularly distributed over an extensive area, diminish greatly between July 28 and 29. The large spot is somewhat indistinctly seen on July 31, as it is then close to the limb, but it appears to have broken up into several parts. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| July 19·586 | 0 | 155 | 0 | 589 | 75·7 | − 9·3 | −81·5 |
| 20·150 | 27 | 641 | 57 | 1365 | 74·5 | − 9·1 | −75·3 |
| 21·497 | 233 | 1561 | 230 | 1508 | 74·7 | − 9·0 | −57·2 |
| 22 | No photograph. | | (235 | 1553 | 74·5 | − 8·9 | −44·6) |
| 23 | No photograph. | | (240 | 1597 | 74·3 | − 8·8 | −32·1) |
| 24·394 | 447 | 3013 | 245 | 1642 | 74·1 | − 8·7 | −19·5 |
| 25·561 | 554 | 3115 | 286 | 1606 | 73·4 | − 8·9 | − 4·8 |
| 26·405 | 408 | 1967 | 212 | 1021 | 73·2 | − 9·5 | + 6·2 |
| 27·444 | 470 | 2495 | 257 | 1374 | 73·1 | − 9·9 | +19·8 |
| 28·400 | 396 | 2252 | 243 | 1388 | 73·2 | − 9·8 | +32·6 |
| 29·449 | 266 | 1461 | 198 | 1092 | 72·7 | − 9·8 | +45·9 |
| 30 | No photograph. | | (176 | 1360 | 73·3 | −10·6 | +60·0) |
| 31·475 | 90 | 814 | 154 | 1627 | 73·9 | −11·3 | +74·0 |
| Means ... | ... | ... | 195 | 1363 | 73·89 | − 9·51 | ... |
| **Group 1081.** A small faint spot. | | | | | | | |
| July 20·150 | 2 | 10 | 3 | 14 | 218·7 | − 2·8 | +68·9 |
| Means ... | ... | ... | 3 | 14 | 218·7 | − 2·8 | ... |
| **Group 1082.** A very small faint spot. | | | | | | | |
| July 20·150 | 0 | 2 | 0 | 1 | 186·3 | + 5·2 | +36·5 |
| Means ... | ... | ... | 0 | 1 | 186·3 | + 5·2 | ... |
| **Group 1083.** Several very small faint spots close together. | | | | | | | |
| July 20·150 | 0 | 8 | 0 | 7 | 95·6 | + 5·7 | −54·2 |
| 21·497 | 0 | 17 | 0 | 11 | 96·5 | + 5·6 | −35·4 |
| 22 | No photograph. | | (0 | 12 | 96·3 | + 5·3 | −22·8) |
| 23 | No photograph. | | (1 | 13 | 96·2 | + 5·1 | −10·3) |
| 24·394 | 2 | 27 | 1 | 13 | 95·9 | + 4·8 | + 2·3 |
| Means ... | ... | ... | 0 | 11 | 96·10 | + 5·30 | ... |
| **Group 1084.** An irregular group composed of three or four spots. The group diminishes in size on July 24, and the following days. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| July 20·150 | 6 | 45 | 17 | 136 | 68·6 | + 8·2 | −81·2 |
| 21·497 | 18 | 163 | 20 | 181 | 68·5 | + 8·3 | −63·4 |
| 22 | No photograph. | | (19 | 152 | 68·3 | + 8·6 | −50·9) |
| 23 | No photograph. | | (19 | 122 | 68·0 | + 9·0 | −38·3) |
| 24·394 | 33 | 168 | 18 | 93 | 67·8 | + 9·3 | −25·8 |
| 25·561 | 12 | 76 | 6 | 39 | 69·0 | + 9·8 | − 9·2 |
| 26·405 | 0 | 33 | 0 | 16 | 68·7 | + 9·5 | + 1·7 |
| Means ... | ... | ... | 14 | 106 | 68·41 | + 8·96 | ... |
| **Group 1085.** Several very small spots, somewhat scattered. | | | | | | | |
| July 24·394 | 3 | 20 | 1 | 11 | 65·0 | +18·7 | −28·6 |
| 25·561 | 9 | 59 | 4 | 31 | 65·6 | +18·1 | −12·6 |
| Means ... | ... | ... | 3 | 21 | 65·30 | +18·40 | ... |
| **Group 1086.** A regular spot. Two very small faint spots are seen near it on July 27. | | | | | | | |
| July 24·394 | 40 | 210 | 32 | 168 | 41·9 | + 9·3 | −51·7 |
| 25·561 | 34 | 228 | 21 | 141 | 41·7 | + 9·1 | −36·5 |
| 26·405 | 41 | 217 | 23 | 120 | 41·7 | + 8·9 | −25·3 |
| 27·444 | 53 | 269 | 27 | 137 | 41·9 | + 9·1 | −11·4 |
| 28·400 | 51 | 267 | 26 | 133 | 41·9 | + 8·9 | + 1·3 |
| 29·449 | 41 | 217 | 21 | 112 | 42·3 | + 9·1 | +15·5 |
| 30 | No photograph. | | (20 | 98 | 42·3 | + 9·2 | +28·9) |
| 31·475 | 27 | 125 | 18 | 84 | 42·2 | + 9·3 | +42·3 |
| Aug. 1·407 | 15 | 105 | 13 | 90 | 42·5 | + 9·3 | +54·9 |
| 2·211 | 7 | 49 | 9 | 60 | 43·3 | + 9·6 | +66·3 |
| Means ... | ... | ... | 21 | 114 | 42·17 | + 9·18 | ... |
| **Group 1087.** A small spot. A very small spot precedes it on July 26. Another small spot follows it on July 27. | | | | | | | |
| July 24·394 | 0 | 16 | 0 | 23 | 25·9 | −10·0 | −67·7 |
| 25·561 | 9 | 29 | 8 | 24 | 26·8 | −10·6 | −51·4 |
| 26·405 | 0 | 20 | 0 | 13 | 27·8 | − 9·9 | −39·2 |
| 27·444 | 12 | 40 | 7 | 24 | 27·2 | −10·7 | −26·1 |
| 28·400 | 9 | 17 | 5 | 9 | 29·1 | −10·0 | −11·5 |
| 29·449 | 0 | 17 | 0 | 9 | 30·2 | −10·0 | + 3·4 |
| Means ... | ... | ... | 3 | 17 | 27·83 | −10·20 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1088.** Two very small faint spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| July 31·475 | 0 | 33 | 0 | 17 | 6·7 | + 5·6 | + 6·8 |
| Means ... | ... | ... | 0 | 17 | 6·7 | + 5·6 | ... |
| **Group 1089.** Two spots of nearly equal size. The preceding spot breaks up into several portions on August 1, and both spots diminish in size on August 2 and 3, the following spot more rapidly than the preceding. | | | | | | | |
| July 31·475 | 89 | 420 | 49 | 231 | 343·4 | −13·5 | −16·5 |
| Aug. 1·407 | 69 | 458 | 37 | 243 | 343·1 | −13·5 | − 4·5 |
| 2·211 | 32 | 229 | 17 | 123 | 344·3 | −13·4 | + 7·3 |
| 3·564 | 20 | 91 | 12 | 54 | 344·7 | −13·5 | +25·6 |
| Means ... | ... | ... | 29 | 163 | 343·88 | −13·48 | ... |
| **Group 1090.** Three small spots. | | | | | | | |
| Aug. 7·424 | 11 | 54 | 7 | 33 | 298·1 | −14·7 | +30·1 |
| Means ... | ... | ... | 7 | 33 | 298·1 | −14·7 | ... |
| **Group 1091.** A small regular spot. Two small faint spots are seen near it on August 8. | | | | | | | |
| Aug. 7·424 | 29 | 112 | 18 | 71 | 230·4 | +15·6 | −37·6 |
| 8·298 | 10 | 77 | 5 | 42 | 230·3 | +15·5 | −26·2 |
| 9·421 | 0 | 29 | 0 | 15 | 230·5 | +15·1 | −11·3 |
| Means ... | ... | ... | 8 | 43 | 230·40 | +15·40 | ... |
| **Group 1092.** Several small faint spots. The components of this group are very unstable. | | | | | | | |
| Aug. 7·424 | 0 | 4 | 0 | 7 | 198·4 | −16·5 | −69·6 |
| 8·298 | 0 | 67 | 0 | 75 | 196·6 | −16·5 | −59·9 |
| 9·421 | 0 | 27 | 0 | 21 | 196·2 | −17·4 | −45·6 |
| 10·391 | 0 | 12 | 0 | 8 | 193·2 | −17·8 | −35·7 |
| 11·431 | 0 | 15 | 0 | 8 | 194·8 | −14·4 | −20·3 |
| 12·461 | 34 | 130 | 19 | 72 | 192·3 | −17·4 | − 9·2 |
| 13·389 | 19 | 146 | 10 | 80 | 193·7 | −17·3 | + 4·5 |
| 14·391 | 0 | 84 | 0 | 48 | 192·8 | −17·6 | +16·9 |
| 15·442 | 0 | 6 | 0 | 4 | 192·1 | −17·5 | +30·0 |
| Means ... | ... | ... | 3 | 36 | 194·46 | −16·93 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1093.** A small faint spot. A second is seen at a little distance from it on August 8. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Aug. 7·424 | 0 | 21 | 0 | 53 | 188·2 | +10·4 | −79·8 |
| 8·298 | 0 | 35 | 0 | 52 | 185·3 | + 8·9 | −71·2 |
| Means ... | ... | ... | 0 | 53 | 186·75 | + 9·65 | ... |
| **Group 1094.** A regular spot with two smaller spots to the south of it. The latter disappear before August 12. The three spots are measured as one on August 8. Some very small spots are occasionally seen in the neighbourhood of the principal spot. | | | | | | | |
| Aug. 8·298 | 16 | 119 | 46 | 345 | 177·9 | −11·4 | −78·6 |
| 9·421 | 31 | 259 | 37 | 313 | 178·4 | −11·3 | −63·4 |
| 10·391 | 30 | 466 | 25 | 391 | 178·3 | −11·3 | −50·6 |
| 11·431 | 56 | 353 | 36 | 232 | 178·3 | −10·7 | −36·8 |
| 12·461 | 70 | 401 | 40 | 229 | 178·1 | −10·2 | −23·4 |
| 13·389 | 70 | 388 | 37 | 207 | 177·9 | −10·2 | −11·3 |
| 14·391 | 88 | 436 | 46 | 227 | 177·6 | −10·1 | + 1·7 |
| 15·442 | 62 | 372 | 34 | 203 | 177·7 | −10·2 | +15·6 |
| 16·489 | 77 | 324 | 46 | 195 | 177·9 | − 9·8 | +29·6 |
| 17·133 | 37 | 298 | 25 | 199 | 178·4 | − 9·3 | +38·7 |
| 18·442 | 48 | 223 | 44 | 208 | 177·6 | − 9·6 | +55·1 |
| 19·379 | 4 | 90 | 6 | 127 | 177·8 | − 9·7 | +67·7 |
| 20·410 | 0 | 17 | 0 | 65 | 177·6 | − 9·5 | +81·2 |
| Means ... | ... | ... | 32 | 226 | 177·96 | −10·25 | ... |
| **Group 1095.** Two small regular spots. The two spots tend to separate on August 10, 11, and 12, and the following spot disappears before August 16. A number of very small faint spots are seen near them on August 11 and 12. | | | | | | | |
| Aug. 10·391 | 9 | 83 | 9 | 79 | 169·9 | +11·1 | −59·0 |
| 11·431 | 58 | 274 | 40 | 191 | 170·5 | +11·0 | −44·6 |
| 12·461 | 52 | 295 | 30 | 171 | 171·1 | +11·0 | −30·4 |
| 13·389 | 50 | 284 | 27 | 151 | 170·4 | +11·5 | −18·8 |
| 14·391 | 34 | 161 | 17 | 81 | 170·2 | +11·6 | − 5·7 |
| 15·442 | 4 | 57 | 2 | 29 | 171·6 | +11·6 | + 9·5 |
| 16·489 | 9 | 35 | 5 | 20 | 176·4 | +11·6 | +28·1 |
| 17·133 | 8 | 31 | 5 | 19 | 176·6 | +11·5 | +36·9 |
| 18·442 | 0 | 22 | 0 | 19 | 176·7 | +11·3 | +54·2 |
| Means ... | ... | ... | 15 | 84 | 172·60 | +11·36 | ... |
| **Group 1096.** A small faint spot. | | | | | | | |
| Aug. 11·431 | 0 | 15 | 0 | 21 | 148·0 | −13·0 | −67·1 |
| Means ... | ... | ... | 0 | 21 | 148·0 | −13·0 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1097.** Two spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Aug. 14·391 | 0 | 118 | 0 | 362 | 253·4 | −16·5 | +77·5 |
| Means ... | ... | ... | 0 | 362 | 253·4 | −16·5 | ... |
| **Group 1098.** A regular spot. A very small spot is seen near it on August 16, and another on August 22. | | | | | | | |
| Aug. 15·442 | 18 | 47 | 36 | 95 | 89·2 | −16·5 | −72·9 |
| 16·489 | 20 | 115 | 22 | 127 | 89·1 | −16·5 | −59·2 |
| 17·133 | 12 | 128 | 11 | 112 | 89·2 | −16·3 | −50·5 |
| 18·442 | 55 | 273 | 36 | 179 | 89·2 | −16·3 | −33·3 |
| 19·379 | 47 | 268 | 25 | 142 | 89·3 | −16·5 | −20·8 |
| 20·410 | 51 | 243 | 28 | 134 | 89·4 | −16·6 | − 7·0 |
| 21·409 | 34 | 250 | 19 | 138 | 89·3 | −16·4 | + 6·0 |
| 22·411 | 28 | 237 | 16 | 138 | 89·4 | −16·7 | +19·4 |
| 23·418 | 38 | 204 | 25 | 132 | 89·1 | −16·5 | +32·4 |
| 24·423 | 20 | 134 | 16 | 106 | 89·0 | −16·5 | +45·6 |
| 25·430 | 15 | 62 | 16 | 67 | 88·6 | −16·3 | +58·6 |
| 26·465 | 3 | 38 | 6 | 70 | 87·7 | −15·9 | +71·2 |
| Means ... | ... | ... | 21 | 120 | 89·04 | −16·42 | ... |
| **Group 1099.** A single spot. A small spot is seen near it on August 18, and another on August 19. | | | | | | | |
| Aug. 16·489 | 13 | 38 | 20 | 61 | 79·6 | −15·7 | −68·7 |
| 17·133 | 4 | 72 | 5 | 82 | 79·4 | −15·7 | −60·3 |
| 18·442 | 20 | 100 | 15 | 76 | 78·8 | −16·5 | −43·7 |
| 19·379 | 6 | 31 | 4 | 21 | 77·9 | −16·2 | −32·2 |
| 20·410 | 0 | 17 | 0 | 10 | 76·3 | −18·0 | −20·1 |
| Means ... | ... | ... | 9 | 50 | 78·40 | −16·42 | ... |
| **Group 1100.** Two small spots which are measured together. | | | | | | | |
| Aug. 17·133 | 5 | 26 | 7 | 34 | 74·0 | −10·8 | −65·7 |
| 18·442 | 0 | 37 | 0 | 29 | 73·9 | −10·7 | −48·6 |
| 19·379 | 7 | 15 | 5 | 10 | 74·0 | −10·8 | −36·1 |
| Means ... | ... | ... | 4 | 24 | 73·97 | −10·77 | ... |
| **Group 1101.** A compact cluster of very small faint spots. Part of it has disappeared before August 18. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Aug. 17·133 | 1 | 31 | 2 | 47 | 68·8 | − 0·1 | −70·9 |
| 18·442 | 0 | 20 | 0 | 18 | 68·1 | − 0·3 | −54·4 |
| 19·379 | 0 | 11 | 0 | 8 | 68·9 | 0·0 | −41·2 |
| Means ... | ... | ... | 1 | 24 | 68·60 | − 0·13 | ... |
| **Group 1102.** A small faint spot. On August 19, five spots are seen scattered over a wide area. Two of these (long. 55°·0) are measured together. On August 20, only two spots remain. | | | | | | | |
| Aug. 17·133 | 1 | 14 | 5 | 58 | 55·6 | +10·6 | −84·1 |
| 18·442 | 3 | 21 | 5 | 29 | 53·1 | +12·2 | −69·4 |
| 19·379 | 15 | 91 | 12 | 75 | 57·0 | +11·3 | −53·1 |
| 20·410 | 8 | 49 | 5 | 31 | 57·7 | +11·2 | −38·7 |
| Means ... | ... | ... | 7 | 48 | 55·85 | +11·33 | ... |
| **Group 1103.** A fine regular spot, followed on August 21 and succeeding days by a smaller regular spot. A number of small spots are seen at times between the two. Two small spots are seen following the group on August 27. The smaller regular spot disappears before August 30, leaving the principal spot alone. | | | | | | | |
| Aug. 20·410 | 11 | 68 | 31 | 193 | 18·8 | −14·8 | −77·6 |
| 21·409 | 54 | 379 | 87 | 608 | 14·6 | −15·7 | −68·7 |
| 22·411 | 58 | 633 | 57 | 641 | 13·5 | −15·6 | −56·5 |
| 23·418 | 137 | 844 | 101 | 637 | 13·3 | −15·8 | −43·4 |
| 24·423 | 151 | 984 | 95 | 621 | 13·3 | −15·8 | −30·1 |
| 25·430 | 154 | 879 | 88 | 499 | 13·3 | −15·7 | −16·7 |
| 26·465 | 149 | 775 | 80 | 420 | 14·2 | −15·5 | − 2·3 |
| 27·433 | 100 | 643 | 56 | 359 | 15·9 | −15·3 | +12·3 |
| 28·400 | 114 | 588 | 68 | 353 | 16·2 | −15·2 | +25·4 |
| 29 | No photograph. | | (42 | 298 | 17·4 | −15·0 | +40·2) |
| 30·469 | 15 | 253 | 15 | 243 | 18·5 | −14·7 | +55·0 |
| 31·282 | 37 | 196 | 49 | 261 | 17·7 | −14·7 | +65·0 |
| Sept. 1·396 | 7 | 42 | 26 | 162 | 18·4 | −14·2 | +80·4 |
| Means ... | ... | ... | 63 | 407 | 15·78 | −15·23 | ... |
| **Group 1104.** Two small spots on August 25. The preceding spot disappears before August 26. | | | | | | | |
| Aug. 25·430 | 0 | 17 | 0 | 10 | 55·1 | +10·4 | +25·5 |
| 26·465 | 4 | 31 | 3 | 19 | 53·4 | +10·2 | +36·9 |
| 27·433 | 0 | 23 | 0 | 21 | 58·3 | +10·9 | +54·7 |
| Means ... | ... | ... | 1 | 17 | 55·60 | +10·50 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1105.** | | | | | | | |
| Two small spots on August 25. Both increase in size on the following days, the preceding spot becoming a large regular spot, the following a stream of small spots. The following part of the group disappears before August 30. A small spot is seen in advance of the group on August 28. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Aug. 25·430 | 13 | 47 | 7 | 26 | 13·2 | +21·2 | −16·8 |
| 26·465 | 87 | 352 | 45 | 181 | 16·6 | +20·6 | + 0·1 |
| 27·433 | 49 | 495 | 26 | 261 | 16·8 | +20·8 | +13·2 |
| 28·400 | 139 | 568 | 80 | 328 | 18·3 | +21·1 | +27·5 |
| 29 | No photograph. | | (50 | 267 | 19·4 | +20·7 | +42·3) |
| 30·469 | 21 | 227 | 19 | 206 | 20·5 | +20·3 | +57·0 |
| 31·282 | 13 | 173 | 16 | 221 | 20·7 | +19·9 | +68·0 |
| Sept. 1·396 | 0 | 53 | 0 | 180 | 21·7 | +20·0 | +83·7 |
| Means ... | ... | ... | 30 | 209 | 18·40 | +20·58 | ... |
| **Group 1106.** | | | | | | | |
| Three small spots on August 27. The group increases in size on the following days, a fresh spot of regular outline appearing on the preceding side. The following portion of the group consists of an irregular scattered stream of many small spots. The group diminishes rapidly after passing the central meridian on August 31, and only two small spots are left on September 3. The group is measured as a whole on September 1. | | | | | | | |
| Aug. 27·433 | 6 | 61 | 6 | 56 | 308·8 | − 8·9 | −54·8 |
| 28·400 | 73 | 348 | 50 | 239 | 310·6 | − 9·0 | −40·2 |
| 29 | No photograph. | | (40 | 233 | 312·6 | − 9·1 | −24·6) |
| 30·469 | 58 | 431 | 30 | 227 | 314·6 | − 9·1 | − 8·9 |
| 31·282 | 51 | 386 | 26 | 200 | 315·5 | − 9·2 | + 2·8 |
| Sept. 1·396 | 45 | 216 | 25 | 120 | 318·1 | − 9·1 | +20·1 |
| 2 | No photograph. | | (20 | 100 | 318·2 | − 8·9 | +33·5) |
| 3·417 | 19 | 103 | 14 | 79 | 318·3 | − 8·6 | +46·9 |
| 4·395 | 10 | 90 | 11 | 97 | 319·1 | − 8·9 | +60·6 |
| 5·492 | 0 | 25 | 0 | 57 | 319·8 | − 9·0 | +75·9 |
| Means ... | ... | ... | 22 | 141 | 315·56 | − 8·98 | ... |
| **Group 1107.** | | | | | | | |
| A fine group appearing suddenly near the centre of the sun and consisting at first of several small spots in two clusters. On August 30 it becomes two large spots, both closely accompanied by several very small spots. | | | | | | | |
| Aug. 28·400 | 176 | 259 | 92 | 135 | 339·4 | − 5·8 | −11·4 |
| 29 | No photograph. | | (114 | 382 | 339·7 | − 5·6 | + 2·5) |
| 30·469 | 255 | 1179 | 136 | 629 | 339·9 | − 5·3 | +16·4 |
| 31·282 | 137 | 867 | 79 | 501 | 339·8 | − 5·2 | +27·1 |
| Sept. 1·396 | 109 | 657 | 76 | 457 | 340·5 | − 5·0 | +42·5 |
| 2 | No photograph. | | (59 | 372 | 341·2 | − 4·8 | +56·0) |
| 3·417 | 26 | 184 | 41 | 286 | 341·9 | − 4·5 | +70·5 |
| Means ... | ... | ... | 85 | 395 | 340·34 | −5·17 | ... |
| **Group 1108.** | | | | | | | |
| Two large regular spots with a number of small spots between them. The small spots (which are measured with the following spot on September 3) disappear before September 7. The preceding large spot undergoes a remarkable change of shape between August 30 and September 1. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Aug. 30·469 | 55 | 367 | 48 | 310 | 274·0 | −14·8 | −49·5 |
| 31·282 | 176 | 1010 | 129 | 727 | 272·1 | −15·4 | −40·6 |
| Sept. 1·396 | 282 | 1526 | 168 | 908 | 274·0 | −15·5 | −24·0 |
| 2 | No photograph. | | (178 | 907 | 273·8 | −15·5 | −10·9) |
| 3·417 | 343 | 1664 | 187 | 906 | 273·6 | −15·5 | + 2·2 |
| 4·395 | 247 | 1555 | 139 | 876 | 273·3 | −15·6 | +14·8 |
| 5·492 | 217 | 1284 | 137 | 803 | 272·8 | −15·7 | +28·9 |
| 6 | No photograph. | | (111 | 694 | 273·4 | −15·8 | +40·3) |
| 7·144 | 94 | 648 | 85 | 585 | 273·9 | −15·9 | +51·7 |
| 8·506 | 69 | 381 | 120 | 657 | 274·3 | −16·0 | +70·1 |
| 9·567 | 0 | 53 | 0 | 131 | 266·0 | −14·6 | +75·9 |
| Means ... | ... | ... | 118 | 682 | 272·84 | −15·48 | ... |
| **Group 1109.** | | | | | | | |
| A fine regular spot accompanied by two or three very small spots close to it. | | | | | | | |
| Aug. 30·469 | 42 | 271 | 67 | 426 | 255·7 | −18·4 | −67·8 |
| 31·282 | 66 | 424 | 71 | 453 | 255·1 | −18·4 | −57·6 |
| Sept. 1·396 | 96 | 640 | 73 | 491 | 255·2 | −18·4 | −42·8 |
| 2 | No photograph. | | (84 | 492 | 254·8 | −18·7 | −29·9) |
| 3·417 | 161 | 846 | 94 | 493 | 254·4 | −18·9 | −17·0 |
| 4·395 | 150 | 916 | 84 | 511 | 253·7 | −18·9 | − 4·8 |
| 5·492 | 150 | 1014 | 85 | 575 | 253·2 | −19·1 | + 9·3 |
| 6 | No photograph. | | (73 | 522 | 253·2 | −19·2 | +20·1) |
| 7·144 | 91 | 710 | 60 | 468 | 253·1 | −19·2 | +30·9 |
| 8·506 | 72 | 430 | 62 | 370 | 252·6 | −19·2 | +48·4 |
| 9·567 | 46 | 362 | 60 | 469 | 252·9 | −19·7 | +62·8 |
| 10·368 | 9 | 93 | 21 | 214 | 253·6 | −19·3 | +74·0 |
| Means ... | ... | ... | 70 | 457 | 253·96 | −18·95 | ... |
| **Group 1110.** | | | | | | | |
| A large regular spot followed at a little distance by several small spots which differ greatly in number, arrangement, and area from day to day. | | | | | | | |
| Sept. 1·396 | 8 | 59 | 19 | 146 | 218·7 | +10·7 | −79·3 |
| 2 | No photograph. | | (43 | 306 | 217·5 | +10·8 | −67·2) |
| 3·417 | 80 | 541 | 67 | 466 | 216·3 | +10·9 | −55·1 |
| 4·395 | 95 | 434 | 62 | 285 | 217·8 | +10·8 | −40·7 |
| 5·492 | 95 | 485 | 53 | 268 | 218·7 | +10·9 | −25·2 |
| 6 | No photograph. | | (48 | 266 | 218·9 | +11·1 | −14·2) |
| 7·144 | 84 | 521 | 42 | 264 | 219·0 | +11·3 | − 3·2 |
| 8·506 | 87 | 572 | 45 | 298 | 219·9 | +11·0 | +15·7 |
| 9·567 | 59 | 429 | 34 | 248 | 219·7 | +11·1 | +29·6 |
| 10·368 | 70 | 463 | 46 | 305 | 219·9 | +11·0 | +40·3 |
| 11 | No photograph. | | (47 | 249 | 220·4 | +11·0 | +54·7) |
| 12·483 | 35 | 142 | 47 | 192 | 220·8 | +11·0 | +69·1 |
| Means ... | ... | ... | 46 | 274 | 218·97 | +10·97 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1111.** A small spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Sept. 3·417 | 4 | 33 | 4 | 28 | 217·9 | − 4·9 | −53·5 |
| 4·395 | 10 | 36 | 7 | 25 | 217·9 | − 5·1 | −40·6 |
| 5·492 | 8 | 23 | 5 | 13 | 217·8 | − 5·2 | −26·1 |
| Means ... | ... | ... | 5 | 22 | 217·87 | − 5·07 | ... |
| **Group 1112.** A small spot. | | | | | | | |
| Sept. 3·417 | 0 | 9 | 0 | 16 | 201·2 | −16·2 | −70·2 |
| 4·395 | 0 | 33 | 0 | 36 | 199·8 | −16·8 | −58·7 |
| Means ... | ... | ... | 0 | 26 | 200·50 | −16·50 | ... |
| **Group 1113.** A small spot. | | | | | | | |
| Sept. 4·395 | 0 | 8 | 0 | 10 | 190·1 | +16·4 | −68·4 |
| Means ... | ... | ... | 0 | 10 | 190·1 | +16·4 | ... |
| **Group 1114.** A very large regular spot. On September 10 a large penumbral spot is seen detached from the principal spot. It coalesces with it before September 12. | | | | | | | |
| Sept. 8·506 | 106 | 440 | 198 | 818 | 134·1 | −21·1 | −70·1 |
| 9·567 | 202 | 826 | 214 | 873 | 134·3 | −21·2 | −55·8 |
| 10·368 | 176 | 1043 | 147 | 877 | 133·6 | −21·4 | −46·0 |
| 11 | No photograph. | | (170 | 986 | 133·4 | −21·6 | −32·3) |
| 12·483 | 321 | 1806 | 194 | 1094 | 133·2 | −21·8 | −18·5 |
| 13·489 | 392 | 1789 | 226 | 1032 | 132·7 | −21·9 | − 5·7 |
| 14·412 | 376 | 1671 | 217 | 966 | 132·4 | −22·0 | + 6·2 |
| 15·541 | 428 | 1696 | 265 | 1048 | 132·5 | −21·7 | +21·2 |
| 16·480 | 362 | 1461 | 252 | 1015 | 132·3 | −22·0 | +33·4 |
| 17·411 | 221 | 1279 | 185 | 1070 | 131·9 | −22·2 | +45·3 |
| 18·537 | 176 | 825 | 221 | 1029 | 132·3 | −22·3 | +60·6 |
| 19·465 | 33 | 423 | 68 | 880 | 131·4 | −22·1 | +71·9 |
| 20·297 | 0 | 53 | 0 | 278 | 129·7 | −22·5 | +81·2 |
| Means ... | ... | ... | 181 | 920 | 132·60 | −21·83 | ... |
| **Group 1115.** A cluster of several spots. | | | | | | | |
| Sept. 10·368 | 16 | 46 | 11 | 31 | 218·4 | − 8·0 | +38·8 |
| 11 | No photograph. | | (10 | 58 | 218·7 | − 8·2 | +53·0) |
| 12·483 | 8 | 61 | 8 | 84 | 218·9 | − 8·3 | +67·2 |
| Means ... | ... | ... | 10 | 58 | 218·67 | − 8·17 | ... |
| **Group 1116.** A small faint spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Sept. 10·368 | 0 | 6 | 0 | 4 | 215·9 | +18·5 | +36·3 |
| Means ... | ... | ... | 0 | 4 | 215·9 | +18·5 | ... |
| **Group 1117.** A regular spot closely followed by several small spots. The group undergoes many slight changes, and diminishes rapidly after passing the central meridian on September 16. | | | | | | | |
| Sept. 10·368 | 4 | 15 | 11 | 43 | 98·4 | +10·6 | −81·2 |
| 11 | No photograph. | | (23 | 87 | 98·2 | +10·9 | −67·5) |
| 12·483 | 41 | 156 | 35 | 131 | 97·9 | +11·1 | −53·8 |
| 13·489 | 47 | 304 | 32 | 203 | 96·5 | +11·3 | −41·9 |
| 14·412 | 55 | 262 | 31 | 150 | 97·4 | +11·4 | −28·8 |
| 15·541 | 21 | 135 | 11 | 70 | 98·2 | +11·5 | −13·1 |
| 16·480 | 23 | 97 | 11 | 49 | 98·2 | +11·6 | − 0·7 |
| 17·411 | 0 | 38 | 0 | 19 | 98·4 | +11·7 | +11·8 |
| 18·537 | 6 | 37 | 3 | 21 | 98·2 | +11·7 | +26·5 |
| Means ... | ... | ... | 17 | 86 | 97·93 | +11·31 | ... |
| **Group 1118.** A small spot. | | | | | | | |
| Sept. 12·483 | 1 | 8 | 1 | 7 | 197·4 | −17·9 | +45·7 |
| Means ... | ... | ... | 1 | 7 | 197·4 | −17·9 | ... |
| **Group 1119.** A spot of irregular outline. It undergoes frequent changes, and small spots appear in its neighbourhood on September 15 and the following days. | | | | | | | |
| Sept. 12·483 | 24 | 181 | 52 | 387 | 74·3 | +10·6 | −77·4 |
| 13·489 | 53 | 354 | 60 | 399 | 74·1 | +10·4 | −64·3 |
| 14·412 | 84 | 557 | 68 | 451 | 73·8 | +10·4 | −52·4 |
| 15·541 | 76 | 729 | 48 | 455 | 74·4 | +10·3 | −36·9 |
| 16·480 | 93 | 623 | 51 | 341 | 75·2 | +10·8 | −23·7 |
| 17·411 | 122 | 687 | 63 | 353 | 74·8 | +10·4 | −11·8 |
| 18·537 | 118 | 775 | 60 | 391 | 74·8 | +10·8 | + 3·1 |
| 19·465 | 125 | 853 | 65 | 441 | 75·0 | +11·2 | +15·5 |
| 20·297 | 154 | 950 | 86 | 529 | 74·9 | +11·6 | +26·4 |
| 21·153 | 105 | 624 | 66 | 394 | 75·1 | +11·3 | +37·9 |
| 22·326 | 73 | 595 | 61 | 497 | 75·7 | +11·3 | +53·9 |
| 23·459 | 70 | 302 | 94 | 407 | 75·8 | +10·7 | +69·0 |
| Means ... | ... | ... | 65 | 420 | 74·83 | +10·82 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1120.

A small spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Sept. 13·489 | 0 | 21 | 0 | 15 | 183·1 | + 6·0 | +44·7 |
| 14·412 | 21 | 66 | 18 | 55 | 179·8 | + 6·2 | +53·6 |
| 15·541 | 0 | 21 | 0 | 25 | 176·6 | + 7·2 | +65·3 |
| Means ... | ... | ... | 6 | 32 | 179·83 | + 6·47 | ... |

### Group 1121.

Four small spots on September 13. The two middle spots being close together are measured as one. Only two spots remain on September 14.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 13·489 | 4 | 124 | 2 | 64 | 126·1 | + 4·3 | −12·3 |
| 14·412 | 3 | 37 | 2 | 19 | 126·7 | + 4·1 | + 0·5 |
| Means ... | ... | ... | 2 | 42 | 126·40 | + 4·20 | ... |

### Group 1122.

A group appearing suddenly near the centre of the sun. It consists at first of three small spots which are measured together. It increases in size on September 14, and then becomes a regular spot, followed by two compact clusters of small spots. These two clusters are measured as one on September 15 and 16.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 13·489 | 19 | 106 | 10 | 56 | 128·9 | − 9·6 | − 9·5 |
| 14·412 | 57 | 435 | 31 | 229 | 129·5 | − 9·5 | + 3·3 |
| 15·541 | 89 | 348 | 50 | 193 | 130·9 | − 8·4 | +19·6 |
| 16·480 | 93 | 417 | 58 | 259 | 131·4 | − 8·4 | +32·5 |
| 17·411 | 75 | 314 | 56 | 232 | 131·1 | − 8·8 | +44·5 |
| 18·537 | 45 | 226 | 49 | 238 | 131·4 | − 8·5 | +59·7 |
| 19·465 | 16 | 76 | 32 | 150 | 133·6 | − 8·2 | +74·1 |
| 20·297 | 0 | 28 | 0 | 124 | 130·8 | − 8·0 | +82·3 |
| Means ... | ... | ... | 36 | 185 | 130·95 | − 8·68 | ... |

### Group 1123.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 16·480 | 0 | 24 | 0 | 41 | 24·3 | +18·6 | −74·6 |
| 17·411 | 0 | 34 | 0 | 34 | 25·6 | +18·3 | −61·0 |
| 18·537 | 3 | 16 | 2 | 12 | 25·4 | +18·1 | −46·3 |
| Means ... | ... | ... | 1 | 29 | 25·10 | +18·33 | ... |

### Group 1124.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 22·326 | 0 | 4 | 0 | 5 | 317·4 | − 7·4 | −64·4 |
| Means ... | ... | ... | 0 | 5 | 317·4 | − 7·4 | ... |

### Group 1125.

Three small faint spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Sept. 22·326 | 0 | 11 | 0 | 14 | 314·5 | +18·4 | −67·3 |
| Means ... | ... | ... | 0 | 14 | 314·5 | +18·4 | ... |

### Group 1126.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 26·559 | 0 | 48 | 0 | 120 | 250·6 | −19·0 | −75·3 |
| 27·397 | 19 | 79 | 26 | 109 | 250·4 | −19·2 | −64·4 |
| 28·422 | 33 | 163 | 30 | 147 | 250·5 | −18·9 | −50·8 |
| 29·394 | 33 | 175 | 24 | 125 | 250·0 | −18·9 | −38·5 |
| 30·134 | 36 | 230 | 23 | 146 | 249·8 | −18·9 | −28·9 |
| Oct. 1·523 | 27 | 226 | 16 | 128 | 250·0 | −19·0 | −10·4 |
| 2·563 | 35 | 308 | 19 | 171 | 249·5 | −18·4 | + 2·9 |
| 3·295 | 45 | 279 | 26 | 159 | 249·5 | −18·7 | +12·5 |
| 4·295 | 34 | 241 | 21 | 148 | 249·3 | −18·7 | +25·5 |
| 5·452 | 25 | 141 | 18 | 103 | 248·9 | −18·3 | +40·4 |
| 6·541 | 17 | 80 | 16 | 77 | 248·5 | −18·1 | +54·4 |
| 7·144 | 13 | 75 | 15 | 92 | 248·2 | −18·3 | +62·0 |
| 8·148 | 5 | 34 | 12 | 82 | 248·1 | −18·4 | +75·2 |
| Means ... | ... | ... | 19 | 124 | 249·48 | −18·68 | ... |

### Group 1127.

Several very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 28·422 | 8 | 63 | 4 | 34 | 303·3 | −14·5 | + 2·0 |
| 29·394 | 0 | 27 | 0 | 15 | 302·3 | −12·6 | +13·8 |
| 30·134 | 0 | 16 | 0 | 10 | 303·0 | −13·4 | +24·3 |
| Means ... | ... | ... | 1 | 20 | 302·87 | −13·50 | ... |

### Group 1128.

Several very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 29·394 | 0 | 34 | 0 | 24 | 254·3 | −20·8 | −34·2 |
| 30·134 | 0 | 18 | 0 | 12 | 252·1 | −21·5 | −26·6 |
| Means ... | ... | ... | 0 | 18 | 253·20 | −21·15 | ... |

### Group 1129.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 29·394 | 0 | 20 | 0 | 22 | 224·8 | +13·1 | −63·7 |
| 30·134 | 3 | 9 | 2 | 7 | 225·2 | +13·0 | −53·5 |
| Means ... | ... | ... | 1 | 15 | 225·00 | +13·05 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1130.

A fine spot with a smaller one following it. Some small spots appear near them on October 7, but disappear before October 10, and the principal spot alone remains on October 11.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Oct. 2·563 | 32 | 227 | 51 | 358 | 176·2 | − 6·0 | −70·4 |
| 3·295 | 44 | 241 | 48 | 259 | 176·2 | − 7·0 | −60·8 |
| 4·295 | 59 | 436 | 45 | 335 | 176·3 | − 7·0 | −47·5 |
| 5·452 | 93 | 354 | 56 | 213 | 176·9 | − 7·0 | −31·6 |
| 6·541 | 94 | 373 | 51 | 199 | 176·9 | − 6·8 | −17·2 |
| 7·144 | 61 | 377 | 31 | 196 | 177·2 | − 6·9 | − 9·0 |
| 8·148 | 64 | 342 | 33 | 177 | 177·2 | − 6·9 | + 4·3 |
| 9·284 | 44 | 242 | 24 | 132 | 177·5 | − 6·7 | +19·6 |
| 10·549 | 51 | 254 | 33 | 163 | 178·1 | − 6·5 | +36·8 |
| 11·173 | 16 | 173 | 12 | 128 | 178·6 | − 6·3 | +45·6 |
| 12·167 | 21 | 115 | 21 | 115 | 178·6 | − 6·6 | +58·5 |
| 13·415 | 7 | 52 | 14 | 109 | 178·7 | − 7·1 | +75·2 |
| 14·144 | 2 | 50 | 3 | 70 | 177·6 | − 6·3 | +83·8 |
| Means ... | ... | ... | 32 | 189 | 177·38 | − 6·70 | ... |

### Group 1131.

A small spot. Two smaller spots are seen near and measured with it on October 6, and on October 7 the group consists of a great number of very small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 5·452 | 0 | 9 | 0 | 6 | 250·1 | −11·9 | +41·6 |
| | 6·541 | 1 | 8 | 1 | 7 | 248·0 | −11·3 | +53·9 |
| | 7·144 | 0 | 25 | 0 | 31 | 249·7 | −12·0 | +63·5 |
| Means ... | | ... | ... | 0 | 15 | 249·27 | −11·73 | ... |

### Group 1132.

A small spot on October 5. On October 6, 7, and 8 the group is composed of a few *faint and widely scattered small spots. It has undergone an entire change* before October 9, and then consists of two spots with some very faint spots near them. The group undergoes several slighter changes on the following days. Only one spot is visible on October 15.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 5·452 | 7 | 15 | 8 | 18 | 144·7 | − 5·9 | −63·8 |
| | 6·541 | 5 | 74 | 4 | 59 | 144·0 | − 4·7 | −50·1 |
| | 7·144 | 10 | 78 | 8 | 55 | 144·0 | − 5·3 | −42·2 |
| | 8·148 | 7 | 43 | 4 | 26 | 144·4 | − 5·3 | −28·5 |
| | 9·284 | 63 | 168 | 33 | 88 | 145·5 | − 5·9 | −12·4 |
| | 10·549 | 27 | 361 | 13 | 184 | 145·5 | − 5·5 | + 4·2 |
| | 11·173 | 61 | 434 | 32 | 226 | 145·2 | − 5·6 | +12·2 |
| | 12·167 | 32 | 320 | 18 | 183 | 145·6 | − 5·8 | +25·5 |
| | 13·415 | 74 | 142 | 51 | 96 | 144·8 | − 5·9 | +41·3 |
| | 14·548 | 0 | 29 | 0 | 29 | 146·4 | − 6·2 | +57·9 |
| | 15·383 | 0 | 41 | 0 | 60 | 146·3 | − 6·3 | +68·8 |
| Means ... | | ... | ... | 16 | 93 | 145·13 | − 5·67 | ... |

### Group 1133.

A regular spot. A small very faint spot is seen near it on October 11, and two on October 12.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Oct. 5·452 | 25 | 144 | 78 | 450 | 131·0 | −22·4 | −77·5 |
| 6·541 | 63 | 362 | 87 | 496 | 130·3 | −22·1 | −63·8 |
| 7·144 | 87 | 415 | 93 | 444 | 129·7 | −22·3 | −56·5 |
| 8·148 | 101 | 532 | 82 | 431 | 129·2 | −22·6 | −43·7 |
| 9·284 | 90 | 628 | 59 | 412 | 129·1 | −22·3 | −28·8 |
| 10·549 | 160 | 747 | 93 | 435 | 128·9 | −22·3 | −12·4 |
| 11·173 | 122 | 659 | 70 | 378 | 128·9 | −22·4 | − 4·1 |
| 12·167 | 131 | 679 | 76 | 393 | 128·7 | −22·5 | + 8·6 |
| 13·415 | 156 | 635 | 98 | 398 | 128·0 | −22·4 | +24·5 |
| 14·548 | 85 | 488 | 63 | 363 | 127·7 | −22·5 | +39·2 |
| 15·383 | 111 | 405 | 101 | 366 | 127·7 | −22·4 | +50·2 |
| 16·522 | 43 | 269 | 61 | 384 | 127·3 | −22·4 | +64·9 |
| 17·397 | 27 | 104 | 78 | 294 | 127·6 | −22·7 | +76·7 |
| Means ... | ... | ... | 80 | 403 | 128·78 | −22·41 | ... |

### Group 1134.

A regular spot. A small spot follows it on October 8, and other small spots appear in its neighbourhood on October 10 and following days. The principal spot diminishes in size at the same time, so that after October 14 the group consists of a great number of small spots irregularly distributed.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 6·541 | 0 | 25 | 0 | 101 | 110·1 | +11·2 | −84·0 |
| | 7·144 | 7 | 31 | 14 | 62 | 109·9 | +11·0 | −76·3 |
| | 8·148 | 13 | 83 | 14 | 90 | 110·0 | +11·1 | −62·9 |
| | 9·284 | 20 | 142 | 14 | 103 | 111·0 | +11·0 | −46·9 |
| | 10·549 | 33 | 197 | 19 | 113 | 112·0 | +12·0 | −29·3 |
| | 11·173 | 36 | 213 | 20 | 114 | 112·7 | +10·5 | −20·3 |
| | 12·167 | 46 | 292 | 23 | 148 | 114·8 | +10·4 | − 5·3 |
| | 13·415 | 45 | 257 | 23 | 132 | 116·2 | +10·5 | +12·7 |
| | 14·548 | 41 | 244 | 24 | 139 | 117·1 | +10·5 | +28·6 |
| | 15·383 | 73 | 449 | 47 | 285 | 115·7 | +10·8 | +38·2 |
| | 16·522 | 32 | 282 | 28 | 249 | 118·2 | +10·9 | +55·8 |
| | 17·397 | 36 | 214 | 45 | 277 | 118·7 | +11·0 | +67·8 |
| Means ... | | ... | ... | 23 | 151 | 113·87 | +10·91 | ... |

### Group 1135.

Several very small faint spots on October 7. On October 8 two dark and well-defined spots have formed. On October 9 the group consists of a great number of small spots extending over a large area. The group continues to increase in size until it passes out of view at the west limb.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 7·144 | 0 | 24 | 0 | 13 | 206·1 | −11·1 | +19·9 |
| | 8·148 | 33 | 113 | 21 | 72 | 206·5 | −10·2 | +33·6 |
| | 9·284 | 20 | 94 | 17 | 74 | 206·3 | − 9·8 | +48·4 |
| | 10·549 | 15 | 259 | 16 | 316 | 205·3 | −10·3 | +64·0 |
| | 11·173 | 23 | 239 | 39 | 440 | 205·7 | −10·2 | +72·7 |
| | 12·167 | 3 | 44 | 6 | 223 | 203·2 | −10·5 | +83·1 |
| Means ... | | ... | ... | 17 | 190 | 205·52 | −10·35 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1136.** Two small spots on October 7. The preceding spot increases in size on the following days, and many small spots appear near it, *s* and *f*. The smaller spots disappear before October 17. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Oct. 7·144 | 0 | 11 | 0 | 15 | 121·5 | −17·8 | −64·7 |
| 8·148 | 21 | 101 | 19 | 87 | 122·5 | −15·8 | −50·4 |
| 9·284 | 44 | 303 | 29 | 202 | 122·9 | −16·1 | −35·0 |
| 10·549 | 141 | 710 | 81 | 405 | 122·4 | −16·0 | −18·9 |
| 11·173 | 83 | 892 | 46 | 491 | 122·8 | −16·2 | −10·2 |
| 12·167 | 91 | 683 | 49 | 370 | 123·6 | −16·1 | + 3·5 |
| 13·415 | 139 | 720 | 81 | 414 | 123·5 | −16·4 | +20·0 |
| 14·548 | 62 | 364 | 42 | 245 | 124·7 | −15·9 | +36·2 |
| 15·383 | 67 | 320 | 55 | 261 | 125·5 | −15·6 | +48·0 |
| 16·522 | 17 | 186 | 22 | 232 | 125·7 | −15·9 | +63·3 |
| 17·397 | 23 | 73 | 57 | 180 | 126·9 | −16·8 | +76·0 |
| Means ... | ... | ... | 44 | 264 | 123·82 | −16·24 | ... |
| **Group 1137.** A regular spot with a small spot closely following it on October 8 and 9. Another very small spot follows it on October 12. The principal spot slowly diminishes in size as it approaches the west limb. | | | | | | | |
| Oct. 7·144 | 8 | 90 | 18 | 200 | 111·2 | −13·1 | −75·0 |
| 8·148 | 15 | 125 | 17 | 142 | 111·4 | −13·1 | −61·5 |
| 9·284 | 16 | 114 | 12 | 88 | 111·6 | −12·9 | −46·3 |
| 10·549 | 26 | 79 | 16 | 48 | 111·9 | −12·7 | −29·4 |
| 11·173 | 13 | 108 | 7 | 61 | 112·0 | −12·8 | −21·0 |
| 12·167 | 20 | 99 | 11 | 53 | 111·7 | −12·6 | − 8·4 |
| 13·415 | 11 | 95 | 6 | 51 | 112·1 | −12·7 | + 8·6 |
| 14·548 | 0 | 37 | 0 | 22 | 111·9 | −13·0 | +23·4 |
| 15·383 | 0 | 41 | 0 | 27 | 112·1 | −12·7 | +34·6 |
| 16·522 | 0 | 8 | 0 | 7 | 112·0 | −12·7 | +49·6 |
| Means ... | ... | ... | 9 | 70 | 111·79 | −12·83 | ... |
| **Group 1138.** Two small spots on October 8. The group increases in size rapidly on the following days, the preceding spot becoming a very large and irregular spot. It is followed by an irregular stream of spots, some of them large, and spread over an extensive area. Part of the large spot becomes detached and is measured separately on October 17, whilst the smaller spots are measured with the main body of the large spot. | | | | | | | |
| Oct. 8·148 | 19 | 64 | 16 | 51 | 121·2 | +12·6 | −51·7 |
| 9·284 | 52 | 351 | 32 | 219 | 121·3 | +12·6 | −36·6 |
| 10·549 | 192 | 832 | 102 | 440 | 123·0 | +12·2 | −18·3 |
| 11·173 | 158 | 987 | 80 | 506 | 123·3 | +12·2 | − 9·7 |
| 12·167 | 183 | 1270 | 92 | 644 | 123·5 | +12·3 | + 3·4 |
| 13·415 | 341 | 1876 | 184 | 1014 | 125·7 | +11·3 | +22·2 |
| 14·548 | 447 | 1534 | 283 | 972 | 126·1 | +11·3 | +37·6 |
| 15·383 | 359 | 2201 | 271 | 1670 | 126·5 | +10·9 | +49·0 |
| 16·522 | 244 | 1340 | 275 | 1466 | 126·1 | +11·4 | +63·7 |
| 17·397 | 70 | 567 | 151 | 1071 | 126·3 | +10·9 | +75·4 |
| Means ... | ... | ... | 149 | 805 | 124·30 | +11·77 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1139.** Three spots on October 9. One of these disappears before October 10, whilst the preceding spot separates into two portions. A fourth spot is seen on October 11. Only the two preceding spots (which are measured together) are left on October 12. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Oct. 9·284 | 14 | 119 | 10 | 75 | 121·2 | +17·8 | −36·7 |
| 10·549 | 3 | 98 | 2 | 53 | 121·5 | +17·2 | −19·8 |
| 11·173 | 22 | 124 | 11 | 65 | 121·5 | +17·5 | −11·5 |
| 12·167 | 10 | 22 | 5 | 11 | 123·0 | +16·9 | + 2·9 |
| Means ... | ... | ... | 7 | 51 | 121·80 | +17·35 | ... |
| **Group 1140.** A regular spot. | | | | | | | |
| Oct. 9·284 | 5 | 32 | 10 | 66 | 80·5 | +15·1 | −77·4 |
| 10·549 | 29 | 48 | 29 | 48 | 80·6 | +15·2 | −60·7 |
| 11·173 | 13 | 78 | 11 | 64 | 80·4 | +15·3 | −52·6 |
| 12·167 | 12 | 122 | 8 | 80 | 81·0 | +15·6 | −39·1 |
| 13·415 | 29 | 108 | 16 | 59 | 82·2 | +16·1 | −21·3 |
| 14·548 | 23 | 96 | 12 | 49 | 81·1 | +16·5 | − 7·4 |
| 15·383 | 33 | 96 | 17 | 49 | 81·2 | +16·0 | + 3·7 |
| 16·522 | 17 | 61 | 9 | 33 | 81·0 | +16·0 | +18·6 |
| 17·397 | 5 | 19 | 3 | 11 | 81·0 | +15·9 | +30·1 |
| 18·397 | 2 | 15 | 1 | 10 | 81·2 | +15·9 | +43·4 |
| Means ... | ... | ... | 12 | 47 | 81·02 | +15·76 | ... |
| **Group 1141.** Two small spots. Only the preceding spot is seen on October 13. | | | | | | | |
| Oct. 11·173 | 14 | 32 | 11 | 25 | 178·3 | −17·8 | +45·3 |
| 12·167 | 7 | 32 | 8 | 38 | 181·2 | −18·1 | +61·1 |
| 13·415 | 2 | 17 | 8 | 54 | 182·1 | −18·9 | +78·6 |
| Means ... | ... | ... | 9 | 39 | 180·53 | −18·27 | ... |
| **Group 1142.** A number of small spots on October 11, which have greatly increased in size before October 12, and on the following days tend to coalesce into two clusters, finally forming two regular spots on October 16. The preceding spot has passed the west limb before October 17. | | | | | | | |
| Oct. 11·173 | 0 | 21 | 0 | 11 | 128·9 | − 9·2 | − 4·1 |
| 12·167 | 42 | 371 | 22 | 196 | 130·0 | − 8·9 | + 9·9 |
| 13·415 | 87 | 409 | 51 | 238 | 130·2 | − 9·4 | +26·7 |
| 14·548 | 127 | 484 | 89 | 338 | 130·0 | − 9·5 | +41·5 |
| 15·383 | 99 | 477 | 85 | 414 | 130·4 | − 9·4 | +52·9 |
| 16·522 | 28 | 280 | 39 | 409 | 130·9 | − 9·7 | +68·5 |
| 17·397 | 23 | 54 | 57 | 133 | 128·0 | −10·0 | +77·1 |
| Means ... | ... | ... | 49 | 248 | 129·77 | − 9·44 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1143.

Two very small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Oct. 12·167 | 0 | 5 | 0 | 6 | 183·7 | +14·4 | +63·6 |
| Means ... | ... | ... | 0 | 6 | 183·7 | +14·4 | ... |

### Group 1144.

A very large and fine spot. The spot is measured in three parts on October 13, and in two parts on October 15. A regular spot is separated from it by October 15, and some very small spots are seen from time to time in its immediate neighbourhood.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 12·167 | 32 | 119 | 172 | 636 | 36·6 | −10·2 | −83·5 |
| 13·415 | 200 | 1071 | 287 | 1700 | 33·8 | − 8·9 | −69·7 |
| 14·548 | 273 | 1770 | 246 | 1592 | 34·1 | − 8·8 | −54·4 |
| 15·383 | 349 | 1917 | 250 | 1364 | 34·0 | −10·0 | −43·5 |
| 16·522 | 292 | 1844 | 171 | 1080 | 35·3 | − 9·8 | −27·1 |
| 17·397 | 276 | 1974 | 148 | 1066 | 35·5 | −10·2 | −15·4 |
| 18·397 | 325 | 2370 | 169 | 1231 | 35·2 | − 9·9 | − 2·6 |
| 19·311 | 334 | 2338 | 176 | 1237 | 35·3 | −10·1 | + 9·6 |
| 20·473 | 302 | 2153 | 174 | 1240 | 35·3 | − 9·9 | +24·9 |
| 21·477 | 277 | 1450 | 187 | 969 | 35·7 | − 9·7 | +38·5 |
| 22·487 | 222 | 1024 | 188 | 869 | 36·0 | − 9·7 | +52·2 |
| 23·161 | 144 | 715 | 158 | 776 | 36·1 | − 9·9 | +61·1 |
| 24·294 | 76 | 367 | 172 | 808 | 35·8 | −10·1 | +75·8 |
| Means ... | ... | ... | 192 | 1121 | 35·28 | − 9·78 | ... |

### Group 1145.

A small spot. Two other small spots are seen near it on October 14.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 13·415 | 0 | 17 | 0 | 18 | 167·0 | + 5·6 | +63·5 |
| 14·144 | 4 | 108 | 3 | 74 | 172·9 | + 3·5 | +79·1 |
| Means ... | ... | ... | 2 | 46 | 169·95 | + 4·55 | ... |

### Group 1145*.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 14·144 | 50 | 141 | 27 | 76 | 167·8 | −13·3 | +74·0 |
| Means ... | ... | ... | 27 | 76 | 167·8 | −13·3 | ... |

### Group 1146.

A cluster of small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Oct. 15·383 | 33 | 122 | 18 | 66 | 58·8 | − 6·4 | −18·7 |
| 16·522 | 25 | 246 | 13 | 127 | 57·3 | − 7·1 | − 5·1 |
| 17·397 | 38 | 286 | 20 | 148 | 57·6 | − 7·1 | + 6·7 |
| 18·397 | 46 | 176 | 25 | 96 | 57·5 | − 6·6 | +19·7 |
| 19·311 | 25 | 217 | 16 | 137 | 60·5 | − 6·6 | +34·8 |
| 20·473 | 31 | 112 | 26 | 91 | 61·1 | − 6·6 | +50·7 |
| 21·477 | 16 | 136 | 20 | 167 | 62·0 | − 6·5 | +64·8 |
| Means ... | ... | ... | 20 | 119 | 59·26 | − 6·70 | ... |

### Group 1147.

A small spot, which is replaced by another small spot on October 18.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 14·144 | 10 | 51 | 18 | 92 | 19·3 | +12·1 | −74·5 |
| 15·383 | 21 | 73 | 19 | 68 | 19·6 | +11·9 | −57·9 |
| 16·522 | 2 | 30 | 2 | 20 | 19·4 | +12·0 | −43·0 |
| 17·397 | 0 | 25 | 0 | 15 | 19·8 | +12·1 | −31·1 |
| 18·397 | 0 | 17 | 0 | 9 | 22·6 | +12·5 | −15·2 |
| Means ... | ... | ... | 8 | 41 | 20·14 | +12·12 | ... |

### Group 1148.

Two small spots. They are measured together on October 17.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 17·397 | 0 | 17 | 0 | 10 | 24·1 | +20·9 | −26·8 |
| 18·397 | 4 | 26 | 2 | 14 | 23·5 | +20·6 | −14·3 |
| Means ... | ... | ... | 1 | 12 | 23·80 | +20·75 | ... |

### Group 1149.

A number of small spots. The group undergoes many changes, rapidly increasing in size after passing the central meridian on October 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 20·473 | 37 | 89 | 31 | 72 | 320·6 | −10·6 | −49·8 |
| 21·477 | 53 | 269 | 35 | 175 | 321·4 | −11·0 | −35·8 |
| 22·487 | 40 | 259 | 23 | 145 | 321·4 | −10·5 | −22·4 |
| 23·161 | 33 | 174 | 18 | 94 | 321·0 | −11·2 | −14·0 |
| 24·294 | 76 | 345 | 40 | 180 | 323·0 | −11·5 | + 3·0 |
| 25·432 | 58 | 719 | 32 | 404 | 325·2 | −11·6 | +20·2 |
| 26·311 | 57 | 672 | 34 | 419 | 325·8 | −12·1 | +32·4 |
| 27·536 | 105 | 851 | 87 | 699 | 326·9 | −11·9 | +49·7 |
| 28·575 | 97 | 744 | 117 | 887 | 327·1 | −11·9 | +63·5 |
| 29·586 | 0 | 177 | 0 | 410 | 326·3 | −12·0 | +76·2 |
| 30·304 | 8 | 87 | 30 | 316 | 321·6 | −12·6 | +80·8 |
| Means ... | ... | ... | 41 | 346 | 323·66 | −11·54 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1150.** A number of small spots arranged in a straight line. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Oct. 21·477 | 23 | 140 | 13 | 81 | 25·0 | +18·1 | +27·8 |
| 22·487 | 42 | 250 | 29 | 170 | 25·5 | +18·0 | +41·7 |
| Means ... | ... | ... | 21 | 126 | 25·25 | +18·05 | ... |
| **Group 1151.** Two very small spots. | | | | | | | |
| Oct. 21·477 | 0 | 12 | 0 | 6 | 356·3 | +13·7 | − 0·9 |
| Means ... | ... | ... | 0 | 6 | 356·3 | +13·7 | ... |
| **Group 1152.** A regular spot with two or three small faint spots near it. | | | | | | | |
| Oct. 21·477 | 16 | 95 | 31 | 178 | 281·9 | +14·3 | −75·3 |
| 22·487 | 16 | 159 | 17 | 165 | 282·0 | +14·7 | −61·8 |
| 23·161 | 30 | 176 | 25 | 148 | 281·7 | +14·7 | −53·3 |
| 24·294 | 12 | 140 | 8 | 90 | 281·4 | +14·9 | −38·6 |
| 25·432 | 16 | 192 | 9 | 106 | 281·7 | +14·7 | −23·3 |
| 26·311 | 10 | 159 | 5 | 82 | 281·4 | +14·9 | −12·0 |
| 27·536 | 23 | 111 | 12 | 57 | 281·7 | +15·1 | + 4·5 |
| 28·575 | 16 | 66 | 9 | 35 | 282·4 | +14·9 | +18·8 |
| 29·586 | 7 | 37 | 4 | 22 | 282·0 | +15·0 | +31·9 |
| 30·304 | 1 | 16 | 1 | 11 | 282·3 | +15·0 | +41·5 |
| Means ... | ... | ... | 12 | 89 | 281·85 | +14·82 | ... |
| **Group 1153.** A very small spot, which is not seen on October 24. A second is seen near it on October 25. | | | | | | | |
| Oct. 23·161 | 0 | 8 | 0 | 4 | 356·8 | +13·8 | +21·8 |
| 24·294 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 25·432 | 3 | 16 | 3 | 11 | 351·9 | +13·8 | +46·9 |
| 26·311 | 0 | 11 | 0 | 11 | 356·0 | +14·0 | +62·6 |
| Means ... | ... | ... | 1 | 7 | 354·90 | +13·87 | ... |
| **Group 1154.** A regular spot. Occasionally small faint spots are seen close to it. | | | | | | | |
| Oct. 23·161 | 6 | 50 | 23 | 179 | 253·5 | − 6·5 | −81·5 |
| 24·294 | 8 | 114 | 11 | 153 | 253·0 | − 6·8 | −67·0 |
| 25·432 | 26 | 209 | 21 | 173 | 253·7 | − 6·6 | −51·3 |
| 26·311 | 15 | 145 | 10 | 97 | 253·3 | − 6·7 | −40·1 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1154—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Oct. 27·536 | 34 | 200 | 19 | 112 | 253·9 | − 6·0 | −23·3 |
| 28·575 | 21 | 143 | 11 | 73 | 254·5 | − 6·1 | − 9·1 |
| 29·586 | 21 | 143 | 11 | 72 | 254·9 | − 6·2 | + 4·8 |
| 30·304 | 23 | 118 | 12 | 62 | 255·0 | − 6·2 | +14·2 |
| 31·297 | 17 | 104 | 10 | 60 | 255·2 | − 6·4 | +27·5 |
| Nov. 1·287 | 4 | 43 | 3 | 29 | 255·1 | − 6·6 | +40·5 |
| 2·289 | 5 | 18 | 4 | 16 | 254·9 | − 6·5 | +53·5 |
| 3·163 | 0 | 3 | 0 | 4 | 255·0 | − 6·5 | +65·2 |
| Means ... | ... | ... | 11 | 86 | 254·33 | − 6·43 | ... |
| **Group 1155.** Three small spots, the first two of which are close together, and are, therefore, measured as one. The following spot disappears before October 30, and the preceding spots break up and form a compact cluster of small spots, of which only two remain on November 1. | | | | | | | |
| Oct. 25·432 | 18 | 87 | 27 | 127 | 236·0 | − 7·4 | −69·0 |
| 26·311 | 18 | 195 | 19 | 195 | 234·7 | − 7·6 | −58·7 |
| 27·536 | 29 | 266 | 20 | 184 | 235·1 | − 7·1 | −42·1 |
| 28·575 | 26 | 206 | 15 | 119 | 235·3 | − 7·4 | −28·3 |
| 29·586 | 40 | 85 | 21 | 45 | 236·2 | − 7·1 | −13·9 |
| 30·304 | 18 | 92 | 9 | 47 | 237·1 | − 6·9 | − 3·7 |
| 31·297 | 10 | 60 | 5 | 31 | 237·4 | − 6·8 | + 9·7 |
| Nov. 1·287 | 6 | 22 | 3 | 12 | 237·5 | − 6·8 | +22·9 |
| 2·289 | 1 | 22 | 1 | 14 | 237·8 | − 6·9 | +36·4 |
| 3·163 | 2 | 5 | 2 | 4 | 238·1 | − 7·0 | +48·3 |
| Means ... | ... | ... | 12 | 78 | 236·52 | − 7·10 | ... |
| **Group 1156.** A large regular spot, followed by a smaller one. On October 29 and following days some very small faint spots follow the group. The two principal spots extend toward each other, and are measured together on October 30; on November 1 they coalesce. On the same day, the larger and preceding spot, which from October 25 has gradually been opening from the southern side, is finally divided into two portions, and the preceding portion breaks up into a number of small spots. On the following days the group consists mainly of two clusters of small spots, both of which, but especially the following cluster, diminish rapidly in size. | | | | | | | |
| Oct. 25·432 | 4 | 49 | 16 | 187 | 223·3 | − 9·1 | −81·7 |
| 26·432 | 31 | 315 | 50 | 511 | 222·4 | − 9·4 | −71·0 |
| 27·536 | 77 | 614 | 69 | 563 | 222·1 | − 9·3 | −55·1 |
| 28·575 | 145 | 866 | 100 | 594 | 222·4 | − 9·9 | −41·2 |
| 29·586 | 184 | 1146 | 107 | 664 | 222·7 | − 9·9 | −27·4 |
| 30·304 | 162 | 1107 | 86 | 601 | 223·0 | − 9·6 | −17·8 |
| 31·297 | 209 | 1115 | 110 | 578 | 223·9 | −10·2 | − 3·8 |
| Nov. 1·287 | 105 | 1079 | 55 | 564 | 224·9 | −10·6 | +10·3 |
| 2·289 | 48 | 466 | 27 | 261 | 224·5 | −10·4 | +23·1 |
| 3·163 | 43 | 261 | 28 | 167 | 225·9 | − 9·9 | +36·1 |
| 4·207 | 14 | 109 | 11 | 90 | 227·0 | − 9·9 | +50·9 |
| 5·397 | 0 | 29 | 0 | 44 | 230·3 | − 9·6 | +69·9 |
| Means ... | ... | ... | 55 | 402 | 224·37 | − 9·82 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1157.

A small spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Oct. 27·536 | 3 | 12 | 2 | 7 | 311·9 | − 7·4 | +34·7 |
| 28·575 | 2 | 19 | 1 | 15 | 312·2 | − 7·8 | +48·6 |
| Means ... | ... | ... | 2 | 11 | 312·05 | − 7·60 | ... |

### Group 1158.

Three very small spots on October 28. The group rapidly increases in size on the following days, and on October 30 consists of a large regular spot, with a somewhat scattered cluster of small spots at a little distance. These small spots tend to coalesce after passing the central meridian on October 31, and at the same time diminish in size.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 28·575 | 0 | 18 | 0 | 12 | 230·3 | +22·3 | −33·3 |
| 29·586 | 74 | 152 | 40 | 84 | 230·5 | +21·6 | −19·6 |
| 30·304 | 100 | 524 | 54 | 279 | 231·2 | +22·2 | − 9·6 |
| 31·297 | 85 | 535 | 44 | 281 | 230·6 | +22·5 | + 2·9 |
| Nov. 1·287 | 49 | 397 | 27 | 217 | 230·2 | +22·5 | +15·6 |
| 2·289 | 26 | 370 | 15 | 220 | 229·5 | +22·2 | +28·1 |
| 3·163 | 28 | 253 | 19 | 173 | 229·5 | +22·5 | +39·7 |
| 4·207 | 22 | 150 | 20 | 132 | 229·7 | +22·3 | +53·6 |
| 5·397 | 0 | 45 | 0 | 65 | 229·3 | +22·8 | +68·9 |
| 6·296 | 3 | 26 | 8 | 74 | 229·2 | +22·4 | +80·6 |
| Means ... | ... | ... | 23 | 154 | 230·00 | +22·33 | ... |

### Group 1159.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 28·575 | 4 | 23 | 4 | 20 | 210·9 | −12·7 | −52·7 |
| Means ... | ... | ... | 4 | 20 | 210·9 | −12·7 | ... |

### Group 1160.

A cluster of small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 28·575 | 0 | 28 | 0 | 40 | 193·6 | +14·2 | −70·0 |
| 29·586 | 0 | 48 | 0 | 42 | 193·6 | +13·5 | −56·5 |
| 30·304 | 6 | 81 | 4 | 59 | 194·0 | +13·0 | −46·8 |
| 31·297 | 14 | 55 | 8 | 33 | 195·2 | +13·1 | −32·5 |
| Nov. 1·287 | 0 | 24 | 0 | 13 | 196·0 | +12·9 | −18·6 |
| Means ... | ... | ... | 2 | 37 | 194·48 | +13·34 | ... |

### Group 1161.

Three regular spots. Several small spots are seen near the middle spot on October 30 and 31. The two following spots break up and diminish in size on the following days, and disappear, the last spot before November 4, the middle spot before November 5, leaving the preceding spot alone.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Oct. 28·575 | 4 | 34 | 12 | 95 | 183·6 | + 2·6 | −80·0 |
| 29·586 | 27 | 363 | 29 | 513 | 180·6 | + 3·9 | −69·5 |
| 30·304 | 61 | 428 | 62 | 428 | 180·7 | + 4·0 | −60·1 |
| 31·297 | 86 | 581 | 60 | 420 | 181·4 | + 3·9 | −46·3 |
| Nov. 1·287 | 83 | 619 | 49 | 367 | 182·3 | + 3·8 | −32·3 |
| 2·289 | 89 | 511 | 46 | 267 | 184·1 | + 3·3 | −17·3 |
| 3·163 | 105 | 446 | 53 | 225 | 185·2 | + 3·2 | − 4·6 |
| 4·207 | 68 | 375 | 35 | 192 | 187·0 | + 2·7 | +10·9 |
| 5·397 | 87 | 312 | 49 | 177 | 187·5 | + 2·4 | +27·1 |
| 6·296 | 35 | 254 | 23 | 164 | 188·0 | + 2·5 | +39·4 |
| 7·159 | 22 | 199 | 18 | 159 | 188·4 | + 2·4 | +51·3 |
| 8·161 | 13 | 126 | 16 | 146 | 188·3 | + 3·1 | +64·4 |
| Means ... | ... | ... | 38 | 263 | 184·76 | + 3·15 | ... |

### Group 1162.

A scattered group composed of very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 29·586 | 8 | 58 | 5 | 35 | 258·6 | −28·2 | + 8·5 |
| 30·304 | 10 | 46 | 6 | 28 | 257·6 | −28·1 | +16·8 |
| 31·297 | 2 | 14 | 1 | 9 | 256·0 | −28·3 | +28·3 |
| Means ... | ... | ... | 4 | 24 | 257·40 | −28·20 | ... |

### Group 1163.

An irregular and very scattered group of small spots. The group undergoes constant change during the period of its visibility.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 30·304 | 8 | 13 | 5 | 8 | 203·8 | −11·4 | −37·0 |
| 31·297 | 37 | 168 | 22 | 97 | 200·4 | −11·3 | −27·3 |
| Nov. 1·287 | 40 | 162 | 21 | 87 | 200·9 | −11·8 | −13·7 |
| 2·289 | 27 | 144 | 14 | 75 | 204·4 | −11·6 | + 3·0 |
| 3·163 | 36 | 285 | 20 | 156 | 207·1 | −10·8 | +17·3 |
| 4·207 | 36 | 315 | 22 | 196 | 209·6 | −10·6 | +33·5 |
| 5·397 | 42 | 380 | 34 | 305 | 209·9 | −10·9 | +49·5 |
| 6·296 | 40 | 265 | 47 | 302 | 211·3 | −10·4 | +62·7 |
| 7·159 | 20 | 323 | 39 | 639 | 211·5 | −10·7 | +74·4 |
| 8·161 | 0 | 19 | 0 | 117 | 208·3 | −13·1 | +84·4 |
| Means ... | ... | ... | 22 | 198 | 206·72 | −11·26 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1164.** A small spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Oct. 31·297 | 0 | 15 | 0 | 19 | 160·5 | +10·6 | −67·2 |
| Nov. 1·287 | 7 | 27 | 6 | 23 | 160·5 | +10·4 | −54·1 |
| 2·289 | 6 | 12 | 4 | 8 | 160·8 | +10·2 | −40·6 |
| 3·163 | 8 | 18 | 5 | 11 | 161·1 | +10·3 | −28·7 |
| 4·207 | 6 | 13 | 3 | 7 | 161·5 | +10·4 | −14·6 |
| 5·397 | 0 | 29 | 0 | 14 | 162·1 | +10·3 | + 1·7 |
| Means ... | ... | ... | 3 | 14 | 161·08 | +10·37 | ... |
| **Group 1165.** A small spot. A second spot is seen near it on November 2 and 3, and another is seen on November 7. | | | | | | | |
| Nov. 1·287 | 0 | 11 | 0 | 40 | 133·0 | −11·0 | −81·6 |
| 2·289 | 6 | 34 | 10 | 55 | 130·6 | −10·4 | −70·8 |
| 3·163 | 8 | 22 | 7 | 22 | 132·4 | −10·4 | −57·4 |
| 4·207 | 6 | 13 | 4 | 9 | 134·0 | −11·0 | −42·1 |
| 5·397 | 0 | 16 | 0 | 10 | 134·3 | −11·7 | −26·1 |
| 6·296 | 5 | 11 | 3 | 6 | 134·2 | −11·4 | −14·4 |
| 7·159 | 0 | 21 | 0 | 11 | 134·1 | − 9·8 | − 3·0 |
| 8·161 | 0 | 4 | 0 | 2 | 132·3 | −10·6 | + 8·4 |
| 9·518 | 4 | 27 | 1 | 15 | 131·8 | − 8·9 | +25·7 |
| Means ... | ... | ... | 3 | 19 | 132·97 | −10·58 | ... |
| **Group 1166.** Three spots of considerable size with several very small spots near. The larger spot breaks up into a number of fragments, and the entire group diminishes rapidly in size on November 3 and the following days. The group covers a wide area, the individual spots being somewhat scattered. | | | | | | | |
| Nov. 1·287 | 9 | 112 | 33 | 429 | 131·4 | +10·4 | −83·2 |
| 2·289 | 28 | 307 | 42 | 464 | 130·2 | +10·2 | −71·2 |
| 3·163 | 52 | 442 | 50 | 433 | 130·5 | +10·8 | −59·3 |
| 4·207 | 53 | 405 | 37 | 289 | 131·0 | +10·6 | −45·1 |
| 5·397 | 94 | 508 | 54 | 294 | 131·8 | +11·0 | −28·6 |
| 6·296 | 92 | 384 | 49 | 200 | 132·7 | +11·1 | −15·9 |
| 7·159 | 28 | 205 | 15 | 104 | 133·2 | +11·2 | − 3·9 |
| 8·161 | 20 | 132 | 11 | 67 | 132·8 | +11·2 | + 8·9 |
| 9·518 | 17 | 161 | 10 | 92 | 135·1 | +10·3 | +29·0 |
| 10·541 | 2 | 56 | 1 | 38 | 135·0 | + 9·9 | +42·4 |
| Means ... | ... | ... | 30 | 241 | 132·37 | +10·67 | ... |
| **Group 1167.** A small spot. | | | | | | | |
| Nov. 2·289 | 0 | 10 | 0 | 5 | 206·5 | + 7·2 | + 5·1 |
| Means ... | ... | ... | 0 | 5 | 206·5 | + 7·2 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1168.** A regular spot. It diminishes in size on November 3 and the following days. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Nov. 2·289 | 8 | 54 | 15 | 94 | 130·0 | −16·8 | −71·4 |
| 3·163 | 8 | 75 | 9 | 78 | 131·5 | −16·8 | −58·3 |
| 4·207 | 8 | 73 | 6 | 55 | 131·7 | −16·8 | −44·4 |
| 5·397 | 11 | 57 | 7 | 36 | 132·5 | −16·5 | −27·9 |
| 6·296 | 2 | 22 | 1 | 12 | 132·6 | −16·6 | −16·0 |
| Means ... | ... | ... | 8 | 55 | 131·66 | −16·70 | ... |
| **Group 1169.** A large regular spot. | | | | | | | |
| Nov. 2·289 | 0 | 41 | 0 | 219 | 119·1 | −23·4 | −82·3 |
| 3·163 | 22 | 125 | 38 | 212 | 120·5 | −23·3 | −69·3 |
| 4·207 | 32 | 223 | 33 | 231 | 119·9 | −23·2 | −56·2 |
| 5·397 | 70 | 322 | 53 | 246 | 119·9 | −23·8 | −40·5 |
| 6·296 | 56 | 328 | 36 | 210 | 119·2 | −23·3 | −29·4 |
| 7·159 | 69 | 352 | 41 | 207 | 118·8 | −23·0 | −18·3 |
| 8·161 | 57 | 348 | 32 | 195 | 118·7 | −23·2 | − 5·2 |
| 9·518 | 60 | 336 | 34 | 192 | 118·3 | −22·8 | +12·2 |
| 10·541 | 66 | 322 | 41 | 199 | 117·8 | −23·2 | +25·2 |
| 11 | No photograph. | | (36 | 177 | 117·4 | −23·3 | +37·8) |
| 12·520 | 35 | 176 | 31 | 156 | 116·9 | −23·3 | +50·4 |
| 13·507 | 38 | 143 | 48 | 184 | 116·6 | −23·8 | +63·1 |
| Means ... | .. | ... | 35 | 202 | 118·59 | −23·30 | ... |
| **Group 1170.** A number of small spots irregularly arranged. Only two spots remain on November 7, only one on November 8 | | | | | | | |
| Nov. 4·207 | 59 | 156 | 32 | 84 | 194·9 | +14·5 | +18·8 |
| 5·397 | 35 | 113 | 22 | 72 | 195·5 | +14·1 | +35·1 |
| 6·296 | 17 | 54 | 13 | 40 | 196·0 | +14·4 | +47·4 |
| 7·159 | 9 | 45 | 9 | 44 | 196·3 | +14·4 | +59·2 |
| 8·161 | 3 | 18 | 4 | 28 | 195·4 | +15·1 | +71·5 |
| Means ... | ... | ... | 16 | 54 | 195·62 | +14·50 | ... |
| **Group 1171.** Two very small spots on November 6, one of which disappears before November 7. The group suddenly develops on November 8 into two clusters of small spots, one of which disappears before November 9. | | | | | | | |
| Nov. 6·296 | 2 | 7 | 2 | 5 | 101·5 | + 6·7 | −47·1 |
| 7·159 | 0 | 7 | 0 | 5 | 103·1 | + 7·7 | −34·0 |
| 8·161 | 5 | 76 | 3 | 41 | 102·9 | + 8·1 | −21·0 |
| 9·518 | 7 | 29 | 3 | 14 | 103·9 | + 9·1 | − 2·2 |
| Means ... | ... | ... | 2 | 16 | 102·85 | + 7·90 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1172.** Two regular spots. A number of small spots are seen between them November 9–14, and on November 16. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Nov. 9·518 | 16 | 162 | 18 | 159 | 48·9 | −14·2 | −57·2 |
| 10·541 | 159 | 663 | 117 | 488 | 48·6 | −14·7 | −44·0 |
| 11 | No photograph. | | (121 | 528 | 48·5 | −14·7 | −31·1) |
| 12·520 | 224 | 1022 | 125 | 567 | 48·3 | −14·7 | −18·2 |
| 13·507 | 227 | 1301 | 120 | 692 | 48·1 | −15·0 | − 5·4 |
| 14·552 | 207 | 1100 | 111 | 587 | 47·2 | −15·1 | + 7·5 |
| 15·561 | 223 | 1099 | 126 | 622 | 47·6 | −14·8 | +21·2 |
| 16·151 | 120 | 872 | 73 | 522 | 47·6 | −14·9 | +29·0 |
| 17·504 | 85 | 546 | 68 | 426 | 48·1 | −14·5 | +47·3 |
| 18·204 | 42 | 395 | 39 | 372 | 47·4 | −14·6 | +55·8 |
| 19·491 | 24 | 187 | 42 | 343 | 47·7 | −15·0 | +73·1 |
| 20·414 | 0 | 38 | 0 | 136 | 43·5 | −16·5 | +81·1 |
| Means ... | ... | ... | 80 | 454 | 47·63 | −14·89 | ... |
| **Group 1173.** A large regular spot, followed on November 12 and succeeding days by another but smaller regular spot. The latter is again followed on and after November 14 by an irregular chain of small spots, which undergo frequent changes in number, shape, and area. On November 16, 17, and 18, a large portion of the principal spot separates from it, breaks up, and moves forward. Small spots are also seen between the two principal spots of the group on November 13 and 14. | | | | | | | |
| Nov. 9·518 | 60 | 443 | 85 | 632 | 37·5 | − 8·9 | −68·6 |
| 10·541 | 144 | 705 | 131 | 646 | 36·8 | − 9·1 | −55·8 |
| 11 | No photograph. | | (126 | 648 | 36·6 | − 9·0 | −43·0) |
| 12·520 | 201 | 1096 | 120 | 649 | 36·4 | − 8·9 | −30·1 |
| 13·507 | 259 | 1378 | 140 | 742 | 35·7 | − 8·6 | −17·8 |
| 14·552 | 325 | 1976 | 168 | 1020 | 33·5 | − 8·4 | − 6·2 |
| 15·561 | 447 | 2096 | 231 | 1083 | 33·8 | − 8·6 | + 7·4 |
| 16·151 | 313 | 2229 | 167 | 1186 | 34·6 | − 8·8 | +16·0 |
| 17·504 | 424 | 2064 | 265 | 1294 | 35·9 | − 8·6 | +35·1 |
| 18·204 | 255 | 1777 | 185 | 1286 | 36·6 | − 8·7 | +45·0 |
| 19·491 | 209 | 1279 | 219 | 1354 | 35·7 | − 9·3 | +61·1 |
| 20·414 | 130 | 664 | 232 | 1157 | 35·1 | − 9·1 | +72·7 |
| 21·414 | 0 | 50 | 0 | 179 | 30·8 | − 8·8 | +81·6 |
| Means ... | ... | ... | 159 | 914 | 35·31 | − 8·83 | ... |
| **Group 1174.** A number of small spots, irregularly arranged. The group undergoes constant changes. | | | | | | | |
| Nov. 10·541 | 14 | 86 | 8 | 50 | 64·1 | +13·6 | −28·5 |
| 11 | No photograph. | | (20 | 63 | 65·4 | +12·6 | −14·2) |
| 12·520 | 65 | 150 | 33 | 76 | 66·7 | +11·5 | + 0·2 |
| 13·507 | 19 | 118 | 11 | 62 | 67·3 | +10·9 | +13·8 |
| 14·552 | 4 | 59 | 2 | 35 | 68·7 | +11·3 | +29·0 |
| 15·561 | 0 | 20 | 0 | 13 | 67·4 | +11·6 | +41·0 |
| 16·151 | 0 | 27 | 0 | 21 | 68·3 | +12·0 | +49·7 |
| Means ... | ... | ... | 11 | 46 | 66·84 | +11·93 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1175.** Two small spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Nov. 13·507 | 0 | 62 | 0 | 55 | 108·0 | +18·7 | +54·5 |
| Means ... | ... | ... | 0 | 55 | 108·0 | +18·7 | ... |
| **Group 1176.** A number of small spots, measured in two clusters on November 14. On November 15, 16, and 17, the group consists of two large regular spots with a few small spots between them. These small spots are measured with the large spots on November 15 and 17. The following spot has broken up into a number of small spots on November 18. | | | | | | | |
| Nov. 13·507 | 3 | 31 | 2 | 16 | 56·5 | +10·1 | + 3·0 |
| 14·552 | 16 | 160 | 9 | 84 | 56·8 | + 9·9 | +17·1 |
| 15·561 | 109 | 907 | 64 | 534 | 57·3 | + 9·3 | +30·9 |
| 16·151 | 70 | 784 | 46 | 511 | 58·2 | + 9·2 | +39·6 |
| 17·504 | 57 | 399 | 55 | 380 | 58·9 | + 9·3 | +58·1 |
| 18·204 | 23 | 230 | 31 | 311 | 59·9 | + 8·7 | +68·3 |
| Means ... | ... | ... | 35 | 306 | 57·93 | + 9·42 | ... |
| **Group 1177.** A regular spot. Several small spots are seen near it on November 16, 18, 19, 20, and 23. | | | | | | | |
| Nov. 13·507 | 0 | 60 | 0 | 232 | 331·7 | −13·6 | −81·8 |
| 14·552 | 47 | 286 | 64 | 389 | 332·7 | −13·5 | −67·0 |
| 15·561 | 118 | 580 | 105 | 514 | 332·9 | −13·6 | −53·5 |
| 16·151 | 74 | 447 | 56 | 337 | 332·2 | −13·6 | −46·4 |
| 17·504 | 128 | 686 | 76 | 407 | 332·9 | −13·6 | −27·9 |
| 18·204 | 110 | 722 | 61 | 396 | 332·7 | −13·4 | −18·9 |
| 19·491 | 149 | 747 | 77 | 386 | 332·9 | −13·8 | − 1·7 |
| 20·414 | 155 | 849 | 82 | 451 | 332·6 | −13·8 | +10·2 |
| 21·414 | 151 | 729 | 85 | 411 | 332·1 | −13·8 | +22·9 |
| 22·437 | 121 | 641 | 78 | 413 | 332·3 | −13·8 | +36·5 |
| 23·494 | 69 | 444 | 57 | 364 | 332·5 | −13·8 | +50·7 |
| 24·422 | 48 | 300 | 54 | 335 | 331·8 | −14·0 | +62·2 |
| 25·193 | 13 | 165 | 22 | 283 | 331·6 | −14·0 | +72·2 |
| Means ... | ... | ... | 63 | 378 | 332·38 | −13·72 | ... |
| **Group 1178.** A small faint spot. | | | | | | | |
| Nov. 16·151 | 0 | 9 | 0 | 21 | 96·8 | +18·9 | +78·2 |
| Means ... | ... | ... | 0 | 21 | 96·8 | +18·9 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1179.

A somewhat scattered group composed of several very small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Nov. 16·151 | 8 | 62 | 6 | 48 | 66·4 | −10·5 | +47·8 |
| 17·504 | 11 | 72 | 15 | 96 | 67·8 | −10·4 | +67·0 |
| 18·204 | 1 | 28 | 1 | 57 | 66·5 | − 9·6 | +74·9 |
| Means ... | ... | ... | 7 | 67 | 66·90 | −10·17 | ... |

### Group 1180.

A number of small spots irregularly arranged on November 16. The group increases in size on the following days, and from November 20 onwards consists mainly of four spots closely following each other. These are measured in two pairs on November 22 and 23.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 16·151 | 3 | 37 | 2 | 21 | 358·6 | −12·2 | −20·0 |
| 17·504 | 10 | 50 | 5 | 25 | 359·1 | −11·9 | − 1·7 |
| 18·204 | 22 | 101 | 11 | 53 | 0·5 | −12·0 | + 8·9 |
| 19·491 | 42 | 279 | 25 | 164 | 3·6 | −11·9 | +29·0 |
| 20·414 | 57 | 657 | 40 | 448 | 2·7 | −12·0 | +40·3 |
| 21·414 | 112 | 537 | 97 | 455 | 1·6 | −12·1 | +52·4 |
| 22·437 | 71 | 632 | 88 | 797 | 1·5 | −12·2 | +65·7 |
| 23·494 | 0 | 268 | 0 | 938 | 3·0 | −11·9 | +81·2 |
| Means ... | ... | ... | 34 | 363 | 1·33 | −12·03 | ... |

### Group 1181.

Two or three small spots on November 16. The group increases in size very rapidly on the three following days, and forms a large but at the same time compact group, composed of many spots, some of them large. The spots begin to break up after passing the central meridian on November 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 16·151 | 0 | 75 | 0 | 60 | 328·8 | +17·8 | −49·8 |
| 17·504 | 89 | 707 | 54 | 429 | 329·4 | +17·5 | −31·4 |
| 18·204 | 87 | 871 | 49 | 488 | 329·8 | +17·6 | −21·8 |
| 19·491 | 220 | 1355 | 114 | 703 | 331·2 | +18·1 | − 3·4 |
| 20·414 | 180 | 1393 | 96 | 737 | 331·3 | +18·0 | + 8·9 |
| 21·414 | 155 | 1249 | 87 | 701 | 331·4 | +18·0 | +22·2 |
| 22·437 | 126 | 840 | 81 | 540 | 332·2 | +17·7 | +36·4 |
| 23·494 | 87 | 781 | 60 | 643 | 332·9 | +17·6 | +51·1 |
| 24·422 | 64 | 859 | 77 | 980 | 333·0 | +17·6 | +63·4 |
| 25·193 | 21 | 523 | 39 | 960 | 333·4 | +17·7 | +74·0 |
| Means ... | ... | ... | 66 | 624 | 331·34 | +17·76 | ... |

### Group 1182.

A regular spot with some very small faint spots following at some distance. These latter disappear before November 22.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 18·204 | 9 | 64 | 15 | 123 | 276·7 | + 4·1 | −74·9 |
| 19·491 | 19 | 149 | 17 | 139 | 276·8 | + 3·9 | −57·8 |
| 20·414 | 24 | 162 | 17 | 114 | 278·2 | + 4·0 | −44·2 |

### Group 1182—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Nov. 21·414 | 12 | 122 | 7 | 72 | 276·9 | + 3·6 | −32·3 |
| 22·437 | 7 | 30 | 3 | 16 | 279·3 | + 4·0 | −16·5 |
| 23·494 | 4 | 15 | 2 | 7 | 279·2 | + 4·2 | − 2·6 |
| Means ... | ... | ... | 10 | 79 | 277·85 | + 3·97 | ... |

### Group 1183.

Two small spots. The following spot disappears before November 20.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 19·491 | 0 | 58 | 0 | 31 | 313·3 | − 8·5 | −21·3 |
| 20·414 | 14 | 38 | 7 | 20 | 315·4 | − 8·5 | − 7·0 |
| Means ... | ... | ... | 4 | 26 | 314·35 | − 8·50 | ... |

### Group 1184.

A small spot. Other smaller spots are seen near it on November 20, 24, and 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 20·414 | 0 | 63 | 0 | 95 | 253·0 | −12·4 | −69·4 |
| 21·414 | 17 | 42 | 16 | 40 | 252·5 | −11·9 | −56·7 |
| 22·437 | 13 | 37 | 9 | 26 | 253·3 | −11·6 | −42·5 |
| 23·494 | 15 | 37 | 9 | 22 | 253·1 | −11·9 | −28·7 |
| 24·422 | 13 | 89 | 7 | 48 | 252·7 | −13·2 | −16·9 |
| 25·193 | 6 | 62 | 3 | 32 | 252·9 | −12·6 | − 6·5 |
| 26·548 | 16 | 49 | 9 | 26 | 253·1 | −12·2 | +11·5 |
| 27·452 | 6 | 14 | 4 | 8 | 253·6 | −12·3 | +24·0 |
| Means ... | ... | ... | 7 | 37 | 253·03 | −12·26 | ... |

### Group 1185.

Several small spots close together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 21·414 | 0 | 33 | 0 | 48 | 241·2 | −17·5 | −68·0 |
| 22·437 | 0 | 55 | 0 | 49 | 242·4 | −17·3 | −53·4 |
| 23·494 | 4 | 148 | 3 | 100 | 243·5 | −17·5 | −38·3 |
| 24·422 | 0 | 90 | 0 | 53 | 243·7 | −17·2 | −25·9 |
| Means ... | ... | ... | 1 | 63 | 242·70 | −17·38 | ... |

### Group 1186.

A disturbed area in which several small faint spots appear and disappear at short intervals. One spot is seen on November 22, four on November 23, two on November 24, three on November 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 22·437 | 0 | 7 | 0 | 9 | 231·5 | +15·0 | −64·3 |
| 23·494 | 17 | 104 | 13 | 83 | 232·0 | +15·6 | −49·8 |
| 24·422 | 0 | 66 | 0 | 42 | 232·9 | +15·3 | −36·7 |
| 25·193 | 0 | 35 | 0 | 20 | 234·1 | +16·1 | −25·3 |
| Means ... | ... | ... | 3 | 39 | 232·63 | +15·50 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1187.** A regular spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Nov. 22·437 | 47 | 339 | 70 | 502 | 226·2 | −10·4 | −69·6 |
| 23·494 | 57 | 366 | 52 | 333 | 226·1 | −10·4 | −55·7 |
| 24·422 | 49 | 379 | 35 | 268 | 225·7 | −10·6 | −43·9 |
| 25·193 | 47 | 426 | 29 | 263 | 225·4 | −10·8 | −34·0 |
| 26·548 | 75 | 414 | 40 | 220 | 225·9 | −10·9 | −15·7 |
| 27·452 | 54 | 376 | 27 | 193 | 225·7 | −10·9 | − 3·9 |
| 28·453 | 41 | 299 | 21 | 155 | 225·8 | −11·0 | + 9·5 |
| 29·441 | 28 | 195 | 15 | 108 | 226·0 | −11·0 | +22·8 |
| 30·259 | 18 | 123 | 11 | 76 | 225·8 | −11·3 | +33·1 |
| Dec. 1 | No photograph. | | (8 | 50 | 227·0 | −11·4 | +47·3) |
| 2·224 | 5 | 22 | 5 | 24 | 228·2 | −11·5 | +61·4 |
| Means ... | ... | ... | 28 | 199 | 226·16 | −10·93 | ... |
| **Group 1188.** A regular spot. A small spot is near it on November 24, and another from November 26 to November 30. The latter is measured with the large spot on November 28 and 29. | | | | | | | |
| Nov. 22·437 | 18 | 126 | 51 | 357 | 216·5 | −10·5 | −79·3 |
| 23·494 | 63 | 399 | 77 | 483 | 217·1 | −10·4 | −64·7 |
| 24·422 | 58 | 428 | 50 | 366 | 216·4 | −10·8 | −53·2 |
| 25·193 | 47 | 349 | 33 | 245 | 216·1 | −10·9 | −43·3 |
| 26·548 | 76 | 408 | 43 | 232 | 216·4 | −11·1 | −25·2 |
| 27·452 | 70 | 408 | 37 | 215 | 216·2 | −10·7 | −13·4 |
| 28·453 | 59 | 390 | 30 | 199 | 215·7 | −11·0 | − 0·6 |
| 29·441 | 46 | 308 | 24 | 161 | 215·9 | −10·6 | +12·7 |
| 30·259 | 30 | 304 | 17 | 170 | 215·8 | −10·6 | +23·1 |
| Dec. 1 | No photograph. | | (19 | 160 | 216·4 | −10·4 | +36·6) |
| 2·224 | 26 | 186 | 21 | 149 | 216·9 | −10·2 | +50·1 |
| 3 | No photograph. | | (11 | 139 | 217·4 | −10·0 | +65·0) |
| 4·413 | 0 | 44 | 0 | 128 | 217·8 | − 9·7 | +80·0 |
| Means ... | ... | ... | 32 | 231 | 216·51 | −10·54 | ... |
| **Group 1189.** Two small spots. | | | | | | | |
| Nov. 25·193 | 0 | 14 | 0 | 13 | 204·7 | −10·8 | −54·7 |
| Means ... | ... | ... | 0 | 13 | 204·7 | −10·8 | ... |
| **Group 1190.** A small spot. | | | | | | | |
| Nov. 26·548 | 6 | 34 | 9 | 53 | 170·6 | − 7·8 | −71·0 |
| 27·452 | 11 | 28 | 11 | 27 | 171·4 | − 7·6 | −58·2 |
| 28·453 | 22 | 28 | 16 | 20 | 171·3 | − 7·9 | −45·0 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1190—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Nov. 29·441 | 16 | 34 | 10 | 20 | 171·6 | − 7·8 | −31·6 |
| 30·259 | 0 | 14 | 0 | 7 | 171·5 | − 8·0 | −21·2 |
| Means ... | ... | ... | 9 | 25 | 171·28 | − 7·82 | ... |
| **Group 1191.** A few faint spots irregularly arranged on November 27. The group rapidly increases in size on the following days, and on November 30 is composed of a large regular spot, followed by a train of many small spots. The small spots diminish in number and size on the following days, and have all disappeared before December 4. | | | | | | | |
| Nov. 27·452 | 0 | 25 | 0 | 14 | 206·3 | + 9·2 | −23·3 |
| 28·453 | 31 | 84 | 16 | 43 | 207·4 | + 9·3 | − 8·9 |
| 29·441 | 58 | 340 | 29 | 174 | 207·9 | + 9·7 | + 4·7 |
| 30·259 | 128 | 779 | 68 | 413 | 208·8 | + 9·9 | +16·1 |
| Dec. 1 | No photograph. | | (57 | 368 | 209·6 | + 9·6 | +29·8) |
| 2·224 | 66 | 462 | 46 | 323 | 210·3 | + 9·2 | +43·5 |
| 3 | No photograph. | | (48 | 284 | 210·5 | + 9·2 | +58·2) |
| 4·413 | 29 | 142 | 50 | 245 | 210·7 | + 9·1 | +72·9 |
| Means ... | ... | ... | 39 | 233 | 208·94 | + 9·40 | ... |
| **Group 1192.** A small spot. | | | | | | | |
| Nov. 29·441 | 0 | 12 | 0 | 23 | 129·0 | − 8·0 | −74·2 |
| 30·259 | 0 | 10 | 0 | 12 | 127·9 | − 8·0 | −64·8 |
| Means ... | ... | ... | 0 | 18 | 128·45 | − 8·00 | ... |
| **Group 1193.** A small spot. | | | | | | | |
| Nov. 30·259 | 0 | 6 | 0 | 9 | 122·7 | −12·2 | −70·0 |
| Means ... | ... | ... | 0 | 9 | 122·7 | −12·2 | ... |
| **Group 1194.** A small spot. | | | | | | | |
| Dec. 2·224 | 4 | 10 | 5 | 11 | 108·8 | −24·2 | −58·0 |
| Means ... | ... | ... | 5 | 11 | 108·8 | −24·2 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1195.** A small spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Dec. 2·224 | 6 | 37 | 6 | 40 | 105·2 | + 8·0 | −61·6 |
| 3 | No photograph. | | (3 | 26 | 105·5 | + 8·2 | −46·9) |
| 4·413 | 0 | 20 | 0 | 12 | 105·6 | + 8·3 | −32·2 |
| Means ... | ... | ... | 3 | 26 | 105·43 | + 8·17 | ... |
| **Group 1196.** Two small spots. | | | | | | | |
| Dec. 6·465 | 0 | 55 | 0 | 59 | 49·1 | + 7·7 | −61·7 |
| 7·576 | 4 | 57 | 3 | 40 | 52·0 | + 7·3 | −44·2 |
| 8·255 | 5 | 19 | 3 | 12 | 49·5 | + 7·3 | −37·8 |
| 9·197 | 0 | 19 | 0 | 11 | 49·2 | + 7·2 | −25·7 |
| 10·287 | 0 | 17 | 0 | 9 | 49·3 | + 6·8 | −11·2 |
| Means ... | ... | ... | 1 | 26 | 49·82 | + 7·26 | ... |
| **Group 1197.** Two small spots. The group increases in size as it approaches the central meridian, and on December 9 and the following days it forms two compact clusters of spots with a few smaller spots scattered in the neighbourhood. The preceding cluster coalesces before December 14 to form a regular spot, the following cluster breaks up and its component parts become scattered and diminish in size. | | | | | | | |
| Dec. 6·465 | 0 | 32 | 0 | 38 | 46·2 | −12·9 | −64·6 |
| 7·576 | 10 | 69 | 8 | 56 | 45·2 | −13·9 | −51·0 |
| 8·255 | 17 | 188 | 12 | 132 | 44·4 | −14·0 | −42·9 |
| 9·197 | 9 | 166 | 6 | 99 | 44·8 | −13·7 | −30·1 |
| 10·287 | 32 | 394 | 17 | 209 | 45·5 | −13·1 | −15·0 |
| 11·538 | 104 | 693 | 53 | 357 | 45·7 | −12·9 | + 1·6 |
| 12·314 | 88 | 626 | 48 | 332 | 46·2 | −13·9 | +12·4 |
| 13·543 | 132 | 859 | 78 | 503 | 46·5 | −13·1 | +28·9 |
| 14·299 | 80 | 684 | 54 | 460 | 48·0 | −13·1 | +40·4 |
| 15·475 | 27 | 231 | 25 | 209 | 48·0 | −12·8 | +55·9 |
| 16·498 | 8 | 113 | 13 | 164 | 48·4 | −12·3 | +69·7 |
| 17·283 | 3 | 45 | 12 | 152 | 50·1 | −12·5 | +81·7 |
| Means ... | ... | ... | 27 | 226 | 46·58 | −13·18 | ... |
| **Group 1198.** A regular spot with some small attendant spots. These latter have all disappeared before December 18. | | | | | | | |
| Dec. 6·465 | 14 | 93 | 29 | 200 | 34·5 | − 9·6 | −76·3 |
| 7·576 | 59 | 274 | 63 | 290 | 34·8 | − 9·3 | −61·4 |
| 8·255 | 50 | 351 | 42 | 294 | 34·6 | − 9·3 | −52·7 |
| 9·197 | 60 | 455 | 40 | 305 | 34·6 | − 9·6 | −40·3 |
| 10·287 | 71 | 462 | 40 | 259 | 34·5 | − 9·7 | −26·0 |
| 11·538 | 95 | 486 | 48 | 250 | 34·7 | − 9·3 | − 9·4 |
| **Group 1198—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Dec. 12·314 | 58 | 350 | 29 | 177 | 34·8 | −10·1 | + 1·0 |
| 13·543 | 56 | 346 | 29 | 183 | 34·3 | − 9·8 | +16·7 |
| 14·299 | 39 | 316 | 23 | 180 | 34·5 | −10·2 | +26·9 |
| 15·475 | 31 | 155 | 21 | 105 | 34·3 | − 9·6 | +42·2 |
| 16·498 | 20 | 119 | 18 | 106 | 34·1 | − 9·8 | +55·4 |
| 17·283 | 10 | 95 | 13 | 119 | 34·8 | − 9·8 | +66·4 |
| 18·284 | 8 | 34 | 20 | 87 | 33·9 | −10·3 | +78·7 |
| Means ... | ... | ... | 32 | 197 | 34·49 | − 9·72 | ... |
| **Group 1199.** Two small spots. The preceding spot disappears before December 9. | | | | | | | |
| Dec. 8·255 | 3 | 29 | 2 | 14 | 83·0 | +10·5 | − 4·3 |
| 9·197 | 0 | 10 | 0 | 5 | 80·8 | +11·0 | + 5·9 |
| Means ... | ... | ... | 1 | 10 | 81·90 | +10·75 | ... |
| **Group 1200.** A regular spot. A number of small spots, which undergo frequent and rapid changes, appear near it on December 12 and the following days. The regular spot disappears before December 18. | | | | | | | |
| Dec. 8·255 | 4 | 34 | 12 | 117 | 5·7 | −12·0 | −81·6 |
| 9·197 | 4 | 40 | 6 | 56 | 6·1 | −11·8 | −68·8 |
| 10·287 | 8 | 97 | 7 | 86 | 5·5 | −11·7 | −55·0 |
| 11·538 | 32 | 120 | 21 | 78 | 5·9 | −11·3 | −38·2 |
| 12·314 | 28 | 206 | 17 | 120 | 5·3 | −11·5 | −28·5 |
| 13·543 | 43 | 237 | 23 | 125 | 4·0 | −11·2 | −13·6 |
| 14·299 | 27 | 187 | 14 | 96 | 4·1 | −10·9 | − 3·5 |
| 15·475 | 8 | 78 | 4 | 40 | 4·8 | −10·7 | +12·7 |
| 16·498 | 24 | 211 | 14 | 118 | 4·8 | − 8·6 | +26·1 |
| 17·283 | 24 | 243 | 15 | 152 | 4·4 | − 8·6 | +36·0 |
| 18·284 | 14 | 207 | 11 | 161 | 4·8 | − 8·1 | +49·6 |
| 19·280 | 5 | 97 | 6 | 105 | 4·8 | − 7·8 | +62·7 |
| 20·307 | 0 | 15 | 0 | 26 | 2·4 | − 8·2 | +73·9 |
| Means ... | ... | ... | 12 | 98 | 4·82 | −10·18 | ... |
| **Group 1201.** Two small spots. Fresh spots appear, and on December 12, when on the central meridian, the group is composed of a very great number of small spots. It diminishes rapidly after passing the central meridian. | | | | | | | |
| Dec. 9·197 | 2 | 16 | 2 | 11 | 31·3 | +11·2 | −43·6 |
| 10·287 | 6 | 70 | 4 | 41 | 29·9 | +10·8 | −30·6 |
| 11·538 | 58 | 233 | 30 | 122 | 30·2 | +10·6 | −13·9 |
| 12·314 | 15 | 193 | 8 | 99 | 30·7 | +10·3 | − 3·1 |
| 13·543 | 25 | 83 | 14 | 43 | 31·0 | +10·4 | +13·4 |
| 14·299 | 1 | 34 | 0 | 19 | 31·8 | +10·8 | +24·2 |
| Means ... | ... | ... | 10 | 56 | 30·82 | +10·68 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1202.

A regular spot. Several small spots appear following it on December 12. These disappear before December 15, on which day several small spots are seen to the north of the principal spot. These last are measured with the principal spot on December 16.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Dec. 9·197 | 14 | 62 | 36 | 156 | 356·6 | +12·2 | −78·3 |
| 10·287 | 29 | 213 | 34 | 252 | 356·3 | +12·1 | −64·2 |
| 11·538 | 125 | 445 | 93 | 333 | 357·7 | +12·7 | −46·4 |
| 12·314 | 80 | 450 | 51 | 287 | 357·9 | +12·5 | −35·9 |
| 13·543 | 93 | 586 | 51 | 320 | 358·5 | +12·3 | −19·1 |
| 14·299 | 74 | 413 | 39 | 215 | 359·8 | +12·3 | − 7·8 |
| 15·475 | 52 | 341 | 27 | 177 | 1·7 | +12·6 | + 9·6 |
| 16·498 | 64 | 328 | 36 | 184 | 1·9 | +13·3 | +23·2 |
| 17·283 | 60 | 417 | 38 | 264 | 3·1 | +13·2 | +34·7 |
| 18·284 | 39 | 211 | 31 | 166 | 4·1 | +12·8 | +48·9 |
| 19·280 | 18 | 114 | 20 | 127 | 4·4 | +12·2 | +62·3 |
| 20·307 | 9 | 49 | 20 | 105 | 4·2 | +12·3 | +75·7 |
| Means ... | ... | ... | 40 | 216 | 0·52 | +12·54 | ... |

### Group 1203.

A very small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 10·287 | 0 | 3 | 0 | 2 | 109·6 | −25·2 | +49·1 |
| Means ... | ... | ... | 0 | 2 | 109·6 | −25·2 | ... |

### Group 1204.

Two spots, which are measured together on December 10 and 11. On December 13 they have broken up into a line of small faint spots which are measured together, and of these only one remains on December 14. The group is not seen on December 15, but re-appears as a small faint spot on December 16. Several other small spots appear on December 17, and form an irregular scattered group.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 10·287 | 5 | 69 | 11 | 139 | 345·4 | +15·3 | −75·1 |
| 11·538 | 32 | 156 | 30 | 149 | 347·1 | +15·3 | −57·0 |
| 12·314 | 16 | 77 | 12 | 59 | 346·8 | +15·3 | −47·0 |
| 13·543 | 0 | 113 | 0 | 69 | 346·6 | +14·9 | −31·0 |
| 14·299 | 0 | 24 | 0 | 13 | 346·9 | +14·3 | −20·7 |
| 15·475 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 16·498 | 0 | 20 | 0 | 10 | 344·5 | +13·8 | + 5·8 |
| 17·283 | 7 | 43 | 4 | 23 | 346·0 | +11·5 | +17·6 |
| 18·284 | 8 | 42 | 5 | 24 | 346·1 | +10·4 | +30·9 |
| 19·280 | 23 | 104 | 17 | 76 | 347·3 | +12·1 | +45·2 |
| 20·307 | 25 | 76 | 24 | 76 | 347·5 | +11·2 | +59·0 |
| 21·493 | 0 | 40 | 0 | 62 | 342·9 | +13·0 | +70·0 |
| Means ... | ... | ... | 9 | 58 | 346·10 | +13·37 | ... |

### Group 1205.

A regular spot. Smaller spots are seen near it on December 18, 20, and 22.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Dec. 11·538 | 22 | 87 | 37 | 148 | 332·9 | +20·4 | −71·2 |
| 12·314 | 19 | 116 | 21 | 131 | 332·4 | +20·4 | −61·4 |
| 13·543 | 22 | 161 | 17 | 123 | 331·8 | +20·0 | −45·8 |
| 14·299 | 41 | 180 | 27 | 121 | 331·8 | +20·7 | −35·8 |
| 15·475 | 44 | 230 | 25 | 132 | 331·6 | +20·8 | −20·5 |
| 16·498 | 34 | 198 | 18 | 108 | 331·3 | +20·8 | − 7·4 |
| 17·283 | 42 | 231 | 23 | 126 | 331·4 | +21·1 | + 3·0 |
| 18·284 | 24 | 204 | 14 | 116 | 331·3 | +21·3 | +16·1 |
| 19·280 | 24 | 181 | 15 | 113 | 330·9 | +21·4 | +28·8 |
| 20·307 | 24 | 204 | 18 | 152 | 331·3 | +21·6 | +42·8 |
| 21·493 | 17 | 58 | 17 | 58 | 329·8 | +21·2 | +56·9 |
| 22·268 | 6 | 85 | 8 | 130 | 332·5 | +22·8 | +69·8 |
| 23·184 | 0 | 25 | 0 | 72 | 328·9 | +21·2 | +78·3 |
| Means ... | ... | ... | 18 | 118 | 331·38 | +21·05 | ... |

### Group 1206.

A small faint spot. Several other small spots appear near it on December 15, and others on December 17. The group is measured together as a whole on December 15 and 16.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 11·538 | 0 | 24 | 0 | 40 | 331·7 | −16·3 | −72·4 |
| 12·314 | 5 | 38 | 5 | 43 | 331·1 | −16·5 | −62·7 |
| 13·543 | 15 | 39 | 12 | 30 | 330·6 | −16·9 | −47·0 |
| 14·299 | 6 | 29 | 4 | 19 | 330·7 | −16·6 | −36·9 |
| 15·475 | 6 | 26 | 4 | 14 | 331·1 | −16·3 | −21·0 |
| 16·498 | 0 | 30 | 0 | 16 | 331·3 | −16·2 | − 7·4 |
| 17·283 | 16 | 86 | 9 | 44 | 332·1 | −18·2 | + 3·7 |
| 18·284 | 8 | 78 | 5 | 42 | 332·4 | −17·9 | +17·2 |
| 19·280 | 15 | 47 | 10 | 28 | 333·2 | −17·7 | +31·1 |
| Means ... | ... | ... | 5 | 31 | 331·58 | −16·96 | ... |

### Group 1207.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 13·543 | 0 | 33 | 0 | 36 | 79·9 | + 8·7 | +62·3 |
| Means ... | ... | ... | 0 | 36 | 79·9 | + 8·7 | ... |

### Group 1208.

A small spot followed at a little distance by a small cluster of faint spots. This cluster disappears before December 17.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 14·299 | 1 | 15 | 0 | 8 | 8·3 | +16·0 | + 0·7 |
| 15·475 | 6 | 100 | 3 | 56 | 11·0 | +16·4 | +18·9 |
| 16·498 | 23 | 90 | 13 | 56 | 11·5 | +16·3 | +32·8 |
| 17·283 | 6 | 22 | 4 | 16 | 14·0 | +16·9 | +45·6 |
| Means ... | ... | ... | 5 | 34 | 11·20 | +16·40 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1209.

A small faint spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Dec. 14·299 | 0 | 4 | 0 | 2 | 345·1 | −11·4 | −22·5 |
| 15·475 | 0 | 7 | 0 | 4 | 345·6 | −10·6 | − 6·5 |
| Means ... | ... | ... | 0 | 3 | 345·35 | −11·00 | ... |

### Group 1210.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 17·283 | 0 | 9 | 0 | 5 | 314·0 | −16·9 | −14·4 |
| Means ... | ... | ... | 0 | 5 | 314·0 | −16·9 | ... |

### Group 1211.

Two small clusters of spots, preceded on December 19 by a very small spot. The following cluster disappears before December 21.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 19·280 | 6 | 77 | 3 | 41 | 282·1 | − 6·3 | −20·0 |
| 20·307 | 15 | 86 | 7 | 43 | 283·5 | − 6·3 | − 5·0 |
| 21·493 | 3 | 22 | 2 | 11 | 285·8 | − 5·2 | +12·9 |
| 22·268 | 6 | 25 | 3 | 14 | 285·9 | − 5·1 | +23·2 |
| Means ... | ... | ... | 4 | 27 | 284·33 | − 5·73 | ... |

### Group 1212.

An extensive group of very irregular character, composed of a large spot of irregular outline surrounded by a great number of small spots. The group diminishes in size after December 21, and suffers continual change. On December 26 and following days the group consists of a great number of small spots irregularly distributed over a considerable area.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 19·280 | 18 | 311 | 38 | 632 | 226·3 | − 8·7 | −75·8 |
| 20·307 | 43 | 802 | 47 | 868 | 226·1 | − 8·9 | −62·4 |
| 21·493 | 99 | 1235 | 72 | 892 | 226·7 | − 8·6 | −46·2 |
| 22·268 | 82 | 1303 | 50 | 808 | 226·5 | − 8·9 | −36·2 |
| 23·184 | 76 | 1105 | 42 | 610 | 226·9 | − 8·9 | −23·7 |
| 24·290 | 49 | 983 | 25 | 503 | 227·2 | − 9·0 | − 8·8 |
| 25·224 | 39 | 1107 | 20 | 562 | 228·6 | − 8·9 | + 4·8 |
| 26·187 | 61 | 750 | 33 | 399 | 228·5 | − 8·5 | +17·4 |
| 27·207 | 35 | 504 | 21 | 299 | 229·5 | − 8·9 | +31·9 |
| 28·167 | 22 | 258 | 16 | 181 | 229·7 | − 8·7 | +44·7 |
| 29·239 | 0 | 34 | 0 | 34 | 231·1 | − 8·9 | +60·3 |
| Means ... | ... | ... | 33 | 526 | 227·92 | − 8·81 | ... |

### Group 1213.

A regular spot. It gradually diminishes in size from day to day, and breaks up into small spots on December 27. Occasionally a very faint spot is seen in the neighbourhood of the principal spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1883. d | | | | | ° | ° | ° |
| Dec. 19·280 | 6 | 95 | 24 | 364 | 219·3 | −12·7 | −82·8 |
| 20·307 | 20 | 211 | 28 | 303 | 219·0 | −13·7 | −69·5 |
| 21·493 | 39 | 319 | 34 | 277 | 218·5 | −13·4 | −54·4 |
| 22·268 | 46 | 386 | 33 | 277 | 217·8 | −13·3 | −44·9 |
| 23·184 | 83 | 412 | 50 | 248 | 218·1 | −12·9 | −32·5 |
| 24·290 | 69 | 414 | 37 | 221 | 218·5 | −12·8 | −17·5 |
| 25·224 | 28 | 329 | 14 | 168 | 219·1 | −12·8 | − 4·7 |
| 26·187 | 39 | 275 | 20 | 143 | 219·5 | −12·8 | + 8·4 |
| 27·207 | 27 | 130 | 15 | 72 | 219·6 | −12·7 | +22·0 |
| 28·167 | 11 | 32 | 7 | 20 | 219·5 | −12·5 | +34·5 |
| Means ... | ... | ... | 26 | 209 | 218·89 | −12·96 | ... |

### Group 1214.

Two spots on December 20. Others appear on December 21 and 22, and the group forms a wavy line.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 20·307 | 18 | 91 | 10 | 49 | 270·8 | −17·6 | −17·7 |
| 21·493 | 33 | 109 | 17 | 56 | 271·6 | −16·8 | − 1·3 |
| 22·268 | 20 | 164 | 11 | 86 | 272·3 | −16·6 | + 9·6 |
| 23·184 | 25 | 170 | 14 | 103 | 273·2 | −17·3 | +22·6 |
| 24·290 | 15 | 115 | 10 | 76 | 274·4 | −16·8 | +38·4 |
| 25·224 | 9 | 75 | 7 | 62 | 275·4 | −16·9 | +51·6 |
| 26·187 | 11 | 47 | 13 | 54 | 275·0 | −16·4 | +63·9 |
| Means ... | ... | ... | 12 | 69 | 273·24 | −16·91 | ... |

### Group 1215.

A regular spot. A faint spot is seen following it on December 24, and another on December 28. The large spot divides into two portions on December 26 and 27, and the smaller portion disappears before December 29.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 20·307 | 12 | 92 | 27 | 207 | 211·7 | + 8·3 | −76·8 |
| 21·493 | 43 | 194 | 45 | 206 | 211·7 | + 8·4 | −61·2 |
| 22·268 | 54 | 255 | 45 | 212 | 210·5 | + 8·1 | −52·2 |
| 23·184 | 67 | 329 | 45 | 218 | 211·0 | + 8·1 | −39·6 |
| 24·290 | 60 | 382 | 34 | 216 | 210·6 | + 8·1 | −25·4 |
| 25·224 | 68 | 346 | 35 | 180 | 210·9 | + 8·0 | −12·9 |
| 26·187 | 55 | 378 | 28 | 194 | 211·0 | + 8·2 | − 0·1 |
| 27·207 | 53 | 275 | 28 | 144 | 211·0 | + 8·2 | +13·4 |
| 28·167 | 37 | 217 | 21 | 124 | 211·3 | + 8·4 | +26·3 |
| 29·239 | 23 | 174 | 15 | 117 | 211·1 | + 8·6 | +40·3 |
| Means ... | ... | ... | 32 | 182 | 211·08 | + 8·24 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1216.** A large regular spot, with a long stream of small spots. The small spots undergo frequent changes. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Dec. 20·307 | 0 | 93 | 0 | 356 | 205·8 | − 8·6 | −82·7 |
| 21·493 | 122 | 621 | 168 | 839 | 204·6 | − 8·7 | −68·3 |
| 22·268 | 98 | 1164 | 96 | 1199 | 201·8 | − 9·1 | −60·9 |
| 23·184 | 208 | 1895 | 154 | 1465 | 203·0 | − 9·3 | −47·6 |
| 24·290 | 227 | 1794 | 135 | 1084 | 203·0 | − 9·4 | −33·0 |
| 25·224 | 258 | 2081 | 139 | 1129 | 203·0 | − 9·2 | −20·8 |
| 26·187 | 380 | 1912 | 196 | 984 | 203·2 | − 8·9 | − 7·9 |
| 27·207 | 325 | 1914 | 164 | 971 | 203·7 | − 8·9 | + 6·1 |
| 28·167 | 298 | 1614 | 159 | 862 | 204·0 | − 8·8 | +19·0 |
| 29·239 | 239 | 1241 | 145 | 746 | 204·0 | − 8·7 | +33·2 |
| 30 | No photograph. | | (111 | 573 | 201·7 | − 9·2 | +44·0) |
| 31 | No photograph. | | (78 | 400 | 199·3 | − 9·7 | +54·8) |
| 1884. | | | | | | | |
| Jan. 1 | No photograph. | | (45 | 227 | 196·9 | −10·1 | +65·5) |
| 2·232 | 5 | 26 | 11 | 54 | 194·6 | −10·6 | +76·3 |
| Means ... | ... | ... | 114 | 778 | 202·04 | − 9·23 | ... |
| **Group 1217.** A regular spot. Small spots are seen near it on December 21, 24, 25, 26, and 29. | | | | | | | |
| Dec. 21·493 | 21 | 78 | 41 | 149 | 198·1 | + 2·5 | −74·8 |
| 22·268 | 29 | 171 | 35 | 204 | 197·7 | + 2·1 | −65·0 |
| 23·184 | 47 | 234 | 38 | 191 | 198·5 | + 2·0 | −52·1 |
| 24·290 | 61 | 338 | 38 | 213 | 199·1 | + 1·7 | −36·9 |
| 25·224 | 54 | 354 | 30 | 194 | 200·7 | + 1·6 | −23·1 |
| 26·187 | 86 | 463 | 44 | 238 | 200·5 | + 1·9 | −10·6 |
| 27·207 | 65 | 401 | 33 | 201 | 200·7 | + 1·9 | + 3·1 |
| 28·167 | 65 | 373 | 34 | 195 | 201·0 | + 1·7 | +16·0 |
| 29·239 | 51 | 351 | 30 | 205 | 200·8 | + 1·9 | +30·0 |
| 30 | No photograph. | | (30 | 193 | 200·8 | + 1·9 | +43·2) |
| 31 | No photograph. | | (30 | 182 | 200·9 | + 1·9 | +56·4) |
| 1884. | | | | | | | |
| Jan. 1 | No photograph. | | (30 | 170 | 201·0 | + 1·9 | +69·5) |
| 2·232 | 7 | 39 | 30 | 158 | 201·0 | + 1·9 | +82·7 |
| Means ... | ... | ... | 34 | 192 | 200·06 | + 1·92 | ... |
| **Group 1218.** A regular spot with several smaller spots near it. The smaller spots undergo several changes, and have all disappeared before December 28. A very small spot is seen near the large spot on December 29. | | | | | | | |
| Dec. 21·493 | 7 | 75 | 18 | 189 | 194·3 | −17·1 | −78·6 |
| 22·268 | 30 | 168 | 44 | 245 | 192·9 | −16·3 | −69·8 |
| 23·184 | 55 | 210 | 51 | 197 | 193·7 | −16·9 | −56·9 |
| 24·290 | 65 | 337 | 46 | 238 | 193·1 | −17·0 | −42·9 |
| 25·224 | 74 | 370 | 43 | 222 | 193·4 | −16·4 | −30·4 |
| 26·187 | 79 | 446 | 43 | 242 | 193·5 | −16·8 | −17·6 |
| 27·207 | 71 | 386 | 37 | 199 | 194·2 | −16·7 | − 3·4 |
| **Group 1218—*continued.*** | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Dec. 28·167 | 53 | 298 | 28 | 155 | 194·7 | −16·4 | + 9·7 |
| 29·239 | 50 | 289 | 28 | 163 | 194·7 | −16·2 | +23·9 |
| 30 | No photograph. | | (26 | 142 | 194·6 | −16·2 | +36·9) |
| 31 | No photograph. | | (24 | 122 | 194·5 | −16·3 | +50·0) |
| 1884. | | | | | | | |
| Jan. 1 | No photograph. | | (21 | 101 | 194·4 | −16·4 | +63·0) |
| 2·232 | 9 | 40 | 19 | 80 | 194·3 | −16·4 | +76·0 |
| Means ... | ... | ... | 33 | 177 | 194·02 | −16·55 | ... |
| **Group 1219.** Three small faint spots. | | | | | | | |
| Dec. 23·184 | 6 | 95 | 3 | 49 | 259·5 | −13·4 | + 8·9 |
| 24·290 | 0 | 4 | 0 | 2 | 257·5 | −15·3 | +21·5 |
| 25·224 | 5 | 23 | 3 | 14 | 256·8 | −15·0 | +33·0 |
| 26·187 | 10 | 14 | 7 | 11 | 257·6 | −14·2 | +46·5 |
| 27·207 | 4 | 15 | 4 | 15 | 259·4 | −13·2 | +61·8 |
| Means ... | ... | ... | 3 | 18 | 258·16 | −14·22 | ... |
| **Group 1220.** Two small spots, measured together on December 24. They move apart on the following days, and the following spot disappears before December 27. | | | | | | | |
| Dec. 24·290 | 0 | 34 | 0 | 35 | 177·6 | −23·3 | −58·4 |
| 25·224 | 13 | 91 | 10 | 68 | 179·1 | −23·3 | −44·7 |
| 26·187 | 7 | 59 | 5 | 36 | 180·7 | −22·7 | −30·4 |
| 27·207 | 7 | 33 | 4 | 18 | 181·7 | −22·2 | −15·9 |
| 28·167 | 3 | 11 | 1 | 6 | 181·8 | −22·2 | − 3·2 |
| 29·239 | 0 | 5 | 0 | 3 | 181·4 | −21·7 | +10·6 |
| Means ... | ... | ... | 3 | 28 | 180·38 | −22·57 | ... |
| **Group 1221.** A very small faint spot. | | | | | | | |
| Dec. 25·224 | 0 | 2 | 0 | 3 | 151·9 | −12·6 | −71·9 |
| 26·187 | 1 | 4 | 1 | 4 | 149·3 | −13·1 | −61·8 |
| Means ... | ... | ... | 1 | 4 | 150·60 | −12·85 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1222.** A very small faint spot. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Dec. 28·167 | 0 | 5 | 0 | 6 | 250·7 | − 6·9 | +65·7 |
| Means ... | ... | ... | 0 | 6 | 250·7 | − 6·9 | ... |
| **Group 1223.** A small faint spot on December 28. The group has greatly increased in size before December 29, and appears as a number of small spots scattered over a considerable area, the preceding spot being the largest. | | | | | | | |
| Dec. 28·167 | 0 | 5 | 0 | 3 | 181·0 | −13·4 | − 4·0 |
| 29·239 | 19 | 217 | 10 | 114 | 182·3 | −13·6 | +11·5 |
| 30 | No photograph. | | (11 | 154 | 182·8 | −14·0 | +25·1) |
| 31 | No photograph. | | (13 | 194 | 183·3 | −14·3 | +38·7) |
| 1884. | | | | | | | |
| Jan. 1 | No photograph. | | (15 | 234 | 183·7 | −14·7 | +52·3) |
| 2·232 | 14 | 223 | 16 | 274 | 184·2 | −15·0 | +65·9 |
| 3·149 | 6 | 184 | 13 | 431 | 184·4 | −15·0 | +78·2 |
| Means ... | ... | ... | 11 | 201 | 183·10 | −14·29 | ... |
| **Group 1224.** An irregular cluster of small spots. | | | | | | | |
| 1883. d | | | | | ° | ° | ° |
| Dec. 28·167 | 20 | 73 | 10 | 37 | 189·0 | − 8·3 | + 4·0 |
| 29·239 | 14 | 170 | 8 | 90 | 190·5 | − 8·3 | +19·7 |
| Means ... | .... | ... | 9 | 63 | 189·75 | − 8·30 | ... |
| **Group 1225.** A regular spot. It has broken up before January 2, and only two or three very small faint spots remain to mark its place. | | | | | | | |
| Dec. 28·167 | 9 | 40 | 14 | 62 | 113·7 | −15·0 | −71·3 |
| 29·239 | 6 | 41 | 5 | 39 | 113·4 | −14·7 | −57·4 |
| 30 | No photograph. | | (4 | 33 | 113·5 | −14·7 | −44·1) |
| 31 | No photograph. | | (2 | 28 | 113·7 | −14·8 | −30·9) |
| 1884. | | | | | | | |
| Jan. 1 | No photograph. | | (1 | 22 | 113·9 | −14·9 | −17·6) |
| 2·232 | 0 | 32 | 0 | 16 | 114·0 | −14·9 | − 4·3 |
| 3·149 | 0 | 26 | 0 | 13 | 114·3 | −16·2 | + 8·1 |
| 4·397 | 0 | 10 | 0 | 5 | 114·9 | −14·1 | +25·1 |
| 5·314 | 0 | 4 | 0 | 2 | 115·2 | −15·3 | +37·5 |
| Means ... | ... | ... | 3 | 24 | 114·07 | −14·96 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1226.

Two small spots, *a* and *b*; the following spot is not seen on January 3.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 2·232 | 4 | 21 | 3 | 15 | 166·5 | − 9·1 | +48·2 |
| 3·149 | 5 | 9 | 5 | 9 | 168·4 | − 9·1 | +62·2 |
| Means ... | ... | ... | 4 | 12 | 167·45 | − 9·10 | ... |

### Group 1227.

Several small spots, measured in two clusters on January 2.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·232 | 20 | 121 | 12 | 74 | 151·9 | + 8·0 | +33·6 |
| 3·149 | 14 | 122 | 10 | 92 | 153·3 | + 7·5 | +47·1 |
| 4·397 | 0 | 36 | 0 | 44 | 154·8 | + 6·8 | +65·0 |
| 5·314 | 0 | 4 | 0 | 13 | 158·1 | + 5·8 | +80·4 |
| Means ... | ... | ... | 6 | 56 | 154·53 | + 7·03 | ... |

### Group 1228.

Three small spots on January 2. Two clusters of very small spots on January 3.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·232 | 7 | 50 | 4 | 26 | 129·3 | + 8·6 | +11·0 |
| 3·149 | 5 | 25 | 3 | 14 | 131·3 | + 8·7 | +25·1 |
| Means ... | ... | ... | 4 | 20 | 130·30 | + 8·65 | ... |

### Group 1229.

A wedge-shaped and somewhat compact group of small spots on January 2. The group undergoes many changes on the succeeding days, the spots in the middle of the group disappearing before January 5, leaving two small clusters.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·232 | 5 | 127 | 3 | 70 | 99·1 | +10·8 | −19·2 |
| 3·149 | 14 | 105 | 7 | 55 | 100·0 | +11·1 | − 6·2 |
| 4·397 | 10 | 80 | 6 | 42 | 101·0 | +11·1 | +11·2 |
| 5·314 | 11 | 96 | 6 | 53 | 99·7 | +11·9 | +22·0 |
| 6·200 | 5 | 69 | 3 | 43 | 100·2 | +11·2 | +34·2 |
| 7·186 | 10 | 102 | 9 | 81 | 101·9 | +11·1 | +48·9 |
| 8·307 | 3 | 49 | 3 | 58 | 102·0 | +11·3 | +63·7 |
| 9·283 | 4 | 30 | 9 | 66 | 101·3 | +11·6 | +75·8 |
| Means ... | ... | ... | 6 | 59 | 100·65 | +11·26 | ... |

### Group 1230.

A small regular spot, *a*, followed by several small spots. The latter disappear before January 5.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·232 | 9 | 58 | 7 | 47 | 69·2 | +11·9 | −49·1 |
| 3·149 | 5 | 44 | 3 | 28 | 71·1 | +12·3 | −35·1 |
| 4·397 | 6 | 30 | 4 | 16 | 70·4 | +12·3 | −19·4 |
| 5·314 | 7 | 17 | 4 | 9 | 71·9 | +12·6 | − 5·8 |
| 6·200 | 9 | 21 | 5 | 11 | 72·2 | +12·7 | + 6·2 |
| Means ... | ... | ... | 5 | 22 | 70·96 | +12·36 | ... |

### Group 1231.

A small spot, *a*, on January 2. Several smaller spots are seen following it on January 3, and again on January 5 and 6. Other spots precede it on January 7, and represent the group on January 8 and 9, when *a* has disappeared. These all disappear before January 10, and are replaced by two spots, *b* and *c*, of considerable size, of which *c* disappears before January 12.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 2·232 | 2 | 12 | 4 | 24 | 42·5 | −13·3 | −75·8 |
| 3·149 | 5 | 28 | 5 | 31 | 43·5 | −13·7 | −62·7 |
| 4·397 | 1 | 12 | 1 | 9 | 44·9 | −13·9 | −44·9 |
| 5·314 | 4 | 19 | 3 | 12 | 45·0 | −13·9 | −32·7 |
| 6·200 | 7 | 22 | 4 | 12 | 44·9 | −13·5 | −21·1 |
| 7·186 | 0 | 28 | 0 | 14 | 48·3 | −11·6 | − 4·7 |
| 8·307 | 12 | 47 | 6 | 25 | 50·7 | −11·1 | +12·4 |
| 9·283 | 5 | 45 | 3 | 25 | 47·9 | −12·5 | +22·4 |
| 10·275 | 19 | 124 | 12 | 77 | 48·2 | −12·9 | +35·8 |
| 11·488 | 63 | 222 | 51 | 180 | 48·1 | −12·8 | +51·7 |
| 12·495 | 12 | 36 | 16 | 47 | 50·3 | −14·0 | +67·2 |
| 13·150 | 4 | 39 | 7 | 78 | 50·8 | −13·1 | +76·3 |
| Means ... | ... | ... | 9 | 45 | 47·09 | −13·03 | ... |

### Group 1232.

A fine group, composed of two larger spots, *a* and *b*, with a number of small spots between them. The group undergoes various changes, and by January 13 forms a compact cluster composed of a number of distinct spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·232 | 2 | 71 | 8 | 258 | 37·1 | +11·1 | −81·2 |
| 3·149 | 6 | 215 | 8 | 347 | 35·6 | +11·2 | −70·6 |
| 4·397 | 37 | 496 | 32 | 446 | 35·3 | +11·1 | −54·5 |
| 5·314 | 60 | 720 | 42 | 513 | 35·1 | +11·3 | −42·6 |
| 6·200 | 76 | 821 | 44 | 497 | 35·2 | +11·4 | −30·8 |
| 7·186 | 83 | 921 | 45 | 503 | 35·3 | +11·2 | −17·7 |
| 8·307 | 63 | 645 | 33 | 337 | 36·5 | +11·1 | − 1·8 |
| 9·283 | 49 | 512 | 27 | 272 | 37·5 | +11·1 | +12·0 |
| 10·275 | 37 | 838 | 21 | 479 | 37·3 | +10·6 | +24·9 |
| 11·488 | 150 | 688 | 102 | 472 | 37·1 | +10·4 | +40·7 |
| 12·495 | 16 | 587 | 15 | 529 | 37·6 | +10·3 | +54·5 |
| 13·150 | 27 | 287 | 33 | 345 | 38·2 | +10·8 | +63·7 |
| 14·260 | 5 | 92 | 14 | 269 | 39·0 | +10·5 | +79·1 |
| Means ... | ... | ... | 33 | 405 | 36·68 | +10·93 | ... |

### Group 1233.

A small regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 3·149 | 7 | 15 | 13 | 28 | 31·3 | −10·7 | −74·9 |
| 4·397 | 0 | 20 | 0 | 20 | 30·3 | −10·6 | −59·5 |
| 5·314 | 4 | 28 | 3 | 21 | 30·5 | −10·7 | −47·2 |
| 6·200 | 7 | 36 | 4 | 22 | 30·9 | −10·3 | −35·1 |
| 7·186 | 3 | 26 | 2 | 14 | 31·0 | −10·4 | −22·0 |
| 8·307 | 4 | 32 | 2 | 16 | 31·6 | −10·9 | − 6·7 |
| 9·283 | 3 | 17 | 1 | 9 | 31·8 | −10·9 | + 6·3 |
| 10·275 | 0 | 8 | 0 | 4 | 31·8 | −10·9 | +19·4 |
| Means .... | ... | ... | 3 | 17 | 31·15 | −10·68 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1234.** Two small faint spots. The following spot has divided into two portions by January 5, which are, however, measured together. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Jan. 4·397 | 0 | 12 | 0 | 7 | 80·0 | −20·7 | − 9·8 |
| 5·314 | 2 | 12 | 1 | 6 | 82·1 | −20·2 | + 4·4 |
| Means ... | ... | ... | 1 | 7 | 81·05 | −20·45 | ... |
| **Group 1235.** A very fine group following Group 1232 in nearly the same latitude. It consists at first of a large regular spot, *a*, which from January 4 to January 10 is completely detached from the rest of the group, followed by a long stream of spots. The last spots of the group coalesce to form on January 7 a large spot, *b*. The spots between *a* and *b* change rapidly in number, arrangement, and area, closing up to *a* and leaving *b* behind, until on January 12 *b* is as completely isolated as *a* was on January 4. | | | | | | | |
| Jan. 4·397 | 7 | 264 | 10 | 1097 | 7·9 | +15·5 | −81·9 |
| 5·314 | 54 | 619 | 68 | 873 | 10·5 | +15·4 | −69·2 |
| 6·200 | 90 | 1011 | 80 | 944 | 11·4 | +15·4 | −54·6 |
| 7·186 | 212 | 1528 | 155 | 1109 | 10·8 | +15·5 | −42·2 |
| 8·307 | 161 | 1722 | 97 | 1034 | 11·9 | +15·1 | −26·4 |
| 9·283 | 181 | 1563 | 98 | 860 | 11·7 | +15·6 | −13·8 |
| 10·275 | 225 | 1854 | 121 | 992 | 12·8 | +15·1 | + 0·4 |
| 11·488 | 286 | 2168 | 161 | 1215 | 13·8 | +14·5 | +17·4 |
| 12·495 | 283 | 1770 | 179 | 1118 | 15·2 | +14·2 | +32·1 |
| 13·150 | 236 | 1486 | 167 | 1066 | 15·8 | +14·2 | +41·3 |
| 14·260 | 67 | 1001 | 65 | 970 | 15·8 | +14·2 | +55·9 |
| 15·164 | 54 | 529 | 70 | 755 | 15·0 | +14·7 | +67·1 |
| Means ... | ... | ... | 106 | 1003 | 12·72 | +14·95 | ... |
| **Group 1236.** Several very small spots on January 5. The group has greatly increased in size by January 6. On January 7 only one large regular spot is seen close to the sun's limb. | | | | | | | |
| Jan. 5·314 | 0 | 14 | 0 | 13 | 135·6 | −17·2 | +57·9 |
| 6·200 | 13 | 149 | 17 | 207 | 135·0 | −16·6 | +69·0 |
| 7·186 | 5 | 58 | 12 | 146 | 132·2 | −17·8 | +79·2 |
| Means ... | ... | ... | 10 | 122 | 134·27 | −17·20 | ... |
| **Group 1237.** A large regular spot. Small spots are seen in its immediate neighbourhood from day to day. These are usually measured with the large spot, but on January 10, 11, 12 and 13 they are measured separately. | | | | | | | |
| Jan. 5·314 | 4 | 108 | 15 | 392 | 355·1 | −10·9 | −82·6 |
| 6·200 | 32 | 327 | 48 | 496 | 354·8 | −10·9 | −71·2 |
| 7·186 | 60 | 635 | 57 | 599 | 355·0 | −11·1 | −58·0 |
| 8·307 | 81 | 905 | 56 | 629 | 355·0 | −11·2 | −43·3 |
| 9·283 | 77 | 1079 | 45 | 631 | 354·8 | −11·3 | −30·7 |
| 10·275 | 110 | 1058 | 58 | 557 | 355·0 | −11·0 | −17·4 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1237—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Jan. 11·488 | 193 | 967 | 97 | 489 | 355·2 | −10·9 | − 1·2 |
| 12·495 | 83 | 755 | 43 | 392 | 355·6 | −10·8 | +12·5 |
| 13·150 | 155 | 763 | 84 | 412 | 356·0 | −11·0 | +21·5 |
| 14·260 | 70 | 624 | 43 | 387 | 356·1 | −10·9 | +36·2 |
| 15·164 | 54 | 403 | 41 | 306 | 356·7 | −10·7 | +48·8 |
| 16 | No photograph. | | (38 | 258 | 357·0 | −10·5 | +62·8) |
| 17·260 | 16 | 100 | 34 | 210 | 357·2 | −10·2 | +76·8 |
| Means ... | ... | ... | 51 | 443 | 355·65 | −10·88 | ... |
| **Group 1238.** Two small faint spots. | | | | | | | |
| Jan. 6·200 | 0 | 15 | 0 | 8 | 54·8 | − 6·3 | −11·2 |
| Means ... | . | ... | 0 | 8 | 54·8 | − 6·3 | ... |
| **Group 1239.** Two very small spots. | | | | | | | |
| Jan. 6·200 | 0 | 11 | 0 | 7 | 31·9 | −13·6 | −34·1 |
| Means ... | ... | ... | 0 | 7 | 31·9 | −13·6 | ... |
| **Group 1240.** A small faint spot. A second appears near it on January 7, and others on January 8. On January 8 and the succeeding days, the group consists of several small spots in a compact cluster. It is measured in two parts on January 10. | | | | | | | |
| Jan. 6·200 | 0 | 4 | 0 | 13 | 344·5 | −12·8 | −81·5 |
| 7·186 | 0 | 15 | 0 | 21 | 345·1 | −12·1 | −67·9 |
| 8·307 | 0 | 51 | 0 | 44 | 344·0 | −12·5 | −54·3 |
| 9·283 | 0 | 49 | 0 | 32 | 344·9 | −12·1 | −40·6 |
| 10·275 | 0 | 79 | 0 | 46 | 343·5 | −12·5 | −28·9 |
| 11·488 | 2 | 36 | 1 | 19 | 344·8 | −11·3 | −11·6 |
| Means ... | ... | ... | 0 | 29 | 344·47 | −12·22 | ... |
| **Group 1241.** A regular spot. It divides into two parts, which are measured together, on January 8. It breaks up further on January 9, and on January 11 only one small spot remains. | | | | | | | |
| Jan. 6·200 | 3 | 31 | 13 | 135 | 342·0 | − 9·3 | −84·0 |
| 7·186 | 12 | 53 | 18 | 78 | 342·5 | − 9·4 | −70·5 |
| 8·307 | 2 | 53 | 2 | 47 | 342·7 | − 9·9 | −55·6 |
| 9·283 | 4 | 25 | 3 | 17 | 342·5 | − 9·9 | −43·0 |
| 10·275 | 4 | 22 | 2 | 13 | 342·5 | − 9·8 | −29·9 |
| 11·488 | 15 | 28 | 8 | 15 | 341·8 | − 9·1 | −14·6 |
| Means ... | ... | ... | 8 | 51 | 342·33 | − 9·57 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1242.** A small spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Jan. 7·186 | 0 | 5 | 0 | 11 | 128·1 | + 8·0 | +75·1 |
| Means ... | ... | ... | 0 | 11 | 128·1 | + 8·0 | ... |
| **Group 1243.** A small regular spot, *a*, followed by several smaller spots. The regular spot alone remains on January 11. | | | | | | | |
| Jan. 7·186 | 2 | 30 | 4 | 50 | 342·1 | +13·1 | −70·9 |
| 8·307 | 20 | 110 | 19 | 105 | 342·1 | +12·6 | −56·2 |
| 9·283 | 14 | 132 | 10 | 92 | 343·5 | +12·8 | −42·0 |
| 10·275 | 19 | 112 | 11 | 65 | 346·1 | +12·4 | −26·3 |
| 11·488 | 19 | 53 | 10 | 28 | 347·3 | +12·3 | − 9·1 |
| 12·495 | 16 | 49 | 8 | 26 | 347·6 | +12·1 | + 4·5 |
| 13·150 | 16 | 51 | 9 | 27 | 348·1 | +12·2 | +13·6 |
| 14·260 | 8 | 12 | 5 | 7 | 348·5 | +12·6 | +28·6 |
| 15·164 | 6 | 15 | 4 | 10 | 348·6 | +12·6 | +40·7 |
| Means ... | ... | ... | 9 | 46 | 345·99 | +12·52 | ... |
| **Group 1244.** A small faint spot. Three others are seen with it on January 9, the four being arranged in two pairs. On January 10 the four spots are arranged in a straight line. The two pairs of spots have moved away from each other by January 11. | | | | | | | |
| Jan. 8·307 | 0 | 4 | 0 | 4 | 342·0 | −24·2 | −56·3 |
| 9·283 | 0 | 26 | 0 | 19 | 341·7 | −24·0 | −43·8 |
| 10·275 | 5 | 76 | 3 | 47 | 342·2 | −24·1 | −30·2 |
| 11·488 | 20 | 57 | 12 | 31 | 340·5 | −24·6 | −15·9 |
| Means ... | ... | ... | 4 | 25 | 341·60 | −24·23 | ... |
| **Group 1245.** A small spot. | | | | | | | |
| Jan. 8·307 | 0 | 2 | 0 | 3 | 336·9 | −27·7 | −61·4 |
| Means ... | ... | ... | 0 | 3 | 336·90 | −27·70 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1246.** A small regular spot, *a*. Two small spots, which are measured together, follow it on January 9. They move apart on the following days and are measured separately as *b* and *c*. They undergo several changes in size, position and shape. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Jan. 8·307 | 2 | 14 | 3 | 29 | 323·6 | +10·8 | −74·7 |
| 9·283 | 0 | 35 | 0 | 43 | 320·7 | +10·7 | −64·8 |
| 10·275 | 5 | 34 | 4 | 27 | 322·5 | +10·6 | −49·9 |
| 11·488 | 35 | 132 | 22 | 85 | 320·9 | +10·6 | −35·5 |
| 12·495 | 0 | 105 | 0 | 59 | 319·9 | +10·6 | −23·2 |
| 13·150 | 11 | 37 | 7 | 20 | 318·8 | +11·8 | −15·7 |
| 14·260 | 1 | 4 | 1 | 2 | 316·9 | +12·6 | − 3·0 |
| Means ... | ... | ... | 5 | 38 | 320·47 | +11·10 | ... |
| **Group 1247.** Two small spots. They are measured together on January 9, but separately on January 10, when they are somewhat further apart. | | | | | | | |
| Jan. 9·283 | 0 | 20 | 0 | 12 | 350·1 | +11·3 | −35·4 |
| 10·275 | 0 | 7 | 0 | 4 | 350·6 | +11·4 | −21·8 |
| Means ... | ... | ... | 0 | 8 | 350·35 | +11·35 | ... |
| **Group 1248.** Three small spots. The first two spots are measured together. | | | | | | | |
| Jan. 10·275 | 2 | 33 | 2 | 28 | 64·6 | +10·3 | +52·2 |
| Means ... | ... | ... | 2 | 28 | 64·6 | +10·3 | ... |
| **Group 1249.** Two small spots measured together on January 14. | | | | | | | |
| Jan. 13·150 | 9 | 22 | 10 | 26 | 39·6 | − 6·3 | +65·1 |
| 14·260 | 0 | 12 | 0 | 28 | 37·9 | − 6·7 | +78·0 |
| Means ... | ... | ... | 5 | 27 | 38·75 | − 6·50 | ... |
| **Group 1250.** A number of very small faint spots scattered over a considerable area. Only one spot remains on January 15. | | | | | | | |
| Jan. 13·150 | 2 | 20 | 1 | 9 | 347·8 | −10·0 | +13·3 |
| 14·260 | 4 | 110 | 2 | 63 | 348·6 | −11·0 | +28·7 |
| 15·164 | 0 | 5 | 0 | 3 | 346·0 | − 9·8 | +38·1 |
| Means ... | ... | ... | 2 | 25 | 347·47 | −10·27 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1251.

Two small faint spots on January 13. The group rapidly increases in size. On January 14 it is composed of nine small spots, measured in two clusters. On January 15 these have coalesced to form a large and irregular spot. This breaks up into a number of spots before January 17, and the group then consists of a large spot, closely followed by another large spot, *b*, and a number of small spots around them. The group undergoes further changes, but retains the same general character until January 24, by which date all the small spots have disappeared.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 13·150 | 0 | 7 | 0 | 16 | 257·3 | −17·7 | −77·2 |
| 14·260 | 8 | 90 | 9 | 101 | 256·5 | −17·4 | −63·4 |
| 15·164 | 113 | 812 | 93 | 666 | 256·0 | −18·1 | −51·9 |
| 16 | No photograph. | | (92 | 821 | 255·6 | −18·2 | −38·6) |
| 17·260 | 163 | 1714 | 92 | 977 | 255·1 | −18·3 | −25·3 |
| 18·356 | 217 | 1617 | 114 | 842 | 256·3 | −17·7 | − 9·7 |
| 19·322 | 117 | 1290 | 60 | 661 | 255·3 | −17·8 | + 2·1 |
| 20·546 | 205 | 1287 | 110 | 698 | 254·8 | −18·2 | +17·7 |
| 21·443 | 87 | 1166 | 53 | 694 | 255·7 | −18·3 | +30·4 |
| 22·262 | 61 | 850 | 42 | 575 | 255·8 | −17·9 | +41·2 |
| 23·130 | 57 | 547 | 48 | 454 | 255·9 | −18·2 | +52·8 |
| 24·515 | 28 | 168 | 41 | 254 | 255·9 | −18·4 | +71·1 |
| 25·448 | 0 | 49 | 0 | 199 | 257·1 | −18·2 | +84·4 |
| Means ... | ... | ... | 58 | 535 | 255·95 | −18·03 | ... |

### Group 1252.

A small spot, *a*, on January 15. Two others, *b* and *c*, follow it on January 17, but *b* disappears before January 18, *c* before January 19. A fourth spot, *d*, appears on January 18; spots *a* and *d* move away from each other.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 15·164 | 3 | 5 | 2 | 3 | 297·2 | +18·1 | −10·7 |
| 16 | No photograph. | | (8 | 48 | 296·9 | +18·5 | + 2·7) |
| 17·260 | 25 | 162 | 14 | 93 | 296·5 | +18·8 | +16·1 |
| 18·356 | 14 | 82 | 9 | 54 | 298·6 | +18·8 | +32·6 |
| 19·322 | 6 | 52 | 5 | 42 | 299·3 | +18·6 | +46·1 |
| 20·546 | 4 | 61 | 4 | 72 | 298·5 | +18·0 | +61·4 |
| Means ... | ... | ... | 7 | 52 | 297·83 | +18·47 | ... |

### Group 1253.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 15·164 | 0 | 8 | 0 | 4 | 291·7 | −13·1 | −16·2 |
| Means ... | ... | ... | 0 | 4 | 291·7 | −13·1 | ... |

### Group 1254.

A regular spot, *a*, followed by several very small spots. The whole group is measured together on January 17. The smaller spots vary in number and position from day to day, and are not seen after January 20.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 17·260 | 3 | 12 | 3 | 12 | 218·8 | − 0·7 | −61·6 |
| 18·356 | 7 | 76 | 5 | 54 | 221·0 | − 0·3 | −45·0 |
| 19·322 | 17 | 99 | 10 | 58 | 221·4 | 0·0 | −31·8 |
| 20·546 | 26 | 111 | 14 | 58 | 222·6 | − 0·3 | −14·5 |

### Group 1254—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 21·443 | 23 | 81 | 11 | 41 | 223·2 | − 0·3 | − 2·1 |
| 22·262 | 6 | 50 | 3 | 25 | 223·4 | − 0·4 | + 8·8 |
| 23·130 | 10 | 35 | 6 | 18 | 223·6 | − 0·1 | +20·5 |
| 24·515 | 4 | 20 | 3 | 13 | 223·2 | − 0·1 | +38·4 |
| 25·448 | 0 | 24 | 0 | 19 | 223·5 | − 0·5 | +50·8 |
| Means ... | ... | ... | 6 | 33 | 222·30 | − 0·30 | ... |

### Group 1255.

A large regular spot, *a*. A second spot, *b*, is seen on January 29 after *a* has passed out of sight at the west limb. On January 28 this group and Group 1263 are measured on a different photograph from that on which the remaining spots are measured.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 17·260 | 68 | 258 | 111 | 423 | 207·6 | − 8·1 | −72·8 |
| 18·356 | 78 | 449 | 72 | 416 | 208·3 | − 8·4 | −57·7 |
| 19·322 | 113 | 545 | 80 | 386 | 207·7 | − 8·2 | −45·5 |
| 20·546 | 169 | 643 | 98 | 371 | 207·5 | − 8·5 | −29·6 |
| 21·443 | 158 | 790 | 83 | 415 | 207·8 | − 8·5 | −17·5 |
| 22·262 | 133 | 761 | 68 | 386 | 207·9 | − 8·6 | − 6·7 |
| 23·130 | 137 | 734 | 69 | 367 | 208·1 | − 8·6 | + 5·0 |
| 24·515 | 120 | 656 | 65 | 358 | 208·0 | − 8·5 | +23·2 |
| 25·448 | 97 | 582 | 60 | 360 | 208·6 | − 8·3 | +35·9 |
| 26 | No photograph. | | (72 | 364 | 209·0 | − 8·6 | +49·8) |
| 27·500 | 77 | 332 | 85 | 369 | 209·5 | − 8·9 | +63·7 |
| 28·411 | 41 | 173 | 78 | 334 | 209·3 | − 8·8 | +75·7 |
| 29·362 | 2 | 18 | 11 | 94 | 207·2 | −11·0 | +86·1 |
| Means ... | ... | ... | 73 | 357 | 208·19 | − 8·54 | ... |

### Group 1256.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 17·260 | 4 | 57 | 9 | 133 | 202·8 | + 1·1 | −77·6 |
| 18·356 | 14 | 102 | 15 | 111 | 203·4 | + 1·1 | −62·6 |
| 19·322 | 22 | 154 | 17 | 121 | 202·9 | + 1·3 | −50·3 |
| 20·546 | 23 | 170 | 14 | 103 | 203·1 | + 0·9 | −34·0 |
| 21·443 | 43 | 178 | 23 | 97 | 203·4 | + 1·1 | −21·9 |
| 22·262 | 20 | 164 | 10 | 84 | 203·4 | + 1·0 | −11·2 |
| 23·130 | 17 | 162 | 9 | 81 | 203·5 | + 1·4 | + 0·4 |
| 24·515 | 28 | 148 | 15 | 79 | 203·1 | + 1·6 | +18·3 |
| 25·448 | 27 | 121 | 16 | 71 | 203·2 | + 1·8 | +30·5 |
| 26 | No photograph. | | (16 | 67 | 203·6 | + 1·5 | +44·3) |
| 27·500 | 16 | 65 | 16 | 62 | 203·9 | + 1·1 | +58·1 |
| 28·539 | 9 | 39 | 15 | 65 | 204·3 | + 1·3 | +72·3 |
| 29·362 | 0 | 3 | 0 | 13 | 204·8 | + 1·4 | +83·7 |
| Means ... | ... | ... | 13 | 84 | 203·49 | + 1·28 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1257.

Two small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 19·322 | 3 | 24 | 2 | 17 | 295·7 | −12·1 | +42·5 |
| Means ... | ... | ... | 2 | 17 | 295·7 | −12·1 | ... |

### Group 1258.

*A small spot.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 22·262 | 0 | 4 | 0 | .5 | 271·2 | +21·9 | +56·6 |
| Means ... | ... | ... | 0 | 5 | 271·2 | +21·9 | ... |

### Group 1259.

A regular spot, *a*, which diminishes in size day by day, and disappears before January 30. A small spot, *b*, is seen near it on January 24; two other spots, *c* and *d*, appear on January 28, and a fourth, *e*, on January 29, but on January 30 and 31 only one small spot, *d*, remains of the entire group.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 22·262 | 6 | 65 | 11 | 125 | 138·7 | −16·5 | −75·9 |
| 23·130 | 8 | 86 | 8 | 92 | 140·3 | −16·8 | −62·8 |
| 24·515 | 16 | 133 | 12 | 96 | 139·6 | −17·1 | −45·2 |
| 25·448 | 2 | 97 | 1 | 58 | 140·6 | −17·5 | −32·1 |
| 26 | No photograph. | | (5 | 36 | 140·7 | −17·7 | −18·6) |
| 27·500 | 15 | 24 | 8 | 13 | 140·7 | −17·8 | − 5·1 |
| 28·539 | 23 | 83 | 12 | 42 | 135·3 | −17·0 | + 3·3 |
| 29·362 | 7 | 84 | 4 | 44 | 135·6 | −16·7 | +14·5 |
| 30·341 | 0 | 8 | 0 | 4 | 132·7 | −15·4 | +24·5 |
| 31·341 | 4 | 21 | 3 | 13 | 132·8 | −15·1 | +37·8 |
| Means ... | ... | ... | 6 | 52 | 137·70 | −16·76 | ... |

### Group 1260.

Two small spots on January 23. A third spot appears on January 24, but the preceding spot increases in size, and other spots appear near it. The group increases yet further on the succeeding days, and consists on January 27 of four large spots following one another in a straight line, with a great number of very small spots clustering round them. The two preceding large spots approach each other, and are measured together on January 28; they afterwards coalesce to form spot *a* on January 29. The two following spots unite in a similar manner to form spot *b*. The smaller spots undergo constant changes both in number and size.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 23·130 | 0 | 12 | 0 | 16 | 136·5 | + 6·9 | −66·6 |
| 24·515 | 44 | 162 | 32 | 120 | 139·0 | + 6·2 | −45·8 |
| 25·448 | 63 | 621 | 38 | 378 | 140·2 | + 5·8 | −32·5 |
| 26 | No photograph. | | (68 | 393 | 141·7 | + 6·0 | −17·6) |
| 27·500 | 190 | 792 | 98 | 408 | 143·2 | + 6·2 | − 2·6 |
| 28·539 | 228 | 1280 | 120 | 670 | 142·6 | + 6·2 | +10·6 |

### Group 1260—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 29·362 | 143 | 1017 | 80 | 562 | 143·2 | + 6·5 | +22·1 |
| 30·341 | 108 | 904 | 68 | 571 | 143·7 | + 6·5 | +35·5 |
| 31·341 | 47 | 605 | 37 | 483 | 144·6 | + 6·4 | +49·6 |
| Feb. 1·450 | 40 | 438 | 50 | 531 | 144·8 | + 6·5 | +64·4 |
| 2·252 | 6 | 221 | 12 | 432 | 144·2 | + 6·5 | +74·3 |
| Means ... | ... | ... | 55 | 415 | 142·15 | + 6·34 | ... |

### Group 1261.

A regular spot, *a*. Small spots are seen near it on January 27 and 28. It breaks up into a number of small spots on passing the central meridian on January 30.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 24·515 | 0 | 14 | 0 | 37 | 107·3 | +10·4 | −77·5 |
| 25·448 | 0 | 79 | 0 | 102 | 107·3 | + 9·2 | −65·4 |
| 26 | No photograph. | | (20 | 135 | 107·4 | + 9·4 | −51·9) |
| 27·500 | 59 | 251 | 40 | 167 | 107·5 | + 9·6 | −38·3 |
| 28·539 | 48 | 320 | 27 | 182 | 108·1 | + 9·3 | −23·9 |
| 29·362 | 16 | 218 | 9 | 117 | 107·7 | + 9·9 | −13·4 |
| 30·341 | 22 | 172 | 11 | 89 | 107·4 | +10·0 | − 0·8 |
| 31·341 | 15 | 132 | 8 | 70 | 107·5 | +10·8 | +12·5 |
| Feb. 1·450 | 9 | 28 | 5 | 16 | 107·5 | + 9·6 | +27·1 |
| 2·252 | 0 | 13 | 0 | 9 | 108·6 | + 9·4 | +38·7 |
| Means ... | ... | ... | 12 | 102 | 107·63 | + 9·76 | ... |

### Group 1262.

Five small spots in two clusters on January 27. One spot has disappeared before January 28, and the others seem through the effect of foreshortening to form but one cluster.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 27·500 | 32 | 209 | 43 | 262 | 212·8 | −17·0 | +67·0 |
| 28·539 | 12 | 101 | 27 | 229 | 210·5 | −18·0 | +78·5 |
| Means ... | ... | ... | 35 | 246 | 211·65 | −17·50 | ... |

### Group 1263.

A small spot on January 27. A second spot is seen near it on January 28. On January 28, this group and Group 1255 are measured on a different photograph from that on which the remaining spots are measured.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 27·500 | 0 | 12 | 0 | 10 | 199·8 | −11·0 | +54·0 |
| 28·411 | 0 | 53 | 0 | 65 | 200·3 | −13·2 | +66·7 |
| Means ... | ... | ... | 0 | 38 | 200·05 | −12·10 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1264.

A large irregular spot, *a*. A portion, *b*, is detached from the main spot on January 29, and a second portion, *c*, on February 1. The spot *c* breaks up into several small spots on the following day, moving forward and northward at the same time; it disappears before February 6. Some small spots are seen close to the principal spots on January 28, 29, 31, and February 1.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 27·500 | 41 | 158 | 70 | 273 | 73·9 | + 9·9 | −71·9 |
| 28·539 | 104 | 477 | 104 | 480 | 73·9 | +10·5 | −58·1 |
| 29·362 | 81 | 678 | 62 | 527 | 73·8 | +10·2 | −47·3 |
| 30·341 | 60 | 743 | 38 | 468 | 74·2 | +10·3 | −34·0 |
| 31·341 | 85 | 839 | 48 | 464 | 74·8 | +10·2 | −20·2 |
| Feb. 1·450 | 171 | 1072 | 90 | 563 | 74·4 | +10·4 | − 6·0 |
| 2·252 | 115 | 736 | 60 | 385 | 75·0 | +10·4 | + 5·1 |
| 3 | No photograph. | | (82 | 406 | 75·0 | +10·6 | +19·7) |
| 4·455 | 162 | 668 | 103 | 426 | 75·0 | +10·8 | +34·2 |
| 5·298 | 26 | 385 | 20 | 290 | 75·2 | +11·2 | +45·4 |
| 6·156 | 38 | 299 | 38 | 294 | 75·4 | +11·7 | +57·0 |
| 7·364 | 10 | 116 | 18 | 216 | 75·2 | +11·9 | +72·6 |
| Means ... | ... | ... | 61 | 399 | 74·65 | +10·68 | ... |

### Group 1265.

Several small spots. The group is measured as a whole on January 28. The arrangements of the spots change from day to day.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 28·539 | 33 | 92 | 19 | 53 | 160·4 | − 5·8 | +28·4 |
| 29·362 | 12 | 76 | 7 | 50 | 161·4 | − 5·7 | +40·3 |
| 30·341 | 12 | 42 | 10 | 33 | 161·8 | − 5·8 | +53·6 |
| Means ... | ... | ... | 12 | 45 | 161·20 | − 5·77 | ... |

### Group 1266.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 29·362 | 17 | 35 | 55 | 114 | 41·1 | + 9·5 | −80·0 |
| 30·341 | 17 | 123 | 22 | 162 | 41·9 | + 9·3 | −66·3 |
| 31·341 | 20 | 191 | 17 | 163 | 42·7 | + 8·9 | −52·3 |
| Feb. 1·450 | 56 | 294 | 37 | 195 | 42·0 | + 8·7 | −38·4 |
| 2·252 | 35 | 297 | 20 | 174 | 42·3 | + 8·8 | −27·6 |
| 3 | No photograph. | | (27 | 175 | 42·6 | + 8·5 | −12·8) |
| 4·455 | 67 | 339 | 34 | 175 | 42·9 | + 8·2 | + 2·1 |
| 5·298 | 37 | 302 | 20 | 161 | 43·7 | + 8·1 | +13·9 |
| 6·156 | 35 | 263 | 20 | 151 | 44·0 | + 8·4 | +25·6 |
| 7·364 | 30 | 224 | 21 | 154 | 43·8 | + 8·0 | +41·2 |
| 8·287 | 20 | 180 | 17 | 156 | 43·6 | + 7·8 | +53·2 |
| 9·245 | 11 | 102 | 13 | 127 | 42·9 | + 7·8 | +65·1 |
| 10·468 | 0 | 31 | 0 | 135 | 43·1 | + 8·0 | +81·5 |
| Means ... | ... | ... | 23 | 157 | 42·82 | + 8·46 | ... |

### Group 1267.

A large regular spot, *a*, closely followed by another large irregular spot. The latter has broken up by February 1 into several portions, which are, however, measured together, and afterwards diminishes in size, disappearing before February 9. Some small spots are seen near *a* on February 5 and 6.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Jan. 30·341 | 34 | 251 | 78 | 638 | 27·8 | −25·0 | −80·4 |
| 31·341 | 71 | 614 | 84 | 753 | 28·6 | −24·9 | −66·4 |
| Feb. 1·450 | 147 | 897 | 123 | 753 | 28·1 | −24·5 | −52·3 |
| 2·252 | 114 | 951 | 79 | 665 | 27·7 | −24·4 | −42·2 |
| 3 | No photograph. | | (97 | 630 | 27·7 | −24·4 | −27·7) |
| 4·455 | 209 | 1099 | 114 | 594 | 27·6 | −24·3 | −13·2 |
| 5·298 | 150 | 1026 | 79 | 542 | 27·5 | −24·7 | − 2·3 |
| 6·156 | 144 | 945 | 77 | 504 | 27·5 | −24·5 | + 9·1 |
| 7·364 | 143 | 871 | 82 | 503 | 27·1 | −24·6 | +24·5 |
| 8·287 | 107 | 727 | 69 | 465 | 26·5 | −24·6 | +36·1 |
| 9·245 | 74 | 553 | 57 | 428 | 26·2 | −24·5 | +48·4 |
| 10·468 | 107 | 370 | 121 | 420 | 25·9 | −24·2 | +64·3 |
| 11·431 | 53 | 212 | 109 | 434 | 26·5 | −24·3 | +77·5 |
| Means ... | ... | ... | 90 | 564 | 27·28 | −24·53 | ... |

### Group 1268.

A large irregular spot, *a*, with a number of small spots in its neighbourhood. The small spots undergo constant changes in size and position. The large spot, *a*, also undergoes great changes in shape and size.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 31·341 | 27 | 266 | 46 | 454 | 24·1 | +13·3 | −70·9 |
| Feb. 1·450 | 92 | 544 | 94 | 552 | 23·0 | +13·6 | −57·4 |
| 2·252 | 48 | 544 | 38 | 428 | 23·2 | +12·6 | −46·7 |
| 3 | No photograph. | | (49 | 453 | 23·3 | +13·2 | −32·1) |
| 4·455 | 106 | 853 | 59 | 477 | 23·3 | +13·8 | −17·5 |
| 5·298 | 73 | 731 | 40 | 395 | 24·2 | +13·8 | − 5·6 |
| 6·156 | 82 | 820 | 44 | 439 | 24·5 | +13·8 | + 6·1 |
| 7·364 | 85 | 693 | 48 | 396 | 23·5 | +13·6 | +20·9 |
| 8·287 | 74 | 477 | 47 | 303 | 23·5 | +13·6 | +33·1 |
| 9·245 | 28 | 339 | 22 | 256 | 22·6 | +13·6 | +44·8 |
| 10·468 | 39 | 234 | 45 | 267 | 22·8 | +13·6 | +61·2 |
| 11·431 | 43 | 161 | 95 | 354 | 23·7 | +14·0 | +74·7 |
| Means ... | ... | ... | 52 | 398 | 23·48 | +13·54 | ... |

### Group 1269.

A small spot. A second is seen on February 2.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 1·450 | 0 | 14 | 0 | 27 | 7·4 | +12·8 | −73·0 |
| 2·252 | 0 | 21 | 0 | 25 | 7·5 | +13·1 | −62·4 |
| 3 | No photograph. | | (4 | 26 | 7·6 | +13·1 | −47·8) |
| 4·455 | 13 | 41 | 8 | 26 | 7·6 | +13·1 | −33·2 |
| 5·298 | 8 | 22 | 5 | 13 | 8·2 | +13·1 | −21·6 |
| 6·156 | 8 | 27 | 4 | 14 | 8·5 | +13·0 | − 9·9 |
| 7·364 | 4 | 29 | 2 | 15 | 8·3 | +12·9 | + 5·7 |
| 8·287 | 2 | 13 | 1 | 7 | 8·2 | +12·8 | +17·8 |
| Means ... | ... | ... | 3 | 19 | 7·92 | +12·72 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1270.** Several small faint spots arranged in a nearly straight line. The group undergoes frequent changes. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Feb. 4·455 | 10 | 81 | 6 | 50 | 13·3 | +17·4 | −27·5 |
| 5·298 | 7 | 83 | 4 | 47 | 15·1 | +17·4 | −14·7 |
| 6·156 | 6 | 63 | 3 | 35 | 15·5 | +17·3 | − 2·9 |
| 7·364 | 3 | 63 | 2 | 35 | 16·6 | +17·2 | +14·0 |
| 8·287 | 5 | 77 | 3 | 47 | 17·7 | +16·9 | +27·3 |
| Means ... | ... | ... | 4 | 43 | 15·64 | +17·24 | ... |
| **Group 1271.** A large regular spot. A second spot appears on February 14. | | | | | | | |
| Feb. 4·455 | 12 | 106 | 21 | 186 | 329·0 | +11·3 | −71·8 |
| 5·298 | 12 | 156 | 13 | 170 | 329·4 | +11·4 | −60·4 |
| 6·156 | 16 | 225 | 13 | 182 | 329·4 | +11·6 | −49·0 |
| 7·364 | 26 | 302 | 16 | 191 | 329·1 | +11·6 | −33·5 |
| 8·287 | 44 | 278 | 25 | 157 | 329·0 | +11·6 | −21·4 |
| 9·245 | 45 | 293 | 24 | 156 | 328·8 | +11·9 | − 9·0 |
| 10·468 | 58 | 295 | 31 | 157 | 328·9 | +12·0 | + 7·3 |
| 11·431 | 50 | 270 | 28 | 151 | 329·1 | +11·6 | +20·1 |
| 12·481 | 35 | 244 | 22 | 156 | 329·5 | +11·9 | +34·3 |
| 13·403 | 42 | 210 | 32 | 163 | 329·6 | +12·0 | +46·6 |
| 14·559 | 42 | 153 | 49 | 182 | 330·4 | +12·6 | +62 6 |
| 15·453 | 24 | 108 | 48 | 241 | 331·1 | +12·4 | +75·1 |
| Means ... | ... | ... | 27 | 174 | 329·44 | +11·83 | ... |
| **Group 1272.** Two small spots on February 5, on which day they are measured together. They have moved apart and increased in size by February 6. The preceding spot has disappeared by February 7. | | | | | | | |
| Feb. 5·298 | 0 | 5 | 0 | 4 | 341·2 | − 4·4 | −48·6 |
| 6·156 | 4 | 21 | 3 | 13 | 340·9 | − 4·5 | −37·5 |
| 7·364 | 9 | 30 | 5 | 16 | 340·3 | − 4·8 | −22·3 |
| 8·287 | 8 | 25 | 4 | 13 | 340·5 | − 5·0 | − 9·9 |
| Means ... | ... | ... | 3 | 12 | 340·73 | − 4·68 | ... |
| **Group 1273.** A small spot when first seen. A second is seen on February 6, a third on February 7. The group consists after this of a number of small spots irregularly arranged, the size, distribution, and number changing from day to day. | | | | | | | |
| Feb. 5·298 | 0 | 3 | 0 | 4 | 321·4 | +12 8 | −68·4 |
| 6·156 | 0 | 20 | 0 | 19 | 322·6 | +13·2 | −55·8 |
| 7·364 | 0 | 40 | 0 | 31 | 325·1 | +13·9 | −37·5 |
| 8·287 | 2 | 57 | 1 | 34 | 323·6 | +13·7 | −26·8 |
| 9·245 | 4 | 158 | 2 | 87 | 323·5 | +13·9 | −14·3 |
| 10·468 | 20 | 142 | 10 | 76 | 323·7 | +13·6 | + 2·1 |
| **Group 1273—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Feb. 11·431 | 22 | 81 | 12 | 45 | 324·7 | +13·0 | +15·7 |
| 12·481 | 16 | 84 | 10 | 51 | 325·8 | +13·5 | +30·6 |
| 13·403 | 0 | 40 | 0 | 31 | 327·8 | +15·5 | +44·8 |
| 14·559 | 0 | 16 | 0 | 18 | 328·0 | +16·3 | +60·2 |
| 15·453 | 0 | 12 | 0 | 27 | 326·7 | +16·3 | +70·7 |
| Means ... | ... | ... | 3 | 38 | 324·81 | +13·98 | ... |
| **Group 1274.** A small spot. | | | | | | | |
| Feb. 8·287 | 2 | 5 | 2 | 4 | 37·6 | +12·1 | +47·2 |
| Means ... | ... | ... | 2 | 4 | 37·6 | +12·1 | ... |
| **Group 1275.** Three small faint spots measured together. | | | | | | | |
| Feb. 8·287 | 0 | 19 | 0 | 10 | 1·9 | −10·2 | +11·5 |
| Means ... | ... | ... | 0 | 10 | 1·9 | −10·2 | ... |
| **Group 1276.** A small spot on February 9. On February 10 the group consists of three spots of considerable size, the first two being measured together. | | | | | | | |
| Feb. 9·245 | 0 | 12 | 0 | 13 | 38·1 | +10·9 | +60·3 |
| 10·468 | 0 | 113 | 0 | 257 | 36·9 | +12·4 | +75·3 |
| Means ... | ... | ... | 0 | 135 | 37·50 | +11·65 | ... |
| **Group 1277.** A fine group composed of two large regular spots, *a* and *b*, and a number of smaller spots between them, which undergo frequent changes, and which have all disappeared by February 20. | | | | | | | |
| Feb. 9·245 | 4 | 42 | 18 | 203 | 254·9 | + 8·4 | −82·9 |
| 10·468 | 89 | 468 | 132 | 705 | 252·3 | + 7·5 | −69·3 |
| 11·431 | 112 | 685 | 107 | 641 | 252·9 | + 7·2 | −56·1 |
| 12·481 | 155 | 1002 | 106 | 693 | 253·8 | + 7·2 | −41·4 |
| 13·403 | 191 | 1012 | 112 | 696 | 254·0 | + 7·1 | −29·0 |
| 14·559 | 317 | 1373 | 168 | 728 | 254·4 | + 6·9 | −13·4 |
| 15·453 | 186 | 1137 | 96 | 587 | 254·6 | + 7·2 | − 1·4 |
| 16·470 | 198 | 969 | 105 | 514 | 255·6 | + 7·2 | +13·0 |
| 17 | No photograph. | | (104 | 510 | 256·0 | + 7·4 | +26·1) |
| 18·398 | 153 | 755 | 103 | 505 | 256·4 | + 7·5 | +39·2 |
| 19 | No photograph. | | (78 | 409 | 257·1 | + 7·5 | +53·6) |
| 20·481 | 35 | 220 | 52 | 313 | 257·8 | + 7·4 | +68·0 |
| Means ... | ... | ... | 98 | 542 | 254·98 | + 7·38 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1278.** A small spot, *a*, which has disappeared by February 12. A second spot, *b*, appears on February 11. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Feb. 10·468 | 0 | 11 | 0 | 6 | 340·6 | + 6·9 | +19·0 |
| 11·431 | 10 | 57 | 6 | 34 | 340·1 | + 7·5 | +31·1 |
| 12·481 | 7 | 21 | 5 | 15 | 338·7 | + 8·6 | +43·5 |
| Means ... | ... | ... | 4 | 18 | 339·80 | + 7·67 | ... |
| **Group 1279.** Two small spots. | | | | | | | |
| Feb. 10·468 | 0 | 12 | 0 | 7 | 333·8 | +12·0 | +12·2 |
| 11·431 | 0 | 17 | 0 | 9 | 333·6 | +11·4 | +24·6 |
| Means ... | ... | ... | 0 | 8 | 333·70 | +11·70 | ... |
| **Group 1280.** A single spot. | | | | | | | |
| Feb. 10·468 | 0 | 18 | 0 | 31 | 246·8 | −19·2 | −74·8 |
| 11·431 | 3 | 57 | 3 | 59 | 247·1 | −19·8 | −61·9 |
| 12·481 | 0 | 65 | 0 | 48 | 247·7 | −19·8 | −47·5 |
| Means ... | ... | ... | 1 | 46 | 247·20 | −19·60 | ... |
| **Group 1281.** A single spot. | | | | | | | |
| Feb. 10·468 | 0 | 41 | 0 | 155 | 238·0 | − 9·8 | −83·6 |
| 11·431 | 10 | 63 | 14 | 90 | 238·9 | −10·1 | −70·1 |
| 12·481 | 27 | 106 | 24 | 93 | 239·3 | −10·4 | −55·9 |
| 13·403 | 43 | 148 | 30 | 101 | 239·3 | −10·6 | −43·7 |
| 14·559 | 25 | 107 | 14 | 60 | 240·0 | −11·0 | −27·8 |
| 15·453 | 24 | 74 | 13 | 38 | 240·1 | −10·9 | −15·9 |
| 16·470 | 16 | 33 | 8 | 16 | 240·3 | −10·8 | − 2·3 |
| 17 | No photograph. | | (8 | 14 | 240·4 | −10·5 | +10·5) |
| 18·398 | 15 | 23 | 8 | 12 | 240·5 | −10·2 | +23·3 |
| Means ... | ... | ... | 13 | 64 | 239·64 | −10·48 | ... |
| **Group 1282.** A small spot. | | | | | | | |
| Feb. 13·403 | 0 | 19 | 0 | 21 | 342·0 | +20·4 | +59·0 |
| 14·559 | 0 | 12 | 0 | 29 | 342·2 | +20·5 | +74·4 |
| Means ... | ... | ... | 0 | 25 | 342·10 | +20·45 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1283.** A small spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Feb. 13·403 | 0 | 20 | 0 | 21 | 220·2 | −15·8 | −62·8 |
| 14·559 | 0 | 7 | 0 | 5 | 220·5 | −15·4 | −47·3 |
| Means ... | ... | ... | 0 | 13 | 220·35 | −15·60 | ... |
| **Group 1284.** A large regular spot, *a*, preceded by a number of small spots, which diminish in size day by day, and disappear before February 20. | | | | | | | |
| Feb. 13·403 | 38 | 248 | 70 | 437 | 208·6 | −11·2 | −74·4 |
| 14·559 | 103 | 506 | 101 | 488 | 208·4 | −10·8 | −59·4 |
| 15·453 | 96 | 559 | 71 | 411 | 208·2 | −10·0 | −47·8 |
| 16·470 | 99 | 537 | 59 | 324 | 207·9 | − 9·7 | −34·7 |
| 17 | No photograph. | | (57 | 318 | 207·9 | − 9·7 | −22·1) |
| 18·398 | 106 | 615 | 54 | 312 | 207·8 | − 9·7 | − 9·4 |
| 19 | No photograph. | | (51 | 305 | 207·6 | − 9·6 | + 4·1) |
| 20·481 | 90 | 571 | 47 | 298 | 207·4 | − 9·4 | +17·6 |
| 21·538 | 57 | 490 | 34 | 288 | 207·3 | − 9·3 | +31·4 |
| 22·283 | 44 | 384 | 29 | 255 | 207·4 | − 9·2 | +41·4 |
| 23·394 | 50 | 299 | 44 | 263 | 207·3 | − 9·1 | +55·9 |
| 24·456 | 49 | 188 | 68 | 262 | 207·1 | − 8·9 | +69·7 |
| 25·498 | 19 | 45 | 90 | 216 | 208·8 | − 9·1 | +85·1 |
| Means ... | ... | ... | 60 | 321 | 207·83 | − 9·67 | ... |
| **Group 1285.** Two considerable spots, *a* and *b*, which appear suddenly near the centre of the sun. Several small spots are seen close to them. The appearance and areas of the spots undergo frequent changes. | | | | | | | |
| Feb. 14·559 | 92 | 303 | 48 | 160 | 285·5 | −11·7 | +17·7 |
| 15·453 | 95 | 597 | 54 | 341 | 285·2 | −11·4 | +29·2 |
| 16·470 | 87 | 596 | 59 | 406 | 285·8 | −11·5 | +43·2 |
| 17 | No photograph. | | (52 | 416 | 286·0 | −11·3 | +56·1) |
| 18·398 | 33 | 320 | 44 | 425 | 286·1 | −11·0 | +68·9 |
| Means ... | ... | ... | 51 | 350 | 285·72 | −11·38 | ... |
| **Group 1286.** Two compact clusters of very small spots. The members of each cluster have coalesced by February 16, thus forming two small spots. The photograph on February 21 is much over-exposed. | | | | | | | |
| Feb. 15·453 | 29 | 88 | 14 | 45 | 249·1 | −10·1 | − 6·9 |
| 16·470 | 17 | 44 | 8 | 22 | 249·2 | −10·1 | + 6·6 |
| Means ... | ... | ... | 11 | 34 | 249·15 | −10·10 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1287.

A scattered group of small faint spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Feb. 16·470 | 0 | 37 | 0 | 23 | 205·0 | −15·5 | −37·6 |
| 17 | No photograph. | | (2 | 29 | 204·4 | −15·6 | −25·5) |
| 18·398 | 7 | 67 | 4 | 34 | 203·8 | −15·6 | −13·4 |
| 19 | No photograph. | | (2 | 43 | 204·3 | −15·5 | + 0·8) |
| 20·481 | 0 | 99 | 0 | 51 | 204·7 | −15·3 | +14·9 |
| 21·538 | 0 | 76 | 0 | 44 | 204·8 | −16·7 | +28·9 |
| 22·283 | 6 | 38 | 4 | 24 | 204·5 | −14·8 | +38·5 |
| Means ... | ... | ... | 2 | 35 | 204·50 | −15·57 | ... |

### Group 1288.

A large regular spot, *a*, followed by a stream of smaller spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 16·470 | 1 | 31 | 1 | 50 | 173·0 | +14·0 | −69·6 |
| 17 | No photograph. | | (22 | 124 | 173·8 | +14·2 | −56·2) |
| 18·398 | 55 | 268 | 42 | 197 | 174·5 | +14·3 | −42·7 |
| 19 | No photograph. | | (50 | 257 | 175·1 | +14·1 | −28·5) |
| 20·481 | 104 | 575 | 58 | 317 | 175·6 | +13·9 | −14·2 |
| 21·538 | 102 | 658 | 54 | 354 | 176·5 | +13·5 | + 0·6 |
| 22·283 | 61 | 828 | 33 | 450 | 177·0 | +13·3 | +11·0 |
| 23·394 | 96 | 731 | 57 | 437 | 177·5 | +12·9 | +26·1 |
| 24·456 | 80 | 592 | 58 | 425 | 178·4 | +12·9 | +41·0 |
| 25·498 | 51 | 314 | 50 | 313 | 180·3 | +12·8 | +56·6 |
| 26·480 | 15 | 164 | 26 | 272 | 180·9 | +12·7 | +70·1 |
| 27·234 | 1 | 45 | 5 | 215 | 182·8 | +13·3 | +82·0 |
| Means ... | ... | ... | 38 | 284 | 177·12 | +13·49 | ... |

### Group 1289.

A number of small faint spots irregularly arranged.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 18·398 | 0 | 71 | 0 | 11 | 259·5 | −13·3 | +42·3 |
| 19 | No photograph. | | (0 | 18 | 260·5 | −11·4 | +57·0) |
| 20·481 | 1 | 16 | 1 | 25 | 261·5 | − 9·5 | +71·7 |
| Means ... | ... | ... | 1 | 18 | 260·50 | −11·40 | ... |

### Group 1290.

A small well-defined spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 18·398 | 0 | 7 | 0 | 4 | 213·6 | −21·9 | − 3·6 |
| Means ... | ... | ... | 0 | 4 | 213·6 | −21·9 | ... |

### Group 1291.

A regular spot, *a*. A small spot appears near it on February 22 and is measured with it. Other small spots appear on February 23. The whole group is measured together as one on February 24. A small but dark spot, *b*, appears on February 25. The group is measured in three portions on February 25 and 26; *a* and *b* separately, and the remaining small spots together. The small spots seen on February 26 are wholly different from those seen on February 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Feb. 18·398 | 29 | 141 | 39 | 191 | 150·0 | + 7·3 | −67·2 |
| 19 | No photograph. | | (36 | 211 | 150·7 | + 7·2 | −52·8) |
| 20·481 | 49 | 350 | 32 | 230 | 151·4 | + 7·0 | −38·4 |
| 21·538 | 37 | 302 | 21 | 172 | 151·9 | + 7·4 | −24·0 |
| 22·283 | 29 | 306 | 15 | 163 | 152·0 | + 7·5 | −14·0 |
| 23·394 | 51 | 240 | 27 | 125 | 152·3 | + 7·9 | + 0·9 |
| 24·456 | 25 | 221 | 13 | 119 | 152·6 | + 8·0 | +15·2 |
| 25·498 | 38 | 183 | 28 | 110 | 152·9 | + 8·8 | +29·2 |
| 26·480 | 28 | 134 | 20 | 96 | 153·1 | + 9·9 | +42·3 |
| 27·234 | 13 | 79 | 12 | 68 | 152·9 | +10·1 | +52·1 |
| Means ... | ... | ... | 24 | 148 | 151·98 | + 8·11 | ... |

### Group 1292.

A scattered group of small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 20·481 | 11 | 37 | 6 | 20 | 213·4 | −16·2 | +23·6 |
| 21·538 | 0 | 43 | 0 | 27 | 214·0 | −15·5 | +38·1 |
| 22·283 | 0 | 12 | 0 | 9 | 211·9 | −18·8 | +45·9 |
| Means ... | ... | ... | 2 | 19 | 213·10 | −16·83 | ... |

### Group 1293.

Two spots close together. They are measured together until February 24, but separately afterwards. The following spot breaks up into three parts on February 25, but is still measured as a whole.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 21·538 | 0 | 37 | 0 | 63 | 102·2 | − 7·1 | −73·7 |
| 22·283 | 11 | 57 | 12 | 62 | 102·6 | − 7·0 | −63·4 |
| 23·394 | 27 | 115 | 20 | 86 | 103·0 | − 7·7 | −48·4 |
| 24·456 | 16 | 180 | 10 | 108 | 103·3 | − 7·5 | −34·1 |
| 25·498 | 20 | 131 | 11 | 70 | 104·0 | − 7·5 | −19·7 |
| 26·480 | 37 | 97 | 18 | 49 | 103·6 | − 7·6 | − 7·2 |
| 27·234 | 6 | 58 | 3 | 29 | 103·7 | − 7·3 | + 2·9 |
| Means ... | ... | ... | 11 | 67 | 103·20 | − 7·39 | ... |

### Group 1294.

A faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 22·283 | 0 | 3 | 0 | 3 | 98·0 | − 6·7 | −68·0 |
| 23·394 | 0 | 37 | 0 | 32 | 96·6 | − 7·3 | −54·8 |
| 24·456 | 0 | 106 | 0 | 69 | 97·1 | − 7·5 | −40·3 |
| 25·498 | 10 | 61 | 5 | 34 | 98·4 | − 7·7 | −25·3 |
| 26·480 | 0 | 67 | 0 | 36 | 98·7 | − 8·4 | −12·1 |
| Means ... | ... | ... | 1 | 35 | 97·76 | − 7·52 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1295.

A regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. a | | | | | ° | ° | ° |
| Feb. 23·394 | 7 | 33 | 19 | 85 | 74·5 | +11·7 | −76·9 |
| 24·456 | 15 | 64 | 19 | 80 | 73·6 | +12·4 | −63·8 |
| 25·498 | 20 | 98 | 17 | 82 | 73·8 | +12·1 | −49·9 |
| 26·480 | 25 | 139 | 17 | 94 | 73·4 | +12·3 | −37·4 |
| 27·234 | 16 | 97 | 9 | 59 | 73·3 | +12·7 | −27·5 |
| 28 | No photograph. | | (12 | 54 | 73·5 | +12·5 | −12·1) |
| 29·558 | 27 | 91 | 14 | 48 | 73·6 | +12·2 | + 3·3 |
| Mar. 1·434 | 19 | 62 | 10 | 34 | 73·2 | +12·3 | +14·5 |
| 2·553 | 16 | 76 | 10 | 47 | 73·3 | +12·2 | +29·4 |
| 3·297 | 8 | 63 | 6 | 44 | 73·9 | +12·1 | +39·7 |
| Means ... | ... | ... | 13 | 63 | 73·61 | +12·25 | ... |

### Group 1296.

Three spots close together on February 24. On February 26 the group consists of two cluster of spots, *a* and b. On February 29 a small regular spot, *c*, appears a little in advance of *a*. *a* and b are measured together on March 1, and disappear before March 2. *c* has divided into two portions by March 2.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 24·456 | 41 | 204 | 42 | 211 | 75·8 | −14·1 | −61·6 |
| 25·498 | 57 | 254 | 42 | 188 | 75·8 | −14·9 | −47·9 |
| 26·480 | 45 | 305 | 28 | 185 | 76·3 | −14·6 | −34·5 |
| 27·234 | 44 | 223 | 25 | 124 | 75·7 | −14·2 | −25·1 |
| 28 | No photograph. | | (23 | 113 | 77·9 | −13·7 | − 7·7) |
| 29·558 | 41 | 199 | 21 | 101 | 80·0 | −13·2 | + 9·7 |
| Mar. 1·434 | 31 | 171 | 17 | 93 | 81·4 | −12·4 | +22·7 |
| 2·553 | 37 | 135 | 23 | 86 | 82·3 | −12·7 | +38·4 |
| 3·297 | 12 | 111 | 10 | 84 | 83·1 | −13·2 | +48·9 |
| Means ... | ... | ... | 26 | 132 | 78·70 | −13·67 | ... |

### Group 1297.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 24·456 | 0 | 21 | 0 | 48 | 61·7 | + 9·3 | −75·7 |
| 25·498 | 16 | 64 | 17 | 67 | 64·1 | + 9·6 | −59·6 |
| 26·480 | 16 | 53 | 12 | 40 | 65·3 | + 8·4 | −45·5 |
| 27·234 | 10 | 71 | 7 | 45 | 65·9 | + 8·1 | −34·9 |
| 28 | No photograph. | | (8 | 33 | 67·2 | + 7·4 | −18·4) |
| 29·558 | 16 | 41 | 8 | 21 | 68·5 | + 6·7 | − 1·8 |
| Mar. 1·434 | 8 | 27 | 4 | 14 | 68·6 | + 6·5 | + 9·9 |
| 2·553 | 10 | 20 | 6 | 12 | 69·5 | + 6·2 | +25·6 |
| 3·297 | 0 | 2 | 0 | 2 | 70·4 | + 6·1 | +36·2 |
| Means ... | ... | ... | 7 | 31 | 66·80 | + 7·59 | ... |

### Group 1298.

A very small spot on February 25. Three spots on February 26, the last two of which have coalesced by February 27.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. a | | | | | ° | ° | ° |
| Feb. 25·498 | 2 | 7 | 1 | 6 | 174·0 | + 8·7 | +50·3 |
| 26·480 | 93 | 432 | 107 | 484 | 172·7 | + 7·3 | +61·9 |
| 27·234 | 19 | 238 | 33 | 421 | 173·3 | + 6·7 | +72·5 |
| Means ... | ... | ... | 47 | 304 | 173·33 | + 7·57 | ... |

### Group 1299.

Two clusters of small spots. Only two spots remain of the following cluster on February 27, and those are measured separately.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 25·498 | 23 | 80 | 12 | 42 | 125·6 | +10·6 | + 1·9 |
| 26·480 | 20 | 119 | 11 | 65 | 126·2 | +10·7 | +15·4 |
| 27·234 | 10 | 164 | 6 | 96 | 126·9 | +11·3 | +26·1 |
| Means ... | ... | ... | 10 | 68 | 126·23 | +10·87 | ... |

### Group 1300.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 25·498 | 0 | 4 | 0 | 5 | 58·8 | +10·1 | −64·9 |
| 26·480 | 0 | 15 | 0 | 12 | 59·6 | + 9·8 | −51·2 |
| 27·234 | 0 | 5 | 0 | 4 | 59·4 | +10·4 | −41·4 |
| Means ... | ... | ... | 0 | 7 | 59·27 | +10·10 | ... |

### Group 1301.

A large regular spot, *a*, which has divided into two portions by March 5. The two spots are not measured separately until March 6. Some small spots are seen near *a* on March 2, and others on March 3.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 25·498 | 33 | 123 | 144 | 540 | 41·7 | +10·6 | −82·0 |
| 26·480 | 82 | 311 | 133 | 505 | 40·6 | +10·4 | −70·2 |
| 27·234 | 67 | 471 | 72 | 506 | 40·9 | +10·8 | −59·9 |
| 28 | No photograph. | | (86 | 519 | 41·3 | +10·6 | −44·3) |
| 29·558 | 174 | 885 | 104 | 531 | 41·6 | +10·3 | −28·7 |
| Mar. 1·434 | 105 | 861 | 58 | 474 | 41·2 | +10·3 | −17·5 |
| 2·553 | 146 | 987 | 76 | 518 | 41·2 | +10·3 | − 2·7 |
| 3·297 | 94 | 941 | 50 | 498 | 41·8 | +10·4 | + 7·6 |
| 4 | No photograph. | | (56 | 426 | 41·8 | +10·4 | +21·9) |
| 5·465 | 94 | 541 | 62 | 353 | 41·8 | +10·4 | +36·2 |
| 6·339 | 65 | 495 | 51 | 390 | 41·8 | +10·1 | +47·7 |
| 7·454 | 35 | 204 | 41 | 237 | 41·8 | +10·4 | +62·4 |
| Means ... | ... | ... | 78 | 458 | 41·46 | +10·42 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1302.

A small spot on February 26. A number of other spots appear before February 27, and on February 29 the group consists of two large spots, *a* and *b*, and some small spots between them. *b* has broken up into a number of small spots by March 3, and on March 5 the group consists of a number of small spots in a fairly compact cluster, which are, therefore, measured together; but as the individual spots tend to move apart, the group is measured in four divisions on March 6.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Feb. 26·480 | 0 | 15 | 0 | 14 | 52·9 | − 8·4 | −57·9 |
| 27·234 | 14 | 48 | 10 | 35 | 52·9 | − 8·2 | −47·9 |
| 28 | No photograph. | | (41 | 297 | 54·4 | − 8·6 | −31·2) |
| 29·558 | 136 | 1077 | 71 | 558 | 55·8 | − 8·9 | −14·5 |
| Mar. 1·434 | 113 | 918 | 57 | 461 | 55·4 | − 8·9 | − 3·3 |
| 2·553 | 115 | 872 | 59 | 447 | 55·7 | − 9·0 | +11·8 |
| 3·297 | 83 | 688 | 45 | 374 | 56·2 | − 8·9 | +22·0 |
| 4· | No photograph. | | (62 | 383 | 55·9 | − 8·9 | +36·0) |
| 5·465 | 101 | 508 | 78 | 392 | 55·6 | − 8·9 | +50·0 |
| 6·339 | 10 | 197 | 12 | 212 | 56·8 | − 8·8 | +62·7 |
| 7·454 | 0 | 115 | 0 | 249 | 57·0 | − 8·5 | +77·6 |
| Means ... | ... | ... | 40 | 311 | 55·33 | − 8·73 | ... |

### Group 1303.

A regular spot, *a*, followed by a smaller one, *b*. The latter has broken up into a number of very small spots by March 1. These have all disappeared by March 6.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 27·234 | 4 | 43 | 10 | 108 | 20·1 | −26·3 | −80·7 |
| 28 | No photograph. | | (13 | 114 | 20·5 | −26·5 | −65·1) |
| 29·558 | 20 | 150 | 16 | 119 | 20·8 | −26·6 | −49·5 |
| Mar. 1·434 | 29 | 312 | 19 | 209 | 19·9 | −27·0 | −38·8 |
| 2·553 | 51 | 273 | 29 | 159 | 19·8 | −27·0 | −24·1 |
| 3·297 | 24 | 209 | 13 | 116 | 19·9 | −26·9 | −14·3 |
| 4 | No photograph. | | (17 | 120 | 20·1 | −26·8 | + 0·1) |
| 5·465 | 36 | 227 | 20 | 124 | 20·2 | −26·7 | +14·6 |
| 6·339 | 17 | 182 | 10 | 106 | 19·6 | −26·6 | +25·5 |
| 7·454 | 27 | 109 | 18 | 74 | 19·3 | −26·5 | +39·9 |
| 8· | No photograph. | | (18 | 81 | 18·4 | 26·6 | +52·8) |
| 9·543 | 16 | 78 | 18 | 87 | 17·5 | −26·6 | +65·6 |
| 10·566 | 1 | 41 | 2 | 93 | 17·6 | −27·1 | +79·2 |
| Means ... | ... | ... | 16 | 116 | 19·52 | −26·71 | ... |

### Group 1304.

A small spot. A second is seen near it on March 1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 29·558 | 7 | 19 | 4 | 11 | 40·5 | − 6·9 | −29·8 |
| Mar. 1·434 | 0 | 119 | 0 | 63 | 39·6 | − 7·9 | −19·1 |
| 2·553 | 0 | 13 | 0 | 7 | 41·9 | − 7·1 | − 2·0 |
| Means ... | ... | ... | 1 | 27 | 40·67 | − 7·30 | ... |

### Group 1305.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Mar. 3·297 | 0 | 5 | 0 | 3 | 23·4 | +17·7 | −10·8 |
| 4 | No photograph. | | (0 | 8 | 23·6 | +18·0 | + 3·7) |
| 5·465 | 0 | 21 | 0 | 12 | 23·8 | +18·2 | +18·2 |
| Means ... | ... | ... | 0 | 8 | 23·60 | +17·97 | ... |

### Group 1306.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 3·297 | 0 | 3 | 0 | 3 | 332·3 | +11·0 | −61·9 |
| Means ... | ... | ... | 0 | 3 | 332·3 | +11·0 | ... |

### Group 1307.

A regular spot, *a*, followed on March 9, 10, and 11 by several small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 3·297 | 5 | 61 | 9 | 105 | 322·8 | +10·2 | −71·4 |
| 4 | No photograph. | | (16 | 97 | 323·0 | +10·1 | −57·0) |
| 5·465 | 32 | 123 | 23 | 88 | 323·1 | +10·0 | −42·5 |
| 6·339 | 23 | 123 | 14 | 76 | 323·1 | +10·3 | −31·0 |
| 7·454 | 27 | 127 | 15 | 69 | 323·7 | +10·0 | −15·7 |
| 8 | No photograph. | | (13 | 84 | 323·6 | + 9·7 | − 2·1) |
| 9·543 | 21 | 183 | 11 | 98 | 323·5 | + 9·3 | +11·6 |
| 10·566 | 33 | 129 | 19 | 75 | 323·7 | +11·2 | +25·3 |
| 11·228 | 7 | 116 | 5 | 74 | 323·5 | +11·3 | +33·9 |
| 12·593 | 0 | 27 | 0 | 24 | 325·0 | +10·9 | +53·4 |
| Means ... | ... | ... | 13 | 79 | 323·50 | +10·30 | ... |

### Group 1308.

Two large irregular spots, *a* and *b*. A great number of very small spots are seen in their neighbourhood March 5–11; these are partly between *a* and *b*, and partly following *b*.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 3·297 | 4 | 69 | 8 | 144 | 317·0 | −10·3 | −77·2 |
| 4 | No photograph. | | (35 | 297 | 317·8 | −10·1 | −62·2) |
| 5·465 | 85 | 618 | 61 | 449 | 318·5 | − 9·9 | −47·1 |
| 6·339 | 66 | 979 | 41 | 607 | 318·0 | −10·1 | −36·1 |
| 7·454 | 178 | 953 | 94 | 510 | 318·5 | − 9·9 | −20·9 |
| 8 | No photograph. | | (86 | 491 | 318·4 | − 9·8 | − 7·3) |
| 9·543 | 155 | 935 | 78 | 471 | 318·3 | − 9·7 | + 6·4 |
| 10·566 | 134 | 829 | 72 | 446 | 320·4 | − 8·8 | +22·0 |
| 11·228 | 65 | 753 | 39 | 439 | 320·5 | − 9·0 | +30·9 |
| 12·593 | 48 | 374 | 39 | 293 | 322·3 | − 8·7 | +50·7 |
| Means ... | ... | ... | 55 | 415 | 318·97 | − 9·63 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1309.

A small regular spot, *a*; a second, *b*, appears closely following it on March 9.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *d* | | | | | ° | ° | ° |
| Mar. 6·339 | 4 | 26 | 6 | 40 | 282·5 | − 4·8 | −71·6 |
| 7·454 | 7 | 58 | 6 | 51 | 283·2 | − 5·0 | −56·2 |
| 8 | No photograph. | | (7 | 37 | 283·3 | − 4·9 | −42·4) |
| 9·543 | 12 | 39 | 7 | 22 | 283·3 | − 4·8 | −28·6 |
| 10·566 | 8 | 63 | 4 | 33 | 283·9 | − 4·9 | −14·5 |
| 11·228 | 10 | 102 | 5 | 52 | 283·6 | − 4·8 | − 6·0 |
| 12·593 | 0 | 44 | 0 | 23 | 284·6 | − 4·9 | +13·0 |
| Means ... | ... | ... | 5 | 37 | 283·50 | − 4·87 | ... |

### Group 1310.

A regular spot, which breaks up into several portions on March 9. The group again appears as a single regular spot on March 14, and as the group on the intermediate days always forms a compact cluster, it is measured as a whole.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 6·339 | 2 | 20 | 14 | 148 | 265·3 | −16·2 | −88·8 |
| 7·454 | 15 | 80 | 23 | 124 | 266·8 | −16·6 | −72·6 |
| 8 | No photograph. | | (31 | 264 | 267·7 | −16·8 | −68·0) |
| 9·543 | 56 | 588 | 38 | 403 | 268·6 | −16·9 | −43·3 |
| 10·566 | 91 | 625 | 53 | 363 | 268·4 | −17·2 | −30·0 |
| 11·228 | 49 | 429 | 27 | 234 | 268·1 | −16·8 | −21·5 |
| 12·593 | 89 | 395 | 45 | 201 | 268·7 | −17·0 | − 2·9 |
| 13 | No photograph. | | (35 | 187 | 268·6 | −16·8 | +10·1) |
| 14·577 | 44 | 316 | 25 | 173 | 268·5 | −16·6 | +23·0 |
| 15·463 | 45 | 305 | 28 | 188 | 268·5 | −16·9 | +34·7 |
| 16·441 | 29 | 224 | 21 | 164 | 268·9 | −16·3 | +47·9 |
| 17·503 | 20 | 100 | 19 | 101 | 268·2 | −16·6 | +61·3 |
| 18·438 | 17 | 81 | 29 | 141 | 269·2 | −16·2 | +74·6 |
| Means ... | ... | .. | 30 | 207 | 268·12 | −16·68 | ... |

### Group 1311.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 7·454 | 11 | 45 | 18 | 78 | 265·5 | − 8·4 | −73·9 |
| 8 | No photograph. | | (14 | 77 | 265·7 | − 8·3 | −60·0) |
| 9·543 | 12 | 107 | 9 | 76 | 265·9 | − 8·2 | −46·0 |
| 10·566 | 19 | 119 | 11 | 70 | 266·0 | − 8·1 | −32·4 |
| 11·228 | 6 | 82 | 3 | 45 | 266·0 | − 8·1 | −23·6 |
| 12·593 | 8 | 33 | 4 | 16 | 266·3 | − 8·0 | − 5·3 |
| 13 | No photograph. | | ( 4 | 15 | 266·4 | − 7·7 | + 7·9) |
| 14·577 | 8 | 24 | 4 | 13 | 266·5 | − 7·4 | +21·0 |
| 15·463 | 7 | 21 | 4 | 13 | 266·4 | − 7·4 | +32·6 |
| 16·441 | 0 | 12 | 0 | 8 | 267·1 | − 6·7 | +46·1 |
| Means ... | ... | ... | 7 | 41 | 266·18 | − 7·83 | ... |

### Group 1312.

A small spot. A second is seen close to it on March 10 and 11, but the two are measured together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. *d* | | | | | ° | ° | ° |
| Mar. 9·543 | 0 | 22 | 0 | 13 | 278·9 | − 7·5 | −33·0 |
| 10·566 | 0 | 66 | 0 | 35 | 279·1 | − 6·8 | −19·3 |
| 11·228 | 0 | 19 | 0 | 10 | 278·9 | − 6·6 | −10·7 |
| Means ... | ... | ... | 0 | 19 | 278·97 | − 6·97 | ... |

### Group 1313.

Two small spots, *a* and *b*; *a* disappears before March 12.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 9·543 | 25 | 56 | 21 | 47 | 260·6 | +10·1 | −51·3 |
| 10·566 | 4 | 43 | 3 | 28 | 260·6 | +10·4 | −37·8 |
| 11·228 | 1 | 14 | 1 | 8 | 260·0 | +10·3 | −29·6 |
| 12·593 | 0 | 11 | 0 | 6 | 259·5 | + 9·6 | −12·1 |
| Means ... | ... | ... | 6 | 22 | 260·18 | +10·10 | ... |

### Group 1314.

Two large spots, *a* and *b*; *a* breaks up into several portions on March 12, and diminishes in size; it is still, however, measured as a whole. A small spot, *c*, is seen between *a* and *b* on March 14 and 15; *a* and *c* disappear before March 16.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 9·543 | 8 | 123 | 17 | 284 | 236·6 | +13·1 | −75·3 |
| 10·566 | 25 | 270 | 34 | 356 | 233·6 | +14·0 | −64·8 |
| 11·228 | 35 | 368 | 36 | 367 | 233·2 | +14·1 | −56·4 |
| 12·593 | 66 | 341 | 45 | 236 | 233·1 | +13·9 | −38·5 |
| 13 | No photograph. | | (37 | 211 | 232·8 | +14·3 | −25·8) |
| 14·577 | 52 | 336 | 29 | 185 | 232·4 | +14·7 | −13·1 |
| 15·463 | 68 | 355 | 37 | 192 | 232·0 | +14·8 | − 1·8 |
| 16·441 | 33 | 316 | 18 | 172 | 231·6 | +15·0 | +10·6 |
| 17·503 | 44 | 256 | 27 | 153 | 231·4 | +15·3 | +24·5 |
| 18·438 | 31 | 112 | 21 | 76 | 231·5 | +15·1 | +36·9 |
| 19·474 | 8 | 48 | 7 | 43 | 231·0 | +15·0 | +50·1 |
| Means ... | ... | ... | 28 | 207 | 232·65 | +14·48 | ... |

### Group 1315.

Two spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 10·566 | 0 | 45 | 0 | 59 | 6·8 | −12·3 | +68·4 |
| 11·228 | 0 | 24 | 0 | 47 | 6·2 | −12·1 | +76·6 |
| Means ... | ... | ... | 0 | 53 | 6·50 | −12·20 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1316.** A small spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Mar. 10·566 | 0 | 16 | 0 | 8 | 286·9 | − 9·9 | −11·5 |
| Means ... | ... | ... | 0 | 8 | 286·9 | − 9·9 | ... |
| **Group 1317.** A small spot on March 10 and 11; it rapidly increases in size, and on March 12 is composed of seven spots in a compact cluster. This has broken up into two well-defined clusters, *a* and *b*, by March 14, and the separate spots have coalesced to form two spots by March 17, *a* showing a large proper motion in longitude. | | | | | | | |
| Mar. 10·566 | 0 | 11 | 0 | 7 | 255·3 | −13·4 | −43·1 |
| 11·228 | 8 | 22 | 5 | 13 | 255·3 | −13·2 | −34·3 |
| 12·593 | 31 | 140 | 16 | 73 | 255·0 | −13·3 | −16·6 |
| 13 | No photograph. | | (17 | 125 | 255·0 | −12·7 | − 3·6) |
| 14·577 | 32 | 352 | 17 | 177 | 255·0 | −12·2 | + 9·5 |
| 15·463 | 97 | 718 | 53 | 387 | 254·8 | −12·3 | +21·0 |
| 16·441 | 45 | 360 | 27 | 217 | 255·6 | −11·8 | +34·6 |
| 17·503 | 16 | 200 | 12 | 151 | 254·7 | −12·3 | +47·8 |
| 18·438 | 16 | 128 | 15 | 135 | 256·9 | −11·6 | +62·3 |
| 19·474 | 0 | 8 | 0 | 12 | 252·2 | −12·3 | +71·3 |
| Means ... | ... | ... | 16 | 130 | 254·98 | −12·51 | ... |
| **Group 1318.** Two very small spots. | | | | | | | |
| Mar. 11·228 | 0 | 18 | 0 | 9 | 284·2 | − 9·0 | − 5·4 |
| Means ... | ... | ... | 0 | 9 | 284·2 | − 9·0 | ... |
| **Group 1319.** Several small spots. The group has greatly increased in size by March 12, but only one small spot remains on March 14. | | | | | | | |
| Mar. 11·228 | 0 | 12 | 0 | 7 | 255·8 | −17·0 | −33·8 |
| 12·593 | 25 | 145 | 13 | 76 | 259·0 | −16·3 | −12·6 |
| 13 | No photograph. | | ( 7 | 44 | 260·4 | −15·4 | + 1·8) |
| 14·577 | 0 | 20 | 0 | 11 | 261·7 | −14·4 | +16·2 |
| 15·463 | 8 | 15 | 5 | 8 | 261·8 | −14·3 | +28·0 |
| Means ... | ... | ... | 5 | 29 | 259·74 | −15·48 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1320.** A regular spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Mar. 11·288 | 3 | 36 | 9 | 114 | 207·6 | − 9·8 | −82·0 |
| 12·593 | 21 | 107 | 23 | 117 | 207·6 | −10·0 | −64·0 |
| 13 | No photograph. | | (19 | 135 | 208·1 | − 9·9 | −50·5) |
| 14·577 | 24 | 248 | 15 | 153 | 208·5 | − 9·8 | −37·0 |
| 15·463 | 44 | 223 | 24 | 124 | 208·5 | −10·0 | −25·3 |
| 16·441 | 37 | 232 | 19 | 118 | 208·6 | −10·0 | −12·4 |
| 17·503 | 44 | 220 | 22 | 110 | 208·5 | − 9·9 | + 1·6 |
| 18·438 | 36 | 211 | 18 | 109 | 208·6 | − 9·6 | +14·0 |
| 19·474 | 48 | 284 | 27 | 160 | 208·2 | − 9·6 | +27·3 |
| 20·439 | 28 | 236 | 19 | 154 | 208·7 | − 9·1 | +40·4 |
| 21·476 | 25 | 153 | 21 | 127 | 208·0 | − 9·4 | +53·5 |
| 22·238 | 16 | 107 | 17 | 117 | 207·9 | − 8·9 | +63·4 |
| 23·553 | 10 | 50 | 29 | 145 | 208·3 | − 9·6 | +81·1 |
| Means ... | ... | ... | 20 | 129 | 208·24 | − 9·67 | ... |
| **Group 1321.** Two spots. | | | | | | | |
| Mar. 14·577 | 4 | 68 | 3 | 82 | 312·0 | −12·7 | +66·5 |
| 15·463 | 0 | 116 | 0 | 266 | 312·5 | −13·1 | +78·7 |
| Means ... | ... | .. | 2 | 174 | 312·25 | −12·90 | ... |
| **Group 1322.** Four small spots, *a*, *b*, *c*, and *d*; a number of other spots appear close to *b* on March 15 and 16, and are measured with it. | | | | | | | |
| Mar. 14·577 | 8 | 92 | 6 | 68 | 198·8 | −14·1 | −46·7 |
| 15·463 | 58 | 293 | 35 | 181 | 198·6 | −13·9 | −35·2 |
| 16·441 | 57 | 468 | 31 | 253 | 198·9 | −14·0 | −22·1 |
| 17·503 | 100 | 440 | 50 | 225 | 199·9 | −14·1 | − 7·0 |
| 18·438 | 60 | 534 | 30 | 271 | 199·0 | −14·2 | + 4·4 |
| 19·474 | 56 | 208 | 29 | 110 | 199·3 | −14·1 | +18·4 |
| 20·439 | 20 | 92 | 12 | 53 | 198·2 | −14·4 | +29·9 |
| 21·476 | 0 | 17 | 0 | 11 | 197·6 | −13·8 | +43·1 |
| Means ... | ... | ... | 24 | 147 | 198·79 | +14·08 | ... |
| **Group 1323.** A regular spot. | | | | | | | |
| Mar. 14·577 | 16 | 76 | 16 | 74 | 188·2 | +12·1 | −57·3 |
| 15·463 | 21 | 136 | 16 | 106 | 187·8 | +12·2 | −46·0 |
| 16·441 | 27 | 180 | 17 | 115 | 187·8 | +12·2 | −33·2 |
| 17·503 | 32 | 192 | 19 | 110 | 187·7 | +12·9 | −19·2 |
| 18·438 | 50 | 182 | 26 | 97 | 188·5 | +13·2 | − 6·1 |
| 19·474 | 16 | 216 | 9 | 116 | 188·5 | +13·7 | + 7·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1323—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Mar. 20·439 | 20 | 216 | 11 | 124 | 188·4 | +14·6 | +20·1 |
| 21·476 | 22 | 131 | 17 | 101 | 188·8 | +14·4 | +34·3 |
| 22·238 | 12 | 94 | 9 | 71 | 188·8 | +14·6 | +44·3 |
| 23·553 | 1 | 25 | 1 | 30 | 189·7 | +14·0 | +62·5 |
| 24·295 | 0 | 10 | 0 | 18 | 189·5 | +14·4 | +72·1 |
| Means ... | ... | .. | 13 | 87 | 188·52 | +13·48 | ... |
| **Group 1324.** A regular spot, *a*; a small spot, *b*, is seen near it on March 21, 22 and 23. | | | | | | | |
| Mar. 14·577 | 44 | 228 | 58 | 295 | 179·7 | + 6·9 | −65·8 |
| 15·463 | 68 | 421 | 62 | 378 | 179·4 | + 7·0 | −54·4 |
| 16·441 | 74 | 532 | 51 | 367 | 179·4 | + 7·0 | −41·6 |
| 17·503 | 116 | 644 | 68 | 377 | 179·4 | + 7·4 | −27·5 |
| 18·438 | 112 | 653 | 60 | 349 | 180·2 | + 7·4 | −14·4 |
| 19·474 | 84 | 636 | 44 | 329 | 180·5 | + 7·4 | − 0·4 |
| 20·439 | 76 | 608 | 39 | 324 | 180·3 | + 7·8 | +12·0 |
| 21·476 | 106 | 544 | 64 | 315 | 181·0 | + 8·0 | +26·5 |
| 22·238 | 89 | 461 | 57 | 297 | 180·7 | + 8·1 | +36·2 |
| 23·553 | 52 | 289 | 46 | 259 | 181·4 | + 7·4 | +54·2 |
| 24·295 | 34 | 253 | 41 | 303 | 181·2 | + 7·7 | +63·8 |
| 25·311 | 30 | 109 | 76 | 274 | 181·5 | + 7·7 | +77·5 |
| Means ... | ... | ... | 56 | 322 | 180·39 | + 7·48 | ... |
| **Group 1325.** Three small spots on March 15. Four spots measured in two pairs are seen on March 16 and 17. Only one spot remains on March 18. | | | | | | | |
| Mar. 15·463 | 7 | 54 | 4 | 30 | 207·3 | −17·7 | −26·5 |
| 16·441 | 12 | 36 | 6 | 20 | 208·7 | −16·8 | −12·3 |
| 17·503 | 4 | 28 | 2 | 14 | 208·2 | −17·6 | + 1·3 |
| 18·438 | 0 | 23 | 0 | 12 | 209·6 | −17·0 | +15·0 |
| Means ... | ... | ... | 3 | 19 | 208·45 | −17·28 | ... |
| **Group 1326.** A small spot on March 16. Other small spots are seen near it on March 17. Only one spot remains on March 18. Two spots are seen on March 19. | | | | | | | |
| Mar. 16·441 | 1 | 8 | 1 | 7 | 166·3 | + 4·2 | −54·7 |
| 17·503 | 0 | 32 | 0 | 20 | 167·4 | + 4·8 | −39·5 |
| 18·438 | 4 | 31 | 2 | 18 | 168·6 | + 4·4 | −26·0 |
| 19·474 | 0 | 64 | 0 | 34 | 169·0 | + 4·5 | −11·9 |
| Means ... | ... | ... | 1 | 20 | 167·83 | + 4·48 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1327.** A regular spot, *a*. A second, *b*, follows on March 18. Several smaller spots (measured as one) are seen between them on March 19. *b* has disappeared by March 21. On March 22 *a* is followed by a long straggling line of very small faint spots. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Mar. 17·503 | 0 | 32 | 0 | 88 | 130·1 | +14·7 | −76·8 |
| 18·438 | 2 | 128 | 4 | 195 | 126·4 | +13·9 | −68·2 |
| 19·474 | 36 | 216 | 35 | 207 | 126·3 | +14·0 | −54·6 |
| 20·439 | 8 | 140 | 6 | 103 | 126·7 | +14·6 | −41·6 |
| 21·476 | 0 | 98 | 0 | 58 | 131·2 | +15·3 | −23·3 |
| 22·238 | 2 | 60 | 1 | 34 | 125·6 | +14·3 | −18·9 |
| Means ... | ... | .. | 8 | 114 | 127·72 | +14·47 | ... |
| **Group 1328.** A faint spot. | | | | | | | |
| Mar. 18·438 | 0 | 45 | 0 | 36 | 240·5 | +13·8 | +45·9 |
| Means ... | .. | ... | 0 | 36 | 240·5 | +13·8 | ... |
| **Group 1329.** A faint spot. | | | | | | | |
| Mar. 18·438 | 1 | 16 | 0 | 8 | 188·1 | + 9·2 | − 6·5 |
| Means ... | ... | ... | 0 | 8 | 188·1 | + 9·2 | ... |
| **Group 1330.** A large regular spot, *a*, followed by a number of small spots, which undergo several changes until March 21, when they consist of two clusters, *b* and *c*, which are more stable. *c* has disappeared by March 25; *b* by March 29. A very small faint spot is also seen following *c* on March 24. This spot re-appears as a small pair on March 26. | | | | | | | |
| Mar. 18·438 | 21 | 174 | 37 | 311 | 120·1 | − 8·2 | −74·5 |
| 19·474 | 72 | 476 | 77 | 502 | 119·0 | − 8·4 | −61·9 |
| 20·439 | 108 | 576 | 80 | 429 | 120·4 | − 8·4 | −47·9 |
| 21·476 | 134 | 604 | 81 | 360 | 121·4 | − 8·9 | −33·1 |
| 22·238 | 138 | 886 | 76 | 487 | 119·7 | − 8·7 | −24·8 |
| 23·553 | 151 | 1025 | 76 | 518 | 120·5 | − 9·1 | − 6·7 |
| 24·295 | 144 | 1032 | 72 | 521 | 121·8 | − 9·0 | + 4·4 |
| 25·311 | 184 | 1042 | 97 | 550 | 122·8 | − 8·8 | +18·8 |
| 26·294 | 145 | 874 | 86 | 518 | 123·1 | − 8·7 | +32·1 |
| 27·314 | 129 | 625 | 94 | 452 | 124·2 | − 8·6 | +46·7 |
| 28·250 | 77 | 472 | 74 | 456 | 124·5 | − 8·2 | +59·3 |
| 29·273 | 39 | 262 | 62 | 419 | 124·3 | − 9·1 | +72·5 |
| Means ... | ... | ... | 76 | 460 | 121·82 | − 8·68 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1331.

Two spots appearing suddenly near the centre of the sun on March 19. On March 20 the group consists of 18 spots, extending over a considerable area. It is measured in two clusters on March 20, but in four on March 21 and 22, as it is then more broken up and scattered. On March 23 only two close pairs of small spots remain; and a member of each pair disappears before March 24.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Mar. 19·474 | 16 | 92 | 8 | 48 | 177·1 | +10·4 | − 3·8 |
| 20·439 | 60 | 276 | 33 | 148 | 177·0 | +11·9 | + 8·7 |
| 21·476 | 44 | 259 | 26 | 150 | 177·7 | +12·8 | +23·2 |
| 22·238 | 35 | 146 | 23 | 94 | 177·1 | +13·8 | +32·6 |
| 23·553 | 12 | 41 | 10 | 36 | 177·5 | +13·3 | +50·3 |
| 24·295 | 0 | 10 | 0 | 11 | 177·9 | +13·7 | +60·5 |
| Means ... | ... | ... | 17 | 81 | 177·38 | +12·65 | ... |

### Group 1332.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 20·439 | 0 | 8 | 0 | 5 | 204·3 | −13·3 | +36·0 |
| Means ... | ... | ... | 0 | 5 | 204·3 | −13·3 | ... |

### Group 1333.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 20·439 | 8 | 20 | 4 | 10 | 155·6 | −15·6 | −12·7 |
| Means ... | ... | ... | 4 | 10 | 155·6 | −15·6 | ... |

### Group 1334.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 21·476 | 4 | 25 | 2 | 14 | 176·0 | + 6·6 | +21·5 |
| Means ... | ... | ... | 2 | 14 | 176·0 | + 6·6 | ... |

### Group 1335.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 21·476 | 0 | 10 | 0 | 5 | 143·0 | −18·7 | −11·5 |
| Means ... | ... | ... | 0 | 5 | 143·0 | −18·7 | ... |

### Group 1336.

A large regular spot, *a*, followed March 22–26 by a number of small spots. The small spots undergo frequent changes.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Mar. 22·238 | 22 | 195 | 48 | 481 | 65·0 | −12·2 | −79·5 |
| 23·553 | 58 | 292 | 57 | 283 | 67·7 | −11·4 | −59·5 |
| 24·295 | 38 | 361 | 29 | 277 | 67·8 | −11·3 | −49·6 |
| 25·311 | 63 | 360 | 40 | 223 | 68·2 | −11·6 | −35·8 |
| 26·294 | 52 | 390 | 28 | 212 | 68·9 | −11·3 | −22·1 |
| 27·314 | 49 | 335 | 25 | 170 | 69·7 | −11·1 | − 7·8 |
| 28·250 | 39 | 328 | 20 | 166 | 69·9 | −10·9 | + 4·7 |
| 29·273 | 16 | 312 | 9 | 164 | 69·8 | −10·8 | +18·0 |
| 30·210 | 15 | 258 | 9 | 150 | 70·2 | −10·9 | +30·8 |
| 31·257 | 14 | 219 | 10 | 153 | 70·4 | −10·9 | +44·9 |
| Apr. 1·280 | 22 | 129 | 21 | 123 | 71·0 | −10·9 | +58·9 |
| Means ... | ... | ... | 27 | 218 | 68·96 | −11·21 | ... |

### Group 1337.

Three pairs of very small spots on March 23; two single spots and one pair on March 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 23·553 | 4 | 62 | 2 | 34 | 143·7 | +12·4 | +16·5 |
| 24·295 | 6 | 43 | 4 | 25 | 142·6 | +12·7 | +25·2 |
| Means .. | ... | ... | 3 | 30 | 143·15 | +12·55 | ... |

### Group 1338.

A small faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 24·295 | 3 | 7 | 1 | 4 | 125·8 | + 9·9 | + 8·4 |
| Means ... | ... | ... | 1 | 4 | 125·8 | + 9·9 | ... |

### Group 1339.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 24·295 | 0 | 24 | 0 | 42 | 45·2 | + 9·5 | −72·2 |
| 25·311 | 10 | 48 | 10 | 50 | 44·9 | + 9·6 | −59·1 |
| 26·294 | 6 | 22 | 4 | 17 | 45·3 | + 9·5 | −45·7 |
| 27·314 | 0 | 5 | 0 | 3 | 45·3 | + 9·5 | −32·2 |
| Means ... | ... | ... | 4 | 28 | 45·18 | + 9·53 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1340.** A very small spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Mar. 25·311 | 0 | 3 | 0 | 4 | 37·7 | +13·4 | −66·3 |
| 26·294 | 0 | 5 | 0 | 4 | 38·2 | +13·2 | −52·8 |
| 27·314 | 0 | 4 | 0 | 3 | 37·7 | +13·1 | −39·8 |
| Means ... | ... | ... | 0 | 4 | 37·87 | +13·23 | ... |
| **Group 1341.** A small spot, *a*. A second, *b*, appears on March 28. Each increases in size before March 29, and forms a compact cluster of small spots. | | | | | | | |
| Mar. 27·314 | 0 | 9 | 0 | 5 | 43·8 | − 7·2 | −33·7 |
| 28·250 | 0 | 15 | 0 | 8 | 43·6 | − 7·3 | −21·6 |
| 29·273 | 7 | 78 | 3 | 40 | 43·7 | − 7·1 | − 8·1 |
| 30·210 | 19 | 111 | 10 | 56 | 43·2 | − 7·1 | + 3·8 |
| 31·257 | 6 | 70 | 3 | 37 | 43·8 | − 7·1 | +18·3 |
| Apr. 1·280 | 6 | 18 | 3 | 10 | 43·9 | − 6·9 | +31·8 |
| Means ... | ... | ... | 3 | 26 | 43·67 | − 7·12 | ... |
| **Group 1342.** A large regular spot, *a*, followed April 1–4 by several very small spots. | | | | | | | |
| Mar. 29·273 | 4 | 61 | 11 | 154 | 332·3 | − 8·8 | −79·5 |
| 30·210 | 8 | 139 | 10 | 174 | 332·2 | − 9·0 | −67·2 |
| 31·257 | 30 | 220 | 25 | 180 | 332·5 | − 9·1 | −53·0 |
| Apr. 1·280 | 38 | 251 | 24 | 163 | 332·5 | − 9·1 | −39·6 |
| 2·413 | 24 | 232 | 14 | 128 | 332·6 | − 9·1 | −24·5 |
| 3·234 | 36 | 210 | 19 | 108 | 333·8 | − 9·1 | −12·5 |
| 4·507 | 14 | 163 | 7 | 82 | 333·9 | − 9·3 | + 4·3 |
| 5·352 | 20 | 153 | 10 | 80 | 334·0 | − 9·3 | +15·7 |
| 6·203 | 23 | 133 | 13 | 75 | 334·2 | − 9·4 | +27·1 |
| 7·280 | 8 | 83 | 6 | 55 | 334·4 | − 9·1 | +41·5 |
| 8·273 | 18 | 69 | 15 | 59 | 334·2 | − 8·1 | +54·5 |
| 9·567 | 4 | 27 | 6 | 40 | 333·8 | − 8·8 | +71·1 |
| Means .. | ... | ... | 13 | 108 | 333·37 | − 9·02 | ... |
| **Group 1343.** Three small spots close together, followed by a fourth at a little distance, on March 31. The group increases in size rapidly, and on April 2 consists of a very large regular spot, *a*, followed by several spots of various sizes close together. These spots tend to coalesce, and on April 3, 4, and 5 consist of one large spot of irregular outline, *b*, with two small spots close to it, which are measured with it. The large spot, *b*, divides in two parts on April 6. | | | | | | | |
| Mar. 31·257 | 4 | 106 | 2 | 53 | 17·5 | − 9·9 | − 8·0 |
| Apr. 1·280 | 47 | 352 | 24 | 177 | 18·9 | − 9·8 | + 6·8 |
| 2·413 | 177 | 1581 | 98 | 863 | 19·4 | − 9·7 | +22·3 |
| 3·234 | 416 | 2486 | 251 | 1484 | 19·7 | −10·1 | +33·4 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1343—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Apr. 4·507 | 196 | 2143 | 158 | 1706 | 20·7 | −10·1 | +51·1 |
| 5·352 | 216 | 1895 | 243 | 2005 | 20·4 | −10·0 | +62·1 |
| 6·203 | 124 | 1289 | 241 | 2246 | 21·1 | −10·6 | +74·0 |
| 7·280 | 7 | 160 | 19 | 521 | 15·2 | −11·8 | +82·3 |
| Means ... | ... | ... | 130 | 1132 | 19·11 | −10·25 | ... |
| **Group 1344.** Two small spots, *a* and *b*. | | | | | | | |
| Apr. 1·280 | 17 | 55 | 10 | 33 | 44·3 | −12·2 | +32·2 |
| 2·413 | 6 | 69 | 5 | 52 | 45·3 | −12·1 | +48·2 |
| 3·234 | 2 | 11 | 2 | 11 | 46·9 | −12·0 | +60·6 |
| Means ... | ... | ... | 6 | 32 | 45·50 | −12·10 | ... |
| **Group 1345.** A very small spot. | | | | | | | |
| Apr. 1·280 | 0 | 5 | 0 | 3 | 45·5 | −18·1 | +33·4 |
| Means ... | ... | ... | 0 | 3 | 45·5 | −18·1 | ... |
| **Group 1346.** A regular spot. | | | | | | | |
| Apr. 2·413 | 4 | 52 | 6 | 77 | 286·0 | −14·6 | −71·1 |
| 3·234 | 18 | 77 | 17 | 74 | 287·2 | −14·6 | −59·1 |
| 4·507 | 10 | 72 | 7 | 49 | 287·2 | −14·2 | −42·4 |
| 5·352 | 24 | 88 | 14 | 52 | 287·4 | −14·4 | −30·9 |
| 6·203 | 6 | 36 | 3 | 19 | 287·4 | −14·4 | −19·7 |
| 7·280 | 2 | 15 | 1 | 8 | 287·1 | −14·7 | − 5·8 |
| Means ... | ... | ... | 8 | 47 | 287·05 | −14·48 | ... |
| **Group 1347.** A large regular spot with two well-defined nuclei. Several very small faint spots are seen near it on April 6, 7, and 9. | | | | | | | |
| Apr. 2·413 | 9 | 208 | 15 | 337 | 284·3 | −11·0 | −72·8 |
| 3·234 | 59 | 334 | 60 | 337 | 285·3 | −11·3 | −61·0 |
| 4·507 | 104 | 812 | 72 | 565 | 285·7 | −11·5 | −43·9 |
| 5·352 | 111 | 801 | 66 | 477 | 285·6 | −11·7 | −32·7 |
| 6·203 | 106 | 718 | 57 | 389 | 284·9 | −12·0 | −22·2 |
| 7·280 | 83 | 627 | 42 | 319 | 285·1 | −11·6 | − 7·8 |
| 8·273 | 78 | 617 | 40 | 314 | 285·2 | −11·7 | + 5·5 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1347—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Apr. 9·567 | 74 | 474 | 40 | 257 | 285·2 | −11·3 | +22·5 |
| 10·587 | 27 | 221 | 17 | 137 | 285·3 | −11·4 | +36·1 |
| 11·316 | 52 | 229 | 38 | 164 | 285·4 | −11·9 | +45·9 |
| 12· | No photograph. | | (24 | 131 | 284·8 | −11·9 | +59·1) |
| 13·415 | 6 | 62 | 9 | 98 | 284·2 | −11·9 | +72·3 |
| 14·282 | 0 | 21 | 0 | 103 | 285·6 | −11·9 | +85·1 |
| Means ... | .. | ... | 37 | 279 | 285·12 | −11·62 | ... |
| **Group 1348.** A regular spot. | | | | | | | |
| Apr. 2·413 | 1 | 35 | 2 | 74 | 279·6 | −14·4 | −77·5 |
| 3·234 | 12 | 79 | 14 | 95 | 280·0 | −14·7 | −66·3 |
| 4·507 | 21 | 97 | 16 | 76 | 279·6 | −14·8 | −50·0 |
| 5·352 | 30 | 110 | 19 | 71 | 279·7 | −15·4 | −38·6 |
| 6·203 | 24 | 78 | 14 | 45 | 279·7 | −15·6 | −27·4 |
| 7·280 | 10 | 25 | 5 | 13 | 279·8 | −15·4 | −13·1 |
| 8·273 | 7 | 20 | 3 | 10 | 280·2 | −15·3 | + 0·5 |
| Means ... | ... | ... | 10 | 55 | 279·80 | −15·09 | ... |
| **Group 1349.** A very small spot. | | | | | | | |
| Apr. 3·234 | 2 | 4 | 1 | 2 | 327·6 | −23·9 | −18·7 |
| Means ... | ... | ... | 1 | 2 | 327·6 | −23·9 | ... |
| **Group 1350.** A regular spot. | | | | | | | |
| Apr. 3·234 | 9 | 58 | 20 | 123 | 268·5 | −17·7 | −77·8 |
| 4·507 | 16 | 108 | 17 | 111 | 268·4 | −17·7 | −61·2 |
| 5·352 | 22 | 147 | 17 | 116 | 268·1 | −18·1 | −50·2 |
| 6·203 | 29 | 182 | 19 | 119 | 268·1 | −18·0 | −39·0 |
| 7·280 | 18 | 200 | 10 | 113 | 267·9 | −17·8 | −25·0 |
| 8·273 | 36 | 229 | 19 | 120 | 268·0 | −17·5 | −11·7 |
| 9·567 | 23 | 197 | 12 | 101 | 268·1 | −16·5 | + 5·4 |
| 10·587 | 9 | 195 | 5 | 105 | 268·3 | −16·3 | +19·1 |
| 11·316 | 27 | 140 | 16 | 81 | 268·3 | −16·6 | +28·8 |
| 12· | No photograph. | | (12 | 79 | 268·0 | −16·4 | +42·4) |
| 13·415 | 8 | 86 | 7 | 76 | 267·8 | −16·2 | +55·9 |
| 14·282 | 10 | 61 | 12 | 78 | 268·1 | −16·5 | +67·6 |
| 15·295 | 0 | 5 | 0 | 13 | 267·6 | −16·6 | +80·6 |
| Means ... | ... | ... | 13 | 95 | 268·09 | −17·07 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1351.** A very large spot. Some small spots, measured as one cluster, appear near its preceding edge on April 9. These are measured with the principal spot on April 13 and following days. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Apr. 3·234 | 8 | 171 | 21 | 429 | 266·5 | −13·2 | −79·8 |
| 4·507 | 53 | 423 | 58 | 463 | 266·3 | −12·6 | −63·3 |
| 5·352 | 77 | 699 | 62 | 562 | 266·6 | −13·1 | −51·7 |
| 6·203 | 122 | 890 | 80 | 587 | 266·9 | −13·3 | −40·2 |
| 7·280 | 119 | 1040 | 67 | 586 | 266·6 | −13·0 | −26·3 |
| 8·273 | 124 | 1195 | 64 | 619 | 266·4 | −13·1 | −13·3 |
| 9·567 | 155 | 1078 | 78 | 547 | 266·8 | −12·6 | + 4·1 |
| 10·587 | 188 | 1288 | 99 | 681 | 267·0 | −12·7 | +17·8 |
| 11·316 | 180 | 1500 | 102 | 856 | 267·1 | −12·9 | +27·6 |
| 12· | No photograph. | | (83 | 768 | 266·9 | −12·9 | +41·2) |
| 13·415 | 74 | 788 | 64 | 680 | 266·7 | −12·8 | +54·8 |
| 14·282 | 47 | 519 | 57 | 628 | 266·7 | −13·0 | +66·2 |
| 15·295 | 15 | 204 | 40 | 540 | 267·2 | −12·7 | +80·2 |
| Means ... | ... | ... | 67 | 611 | 266·75 | −12·92 | ... |
| **Group 1352.** A number of small faint spots. They undergo frequent changes. | | | | | | | |
| Apr. 4·507 | 0 | 89 | 0 | 136 | 258·0 | −14·2 | −71·6 |
| 5·352 | 0 | 139 | 0 | 133 | 259·3 | −14·5 | −59·0 |
| 6·203 | 6 | 44 | 4 | 33 | 258·2 | −14·3 | −48·9 |
| 7·280 | 0 | 67 | 0 | 41 | 258·4 | −14·3 | −34·5 |
| 8·273 | 0 | 45 | 0 | 24 | 259·7 | −14·1 | −20·0 |
| 9·567 | 0 | 119 | 0 | 60 | 259·5 | −13·6 | − 3·2 |
| 10·587 | 0 | 107 | 0 | 54 | 259·5 | −12·9 | +10·3 |
| 11·316 | 6 | 72 | 3 | 39 | 260·3 | −12·3 | +20·8 |
| Means ... | ... | ... | 1 | 65 | 259·11 | −13·78 | ... |
| **Group 1353.** Two small spots, *a* and *b*, which tend to move away from each other; *b* disappears before April 8. | | | | | | | |
| Apr. 5·352 | 0 | 16 | 0 | 14 | 267·1 | +10·9 | −51·2 |
| 6·203 | 18 | 47 | 12 | 32 | 268·0 | +11·2 | −39·1 |
| 7·280 | 13 | 52 | 7 | 30 | 268·1 | +11·1 | −24·8 |
| 8·273 | 4 | 22 | 2 | 11 | 270·4 | + 8·8 | − 9·3 |
| Means ... | ... | ... | 5 | 22 | 268·40 | +10·50 | ... |
| **Group 1354.** Three small spots measured together. | | | | | | | |
| Apr. 6·203 | 5 | 30 | 6 | 36 | 243·8 | +10·3 | −63·3 |
| 7·280 | 1 | 9 | 1 | 7 | 244·3 | +10·0 | −48·6 |
| Means ... | ... | ... | 4 | 22 | 244·05 | +10·15 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1355.

Two small spots, *a* and *b*, which are measured together on April 6. Another small spot is seen near the group on April 7, and again another on April 8. On April 9 only *a* remains. Some other spots are seen close to and following *a* on April 10 and 11.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. a | | | | | ° | ° | ° |
| Apr. 6·203 | 5 | 26 | 8 | 39 | 235·5 | −18·1 | −71·6 |
| 7·280 | 4 | 24 | 4 | 22 | 235·5 | −18·0 | −57·4 |
| 8·273 | 10 | 43 | 6 | 29 | 238·9 | −18·1 | −40·8 |
| 9·567 | 8 | 45 | 4 | 24 | 242·9 | −17·6 | −19·8 |
| 10·587 | 27 | 147 | 14 | 76 | 242·3 | −17·8 | − 6·9 |
| 11·316 | 33 | 148 | 17 | 76 | 242·7 | −17·6 | + 3·2 |
| 12· | No photograph. | | (10 | 59 | 242·7 | −17·7 | +17·0) |
| 13·415 | 4 | 68 | 2 | 41 | 242·6 | −17·8 | +30·7 |
| 14·282 | 2 | 17 | 2 | 12 | 243·2 | −18·0 | +42·7 |
| Means ... | ... | ... | 7 | 42 | 240·70 | −17·86 | ... |

### Group 1356.

Two regular spots, *a* and *b*. Two or three small faint spots are seen near them on April 7, 8, 9. By April 11 each spot has broken up into several small spots. On April 13 the group is represented by a close pair of small spots which are measured together. These move apart on the following days.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 7·280 | 14 | 125 | 9 | 76 | 261·5 | −19·9 | −31·4 |
| 8·273 | 31 | 130 | 17 | 71 | 260·7 | −19·9 | −19·0 |
| 9·567 | 11 | 58 | 5 | 30 | 261·3 | −20·0 | − 1·4 |
| 10·587 | 3 | 49 | 2 | 26 | 261·4 | −20·2 | +12·2 |
| 11·316 | 21 | 62 | 12 | 35 | 260·9 | −20·6 | +21·4 |
| 12· | No photograph. | | ( 6 | 30 | 261·0 | −20·6 | +35·4) |
| 13·415 | 0 | 32 | 0 | 25 | 261·2 | −20·6 | +49·3 |
| 14·282 | 0 | 23 | 0 | 25 | 262·6 | −21·2 | +62·1 |
| 15·295 | 0 | 12 | 0 | 23 | 262·3 | −21·1 | +75·3 |
| Means ... | ... | ... | 6 | 38 | 261·43 | −20·46 | ... |

### Group 1357.

A small regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 8·273 | 2 | 14 | 4 | 22 | 208·2 | − 9·6 | −71·5 |
| 9·567 | 4 | 16 | 4 | 15 | 207·7 | − 9·1 | −55·0 |
| 10·587 | 0 | 28 | 0 | 19 | 208·0 | − 9·3 | −41·2 |
| Means ... | ... | ... | 3 | 19 | 207·97 | − 9·33 | ... |

### Group 1358.

A regular spot, *a*. On April 17 several other spots, arranged in two clusters, *b* and *c*, appear close to it; *a* and *c* coalesce to form one large spot on April 20, and the whole group is measured as one spot on April 21.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 9·567 | 0 | 20 | 0 | 69 | 182·1 | + 8·4 | −80·6 |
| 10·587 | 7 | 55 | 9 | 73 | 182·7 | + 8·0 | −66·5 |
| 11·316 | 17 | 120 | 16 | 115 | 182·5 | + 8·2 | −57·0 |
| 12· | No photograph. | | (13 | 120 | 182·5 | + 8·5 | −43·3) |
| 13·415 | 17 | 209 | 10 | 124 | 182·4 | + 8·7 | −29·5 |

### Group 1358—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. a | | | | | ° | ° | ° |
| Apr. 14·282 | 22 | 172 | 12 | 93 | 182·4 | + 8·4 | −18·1 |
| 15·295 | 34 | 185 | 18 | 95 | 182·4 | + 8·4 | − 4·6 |
| 16·389 | 26 | 154 | 14 | 80 | 182·6 | + 8·5 | +10·0 |
| 17·280 | 78 | 276 | 43 | 154 | 183·2 | + 8·8 | +22·4 |
| 18·287 | 53 | 443 | 34 | 284 | 183·5 | + 9·3 | +35·9 |
| 19·486 | 48 | 474 | 39 | 401 | 183·4 | +10·1 | +51·7 |
| 20·196 | 39 | 514 | 42 | 557 | 183·2 | +10·0 | +60·9 |
| 21·474 | 0 | 105 | 0 | 264 | 183·0 | +10·0 | +77·5 |
| Means ... | ... | ... | 19 | 187 | 182·76 | + 8·87 | ... |

### Group 1359.

Two small spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 11·316 | 0 | 31 | 0 | 24 | 191·5 | + 9·3 | −48·0 |
| Means ... | ... | ... | 0 | 24 | 191·5 | + 9·3 | ... |

### Group 1360.

A regular spot. A small spot is seen near it on April 20.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 13·415 | 0 | 10 | 0 | 38 | 128·1 | − 9·4 | −83·8 |
| 14·282 | 5 | 44 | 8 | 68 | 128·7 | − 9·6 | −71·8 |
| 15·295 | 17 | 76 | 16 | 71 | 128·7 | − 9·3 | −58·3 |
| 16·389 | 18 | 115 | 12 | 79 | 128·9 | − 9·1 | −43·7 |
| 17·280 | 18 | 137 | 11 | 81 | 128·5 | − 9·1 | −32·3 |
| 18·287 | 18 | 119 | 9 | 63 | 128·7 | − 9·1 | −18·9 |
| 19·486 | 8 | 105 | 4 | 53 | 129·1 | − 8·9 | − 2·6 |
| 20·196 | 14 | 140 | 7 | 71 | 129·1 | − 9·2 | + 6·8 |
| 21·474 | 7 | 68 | 4 | 37 | 130·4 | − 8·8 | +24·9 |
| 22·580 | 7 | 28 | 5 | 18 | 130·3 | − 8·5 | +39·4 |
| 23·447 | 0 | 30 | 0 | 24 | 130·5 | − 8·5 | +51·1 |
| Means ... | ... | ... | 7 | 55 | 129·18 | − 9·05 | ... |

### Group 1361.

Two small faint spots measured together.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 14·282 | 0 | 8 | 0 | 7 | 144·4 | − 7·5 | −56·1 |
| Means ... | ... | ... | 0 | 7 | 144·4 | − 7·5 | ... |

### Group 1362.

A small spot *a*. A second is seen near it on April 16.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| Apr. 15·295 | 8 | 25 | 5 | 17 | 227·4 | + 3·9 | +40·4 |
| 16·389 | 3 | 23 | 3 | 21 | 228·1 | + 4·0 | +55·5 |
| 17·280 | 0 | 12 | 0 | 17 | 229·3 | + 3·3 | +68·5 |
| Means ... | ... | ... | 3 | 18 | 228·27 | + 3·73 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1363.** Two regular spots, *a* and *b*. Small spots begin to appear on April 17, and a spot of some size, *c*, on April 18. By April 19 *b* has extended itself in a remarkable manner, and another spot, *d*, is seen. This disappears before April 24, *b* and *c* disappearing before April 26. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Apr. 15·295 | 23 | 191 | 34 | 279 | 116·3 | −10·2 | −70·7 |
| 16·389 | 49 | 421 | 43 | 373 | 116·5 | − 9·6 | −56·1 |
| 17·280 | 75 | 443 | 52 | 304 | 117·4 | − 9·8 | −43·4 |
| 18·287 | 82 | 554 | 48 | 321 | 117·3 | − 9·7 | −30·3 |
| 19.486 | 77 | 871 | 40 | 452 | 117·0 | − 9·6 | −14·7 |
| 20·196 | 94 | 824 | 48 | 418 | 116·7 | − 9·7 | − 5·6 |
| 21·474 | 76 | 644 | 39 | 332 | 117·5 | − 9·5 | +12·0 |
| 22·580 | 40 | 429 | 23 | 243 | 118·9 | − 9·2 | +28·0 |
| 23·447 | 13 | 207 | 9 | 135 | 119·4 | − 9·4 | +40·0 |
| 24·438 | 19 | 133 | 16 | 112 | 120·9 | − 9·2 | +54·6 |
| 25·307 | 16 | 115 | 20 | 141 | 121·0 | − 9·3 | +66·2 |
| 26·501 | 0 | 12 | 0 | 40 | 120·9 | − 9·0 | +81·9 |
| Means ... | ... | .. | 31 | 263 | 118·32 | − 9·52 | ... |
| **Group 1364.** Two very small spots measured together. | | | | | | | |
| Apr. 15·295 | 0 | 19 | 0 | 10 | 174·4 | −22·8 | −12·6 |
| Means ... | ... | ... | 0 | 10 | 174·4 | −22·8 | ... |
| **Group 1365.** A small faint spot. | | | | | | | |
| Apr. 16·389 | 0 | 10 | 0 | 6 | 152·3 | +16·2 | −20·3 |
| Means ... | ... | ... | 0 | 6 | 152·3 | +16·2 | ... |
| **Group 1366.** A small spot, *a*, followed by several yet smaller spots; *a* increases in size on April 17 and 18, and shows considerable proper motion. The other spots have disappeared by April 21. | | | | | | | |
| Apr. 16·389 | 9 | 40 | 5 | 26 | 136·8 | + 9·3 | −35·8 |
| 17·280 | 15 | 52 | 8 | 29 | 138·7 | + 8·9 | −22·1 |
| 18·287 | 25 | 144 | 13 | 74 | 140·0 | + 9·7 | − 7·6 |
| 19·486 | 24 | 171 | 13 | 90 | 139·1 | +10·4 | + 7·4 |
| 20·196 | 8 | 144 | 4 | 79 | 140·9 | +10·4 | +18·6 |
| 21·474 | 0 | 51 | 0 | 33 | 141·8 | +10·6 | +36·3 |
| 22·580 | 0 | 21 | 0 | 17 | 141·9 | +10·4 | +51·0 |
| Means ... | ... | ... | 6 | 50 | 139·89 | + 9·96 | ... |
| **Group 1367.** A small spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Apr. 18·287 | 7 | 11 | 6 | 10 | 205·1 | − 9·3 | +57·5 |
| Means ... | ... | ... | 6 | 10 | 205·1 | − 9·3 | ... |
| **Group 1368.** A regular spot, *a*, followed on April 19 and 20 by two other spots. | | | | | | | |
| Apr. 18·287 | 0 | 4 | 0 | 14 | 65·6 | −20·5 | −82·0 |
| 19·486 | 0 | 28 | 0 | 37 | 64·2 | −20·9 | −67·5 |
| 20·196 | 12 | 127 | 11 | 122 | 63·7 | −20·6 | −58·6 |
| 21·474 | 0 | 84 | 0 | 55 | 67·0 | −20·6 | −38·5 |
| 22·580 | 0 | 78 | 0 | 44 | 66·9 | −20·3 | −24·0 |
| 23·447 | 0 | 52 | 0 | 27 | 67·0 | −20·3 | −12·4 |
| 24·438 | 0 | 14 | 0 | 7 | 67·3 | −20·4 | + 1·0 |
| 25·307 | 0 | 3 | 0 | 2 | 66·8 | −20·4 | +12·0 |
| Means ... | ... | ... | 1 | 39 | 66·06 | −20·50 | ... |
| **Group 1369.** A regular spot, *a*, followed by a second and smaller spot on April 20. A number of small spots have formed behind *a* by April 22. These are measured all together, or in two or three divisions, according to their arrangement, which changes greatly from day to day. Only *a* remains on April 29. | | | | | | | |
| Apr. 19·486 | 0 | 47 | 0 | 99 | 54·6 | −14·4 | −77·1 |
| 20·196 | 36 | 144 | 46 | 200 | 52·9 | −13·8 | −69·4 |
| 21·474 | 40 | 206 | 31 | 158 | 56·0 | −13·6 | −49·5 |
| 22·580 | 41 | 330 | 25 | 206 | 55·2 | −14·1 | −35·7 |
| 23·447 | 33 | 511 | 18 | 282 | 55·1 | −14·0 | −24·3 |
| 24·438 | 79 | 476 | 40 | 245 | 56·0 | −14·1 | −10·3 |
| 25·307 | 101 | 556 | 52 | 284 | 56·6 | −14·1 | + 1·8 |
| 26·501 | 103 | 515 | 55 | 274 | 57·2 | −14·2 | +18·2 |
| 27·217 | 62 | 481 | 36 | 277 | 57·8 | −14·0 | +28·3 |
| 28· | No photograph. | | (48 | 219 | 58·3 | −14·0 | +43·6) |
| 29·458 | 62 | 165 | 60 | 161 | 58·8 | −14·1 | +58·9 |
| 30·423 | 6 | 118 | 10 | 183 | 58·6 | −14·0 | +71·4 |
| May 1·314 | 0 | 52 | 0 | 189 | 58·0 | −13·8 | +82·6 |
| Means ... | ... | ... | 32 | 214 | 56·55 | −14·02 | ... |
| **Group 1370.** Three small spots on April 21. The first two spots coalesce to form a large spot on April 22, and a new spot appears on the same day. The group increases in size and has undergone yet further change by April 23. | | | | | | | |
| Apr. 21·474 | 8 | 102 | 5 | 64 | 143·1 | − 8·7 | +37·6 |
| 22·580 | 83 | 482 | 69 | 398 | 143·8 | − 7·9 | +52·9 |
| 23·447 | 75 | 451 | 103 | 566 | 146·3 | − 7·5 | +66·9 |
| 24·438 | 18 | 148 | 37 | 289 | 141·9 | − 9·3 | +75·6 |
| Means ... | ... | ... | 54 | 329 | 143·78 | − 8·35 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1371.

A magnificent group composed of a very large regular spot, *a*, followed at a considerable distance by another regular spot, with which it is connected by a stream of smaller spots, which undergo great changes; *b* has broken up before April 29. Occasionally one or two small spots are seen in advance of *a*. The entire group, with the exception of *a*, has disappeared by May 2.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Apr. 21·474 | 54 | 228 | 140 | 578 | 26·2 | − 9·6 | −79·3 |
| 22·580 | 138 | 680 | 166 | 815 | 25·2 | − 9·3 | −65·7 |
| 23·447 | 113 | 1143 | 94 | 1002 | 23·9 | −10·4 | −55·5 |
| 24·438 | 239 | 1864 | 163 | 1276 | 23·0 | −10·7 | −43·3 |
| 25·307 | 384 | 1985 | 227 | 1177 | 23·0 | −10·9 | −31·8 |
| 26·501 | 344 | 2366 | 180 | 1239 | 22·8 | −11·2 | −16·2 |
| 27·217 | 342 | 2162 | 176 | 1106 | 23·1 | −11·0 | − 6·4 |
| 28· | No photograph. | | (128 | 989 | 23·2 | −11·0 | + 8·5) |
| 29·458 | 138 | 1570 | 79 | 872 | 23·3 | −10·9 | +23·4 |
| 30·423 | 74 | 1180 | 48 | 760 | 25·5 | −10·3 | +38·3 |
| May 1·314 | 87 | 845 | 70 | 665 | 25·6 | −10·1 | +50·2 |
| 2·448 | 50 | 331 | 65 | 434 | 27·8 | −10·3 | +67·8 |
| 3·553 | 0 | 97 | 0 | 353 | 28·4 | −12·2 | +82·6 |
| Means ... | ... | ... | 118 | 867 | 24·69 | −10·61 | ... |

### Group 1372.

Two small spots, *a* and *b*; *b* has disappeared by April 27.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 22·580 | 10 | 88 | 5 | 47 | 79·8 | −20·6 | −11·1 |
| 23·447 | 16 | 185 | 8 | 96 | 79·2 | −20·2 | − 0·2 |
| 24·438 | 15 | 103 | 9 | 56 | 80·0 | −20·7 | +13·7 |
| 25·307 | 10 | 35 | 6 | 20 | 79·4 | −20·8 | +24·6 |
| 26·501 | 3 | 28 | 2 | 19 | 80·9 | −20·6 | +41·9 |
| 27·217 | 0 | 6 | 0 | 5 | 81·8 | −20·5 | +52·3 |
| Means ... | ... | ... | 5 | 41 | 80·18 | −20·57 | ... |

### Group 1373.

A number of spots closely following one another. The group undergoes striking and frequent changes, the different members increasing and diminishing, coalescing and breaking up from day to day.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 26·501 | 0 | 44 | 0 | 65 | 328·4 | −14·8 | −70·6 |
| 27·217 | 42 | 269 | 40 | 257 | 331·2 | −15·2 | −58·3 |
| 28· | No photograph. | | (30 | 333 | 332·0 | −14·9 | −42·8) |
| 29·458 | 33 | 709 | 19 | 409 | 332·7 | −14·5 | −27·2 |
| 30·423 | 60 | 1023 | 31 | 538 | 333·4 | −14·8 | −13·8 |
| May 1·314 | 97 | 1184 | 50 | 609 | 334·1 | −14·8 | − 1·3 |
| 2·448 | 118 | 850 | 62 | 446 | 334·1 | −14·8 | +13·7 |
| 3·553 | 29 | 696 | 17 | 414 | 335·4 | −16·0 | +29·6 |
| 4·524 | 33 | 543 | 23 | 373 | 335·1 | −16·1 | +42·2 |
| 5·445 | 50 | 670 | 44 | 584 | 335·3 | −15·9 | +54·5 |
| 6·417 | 27 | 435 | 36 | 551 | 335·7 | −16·5 | +67·8 |
| 7·175 | 11 | 325 | 20 | 719 | 335·3 | −14·3 | +77·4 |
| Means ... | ... | ... | 31 | 442 | 333·56 | −15·22 | ... |

### Group 1374.

A small spot, *a*, which has disappeared by May 5, when another small spot, *b*, appears.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| May 1·314 | 0 | 14 | 0 | 21 | 264·5 | −12·2 | −70·9 |
| 2·448 | 0 | 27 | 0 | 24 | 264·2 | −10·9 | −56·2 |
| 3·553 | 0 | 37 | 0 | 25 | 264·7 | − 9·9 | −41·1 |
| 4·524 | 6 | 56 | 4 | 32 | 265·0 | −10·6 | −27·9 |
| 5·445 | 0 | 48 | 0 | 26 | 260·9 | − 9·8 | −19·9 |
| 6·417 | 0 | 17 | 0 | 8 | 260·8 | −10·0 | − 7·1 |
| Means ... | ... | ... | 1 | 23 | 263·35 | −10·57 | ... |

### Group 1375.

Two small spots, *a* and *b*. A third, *c*, appears on May 5. On May 7 the group consists of a cluster of very small spots followed by a single very small spot. Of this cluster only one spot remains on May 8.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 3·553 | 0 | 56 | 0 | 58 | 244·8 | −12·7 | −61·0 |
| 4·524 | 0 | 41 | 0 | 32 | 243·5 | −13·3 | −49·4 |
| 5·445 | 0 | 128 | 0 | 83 | 243·2 | −14·2 | −37·6 |
| 6·417 | 0 | 64 | 0 | 36 | 244·3 | −14·2 | −23·6 |
| 7·175 | 18 | 49 | 9 | 26 | 245·1 | −15·0 | −12·8 |
| 8·252 | 0 | 12 | 0 | 6 | 243·8 | −15·8 | + 0·1 |
| Means ... | ... | ... | 2 | 40 | 244·12 | −14·20 | ... |

### Group 1376.

A number of small spots irregularly distributed over a considerable area. The preceding spot increases in size, and by May 9 has become a large regular spot, *a*.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 6·417 | 0 | 71 | 0 | 48 | 228·9 | +11·2 | −39·0 |
| 7·175 | 13 | 73 | 8 | 42 | 230·8 | + 9·2 | −27·1 |
| 8·252 | 12 | 120 | 6 | 64 | 233·1 | + 9·4 | −10·6 |
| 9·520 | 67 | 619 | 35 | 319 | 233·9 | + 9·1 | + 7·0 |
| 10· | No photograph. | | (52 | 431 | 234·3 | + 9·4 | +18·2) |
| 11·162 | 114 | 910 | 68 | 542 | 234·6 | + 9·6 | +29·4 |
| 12·276 | 71 | 728 | 53 | 531 | 235·2 | + 9·7 | +44·7 |
| 13·231 | 56 | 529 | 51 | 503 | 234·7 | + 9·4 | +56·9 |
| 14·287 | 32 | 358 | 52 | 561 | 234·4 | + 9·7 | +70·5 |
| 15·280 | 5 | 111 | 11 | 267 | 228·1 | +10·4 | +77·4 |
| Means ... | ... | ... | 34 | 331 | 232·80 | + 9·71 | ... |

### Group 1377.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 6·417 | 0 | 21 | 0 | 26 | 203·7 | +14·0 | −64·2 |
| 7·175 | 5 | 18 | 5 | 16 | 203·4 | +12·0 | −54·5 |
| 8·252 | 6 | 19 | 4 | 13 | 203·7 | +11·7 | −40·0 |
| 9·520 | 0 | 27 | 0 | 15 | 204·3 | +13·3 | −22·6 |
| 10· | No photograph. | | (1 | 13 | 204·3 | +13·0 | −11·8) |
| 11·162 | 5 | 19 | 2 | 10 | 204·2 | +12·8 | − 1·0 |
| Means ... | ... | ... | 2 | 16 | 203·93 | +12·80 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1378.** Two small spots, *a* and *b*; *a* disappears before May 8. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| May 7·175 | 7 | 47 | 4 | 28 | 290·6 | − 4·2 | +32·7 |
| 8·252 | 4 | 12 | 3 | 9 | 290·4 | − 4·2 | +46·7 |
| Means ... | ... | ... | 4 | 19 | 290·50 | − 4·20 | ... |
| **Group 1379.** A small spot. | | | | | | | |
| May 7·175 | 0 | 33 | 0 | 43 | 191·8 | + 9·1 | −66·1 |
| 8·252 | 3 | 18 | 2 | 14 | 193·1 | + 8·6 | −50·6 |
| Means ... | ... | ... | 1 | 29 | 192·45 | + 8·85 | ... |
| **Group 1380.** A number of small spots which undergo great changes from day to day. | | | | | | | |
| May 7·175 | 0 | 96 | 0 | 190 | 183·1 | + 9·0 | −74·8 |
| 8·252 | 10 | 118 | 10 | 121 | 183·7 | + 8·2 | −60·0 |
| 9·520 | 10 | 124 | 7 | 88 | 183·5 | + 8·8 | −43·4 |
| 10· | No photograph. | | (16 | 176 | 184·0 | + 7·9 | −32·1) |
| 11·162 | 46 | 478 | 25 | 263 | 184·4 | + 7·0 | −20·8 |
| 12·276 | 34 | 428 | 18 | 221 | 184·8 | + 6·3 | − 5·7 |
| 13·231 | 24 | 264 | 12 | 137 | 185·1 | + 6·3 | + 7·3 |
| 14·287 | 18 | 153 | 10 | 84 | 185·4 | + 5·4 | +21·5 |
| 15·280 | 7 | 48 | 4 | 30 | 185·3 | + 5·0 | +34·6 |
| 16·281 | 5 | 23 | 4 | 17 | 185·8 | + 6·2 | +48·3 |
| Means ... | ... | ... | 11 | 133 | 184·51 | + 7·01 | ... |
| **Group 1381.** A very large, regular spot, *a*. Small spots are seen near it on May 13, 14, 15, 16, and 19. | | | | | | | |
| May 9·520 | 17 | 204 | 27 | 337 | 154·4 | − 6·0 | −72·5 |
| 10· | No photograph. | | (72 | 488 | 154·0 | − 6·9 | −62·0) |
| 11·162 | 144 | 791 | 117 | 639 | 153·6 | − 7·8 | −51·6 |
| 12·276 | 156 | 1006 | 98 | 633 | 153·5 | − 8·0 | −37·0 |
| 13·231 | 218 | 1090 | 122 | 609 | 153·0 | − 7·8 | −24·8 |
| 14·287 | 226 | 1176 | 116 | 604 | 153·3 | − 7·9 | −10·6 |
| 15·280 | 221 | 1229 | 111 | 617 | 153·2 | − 7·7 | + 2·5 |
| 16·281 | 259 | 1153 | 135 | 604 | 152·9 | − 7·4 | +15·4 |
| 17·273 | 166 | 1028 | 95 | 588 | 152·3 | − 7·7 | +28·0 |
| 18·147 | 178 | 900 | 116 | 588 | 152·6 | − 7·7 | +39·8 |
| 19·293 | 139 | 818 | 121 | 716 | 152·6 | − 7·2 | +54·9 |
| 20· | No photograph. | | (109 | 646 | 152·6 | − 7·6 | +68·2) |
| 21·303 | 29 | 176 | 96 | 576 | 152·5 | − 8·0 | +81·4 |
| Means ... | ... | ... | 103 | 588 | 153·12 | − 7·52 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1382.** A small regular spot, *a*, followed by a stream of very small faint spots, which disappear by May 12; *a* moves rapidly forward between May 11 and 12, and after May 12 it moves slowly backward. Another spot appears near it on May 14. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| May 11·162 | 2 | 66 | 1 | 36 | 220·8 | +11·5 | +15·6 |
| 12·276 | 6 | 19 | 4 | 12 | 225·3 | +11·0 | +34·8 |
| 13·231 | 6 | 45 | 5 | 34 | 224·6 | +10·3 | +46·8 |
| 14·287 | 4 | 47 | 4 | 48 | 223·4 | +10·2 | +59·5 |
| 15·280 | 6 | 68 | 9 | 112 | 222·4 | + 9·4 | +71·7 |
| Means ... | ... | ... | 5 | 48 | 223·30 | +10·48 | ... |
| **Group 1383.** A small spot, *a*, followed by several very small spots; *a* disappears before May 14. | | | | | | | |
| May 11·162 | 11 | 31 | 8 | 22 | 161·2 | +12·3 | −44·0 |
| 12·276 | 0 | 78 | 0 | 48 | 158·8 | +12·1 | −31·7 |
| 13·231 | 3 | 39 | 2 | 22 | 159·4 | +12·4 | −18·4 |
| 14·287 | 0 | 64 | 0 | 33 | 158·3 | +12·1 | − 5·6 |
| 15·280 | 0 | 34 | 0 | 18 | 157·6 | +12·4 | + 6·9 |
| Means ... | ... | ... | 2 | 29 | 159·06 | +12·26 | ... |
| **Group 1384.** A small spot. | | | | | | | |
| May 11·162 | 0 | 16 | 0 | 29 | 132·4 | + 6·4 | −72·8 |
| 12·276 | 4 | 16 | 4 | 16 | 132·2 | + 6·6 | −58·3 |
| Means ... | ... | ... | 2 | 23 | 132·30 | + 6·50 | ... |
| **Group 1385.** A regular spot. | | | | | | | |
| May 11·162 | 1 | 12 | 2 | 41 | 123·7 | − 8·5 | −81·5 |
| 12·276 | 8 | 40 | 9 | 51 | 123·6 | − 8·4 | −66·9 |
| 13·231 | 8 | 45 | 7 | 39 | 123·6 | − 8·5 | −54·2 |
| 14·287 | 11 | 36 | 7 | 24 | 123·9 | − 8·7 | −40·0 |
| 15·280 | 0 | 16 | 0 | 9 | 124·1 | − 8·8 | −26·6 |
| 16·281 | 0 | 14 | 0 | 7 | 124·3 | − 8·6 | −13·2 |
| Means ... | ... | ... | 4 | 29 | 123·87 | − 8·58 | ... |
| **Group 1386.** A small spot. | | | | | | | |
| May 12·276 | 0 | 9 | 0 | 11 | 254·8 | +10·0 | +64·3 |
| Means ... | ... | ... | 0 | 11 | 254·8 | +10·0 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1387.

1 Two small spots close together on May 12. The group diminishes in size until about May 14, and then increases. It undergoes continual change in the number, size, and arrangement of the spots composing it. It is measured as a whole until May 16.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| May 12·276 | 0 | 19 | 0 | 10 | 173·7 | + 6·6 | −16·8 |
| 13·231 | 0 | 9 | 0 | 5 | 173·3 | + 7·4 | − 4·5 |
| 14·287 | 0 | 13 | 0 | 7 | 172·9 | + 5·9 | + 9·0 |
| 15·280 | 0 | 36 | 0 | 20 | 173·7 | + 6·0 | +23·0 |
| 16·281 | 14 | 72 | 9 | 47 | 177·4 | + 6·9 | +39·9 |
| 17·273 | 0 | 68 | 0 | 57 | 176·4 | + 6·0 | +52·1 |
| 18·147 | 0 | 18 | 0 | 18 | 174·5 | + 6·5 | +61·7 |
| Means ... | ... | ... | 1 | 23 | 174·56 | + 6·47 | ... |

### Group 1388.

A regular spot, *a*. Some very small spots are seen near it on May 17, 18, 21, 22, and 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 15·280 | 7 | 56 | 17 | 127 | 73·5 | − 2·2 | −77·2 |
| 16 281 | 24 | 136 | 27 | 155 | 73·6 | − 2·0 | −63·9 |
| 17·273 | 33 | 248 | 27 | 197 | 73·6 | − 1·7 | −50·7 |
| 18·147 | 41 | 301 | 27 | 194 | 73·6 | − 1·7 | −39·2 |
| 19·293 | 50 | 335 | 27 | 183 | 74·4 | − 1·7 | −23·3 |
| 20· | No photograph. | | (30 | 187 | 74·7 | − 2·1 | − 9·7) |
| 21·303 | 68 | 382 | 34 | 191 | 75·0 | − 2·4 | + 3·9 |
| 22·314 | 70 | 367 | 37 | 195 | 75·7 | − 2·4 | +18·0 |
| 23·318 | 51 | 264 | 32 | 168 | 75·4 | − 2·7 | +31·0 |
| 24·573 | 40 | 260 | 30 | 198 | 76·2 | − 3·1 | +48·4 |
| 25·144 | 34 | 183 | 30 | 164 | 76·6 | − 3·1 | +56·3 |
| 26·231 | 9 | 111 | 14 | 168 | 76·5 | − 3·0 | +70·7 |
| 27·123 | 3 | 41 | 12 | 146 | 76·0 | − 3·0 | +82·0 |
| Means ... | ... | ... | 26 | 175 | 74·98 | − 2·39 | ... |

### Group 1389.

Two regular spots in contact with each other and measured together; the smaller spot diminishes in size and breaks up before May 24, disappearing before May 26. Several small spots are seen near the large spots on May 19–25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 16·281 | 19 | 134 | 39 | 276 | 61·4 | −14·4 | −76·1 |
| 17·273 | 28 | 251 | 31 | 279 | 61·5 | −14·7 | −62·8 |
| 18·147 | 46 | 340 | 38 | 276 | 61·6 | −14·7 | −51·2 |
| 19·293 | 73 | 504 | 47 | 320 | 61·7 | −15·2 | −36·0 |
| 20· | No photograph. | | (49 | 304 | 61·4 | −14·9 | −23·0) |
| 21·303 | 96 | 554 | 51 | 287 | 61·1 | −14·6 | −10·0 |
| 22·314 | 132 | 849 | 69 | 439 | 62·0 | −14·1 | + 4·3 |
| 23·318 | 88 | 522 | 51 | 302 | 61·1 | −13·9 | +16·7 |
| 24·573 | 40 | 322 | 25 | 197 | 60·5 | −13·3 | +32·7 |
| 25·144 | 54 | 336 | 37 | 229 | 61·7 | −13·2 | +41·4 |
| 26·231 | 24 | 181 | 21 | 163 | 61·2 | −13·3 | +55·4 |
| 27·123 | 14 | 125 | 19 | 167 | 61·7 | −13·3 | +67·7 |
| 28·294 | 4 | 33 | 19 | 156 | 62·6 | −11·6 | +84·0 |
| Means ... | ... | ... | 38 | 261 | 61·50 | −13·94 | ... |

### Group 1390.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| May 16·281 | 1 | 10 | 4 | 35 | 55·8 | − 3·9 | −81·7 |
| 17·273 | 0 | 11 | 0 | 14 | 57·1 | − 3·7 | −67·2 |
| Means ... | .... | ... | 2 | 25 | 56·45 | − 3·80 | ... |

### Group 1391.

Two small spots, *a* and *b*. They move rapidly apart, and *b* disappears before May 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 17·273 | 0 | 31 | 0 | 20 | 158·2 | +13·7 | +33·9 |
| 18·147 | 7 | 42 | 5 | 33 | 159·6 | +13·3 | +46·8 |
| 19·293 | 1 | 7 | 1 | 9 | 162·0 | +12·7 | +64·3 |
| Means ... | ... | ... | 2 | 21 | 159·93 | +13·23 | ... |

### Group 1392.

A spot of irregular outline. It has broken up into a number of small spots by May 21.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 17·273 | 0 | 49 | 0 | 94 | 49·4 | − 4·3 | −74·9 |
| 18·147 | 7 | 54 | 7 | 60 | 49·7 | − 3·3 | −63·1 |
| 19·293 | 7 | 116 | 6 | 85 | 50·7 | − 4·1 | −47·0 |
| 20· | No photograph. | | (4 | 62 | 51·0 | − 4·3 | −33·5) |
| 21·303 | 2 | 70 | 1 | 38 | 51·2 | − 4·4 | −19·9 |
| Means ... | ... | .. | 4 | 68 | 50·40 | − 4·08 | ... |

### Group 1393.

A regular spot. It shows a large proper motion in longitude between May 29 and 30.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 18·147 | 14 | 57 | 65 | 275 | 28·6 | − 9·9 | −84·2 |
| 19·293 | 47 | 235 | 65 | 328 | 28·7 | − 9·9 | −69·0 |
| 20· | No photograph. | | (62 | 305 | 28·7 | − 9·9 | −55·8) |
| 21·303 | 84 | 409 | 59 | 281 | 28·6 | − 9·9 | −42·5 |
| 22·314 | 100 | 483 | 58 | 279 | 28·8 | − 9·6 | −28·9 |
| 23·318 | 98 | 489 | 55 | 277 | 28·4 | − 9·4 | −16·0 |
| 24·573 | 90 | 437 | 46 | 223 | 28·6 | − 9·3 | + 0·8 |
| 25·144 | 131 | 480 | 66 | 244 | 29·1 | − 9·5 | + 8·8 |
| 26·231 | 98 | 477 | 54 | 263 | 28·9 | − 9·4 | +23·1 |
| 27·123 | 84 | 409 | 51 | 252 | 29·0 | − 9·5 | +35·0 |
| 28·294 | 58 | 325 | 46 | 258 | 29·4 | − 8·2 | +50·8 |
| 29·155 | 40 | 219 | 43 | 236 | 29·3 | − 8·0 | +62·1 |
| 30·564 | 0 | 99 | 0 | 220 | 24·8 | − 8·7 | +76·3 |
| Means ... | ... | ... | 52 | 265 | 28·53 | − 9·32 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1394.** A regular spot, *a*. A few small faint spots are occasionally seen near it. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| May 22·314 | 6 | 47 | 18 | 149 | 337·8 | +17·8 | −79·9 |
| 23·318 | 18 | 125 | 27 | 190 | 336·9 | +17·8 | −67·5 |
| 24·573 | 17 | 164 | 14 | 137 | 336·9 | +18·1 | −49·9 |
| 25·144 | 41 | 232 | 30 | 169 | 337·0 | +18·1 | −43·3 |
| 26·231 | 43 | 287 | 26 | 176 | 336·5 | +18·3 | −29·3 |
| 27·123 | 52 | 261 | 29 | 145 | 336·8 | +18·5 | −17·2 |
| 28·294 | 46 | 280 | 25 | 147 | 336·6 | +18·0 | − 2·0 |
| 29·155 | 52 | 273 | 28 | 147 | 337·1 | +18·0 | + 9·9 |
| 30·564 | 33 | 211 | 20 | 126 | 337·6 | +17·7 | +29·1 |
| 31·155 | 33 | 207 | 22 | 136 | 337·5 | +18·4 | +36·8 |
| June 1·218 | 21 | 124 | 18 | 103 | 337·0 | +18·6 | +50·4 |
| Means ... | ... | ... | 23 | 148 | 337·06 | +18·12 | ... |
| **Group 1395.** A regular spot. Two small spots are seen near it on May 28. | | | | | | | |
| May 22·314 | 7 | 46 | 30 | 202 | 334·1 | −15·4 | −83·6 |
| 23·318 | 17 | 93 | 29 | 157 | 333·3 | −15·3 | −71·1 |
| 24·573 | 17 | 204 | 15 | 176 | 334·5 | −15·1 | −53·3 |
| 25·144 | 38 | 244 | 28 | 180 | 334·3 | −15·5 | −46·0 |
| 26·231 | 51 | 293 | 31 | 177 | 334·3 | −15·7 | −31·5 |
| 27·123 | 54 | 344 | 30 | 189 | 334·5 | −15·7 | −19·5 |
| 28·294 | 43 | 352 | 22 | 182 | 335·4 | −15·8 | − 3·2 |
| 29·155 | 59 | 326 | 31 | 171 | 335·2 | −15·6 | + 8·0 |
| 30·564 | 42 | 230 | 24 | 132 | 334·2 | −15·1 | +25·7 |
| 31·155 | 16 | 197 | 10 | 122 | 335·2 | −14·7 | +34·5 |
| June 1·218 | 22 | 148 | 17 | 113 | 334·6 | −14·3 | +48·0 |
| 2· | No photograph. | | (14 | 88 | 334·4 | −15·0 | +60·9) |
| 3·184 | 6 | 34 | 10 | 62 | 334·2 | −15·6 | +73·7 |
| Means ... | ... | ... | 22 | 150 | 334·48 | −15·29 | ... |
| **Group 1396.** A large and irregular group composed of a great number of small spots, which change in number, area, and arrangement from day to day. The umbra of the last spot of the group in completely hidden by the wire on May 26, and its area is merely estimated. | | | | | | | |
| May 23·318 | 2 | 115 | 4 | 249 | 328·9 | −12·2 | −75·5 |
| 24·573 | 0 | 314 | 0 | 303 | 329·8 | −11·9 | −58·0 |
| 25·144 | 31 | 317 | 25 | 255 | 329·5 | −12·1 | −50·8 |
| 26·231 | 34 | 377 | 21 | 238 | 329·7 | −11·6 | −36·1 |
| 27·123 | 69 | 440 | 38 | 244 | 330·5 | −11·3 | −23·5 |
| 28·294 | 68 | 478 | 35 | 245 | 330·8 | −11·6 | − 7·8 |
| 29·155 | 105 | 635 | 53 | 325 | 330·7 | −11·0 | + 3·5 |
| 30·564 | 153 | 594 | 83 | 326 | 330·2 | −10·7 | +21·7 |
| 31·155 | 73 | 836 | 43 | 491 | 330·9 | −10·6 | +30·2 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1396—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| June 1·218 | 52 | 600 | 35 | 420 | 330·5 | −10·2 | +43·9 |
| 2· | No photograph. | | (18 | 283 | 330·7 | −10·9 | +57·1) |
| 3·184 | 0 | 96 | 0 | 146 | 330·8 | −11·6 | +70·3 |
| Means ... | ... | ... | 30 | 294 | 330·25 | −11·31 | ... |
| **Group 1397.** A regular spot which decreases in size after May 25. | | | | | | | |
| May 23·318 | 0 | 13 | 0 | 43 | 324·2 | −24·4 | −80·2 |
| 24·573 | 0 | 23 | 0 | 27 | 325·1 | −24·0 | −62·7 |
| 25·144 | 12 | 38 | 11 | 36 | 325·0 | −24·7 | −55·3 |
| 26·231 | 8 | 37 | 6 | 27 | 325·1 | −24·6 | −40·7 |
| 27·123 | 10 | 22 | 6 | 14 | 325·2 | −24·7 | −28·8 |
| 28·294 | 0 | 11 | 0 | 6 | 325·9 | −24·9 | −12·7 |
| Means ... | ... | ... | 4 | 26 | 325·08 | −24·55 | ... |
| **Group 1398.** A regular spot which decreases in size after May 25. It divides into two portions on May 28. | | | | | | | |
| May 24·573 | 0 | 79 | 0 | 136 | 315·6 | −23·7 | −72·2 |
| 25·144 | 13 | 142 | 17 | 179 | 315·5 | −24·6 | −64·8 |
| 26·231 | 23 | 147 | 19 | 127 | 314·7 | −24·4 | −51·1 |
| 27·123 | 12 | 106 | 9 | 75 | 314·3 | −24·5 | −39·7 |
| 28·294 | 10 | 77 | 6 | 46 | 314·7 | −25·0 | −23·9 |
| Means ... | ... | ... | 10 | 113 | 314·96 | −24·44 | ... |
| **Group 1399.** Three small spots, measured together. | | | | | | | |
| May 25·144 | 3 | 16 | 2 | 11 | 62·7 | − 4·0 | +42·4 |
| Means ... | ... | ... | 2 | 11 | 62·7 | − 4·0 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1400.

A small spot on May 25. It increases in size, and other spots appear, until on May 28 and the succeeding days the group consists of two large regular spots, *a* and *b*, with some smaller spots between them ; *b* has disappeared by June 3.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| May 25·144 | 0 | 7 | 0 | 6 | 330·1 | +14·9 | −50·2 |
| 26·231 | 8 | 44 | 5 | 30 | 326·6 | +14·7 | −39·2 |
| 27·123 | 63 | 204 | 36 | 119 | 326·5 | +15·4 | −27·5 |
| 28·294 | 150 | 826 | 79 | 437 | 325·4 | +14·7 | −13·2 |
| 29·155 | 142 | 868 | 74 | 455 | 328·1 | +15·3 | + 0·9 |
| 30·564 | 76 | 431 | 43 | 241 | 328·0 | +16·1 | +19·5 |
| 31·159 | 41 | 331 | 25 | 200 | 330·3 | +16·3 | +29·6 |
| June 1·218 | 32 | 177 | 23 | 130 | 331·3 | +16·3 | +44·7 |
| 2 | No photograph. | | (15 | 89 | 332·6 | +15·2 | +59·1) |
| 3·184 | 4 | 26 | 7 | 47 | 333·9 | +14·0 | +73·4 |
| Means ... | ... | ... | 31 | 175 | 329·28 | +15·29 | ... |

### Group 1401.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 29·155 | 0 | 7 | 0 | 5 | 289·7 | −16·7 | −37·5 |
| Means ... | ... | ... | 0 | 5 | 289·7 | −16·7 | ... |

### Group 1402.

Two very small spots measured together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 29·155 | 0 | 11 | 0 | 14 | 259·4 | − 7·8 | −67·8 |
| Means ... | ... | ... | 0 | 14 | 259·4 | − 7·8 | ... |

### Group 1403.

A regular spot, *a*, followed by some smaller spots. The latter have disappeared by June 4.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 30·564 | 0 | 167 | 0 | 249 | 239·3 | + 9·4 | −69·2 |
| 31·159 | 21 | 222 | 23 | 253 | 236·9 | + 7·2 | −63·8 |
| June 1·218 | 40 | 324 | 31 | 251 | 237·2 | + 7·4 | −49·4 |
| 2 | No photograph. | | (36 | 224 | 237·7 | + 7·9 | −35·9) |
| 3·184 | 75 | 361 | 40 | 197 | 238·2 | + 8·3 | −22·3 |
| 4·321 | 23 | 393 | 12 | 201 | 238·7 | + 8·3 | − 6·8 |
| 5 | No photograph. | | (27 | 205 | 238·7 | + 8·2 | + 5·5) |
| 6·185 | 77 | 390 | 41 | 208 | 238·6 | + 8·0 | +17·7 |
| 7·167 | 70 | 306 | 41 | 179 | 238·4 | + 7·9 | +30·6 |
| Means ... | ... | ... | 28 | 219 | 238·19 | + 8·07 | ... |

### Group 1404.

A regular spot, *a*. Several very small spots are seen near it on June 3, 4, and 11. On June 11 these are measured with the principal spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| May 30·564 | 0 | 102 | 0 | 155 | 235·7 | −14·3 | −72·8 |
| 31·159 | 11 | 127 | 16 | 177 | 232·4 | −17·2 | −68·3 |
| June 1·218 | 21 | 188 | 19 | 166 | 232·6 | −17·3 | −54·0 |
| 2 | No photograph. | | (25 | 173 | 232·5 | −16·7 | −41·1) |
| 3·184 | 51 | 306 | 30 | 180 | 232·4 | −16·1 | −28·1 |
| 4·321 | 43 | 308 | 23 | 165 | 232·7 | −15·9 | −12·8 |
| 5 | No photograph. | | (30 | 173 | 232·5 | −15·9 | − 0·7) |
| 6·185 | 69 | 338 | 37 | 180 | 232·3 | −15·9 | +11·4 |
| 7·167 | 61 | 360 | 35 | 206 | 232·4 | −15·6 | +24·6 |
| 8 | No photograph. | | (26 | 170 | 231·8 | −15·5 | +38·1) |
| 9 | No photograph. | | (18 | 134 | 231·2 | −15·3 | +51·6) |
| 10 | No photograph. | | ( 9 | 98 | 230·6 | −15·2 | +65·1) |
| 11·434 | 0 | 23 | 0 | 62 | 230·0 | −15·0 | +78·6 |
| Means ... | ... | ... | 21 | 157 | 232·24 | −15·84 | ... |

### Group 1405.

A regular spot, *a*. It divides into two parts on June 3, but these are still measured together. A very small spot is seen near *a* on June 3.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 31·159 | 5 | 22 | 15 | 64 | 220·9 | −17·7 | −79·8 |
| June 1·218 | 9 | 58 | 11 | 68 | 222·8 | −17·7 | −63·8 |
| 2 | No photograph. | | (17 | 91 | 222·7 | −16·8 | −50·9) |
| 3·184 | 34 | 173 | 22 | 114 | 222·5 | −15·8 | −38·0 |
| 4·321 | 24 | 170 | 13 | 96 | 223·0 | −15·8 | −22·5 |
| 5 | No photograph. | | (17 | 93 | 223·2 | −16·0 | −10·0) |
| 6·185 | 38 | 173 | 20 | 90 | 223·3 | −16·1 | + 2·4 |
| 7·167 | 28 | 132 | 15 | 71 | 223·6 | −15·8 | +15·8 |
| 8 | No photograph. | | (11 | 61 | 223·6 | −15·7 | +29·9) |
| 9 | No photograph. | | ( 8 | 52 | 223·7 | −15·7 | +44·0) |
| 10 | No photograph. | | ( 4 | 43 | 223·7 | −15·7 | +58·2) |
| 11·434 | 0 | 19 | 0 | 33 | 223·7 | −15·6 | +72·3 |
| Means ... | ... | ... | 13 | 73 | 223·06 | −16·20 | ... |

### Group 1406.

Several small faint spots. The greater number have disappeared by June 4.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 3·184 | 0 | 40 | 0 | 32 | 211·8 | −19·0 | −48·7 |
| 4·321 | 0 | 11 | 0 | 7 | 209·2 | −20·7 | −36·3 |
| Means ... | ... | ... | 0 | 20 | 210·50 | −19·85 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1407.** A great number of small spots. The spots greatly diminish in size, and become much more scattered between June 4 and 6. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| June 3·184 | 19 | 365 | 21 | 420 | 196·6 | + 9·4 | −63·9 |
| 4·321 | 24 | 322 | 18 | 247 | 197·0 | + 9·3 | −48·5 |
| 5 | No photograph. | | (16 | 184 | 196·5 | + 9·4 | −36·7) |
| 6·185 | 22 | 214 | 13 | 120 | 196·0 | + 9·4 | −24·9 |
| 7·167 | 7 | 79 | 3 | 40 | 197·7 | + 9·1 | −10·1 |
| Means ... | ... | ... | 14 | 202 | 196·76 | + 9·32 | ... |
| **Group 1408.** Two small spots, *a* and *b*. Only *a* remains on June 7. | | | | | | | |
| June 6·185 | 8 | 35 | 5 | 21 | 251·8 | +18·3 | +30·9 |
| 7·167 | 0 | 9 | 0 | 7 | 253·7 | +18·7 | +45·9 |
| Means ... | ... | ... | 3 | 14 | 252·75 | +18·50 | ... |
| **Group 1409.** A large regular spot, *a*, followed by a small spot, *b*. The latter has disappeared by June 11. | | | | | | | |
| June 6·185 | 25 | 138 | 33 | 184 | 153·1 | − 7·4 | −67·8 |
| 7·167 | 32 | 249 | 28 | 223 | 152·1 | − 7·3 | −55·7 |
| 8 | No photograph. | | (28 | 217 | 152·2 | − 7·1 | −41·6) |
| 9 | No photograph. | | (28 | 212 | 152·2 | − 6·9 | −27·4) |
| 10 | No photograph. | | (28 | 207 | 152·2 | − 6·7 | −13·3) |
| 11·434 | 56 | 396 | 28 | 201 | 152·3 | − 6·5 | + 0·9 |
| 12·457 | 69 | 356 | 36 | 184 | 151·9 | − 6·2 | +14·1 |
| 13·123 | 49 | 332 | 27 | 182 | 152·5 | − 6·4 | +23·4 |
| 14·591 | 48 | 265 | 33 | 183 | 152·1 | − 5·9 | +42·5 |
| 15·435 | 43 | 198 | 36 | 169 | 152·1 | − 6·2 | +53·6 |
| 16·566 | 2 | 77 | 3 | 108 | 152·3 | − 6·0 | +68·8 |
| Means ... | ... | ... | 28 | 188 | 152·27 | − 6·60 | ... |
| **Group 1410.** A regular spot. | | | | | | | |
| June 11·434 | 2 | 42 | 3 | 68 | 79·5 | − 2·1 | −71·9 |
| 12·457 | 11 | 85 | 10 | 81 | 79·3 | − 1·9 | −58·5 |
| 13·123 | 18 | 109 | 13 | 83 | 79·8 | − 2·1 | −49·3 |
| 14·591 | 18 | 148 | 11 | 87 | 79·7 | − 2·2 | −29·9 |
| 15·435 | 32 | 170 | 17 | 90 | 79·8 | − 2·1 | −18·7 |
| 16·566 | 21 | 149 | 11 | 75 | 80·3 | − 2·2 | − 3·2 |
| 17 | No photograph. | | ( 8 | 72 | 80·4 | − 2·4 | +10·2) |
| **Group 1410—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| June 18 | No photograph. | | (5 | 68 | 80·5 | − 2·6 | +23·6) |
| 19 | No photograph. | | (3 | 65 | 80·5 | − 2·8 | +37·0) |
| 20·589 | 0 | 79 | 0 | 62 | 80·6 | − 3·0 | +50·3 |
| Means ... | ... | ... | 8 | 75 | 80·04 | − 2·34 | ... |
| **Group 1411.** A regular spot. | | | | | | | |
| June 11·434 | 0 | 42 | 0 | 86 | 75·6 | + 6·3 | −75·8 |
| 12·457 | 11 | 106 | 11 | 115 | 75·3 | + 6·3 | −62·5 |
| 13·123 | 21 | 126 | 19 | 112 | 76·1 | + 6·5 | −53·0 |
| 14·591 | 21 | 149 | 13 | 90 | 75·9 | + 6·4 | −33·7 |
| 15·435 | 29 | 170 | 16 | 93 | 76·2 | + 6·5 | −22·3 |
| 16·566 | 15 | 149 | 8 | 76 | 76·8 | + 6·6 | − 6·7 |
| Means ... | ... | ... | 11 | 95 | 75·98 | + 6·43 | ... |
| **Group 1412.** A small spot. A second spot is seen near it on June 13. | | | | | | | |
| June 12·457 | 0 | 20 | 0 | 13 | 97·4 | + 4·9 | −40·4 |
| 13·123 | 5 | 16 | 3 | 9 | 99·2 | + 5·4 | −29·9 |
| Means ... | ... | ... | 2 | 11 | 98·30 | + 5·15 | ... |
| **Group 1413.** Two small spots. | | | | | | | |
| June 14·591 | 0 | 29 | 0 | 14 | 107·9 | + 7·5 | − 1·7 |
| Means ... | .. | ... | 0 | 14 | 107·9 | + 7·5 | ... |
| **Group 1414.** A regular spot. | | | | | | | |
| June 14·591 | 0 | 9 | 0 | 23 | 30·7 | − 8·0 | −78·9 |
| 15·435 | 0 | 55 | 0 | 76 | 30·6 | − 7·9 | −67·9 |
| 16·566 | 21 | 149 | 18 | 126 | 30·7 | − 7·9 | −52·8 |
| 17 | No photograph. | | (20 | 127 | 30·9 | − 7·9 | −39·3) |
| 18 | No photograph. | | (22 | 128 | 31·1 | − 7·9 | −25·8) |
| 19 | No photograph. | | (25 | 130 | 31·3 | − 7·8 | −12·3) |
| 20·589 | 53 | 256 | 27 | 131 | 31·5 | − 7·8 | + 1·2 |
| 21·475 | 43 | 235 | 22 | 123 | 31·9 | − 8·6 | +13·4 |
| 22·090 | 40 | 225 | 22 | 124 | 32·9 | − 7·8 | +22·5 |
| 23·433 | 32 | 193 | 21 | 128 | 32·3 | − 8·6 | +39·7 |
| 24·549 | 17 | 117 | 13 | 102 | 31·8 | − 8·5 | +54·0 |
| 25·598 | 5 | 88 | 7 | 119 | 31·5 | − 9·4 | +67·6 |
| Means ... | ... | ... | 16 | 111 | 31·43 | − 8·18 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |

### Group 1415.

Two small spots, *a* and *b*. *b* has disappeared by June 21, *a* by June 23. A small spot is, however, seen near its place on June 23.

| 1884. d | | | | | ° | ° ′ | ° |
|---|---|---|---|---|---|---|---|
| June 20·589 | 3 | 99 | 2 | 50 | 33·2 | − 3·5 | + 2·9 |
| 21·475 | 0 | 12 | 0 | 6 | 35·3 | − 5·4 | +16·8 |
| 22·090 | 0 | 12 | 0 | 7 | 36·2 | − 5·1 | +25·8 |
| 23·433 | 0 | 7 | 0 | 5 | 34·2 | − 5·9 | +41·6 |
| Means ... | ... | ... | 1 | 17 | 34·73 | − 4·98 | ... |

### Group 1416.

A number of small spots in a long irregular stream. The following portion of the stream has disappeared by June 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 20·589 | 0 | 173 | 0 | 101 | 2·0 | +13·1 | −28·3 |
| 21·475 | 0 | 94 | 0 | 51 | 0·7 | +12·9 | −17·8 |
| 22·090 | 11 | 128 | 6 | 66 | 359·6 | +12·9 | −10·8 |
| 23·433 | 6 | 118 | 3 | 60 | 4·8 | +12·2 | +12·2 |
| 24·549 | 0 | 95 | 0 | 55 | 4·5 | +12·7 | +26·7 |
| 25·598 | 11 | 214 | 7 | 145 | 6·0 | +10·8 | +42·1 |
| 26·500 | 0 | 148 | 0 | 129 | 6·7 | +10·7 | +54·7 |
| 27·452 | 0 | 117 | 0 | 156 | 7·3 | +10·8 | +67·9 |
| Means ... | ... | ... | 2 | 95 | 3·95 | +12·01 | ... |

### Group 1417.

Five small spots arranged in two compact clusters on June 21. Other small spots are seen near these, and are measured with them on June 22. The group has diminished in size by June 23.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 21·475 | 0 | 61 | 0 | 40 | 57·6 | −10·5 | +39·1 |
| 22·090 | 0 | 179 | 0 | 135 | 57·5 | − 9·4 | +47·1 |
| 23·433 | 0 | 45 | 0 | 51 | 55·8 | −10·3 | +63·2 |
| Means ... | ... | ... | 0 | 75 | 56·97 | −10·07 | ... |

### Group 1418.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 22·090 | 0 | 9 | 0 | 6 | 333·1 | −15·6 | −37·3 |
| 23·433 | 0 | 6 | 0 | 3 | 332·1 | −14·8 | −20·5 |
| Means ... | ... | ... | 0 | 5 | 332·60 | −15·20 | ... |

### Group 1419.

A large regular spot, *a*, followed by another spot, *b*. *b* has broken up into a number of small, faint, and widely scattered spots by July 3. On July 4 these have become a compact cluster, and are measured together. The group is on the actual limb on July 8, and only *a* is distinguishable.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 26·500 | 0 | 144 | 0 | 273 | 238·0 | −11·0 | −74·0 |
| 27·452 | 42 | 311 | 46 | 340 | 238·0 | −11·1 | −61·4 |
| 28·404 | 64 | 500 | 51 | 401 | 237·2 | −11·5 | −49·6 |

### Group 1419—*continued.*

| 1884. d | | | | | ° | ° | ° |
|---|---|---|---|---|---|---|---|
| June 29·430 | 85 | 646 | 54 | 413 | 237·5 | −11·5 | −35·7 |
| 30·486 | 96 | 750 | 53 | 419 | 237·6 | −11·7 | −21·6 |
| July 1 | No photograph. | | (56 | 415 | 237·9 | −12·2 | − 8·8) |
| 2 | No photograph. | | (60 | 412 | 238·1 | −12·7 | + 4·1) |
| 3·335 | 115 | 750 | 63 | 408 | 238·4 | −13·2 | +16·9 |
| 4·243 | 160 | 1058 | 95 | 630 | 236·7 | −14·7 | +27·2 |
| 5·366 | 85 | 795 | 61 | 574 | 237·8 | −13·9 | +43·1 |
| 6 | No photograph. | | (60 | 500 | 238·9 | −13·9 | +57·4) |
| 7 | No photograph. | | (58 | 427 | 240·1 | −13·9 | +71·8) |
| 8·348 | 6 | 35 | 57 | 353 | 241·3 | −13·8 | +86·1 |
| Means ... | ... | ... | 55 | 428 | 238·27 | −12·70 | ... |

### Group 1420.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 26·500 | 0 | 75 | 0 | 124 | 239·5 | +10·3 | −72·5 |
| 27·452 | 6 | 108 | 6 | 109 | 239·4 | +10·3 | −60·0 |
| 28·404 | 9 | 80 | 6 | 59 | 239·5 | + 9·8 | −47·3 |
| 29·430 | 0 | 87 | 0 | 53 | 239·7 | + 9·6 | −33·5 |
| 30·486 | 35 | 102 | 19 | 54 | 239·6 | + 9·3 | −19·6 |
| July 1 | No photograph. | | (18 | 53 | 239·6 | + 9·0 | − 7·0) |
| 2 | No photograph. | | (18 | 53 | 239·7 | + 8·8 | + 5·6) |
| 3·335 | 32 | 98 | 17 | 52 | 239·7 | + 8·5 | +18·2 |
| 4·243 | 14 | 73 | 8 | 42 | 239·6 | + 8·5 | +30·1 |
| 5·366 | 4 | 26 | 3 | 18 | 240·2 | + 8·8 | +45·5 |
| Means ... | ... | ... | 10 | 62 | 239·65 | + 9·29 | ... |

### Group 1421.

A regular spot on June 28. The spot increases in size on the succeeding days, and smaller spots appear following it, forming on July 3, 4, and 5 a long stream.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 28·404 | 0 | 50 | 0 | 59 | 222·1 | +13·3 | −64·7 |
| 29·430 | 0 | 112 | 0 | 90 | 221·9 | +13·3 | −51·3 |
| 30·486 | 34 | 355 | 22 | 232 | 219·8 | +13·1 | −39·4 |
| July 1 | No photograph. | | (21 | 236 | 221·0 | +13·0 | −25·7) |
| 2 | No photograph. | | (19 | 239 | 222·1 | +13·0 | −11·9) |
| 3·335 | 36 | 478 | 18 | 243 | 223·3 | +12·9 | + 1·8 |
| 4·243 | 80 | 469 | 42 | 247 | 223·8 | +13·1 | +14·3 |
| 5·366 | 74 | 454 | 43 | 262 | 223·5 | +13·8 | +28·8 |
| 6 | No photograph. | | (32 | 222 | 222·9 | +13·9 | +41·4) |
| 7 | No photograph. | | (22 | 182 | 222·3 | +13·9 | +53·9) |
| 8·348 | 10 | 116 | 11 | 142 | 221·7 | +14·0 | +66·5 |
| 9·168 | 8 | 57 | 14 | 118 | 220·8 | +14·6 | +76·5 |
| Means ... | ... | ... | 20 | 189 | 222·10 | +13·49 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1422.** A small spot on June 30. On July 3 the group consists of a large regular spot, *a*, followed by a stream of small spots. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| June 30·486 | 0 | 59 | 0 | 30 | 264·2 | +10·0 | + 5·0 |
| July 1 | No photograph. | | (13 | 113 | 265·8 | + 9·9 | +19·1) |
| 2 | No photograph. | | (25 | 195 | 267·3 | + 9·7 | +33·3) |
| 3·335 | 52 | 377 | 38 | 278 | 268·9 | + 9·6 | +47·4 |
| 4·243 | 67 | 343 | 69 | 352 | 270·4 | +10·0 | +60·9 |
| 5·366 | 15 | 160 | 31 | 347 | 271·8 | +10·4 | +77·1 |
| Means ... | ... | ... | 29 | 219 | 268·07 | + 9·93 | ... |
| **Group 1423.** A small spot. | | | | | | | |
| June 30·486 | 0 | 27 | 0 | 15 | 236·0 | +17·5 | −23·2 |
| Means ... | ... | ... | 0 | 15 | 236·0 | +17·5 | ... |
| **Group 1424.** A regular spot, *a*, followed by a stream of small spots. *a* has broken up into a number of small spots by July 8. | | | | | | | |
| July 3·335 | 32 | 286 | 24 | 207 | 175·7 | − 4·9 | −45·8 |
| 4·243 | 62 | 303 | 38 | 184 | 176·1 | − 5·1 | −33·4 |
| 5·366 | 50 | 288 | 27 | 153 | 176·4 | − 5·0 | −18·3 |
| 6 | No photograph. | | (21 | 120 | 176·6 | − 5·0 | − 4·9) |
| 7 | No photograph. | | (16 | 88 | 176·8 | − 4·9 | + 8·4) |
| 8·348 | 18 | 101 | 10 | 55 | 177·0 | − 4·9 | +21·8 |
| 9·168 | 9 | 67 | 5 | 39 | 175·5 | − 5·2 | +31·2 |
| Means ... | ... | ... | 20 | 121 | 176·30 | − 5·00 | ... |
| **Group 1425.** A regular spot. | | | | | | | |
| July 3·335 | 5 | 43 | 7 | 65 | 151·3 | − 7·4 | −70·2 |
| 4·243 | 22 | 100 | 22 | 98 | 151·2 | − 7·5 | −58·3 |
| 5·366 | 16 | 144 | 12 | 100 | 151·4 | − 7·4 | −43·3 |
| 6 | No photograph. | | (14 | 92 | 151·4 | − 7·4 | −30·1) |
| 7 | No photograph. | | (15 | 83 | 151·5 | − 7·4 | −16·9) |
| 8·348 | 34 | 147 | 17 | 75 | 151·5 | − 7·4 | − 3·7 |
| 9·168 | 39 | 158 | 20 | 81 | 151·5 | − 7·2 | + 7·2 |
| 10·205 | 21 | 131 | 11 | 71 | 151·5 | − 7·1 | +20·9 |
| 11·164 | 21 | 114 | 13 | 70 | 151·2 | − 7·0 | +33·3 |
| 12·280 | 18 | 114 | 13 | 86 | 150·4 | − 6·7 | +47·3 |
| Means ... | ... | ... | 14 | 82 | 151·29 | − 7·25 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1426.** A regular spot. A small spot is seen near it on July 5, and it has broken up by July 8 into a number of small spots. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| July 3·335 | 0 | 32 | 0 | 89 | 141·2 | + 8·3 | −80·3 |
| 4·243 | 12 | 111 | 16 | 151 | 140·9 | + 8·1 | −68·6 |
| 5·366 | 13 | 148 | 11 | 122 | 141·5 | + 7·9 | −53·2 |
| 6 | No photograph. | | (11 | 103 | 141·4 | + 7·9 | −40·1) |
| 7 | No photograph. | | (10 | 83 | 141·4 | + 7·8 | −27·0) |
| 8·348 | 19 | 124 | 10 | 64 | 141·3 | + 7·8 | −13·9 |
| 9·168 | 8 | 44 | 4 | 22 | 141·2 | + 8·3 | − 3·1 |
| Means ... | ... | ... | 9 | 91 | 141·27 | + 8·01 | ... |
| **Group 1427.** A large spot of irregular outline, *a*, preceded by a stream of small spots. On July 19 only one large regular spot is seen. | | | | | | | |
| July 8·348 | 12 | 97 | 18 | 149 | 83·6 | +11·0 | −71·6 |
| 9·168 | 45 | 266 | 45 | 267 | 83·9 | +11·0 | −60·4 |
| 10·205 | 35 | 366 | 26 | 267 | 83·9 | +10·9 | −46·7 |
| 11·164 | 28 | 243 | 17 | 146 | 85·3 | +11·4 | −32·6 |
| 12·280 | 70 | 345 | 36 | 183 | 85·1 | +11·3 | −18·0 |
| 13 | No photograph. | | (38 | 213 | 86·2 | +11·4 | − 3·4) |
| 14 | No photograph. | | (41 | 242 | 87·4 | +11·5 | +11·2) |
| 15 | No photograph. | | (44 | 272 | 88·6 | +11·6 | +25·9) |
| 16 | No photograph. | | (46 | 301 | 89·7 | +11·7 | +40·5) |
| 17 | No photograph. | | (49 | 331 | 90·9 | +11·8 | +55·1) |
| 18 | No photograph. | | (52 | 360 | 92·0 | +11·9 | +69·8) |
| 19·409 | 12 | 89 | 54 | 390 | 93·2 | +12·0 | +84·4 |
| Means ... | ... | ... | 39 | 260 | 87·48 | +11·46 | ... |
| **Group 1428.** A very small spot. | | | | | | | |
| July 9·168 | 0 | 3 | 0 | 3 | 197·4 | +15·9 | +53·1 |
| Means ... | ... | ... | 0 | 3 | 197·4 | +15·9 | ... |
| **Group 1429.** Two small spots measured together. | | | | | | | |
| July 9·168 | 7 | 22 | 5 | 17 | 193·3 | + 6·1 | +49·0 |
| Means ... | ... | ... | 5 | 17 | 193·3 | + 6·1 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1430.** A single spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| July 11·164 | 0 | 18 | 0 | 36 | 43·2 | − 8·1 | −74·7 |
| 12·280 | 15 | 66 | 16 | 68 | 42·8 | − 8·2 | −60·3 |
| Means ... | ... | ... | 8 | 52 | 43·00 | − 8·15 | ... |
| **Group 1431.** Two small spots. | | | | | | | |
| July 12·280 | 3 | 16 | 3 | 20 | 170·2 | + 9·7 | +67·1 |
| Means ... | ... | ... | 3 | 20 | 170·2 | + 9·7 | ... |
| **Group 1432.** Five small spots, three being close together are measured as one. | | | | | | | |
| July 12·280 | 31 | 90 | 22 | 63 | 145·3 | −10·6 | +42·2 |
| Means .. | ... | ... | 22 | 63 | 145·3 | −10·6 | ... |
| **Group 1433.** A small spot. | | | | | | | |
| July 12·280 | 0 | 4 | 0 | 6 | 32·7 | −10·3 | −70·4 |
| Means ... | ... | ... | 0 | 6 | 32·7 | −10·3 | ... |
| **Group 1434.** A very small spot on July 19. Two small spots on July 20. | | | | | | | |
| July 19·409 | 1 | 3 | 1 | 4 | 74·2 | + 6·7 | +65·4 |
| 20·414 | 0 | 7 | 0 | 17 | 74·5 | + 7·4 | +79·0 |
| Means ... | ... | ... | 1 | 11 | 74·35 | + 7·05 | ... |
| **Group 1435.** A very small spot. | | | | | | | |
| July 19·409 | 1 | 7 | 1 | 5 | 47·3 | + 9·8 | +38·5 |
| Means ... | ... | ... | 1 | 5 | 47·3 | + 9·8 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1436.** A regular spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| July 19·409 | 20 | 172 | 16 | 131 | 320·5 | − 6·6 | −48·3 |
| 20·414 | 31 | 189 | 19 | 117 | 321·1 | − 6·7 | −34·4 |
| 21 | No photograph. | | (19 | 115 | 321·4 | − 6·7 | −20·9) |
| 22 | No photograph. | | (19 | 113 | 321·7 | − 6·7 | − 7·4) |
| 23 | No photograph. | | (18 | 111 | 322·0 | − 6·6 | + 6·1) |
| 24·407 | 33 | 200 | 18 | 109 | 322·3 | − 6·6 | +19·6 |
| 25·466 | 30 | 144 | 18 | 89 | 322·1 | − 7·5 | +33·5 |
| 26·455 | 28 | 136 | 21 | 103 | 323·1 | − 6·7 | +47·5 |
| 27·244 | 15 | 101 | 15 | 99 | 323·1 | − 6·9 | +58·0 |
| Means ... | ... | ... | 18 | 110 | 321·92 | − 6·78 | ... |
| **Group 1437.** A regular spot on July 19 and 20. It has broken up by July 24, and forms two faint spots close together. On July 26 the group consists of three very small spots. | | | | | | | |
| July 19·409 | 5 | 25 | 10 | 56 | 292·7 | − 9·2 | −76·1 |
| 20·414 | 9 | 63 | 10 | 69 | 293·9 | − 9·2 | −61·6 |
| 21 | No photograph. | | ( 7 | 60 | 294·7 | − 9·0 | −47·6) |
| 22 | No photograph. | | ( 5 | 51 | 295·5 | − 8·7 | −33·6) |
| 23 | No photograph. | | ( 3 | 41 | 296·3 | − 8·4 | −19·6) |
| 24·407 | 0 | 61 | 0 | 32 | 297·1 | − 8·1 | − 5·6 |
| 25·466 | 0 | 74 | 0 | 39 | 297·2 | − 8·6 | + 8·6 |
| 26·455 | 0 | 26 | 0 | 15 | 296·8 | − 9·0 | +21·2 |
| Means ... | ... | ... | 4 | 45 | 295·53 | − 8·78 | ... |
| **Group 1438.** Three very small spots, of which the two following are measured as one. The group has greatly increased in size by July 24, and consists of two spots, *a* and *b*, of considerable size and irregular outline. The preceding spot, *a*, becomes more regular in shape, and moves forward in longitude on the succeeding days. Several small spots appear between *a* and *b*. | | | | | | | |
| July 20·414 | 0 | 18 | 0 | 13 | 310·4 | − 3·5 | −45·1 |
| 21 | No photograph. | | (10 | 67 | 310·9 | − 3·6 | −31·5) |
| 22 | No photograph. | | (20 | 121 | 311·3 | − 3·6 | −17·8) |
| 23 | No photograph. | | (30 | 175 | 311·8 | − 3·7 | − 4·2) |
| 24·407 | 78 | 441 | 40 | 229 | 312·2 | − 3·8 | + 9·5 |
| 25·466 | 95 | 466 | 53 | 259 | 312·3 | − 4·3 | +23·7 |
| 26·455 | 78 | 596 | 51 | 384 | 313·4 | − 3·7 | +37·8 |
| 27·244 | 62 | 556 | 47 | 429 | 313·6 | − 3·8 | +48·5 |
| Means ... | ... | ... | 31 | 210 | 311·99 | − 3·75 | ... |
| **Group 1439.** A regular spot. | | | | | | | |
| July 20·414 | 4 | 19 | 14 | 67 | 272·8 | +10·0 | −82·7 |
| Means ... | ... | ... | 14 | 67 | 272·8 | +10·0 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1440.

Several small spots arranged in three close clusters on July 26. On July 27 only two spots remain, and only one on July 31.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *a* | | | | | ° | ° | ° |
| July 26·455 | 16 | 78 | 10 | 50 | 241·3 | −13·4 | −34·3 |
| 27·244 | 12 | 30 | 8 | 17 | 240·2 | −13·7 | −24·9 |
| 28 | No photograph. | | ( 6 | 15 | 242·1 | −12·8 | − 9·4) |
| 29 | No photograph. | | ( 4 | 13 | 244·0 | −11·9 | + 6·0) |
| 30 | No photograph. | | ( 2 | 11 | 245·9 | −10·9 | +21·5) |
| 31·357 | 0 | 18 | 0 | 12 | 247·8 | −10·0 | +37·0 |
| Means ... | ... | ... | 5 | 20 | 243·55 | −12·12 | ... |

### Group 1441.

Three very small spots on July 26. Other spots appear on July 27, and the group increases in size, consisting on July 31 of two large spots, *a* and *b*, and a few small spots between them. The small spots have disappeared by August 1, and *b* has broken up into two spots by August 3. Only *a* remains on August 5.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 26·455 | 3 | 20 | 3 | 20 | 215·2 | + 4·7 | −60·4 |
| 27·244 | 1 | 29 | 1 | 23 | 212·2 | + 3·5 | −52·9 |
| 28 | No photograph. | | (13 | 127 | 212·5 | + 3·6 | −39·1) |
| 29 | No photograph. | | (25 | 232 | 212·8 | + 3·7 | −25·2) |
| 30 | No photograph. | | (37 | 337 | 213·0 | + 3·8 | −11·3) |
| 31·357 | 99 | 877 | 49 | 441 | 213·3 | + 3·9 | + 2·5 |
| Aug. 1·433 | 103 | 693 | 55 | 367 | 213·8 | + 3·8 | +17·3 |
| 2·432 | 84 | 389 | 51 | 231 | 215·8 | + 3·1 | +32·4 |
| 3·577 | 57 | 285 | 42 | 214 | 216·2 | + 3·5 | +48·0 |
| 4·260 | 44 | 240 | 41 | 228 | 217·4 | + 2·7 | +58·3 |
| 5·485 | 4 | 62 | 8 | 122 | 218·4 | + 2·6 | +75·4 |
| Means ... | ... | ... | 30 | 213 | 214·60 | + 3·54 | ... |

### Group 1442.

Two small spots measured together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 27·244 | 6 | 26 | 5 | 23 | 213·0 | − 8·7 | −52·1 |
| Means ... | ... | ... | 5 | 23 | 213·0 | − 8·7 | ... |

### Group 1443.

Two small spots close together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 31·357 | 8 | 36 | 7 | 31 | 261·9 | −15·5 | +51·1 |
| Aug. 1·433 | 0 | 25 | 0 | 33 | 261·2 | −15·2 | +64·7 |
| Means ... | ... | ... | 4 | 32 | 261·55 | −15·35 | ... |

### Group 1444

Several small spots on July 31. The group increases in size, and on August 1 consists of two large spots, *a* and *b*, with some small spots between them.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *a* | | | | | ° | ° | ° |
| July 31·357 | 36 | 289 | 20 | 155 | 222·6 | −11·6 | +11·8 |
| Aug. 1·433 | 111 | 862 | 67 | 506 | 222·6 | −11·1 | +26·1 |
| 2·432 | 169 | 1183 | 114 | 812 | 223·5 | −10·9 | +40·1 |
| 3·577 | 169 | 749 | 150 | 671 | 221·7 | −11·0 | +53·5 |
| 4·260 | 74 | 618 | 92 | 773 | 223·5 | −11·2 | +64·4 |
| 5·485 | 4 | 76 | 8 | 158 | 216·4 | −11·1 | +73·4 |
| Means ... | ... | ... | 75 | 513 | 221·72 | −11·15 | ... |

### Group 1445.

A few small spots irregularly distributed on July 31. The group changes rapidly, increasing in size from day to day. On August 4 the group consists of two large spots with a few small spots between them.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 31·357 | 11 | 49 | 5 | 25 | 215·7 | − 5·0 | + 4·9 |
| Aug. 1·433 | 23 | 303 | 12 | 167 | 217·0 | − 4·9 | +20·5 |
| 2·432 | 38 | 467 | 23 | 289 | 218·1 | − 4·7 | +34·7 |
| 3·577 | 63 | 369 | 49 | 291 | 217·6 | − 5·3 | +49·4 |
| 4·260 | 48 | 629 | 47 | 612 | 217·2 | − 6·3 | +58·1 |
| 5·485 | 14 | 264 | 28 | 545 | 218·3 | − 6·4 | +75·3 |
| Means ... | ... | ... | 27 | 322 | 217·32 | − 5·43 | ... |

### Group 1446.

Three spots, *a*, *b*, and *c*, in a straight line. *b* has disappeared by August 2, and *c* by August 7. A small spot is seen close to *a* on August 4. The photograph on August 5 is badly defined.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 1·433 | 49 | 354 | 34 | 241 | 153·9 | +10·4 | −42·6 |
| 2·432 | 59 | 214 | 34 | 122 | 154·3 | +10·3 | −29·1 |
| 3·577 | 74 | 430 | 38 | 222 | 156·2 | + 7·7 | −12·0 |
| 4·260 | 78 | 433 | 39 | 218 | 156·7 | + 8·8 | − 2·4 |
| 5·485 | 41 | 353 | 21 | 183 | 156·5 | + 9·1 | +13·5 |
| 6·525 | 39 | 342 | 23 | 196 | 157·7 | + 8·5 | +28·6 |
| 7·459 | 21 | 205 | 14 | 137 | 158·7 | + 7·5 | +41·8 |
| 8·452 | 23 | 162 | 20 | 138 | 158·5 | + 7·4 | +54·8 |
| 9·436 | 15 | 100 | 19 | 127 | 158·2 | + 7·0 | +67·5 |
| 10·550 | 0 | 46 | 0 | 143 | 157·6 | + 7·3 | +81·6 |
| Means ... | ... | ... | 24 | 173 | 156·83 | + 8·40 | ... |

### Group 1447.

Four small spots measured in two clusters.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 2·432 | 2 | 102 | 1 | 58 | 208·5 | +17·4 | +25·1 |
| Means ... | ... | ... | 1 | 58 | 208·5 | +17·4 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1448.

A somewhat faint spot, *a*. A small spot, *b*, appears near it on August 6. *a* has disappeared by August 7, and a third spot, *c*, appears. Two small spots are also seen in the neighbourhood on August 10, and two on August 11, but they cannot be certainly identified in either case with spots seen previously.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *a* | | | | | | | |
| Aug. 3·577 | 0 | 8 | 0 | 15 | 94·2 | +12·2 | −74·0 |
| 4·260 | 0 | 35 | 0 | 42 | 92·8 | +12·6 | −66·3 |
| 5·485 | 4 | 65 | 3 | 51 | 92·8 | +12·4 | −50·2 |
| 6·525 | 2 | 49 | 1 | 31 | 91·9 | +12·9 | −37·2 |
| 7·459 | 0 | 18 | 0 | 10 | 91·8 | +13·0 | −25·1 |
| 8·452 | 0 | 21 | 0 | 11 | 92·1 | +13·7 | −11·6 |
| 9·436 | 0 | 33 | 0 | 16 | 92·1 | +12·9 | + 1·4 |
| 10·550 | 5 | 19 | 3 | 10 | 92·0 | +13·6 | +16·0 |
| 11·503 | 0 | 4 | 0 | 3 | 90·9 | +14·7 | +27·5 |
| Means ... | ... | ... | 1 | 21 | 92·29 | +13·11 | ... |

### Group 1449.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 6·525 | 7 | 48 | 6 | 39 | 178·7 | − 8·4 | +49·6 |
| Means ... | ... | ... | 6 | 39 | 178·7 | − 8·4 | ... |

### Group 1450.

Two spots. Only one remains on August 7.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 6·525 | 4 | 58 | 4 | 55 | 69 6 | +12·2 | −59·5 |
| 7·459 | 0 | 15 | 0 | 10 | 72·2 | +11·7 | −44·7 |
| Means ... | ... | ... | 2 | 33 | 70·90 | +11·95 | ... |

### Group 1451.

One spot on August 6 and 7. A second spot appears on August 8, and others on August 9. The areas of the spots diminish from day to day, and on August 10 the group is composed of a number of small faint spots irregularly distributed over a considerable area.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 6·525 | 3 | 54 | 6 | 98 | 56·1 | − 6·3 | −73·0 |
| 7·459 | 7 | 76 | 8 | 82 | 55·7 | − 6·5 | −61·2 |
| 8·452 | 26 | 182 | 19 | 146 | 54·0 | − 7·2 | −49·7 |
| 9·436 | 6 | 231 | 3 | 150 | 53·8 | − 7·1 | −36·9 |
| 10·550 | 10 | 69 | 6 | 38 | 55·4 | − 7·4 | −20·6 |
| 11·503 | 3 | 54 | 2 | 28 | 54·8 | − 6·4 | − 8·6 |
| Means ... | .. | ... | 7 | 90 | 54·97 | − 6·82 | ... |

### Group 1452.

A small spot on August 7. The group increases in size on the succeeding days, and consists of a great number of small spots irregularly distributed over a large area. The group undergoes great and frequent changes.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *a* | | | | | ° | ° | ° |
| Aug. 7·459 | 1 | 17 | 0 | 10 | 86·6 | + 5·5 | −30·3 |
| 8·452 | 15 | 125 | 8 | 65 | 88·6 | + 5·8 | −15·1 |
| 9·436 | 15 | 102 | 8 | 51 | 91·4 | + 6·4 | + 0·7 |
| 10·550 | 89 | 445 | 45 | 229 | 88·9 | + 6·3 | +12·9 |
| 11·503 | 59 | 584 | 32 | 323 | 88·7 | + 7·6 | +25·3 |
| 12·559 | 45 | 536 | 29 | 351 | 89·7 | + 7·1 | +40·3 |
| 13·453 | 74 | 730 | 63 | 613 | 91·5 | + 6·7 | +53·9 |
| 14·439 | 38 | 506 | 53 | 649 | 92·0 | + 6·6 | +67·5 |
| 15·476 | 0 | 202 | 0 | 618 | 92·0 | + 6·3 | +81·2 |
| Means ... | ... | ... | 26 | 323 | 89·93 | + 6·48 | ... |

### Group 1453.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 8·452 | 5 | 45 | 11 | 98 | 27·6 | − 6·0 | −76·1 |
| 9·436 | 24 | 70 | 28 | 82 | 27·2 | − 6·0 | −63·5 |
| 10·550 | 23 | 153 | 18 | 119 | 27·4 | − 5·9 | −48·6 |
| 11·503 | 14 | 191 | 9 | 121 | 27·7 | − 6·0 | −35·7 |
| 12·559 | 33 | 203 | 18 | 111 | 27·9 | − 5·9 | −21·5 |
| 13·453 | 33 | 245 | 17 | 126 | 28·1 | − 5·8 | − 9·5 |
| 14·439 | 26 | 215 | 13 | 110 | 28·5 | − 5·4 | + 4·0 |
| 15·476 | 37 | 199 | 20 | 107 | 28·5 | − 5·9 | +17·7 |
| 16·437 | 19 | 135 | 12 | 81 | 28·8 | − 5·5 | +30·6 |
| 17·545 | 13 | 126 | 10 | 92 | 28·3 | − 5·6 | +44·8 |
| 18·594 | 14 | 79 | 14 | 78 | 28·0 | − 6·5 | +58·4 |
| 19 | No photograph. | | ( 7 | 46 | 27·4 | − 6·1 | +69·6) |
| 20·393 | 0 | 4 | 0 | 14 | 26·7 | − 5·6 | +80·8 |
| Means ... | ... | ... | 14 | 91 | 27·85 | − 5·86 | ... |

### Group 1454.

A number of small spots measured in three clusters. The clusters are not the same on August 15 as on August 14, or on August 17 as on August 16.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 13·453 | 21 | 52 | 11 | 28 | 23·4 | −10·9 | −14·2 |
| 14·439 | 18 | 70 | 9 | 37 | 23·8 | −10·5 | − 0·7 |
| 15·476 | 23 | 173 | 12 | 94 | 23·9 | −11·4 | +13·1 |
| 16·437 | 10 | 91 | 6 | 53 | 23·7 | −11·3 | +25·5 |
| 17·545 | 1 | 53 | 1 | 38 | 23·9 | −11·5 | +40·4 |
| Means ... | ... | ... | 8 | 50 | 23·74 | −11·12 | ... |

### Group 1455.

A regular spot, *a*. Several small spots are seen near it on August 14–18.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aug. 13·453 | 10 | 74 | 19 | 140 | 323·3 | − 3·2 | −74·3 |
| 14·439 | 15 | 170 | 16 | 183 | 323·1 | − 4·2 | −61·4 |
| 15·476 | 22 | 182 | 16 | 136 | 323·2 | − 3·7 | −47·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1455—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Aug. 16·437 | 18 | 202 | 11 | 125 | 323·5 | − 3·2 | −34·7 |
| 17·545 | 42 | 222 | 23 | 120 | 323·1 | − 2·8 | −20·4 |
| 18·594 | 37 | 232 | 19 | 119 | 323·1 | − 2·8 | − 6·5 |
| 19 | No photograph. | | (16 | 114 | 323·5 | − 3·0 | + 5·8) |
| 20·393 | 23 | 203 | 12 | 108 | 323·9 | − 3·1 | +18·0 |
| 21·378 | 26 | 150 | 15 | 89 | 323·9 | − 2·8 | +31·1 |
| 22·432 | 7 | 49 | 5 | 35 | 324·1 | − 3·1 | +45·1 |
| 23·444 | 5 | 22 | 5 | 21 | 323·8 | − 3·0 | +58·3 |
| 24·543 | 0 | 9 | 0 | 15 | 322·7 | − 3·1 | +71·7 |
| Means ... | ... | ... | 13 | 100 | 323·43 | − 3·17 | ... |
| **Group 1456.** Two small spots, *a* and *b*. Another small spot is seen near *b*, and measured with it on August 18. | | | | | | | |
| Aug. 17·545 | 4 | 26 | 6 | 37 | 272·8 | +14·0 | −70·7 |
| 18·594 | 2 | 61 | 2 | 55 | 273·3 | +14·2 | −56·3 |
| 19 | No photograph. | | (1 | 33 | 272·6 | +14·6 | −45·2) |
| 20·393 | 0 | 18 | 0 | 11 | 271·8 | +14·9 | −34·1 |
| Means ... | ... | ... | 2 | 34 | 272·63 | +14·43 | ... |
| **Group 1457.** A small spot. | | | | | | | |
| Aug. 20·393 | 12 | 33 | 7 | 18 | 305·3 | −12·4 | − 0·6 |
| 21·378 | 0 | 21 | 0 | 11 | 306·0 | −12·8 | +13·2 |
| Means ... | ... | ... | 4 | 15 | 305·65 | −12·60 | ... |
| **Group 1458.** A number of small faint spots on August 20. They become much larger and darker on the succeeding days, and form a long straight stream of spots following each other very closely. The stream begins to break up after August 25. The individual spots undergo frequent changes. | | | | | | | |
| Aug. 20·393 | 4 | 89 | 2 | 53 | 275·5 | + 2·2 | −30·4 |
| 21·378 | 76 | 391 | 41 | 206 | 274·2 | + 3·3 | −18·6 |
| 22·432 | 145 | 815 | 73 | 410 | 275·9 | + 4·2 | − 3·1 |
| 23·444 | 72 | 697 | 38 | 356 | 278·4 | + 4·5 | +12·9 |
| 24·543 | 47 | 781 | 27 | 433 | 276·7 | + 4·2 | +25·7 |
| 25·221 | 115 | 796 | 69 | 480 | 276·3 | + 4·4 | +34·2 |
| 26·413 | 71 | 565 | 60 | 458 | 278·4 | + 4·6 | +52·1 |
| 27·157 | 46 | 472 | 52 | 530 | 280·4 | + 5·0 | +63·9 |
| Means ... | ... | ... | 45 | 366 | 276·98 | + 4·05 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1459.** A regular spot. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Aug. 20·393 | 8 | 83 | 7 | 70 | 258·3 | −19·5 | −47·6 |
| 21·378 | 25 | 110 | 17 | 75 | 259·6 | −20·5 | −33·2 |
| 22·432 | 17 | 112 | 10 | 67 | 260·2 | −20·5 | −18·8 |
| 23·444 | 16 | 100 | 9 | 57 | 260·2 | −20·3 | − 5·3 |
| 24·543 | 12 | 56 | 7 | 32 | 259·5 | −20·5 | + 8·5 |
| 25·221 | 18 | 43 | 11 | 26 | 259·6 | −20·1 | +17·5 |
| 26·413 | 11 | 30 | 8 | 20 | 259·7 | −19·9 | +33·4 |
| 27·157 | 4 | 24 | 3 | 19 | 260·0 | −20·0 | +43·5 |
| Means ... | ... | ... | 9 | 46 | 259·64 | −20·16 | ... |
| **Group 1460.** Two small spots, *a* and *b*. They have moved apart by August 21; *b* has disappeared by August 22. A third spot, *c*, appears on August 23. | | | | | | | |
| Aug. 20·393 | 0 | 23 | 0 | 19 | 256·6 | −15·7 | −49·3 |
| 21·378 | 12 | 31 | 8 | 21 | 257·2 | −15·8 | −35·6 |
| 22·432 | 9 | 28 | 5 | 16 | 258·4 | −15·7 | −20·6 |
| 23·444 | 1 | 19 | 0 | 10 | 258·8 | −15·5 | − 6·7 |
| Means ... | ... | ... | 3 | 17 | 257·75 | −15·68 | ... |
| **Group 1461.** A regular spot, *a*. Some small spots are seen near it, August 21–23. | | | | | | | |
| Aug. 20·393 | 0 | 33 | 0 | 30 | 254·0 | −15·0 | −51·9 |
| 21·378 | 28 | 101 | 20 | 72 | 252·3 | −15·5 | −40·5 |
| 22·432 | 12 | 107 | 8 | 65 | 252·1 | −15·3 | −26·9 |
| 23·444 | 6 | 30 | 3 | 17 | 252·0 | −16·0 | −13·5 |
| Means ... | ... | ... | 8 | 46 | 252·60 | −15·45 | ... |
| **Group 1462.** A small spot. | | | | | | | |
| Aug. 20·393 | 0 | 8 | 0 | 8 | 250·8 | −19·0 | −55·1 |
| Means ... | ... | ... | 0 | 8 | 250·8 | −19·0 | ... |
| **Group 1463.** A regular spot, *a*, with a larger spot, *b*, of irregular shape near it. *b* has broken up into a number of small spots by August 23. | | | | | | | |
| Aug. 20·393 | 6 | 62 | 21 | 220 | 225·1 | − 7·6 | −80·8 |
| 21·378 | 24 | 166 | 34 | 235 | 224·8 | − 7·9 | −68·0 |
| 22·432 | 24 | 239 | 21 | 212 | 225·0 | − 7·5 | −54·0 |
| 23·444 | 19 | 214 | 13 | 147 | 224·8 | − 7·7 | −40·7 |
| 24·543 | 9 | 170 | 5 | 99 | 224·6 | − 8·4 | −26·4 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1463—*continued.*** | | | | | | | |
| 1884. a | | | | | ° | ° | ° |
| Aug. 25·221 | 38 | 123 | 20 | 67 | 225·0 | − 8·7 | −17·1 |
| 26·413 | 14 | 118 | 7 | 61 | 226·4 | − 7·8 | + 0·1 |
| 27·157 | 0 | 30 | 0 | 16 | 225·0 | − 8·6 | + 8·5 |
| Means ... | ... | ... | 15 | 132 | 225·09 | − 8·03 | ... |
| **Group 1464.** Two small spots, *a* and *b*. Both move forward in longitude, but *a* the more rapidly. | | | | | | | |
| Aug. 22·432 | 3 | 35 | 2 | 25 | 242·7 | −19·9 | −36·3 |
| 23·444 | 4 | 14 | 2 | 8 | 243·8 | −20·3 | −21·7 |
| Means ... | ... | ... | 2 | 17 | 243·25 | −20·10 | ... |
| **Group 1464*.** A very small spot. | | | | | | | |
| Aug. 25·221 | 0 | 8 | 0 | 5 | 251·5 | −18·9 | + 9·4 |
| Means ... | ... | ... | 0 | 5 | 251·5 | −18·9 | ... |
| **Group 1465.** Several very small spots on August 24. The group has greatly increased in size by August 25, and then consists of a regular spot *a*, followed by two clusters of small spots. The group continues to increase in size, and on August 27 consists almost entirely of two very large spots, the small following spots having coalesced to make a very large spot, *b*. On August 29, *a* and *b* have coalesced to make one still larger spot. | | | | | | | |
| Aug. 24·543 | 0 | 29 | 0 | 16 | 222·1 | +16·2 | −28·9 |
| 25·221 | 46 | 247 | 24 | 132 | 223·0 | +15·5 | −19·1 |
| 26·413 | 81 | 659 | 41 | 334 | 224·4 | +14·8 | − 1·9 |
| 27·157 | 203 | 1147 | 104 | 586 | 224·3 | +15·5 | + 7·8 |
| 28·447 | 166 | 1112 | 91 | 615 | 223·9 | +15·2 | +24·4 |
| 29·453 | 147 | 1334 | 93 | 842 | 223·2 | +15·3 | +37·0 |
| Means ... | ... | ... | 59 | 421 | 223·48 | +15·42 | ... |
| **Group 1466.** A small spot. On August 27 and the succeeding days the group consists of several very small spots. | | | | | | | |
| Aug. 25·221 | 2 | 9 | 3 | 15 | 171·0 | − 9·6 | −71·1 |
| 26·413 | 0 | 4 | 0 | 4 | 171·1 | − 8·6 | −55·2 |
| 27·157 | 0 | 10 | 0 | 7 | 171·3 | − 8·5 | −45·2 |
| 28·447 | 0 | 10 | 0 | 6 | 172·1 | − 8·0 | −27·4 |
| 29·453 | 4 | 25 | 2 | 14 | 170·7 | − 8·4 | −15·5 |
| Means ... | ... | ... | 1 | 9 | 171·24 | − 8·62 | ... |
| **Group 1467.** A small spot. A second small spot is seen near it, and measured with it, on August 27 and the succeeding days. | | | | | | | |
| 1884. a | | | | | ° | ° | ° |
| Aug. 26·413 | 0 | 7 | 0 | 9 | 163·1 | −18·1 | −63·2 |
| 27·157 | 9 | 30 | 8 | 26 | 165·5 | −17·1 | −51·0 |
| 28·447 | 6 | 37 | 4 | 24 | 166·7 | −17·1 | −32·8 |
| 29·453 | 0 | 15 | 0 | 9 | 167·1 | −17·3 | −19·1 |
| Means ... | ... | ... | 3 | 17 | 165·60 | −17·40 | ... |
| **Group 1468.** A small spot. | | | | | | | |
| Aug. 26·413 | 0 | 17 | 0 | 20 | 159·8 | + 7·4 | −66·5 |
| 27·157 | 1 | 15 | 1 | 14 | 159·9 | + 7·6 | −56·6 |
| 28·447 | 5 | 25 | 3 | 16 | 160·1 | + 7·7 | −39·4 |
| 29·453 | 0 | 14 | 0 | 8 | 160·1 | + 7·4 | −26·1 |
| Means ... | ... | ... | 1 | 15 | 159·98 | + 7·53 | ... |
| **Group 1469.** A regular spot, *a*. Small spots follow it August 27–29. | | | | | | | |
| Aug. 26·413 | 13 | 59 | 23 | 101 | 154·9 | −10·9 | −71·4 |
| 27·157 | 8 | 107 | 9 | 121 | 154·9 | −10·8 | −61·6 |
| 28·447 | 22 | 125 | 16 | 94 | 154·5 | −10·7 | −45·0 |
| 29·453 | 14 | 163 | 9 | 102 | 154·3 | −10·7 | −31·9 |
| 30 | No photograph. | | ( 7 | 80 | 154·7 | −10·7 | −18·4) |
| 31 | No photograph. | | ( 5 | 57 | 155·1 | −10·8 | − 4·8) |
| Sept. 1 | No photograph. | | ( 3 | 34 | 155·5 | −10·9 | + 8·8) |
| 2·434 | 0 | 20 | 0 | 12 | 155·9 | −10·9 | +22·3 |
| 3·398 | 0 | 18 | 0 | 11 | 155·9 | −10·7 | +35·1 |
| Means ... | ... | ... | 8 | 68 | 155·08 | −10·79 | ... |
| **Group 1470.** Several small faint spots measured together on August 28. Only one remains on August 29. | | | | | | | |
| Aug. 28·447 | 0 | 27 | 0 | 15 | 184·0 | − 8·6 | −15·5 |
| 29·453 | 0 | 18 | 0 | 10 | 184·0 | − 8·9 | − 2·2 |
| Means ... | ... | ... | 0 | 13 | 184·00 | − 8·75 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1471.** A number of small faint spots irregularly disposed. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Aug. 29·453 | 0 | 66 | 0 | 83 | 123·9 | −19·0 | −62·3 |
| 30 | No photograph. | | (0 | 88 | 123·4 | −19·0 | −49·7) |
| 31 | No photograph. | | (0 | 94 | 122·9 | −19·0 | −37·0) |
| Sept. 1 | No photograph. | | (0 | 99 | 122·3 | −19·0 | −24·4) |
| 2·434 | 0 | 184 | 0 | 105 | 121·8 | −19·0 | −11·8 |
| 3·398 | 0 | 104 | 0 | 58 | 121·1 | −17·3 | + 0·3 |
| 4·150 | 7 | 90 | 4 | 50 | 121·7 | −17·1 | +10·8 |
| Means ... | ... | ... | 1 | 82 | 122·44 | −18·49 | ... |
| **Group 1472.** A small spot. | | | | | | | |
| Sept. 3·398 | 0 | 6 | 0 | 10 | 188·4 | −20·0 | +67·6 |
| Means ... | ... | ... | 0 | 10 | 188·4 | −20·0 | ... |
| **Group 1473.** A small spot. | | | | | | | |
| Sept. 4·150 | 1 | 11 | 2 | 12 | 50·5 | −18·1 | −60·4 |
| Means ... | ... | ... | 2 | 12 | 50·5 | −18·1 | ... |
| **Group 1474.** Two small spots. | | | | | | | |
| Sept. 5·426 | 0 | 33 | 0 | 17 | 98·2 | +17·8 | + 4·1 |
| 6·251 | 4 | 101 | 2 | 53 | 97·6 | +18·1 | +14·4 |
| Means ... | ... | ... | 1 | 35 | 97·90 | +17·95 | ... |
| **Group 1475.** A small spot. The small spot seen on September 6 is apparently not identical with that seen on September 5, though in its immediate neighbourhood. | | | | | | | |
| Sept. 5·426 | 0 | 6 | 0 | 7 | 33·5 | − 9·7 | −60·6 |
| 6·251 | 0 | 4 | 0 | 4 | 31·6 | − 7·0 | −51·6 |
| Means ... | ... | ... | 0 | 6 | 32·55 | − 8·35 | ... |
| **Group 1476.** A small regular spot. | | | | | | | |
| Sept. 5·426 | 0 | 29 | 0 | 45 | 24·7 | −11·0 | −69·4 |
| 6·251 | 9 | 29 | 10 | 30 | 24·6 | −11·6 | −58·6 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1476—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Sept. 7·654 | 17 | 76 | 12 | 52 | 25·5 | −11·1 | −39·4 |
| 8·389 | 12 | 30 | 7 | 18 | 25·9 | −11·5 | −29·1 |
| 9·227 | 12 | 42 | 6 | 23 | 25·9 | −11·3 | −17·9 |
| 10·463 | 6 | 21 | 3 | 11 | 26·9 | −11·6 | − 0·6 |
| 11·462 | 5 | 19 | 3 | 10 | 27·6 | −11·6 | +13·2 |
| Means ... | ... | ... | 6 | 27 | 25·87 | −11·39 | ... |
| **Group 1477.** A few very small spots on September 6. On September 7 the group consists of two large regular spots, *a* and *b*, with several small spots between them. | | | | | | | |
| Sept. 6·251 | 6 | 19 | 4 | 14 | 124·2 | −14·0 | +41·0 |
| 7·654 | 52 | 274 | 61 | 321 | 126·5 | −14·2 | +61·6 |
| 8·389 | 25 | 137 | 64 | 318 | 130·1 | −14·5 | +75·1 |
| 9·227 | 9 | 50 | 28 | 148 | 121·8 | −13·7 | +78·0 |
| Means ... | ... | ... | 39 | 200 | 125·65 | −14·10 | ... |
| **Group 1478.** Two very small spots. | | | | | | | |
| Sept. 6·251 | 0 | 20 | 0 | 10 | 79·9 | +18·6 | − 3·3 |
| Means ... | ... | ... | 0 | 10 | 79·9 | +18·6 | ... |
| **Group 1479.** Several small faint spots close together. The group undergoes several changes. | | | | | | | |
| Sept. 6·251 | 1 | 24 | 2 | 29 | 20·4 | −14·3 | −62·8 |
| 7·654 | 0 | 16 | 0 | 12 | 20·7 | −14·9 | −44·2 |
| 8·389 | 0 | 16 | 0 | 10 | 22·2 | −14·0 | −32·8 |
| 9·227 | 0 | 2 | 0 | 1 | 21·2 | −15·0 | −22·6 |
| 10·463 | 0 | 43 | 0 | 24 | 21·8 | −14·3 | − 5·7 |
| 11·462 | 0 | 25 | 0 | 14 | 22·1 | −14·6 | + 7·7 |
| Means ... | ... | ... | 0 | 15 | 21·40 | −14·52 | ... |
| **Group 1480.** A few small spots on September 6. Other spots appear on September 7 and 8, and on September 9 the group is a compact cluster of spots. The group continues to increase in size; the first and last spots increasing with the greatest rapidity, so that on September 11 the group consists of two large spots, *a* and *b*, with a stream of small spots between them. The intermediate spots have all disappeared by September 16, but some small spots are seen on that day following *b*. | | | | | | | |
| Sept. 6·251 | 0 | 10 | 0 | 15 | 12·4 | +14·8 | −70·8 |
| 7·654 | 0 | 47 | 0 | 38 | 12·6 | +14·7 | −52·3 |
| 8·389 | 0 | 28 | 0 | 19 | 12·2 | +14·2 | −42·8 |
| 9·227 | 25 | 150 | 15 | 88 | 12·2 | +14·1 | −31·6 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued*

### Group 1480—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. a | | | | | ° | ° | ° |
| Sept. 10·463 | 57 | 653 | 30 | 338 | 13·7 | +14·0 | −13·8 |
| 11·462 | 162 | 1038 | 81 | 525 | 16·0 | +14·1 | + 1·6 |
| 12·411 | 306 | 1528 | 161 | 801 | 16·8 | +14·0 | +14·9 |
| 13·413 | 333 | 1796 | 192 | 1031 | 17·3 | +13·4 | +28·7 |
| 14 | No photograph. | | (265 | 1388 | 19·1 | +13·7 | +43·9) |
| 15·441 | 390 | 2036 | 337 | 1744 | 20·9 | +14·0 | +59·1 |
| 16·458 | 167 | 1304 | 218 | 1630 | 15·6 | +13·9 | +67·2 |
| 17·435 | 67 | 520 | 127 | 1356 | 15·8 | +13·3 | +80·3 |
| Means ... | ... | ... | 119 | 748 | 15·38 | +14·02 | ... |

### Group 1481.

A regular spot, *a*, followed by two or three smaller spots. The following spots have disappeared by September 11; a small spot is seen preceding *a* on that day.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 7·654 | 56 | 145 | 43 | 114 | 23·3 | −23·0 | −41·6 |
| 8·389 | 26 | 268 | 18 | 188 | 25·0 | −23·3 | −30·0 |
| 9·227 | 35 | 253 | 22 | 158 | 23·2 | −23·0 | −20·6 |
| 10·463 | 27 | 243 | 16 | 142 | 24·4 | −23·2 | − 3·1 |
| 11·462 | 27 | 167 | 16 | 99 | 24·9 | −25·2 | +10·5 |
| 12·411 | 20 | 175 | 13 | 111 | 24·5 | −23·5 | +22·6 |
| 13·413 | 16 | 115 | 12 | 83 | 23·9 | −23·6 | +35·3 |
| 14 | No photograph. | | (10 | 59 | 23·4 | −23·2 | +48·2) |
| 15·441 | 6 | 27 | 8 | 34 | 22·9 | −22·8 | +61·1 |
| Means ... | ... | ... | 18 | 110 | 23·94 | −23·42 | ... |

### Group 1482.

Two large regular spots, *a* and *b*; small spots are occasionally seen between them. The group begins to diminish in size after passing the central meridian on September 13, *b* diminishing the more rapidly and disappearing entirely before September 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 8·389 | 16 | 153 | 35 | 386 | 336·0 | + 5·9 | −79·0 |
| 9·227 | 27 | 336 | 35 | 441 | 335·7 | + 6·1 | −68·1 |
| 10·463 | 86 | 499 | 69 | 401 | 335·7 | + 6·1 | −51·8 |
| 11·462 | 83 | 577 | 52 | 367 | 336·2 | + 5·9 | −38·2 |
| 12·411 | 123 | 667 | 70 | 372 | 336·4 | + 5·9 | −25·5 |
| 13·413 | 114 | 674 | 59 | 347 | 336·3 | + 5·9 | −12·3 |
| 14 | No photograph. | | (54 | 319 | 336·7 | + 5·9 | + 1·5) |
| 15·441 | 92 | 562 | 48 | 291 | 337·1 | + 5·9 | +15·3 |
| 16·458 | 90 | 445 | 52 | 256 | 338·0 | + 5·6 | +29·6 |
| 17·435 | 78 | 315 | 53 | 215 | 338·6 | + 5·3 | +43·1 |
| 18·431 | 18 | 130 | 17 | 118 | 339·3 | + 5·0 | +56·9 |
| 19·555 | 0 | 73 | 0 | 121 | 340·2 | + 3·9 | +72·6 |
| 20·436 | 1 | 24 | 3 | 107 | 339·9 | + 4·2 | +84·0 |
| Means ... | ... | ... | 42 | 288 | 337·39 | + 5·51 | ... |

### Group 1483.

A small regular spot, *a*, followed by a close cluster of smaller spots, which have coalesced by September 12 to form one spot, *b*.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. a | | | | | ° | ° | ° |
| Sept. 9·227 | 24 | 228 | 15 | 138 | 9·4 | + 9·1 | −34·4 |
| 10·463 | 21 | 175 | 11 | 92 | 9·7 | + 8·9 | −17·8 |
| 11·462 | 11 | 101 | 6 | 52 | 9·2 | + 8·7 | − 5·2 |
| 12·411 | 7 | 30 | 3 | 15 | 10·3 | + 8·7 | + 8·4 |
| 13·413 | 3 | 28 | 1 | 16 | 11·2 | + 9·0 | +22·6 |
| Means ... | ... | ... | 7 | 63 | 9·96 | + 8·88 | ... |

### Group 1484.

A large regular spot, which has divided into two spots, *a* and *b*, by September 15; *a* has disappeared by September 18.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 12·411 | 15 | 103 | 29 | 197 | 286·6 | + 5·5 | −75·3 |
| 13·413 | 31 | 191 | 33 | 204 | 286·2 | + 5·5 | −62·4 |
| 14 | No photograph. | | (33 | 186 | 286·4 | + 5·4 | −48·9) |
| 15·441 | 53 | 273 | 32 | 167 | 286·5 | + 5·3 | −35·3 |
| 16·458 | 62 | 274 | 34 | 148 | 286·8 | + 4·8 | −21·6 |
| 17·435 | 36 | 282 | 18 | 143 | 287·3 | + 4·6 | − 8·2 |
| 18·431 | 51 | 249 | 26 | 125 | 287·8 | + 4·7 | + 5·4 |
| 19·555 | 53 | 209 | 29 | 113 | 288·0 | + 4·2 | +20·4 |
| 20·436 | 33 | 182 | 20 | 107 | 288·2 | + 3·9 | +32·3 |
| 21·443 | 15 | 121 | 11 | 86 | 288·4 | + 3·8 | +45·7 |
| 22·454 | 12 | 108 | 12 | 103 | 287·9 | + 3·6 | +58·7 |
| 23·445 | 7 | 75 | 10 | 115 | 287·1 | + 3·3 | +70·9 |
| Means ... | ... | ... | 24 | 141 | 287·27 | + 4·55 | ... |

### Group 1485.

A few small spots on September 15. The group rapidly increases in size, and forms on September 17 and the succeeding days a long irregular stream of spots. The group diminishes in size after passing the central meridian on September 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 15·441 | 12 | 39 | 14 | 44 | 257·1 | +13·7 | −64·7 |
| 16·458 | 13 | 240 | 11 | 192 | 256·6 | +13·8 | −51·8 |
| 17·435 | 183 | 813 | 118 | 525 | 256·1 | +13·9 | −39·4 |
| 18·431 | 185 | 920 | 103 | 516 | 256·2 | +14·2 | −26·2 |
| 19·555 | 114 | 946 | 59 | 489 | 256·9 | +14·1 | −10·7 |
| 20·436 | 141 | 891 | 71 | 451 | 257·7 | +14·0 | + 1·8 |
| 21·443 | 84 | 563 | 45 | 296 | 258·1 | +13·9 | +15·4 |
| 22·454 | 102 | 539 | 59 | 312 | 258·8 | +13·9 | +29·6 |
| 23·445 | 50 | 388 | 35 | 272 | 260·7 | +12·8 | +44·5 |
| 24·565 | 23 | 120 | 25 | 121 | 262·3 | +11·8 | +60·9 |
| 25·459 | 0 | 63 | 0 | 117 | 264·9 | +10·6 | +75·3 |
| Means ... | ... | ... | 49 | 303 | 258·67 | +13·34 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1486.** Two regular spots, *a* and *b*. Some small spots are seen near them on September 21, 23, 24, and 25. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Sept. 16·458 | 9 | 121 | 24 | 348 | 226·8 | +16·2 | −81·6 |
| 17·435 | 65 | 248 | 92 | 346 | 225·2 | +16·0 | −70·3 |
| 18·431 | 75 | 354 | 70 | 325 | 224·8 | +15·7 | −57·6 |
| 19·555 | 115 | 440 | 78 | 300 | 225·1 | +15·8 | −42·5 |
| 20·436 | 97 | 622 | 57 | 366 | 224·9 | +15·4 | −31·0 |
| 21·443 | 115 | 702 | 61 | 372 | 224·6 | +15·7 | −18·1 |
| 22·454 | 112 | 695 | 57 | 354 | 224·8 | +15·6 | − 4·4 |
| 23·445 | 107 | 680 | 55 | 351 | 224·7 | +15·6 | + 8·5 |
| 24·565 | 88 | 583 | 49 | 322 | 225·0 | +15·7 | +23·6 |
| 25·459 | 79 | 578 | 49 | 354 | 224·2 | +15·7 | +34·6 |
| 26 | No photograph. | | (49 | 302 | 224·9 | +15·7 | +47·0) |
| 27·229 | 51 | 263 | 49 | 250 | 225·6 | +15·7 | +59·3 |
| Means ... | ... | ... | 58 | 333 | 225·05 | +15·73 | ... |
| **Group 1487.** A few small spots. Three are seen on September 17, two on September 18, none on September 19, three on September 20, two on September 21, and two, measured as one, on September 22. | | | | | | | |
| Sept. 17·435 | 0 | 65 | 0 | 35 | 274·2 | +15·5 | −21·3 |
| 18·431 | 0 | 25 | 0 | 13 | 274·6 | +16·1 | − 7·8 |
| 19·555 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 20·436 | 0 | 63 | 0 | 33 | 275·9 | +14·1 | +20·0 |
| 21·443 | 4 | 43 | 2 | 26 | 278·3 | +14·1 | +35·6 |
| 22·454 | 0 | 44 | 0 | 33 | 278·3 | +14·4 | +49·1 |
| Means ... | ... | ... | 0 | 23 | 276·26 | +14·84 | ... |
| **Group 1488.** A very close pair of small spots on September 18; three small spots on September 19; one spot of greater area on September 20. | | | | | | | |
| Sept. 18·431 | 3 | 20 | 3 | 18 | 335·9 | −11·6 | +53·5 |
| 19·555 | 0 | 14 | 0 | 22 | 336·2 | −11·9 | +68·6 |
| 20·436 | 3 | 27 | 8 | 86 | 335·2 | −10·9 | +79·3 |
| Means ... | ... | ... | 4 | 42 | 335·77 | −11·47 | ... |
| **Group 1489.** Two spots, *a* and *b*, on September 18. The spots move away from each other on the succeeding days, and other spots appear between or near them. The group on September 20 and the succeeding days consists of a number of small spots irregularly distributed over an extensive area. *a* and *b* continue to be the largest members of the group; the other spots are measured in clusters. | | | | | | | |
| Sept. 18·431 | 15 | 66 | 11 | 45 | 238·1 | + 5·7 | −44·3 |
| 19·555 | 11 | 149 | 6 | 86 | 237·8 | + 6·7 | −29·8 |
| 20·436 | 16 | 98 | 9 | 52 | 238·5 | + 6·9 | −17·4 |
| 21·443 | 28 | 224 | 15 | 112 | 239·2 | + 6·1 | − 3·5 |
| **Group 1489—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ′ | ° |
| Sept. 22·454 | 27 | 236 | 14 | 121 | 239·0 | + 6·5 | + 9·8 |
| 23·445 | 22 | 209 | 11 | 116 | 239·8 | + 5·6 | +23·6 |
| 24·565 | 23 | 90 | 13 | 57 | 239·1 | + 6·4 | +37·7 |
| 25·459 | 0 | 54 | 0 | 40 | 236·7 | + 8·4 | +47·1 |
| 26 | No photograph. | | ( 0 | 27 | 237·6 | + 8·9 | +59·6) |
| 27·229 | 0 | 9 | 0 | 14 | 238·4 | + 9·3 | +72·1 |
| Means ... | ... | ... | 8 | 67 | 238·42 | + 7·05 | ... |
| **Group 1490.** Two small spots measured together on September 19. Only one spot remains on September 20. This spot has developed into a close cluster of three small spots, measured as one, by September 21. | | | | | | | |
| Sept. 19·555 | 0 | 17 | 0 | 11 | 227·4 | +19·0 | −40·2 |
| 20·436 | 7 | 17 | 4 | 10 | 229·8 | +17·4 | −26·1 |
| 21·443 | 0 | 72 | 0 | 38 | 229·2 | +17·6 | −13·5 |
| Means ... | ... | ... | 1 | 20 | 228·80 | +18·00 | ... |
| **Group 1491.** Two small spots on September 21. The group rapidly increases in size, and consists on September 22 and the succeeding days of a regular spot, *a*, with a number of small spots following it in an irregular stream. On September 30, *a* is very near the Sun's limb, and is not clearly separated from the other portions of the group. | | | | | | | |
| Sept. 21·443 | 2 | 47 | 1 | 34 | 197·6 | − 7·2 | −45·1 |
| 22·454 | 47 | 286 | 28 | 170 | 199·0 | − 7·3 | −30·2 |
| 23·445 | 81 | 394 | 44 | 215 | 199·6 | − 7·2 | −16·6 |
| 24·565 | 68 | 715 | 35 | 368 | 200·5 | − 6·8 | − 0·9 |
| 25·459 | 171 | 1081 | 91 | 573 | 201·8 | − 6·9 | +12·2 |
| 26 | No photograph. | | (80 | 533 | 202·3 | − 6·9 | +24·4) |
| 27·229 | 106 | 767 | 68 | 493 | 202·8 | − 6·9 | +36·5 |
| 28 | No photograph. | | (51 | 563 | 202·1 | − 7·4 | +50·2) |
| 29 | No photograph. | | (35 | 633 | 201·4 | − 7·9 | +63·9) |
| 30·501 | 8 | 295 | 18 | 703 | 200·7 | − 8·4 | +77·6 |
| Means ... | ... | ... | 45 | 429 | 200·78 | − 7·29 | ... |
| **Group 1492.** A small spot. | | | | | | | |
| Sept. 21·443 | 0 | 18 | 0 | 15 | 196·5 | −16·7 | −46·2 |
| 22·454 | 0 | 43 | 0 | 28 | 197·0 | −16·5 | −32·2 |
| 23·445 | 24 | 51 | 14 | 29 | 198·2 | −16·0 | −18·0 |
| 24·565 | 5 | 19 | 3 | 11 | 199·2 | −16·5 | − 2·2 |
| 25·459 | 3 | 14 | 2 | 8 | 199·8 | −16·1 | +10·2 |
| Means ... | ... | ... | 4 | 18 | 198·14 | −16·36 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1493.** A small spot. A second spot is seen near it on September 23. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Sept. 21·443 | 0 | 12 | 0 | 12 | 183·7 | − 3·5 | −59·0 |
| 22·454 | 0 | 30 | 0 | 23 | 181·6 | − 3·2 | −47·6 |
| 23·445 | 5 | 23 | 3 | 14 | 182·9 | − 3·5 | −33·3 |
| 24·565 | 0 | 15 | 0 | 8 | 181·8 | − 3·5 | −19·6 |
| Means ... | ... | ... | 1 | 14 | 182·50 | − 3·43 | ... |
| **Group 1494.** Two small spots measured together. | | | | | | | |
| Sept. 23·445 | 0 | 38 | 0 | 19 | 205·3 | + 5·6 | −10·9 |
| Means ... | ... | ... | 0 | 19 | 205·3 | + 5·6 | ... |
| **Group 1495.** A large regular spot. | | | | | | | |
| Sept. 23·445 | 13 | 73 | 62 | 354 | 134·0 | −12·3 | −82·2 |
| 24·565 | 24 | 162 | 35 | 232 | 134·2 | −12·1 | −67·2 |
| 25·459 | 51 | 286 | 50 | 276 | 133·8 | −12·6 | −55·8 |
| 26 | No photograph. | | (45 | 252 | 133·8 | −12·8 | −44·2) |
| 27·229 | 62 | 361 | 39 | 228 | 133·8 | −13·0 | −32·5 |
| 28 | No photograph. | | (41 | 224 | 133·8 | −13·2 | −18·1) |
| 29 | No photograph. | | (43 | 220 | 133·8 | −13·5 | − 3·7) |
| 30·501 | 83 | 398 | 45 | 216 | 133·8 | −13·7 | +10·7 |
| Oct. 1 | No photograph. | | (46 | 217 | 133·9 | −13·9 | +23·4) |
| 2·412 | 68 | 326 | 46 | 218 | 133·9 | −14·1 | +36·0 |
| 3·459 | 54 | 282 | 43 | 224 | 133·9 | −14·4 | +49·9 |
| 4·435 | 26 | 202 | 32 | 246 | 134·1 | −14·7 | +62·9 |
| 5·141 | 20 | 132 | 36 | 246 | 133·9 | −14·8 | +72·0 |
| Means ... | ... | ... | 43 | 243 | 133·90 | −13·47 | ... |
| **Group 1496.** Two very small spots. | | | | | | | |
| Sept. 25·459 | 0 | 22 | 0 | 12 | 163·3 | + 6·4 | −26·3 |
| Means ... | ... | ... | 0 | 12 | 163·3 | + 6·4 | ... |
| **Group 1497.** Several small spots irregularly distributed on September 27. A large regular spot, *a*, has formed in advance of the group by September 30, and the small spots form a long straight stream following it. The small spots have all disappeared by October 4. | | | | | | | |
| Sept. 27·229 | 40 | 238 | 31 | 186 | 119·9 | −13·9 | −46·4 |
| 28 | No photograph. | | (45 | 241 | 122·0 | −13·7 | −29·9) |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1497—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Sept. 29 | No photograph. | | (60 | 295 | 124·1 | −13·6 | −13·4) |
| 30·501 | 136 | 652 | 74 | 350 | 126·1 | −13·4 | + 3·0 |
| Oct. 1 | No photograph. | | (64 | 357 | 126·3 | −13·7 | +15·8) |
| 2·412 | 86 | 590 | 54 | 363 | 126·4 | −13·9 | +28·5 |
| 3·459 | 65 | 371 | 47 | 264 | 129·0 | −13·5 | +45·0 |
| 4·435 | 67 | 244 | 70 | 253 | 129·5 | −13·4 | +58·3 |
| 5·141 | 28 | 163 | 41 | 236 | 129·1 | −13·5 | +67·2 |
| Means ... | ... | ... | 54 | 283 | 125·82 | −13·62 | ... |
| **Group 1498.** A small spot on September 27. A number of other small spots are seen on September 30. The group increases yet further in size, and on October 2 and succeeding days consists of a large regular spot, *a*, followed by a straggling stream of small spots. | | | | | | | |
| Sept. 27·229 | 5 | 16 | 9 | 28 | 95·7 | −14·1 | −70·6 |
| 28 | No photograph. | | (13 | 59 | 94·9 | −14·3 | −57·0) |
| 29 | No photograph. | | (16 | 91 | 94·2 | −14·4 | −43·2) |
| 30·501 | 32 | 195 | 20 | 122 | 93·4 | −14·6 | −29·7 |
| Oct. 1 | No photograph. | | (24 | 170 | 95·5 | −14·1 | −15·0) |
| 2·412 | 53 | 381 | 28 | 217 | 97·5 | −13·6 | − 0·4 |
| 3·459 | 86 | 510 | 45 | 265 | 100·7 | −12·6 | +16·7 |
| 4·435 | 42 | 330 | 26 | 205 | 102·2 | −12·6 | +31·0 |
| 5·141 | 69 | 344 | 48 | 240 | 101·5 | −13·1 | +39·6 |
| 6·274 | 43 | 210 | 42 | 202 | 102·4 | −13·4 | +55·5 |
| 7·522 | 10 | 109 | 19 | 205 | 102·7 | −13·8 | +72·3 |
| Means ... | ... | ... | 26 | 164 | 98·25 | −13·69 | ... |
| **Group 1499.** A small spot on September 30 and October 2. On October 3 and the succeeding days the group consists of a few small spots irregularly scattered over a wide area. | | | | | | | |
| Sept. 30·501 | 0 | 28 | 0 | 25 | 67·5 | + 9·1 | −55·6 |
| Oct. 1 | No photograph. | | (0 | 15 | 67·2 | + 9·6 | −43·4) |
| 2·412 | 0 | 9 | 0 | 5 | 66·8 | +10·0 | −31·1 |
| 3·459 | 34 | 120 | 17 | 59 | 67·5 | + 9·6 | −16·5 |
| 4·435 | 12 | 83 | 6 | 42 | 68·3 | + 9·6 | − 2·9 |
| 5·141 | 8 | 37 | 4 | 19 | 71·1 | + 8·2 | + 9·2 |
| Means ... | ... | ... | 5 | 28 | 68·07 | + 9·35 | ... |
| **Group 1500.** Several small spots following one another. | | | | | | | |
| Oct. 2·412 | 8 | 79 | 5 | 46 | 72·1 | − 7·2 | −25·8 |
| 3·459 | 2 | 110 | 1 | 54 | 72·1 | − 7·8 | −11·9 |
| Means ... | ... | ... | 3 | 50 | 72·10 | − 7·50 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1501.

A large regular spot, *a*, followed by another large spot of irregular outline, *b*. Some small spots are seen between *a* and *b*. *b* has broken up by October 6 into a number of spots, which undergo frequent changes during the succeeding days.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *a* | | | | | ° | ° | ° |
| Oct. 2·412 | 50 | 217 | 107 | 464 | 20·3 | +14·4 | −77·6 |
| 3·459 | 152 | 790 | 192 | 995 | 15·0 | +14·3 | −69·0 |
| 4·435 | 176 | 1080 | 151 | 958 | 15·1 | +14·4 | −56·1 |
| 5·141 | 210 | 1328 | 155 | 973 | 15·4 | +14·5 | −46·5 |
| 6·274 | 223 | 1414 | 133 | 846 | 15·3 | +14·5 | −31·6 |
| 7·522 | 297 | 1699 | 156 | 896 | 15·7 | +14·3 | −14·7 |
| 8·461 | 351 | 1811 | 179 | 919 | 15·7 | +14·1 | − 2·4 |
| 9·481 | 191 | 1896 | 99 | 980 | 16·0 | +14·4 | +11·4 |
| 10·293 | 195 | 1532 | 137 | 830 | 15·6 | +13·8 | +21·7 |
| 11·229 | 188 | 1473 | 112 | 882 | 14·7 | +13·8 | +33·2 |
| 12·186 | 125 | 1075 | 92 | 775 | 15·2 | +13·5 | +46·2 |
| 13·442 | 53 | 641 | 56 | 667 | 14 1 | +14·1 | +61·8 |
| 14·458 | 0 | 282 | 0 | 526 | 14·2 | +14·3 | +75·3 |
| 15·192 | 0 | 73 | 0 | 207 | 10·2 | +14·1 | +80·9 |
| Means ... | ... | ... | 112 | 780 | 15·18 | +14·18 | .. |

### Group 1502.

A small spot, *a*. By October 5, *a* has become a cluster of small spots, and a second cluster, *b*, has appeared a little in advance of it. *a* has disappeared by October 7.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 4·435 | 3 | 23 | 2 | 16 | 31·7 | −11·3 | −39·5 |
| | 5·141 | 9 | 132 | 6 | 81 | 31·3 | −11·3 | −30·6 |
| | 6·274 | 38 | 159 | 21 | 88 | 31·1 | −11·3 | −15·8 |
| | 7·522 | 18 | 79 | 10 | 42 | 33·6 | −11·7 | + 3·2 |
| | 8·461 | 0 | 16 | 0 | 9 | 34·4 | −12·3 | +16·3 |
| Means | ... | ... | ... | 8 | 47 | 32·42 | −11·58 | ... |

### Group 1503.

A small spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 5·141 | 2 | 9 | 3 | 15 | 349·8 | − 9·1 | −72·1 |
| | 6·274 | 3 | 10 | 3 | 10 | 350·3 | − 9·3 | −56·6 |
| | 7·522 | 8 | 31 | 5 | 21 | 351·4 | − 9·5 | −39·0 |
| | 8·461 | 1 | 9 | 1 | 5 | 351·5 | − 9·8 | −26·6 |
| Means | ... | ... | ... | 3 | 13 | 350·75 | − 9·43 | ... |

### Group 1504.

Two small spots.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 7·522 | 4 | 40 | 3 | 30 | 67·9 | −22·9 | +37·5 |
| | 8·461 | 7 | 45 | 7 | 43 | 68·5 | −24·4 | +50·4 |
| Means | ... | ... | ... | 5 | 37 | 68·20 | −23·65 | ... |

### Group 1505.

A small regular spot, *a*. A second is seen on October 8.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. *a* | | | | | ° | ° | ° |
| Oct. 7·522 | 0 | 21 | 0 | 18 | 341·8 | −16·3 | −48·6 |
| 8·461 | 22 | 98 | 15 | 66 | 341·9 | −16·9 | −36·2 |
| 9·481 | 4 | 26 | 2 | 15 | 341·2 | −17·5 | −23·4 |
| Means ... | ... | ... | 6 | 33 | 341·63 | −16·90 | ... |

### Group 1506.

Several small spots irregularly arranged.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 10·293 | 12 | 47 | 16 | 66 | 283·5 | +14·2 | −70·4 |
| | 11·229 | 14 | 65 | 12 | 59 | 284·1 | +14·2 | −57·4 |
| | 12·186 | 16 | 51 | 11 | 35 | 285·5 | +13·7 | −43·5 |
| | 13·442 | 18 | 71 | 10 | 40 | 285·2 | +14·1 | −27·1 |
| | 14·458 | 10 | 81 | 5 | 42 | 285·3 | +13·9 | −13·6 |
| | 15·192 | 12 | 59 | 6 | 30 | 285·9 | +13·1 | − 3·4 |
| Means | ... | ... | ... | 10 | 45 | 284·92 | +13·87 | ... |

### Group 1507.

Several very small spots in a compact cluster.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 15·192 | 0 | 11 | 0 | 6 | 311·3 | − 1·7 | +22·0 |
| Means | ... | ... | ... | 0 | 6 | 311·3 | − 1·7 | ... |

### Group 1508.

A spot of irregular outline. It has broken up into a number of small spots by October 18.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 15·192 | 13 | 106 | 24 | 201 | 215·7 | − 8·4 | −73·6 |
| | 16·173 | 19 | 184 | 20 | 196 | 215·9 | − 8·4 | −60·5 |
| | 17·182 | 7 | 151 | 6 | 118 | 215·5 | − 8·8 | −47·6 |
| | 18·398 | 41 | 223 | 25 | 137 | 215·5 | − 8·8 | −31·5 |
| | 19·506 | 14 | 167 | 7 | 91 | 216·5 | − 9·5 | −15·9 |
| | 20·241 | 29 | 132 | 16 | 73 | 216·1 | − 9·0 | − 6·6 |
| | 21·186 | 22 | 91 | 11 | 47 | 216·6 | − 9·3 | + 6·4 |
| | 22·521 | 5 | 24 | 3 | 14 | 217·9 | − 8·6 | +25·2 |
| Means | ... | ... | .. | 14 | 110 | 216·21 | − 8·85 | ... |

### Group 1509.

A spot of irregular outline. It has broken up into a number of small spots by October 18.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oct. | 15·192 | 15 | 56 | 62 | 229 | 207·3 | − 8·2 | −82·0 |
| | 16·173 | 8 | 95 | 13 | 142 | 207·2 | − 8·8 | −69·2 |
| | 17·182 | 6 | 110 | 6 | 104 | 207·3 | − 9·1 | −55·8 |
| | 18·398 | 15 | 170 | 10 | 117 | 206·6 | − 9·1 | −40·4 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1509—*continued.*** | | | | | | | |
| 1884. d | | | ' | ' | ° | ° | ° |
| Oct. 19·506 | 8 | 146 | 4 | 83 | 208·3 | − 9·9 | −24·1 |
| 20·241 | 19 | 106 | 10 | 57 | 208·1 | − 9·6 | −14·6 |
| 21·186 | 15 | 133 | 8 | 70 | 208·1 | − 11·5 | − 2·1 |
| 22·521 | 0 | 22 | 0 | 12 | 209·3 | − 11·7 | +16·6 |
| Means ... | ... | ... | 14 | 102 | 207·78 | − 9·74 | ... |
| **Group 1510.** Three small spots; two are measured together. | | | | | | | |
| Oct. 16·173 | 8 | 65 | 15 | 109 | 347·6 | − 9·1 | +71·2 |
| Means ... | ... | ... | 15 | 109 | 347·6 | − 9·1 | ... |
| **Group 1511.** Two small spots. | | | | | | | |
| Oct. 18·398 | 1 | 16 | 1 | 19 | 310·4 | − 7·4 | +63·4 |
| Means ... | ... | ... | 1 | 19 | 310·4 | − 7·4 | ... |
| **Group 1512.** Three small spots. | | | | | | | |
| Oct. 18·398 | 9 | 49 | 6 | 37 | 291·5 | − 9·8 | +44·5 |
| Means ... | ... | ... | 6 | 37 | 291·5 | − 9·8 | ... |
| **Group 1513.** A small spot. | | | | | | | |
| Oct. 20·241 | 0 | 5 | 0 | 4 | 280·7 | +13·2 | +58·0 |
| 21·186 | 0 | 9 | 0 | 12 | 280·3 | +13·1 | +70·1 |
| Means ... | ... | ... | 0 | 8 | 280·50 | +13·15 | ... |
| **Group 1514.** A close pair of small spots on October 20. Only one spot is seen on October 21, the group is not seen on October 22, and one spot is seen on October 23. | | | | | | | |
| Oct. 20·241 | 9 | 41 | 6 | 25 | 240·0 | −24·9 | +17·3 |
| 21·186 | 0 | 6 | 0 | 4 | 241·8 | −24·9 | +31·6 |
| 22·521 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·493 | 0 | 19 | 0 | 23 | 240·5 | −24·4 | +60·7 |
| Means ... | ... | ... | 2 | 13 | 240·77 | −24·73 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1515.** A small spot not seen on October 22. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Oct. 20·241 | 0 | 10 | 0 | 6 | 237·7 | −26·8 | +15·0 |
| 21·186 | 2 | 10 | 1 | 7 | 237·4 | −27·3 | +27·2 |
| 22·521 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 23·493 | 1 | 29 | 1 | 33 | 237·3 | −27·0 | +57·5 |
| Means ... | ... | ... | 1 | 12 | 237·47 | −27·03 | ... |
| **Group 1516.** Two small spots, *a* and *b*, on October 20. They move apart and increase in size on the succeeding days. Small spots occasionally appear between or near them. | | | | | | | |
| Oct. 20·241 | 5 | 36 | 3 | 20 | 198·5 | − 8·2 | −24·2 |
| 21·186 | 35 | 124 | 19 | 65 | 198·4 | − 8·5 | −11·8 |
| 22·521 | 62 | 540 | 33 | 282 | 200·4 | − 8·5 | + 7·7 |
| 23·493 | 99 | 717 | 54 | 396 | 201·2 | − 8·6 | +21·4 |
| 24 | No photograph. | | (97 | 580 | 201·2 | − 8·7 | +34·4) |
| 25·473 | 184 | 1000 | 140 | 765 | 201·1 | − 8·7 | +47·4 |
| 26·538 | 117 | 576 | 133 | 657 | 202·3 | − 8·8 | +62·6 |
| 27·447 | 20 | 284 | 50 | 579 | 202·4 | − 8·9 | +74·7 |
| 28·290 | 2 | 24 | 7 | 92 | 198·4 | − 8·4 | +81·9 |
| Means ... | ... | ... | 60 | 382 | 200·43 | − 8·59 | ... |
| **Group 1517.** Two very small spots. | | | | | | | |
| Oct. 21·186 | 4 | 25 | 2 | 13 | 217·5 | +18·8 | + 7·3 |
| Means ... | ... | ... | 2 | 13 | 217·5 | +18·8 | ... |
| **Group 1518.** Two regular spots, *a* and *b*. Some small spots are seen near them on October 25 and the succeeding days. | | | | | | | |
| Oct. 21·186 | 5 | 46 | 14 | 125 | 132·4 | −13·9 | −77·8 |
| 22·521 | 23 | 123 | 26 | 135 | 132·4 | −14·1 | −60·3 |
| 23·493 | 28 | 186 | 22 | 147 | 132·4 | −14·1 | −47·4 |
| 24 | No photograph. | | (25 | 132 | 132·5 | −14·3 | −34·3) |
| 25·473 | 49 | 205 | 28 | 116 | 132·6 | −14·5 | −21·1 |
| 26·538 | 35 | 182 | 19 | 98 | 133·4 | −14·7 | − 6·3 |
| 27·447 | 17 | 79 | 9 | 42 | 132·7 | −14·3 | + 5·0 |
| 28·290 | 9 | 43 | 5 | 23 | 132·7 | −14·4 | +16·2 |
| Means ... | ... | ... | 18 | 102 | 132·64 | −14·29 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1519.** Several small spots close together. Only one spot remains after October 22. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Oct. 22·521 | 0 | 142 | 0 | 77 | 212·4 | − 4·0 | +19·7 |
| 23·493 | 0 | 12 | 0 | 7 | 211·3 | − 4·3 | +31·5 |
| 24 | No photograph. | | (0 | 9 | 212·1 | − 4·5 | +45·3) |
| 25·473 | 0 | 11 | 0 | 11 | 212·8 | − 4·6 | +59·1 |
| Means ... | ... | ... | 0 | 26 | 212·15 | − 4·35 | ... |
| **Group 1520.** Two regular spots, *a* and *b*, on October 22. They increase in size on the succeeding days, and other spots appear between or near them. *b* has broken up into a number of spots by October 28. | | | | | | | |
| Oct. 22·521 | 0 | 57 | 0 | 115 | 119·0 | −14·1 | −73·7 |
| 23·493 | 63 | 260 | 74 | 302 | 117·6 | −14·4 | −62·2 |
| 24 | No photograph. | | (134 | 560 | 117·4 | −14·8 | −49·4) |
| 25·473 | 290 | 1226 | 194 | 818 | 117·1 | −15·1 | −36·6 |
| 26·538 | 344 | 1673 | 197 | 967 | 117·9 | −15·4 | −21·8 |
| 27·447 | 241 | 1492 | 130 | 805 | 119·3 | −14·8 | − 8·4 |
| 28·290 | 200 | 1607 | 107 | 854 | 119·5 | −14·6 | + 3·0 |
| 29·555 | 288 | 1453 | 172 | 854 | 120·3 | −14·5 | +20·4 |
| 30·407 | 165 | 1071 | 104 | 673 | 121·5 | −11·1 | +32·9 |
| 31·442 | 148 | 901 | 117 | 704 | 121·7 | −13·7 | +46·7 |
| Nov. 1·186 | 124 | 708 | 120 | 684 | 121·8 | −13·5 | +56·6 |
| 2·209 | 48 | 321 | 74 | 504 | 121·5 | −13·6 | +69·8 |
| Means ... | ... | ... | 119 | 653 | 119·55 | −14·13 | ... |
| **Group 1521.** Two small spots close together, which are measured as one on October 23. The two spots, *a* and *b*, have increased in size by October 25, and two very small spots are seen near them. The small spots have disappeared by October 26, and *b* has disappeared by October 28. | | | | | | | |
| Oct. 23·493 | 0 | 16 | 0 | 9 | 168·7 | −20·7 | −11·1 |
| 24 | No photograph. | | (11 | 59 | 169·4 | −20·9 | + 2·7) |
| 25·473 | 36 | 187 | 21 | 109 | 170·1 | −21·1 | +16·4 |
| 26·538 | 31 | 104 | 20 | 68 | 170·5 | −21·4 | +30·8 |
| 27·447 | 4 | 37 | 4 | 28 | 170·3 | −21·4 | +42·6 |
| 28·290 | 3 | 17 | 3 | 17 | 171·2 | −22·2 | +54·7 |
| Means ... | ... | ... | 10 | 48 | 170·03 | −21·28 | ... |
| **Group 1522.** *Three small spots on October 25. Other small spots appear on the succeeding days,* and follow each other in a straight line. The preceding spot on October 29, *a*, and another spot following it, *b*, increase in size on the succeeding days, whilst the other spots diminish and disappear. *a* and *b* likewise diminish after November 1. | | | | | | | |
| Oct. 25·473 | 6 | 30 | 4 | 22 | 109·2 | − 7·0 | −44·5 |
| 26·538 | 5 | 85 | 3 | 51 | 109·9 | − 6·8 | −29·8 |
| 27·447 | 0 | 56 | 0 | 30 | 110·4 | − 6·2 | −17·3 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1522—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Oct. 28·290 | 24 | 113 | 13 | 58 | 108·9 | − 6·3 | − 7·6 |
| 29·555 | 29 | 144 | 15 | 74 | 108·8 | − 6·6 | + 8·9 |
| 30·407 | 48 | 283 | 27 | 152 | 109·5 | − 6·1 | +20·9 |
| 31·442 | 97 | 367 | 61 | 229 | 110·2 | − 5·7 | +35·2 |
| Nov. 1·186 | 52 | 288 | 39 | 209 | 110·6 | − 5·7 | +45·4 |
| 2·209 | 6 | 41 | 5 | 41 | 110·7 | − 5·6 | +59·0 |
| Means ... | ... | ... | 19 | 96 | 109·80 | − 6·22 | ... |
| **Group 1523.** A small spot. | | | | | | | |
| Oct. 25·473 | 8 | 18 | 6 | 15 | 102·4 | −13·7 | −51·3 |
| 26·538 | 7 | 30 | 4 | 20 | 102·6 | −13·8 | −37·1 |
| Means ... | ... | ... | 5 | 18 | 102·50 | −13·75 | ... |
| **Group 1524.** Two small spots, *a* and *b*. | | | | | | | |
| Oct. 26·538 | 12 | 79 | 6 | 40 | 142·4 | +11·1 | + 2·7 |
| 27·447 | 2 | 147 | 1 | 76 | 143·4 | +11·2 | +15·7 |
| 28·290 | 9 | 35 | 5 | 21 | 144·1 | +11·0 | +27·6 |
| Means ... | ... | ... | 4 | 46 | 143·30 | +11·10 | ... |
| **Group 1525.** Two small spots, *a* and *b*. *b* has disappeared by October 27. | | | | | | | |
| Oct. 26·538 | 0 | 25 | 0 | 32 | 72·4 | + 8·4 | −67·3 |
| 27·447 | 2 | 9 | 1 | 8 | 72·6 | + 9·2 | −55·1 |
| Means ... | ... | ... | 1 | 20 | 72·50 | + 8·80 | ... |
| **Group 1526.** A regular spot, *a*, followed by a fainter spot, *b* Other small spots are seen near it on several days. *b* has disappeared by November 3. | | | | | | | |
| Oct. 28·290 | 9 | 40 | 11 | 52 | 48·2 | + 9·4 | −68·3 |
| 29·555 | 15 | 280 | 11 | 223 | 48·8 | + 9·9 | −51·1 |
| 30·407 | 54 | 347 | 34 | 222 | 50·0 | +10·2 | −38·6 |
| 31·442 | 48 | 353 | 27 | 197 | 50·2 | +10·2 | −24·8 |
| Nov. 1·186 | 71 | 281 | 37 | 146 | 50·6 | +10·2 | −14·6 |
| 2·209 | 32 | 264 | 16 | 132 | 50·8 | +10·2 | − 0·9 |
| 3·421 | 34 | 244 | 18 | 127 | 51·0 | +10·9 | +15·3 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1526—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Nov. 4·552 | 30 | 197 | 18 | 115 | 51·4 | +11·1 | +30·6 |
| 5·445 | 18 | 116 | 12 | 80 | 52·1 | +11·4 | +43·0 |
| 6·326 | 21 | 110 | 19 | 96 | 52·6 | +11·7 | +55·1 |
| 7·408 | 8 | 40 | 11 | 55 | 52·4 | +11·9 | +69·3 |
| Means ... | ... | ... | 19 | 131 | 50·74 | +10·65 | ... |

### Group 1527.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 1·186 | 9 | 35 | 5 | 22 | 103·0 | + 5·7 | +37·8 |
| Means ... | ... | ... | 5 | 22 | 103·0 | + 5·7 | ... |

### Group 1528.

Two very small spots. Only one remains on November 2.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 1·186 | 2 | 13 | 1 | 7 | 72·3 | − 9·5 | + 7·1 |
| 2·209 | 0 | 6 | 0 | 4 | 74·7 | − 9·1 | +23·0 |
| Means ... | ... | ... | 1 | 6 | 73·50 | − 9·30 | ... |

### Group 1529.

Three very small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 1·186 | 5 | 12 | 2 | 6 | 58·7 | −24·2 | − 6·5 |
| Means ... | ... | ... | 2 | 6 | 58·7 | −24·2 | ... |

### Group 1530.

A very small spot. The spot seen on November 2 is probably not the same as that seen on November 1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 1·186 | 1 | 4 | 1 | 3 | 11·9 | +10·1 | −53·3 |
| 2·209 | 0 | 10 | 1 | 7 | 13·2 | + 9·5 | −38·5 |
| Means ... | ... | ... | 1 | 5 | 12·55 | + 9·80 | ... |

### Group 1531.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 2·209 | 0 | 14 | 0 | 39 | 131·0 | − 6·3 | +79·3 |
| Means ... | ... | ... | 0 | 39 | 131·0 | − 6·3 | ... |

### Group 1532.

A small spot on November 9. The group has greatly increased in size by November 10, and then consists of a large regular spot, *a*, followed by a spot, *b*, of irregular outline. Small spots are also seen between and near them. *b* has begun to break up by November 13.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Nov. 9·180 | 0 | 15 | 0 | 8 | 296·2 | −10·2 | −23·6 |
| 10·488 | 74 | 517 | 38 | 265 | 299·6 | − 8·7 | − 2·9 |
| 11·271 | 138 | 952 | 71 | 492 | 299·2 | − 8·6 | + 7·0 |
| 12·273 | 158 | 1109 | 86 | 603 | 298·8 | − 7·9 | +19·8 |
| 13·156 | 113 | 850 | 69 | 511 | 299·2 | − 7·9 | +31·8 |
| 14·503 | 66 | 644 | 52 | 508 | 299·3 | − 7·5 | +49·7 |
| 15·526 | 11 | 172 | 15 | 211 | 301·3 | − 7·2 | +65·1 |
| 16·234 | 15 | 98 | 36 | 201 | 302·1 | − 7·2 | +75·3 |
| Means ... | ... | ... | 46 | 350 | 299·46 | − 8·15 | ... |

### Group 1533.

A small spot. A second small spot is seen close to it, and measured with it on November 11.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 10·488 | 0 | 20 | 0 | 13 | 336·5 | − 6·3 | +34·0 |
| 11·271 | 13 | 73 | 9 | 52 | 336·3 | − 5·6 | +44·1 |
| 12·273 | 0 | 2 | 0 | 2 | 335·4 | − 5·2 | +56·4 |
| Means ... | ... | ... | 3 | 22 | 336·07 | − 5·70 | ... |

### Group 1534.

Three small spots. The two preceding spots form a close pair and are measured together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 10·488 | 12 | 56 | 6 | 29 | 288·9 | + 4·1 | −13·6 |
| 11·271 | 9 | 30 | 4 | 14 | 289·3 | + 4·2 | − 2·9 |
| Means ... | ... | ... | 5 | 22 | 289·10 | + 4·15 | ... |

### Group 1535.

Two small spots, *a* and *b*. Several small spots are seen following *a* on November 13.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 10·488 | 10 | 46 | 8 | 37 | 250·2 | + 3·7 | −52·3 |
| 11·271 | 7 | 22 | 5 | 14 | 251·6 | + 3·7 | −40·6 |
| 12·273 | 12 | 46 | 6 | 25 | 253·4 | + 4·4 | −25·6 |
| 13·156 | 12 | 63 | 6 | 33 | 253·4 | + 4·4 | −14·0 |
| 14·503 | 0 | 12 | 0 | 6 | 256·0 | + 5·2 | + 6·4 |
| Means ... | ... | ... | 5 | 23 | 252·92 | + 4·28 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1536.** A close pair of very small spots. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Nov. 12·273 | 4 | 13 | 4 | 11 | 224·7 | − 3·7 | −54·3 |
| 13·156 | 5 | 15 | 3 | 10 | 224·5 | − 3·6 | −42·9 |
| Means ... | ... | ... | 4 | 11 | 224·60 | − 3·65 | ... |
| **Group 1537.** Two small spots, *a* and *b*. On November 14 and 15 each spot has become a compact cluster of very small spots. A third spot, *c*, is seen on November 15. | | | | | | | |
| Nov. 12·273 | 4 | 26 | 5 | 28 | 217·4 | +18·3 | −61·6 |
| 13·156 | 4 | 54 | 3 | 43 | 217·2 | +18·5 | −50·2 |
| 14·503 | 0 | 40 | 0 | 24 | 218·3 | +18·7 | −31·3 |
| 15·526 | 9 | 97 | 5 | 54 | 218·1 | +18·7 | −18·1 |
| 16·234 | 4 | 45 | 2 | 24 | 218·0 | +19·3 | − 8·8 |
| 17·284 | 0 | 8 | 0 | 5 | 218·2 | +19·7 | + 5·3 |
| Means ... | ... | ... | 3 | 30 | 217·87 | +18·87 | ... |
| **Group 1538.** A very close pair of spots. | | | | | | | |
| Nov. 12·273 | 9 | 64 | 14 | 105 | 207·6 | − 8·6 | −71·4 |
| 13·156 | 14 | 77 | 14 | 77 | 208·1 | − 8·3 | −59·3 |
| 14·503 | 0 | 66 | 0 | 45 | 208·5 | − 8·1 | −41·1 |
| 15·526 | 6 | 23 | 3 | 13 | 208·5 | − 8·1 | −27·7 |
| 16·234 | 2 | 13 | 1 | 7 | 208·5 | − 8·3 | −18·3 |
| Means ... | ... | ... | 6 | 49 | 208·24 | − 8·28 | ... |
| **Group 1539.** A small spot. | | | | | | | |
| Nov. 12·273 | 2 | 8 | 4 | 17 | 203·0 | + 7·7 | −76·0 |
| 13·156 | 6 | 15 | 8 | 18 | 202·7 | + 8·2 | −64·7 |
| 14·503 | 7 | 15 | 5 | 11 | 202·9 | + 8·6 | −46·7 |
| 15·526 | 0 | 23 | 0 | 14 | 203·2 | + 8·6 | −33·0 |
| 16·234 | 5 | 15 | 3 | 8 | 203·5 | + 8·7 | −23·3 |
| 17·284 | 0 | 13 | 0 | 7 | 204 0 | + 8·8 | − 8·9 |
| Means ... | ... | ... | 3 | 13 | 203·22 | + 8·43 | ... |
| **Group 1540.** Two small spots. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Nov. 13·156 | 2 | 27 | 1 | 18 | 228·6 | − 8·9 | −38·8 |
| Means ... | ... | ... | 1 | 18 | 228·6 | − 8·9 | ... |
| **Group 1541.** A regular spot, *a*. A small spot appears following it on November 18. Other small spots forming an irregular stream appear on succeeding days. A second regular spot, *b*, appears closely following *a* on November 19. | | | | | | | |
| Nov. 16·234 | 12 | 82 | 17 | 122 | 156·4 | + 7·9 | −70·4 |
| 17·284 | 17 | 154 | 15 | 136 | 157·8 | + 7·7 | −55·1 |
| 18·284 | 30 | 202 | 20 | 137 | 157·6 | + 7·7 | −42·1 |
| 19·467 | 70 | 354 | 40 | 199 | 157·1 | + 8·0 | −27·1 |
| 20·291 | 52 | 552 | 27 | 289 | 157·1 | + 7·9 | −16·2 |
| 21·284 | 82 | 452 | 41 | 228 | 158·3 | + 7·8 | − 1·9 |
| 22·233 | 47 | 308 | 24 | 160 | 159·8 | + 7·4 | +12·1 |
| 23·225 | 30 | 211 | 17 | 119 | 160·7 | + 7·5 | +26·0 |
| 24·293 | 6 | 74 | 4 | 50 | 161·6 | + 7·4 | +41·0 |
| 25·255 | 2 | 23 | 1 | 20 | 161·6 | + 7·7 | +53·7 |
| Means ... | ... | ... | 21 | 146 | 158·80 | + 7·70 | ... |
| **Group 1542.** A small spot on November 18. Other spots appear on the succeeding days and form an irregular and somewhat scattered group. The group has become more condensed by November 22, when it consists of a large regular spot, *a*, closely followed by a number of small spots in a straight line. By November 24 these have all coalesced with *a* to form one large wedge-shaped spot, the point of the wedge following. The point of the wedge has become detached by November 26. | | | | | | | |
| Nov. 18·284 | 0 | 11 | 0 | 10 | 142·5 | − 7·5 | −57·2 |
| 19·467 | 5 | 18 | 3 | 12 | 142·9 | − 7·2 | −41·3 |
| 20·291 | 9 | 149 | 6 | 92 | 139·4 | − 7·8 | −33·9 |
| 21·284 | 41 | 217 | 22 | 119 | 140·2 | − 7·4 | −20·0 |
| 22·233 | 60 | 494 | 30 | 252 | 141·0 | − 7·2 | − 6·7 |
| 23·225 | 81 | 726 | 41 | 372 | 141·6 | − 6·9 | + 6·9 |
| 24·293 | 130 | 1114 | 71 | 607 | 142·0 | − 7·1 | +21·4 |
| 25·255 | 160 | 1017 | 99 | 630 | 142·9 | − 7·2 | +35·0 |
| 26·273 | 96 | 877 | 73 | 670 | 144·5 | − 7·4 | +50·0 |
| 27 | No photograph. | | (73 | 605 | 144·0 | − 7·4 | +62·8) |
| 28·287 | 33 | 264 | 73 | 539 | 143·5 | − 7·3 | +75·5 |
| Means ... | ... | ... | 45 | 355 | 142·23 | − 7·31 | ... |
| **Group 1543.** Two small spots. | | | | | | | |
| Nov. 19·467 | 5 | 45 | 4 | 41 | 239·8 | −16·8 | +55·6 |
| 20·291 | 3 | 23 | 3 | 30 | 238·2 | −17·3 | +64·9 |
| Means ... | ... | ... | 4 | 36 | 239·00 | −17·05 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1544.

A small regular spot, *a*, with some small faint spots following it on November 21 and 22. On November 23 four spots are seen. Only *a* is seen after November 23.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Nov. 21·284 | 8 | 44 | 5 | 29 | 124·8 | −15·9 | −35·4 |
| 22·233 | 6 | 33 | 3 | 19 | 125·6 | −15·6 | −22·1 |
| 23·225 | 23 | 58 | 12 | 30 | 126·5 | −16·1 | − 8·2 |
| 24·293 | 0 | 28 | 0 | 15 | 127·8 | −15·4 | + 7·2 |
| 25·255 | 6 | 12 | 3 | 7 | 128·3 | −14·9 | +20·4 |
| 26·273 | 0 | 18 | 0 | 11 | 128·4 | −14·7 | +33·9 |
| Means ... | ... | ... | 4 | 19 | 126·90 | −15·43 | ... |

### Group 1545.

A few small spots on November 26. The group has increased in size by November 28, and forms a nearly continuous chain of spots. The group has broken up by November 29, and only six spots remain. Of these six, only three, *a*, *b*, and *c*, are seen on December 1 and 2.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. | 26·273 | 2 | 64 | 1 | 37 | 71·5 | −15·9 | −23·0 |
| | 27 | No photograph. | | (16 | 120 | 72·3 | −15·5 | − 9·0) |
| | 28·287 | 60 | 389 | 31 | 203 | 73·1 | −15·0 | + 5·1 |
| | 29·503 | 59 | 234 | 33 | 132 | 72·9 | −15·2 | +21·0 |
| | 30 | No photograph. | | (25 | 138 | 73·4 | −15·3 | +32·7) |
| Dec. | 1·203 | 22 | 204 | 16 | 144 | 73·8 | −15·4 | +44·3 |
| | 2·289 | 8 | 108 | 8 | 109 | 73·8 | −15·5 | +58·6 |
| Means ... | | ... | ... | 19 | 126 | 72·97 | −15·40 | ... |

### Group 1546.

Four spots on November 29. On November 28 they are not readily separable, and are measured in two parts. By December 1 and the succeeding days the group has become a long straight and almost continuous stream of spots, the first spot, *a*, becoming a large regular spot by December 2. The following spots diminish in size and number rapidly, and all have disappeared by December 8.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nov. | 28·287 | 5 | 49 | 12 | 142 | 347·8 | + 3·9 | −80·2 |
| | 29·503 | 27 | 222 | 33 | 287 | 344·7 | + 5·0 | −67·2 |
| | 30 | No photograph. | | (26 | 348 | 346·1 | + 4·5 | −54·6) |
| Dec. | 1·203 | 27 | 607 | 18 | 409 | 347·5 | + 3·9 | −42·0 |
| | 2·289 | 102 | 835 | 57 | 465 | 349·4 | + 3·5 | −25·8 |
| | 3·290 | 114 | 846 | 58 | 432 | 350·2 | + 3·4 | −11·8 |
| | 4·458 | 112 | 727 | 56 | 364 | 351·8 | + 3·4 | + 5·1 |
| | 5·479 | 100 | 552 | 54 | 293 | 352·5 | + 3·3 | +19·4 |
| | 6·255 | 74 | 521 | 43 | 300 | 352·1 | + 3·4 | +29·2 |
| | 7·441 | 57 | 382 | 41 | 276 | 353·3 | + 3·3 | +46·2 |
| | 8·262 | 50 | 318 | 46 | 293 | 353·5 | + 3·5 | +57·0 |
| | 9·214 | 39 | 227 | 58 | 340 | 354·6 | + 3·5 | +70·6 |
| Means ... | | ... | ... | 42 | 329 | 350·29 | + 3·72 | ... |

### Group 1547.

Four spots on November 29, two of which are measured together. On December 1 the group consists of two large regular spots, *q* and *b*. By December 2 *a* has become the leader of a straight stream of small spots. Some small spots appear following *b* on December 2, and a second stream is thus formed. The two streams have coalesced by December 5, and form a large irregular spot, *c*, close to but not touching *b*.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Nov. 29·503 | 16 | 125 | 11 | 84 | 12·0 | +14·0 | −39·9 |
| 30 | No photograph. | | (34 | 259 | 12·8 | +13·4 | −28·0) |
| Dec. 1·203 | 107 | 810 | 57 | 434 | 13·5 | +12·8 | −16·0 |
| 2·289 | 103 | 606 | 53 | 309 | 13·3 | +12·6 | − 1·9 |
| 3·290 | 105 | 573 | 55 | 301 | 13·4 | +12·7 | +11·4 |
| 4·458 | 118 | 661 | 67 | 377 | 13·3 | +13·6 | +26·6 |
| 5·479 | 68 | 671 | 46 | 449 | 12·9 | +13·7 | +39·8 |
| 6·255 | 58 | 631 | 46 | 513 | 13·5 | +14·2 | +50·6 |
| 7·441 | 31 | 354 | 39 | 450 | 13·1 | +14·4 | +66·0 |
| 8·262 | 11 | 233 | 23 | 500 | 12·5 | +13·8 | +76·0 |
| Means ... | ... | ... | 43 | 368 | 13·03 | +13·52 | ... |

### Group 1548.

A regular spot.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. | 2·289 | 5 | 26 | 7 | 36 | 306·4 | − 6·7 | −68·8 |
| | 3·290 | 12 | 58 | 10 | 51 | 306·7 | − 6·6 | −55·3 |
| | 4·458 | 9 | 51 | 6 | 34 | 307·1 | − 6·5 | −39·6 |
| | 5·479 | 18 | 49 | 10 | 28 | 307·3 | − 6·5 | −25·8 |
| | 6·255 | 5 | 48 | 3 | 25 | 307·4 | − 6·6 | −15·5 |
| | 7·441 | 6 | 32 | 3 | 16 | 307·4 | − 6·5 | + 0·3 |
| | 8·262 | 0 | 20 | 0 | 10 | 307·4 | − 6·5 | +10·9 |
| Means ... | | ... | ... | 6 | 29 | 307·10 | − 6·56 | ... |

### Group 1549.

A regular spot. It has divided into two spots, *a* and *b*, by December 13; *b* has disappeared by December 15.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. | 5·479 | 16 | 66 | 30 | 126 | 258·1 | + 4·4 | −75·0 |
| | 6·255 | 19 | 123 | 23 | 145 | 258·0 | + 4·3 | −64·9 |
| | 7·441 | 34 | 228 | 26 | 175 | 258·0 | + 4·3 | −49·1 |
| | 8·262 | 56 | 292 | 36 | 186 | 258·4 | + 4·4 | −38·1 |
| | 9·214 | 39 | 292 | 21 | 161 | 259·0 | + 4·4 | −25·0 |
| | 10·281 | 63 | 305 | 32 | 156 | 259·0 | + 4·9 | −10·9 |
| | 11·251 | 51 | 320 | 25 | 160 | 259·0 | + 4·9 | + 1·9 |
| | 12·267 | 20 | 262 | 11 | 137 | 259·4 | + 5·4 | +15·6 |
| | 13·248 | 41 | 174 | 23 | 100 | 259·6 | + 5·1 | +28·9 |
| | 14·380 | 30 | 102 | 21 | 72 | 260·2 | + 5·5 | +44·3 |
| | 15·269 | 5 | 21 | 5 | 20 | 261·1 | + 5·4 | +56·9 |
| Means ... | | ... | ... | 23 | 131 | 259·07 | + 4·82 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1550.

Two spots, *a* and *b*; *b* has disappeared by December 10.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Dec. 9·214 | 15 | 53 | 14 | 54 | 344·0 | − 7·0 | +60·0 |
| 10·281 | 12 | 31 | 25 | 76 | 346·5 | − 7·3 | +76·6 |
| Means ... | ... | ... | 20 | 65 | 345·25 | − 7·15 | ... |

### Group 1551.

Two faint spots measured together on December 9. Only one remains on December 10.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 9·214 | 0 | 39 | 0 | 23 | 315·4 | −12·3 | +31·4 |
| 10·281 | 0 | 25 | 0 | 19 | 316·0 | −13·7 | +46·1 |
| Means ... | ... | ... | 0 | 21 | 315·70 | −13·00 | ... |

### Group 1552.

Two clusters of small spots on December 9. On December 10 the group consists of two regular spots, *a* and *b*, and several small spots between or near them. *b* has disappeared by December 14.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 9·214 | 36 | 162 | 19 | 85 | 269·1 | −10·6 | −14·9 |
| 10·281 | 59 | 439 | 30 | 222 | 269·8 | −10·1 | − 0·1 |
| 11·251 | 35 | 375 | 19 | 196 | 270·8 | −10·1 | +13·7 |
| 12·267 | 30 | 278 | 18 | 160 | 272·3 | − 9·6 | +28·5 |
| 13·248 | 32 | 166 | 22 | 115 | 273·6 | − 9·1 | +42·9 |
| 14·380 | 6 | 98 | 6 | 99 | 276·2 | − 7·4 | +60·3 |
| 15·269 | 7 | 45 | 13 | 75 | 277·1 | − 7·3 | +72·9 |
| Means ... | ... | ... | 18 | 136 | 272·70 | − 9·17 | ... |

### Group 1553.

A regular spot, *a*, followed by a stream of small spots. The latter have disappeared by December 15.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 9·214 | 8 | 76 | 12 | 113 | 214·1 | −12·4 | −69·9 |
| 10·281 | 22 | 131 | 20 | 120 | 213·9 | −12·3 | −56·0 |
| 11·251 | 30 | 197 | 21 | 138 | 213·9 | −12·4 | −43·2 |
| 12·267 | 46 | 253 | 26 | 146 | 216·4 | −11·9 | −27·4 |
| 13·248 | 45 | 343 | 25 | 182 | 215·2 | −12·3 | −15·5 |
| 14·380 | 12 | 178 | 6 | 90 | 216·6 | −12·2 | + 0·7 |
| 15·269 | 13 | 38 | 7 | 21 | 223·3 | −11·9 | +19·1 |
| 16·487 | 2 | 19 | 1 | 12 | 224·9 | −11·9 | +36·8 |
| 17·193 | 3 | 13 | 2 | 10 | 225·9 | −11·4 | +47·1 |
| Means ... | ... | ... | 13 | 92 | 218·24 | −12·08 | ... |

### Group 1554.

A cluster of small faint spots on December 10; on December 11 two considerable spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1884. d | | | | | ° | ° | ° |
| Dec. 10·281 | 0 | 25 | 0 | 24 | 328·6 | − 9·3 | +58·7 |
| 11·251 | 8 | 87 | 12 | 147 | 329·6 | − 9·7 | +72·5 |
| Means .... | ... | ... | 6 | 86 | 329·10 | − 9·50 | ... |

### Group 1555.

A somewhat faint spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 13·248 | 0 | 16 | 0 | 39 | 153·2 | +15·6 | −77·5 |
| 14·380 | 10 | 51 | 11 | 58 | 153·4 | +15·9 | −62·5 |
| 15·269 | 4 | 30 | 3 | 24 | 153·6 | +15·5 | −50·6 |
| 16·487 | 0 | 14 | 0 | 9 | 154·0 | +15·3 | −34·1 |
| 17·193 | 0 | 14 | 0 | 8 | 153·9 | +14·6 | −24·9 |
| Means ... | ... | ... | 3 | 28 | 153·62 | +15·38 | ... |

### Group 1556.

A large regular spot, *a*. A small spot is seen near *a* on December 16–17, and a second small spot on December 17. On December 19 on passing the central meridian two irregular spots, one of them large, appear close to *a*. These break up into a number of small spots, and have disappeared by December 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 14·380 | 36 | 154 | 56 | 240 | 144·5 | − 7·5 | −71·4 |
| 15·269 | 36 | 207 | 36 | 206 | 144·4 | − 7·5 | −59·8 |
| 16·487 | 53 | 332 | 37 | 230 | 144·5 | − 7·4 | −43·6 |
| 17·193 | 62 | 406 | 38 | 247 | 144·9 | − 7·8 | −33·9 |
| 18·229 | 59 | 389 | 32 | 207 | 144·7 | − 7·2 | −20·5 |
| 19·505 | 60 | 738 | 30 | 370 | 145·5 | − 6·8 | − 2·9 |
| 20·211 | 75 | 612 | 38 | 312 | 145·4 | − 7·1 | + 6·3 |
| 21·508 | 99 | 586 | 54 | 322 | 145·5 | − 6·5 | +23·5 |
| 22·489 | 82 | 438 | 51 | 274 | 145·6 | − 6·8 | +36·5 |
| 23 | No photograph. | | (36 | 216 | 145·2 | − 6·5 | +47·9) |
| 24·273 | 21 | 161 | 21 | 158 | 144·8 | − 6·2 | +59·2 |
| 25·158 | 11 | 99 | 17 | 156 | 145·4 | − 6·1 | +71·5 |
| Means ... | ... | ... | 37 | 245 | 145·03 | − 6·95 | ... |

### Group 1557.

A small faint spot on December 15. Two close pairs of spots on December 16. The group increases in size on the succeeding days and becomes an irregular stream of small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dec. 15·269 | 0 | 5 | 0 | 3 | 170·2 | −18·0 | −34·0 |
| 16·487 | 9 | 91 | 5 | 50 | 169·4 | −20·0 | −18·7 |
| 17·193 | 34 | 261 | 19 | 142 | 169·7 | −19·8 | − 9·1 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1557—*continued.*** | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Dec. 18·229 | 30 | 255 | 16 | 135 | 170·9 | −19·5 | + 5·7 |
| 19·505 | 20 | 334 | 12 | 191 | 172·0 | −18·8 | +23·6 |
| 20·211 | 33 | 322 | 21 | 204 | 172·7 | −19·0 | +33·6 |
| 21·508 | 38 | 196 | 32 | 166 | 174·1 | −18·7 | +52·1 |
| 22·489 | 13 | 96 | 15 | 111 | 172·6 | −18·6 | +63·5 |
| Means ... | ... | ... | 15 | 125 | 171·45 | −19·05 | ... |
| **Group 1558.** A regular spot. | | | | | | | |
| Dec. 17·193 | 9 | 70 | 21 | 158 | 101·6 | −13·9 | −77·2 |
| 18·229 | 13 | 102 | 15 | 116 | 101·5 | −13·4 | −63·7 |
| 19·505 | 26 | 172 | 20 | 128 | 101·3 | −13·3 | −47·1 |
| 20·211 | 33 | 185 | 21 | 120 | 101·7 | −13·6 | −37·4 |
| 21·508 | 56 | 206 | 30 | 112 | 102·2 | −13·0 | −19·8 |
| 22·489 | 33 | 254 | 17 | 130 | 102·5 | −13·1 | − 6·6 |
| 23 | No photograph. | | (14 | 119 | 102·7 | −13·0 | + 5·4) |
| 24·273 | 21 | 203 | 11 | 108 | 102·9 | −13·0 | +17·3 |
| 25·158 | 13 | 183 | 8 | 106 | 103·2 | −13·0 | +29·3 |
| 26·265 | 10 | 77 | 7 | 54 | 102·7 | −12·7 | +43·4 |
| 27·209 | 0 | 18 | 0 | 16 | 103·0 | −12·7 | +56·1 |
| Means ... | ... | ... | 15 | 106 | 102·30 | −13·15 | ... |
| **Group 1559.** A regular spot. A small spot is seen near it on December 19. | | | | | | | |
| Dec. 18·229 | 5 | 59 | 5 | 57 | 106·8 | + 7·4 | −58·4 |
| 19·505 | 12 | 104 | 8 | 69 | 108·3 | + 8·2 | −40·1 |
| 20·211 | 21 | 65 | 12 | 38 | 109·9 | + 8·1 | −29·2 |
| 21·508 | 15 | 53 | 8 | 28 | 111·5 | + 8·8 | −10·5 |
| 22·489 | 24 | 38 | 12 | 20 | 112·4 | + 8·7 | + 3·3 |
| 23 | No photograph. | | (6 | 21 | 112·8 | + 8·8 | +15·5) |
| 24·273 | 0 | 38 | 0 | 22 | 113·2 | + 8·9 | +27·6 |
| 25·158 | 3 | 16 | 2 | 11 | 113·2 | + 9·0 | +39·3 |
| 26·265 | 5 | 22 | 5 | 19 | 113·1 | + 8·9 | +53·8 |
| 27·209 | 5 | 10 | 6 | 13 | 113·5 | + 8·5 | +66·6 |
| Means ... | ... | ... | 6 | 30 | 111·47 | + 8·53 | ... |
| **Group 1560.** A small spot, *a*, which has disappeared by December 22. A second spot, *b*, appears on December 21. | | | | | | | |
| Dec. 20·211 | 0 | 10 | 0 | 5 | 155·3 | −19·4 | +16·2 |
| 21·508 | 5 | 41 | 3 | 26 | 154·5 | −20·3 | +32·5 |
| 22·489 | 0 | 8 | 0 | 6 | 153·9 | −19·5 | +44·8 |
| Means ... | ... | .. | 1 | 12 | 154·57 | −19·73 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1561.** A very large regular spot, *a*, followed at a considerable distance by three regular but much smaller spots, *b*, *c*, and *d*. A number of small spots are scattered irregularly over the intermediate space. *a* and *c* have very dark umbræ. | | | | | | | |
| 1884. d | | | | | ° | ° | ° |
| Dec. 20·211 | 13 | 225 | 36 | 640 | 59·7 | + 7·7 | −79·4 |
| 21·508 | 108 | 730 | 143 | 928 | 56·0 | + 9·2 | −66·0 |
| 22·489 | 202 | 1318 | 171 | 1152 | 55·0 | + 8·5 | −54·1 |
| 23 | No photograph. | | (150 | 1017 | 55·6 | + 8·4 | −41·8) |
| 24·273 | 224 | 1499 | 130 | 882 | 56·2 | + 8·2 | −29·4 |
| 25·158 | 244 | 1930 | 132 | 1042 | 55·7 | + 8·2 | −18·2 |
| 26·265 | 221 | 1605 | 113 | 824 | 56·3 | + 8·5 | − 3·0 |
| 27·209 | 186 | 1631 | 96 | 847 | 56·2 | + 8·7 | + 9·3 |
| 28·180 | 236 | 1304 | 133 | 727 | 56·9 | + 8·9 | +22·8 |
| 29·218 | 142 | 1002 | 91 | 644 | 56·6 | + 9·0 | +36·2 |
| 30·219 | 89 | 693 | 71 | 554 | 56·9 | + 9·4 | +49·7 |
| 31·262 | 44 | 417 | 53 | 481 | 56·7 | + 9·1 | +63·2 |
| 1885. | | | | | | | |
| Jan. 1·240 | 13 | 168 | 31 | 398 | 57·9 | + 9·4 | +77·2 |
| Means ... | ... | ... | 104 | 780 | 56·59 | + 8·71 | ... |
| **Group 1562.** Two small spots. | | | | | | | |
| 1884. Dec. 25·158 | 4 | 48 | 2 | 25 | 89·4 | −13·4 | +15·5 |
| Means ... | ... | ... | 2 | 25 | 89·4 | −13·4 | ... |
| **Group 1563.** A regular spot, *a*. A small spot, *b*, is seen preceding it on December 26 and 27, and another, *c*, on December 29 and 30. A fourth spot, *d*, is seen on December 29. | | | | | | | |
| Dec. 25·158 | 7 | 54 | 17 | 134 | 355·8 | + 1·5 | −78·1 |
| 26·265 | 14 | 123 | 16 | 140 | 355·7 | + 1·7 | −63·6 |
| 27·209 | 9 | 144 | 8 | 117 | 355·6 | + 1·5 | −51·3 |
| 28·180 | 17 | 194 | 11 | 126 | 355·2 | + 1·5 | −38·9 |
| 29·218 | 33 | 211 | 18 | 118 | 355·7 | + 1·6 | −24·7 |
| 30·219 | 19 | 206 | 10 | 107 | 355·8 | + 1·8 | −11·4 |
| 31·262 | 19 | 190 | 9 | 95 | 356·0 | + 1·2 | + 2·5 |
| 1885. | | | | | | | |
| Jan. 1·240 | 23 | 199 | 12 | 103 | 356·1 | + 1·7 | +15·4 |
| 2·282 | 30 | 158 | 17 | 92 | 356·2 | + 1·5 | +29·3 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1563—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Jan. 3·239 | 27 | 134 | 18 | 90 | 356·0 | + 1·7 | +41·7 |
| 4·245 | 17 | 104 | 15 | 94 | 356·7 | + 1·9 | +55·7 |
| 5·175 | 12 | 50 | 16 | 67 | 356·8 | + 2·0 | +68·0 |
| Means ... | ... | ... | 14 | 107 | 355·97 | + 1·63 | ... |
| **Group 1564.** A small faint spot on December 27 and 28, two small faint spots on December 29. Neither is seen on December 30. On December 31 the group consists of three small spots, two of which are measured together. Only one spot remains on January 1. | | | | | | | |
| 1884. | | | | | | | |
| Dec. 27·209 | 0 | 35 | 0 | 23 | 8·1 | − 9·0 | −38·8 |
| 28·180 | 0 | 14 | 0 | 8 | 8·5 | − 8·7 | −25·6 |
| 29·218 | 0 | 13 | 0 | 8 | 5·5 | − 9·4 | −14·9 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1564—*continued.*** | | | | | | | |
| 1884. d | ' | | | | ° | ° | ° |
| Dec. 30·219 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 31·262 | 9 | 127 | 5 | 67 | 8·9 | − 9·8 | +15·4 |
| 1885. | | | | | | | |
| Jan. 1·240 | 0 | 17 | 0 | 10 | 11·2 | −10·7 | +30·5 |
| Means ... | ... | ... | 1 | 19 | 8·44 | − 9·52 | ... |
| **Group 1565.** A small regular spot. | | | | | | | |
| 1884. | | | | | | | |
| Dec. 30·219 | 5 | 30 | 6 | 36 | 302·0 | − 2·8 | −65·2 |
| Means ... | ... | ... | 6 | 36 | 302·0 | − 2·8 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1566.

Two small spots, *a* and *b*; *a* moves forward and increases in size, and has broken up into several small spots by January 4, which are, however, still measured together. *b* has disappeared by January 4, but several other small spots have appeared near its place. The entire group forms a long straight stream on January 5, of which only the first and last spots remain on January 6, and only the first spot on January 7.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. a | | | | | ° | ° | ° |
| Jan. 1·240 | 0 | 44 | 0 | 42 | 282·2 | −13·5 | −58·5 |
| 2·282 | 21 | 76 | 15 | 54 | 283·2 | −13·6 | −43·7 |
| 3·239 | 41 | 142 | 23 | 82 | 285·4 | −12·7 | −28·9 |
| 4·245 | 29 | 142 | 16 | 76 | 285·8 | −13·2 | −15·2 |
| 5·175 | 15 | 184 | 8 | 93 | 285·0 | −12·7 | − 3·8 |
| 6·469 | 5 | 44 | 3 | 23 | 286·9 | −12·8 | +15·2 |
| 7·455 | 0 | 34 | 0 | 20 | 290·6 | −12·7 | +31·8 |
| 8·450 | 0 | 29 | 0 | 21 | 291·5 | −13·1 | +45·7 |
| 9·517 | 0 | 12 | 0 | 12 | 292·6 | −12·6 | +60·9 |
| Means ... | ... | ... | 7 | 47 | 287·02 | −12·99 | ... |

### Group 1567.

A small faint spot, *a*, on January 1 and 2. Five other spots measured in two clusters are seen near it on January 3. Of these all but one, *b*, has disappeared by January 4, *a* has disappeared by January 7 and *b* by January 9. A third small spot, *c*, is seen on January 9 and 10.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 1·240 | 0 | 7 | 0 | 9 | 273·2 | +11·4 | −67·5 |
| 2·282 | 0 | 18 | 0 | 16 | 273·8 | +11·7 | −53·1 |
| 3·239 | 37 | 117 | 24 | 79 | 274·1 | +12·2 | −40·2 |
| 4·245 | 18 | 175 | 10 | 102 | 275·4 | +12·2 | −25·6 |
| 5·175 | 13 | 180 | 7 | 96 | 276·2 | +12·3 | −12·6 |
| 6·469 | 0 | 83 | 0 | 44 | 275·8 | +12·3 | + 4·1 |
| 7·455 | 0 | 35 | 0 | 19 | 274·2 | +12·6 | +15·4 |
| 8·450 | 0 | 31 | 0 | 18 | 274·3 | +12·4 | +28·5 |
| 9·517 | 0 | 24 | 0 | 18 | 277·5 | +12·6 | +45·8 |
| 10·290 | 4 | 40 | 4 | 38 | 277·1 | +12·7 | +55·6 |
| Means ... | ... | ... | 5 | 44 | 275·16 | +12·24 | ... |

### Group 1568.

Several very small faint spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·282 | 0 | 35 | 0 | 19 | 308·5 | − 3·3 | −18·4 |
| Means ... | ... | ... | 0 | 19 | 308·5 | − 3·3 | ... |

### Group 1569.

A small spot, *a*, followed by two or three small faint spots. The latter undergo several changes and are usually measured together as one.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 2·282 | 7 | 52 | 5 | 32 | 291·4 | − 4·0 | −35·5 |
| 3·239 | 14 | 96 | 7 | 52 | 291·8 | − 4·1 | −22·5 |
| 4·245 | 19 | 65 | 9 | 34 | 292·3 | − 4·6 | − 8·7 |
| 5·175 | 0 | 111 | 0 | 56 | 292·7 | − 4·0 | + 3·9 |
| Means ... | ... | ... | 5 | 44 | 292·05 | − 4·18 | ... |

### Group 1570.

Three small spots *a*, *b*, and *c*; *a* has disappeared by January 15, *b* by January 13.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. a | | | | | ° | ° | ° |
| Jan. 12·499 | 14 | 99 | 8 | 55 | 172·2 | −18·9 | −20·1 |
| 13·470 | 46 | 167 | 24 | 87 | 171·8 | −18·6 | − 7·8 |
| 14·218 | 30 | 161 | 15 | 84 | 171·5 | −18·8 | + 1·8 |
| 15·236 | 15 | 41 | 8 | 22 | 169·6 | −18·6 | +13·3 |
| 16·292 | 9 | 40 | 5 | 23 | 170·3 | −18·7 | +27·8 |
| 17·217 | 4 | 12 | 3 | 8 | 170·1 | −18·7 | +39·9 |
| Means ... | ... | ... | 11 | 47 | 170·92 | −18·72 | ... |

### Group 1571.

Three small spots, *a*, *b*, and *c*, on January 15; *b* has disappeared by January 17, *c* by 18. The group forms a compact cluster on January 15, but *a* and *c* have moved in latitude by January 16, so that the three spots then follow each other on nearly the same parallel of latitude.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 15·236 | 21 | 63 | 11 | 33 | 146·7 | −20·2 | − 9·6 |
| 16·292 | 8 | 64 | 4 | 34 | 148·0 | −19·9 | + 5·5 |
| 17·217 | 7 | 42 | 4 | 23 | 148·0 | −19·7 | +17·8 |
| 18·212 | 1 | 6 | 1 | 4 | 150·2 | −18·9 | +33·1 |
| Means ... | ... | ... | 5 | 24 | 148·23 | −19·68 | ... |

### Group 1572.

Two small spots, *a* and *b*, on January 16. These increase in size, and other spots appear near them on succeeding days; *b* has broken up into a number of small spots by January 20, and *a* has divided to form two regular spots, *c* and *d*, by January 22. The smaller following spots have all disappeared by January 24, leaving *c* and *d* alone.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 16·292 | 0 | 41 | 0 | 46 | 79·8 | −21·7 | −62·7 |
| 17·217 | 15 | 208 | 12 | 165 | 80·2 | −21·6 | −50·0 |
| 18·212 | 39 | 417 | 25 | 271 | 79·6 | −21·5 | −37·5 |
| 19 | No photograph. | | (62 | 372 | 79·8 | −21·4 | −24·3) |
| 20·186 | 184 | 894 | 98 | 473 | 80·0 | −21·3 | −11·1 |
| 21·183 | 119 | 921 | 61 | 479 | 79·2 | −21·2 | + 1·1 |
| 22·214 | 93 | 514 | 50 | 278 | 79·3 | −21·1 | +14·8 |
| 23·366 | 26 | 332 | 15 | 201 | 80·2 | −20·8 | +30·9 |
| 24·225 | 41 | 216 | 29 | 151 | 80·9 | −20·3 | +43·0 |
| 25·542 | 17 | 121 | 17 | 121 | 80·7 | −20·2 | +60·2 |
| 26·246 | 12 | 60 | 16 | 85 | 81·6 | −19·8 | +70·2 |
| Means ... | ... | ... | 35 | 240 | 80·12 | −20·99 | ... |

### Group 1573.

Two small faint spots on January 18. The group has greatly increased in size by January 20, and consists of two large spots, *a* and *b*, and one small one. *a* diminishes on the following days, throwing off small spots in the direction of *b*; these spots combine to form a large spot, *c*, on January 23.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 18·212 | 0 | 53 | 0 | 27 | 111·1 | − 6·0 | − 6·0 |
| 19 | No photograph. | | (40 | 282 | 110·8 | − 6·2 | + 6·7) |
| 20·186 | 148 | 1014 | 79 | 537 | 110·4 | − 6·4 | +19·3 |
| 21·183 | 169 | 940 | 99 | 549 | 109·2 | − 6·2 | +31·1 |
| 22·214 | 160 | 948 | 113 | 664 | 108·9 | − 5·6 | +44·4 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1573—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Jan. 23·366 | 141 | 916 | 139 | 887 | 108·4 | − 5·1 | +59·1 |
| 24·225 | 125 | 603 | 177 | 872 | 108·0 | − 4·8 | +70·1 |
| 25·542 | 0 | 49 | 0 | 300 | 106·1 | − 3·2 | +85·6 |
| Means ... | ... | ... | 81 | 515 | 109·11 | − 5·44 | ... |

### Group 1574.

A small spot, *a*, on January 20. Two others, *b* and *c*, have appeared near it by January 21; *a* has disappeared by January 22. A fourth spot, *d*, is seen on January 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 20·186 | 7 | 38 | 4 | 21 | 72·5 | + 8·1 | −18·6 |
| 21·183 | 0 | 62 | 0 | 32 | 72·8 | + 7·6 | − 5·3 |
| 22·214 | 4 | 48 | 2 | 24 | 70·9 | + 7·3 | + 6·4 |
| 23·366 | 9 | 62 | 5 | 34 | 70·4 | + 7·2 | +21·1 |
| 24·225 | 0 | 36 | 0 | 22 | 70·7 | + 7·3 | +32·8 |
| 25·542 | 0 | 33 | 0 | 27 | 70·8 | + 8·0 | +50·3 |
| 26·246 | 0 | 10 | 0 | 12 | 73·7 | + 7·5 | +62·3 |
| Means ... | ... | ... | 2 | 25 | 71·69 | + 7·57 | ... |

### Group 1575.

Two small spots on January 20. The group has increased in size by January 21, on which date it consists of a regular spot, *a*, followed at a little distance by a large irregular group; this group, which consists of a number of small spots, changes rapidly from day to day. Two spots combine to form *b* on January 24; *a* has disappeared by January 27, and *b* has divided into two spots by January 28.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 20·186 | 10 | 72 | 16 | 113 | 18·8 | −10·0 | −72·3 |
| 21·183 | 20 | 244 | 18 | 223 | 20·8 | − 9·6 | −57·3 |
| 22·214 | 59 | 347 | 39 | 235 | 22·3 | − 8·7 | −42·2 |
| 23·366 | 48 | 545 | 27 | 309 | 22·0 | − 8·1 | −27·3 |
| 24·225 | 109 | 399 | 57 | 207 | 22·1 | − 8·1 | −15·8 |
| 25·542 | 80 | 368 | 41 | 187 | 23·1 | − 8·3 | + 2·6 |
| 26·246 | 64 | 438 | 33 | 222 | 23·3 | − 8·9 | +11·9 |
| 27·473 | 34 | 215 | 20 | 121 | 22·9 | − 9·0 | +27·6 |
| 28·220 | 24 | 199 | 15 | 126 | 23·3 | − 8·7 | +37·9 |
| 29·148 | 18 | 102 | 14 | 79 | 23·0 | − 8·1 | +49·9 |
| Means ... | ... | ... | 28 | 182 | 22·16 | − 8·75 | ... |

### Group 1576.

Two small spots, *a* and *b*, on January 21. Both have moved forward in longitude, and *b* has also shown a motion in latitude by January 22.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 21·183 | 5 | 56 | 3 | 30 | 90·1 | +10·6 | +12·0 |
| 22·214 | 5 | 24 | 3 | 15 | 91·1 | +11·3 | +26·6 |
| Means ... | ... | ... | 3 | 23 | 90·60 | +10·95 | ... |

### Group 1577.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Jan. 22·214 | 1 | 9 | 1 | 10 | 358·9 | + 0·9 | −65·6 |
| Means ... | ... | ... | 1 | 10 | 358·9 | + 0·9 | ... |

### Group 1578.

A regular spot, *a*. Two small spots are seen near it on January 28.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 24·225 | 7 | 34 | 13 | 65 | 324·9 | +11·4 | −73·0 |
| 25·542 | 7 | 58 | 7 | 55 | 324·7 | +11·6 | −55·8 |
| 26·246 | 17 | 121 | 13 | 94 | 324·5 | +11·4 | −46·9 |
| 27·473 | 12 | 127 | 7 | 77 | 324·7 | +11·7 | −30·6 |
| 28·220 | 31 | 142 | 17 | 79 | 324·3 | +11·7 | −21·1 |
| 29·148 | 26 | 101 | 14 | 54 | 324·6 | +11·7 | − 8·5 |
| 30·552 | 12 | 82 | 6 | 44 | 324·8 | +12·0 | +10·2 |
| 31·187 | 13 | 87 | 7 | 49 | 325·1 | +11·7 | +18·9 |
| Feb. 1·387 | 0 | 36 | 0 | 23 | 325·4 | +11·9 | +34·9 |
| Means ... | ... | ... | 9 | 60 | 324·78 | +11·68 | ... |

### Group 1579.

A regular spot, *a*, followed by a number of scattered small spots. The group appears suddenly near the centre of the sun. The following spots gradually disappear, and *a* alone remains on January 29.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 25·542 | 36 | 212 | 19 | 110 | 11·5 | + 4·5 | − 9·0 |
| 26·246 | 20 | 182 | 10 | 92 | 13·8 | + 4·7 | + 2·4 |
| 27·473 | 14 | 208 | 8 | 110 | 12·9 | + 4·8 | +17·6 |
| 28·220 | 18 | 138 | 11 | 80 | 14·4 | + 5·1 | +29·0 |
| 29·148 | 11 | 70 | 8 | 50 | 16·7 | + 5·8 | +43·6 |
| 30·552 | 0 | 12 | 0 | 13 | 16·3 | + 5·7 | +61·7 |
| 31·187 | 0 | 9 | 0 | 14 | 16·7 | + 5·9 | +70·5 |
| Means ... | ... | ... | 8 | 67 | 14·61 | + 5·21 | ... |

### Group 1580.

A large regular spot, *a*, followed by a number of small spots. *a* has broken up into three parts by February 5. They are, however, still measured together as one on that day. On February 6 only two of the three parts remain, and these are measured separately. The small spots following *a* have all disappeared by February 2.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Jan. 25·542 | 7 | 82 | 21 | 226 | 300·1 | −13·1 | −80·4 |
| 26·246 | 52 | 282 | 78 | 426 | 299·8 | −13·7 | −71·6 |
| 27·473 | 96 | 515 | 82 | 438 | 300·6 | −13·7 | −54·7 |
| 28·220 | 123 | 645 | 85 | 449 | 301·1 | −13·8 | −44·3 |
| 29·148 | 170 | 898 | 102 | 541 | 300·9 | −14·0 | −32·2 |
| 30·552 | 125 | 857 | 65 | 447 | 301·4 | −14·0 | −13·2 |
| 31·187 | 236 | 987 | 120 | 500 | 301·2 | −13·8 | − 5·0 |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1580—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 1·387 | 220 | 1015 | 113 | 522 | 301·7 | −13·7 | +11·2 |
| 2·457 | 111 | 823 | 62 | 458 | 302·3 | −13·3 | +25·8 |
| 3·220 | 104 | 685 | 64 | 422 | 302·2 | −13·5 | +35·8 |
| 4·447 | 54 | 487 | 44 | 403 | 303·5 | −13·3 | +53·2 |
| 5·500 | 38 | 296 | 47 | 365 | 303·2 | −13·4 | +66·9 |
| 6·173 | 23 | 125 | 51 | 281 | 305·6 | −12·8 | +78·2 |
| Means ... | ... | ... | 72 | 421 | 301·82 | −13·55 | ... |
| **Group 1581.** Two small spots. A third is seen on January 28. | | | | | | | |
| Jan. 27·473 | 0 | 59 | 0 | 60 | 54·2 | +10·0 | +58·9 |
| 28·220 | 0 | 51 | 0 | 89 | 57·6 | + 9·2 | +72·2 |
| Means ... | ... | ... | 0 | 75 | 55·90 | + 9·60 | ... |
| **Group 1582.** Two small spots, *a* and *b*. A third spot is seen on January 27, and a fourth on January 29. | | | | | | | |
| Jan. 27·473 | 8 | 68 | 5 | 43 | 32·9 | − 1·4 | +37·6 |
| 28·220 | 21 | 70 | 16 | 52 | 33·5 | − 1·5 | +48·1 |
| 29·148 | 11 | 76 | 12 | 85 | 36·3 | − 1·4 | +63·2 |
| Means ... | ... | ... | 11 | 60 | 34·23 | − 1·43 | ... |
| **Group 1583.** A small spot. | | | | | | | |
| Jan. 29·148 | 7 | 16 | 3 | 8 | 346·7 | − 2·7 | +13·6 |
| Means ... | ... | ... | 3 | 8 | 346·7 | − 2·7 | ... |
| **Group 1584.** *Several small spots irregularly distributed. They are measured together on January 29, in two clusters on January 28 and 30, and in three on January 31. On January 29 a small spot is seen following the group at a little distance.* | | | | | | | |
| Jan. 28·220 | 7 | 151 | 6 | 136 | 288·8 | −12·8 | −56·6 |
| 29·148 | 4 | 82 | 3 | 60 | 286·1 | −13·2 | −47·0 |
| 30·552 | 0 | 51 | 0 | 28 | 290·5 | −13·6 | −24·1 |
| 31·187 | 2 | 53 | 1 | 28 | 289·4 | −13·6 | −16·8 |
| Means ... | ... | ... | 3 | 63 | 288·70 | −13·30 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1585.** A small faint spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Jan. 30·552 | 0 | 16 | 0 | 13 | 9·0 | −12·1 | +54·4 |
| 31·187 | 3 | 18 | 3 | 20 | 9·4 | −12·7 | +63·2 |
| Feb. 1·387 | 0 | 9 | 0 | 21 | 9·8 | −12·8 | +79·3 |
| Means ... | ... | ... | 1 | 18 | 9·40 | −12·53 | ... |
| **Group 1586.** A regular spot. A very small spot is seen near it on February 6 and another on February 9. | | | | | | | |
| Jan. 30·552 | 16 | 59 | 23 | 86 | 245·0 | + 0·7 | −69·6 |
| 31·187 | 50 | 190 | 53 | 201 | 244·7 | + 0·8 | −61·5 |
| Feb. 1·387 | 76 | 263 | 55 | 188 | 245·4 | + 0·9 | −45·1 |
| 2·457 | 67 | 333 | 39 | 196 | 245·7 | + 1·3 | −30·8 |
| 3·220 | 58 | 369 | 31 | 197 | 246·4 | + 1·2 | −20·0 |
| 4·447 | 62 | 392 | 31 | 199 | 247·1 | + 1·6 | − 3·2 |
| 5·500 | 58 | 320 | 30 | 164 | 247·1 | + 1·7 | +10·8 |
| 6·173 | 58 | 312 | 31 | 168 | 247·6 | + 2·1 | +20·2 |
| 7·499 | 33 | 232 | 21 | 149 | 248·0 | + 1·9 | +37·9 |
| 8·153 | 28 | 230 | 21 | 172 | 248·3 | + 2·3 | +46·8 |
| 9·480 | 13 | 130 | 15 | 154 | 248·6 | + 2·4 | +64·5 |
| 10·509 | 7 | 50 | 16 | 116 | 247·5 | + 2·3 | +77·1 |
| Means ... | ... | ... | 31 | 166 | 246·78 | + 1·60 | ... |
| **Group 1587.** A number of small spots irregularly scattered over a considerable area. The group becomes somewhat more scattered, and the spots decrease in area until they have passed the central meridian on February 7. The following part of the group then rapidly increases in size, and becomes more compact, the individual spots coalescing with one another until on February 11 the group consists of three large spots so close together as almost to form a single very large spot. These have broken up by February 13. The preceding part of the group has disappeared by February 11. | | | | | | | |
| Feb. 1·387 | 25 | 169 | 32 | 219 | 222·5 | −14·7 | −68·0 |
| 2·457 | 39 | 294 | 32 | 248 | 222·3 | −14·7 | −54·2 |
| 3·220 | 28 | 313 | 19 | 216 | 222·5 | −14·2 | −43·9 |
| 4·447 | 30 | 335 | 18 | 194 | 221·0 | −15·4 | −29·3 |
| 5·500 | 68 | 245 | 37 | 130 | 219·9 | −16·0 | −16·4 |
| 6·173 | 49 | 243 | 26 | 124 | 220·4 | −16·1 | − 7·0 |
| 7·499 | 85 | 646 | 44 | 335 | 216·2 | −18·6 | + 6·1 |
| 8·153 | 176 | 1142 | 94 | 604 | 215·2 | −18·6 | +13·7 |
| 9·480 | 214 | 1019 | 127 | 605 | 214·9 | −18·5 | +30·8 |
| 10·509 | 176 | 888 | 125 | 619 | 213·8 | −18·7 | +43·4 |
| 11·191 | 91 | 809 | 75 | 661 | 213·7 | −18·9 | +52·3 |
| 12·545 | 21 | 200 | 31 | 291 | 214·6 | −19·0 | +71·1 |
| 13·288 | 0 | 57 | 0 | 200 | 217·6 | −18·6 | +83·7 |
| Means ... | ... | ... | 51 | 342 | 218·05 | −17·08 | ... |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1588.** Several small spots arranged in two compact clusters. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 2·457 | 0 | 27 | 0 | 15 | 263·9 | −23·9 | −12·6 |
| 3·220 | 13 | 61 | 7 | 32 | 262·7 | −23·5 | − 3·7 |
| 4·447 | 3 | 64 | 2 | 34 | 262·4 | −23·2 | +12·1 |
| **Means** ... | ... | ... | 3 | 27 | 263·00 | −23·53 | ... |
| **Group 1589.** A large irregular spot surrounded by several small spots. It appears suddenly on the disk, not at the limb. The large spot has broken up by February 5, and the group then consists of a large regular spot, *a*, closely followed by a number of small spots in a long stream. The following spots gradually diminish in size and number, and on February 11 *a* remains alone. | | | | | | | |
| Feb. 3·220 | 91 | 477 | 51 | 265 | 239·9 | − 4·6 | −26·5 |
| 4·447 | 138 | 946 | 70 | 480 | 240·9 | − 4·7 | − 9·4 |
| 5·500 | 171 | 964 | 86 | 484 | 240·8 | − 4·7 | + 4·5 |
| 6·173 | 183 | 1017 | 95 | 526 | 242·4 | − 4·6 | +15·0 |
| 7·499 | 127 | 854 | 74 | 508 | 242·5 | − 4·7 | +32·4 |
| 8·153 | 104 | 706 | 70 | 469 | 242·5 | − 4·3 | +41·0 |
| 9·480 | 54 | 364 | 53 | 355 | 243·4 | − 4·2 | +59·3 |
| 10·509 | 28 | 239 | 49 | 399 | 243·3 | − 3·9 | +72·9 |
| 11·191 | 10 | 127 | 39 | 487 | 244·2 | − 3·7 | +82·8 |
| **Means** ... | ... | ... | 65 | 441 | 242·21 | − 4·38 | ... |
| **Group 1590.** Two small spots on February 7 and 8, but the following spot on February 8 differs considerably in longitude and latitude from the following spot on February 7. Both spots have broken up by February 9, each forming a compact cluster of small spots which are measured together. | | | | | | | |
| Feb. 7·499 | 10 | 38 | 6 | 21 | 229·2 | −21·0 | +19·1 |
| 8·153 | 12 | 96 | 7 | 56 | 229·4 | −20·1 | +27·9 |
| 9·480 | 8 | 140 | 6 | 101 | 229·6 | −20·9 | +45·5 |
| 10·509 | 7 | 44 | 6 | 42 | 228·1 | −20·7 | +57·7 |
| **Means** ... | ... | ... | 6 | 55 | 229·08 | −20·68 | ... |
| **Group 1591.** Three very small spots in a compact cluster on February 7. These have disappeared by February 8, and the three small spots, *a*, *b*, and *c*, are seen. *a* has disappeared by February 9, and another spot, *d*, has appeared in the place of the original cluster. *c* has disappeared by February 10. | | | | | | | |
| Feb. 7·499 | 4 | 16 | 2 | 8 | 185·8 | +10·1 | −24·3 |
| 8·153 | 7 | 114 | 4 | 63 | 189·4 | +13·3 | −12·1 |
| 9·480 | 6 | 98 | 3 | 51 | 187·6 | +10·4 | + 3·5 |
| 10·509 | 0 | 63 | 0 | 35 | 187·6 | + 9·7 | +17·2 |
| **Means** ... | ... | ... | 2 | 39 | 187·60 | +10·88 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1592.** A large irregular spot, *a*, closely followed by a large regular spot, *b*. *a* has broken up by February 13, forming two spots, *c*, a regular spot, and *d*, an irregular spot with several umbræ. *d* breaks up yet further, and diminishes in size on the succeeding days, but remaining a compact cluster is measured as a single spot. It has disappeared by February 17. On February 16 and the succeeding days, the group is almost entirely made up of the two large regular spots, *b* and *c*. Two or three very small spots are seen in the neighbourhood of the large spots on February 10, 15, and 19. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 8·153 | 0 | 65 | 0 | 479 | 115·0 | − 4·4 | −86·5 |
| 9·480 | 27 | 325 | 35 | 424 | 116·3 | − 5·6 | −67·8 |
| 10·509 | 87 | 471 | 75 | 406 | 115·6 | − 6·1 | −54·8 |
| 11·191 | 63 | 652 | 45 | 461 | 116·0 | − 6·2 | −45·4 |
| 12·545 | 145 | 856 | 82 | 480 | 116·7 | − 6·0 | −26·9 |
| 13·288 | 144 | 771 | 76 | 406 | 116·6 | − 6·2 | −17·3 |
| 14·330 | 119 | 837 | 59 | 419 | 116·5 | − 6·3 | − 3·6 |
| 15·158 | 74 | 587 | 37 | 295 | 116·6 | − 6·4 | + 7·3 |
| 16·151 | 70 | 520 | 38 | 278 | 116·5 | − 6·4 | +20·3 |
| 17·371 | 76 | 399 | 47 | 249 | 117·1 | − 5·9 | +37·1 |
| 18·490 | 20 | 240 | 15 | 189 | 116·7 | − 6·3 | +51·4 |
| 19·146 | 31 | 179 | 31 | 179 | 117·3 | − 6·2 | +60·6 |
| 20·216 | 11 | 80 | 18 | 133 | 115·9 | − 6·3 | +73·3 |
| **Means** ... | ... | ... | 43 | 338 | 116·37 | − 6·02 | ... |
| **Group 1593.** A large regular spot, *a*. A small spot is seen near it on February 12 and another on February 14. | | | | | | | |
| Feb. 10·509 | 4 | 53 | 13 | 174 | 89·8 | + 3·9 | −80·6 |
| 11·191 | 14 | 146 | 24 | 248 | 89·1 | + 3·8 | −72·3 |
| 12·545 | 71 | 391 | 62 | 341 | 89·6 | + 4·0 | −54·0 |
| 13·288 | 77 | 460 | 55 | 325 | 90·5 | + 3·6 | −43·4 |
| 14·330 | 65 | 430 | 38 | 249 | 91·2 | + 3·2 | −28·9 |
| 15·158 | 82 | 505 | 44 | 269 | 92·1 | + 3·5 | −17·2 |
| 16·151 | 71 | 515 | 36 | 262 | 92·4 | + 3·3 | − 3·8 |
| 17·371 | 96 | 533 | 50 | 279 | 93·1 | + 3·7 | +13·1 |
| 18·490 | 51 | 372 | 29 | 203 | 93·1 | + 3·7 | +27·8 |
| 19·146 | 73 | 383 | 46 | 243 | 93·5 | + 3·8 | +36·8 |
| 20·216 | 60 | 279 | 48 | 221 | 92·7 | + 3·8 | +50·1 |
| 21·433 | 30 | 139 | 39 | 184 | 93·7 | + 3·9 | +67·0 |
| 22·203 | 15 | 152 | 37 | 374 | 94·0 | + 3·9 | +77·6 |
| **Means** ... | ... | ... | 40 | 259 | 91·91 | + 3·70 | ... |
| **Group 1594.** This group undergoes frequent and striking changes. On February 11 it is an ill-defined spot. On February 12 two close clusters of small spots. On February 13 three spots. On February 14 other small spots are also seen. On February 15 two large clusters of spots. On February 16 a long stream of spots following each other so closely as almost to form a single spot. The preceding spot, *a*, is the largest and best defined. By February 17 the stream has begun to break up, the last spot, *b*, has become clearly isolated by February 18, the centre spots fade away on the succeeding days, and by February 20 only *a* and *b* remain. | | | | | | | |
| Feb. 11·191 | 2 | 49 | 4 | 91 | 85·6 | −20·6 | −75·8 |
| 12·545 | 18 | 73 | 18 | 71 | 84·3 | −20·9 | −59·3 |
| 13·288 | 14 | 97 | 11 | 75 | 85·7 | −21·7 | −48·2 |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1594—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 14·330 | 19 | 115 | 12 | 70 | 88·8 | −21·8 | −31·3 |
| 15·158 | 60 | 507 | 34 | 282 | 87·9 | −21·9 | −21·4 |
| 16·151 | 108 | 1005 | 57 | 528 | 87·0 | −21·8 | − 9·2 |
| 17·371 | 168 | 997 | 88 | 522 | 88·0 | −21·5 | + 8·0 |
| 18·490 | 109 | 817 | 60 | 454 | 87·6 | −21·7 | +22·3 |
| 19·146 | 66 | 592 | 40 | 356 | 88·0 | −21·5 | +31·3 |
| 20·216 | 56 | 358 | 40 | 261 | 88·4 | −21·6 | +45·8 |
| 21·433 | 27 | 203 | 29 | 225 | 90·6 | −21·4 | +63·9 |
| 22·203 | 5 | 107 | 10 | 203 | 92·7 | −21·6 | +76·3 |
| Means ... | ... | ... | 34 | 262 | 87·88 | −21·50 | ... |
| **Group 1595.** A stream of small spots. The spots change in number and area from day to day. | | | | | | | |
| Feb. 12·545 | 4 | 45 | 3 | 34 | 93·2 | −15·8 | −50·4 |
| 13·288 | 3 | 66 | 2 | 42 | 95·3 | −16·1 | −38·6 |
| 14·330 | 10 | 120 | 6 | 67 | 95·3 | −16·2 | −24·8 |
| 15·158 | 8 | 31 | 4 | 16 | 98·9 | −15·9 | −10·4 |
| 16·151 | 0 | 23 | 0 | 12 | 99·8 | −16·0 | + 3·6 |
| 17·371 | 0 | 13 | 0 | 7 | 99·8 | −15·7 | +19·8 |
| Means ... | ... | ... | 3 | 30 | 97·05 | −15·95 | ... |
| **Group 1596.** A regular spot, *a*, followed by a few small scattered spots. | | | | | | | |
| Feb. 12·545 | 6 | 57 | 9 | 85 | 74·6 | + 8·9 | −69·0 |
| 13·288 | 19 | 127 | 19 | 130 | 75·1 | + 8·3 | −58·8 |
| 14·330 | 20 | 177 | 15 | 129 | 76·0 | + 8·3 | −44·1 |
| 15·158 | 54 | 284 | 34 | 174 | 77·1 | + 8·4 | −32·2 |
| 16·151 | 51 | 306 | 28 | 168 | 78·1 | + 8·2 | −18·1 |
| 17·371 | 73 | 363 | 37 | 188 | 79·0 | + 8·8 | − 1·0 |
| 18·490 | 60 | 366 | 32 | 195 | 78·3 | + 9·0 | +13·0 |
| 19·146 | 39 | 367 | 22 | 207 | 79·2 | + 8·6 | +22·5 |
| 20·216 | 27 | 164 | 18 | 106 | 79·4 | + 8·2 | +36·8 |
| 21·433 | 20 | 69 | 18 | 60 | 80·7 | + 8·5 | +54·0 |
| 22·203 | 12 | 56 | 15 | 70 | 81·1 | + 8·4 | +64·7 |
| 23·511 | 0 | 36 | 0 | 120 | 79·4 | + 8·0 | +80·1 |
| Means .... | ... | ... | 21 | 136 | 78·17 | + 8·47 | ... |
| **Group 1597.** A small spot, *a*. Other small spots are seen near it on February 14 and 15, and form with it an irregular scattered group. | | | | | | | |
| Feb. 13·288 | 0 | 27 | 0 | 14 | 152·4 | −15·4 | +18·5 |
| 14·330 | 20 | 107 | 12 | 63 | 152·1 | −15·6 | +32·0 |
| 15·158 | 12 | 115 | 8 | 76 | 150·9 | −15·5 | +41·6 |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1597—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 16·151 | 16 | 133 | 14 | 120 | 152·7 | −15·4 | +56·5 |
| 17·371 | 3 | 22 | 6 | 38 | 154·5 | −14·8 | +74·5 |
| Means ... | ... | ... | 8 | 62 | 152·52 | −15·34 | ... |
| **Group 1598.** The group consists of two small spots on each day on which it is seen, but it is not clear that the spots are the same on each day. | | | | | | | |
| Feb. 13·288 | 0 | 7 | 0 | 5 | 84·7 | + 4·0 | −49·2 |
| 14·330 | 2 | 64 | 1 | 40 | 84·4 | + 5·6 | −35·7 |
| 15·158 | 3 | 54 | 2 | 31 | 83·3 | + 5·4 | −26·0 |
| Means ... | ... | ... | 1 | 25 | 84·13 | + 5·00 | ... |
| **Group 1599.** Two small spots, *a* and *b*. *b* has disappeared by February 17. | | | | | | | |
| Feb. 15·158 | 0 | 13 | 0 | 7 | 136·6 | −16·1 | +27·3 |
| 16·151 | 15 | 38 | 10 | 25 | 136·0 | −15·8 | +39·8 |
| 17·371 | 0 | 11 | 0 | 10 | 140·0 | −14·9 | +60·0 |
| Means ... | ... | ... | 3 | 14 | 137·53 | −15·60 | ... |
| **Group 1600.** Three very small spots. Two of these are measured together on February 15. One member of this pair has disappeared by February 16, and another spot has broken out. | | | | | | | |
| Feb. 15·158 | 0 | 9 | 0 | 12 | 39·9 | − 3·8 | −69·4 |
| 16·151 | 0 | 11 | 0 | 10 | 41·4 | − 2·9 | −54·8 |
| Means ... | ... | ... | 0 | 11 | 40·65 | − 3·35 | ... |
| **Group 1601.** A small regular spot, *a*, on February 16, followed by several very small spots. *a* increases in size on the succeeding days. The small spots which follow it undergo constant changes, and have all disappeared by February 22. | | | | | | | |
| Feb. 16·151 | 4 | 37 | 2 | 22 | 69·0 | −10·9 | −27·2 |
| 17·371 | 12 | 152 | 9 | 79 | 69·6 | −10·8 | −10·4 |
| 18·490 | 32 | 219 | 16 | 109 | 71·9 | − 9·6 | + 6·6 |
| 19·146 | 27 | 291 | 15 | 151 | 72·3 | −10·2 | +15·6 |
| 20·216 | 64 | 254 | 37 | 145 | 72·0 | −10·2 | +29·4 |
| 21·433 | 36 | 213 | 26 | 154 | 73·5 | − 9·7 | +46·8 |
| 22·203 | 28 | 143 | 26 | 132 | 74·4 | − 9·4 | +58·0 |
| 23·511 | 5 | 41 | 8 | 71 | 73·3 | − 9·5 | +74·0 |
| Means ... | ... | ... | 17 | 108 | 72·00 | −10·04 | ... |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1602.** A very small spot on February 16. A close pair of very small spots on February 17. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 16·151 | 0 | 3 | 0 | 3 | 33·6 | − 2·6 | −62·6 |
| 17·371 | 0 | 8 | 0 | 6 | 33·3 | − 3·2 | −46·7 |
| Means ... | ... | ... | 0 | 5 | 33·45 | − 2·90 | ... |
| **Group 1603.** A small spot. | | | | | | | |
| Feb. 18·490 | 0 | 12 | 0 | 8 | 100·3 | +10·8 | +35·0 |
| Means ... | ... | ... | 0 | 8 | 100·3 | +10·8 | ... |
| **Group 1604.** Two small spots, *a* and *b*, on February 19. Only *a* is seen on February 20. | | | | | | | |
| Feb. 19·146 | 3 | 57 | 2 | 47 | 107·7 | + 6·0 | +51·0 |
| 20·216 | 0 | 24 | 0 | 31 | 109·1 | + 5·0 | +66·5 |
| Means ... | ... | ... | 1 | 39 | 108·40 | + 5·50 | ... |
| **Group 1605.** A very small spot. | | | | | | | |
| Feb. 20·216 | 0 | 5 | 0 | 5 | 102·6 | −16·9 | +60·0 |
| Means ... | ... | ... | 0 | 5 | 102·6 | −16·9 | ... |
| **Group 1606.** A small spot on February 20; five very small spots on February 21; four small spots, three of which are measured together, on February 22. Two of these four spots, *a* and *b*, have greatly increased in size by February 23. A few very small spots, measured together, are seen between them on that day. The group undergoes yet further changes on the succeeding days. | | | | | | | |
| Feb. 20·216 | 7 | 24 | 4 | 12 | 27·2 | − 9·9 | −15·4 |
| 21·433 | 2 | 42 | 1 | 21 | 26·1 | −10·5 | − 0·6 |
| 22·203 | 40 | 188 | 20 | 96 | 25·7 | −10·1 | + 9·3 |
| 23·511 | 53 | 446 | 30 | 249 | 25·5 | −10·7 | +26·2 |
| 24·451 | 51 | 447 | 33 | 283 | 25·5 | −10·6 | +38·6 |
| 25·167 | 20 | 319 | 15 | 237 | 25·6 | −10·9 | +48·2 |
| 26·159 | 11 | 42 | 12 | 44 | 26·3 | −11·4 | +62·0 |
| Means ... | ... | ... | 16 | 135 | 25·99 | −10·59 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1607.** A spot, *a*, of very irregular shape on February 20, with two small spots near it. These latter have disappeared by February 21. *a* has broken up into a number of small spots by February 23. Only one spot remains on February 24. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 20·216 | 5 | 65 | 4 | 47 | 356·8 | − 0·2 | −45·8 |
| 21·433 | 29 | 195 | 17 | 113 | 357·2 | + 0·3 | −29·5 |
| 22·203 | 22 | 318 | 12 | 169 | 357·4 | − 0·5 | −19·0 |
| 23·511 | 9 | 93 | 4 | 48 | 358·3 | − 0·1 | − 1·0 |
| 24·451 | 2 | 10 | 1 | 5 | 357·3 | + 2·0 | +10·4 |
| Means ... | ... | ... | 8 | 76 | 357·40 | + 0·30 | ... |
| **Group 1608.** A single spot, *a*, on February 20. A second spot, *b*, has appeared by February 21, and has disappeared by February 25. | | | | | | | |
| Feb. 20·216 | 9 | 46 | 11 | 56 | 336·3 | − 9·6 | −66·3 |
| 21·433 | 14 | 57 | 11 | 43 | 337·0 | − 9·4 | −49·7 |
| 22·203 | 6 | 87 | 4 | 57 | 335·6 | − 9·5 | −40·8 |
| 23·511 | 10 | 34 | 5 | 19 | 336·8 | − 9·5 | −22·5 |
| 24·451 | 4 | 36 | 2 | 18 | 338·1 | − 9·2 | − 8·8 |
| 25·167 | 0 | 15 | 0 | 8 | 339·1 | − 9·5 | + 1·7 |
| Means ... | ... | ... | 6 | 34 | 337·15 | − 9·45 | ... |
| **Group 1609.** A small spot, *a*, on February 23. Two other small spots, *b* and *c*, have appeared by February 24. | | | | | | | |
| Feb. 23·511 | 0 | 20 | 0 | 23 | 294·4 | − 5·8 | −64·9 |
| 24·451 | 5 | 30 | 4 | 25 | 293·8 | − 6·0 | −53·1 |
| 25·167 | 4 | 24 | 3 | 16 | 295·3 | − 6·0 | −42·1 |
| 26·159 | 0 | 14 | 0 | 8 | 295·0 | − 6·1 | −29·3 |
| Means ... | ... | ... | 2 | 18 | 294·63 | − 5·98 | ... |
| **Group 1610.** A small spot. A second is seen near it on February 28. | | | | | | | |
| Feb. 24·451 | 0 | 15 | 0 | 23 | 278·8 | +16·5 | −68·1 |
| 25·167 | 0 | 20 | 0 | 21 | 278·8 | +15·9 | −58·6 |
| 26·159 | 2 | 20 | 2 | 16 | 279·4 | +16·0 | −44·9 |
| 27·207 | 0 | 5 | 0 | 3 | 279·2 | +15·9 | −31·3 |
| 28·216 | 3 | 22 | 2 | 13 | 276·8 | +16·1 | −20·4 |
| Means ... | ... | ... | 1 | 15 | 278·60 | +16·08 | ... |
| **Group 1611.** A small spot. | | | | | | | |
| Feb. 25·167 | 0 | 37 | 0 | 23 | 14·6 | − 0·2 | +37·2 |
| Means ... | ... | ... | 0 | 23 | 14·6 | − 0·2 | ... |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1612.** A large regular spot, *a*, on February 26. On February 27 several small spots are seen *s.f.* of *a*. These increase in number and size on the succeeding days, and approach *a*. On March 3 and the succeeding days some small spots are seen *n.p.* of *a*. *a* diminishes in size from day to day, but the preceding spots of the stream *s.f.* of *a* have coalesced by March 5 to form a large regular spot *b*. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Feb. 26·159 | 20 | 119 | 53 | 310 | 245·1 | − 2·9 | −79·2 |
| 27·207 | 50 | 260 | 64 | 327 | 243·8 | − 3·5 | −66·7 |
| 28·216 | 66 | 441 | 54 | 365 | 244·2 | − 4·2 | −53·0 |
| Mar. 1·442 | 61 | 559 | 39 | 352 | 243·9 | − 3·7 | −37·2 |
| 2·581 | 41 | 451 | 22 | 244 | 245·1 | − 3·6 | −20·9 |
| 3·161 | 86 | 580 | 43 | 300 | 244·8 | − 3·6 | −13·6 |
| 4·456 | 89 | 628 | 45 | 318 | 246·0 | − 3·6 | + 4·7 |
| 5·573 | 79 | 1047 | 43 | 554 | 246·4 | − 3·5 | +19·7 |
| 6·192 | 109 | 784 | 62 | 447 | 247·0 | − 3·6 | +28·5 |
| 7·493 | 70 | 499 | 51 | 361 | 248·0 | − 3·1 | +46·6 |
| 8·175 | 60 | 417 | 53 | 374 | 248·8 | − 3·0 | +56·4 |
| 9·482 | 13 | 122 | 22 | 202 | 247·8 | − 3·1 | +72·6 |
| Means ... | ... | ... | 46 | 346 | 245·91 | − 3·45 | ... |
| **Group 1613.** A small spot, *a*, on February 27. A second *b* is seen on February 28. *a* has disappeared by March 1. | | | | | | | |
| Feb. 27·207 | 0 | 8 | 1 | 21 | 234·4 | +16·3 | −76·1 |
| 28·216 | 9 | 50 | 10 | 58 | 236·1 | +15·3 | −61·1 |
| Mar. 1·442 | 13 | 77 | 10 | 60 | 236·2 | +15·7 | −44·9 |
| 2·581 | 6 | 81 | 4 | 51 | 236·9 | +15·6 | −29·1 |
| 3·161 | 9 | 29 | 5 | 17 | 237·4 | +15·3 | −21·0 |
| 4·456 | 0 | 26 | 0 | 14 | 238·8 | +15·6 | − 2·5 |
| Means ... | ... | ... | 5 | 37 | 236·63 | +15·63 | ... |
| **Group 1614.** A small spot on February 27. This has greatly increased in size by February 28, another spot of about the same area has appeared following it, and a small spot north of it. The group rapidly increases in size on the succeeding days, and forms two irregular streams of spots which together enclose an immense area. The leading spot, *a*, of the northern stream has become a regular spot by March 2, and increases in size on the following days. The preceding spots of the southern stream have coalesced to form a large irregular spot, *b*, by March 5. This spot has, however, divided into two spots by March 8, and re-combined by March 9. The two streams have become intermingled by March 6, and the entire group undergoes continual changes. | | | | | | | |
| Feb. 27·207 | 3 | 10 | 8 | 25 | 229·8 | −18·8 | −80·7 |
| 28·216 | 29 | 232 | 36 | 283 | 230·5 | −20·7 | −66·7 |
| Mar. 1·442 | 64 | 542 | 49 | 419 | 231·2 | −16·8 | −49·9 |
| 2·581 | 90 | 1015 | 55 | 626 | 231·5 | −16·5 | −34·5 |
| 3·161 | 180 | 1099 | 101 | 626 | 231·7 | −16·7 | −26·7 |
| 4·456 | 240 | 1608 | 125 | 831 | 232·2 | −16·8 | − 9·1 |
| 5·573 | 118 | 1259 | 61 | 646 | 232·8 | −17·0 | + 6·1 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1614—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Mar. 6·192 | 205 | 1465 | 109 | 766 | 232·3 | −21·3 | +13·8 |
| 7·493 | 179 | 1443 | 107 | 850 | 232·4 | −17·5 | +31·0 |
| 8·175 | 116 | 1623 | 77 | 1078 | 232·9 | −18·0 | +40·5 |
| 9·482 | 98 | 771 | 89 | 714 | 233·0 | −18·2 | +57·8 |
| 10·465 | 18 | 353 | 31 | 522 | 233·8 | −18·0 | +71·6 |
| 11·493 | 3 | 59 | 7 | 126 | 226·7 | −20·8 | +78·1 |
| Means ... | ... | ... | 66 | 578 | 231·60 | −18·24 | ... |
| **Group 1615.** A small spot. A second is seen near it on March 5, and is measured with it. | | | | | | | |
| Feb. 28·216 | 0 | 15 | 0 | 23 | 230·1 | +17·5 | −67·1 |
| Mar. 1·442 | 18 | 44 | 16 | 40 | 229·2 | +18·4 | −51·9 |
| 2·581 | 10 | 53 | 7 | 39 | 227·9 | +19·5 | −38·1 |
| 3·161 | 14 | 41 | 9 | 27 | 227·4 | +19·6 | −31·0 |
| 4·456 | 0 | 28 | 0 | 16 | 227·5 | +19·7 | −13·8 |
| 5·573 | 0 | 26 | 0 | 14 | 230·5 | +18·5 | + 3·8 |
| Means ... | ... | ... | 5 | 27 | 228·77 | +18·87 | ... |
| **Group 1616.** A small spot. | | | | | | | |
| Mar. 2·581 | 0 | 8 | 0 | 5 | 251·8 | +17·8 | −14·2 |
| Means ... | ... | ... | 0 | 5 | 251·8 | +17·8 | ... |
| **Group 1617.** A large spot, with a small companion appearing suddenly near the centre of the disk. The large spot has begun to break up by March 5, and other spots have appeared near it; but as the group is still very compact, it is measured together on that day. It has become more scattered by March 6, and diminishes in size after that day. | | | | | | | |
| Mar. 4·456 | 67 | 351 | 35 | 184 | 257·2 | −14·1 | +15·9 |
| 5·573 | 20 | 709 | 12 | 414 | 257·3 | −13·6 | +30·6 |
| 6·192 | 92 | 732 | 60 | 474 | 258·3 | −13·5 | +39·8 |
| 7·493 | 30 | 353 | 27 | 318 | 258·7 | −13·4 | +57·3 |
| 8·175 | 4 | 183 | 6 | 228 | 259·7 | −13·6 | +67·3 |
| Means ... | ... | ... | 28 | 324 | 258·24 | −13·64 | ... |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1618.** A large regular spot, *a*, with occasionally a small spot or two near it. The umbra of *a* appears abnormally large on March 6 and 8; this is probably due to the manner in which the photograph has been developed. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Mar. 4·456 | 6 | 103 | 16 | 283 | 159·3 | −15·9 | −82·0 |
| 5·573 | 28 | 199 | 34 | 269 | 159·7 | −16·0 | −67·0 |
| 6·192 | 62 | 232 | 60 | 225 | 158·8 | −15·9 | −59·7 |
| 7·493 | 58 | 381 | 39 | 256 | 159·4 | −15·7 | −42·0 |
| 8·175 | 142 | 419 | 85 | 250 | 159·5 | −15·8 | −32·9 |
| 9·482 | 60 | 456 | 31 | 237 | 159·6 | −15·3 | −15·6 |
| 10·465 | 78 | 522 | 39 | 262 | 159·6 | −15·2 | − 2·6 |
| 11·493 | 65 | 427 | 34 | 221 | 160·0 | −15·2 | +11·4 |
| 12·412 | 56 | 331 | 31 | 183 | 160·4 | −14·7 | +23·9 |
| 13·488 | 55 | 250 | 35 | 162 | 160·7 | −15·0 | +38·3 |
| 14·333 | 33 | 228 | 25 | 173 | 160·3 | −14·8 | +49·1 |
| 15·482 | 30 | 174 | 33 | 200 | 159·6 | −14·6 | +63·6 |
| 16·282 | 20 | 130 | 35 | 223 | 159·8 | −14·6 | +74·3 |
| Means ... | ... | .. | 38 | 226 | 159·75 | −15·28 | ... |
| **Group 1619.** A few very small faint spots following Group 1612. They form two clusters on March 5 and 7, but only one on March 6 and 9. No trace of the group can be detected on March 8. | | | | | | | |
| Mar. 5·573 | 0 | 31 | 0 | 16 | 235·1 | − 4·9 | + 8·4 |
| 6·192 | 0 | 8 | 0 | 4 | 237·8 | − 5·1 | +19·3 |
| 7·493 | 0 | 18 | 0 | 11 | 235·3 | − 5·5 | +33·9 |
| 8·175 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 9·482 | 0 | 18 | 0 | 17 | 234·5 | − 6·0 | +59·3 |
| Means ... | ... | ... | 0 | 10 | 235·68 | − 5·38 | ... |
| **Group 1620.** A small spot on March 6. Three small spots on March 7 and 8; two of these have disappeared by March 9. | | | | | | | |
| Mar. 6·192 | 2 | 14 | 1 | 10 | 176·4 | −18·3 | −42·1 |
| 7·493 | 9 | 43 | 5 | 25 | 175·2 | −19·1 | −26·2 |
| 8·175 | 2 | 26 | 1 | 14 | 174·4 | −19·0 | −18·0 |
| 9·482 | 7 | 22 | 4 | 11 | 171·7 | −19·1 | − 3·5 |
| 10·465 | 0 | 14 | 0 | 7 | 171·3 | −19·8 | + 9·1 |
| Means ... | ... | ... | 2 | 13 | 173·80 | −19·06 | ... |
| **Group 1621.** A very small spot on March 10. Three small spots on March 11, two on March 12, one on March 13 and 14. | | | | | | | |
| Mar. 10·465 | 0 | 12 | 0 | 6 | 119·2 | −18·9 | −43·0 |
| 11·493 | 0 | 91 | 0 | 54 | 119·7 | −18·3 | −28·9 |
| 12·412 | 0 | 28 | 0 | 15 | 120·6 | −19·0 | −15·9 |
| **Group 1621—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Mar. 13·488 | 3 | 13 | 2 | 7 | 121·5 | −21·5 | − 0·9 |
| 14·333 | 4 | 13 | 2 | 7 | 122·5 | −21·4 | +11·3 |
| Means ... | ... | ... | 1 | 18 | 120·70 | −19·82 | ... |
| **Group 1622.** A large regular spot, *a*. It gradually lengthens out, and has divided into two spots, *b* and *c*, by March 15. *c* diminishes in size on the succeeding days, and has broken up into a number of small spots by March 18. A few very small spots are seen near the principal spots occasionally. | | | | | | | |
| Mar. 10·465 | 19 | 116 | 44 | 277 | 85·1 | + 5·1 | −77·1 |
| 11·493 | 28 | 292 | 34 | 348 | 84·8 | + 5·9 | −63·8 |
| 12·412 | 75 | 388 | 63 | 326 | 84·7 | + 5·2 | −51·8 |
| 13·488 | 112 | 538 | 74 | 353 | 84·4 | + 5·1 | −38·0 |
| 14·333 | 80 | 539 | 46 | 309 | 84·7 | + 5·2 | −26·5 |
| 15·482 | 71 | 663 | 37 | 345 | 86·1 | + 5·4 | − 9·9 |
| 16·282 | 52 | 537 | 26 | 273 | 86·1 | + 5·1 | + 0·6 |
| 17·444 | 70 | 416 | 38 | 222 | 86·0 | + 5·6 | +15·9 |
| 18·452 | 39 | 288 | 23 | 172 | 86·9 | + 5·3 | +30·0 |
| 19·431 | 22 | 178 | 15 | 127 | 87·4 | + 5·0 | +43·4 |
| 20·579 | 11 | 70 | 11 | 70 | 87·7 | + 4·8 | +58·8 |
| 21·173 | 27 | 76 | 36 | 102 | 88·5 | + 4·7 | +67·5 |
| 22·205 | 2 | 21 | 10 | 91 | 90·2 | + 4·7 | +82·8 |
| Means ... | ... | ... | 35 | 232 | 86·35 | + 5·16 | ... |
| **Group 1623.** A few very small spots irregularly arranged. The group is not seen on the photographs taken on March 14, 15, and 16. | | | | | | | |
| Mar. 11·493 | 1 | 22 | 2 | 25 | 83·8 | −16·0 | −64·8 |
| 12·412 | 0 | 29 | 0 | 24 | 84·1 | −15·9 | −52·4 |
| 13·488 | 0 | 16 | 0 | 10 | 83·4 | −15·7 | −39·0 |
| 14·333 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 15·482 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 16·282 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 17·444 | 0 | 11 | 0 | 6 | 84·4 | −17·2 | +14·3 |
| Means ... | ... | ... | 0 | 9 | 83·93 | −16·20 | ... |
| **Group 1624.** A regular spot, *a*, preceded by several smaller spots. *a* has broken up by March 17. The group is very unstable, the spots composing it changing from day to day. | | | | | | | |
| Mar. 11·493 | 0 | 102 | 0 | 251 | 73·2 | + 9·7 | −75·4 |
| 12·412 | 19 | 210 | 24 | 268 | 71·6 | + 9·2 | −64·9 |
| 13·488 | 37 | 254 | 31 | 216 | 71·4 | + 9·6 | −51·0 |
| 14·333 | 21 | 205 | 15 | 142 | 71·6 | + 9·7 | −39·6 |
| 15·482 | 28 | 139 | 16 | 79 | 72·8 | + 9·3 | −23·2 |
| 16·282 | 10 | 88 | 6 | 48 | 71·7 | + 9·4 | −13·8 |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1624—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Mar. 17·444 | 18 | 101 | 9 | 52 | 74·3 | + 9·1 | + 4·2 |
| 18·452 | 0 | 79 | 0 | 43 | 74·1 | + 9·3 | +17·2 |
| 19·431 | 0 | 26 | 0 | 16 | 74·2 | + 8·7 | +30·2 |
| Means ... | ... | ... | 11 | 124 | 72·77 | + 9·33 | ... |
| **Group 1625.** A small spot, *a*, seen only on March 14. Another small spot, *b*, is seen on March 16, and another, *c*, on March 18 and 19. No spot belonging to this group is seen on March 17. | | | | | | | |
| Mar. 14·333 | 0 | 13 | 0 | 16 | 44·3 | −12·2 | −66·9 |
| 15·482 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 16·282 | 0 | 11 | 0 | 6 | 44·1 | −12·5 | −41·4 |
| 17·444 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 18·452 | 3 | 17 | 2 | 9 | 47·4 | −12·3 | − 9·5 |
| 19·431 | 0 | 20 | 0 | 10 | 48·4 | −12·6 | + 4·4 |
| Means ... | ... | ... | 0 | 7 | 46·05 | −12·40 | ... |
| **Group 1626.** A small spot. The spot seen on March 16 is probably not the same as that seen on March 15. | | | | | | | |
| Mar. 15·482 | 0 | 10 | 0 | 5 | 108·2 | −17·2 | +12·2 |
| 16·282 | 3 | 19 | 2 | 11 | 109·4 | −15·4 | +23·9 |
| Means ... | ... | ... | 1 | 8 | 108·80 | −16·30 | ... |
| **Group 1627.** Two small spots. | | | | | | | |
| Mar. 19·431 | 0 | 20 | 0 | 10 | 28·0 | −15·3 | −16·0 |
| 20·579 | 0 | 56 | 0 | 28 | 28·0 | −15·5 | − 0·9 |
| Means ... | ... | ... | 0 | 19 | 28·00 | −15·40 | ... |
| **Group 1628.** A small spot. | | | | | | | |
| Mar. 19·431 | 0 | 16 | 0 | 22 | 336·5 | + 4·3 | −67·5 |
| Means ... | ... | ... | 0 | 22 | 336·5 | + 4·3 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1629.** A small regular spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Mar. 24·427 | 2 | 35 | 1 | 20 | 311·4 | − 5·5 | −26·7 |
| 25·430 | 6 | 30 | 3 | 15 | 312·5 | − 6·1 | −12·4 |
| 26·473 | 4 | 29 | 2 | 14 | 313·0 | − 6·0 | + 1·8 |
| 27·483 | 3 | 12 | 2 | 6 | 313·2 | − 5·6 | +15·3 |
| 28·547 | 0 | 7 | 0 | 4 | 314·3 | − 5·7 | +30·5 |
| Means ... | ... | ... | 2 | 12 | 312·88 | − 5·78 | ... |
| **Group 1630.** An irregular straggling group of small spots. | | | | | | | |
| Mar. 25·430 | 4 | 34 | 2 | 19 | 296·3 | −12·0 | −28·6 |
| 26·473 | 7 | 135 | 4 | 70 | 296·8 | −12·6 | −14·4 |
| 27·483 | 18 | 83 | 10 | 42 | 297·2 | −12·5 | − 0·7 |
| 28·547 | 4 | 82 | 2 | 41 | 296·2 | −12·8 | +12·4 |
| Means ... | ... | ... | 5 | 43 | 296·63 | −12·48 | ... |
| **Group 1631.** A large regular spot. It has broken up in two portions by April 4. | | | | | | | |
| Mar. 25·430 | 0 | 35 | 0 | 169 | 238·8 | −20·2 | −86·1 |
| 26·473 | 16 | 154 | 26 | 246 | 238·2 | −20·1 | −73·0 |
| 27·483 | 32 | 269 | 32 | 265 | 237·9 | −20·1 | −60·0 |
| 28·547 | 44 | 366 | 32 | 271 | 237·1 | −19·8 | −46·7 |
| 29·242 | 64 | 380 | 41 | 243 | 237·0 | −19·8 | −37·6 |
| 30·446 | 50 | 381 | 28 | 210 | 236·9 | −19·9 | −21·7 |
| 31·437 | 46 | 392 | 24 | 205 | 236·7 | −20·0 | − 8·9 |
| Apr. 1·429 | 65 | 360 | 34 | 186 | 236·6 | −20·1 | + 4·1 |
| 2·434 | 7 | 211 | 4 | 114 | 236·4 | −20·0 | +17·2 |
| 3·413 | 17 | 224 | 10 | 132 | 236·0 | −20·2 | +29·7 |
| 4·423 | 13 | 148 | 9 | 103 | 235·8 | −20·2 | +42·8 |
| 5·514 | 0 | 69 | 0 | 63 | 235·8 | −19·2 | +57·2 |
| 6·166 | 8 | 101 | 10 | 124 | 236·8 | −19·5 | +66·8 |
| Means ... | ... | ... | 19 | 179 | 236·92 | −19·93 | ... |
| **Group 1632.** A scattered group composed of a number of small spots. The preceding spots of the group have united to form one regular spot, *a*, and the following spots to form another, *b*, by April 2. A third regular spot, *c*, has also formed between these two by April 4, but it is measured with some smaller spots on April 5. *b*, which has greatly diminished in size, is measured with some small spots on April 6. | | | | | | | |
| Mar. 26·473 | 0 | 72 | 0 | 146 | 234·1 | −16·5 | −77·1 |
| 27·483 | 5 | 211 | 5 | 244 | 232·7 | −16·1 | −65·2 |
| 28·547 | 56 | 364 | 47 | 302 | 230·6 | −15·9 | −53·2 |
| 29·242 | 55 | 482 | 39 | 337 | 229·7 | −16·1 | −44·9 |
| 30·446 | 27 | 367 | 15 | 204 | 234·1 | −15·8 | −24·5 |
| 31·437 | 93 | 627 | 49 | 323 | 236·7 | −16·0 | − 8·9 |

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1632—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Apr. 1·429 | 104 | 553 | 53 | 283 | 238·1 | −16·1 | + 5·6 |
| 2·434 | 51 | 747 | 28 | 405 | 239·1 | −15·6 | +19·9 |
| 3·413 | 61 | 525 | 37 | 322 | 241·1 | −16·0 | +34·8 |
| 4·423 | 53 | 528 | 41 | 404 | 242·1 | −16·1 | +49·1 |
| 5·514 | 44 | 484 | 48 | 525 | 242·0 | −15·9 | +63·4 |
| 6·166 | 89 | 249 | 159 | 422 | 243·9 | −16·7 | +73·9 |
| Means ... | ... | ... | 43 | 326 | 237·02 | −16·07 | ... |
| **Group 1633.** Two small spots. | | | | | | | |
| Mar. 28·547 | 3 | 23 | 2 | 14 | 247·4 | −16·5 | −36·4 |
| Means ... | ... | ... | 2 | 14 | 247·4 | −16·5 | ... |
| **Group 1634.** A small spot. | | | | | | | |
| Mar. 28·547 | 6 | 25 | 4 | 17 | 241·3 | −14·0 | −42·5 |
| 29·242 | 0 | 12 | 0 | 7 | 242·1 | −14·5 | −32·5 |
| Means ... | ... | ... | 2 | 12 | 241·70 | −14·25 | ... |
| **Group 1635.** A small spot. | | | | | | | |
| Mar. 28·547 | 0 | 3 | 0 | 4 | 214·3 | + 9·3 | −69·5 |
| Means ... | ... | ... | 0 | 4 | 214·3 | + 9·3 | ... |
| **Group 1636.** A regular group. | | | | | | | |
| Apr. 1·429 | 6 | 51 | 10 | 86 | 158·8 | −13·4 | −73·7 |
| 2·434 | 10 | 85 | 10 | 85 | 158·7 | −13·4 | −60·5 |
| 3·413 | 10 | 119 | 7 | 87 | 158·9 | −13·3 | −47·4 |
| 4·423 | 28 | 135 | 17 | 82 | 158·6 | −13·5 | −34·4 |
| 5·514 | 22 | 168 | 12 | 90 | 158·5 | −13·8 | −20·1 |
| 6·166 | 52 | 165 | 27 | 86 | 158·4 | −14·1 | −11·6 |
| 7·428 | 30 | 122 | 15 | 62 | 158·8 | −13·8 | + 5·4 |
| 8·157 | 24 | 128 | 13 | 67 | 158·7 | −14·1 | +14·9 |
| 9·183 | 9 | 57 | 5 | 33 | 158·3 | −13·9 | +28·1 |
| 10·133 | 7 | 21 | 5 | 14 | 158·3 | −13·8 | +40·7 |
| 11·492 | 0 | 5 | 0 | 5 | 157·9 | −13·1 | +58·2 |
| Means ... | ... | ... | 11 | 63 | 158·54 | −13·65 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1637.** A few small scattered spots, which change from day to day. The group is not seen on April 5. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Apr. 2·434 | 0 | 26 | 0 | 13 | 221·5 | − 6·4 | + 2·3 |
| 3·413 | 0 | 18 | 0 | 9 | 224·3 | − 6·3 | +18·0 |
| 4·423 | 0 | 6 | 0 | 3 | 221·5 | − 6·6 | +28·5 |
| 5·514 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 6·166 | 4 | 14 | 4 | 13 | 226·1 | − 6·3 | +56·1 |
| Means ... | ... | ... | 1 | 8 | 223·35 | − 6·40 | ... |
| **Group 1638.** A large group of very irregular form, which undergoes constant changes. It has become a long straight stream by April 9, and has divided into two groups by April 12, the first spot in each group being large and regular. | | | | | | | |
| Apr. 4·423 | 18 | 274 | 32 | 483 | 121·3 | +11·4 | −71·7 |
| 5·514 | 63 | 541 | 61 | 534 | 121·3 | +11·4 | −57·3 |
| 6·166 | 111 | 916 | 90 | 749 | 120·7 | +11·7 | −49·3 |
| 7·428 | 156 | 1316 | 95 | 827 | 121·3 | +11·9 | −32·1 |
| 8·157 | 177 | 1841 | 99 | 1055 | 120·8 | +12·1 | −23·0 |
| 9·183 | 237 | 2117 | 126 | 1126 | 121·1 | +12·4 | − 9·1 |
| 10·133 | 303 | 2063 | 160 | 1089 | 122·4 | +12·3 | + 4·8 |
| 11·492 | 206 | 1491 | 119 | 860 | 122·4 | +13·0 | +22·7 |
| 12·164 | 113 | 1293 | 72 | 810 | 123·0 | +12·5 | +32·1 |
| 13·251 | 72 | 806 | 57 | 643 | 124·4 | +12·6 | +47·9 |
| 14·483 | 20 | 338 | 27 | 437 | 125·1 | +12·8 | +64·9 |
| 15·476 | 6 | 79 | 13 | 154 | 120·6 | +13·6 | +73·5 |
| Means ... | ... | ... | 79 | 731 | 122·03 | +12·31 | ... |
| **Group 1639.** A large group of very irregular form, which undergoes constant changes. The preceding spots have coalesced by April 11 to form a large spot, *a*, which has divided into two spots, *b* and *c*, by April 15. | | | | | | | |
| Apr. 7·428 | 0 | 39 | 0 | 71 | 80·3 | + 8·9 | −73·1 |
| 8·157 | 9 | 136 | 9 | 153 | 81·4 | + 8·0 | −62·4 |
| 9·183 | 25 | 439 | 19 | 338 | 82·9 | + 7·8 | −47·3 |
| 10·133 | 117 | 932 | 72 | 583 | 82·8 | + 7·4 | −34·8 |
| 11·492 | 100 | 989 | 53 | 530 | 83·2 | + 7·4 | −16·5 |
| 12·164 | 113 | 1097 | 59 | 567 | 84·0 | + 7·1 | − 6·9 |
| 13·251 | 132 | 1322 | 67 | 682 | 83·5 | + 7·9 | + 7·0 |
| 14·483 | 75 | 732 | 42 | 415 | 85·4 | + 7·2 | +25·2 |
| 15·476 | 64 | 533 | 43 | 352 | 86·2 | + 7·1 | +39·1 |
| 16·237 | 59 | 433 | 47 | 343 | 86·2 | + 7·1 | +49·2 |
| 17·437 | 19 | 218 | 24 | 270 | 85·9 | + 7·4 | +64·7 |
| 18·406 | 5 | 73 | 14 | 185 | 86·3 | + 7·1 | +77·9 |
| Means ... | ... | ... | 37 | 374 | 84·01 | + 7·53 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1640.

Two small spots measured together.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Apr. 10·133 | 3 | 23 | 2 | 16 | 162·6 | −10·6 | +45·0 |
| Means ... | ... | ... | 2 | 16 | 162·6 | −10·6 | ... |

### Group 1641.

Two small spots, *a* and *b*. *b* has disappeared by April 13.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 10·133 | 0 | 43 | 0 | 60 | 47·5 | − 9·5 | −70·1 |
| 11·492 | 0 | 35 | 0 | 28 | 47·4 | − 9·6 | −52·3 |
| 12·164 | 0 | 25 | 0 | 17 | 47·9 | − 9·7 | −43·0 |
| 13·251 | 2 | 25 | 1 | 14 | 50·2 | − 8·9 | −26·3 |
| Means ... | ... | ... | 0 | 30 | 48·25 | − 9·43 | ... |

### Group 1642.

Two small spots, *a* and *b*. They have moved away from each other by April 13.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 12·164 | 3 | 30 | 2 | 24 | 140·5 | +10·2 | +49·6 |
| 13·251 | 0 | 13 | 0 | 15 | 141·1 | +10·3 | +64·6 |
| Means ... | ... | ... | 1 | 20 | 140·80 | +10·25 | ... |

### Group 1643.

A regular spot, *a*, followed by a number of small spots. These have all disappeared by April 24.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 16·237 | 13 | 91 | 25 | 179 | 321·4 | − 4·8 | −75·6 |
| 17·437 | 21 | 239 | 21 | 245 | 320·5 | − 4·5 | −60·7 |
| 18·406 | 30 | 328 | 22 | 246 | 320·7 | − 4·3 | −47·7 |
| 19·512 | 40 | 327 | 24 | 194 | 321·3 | − 4·6 | −32·6 |
| 20·442 | 49 | 349 | 26 | 187 | 321·7 | − 4·5 | −19·8 |
| 21·391 | 53 | 341 | 27 | 173 | 322·0 | − 4·6 | − 7·0 |
| 22·420 | 33 | 308 | 16 | 157 | 322·8 | − 4·7 | + 7·5 |
| 23·444 | 33 | 294 | 18 | 157 | 322·8 | − 4·6 | +21·0 |
| 24·168 | 13 | 220 | 8 | 128 | 323·4 | − 4·7 | +31·1 |
| 25·395 | 21 | 153 | 15 | 113 | 323·6 | − 4·5 | +47·6 |
| 26·485 | 13 | 109 | 14 | 116 | 323·8 | − 4·4 | +62·1 |
| 27·408 | 4 | 51 | 7 | 89 | 323·0 | − 4·3 | +73·5 |
| Means ... | ... | ... | 19 | 165 | 322·25 | − 4·54 | ... |

### Group 1644.

A cluster of very small spots, which are measured together.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 19·512 | 0 | 11 | 0 | 6 | 335·7 | + 7·8 | −18·2 |
| Means ... | ... | ... | 0 | 6 | 335·7 | + 7·8 | ... |

### Group 1645.

A regular spot, *a*, followed, April 21–28, by a few small spots. A small spot has separated from *a* by April 25. Two very small spots are seen preceding *a* on April 28.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Apr. 19·512 | 0 | 38 | 0 | 137 | 270·9 | −15·5 | −83·0 |
| 20·442 | 10 | 94 | 15 | 141 | 270·6 | −15·5 | −70·9 |
| 21·391 | 17 | 185 | 16 | 178 | 270·4 | −15·9 | −58·6 |
| 22·420 | 31 | 251 | 22 | 177 | 271·4 | −15·9 | −43·9 |
| 23·444 | 23 | 222 | 14 | 130 | 271·7 | −16·1 | −30·1 |
| 24·168 | 23 | 218 | 12 | 118 | 271·8 | −16·0 | −20·5 |
| 25·395 | 37 | 272 | 19 | 139 | 272·1 | −16·1 | − 3·9 |
| 26·485 | 33 | 254 | 17 | 132 | 272·7 | −16·1 | +11·0 |
| 27·408 | 15 | 200 | 9 | 111 | 273·0 | −16·0 | +23·5 |
| 28·405 | 16 | 158 | 10 | 100 | 272·9 | −16·0 | +36·6 |
| 29·293 | 15 | 100 | 11 | 77 | 273·1 | −16·5 | +48·6 |
| 30·424 | 9 | 62 | 10 | 68 | 272·9 | −16·3 | +63·3 |
| May 1·421 | 7 | 28 | 13 | 54 | 271·9 | −16·6 | +75·5 |
| Means ... | ... | ... | 13 | 120 | 271·95 | −16·04 | ... |

### Group 1646.

A number of small spots suddenly appearing near the centre of the Sun. The last spot of the group has attained a considerable size by April 23, but has decreased again by April 24, and broken up into a number of small spots by April 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 21·391 | 8 | 51 | 4 | 27 | 315·7 | −11·8 | −15·3 |
| 22·420 | 21 | 174 | 10 | 88 | 315·3 | −11·8 | 0·0 |
| 23·444 | 30 | 213 | 16 | 109 | 314·0 | −11·6 | +12·2 |
| 24·168 | 14 | 119 | 8 | 64 | 313·8 | −11·6 | +21·5 |
| 25·395 | 11 | 91 | 8 | 60 | 315·5 | −12·0 | +39·5 |
| Means ... | ... | ... | 9 | 70 | 314·46 | −11·76 | ... |

### Group 1647.

A large regular spot, *a*, occasionally accompanied by small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 21·391 | 0 | 12 | 0 | 63 | 243·0 | −16·8 | −86·0 |
| 22·420 | 16 | 117 | 26 | 183 | 243·3 | −16·3 | −72·0 |
| 23·444 | 21 | 195 | 20 | 188 | 242·8 | −16·3 | −59·0 |
| 24·168 | 33 | 232 | 25 | 181 | 242·9 | −16·1 | −49·4 |
| 25·395 | 47 | 268 | 29 | 163 | 242·6 | −16·3 | −33·4 |
| 26·485 | 55 | 312 | 30 | 169 | 243·0 | −16·3 | −18·7 |
| 27·408 | 55 | 318 | 29 | 164 | 243·1 | −16·3 | − 6·4 |
| 28·405 | 44 | 319 | 23 | 164 | 243·0 | −16·4 | + 6·7 |
| 29·293 | 28 | 282 | 15 | 152 | 243·0 | −16·5 | +18·5 |
| 30·424 | 20 | 226 | 12 | 138 | 243·4 | −16·4 | +33·8 |
| May 1·421 | 13 | 148 | 10 | 109 | 243·4 | −16·5 | +47·0 |
| 2·435 | 5 | 69 | 5 | 70 | 243·2 | −16·0 | +60·2 |
| 3·585 | 0 | 19 | 0 | 34 | 242·6 | −16·4 | +74·7 |
| Means ... | ... | ... | 17 | 137 | 243·02 | −16·35 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1648.** A very small spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Apr. 25·395 | 0 | 10 | 0 | 6 | 242·9 | −21·7 | −33·1 |
| Means ... | ... | ... | 0 | 6 | 242·9 | −21·7 | ... |
| **Group 1649.** A very small spot on April 26. A compact cluster of very small faint spots on April 27. | | | | | | | |
| Apr. 26·485 | 0 | 12 | 0 | 6 | 251·7 | −16·7 | −10·0 |
| 27·408 | 0 | 6 | 0 | 3 | 252·3 | −16·8 | + 2·8 |
| Means ... | ... | ... | 0 | 5 | 252·00 | −16·75 | ... |
| **Group 1650.** A compact cluster of small spots on April 26. The group forms a long stream of spots on April 27 and 28; the central spots then disappear, and the group forms two compact clusters on April 29, of which the preceding one rapidly diminishes in size on the succeeding days. | | | | | | | |
| Apr. 26·485 | 11 | 96 | 6 | 52 | 248·1 | +14·7 | −13·6 |
| 27·408 | 24 | 142 | 12 | 76 | 248·1 | +14·5 | − 1·4 |
| 28·405 | 57 | 235 | 31 | 128 | 247·5 | +14·9 | +11·2 |
| 29·293 | 22 | 238 | 13 | 138 | 249·0 | +14·5 | +24·5 |
| 30·424 | 0 | 200 | 0 | 135 | 248·0 | +14·7 | +38·4 |
| May 1·421 | 11 | 170 | 9 | 139 | 245·7 | +15·1 | +49·3 |
| 2·435 | 0 | 34 | 0 | 38 | 244·1 | +15·7 | +61·1 |
| Means ... | ... | ... | 10 | 101 | 247·21 | +14·87 | ... |
| **Group 1651.** Two very small faint spots measured together on April 27, but separately on April 29. The group has increased in size by April 30, when it forms a compact cluster composed of four spots. The first and second are measured separately; the last two are taken together. | | | | | | | |
| Apr. 27·408 | 0 | 22 | 0 | 12 | 278·8 | −10·0 | +29·3 |
| 28·405 | 0 | 9 | 0 | 6 | 280·2 | −10·5 | +43·9 |
| 29·293 | 2 | 28 | 1 | 24 | 279·8 | −10·4 | +55·3 |
| 30·424 | 0 | 101 | 0 | 143 | 279·4 | −10·3 | +69·8 |
| Means ... | ... | ... | 0 | 46 | 279·55 | −10·30 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1652.** Three very small spots measured together on April 27. The group has greatly increased in size by April 28, and forms a short stream of spots, the last of which, *a*, is the largest. Only *a* and one very small spot remain by April 29. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Apr. 27·408 | 4 | 15 | 2 | 8 | 274·1 | − 5·5 | +24·6 |
| 28·405 | 13 | 106 | 9 | 67 | 272·8 | − 5·0 | +36·5 |
| 29·293 | 23 | 91 | 17 | 68 | 272·4 | − 5·0 | +47·9 |
| 30·424 | 0 | 8 | 0 | 9 | 272·6 | − 4·8 | +63·0 |
| Means ... | ... | ... | 7 | 38 | 272·98 | − 5·08 | ... |
| **Group 1653.** A large regular spot, *a*, accompanied by a number of smaller spots. The latter undergo frequent changes in number, area, and arrangement. | | | | | | | |
| Apr. 27·408 | 16 | 130 | 38 | 300 | 171·5 | −10·0 | −78·0 |
| 28·405 | 58 | 334 | 73 | 420 | 169·4 | − 9·9 | −66·9 |
| 29·293 | 107 | 560 | 92 | 495 | 168·8 | − 9·5 | −55·7 |
| 30·424 | 114 | 723 | 74 | 473 | 169·4 | − 9·7 | −40·2 |
| May 1·421 | 128 | 759 | 71 | 424 | 170·2 | −10·1 | −26·2 |
| 2·435 | 121 | 817 | 62 | 420 | 171·1 | −10·2 | −11·9 |
| 3·585 | 87 | 717 | 44 | 361 | 171·2 | −10·7 | + 3·3 |
| 4·490 | 93 | 650 | 49 | 341 | 171·6 | −10·8 | +15·7 |
| 5·279 | 121 | 582 | 67 | 323 | 171·5 | −11·2 | +26·1 |
| 6·488 | 77 | 514 | 42 | 347 | 171·6 | −10·3 | +42·1 |
| 7·544 | 68 | 563 | 61 | 505 | 171·3 | − 9·8 | +55·9 |
| 8·390 | 40 | 407 | 53 | 546 | 172·4 | − 9·4 | +68·1 |
| 9·409 | 4 | 135 | 11 | 382 | 171·0 | −10·0 | +80·2 |
| Means ... | ... | ... | 57 | 411 | 170·85 | −10·12 | ... |
| **Group 1654.** A very small faint spot. | | | | | | | |
| Apr. 28·405 | 0 | 4 | 0 | 2 | 245·3 | −12·0 | + 9·0 |
| Means ... | ... | ... | 0 | 2 | 245·3 | −12·0 | ... |
| **Group 1655.** A very small spot. | | | | | | | |
| Apr. 28·405 | 2 | 4 | 1 | 2 | 231·9 | −12·5 | − 4·4 |
| Means ... | ... | ... | 1 | 2 | 231·9 | −12·5 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1656.

A single spot. It has greatly decreased in size by April 29.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Apr. 28·405 | 0 | 16 | 0 | 51 | 154·6 | −15·8 | −81·7 |
| 29·293 | 0 | 7 | 0 | 9 | 155·0 | −15·9 | −69·5 |
| Means ... | ... | ... | 0 | 30 | 154·80 | −15·85 | ... |

### Group 1657.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 1·421 | 0 | 4 | 0 | 3 | 154·9 | −13·8 | −41·5 |
| Means ... | ... | ... | 0 | 3 | 154·9 | −13·8 | ... |

### Group 1658.

Two regular spots, *a* and *b*, accompanied by a number of smaller spots. The latter undergo continual changes in number, area, and arrangement. *b* alone remains by May 9. On April 30, *b* is confused with the smaller spots near it, through the effect of foreshortening.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Apr. 30·424 | 0 | 146 | 0 | 369 | 132·0 | +11·4 | −77·6 |
| May 1·421 | 17 | 239 | 20 | 282 | 132·9 | +11·2 | −63·5 |
| 2·435 | 41 | 281 | 33 | 229 | 132·5 | +11·2 | −50·5 |
| 3·585 | 32 | 311 | 20 | 195 | 133·3 | +11·4 | −34·6 |
| 4·490 | 51 | 364 | 29 | 207 | 133·2 | +11·2 | −22·7 |
| 5·279 | 83 | 382 | 44 | 204 | 132·9 | +11·5 | −12·5 |
| 6·488 | 65 | 500 | 34 | 261 | 132·9 | +11·6 | + 3·4 |
| 7·544 | 49 | 395 | 27 | 216 | 133·3 | +12·0 | +17·9 |
| 8·390 | 47 | 316 | 29 | 191 | 133·7 | +12·2 | +29·4 |
| 9·409 | 26 | 244 | 19 | 177 | 134·5 | +12·5 | +43·7 |
| 10·508 | 9 | 130 | 9 | 136 | 134·8 | +12·4 | +58·5 |
| 11·432 | 6 | 60 | 10 | 96 | 134·8 | +12·4 | +70·7 |
| Means ... | ... | ... | 23 | 214 | 133·40 | +11·75 | ... |

### Group 1659.

Two small spots. Only one is seen on May 3.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 1·421 | 9 | 24 | 6 | 14 | 234·1 | − 5·9 | +37·7 |
| 2·435 | 4 | 44 | 4 | 36 | 235·8 | − 5·4 | +52·8 |
| 3·585 | 0 | 6 | 0 | 8 | 236·9 | − 5·4 | +69·0 |
| Means ... | ... | ... | 3 | 19 | 235·60 | − 5·57 | ... |

### Group 1660.

Two small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 1·421 | 2 | 24 | 1 | 16 | 234·3 | −17·8 | +37·9 |
| Means ... | ... | ... | 1 | 16 | 234·3 | −17·8 | ... |

### Group 1661.

A large irregular spot, *a*. The outer part of the spot has broken up into a number of small spots by May 6, but a large spot still remains in the centre. It decreases in size on the succeeding days.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| May 1·421 | 12 | 199 | 28 | 456 | 120·4 | +13·9 | −76·0 |
| 2·435 | 23 | 448 | 27 | 533 | 119·5 | +13·6 | −63·5 |
| 3·585 | 45 | 618 | 36 | 489 | 119·5 | +13·9 | −48·4 |
| 4·490 | 62 | 700 | 41 | 462 | 119·2 | +13·7 | −36·7 |
| 5·279 | 97 | 672 | 58 | 400 | 119·1 | +13·7 | −26·3 |
| 6·488 | 117 | 737 | 63 | 398 | 119·4 | +14·6 | −10·1 |
| 7·544 | 24 | 446 | 13 | 236 | 119·1 | +14·3 | + 3·7 |
| 8·390 | 35 | 312 | 19 | 172 | 119·3 | +14·9 | +15·0 |
| 9·409 | 22 | 258 | 13 | 156 | 119·8 | +15·4 | +29·0 |
| 10·508 | 6 | 48 | 5 | 35 | 119·6 | +15·6 | +43·3 |
| 11·432 | 5 | 41 | 5 | 39 | 119·2 | +15·8 | +55·1 |
| 12·419 | 2 | 25 | 3 | 36 | 118·8 | +15·5 | +67·8 |
| Means ... | ... | ... | 26 | 284 | 119·41 | +14·58 | ... |

### Group 1662.

A regular spot, *a*. It increases in size from day to day until May 7 and 8. On May 6 the penumbra of the spot becomes extended towards the south, the extension being measured as a separate spot. On May 7 and the succeeding days, spots are seen s.p. of *a*, and the group becomes a short stream of spots closely following each other.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 3·585 | 0 | 29 | 0 | 66 | 90·8 | + 4·7 | −77·1 |
| 4·490 | 9 | 76 | 11 | 93 | 90·9 | + 4·3 | −65·0 |
| 5·279 | 19 | 147 | 18 | 136 | 90·4 | + 4·7 | −55·0 |
| 6·488 | 22 | 271 | 14 | 177 | 90·5 | + 3·9 | −39·0 |
| 7·544 | 22 | 294 | 12 | 165 | 90·8 | + 4·2 | −24·6 |
| 8·390 | 56 | 431 | 29 | 224 | 91·3 | + 4·1 | −13·0 |
| 9·409 | 43 | 318 | 22 | 161 | 91·1 | + 4·3 | + 0·3 |
| 10·508 | 17 | 341 | 9 | 178 | 91·7 | + 3·7 | +15·4 |
| 11·432 | 21 | 243 | 12 | 139 | 91·5 | + 4·4 | +27·4 |
| 12·419 | 21 | 186 | 14 | 124 | 92·0 | + 4·1 | +41·0 |
| 13 | No photograph. | | (7 | 74 | 91·9 | + 4·5 | +53·9) |
| 14·384 | 0 | 18 | 0 | 24 | 91·7 | + 5·0 | +66·8 |
| Means ... | ... | ... | 12 | 130 | 91·22 | + 4·33 | ... |

### Group 1663.

A regular spot, *a*, closely followed from May 7 to May 12, and on May 16 by a stream of small spots.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 4·490 | 0 | 11 | 0 | 33 | 77·1 | +14·9 | −78·8 |
| 5·279 | 5 | 75 | 8 | 130 | 75·6 | +15·1 | −69·8 |
| 6·488 | 11 | 126 | 10 | 113 | 76·1 | +14·6 | −53·4 |
| 7·544 | 21 | 195 | 14 | 136 | 75·1 | +14·3 | −40·3 |
| 8·390 | 48 | 284 | 30 | 174 | 74·4 | +14·2 | −29·9 |
| 9·409 | 32 | 247 | 18 | 135 | 74·7 | +14·3 | −16·1 |
| 10·508 | 17 | 248 | 9 | 129 | 75·6 | +14·3 | − 0·7 |
| 11·432 | 14 | 243 | 8 | 130 | 75·4 | +14·7 | +11·3 |
| 12·419 | 19 | 210 | 11 | 123 | 75·2 | +14·6 | +24·2 |
| 13 | No photograph. | | (11 | 105 | 75·0 | +14·6 | +37·0) |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1663—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| May 14·384 | 12 | 106 | 10 | 86 | 74·7 | +14·6 | +49·8 |
| 15·431 | 4 | 58 | 5 | 69 | 74·7 | +14·7 | +63·5 |
| 16·381 | 0 | 42 | 0 | 87 | 73·6 | +15·0 | +74·9 |
| Means ... | ... | ... | 10 | 112 | 75·17 | +14·61 | ... |
| **Group 1664.** Two regular spots, *a* and *b*, on May 6. Other spots appear on the succeeding days, and *b* diminishes in size, so that by May 9 the group has become a long stream of small spots closely following each other, with *a* as their leader. The small spots rapidly disappear after May 9, and by May 14 *a* remains alone. | | | | | | | |
| May 6·488 | 1 | 113 | 2 | 189 | 56·8 | − 9·0 | −72·7 |
| 7·544 | 27 | 198 | 25 | 187 | 57·5 | − 9·1 | −57·9 |
| 8·390 | 48 | 282 | 34 | 206 | 58·3 | − 9·1 | −46·0 |
| 9·409 | 41 | 313 | 24 | 187 | 59·1 | − 8·7 | −31·7 |
| 10·508 | 10 | 230 | 6 | 121 | 60·3 | − 8·2 | −16·0 |
| 11·432 | 23 | 283 | 11 | 142 | 60·8 | − 7·8 | − 3·3 |
| 12·419 | 21 | 194 | 11 | 99 | 60·2 | − 7·7 | + 9·2 |
| 13 | No photograph. | | (11 | 81 | 61·3 | − 7·4 | +23·3) |
| 14·384 | 17 | 99 | 10 | 63 | 62·3 | − 7·0 | +37·4 |
| 15·431 | 12 | 81 | 10 | 65 | 62·6 | − 7·4 | +51·4 |
| 16·381 | 8 | 37 | 10 | 43 | 63·0 | − 7·4 | +64·3 |
| Means ... | ... | ... | 14 | 126 | 60·20 | − 8·07 | ... |
| **Group 1665.** A short stream of very small spots. It is measured in two parts on each day. | | | | | | | |
| May 7·544 | 4 | 36 | 3 | 25 | 159·5 | −12·3 | +44·1 |
| 8·390 | 10 | 54 | 9 | 47 | 158·6 | −12·4 | +54·3 |
| 9·409 | 2 | 56 | 2 | 73 | 158·1 | −12·3 | +67·3 |
| Means ... | ... | ... | 5 | 48 | 158·73 | −12·33 | ... |
| **Group 1666.** A short stream of spots, which appears suddenly near the centre of the disk. | | | | | | | |
| May 8·390 | 29 | 119 | 15 | 64 | 122·6 | − 3·4 | +18·3 |
| 9·409 | 21 | 182 | 13 | 112 | 124·5 | − 3·4 | +33·7 |
| 10·508 | 3 | 85 | 2 | 64 | 124·6 | − 3·5 | +48·3 |
| Means ... | ... | ... | 10 | 80 | 123·90 | − 3·43 | ... |
| **Group 1667.** A small faint spot. | | | | | | | |
| May 8·390 | 0 | 33 | 0 | 18 | 110·3 | +16·3 | + 6·0 |
| Means ... | .. | ... | 0 | 18 | 110·3 | +16·3 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1668.** A very small faint spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| May 9·409 | 0 | 10 | 0 | 5 | 91·4 | −24·7 | + 0·6 |
| Means ... | ... | ... | 0 | 5 | 91·4 | −24·7 | ... |
| **Group 1669.** Two small spots, *a* and *b*. They move somewhat away from each other. *a* has broken up into a number of very small spots by May 18, but is still measured as one. | | | | | | | |
| May 16·381 | 7 | 33 | 5 | 23 | 314·9 | − 8·4 | −43·8 |
| 17·493 | 0 | 66 | 0 | 38 | 315·1 | − 8·1 | −28·8 |
| 18·389 | 0 | 50 | 0 | 26 | 316·0 | − 7·4 | −16·1 |
| Means ... | ... | ... | 2 | 29 | 315·33 | − 7·97 | ... |
| **Group 1670.** A small regular spot, *a*, followed by several very small spots. The group increases in size, and *a* has become a spot of very considerable size by May 20, apparently by coalescing with several of the neighbouring spots The following spots soon disappear, and by May 24 *a* remains alone. | | | | | | | |
| May 16·381 | 8 | 60 | 9 | 77 | 294·0 | +13·2 | −64·7 |
| 17·493 | 12 | 142 | 9 | 113 | 295·0 | +13·5 | −48·9 |
| 18·389 | 38 | 295 | 26 | 191 | 295·6 | +13·8 | −36·5 |
| 19·415 | 16 | 278 | 9 | 154 | 297·9 | +13·8 | −20·5 |
| 20·474 | 69 | 555 | 36 | 290 | 300·8 | +13·8 | − 3·7 |
| 21·556 | 50 | 510 | 26 | 268 | 301·4 | +13·3 | +11·2 |
| 22·477 | 69 | 429 | 39 | 245 | 302·8 | +13·0 | +24·8 |
| 23·418 | 54 | 383 | 35 | 251 | 303·4 | +12·6 | +37·8 |
| 24·375 | 20 | 226 | 17 | 186 | 304·2 | +12·3 | +51·3 |
| 25 | No photograph. | | (18 | 187 | 305·4 | +12·2 | +65·1) |
| 26·273 | 7 | 69 | 19 | 188 | 306·6 | +12·0 | +78·9 |
| Means ... | ... | ... | 22 | 195 | 300·65 | +13·05 | ... |
| **Group 1671.** A large regular spot, *a*. One or two very small spots are seen near it May 22·28. | | | | | | | |
| May 18·389 | 8 | 73 | 16 | 144 | 256·5 | −12·6 | −75·6 |
| 19·415 | 22 | 164 | 24 | 179 | 255·9 | −13·0 | −62·5 |
| 20·474 | 38 | 309 | 29 | 240 | 255·5 | −12·3 | −49·0 |
| 21·556 | 44 | 320 | 27 | 197 | 255·5 | −13·3 | −34·7 |
| 22·477 | 41 | 330 | 23 | 186 | 255·0 | −12·6 | −23·0 |
| 23·418 | 48 | 271 | 25 | 140 | 255·1 | −12·8 | −10·5 |
| 24·375 | 47 | 319 | 24 | 163 | 255·1 | −12·5 | + 2·2 |
| 25 | No photograph. | | (25 | 169 | 255·0 | −12·5 | +14·7) |
| 26·273 | 46 | 305 | 26 | 175 | 254·8 | −12·4 | +27·1 |
| 27·445 | 29 | 196 | 20 | 136 | 255·0 | −12·2 | +42·8 |
| 28·490 | 13 | 118 | 12 | 109 | 255·0 | −12·1 | +56·6 |
| 29·403 | 6 | 64 | 9 | 90 | 254·7 | −12·0 | +68·3 |
| 30·411 | 0 | 35 | 0 | 108 | 253·4 | −12·1 | +80·4 |
| Means ... | ... | ... | 20 | 157 | 255·12 | −12·49 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1672.

A very large regular spot, *a*, with from time to time several small spots near it.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| May 18·389 | 33 | 138 | 82 | 339 | 254·6 | +13·6 | −77·5 |
| 19·415 | 49 | 404 | 58 | 479 | 254·6 | +13·8 | −63·8 |
| 20·474 | 163 | 609 | 133 | 498 | 254·5 | +14·2 | −50·0 |
| 21·556 | 204 | 805 | 129 | 512 | 254·5 | +13·8 | −35·7 |
| 22·477 | 221 | 1053 | 126 | 599 | 254·3 | +14·2 | −23·7 |
| 23·418 | 185 | 1042 | 97 | 534 | 254·4 | +13·9 | −11·2 |
| 24·375 | 171 | 1191 | 88 | 614 | 254·2 | +13·8 | + 1·3 |
| 25 | No photograph. | | (93 | 606 | 254·2 | +14·0 | +13·9) |
| 26·273 | 168 | 1028 | 98 | 598 | 254·1 | +14·1 | +26·4 |
| 27·445 | 76 | 883 | 53 | 613 | 253·7 | +14·1 | +41·5 |
| 28·490 | 52 | 532 | 48 | 494 | 254·0 | +14·1 | +55·6 |
| 29·403 | 17 | 352 | 24 | 488 | 254·2 | +14·0 | +67·8 |
| 30·411 | 4 | 106 | 13 | 336 | 253·4 | +13·6 | +80·4 |
| Means ... | ... | ... | 80 | 516 | 254·21 | +13·94 | ... |

### Group 1673.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 18·389 | 0 | 33 | 0 | 80 | 254·0 | − 8·4 | −78·1 |
| 19·415 | 8 | 50 | 10 | 58 | 253·6 | − 7·9 | −64·8 |
| 20·474 | 6 | 72 | 5 | 58 | 253·7 | − 6·9 | −50·8 |
| 21·556 | 11 | 62 | 7 | 38 | 254·4 | − 7·5 | −35·8 |
| 22·477 | 18 | 84 | 10 | 46 | 254·5 | − 6·9 | −23·5 |
| 23·418 | 6 | 93 | 3 | 47 | 255·2 | − 6·7 | −10·4 |
| 24·375 | 7 | 53 | 3 | 26 | 255·1 | − 6·7 | + 2·2 |
| 25 | No photograph. | | (4 | 19 | 255·2 | − 6·4 | +14·9) |
| 26·273 | 8 | 21 | 4 | 12 | 255·2 | − 6·0 | +27·5 |
| 27·445 | 0 | 8 | 0 | 5 | 255·3 | − 5·8 | +43·1 |
| Means ... | ... | ... | 5 | 39 | 254·62 | − 6·92 | ... |

### Group 1674.

Three small spots, *a*, *b*, and *c*, on May 20; only *a* remains by May 21.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 20·474 | 4 | 45 | 2 | 25 | 285·0 | +16·2 | −19·5 |
| 21·556 | 0 | 16 | 0 | 8 | 286·7 | +16·6 | − 3·5 |
| Means ... | ... | ... | 1 | 17 | 285·85 | +16·40 | ... |

### Group 1675.

A small spot, *a*, on May 20. Other spots appear near it on the succeeding days, and the group becomes a long straggling stream of small spots, which change from day to day. *a* has disappeared by May 23. The group is mainly measured in two clusters on May 23–26; the first of these two clusters has disappeared by May 27.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 20·474 | 0 | 21 | 0 | 18 | 251·9 | −16·9 | −52·6 |
| 21·556 | 0 | 21 | 0 | 14 | 254·2 | −16·7 | −36·0 |
| 22·477 | 10 | 44 | 6 | 24 | 258·3 | −15·4 | −19·7 |
| 23·418 | 0 | 66 | 0 | 34 | 260·0 | −15·9 | − 5·6 |
| 24·375 | 21 | 135 | 12 | 69 | 259·8 | −15·7 | + 6·9 |

### Group 1675—*continued.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| May 25 | No photograph. | | (11 | 76 | 260·9 | −15·7 | +20·6) |
| 26·273 | 16 | 129 | 10 | 82 | 261·9 | −15·7 | +34·2 |
| 27·445 | 4 | 69 | 3 | 48 | 256·2 | −15·3 | +44·0 |
| 28·490 | 0 | 10 | 0 | 10 | 254·1 | −15·3 | +55·7 |
| Means ... | ... | ... | 5 | 42 | 257·48 | −15·84 | ... |

### Group 1676.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 20·474 | 0 | 33 | 0 | 31 | 246·6 | − 9·3 | −57·9 |
| 21·556 | 2 | 23 | 1 | 16 | 246·5 | −10·2 | −43·7 |
| 22·477 | 2 | 24 | 1 | 15 | 246·4 | − 9·4 | −31·6 |
| 23·418 | 0 | 9 | 0 | 5 | 247·0 | − 9·6 | −18·6 |
| Means ... | ... | ... | 1 | 17 | 246·63 | − 9·63 | ... |

### Group 1677.

A large spot, *a*, of irregular outline. It rapidly diminishes in size, throwing off some small spots on May 22 and the succeeding days. It has entirely broken up by May 27, but the group is measured together on that day. It has begun to increase in size again by May 29.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 20·474 | 71 | 305 | 101 | 433 | 235·8 | + 8·9 | −68·7 |
| 21·556 | 33 | 458 | 29 | 396 | 236·1 | + 8·6 | −54·1 |
| 22·477 | 37 | 556 | 25 | 381 | 236·2 | + 9·3 | −41·8 |
| 23·418 | 19 | 399 | 11 | 233 | 236·5 | + 9·1 | −29·1 |
| 24·375 | 23 | 405 | 12 | 214 | 236·3 | + 9·2 | −16·6 |
| 25 | No photograph. | | (9 | 170 | 236·1 | + 9·8 | − 4·2) |
| 26·273 | 10 | 244 | 5 | 126 | 235·9 | +10·4 | + 8·2 |
| 27·445 | 26 | 270 | 14 | 152 | 236·5 | +10·3 | +24·3 |
| 28·490 | 4 | 90 | 2 | 59 | 237·0 | +10·3 | +38·6 |
| 29·403 | 4 | 144 | 3 | 114 | 236·2 | + 9·9 | +49·8 |
| 30·411 | 6 | 75 | 7 | 82 | 235·1 | +10·2 | +62·1 |
| 31·177 | 3 | 59 | 4 | 97 | 234·9 | +10·0 | +72·0 |
| Means ... | ... | ... | 18 | 205 | 236·05 | + 9·67 | ... |

### Group 1678.

A regular spot, *a*. A few very small spots are seen near it on May 24, 27, 30, and 31.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 20·474 | 0 | 81 | 0 | 205 | 225·9 | −17·3 | −78·6 |
| 21·556 | 18 | 164 | 20 | 186 | 227·1 | −17·7 | −63·1 |
| 22·477 | 53 | 214 | 44 | 179 | 226·5 | −17·2 | −51·5 |
| 23·418 | 31 | 281 | 21 | 188 | 226·6 | −17·7 | −39·0 |
| 24·375 | 72 | 356 | 41 | 205 | 226·7 | −17·4 | −26·2 |
| 25 | No photograph. | | (42 | 206 | 226·8 | −17·4 | −13·6) |
| 26·273 | 83 | 398 | 43 | 207 | 226·8 | −17·3 | − 0·9 |
| 27·445 | 62 | 360 | 34 | 193 | 227·1 | −17·0 | +14·9 |
| 28·490 | 52 | 301 | 31 | 181 | 227·1 | −16·9 | +28·7 |
| 29·403 | 36 | 277 | 27 | 178 | 227·3 | −16·8 | +40·9 |
| 30·411 | 35 | 191 | 31 | 169 | 226·9 | −16·4 | +53·9 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1678—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| May 31·177 | 29 | 159 | 35 | 190 | 227·3 | −16·8 | +64·4 |
| June 1·388 | 0 | 60 | 0 | 191 | 227·4 | −16·2 | +80·6 |
| Means ... | ... | ... | 28 | 191 | 226·88 | −17·08 | ... |
| **Group 1679.** A small spot. | | | | | | | |
| May 21·556 | 0 | 11 | 0 | 12 | 353·9 | − 3·0 | +63·7 |
| 22·477 | 0 | 9 | 0 | 17 | 353·3 | − 3·8 | +75·3 |
| Means ... | ... | ... | 0 | 15 | 353·60 | − 3·40 | ... |
| **Group 1680.** Two small spots. | | | | | | | |
| May 21·556 | 0 | 41 | 0 | 21 | 304·0 | − 6·5 | +13·8 |
| Means ... | ... | ... | 0 | 21 | 304·0 | − 6·5 | ... |
| **Group 1681.** A small spot on May 23. On May 24 and succeeding days a regular spot, *a*, followed by a cluster of small spots. | | | | | | | |
| May 23·418 | 0 | 40 | 0 | 20 | 277·8 | −10·2 | +12·2 |
| 24·375 | 11 | 94 | 6 | 52 | 278·5 | − 9·6 | +25·6 |
| 25 | No photograph. | | (9 | 94 | 278·3 | −10·0 | +38·0) |
| 26·273 | 16 | 171 | 12 | 136 | 278·1 | −10·3 | +50·4 |
| 27·445 | 14 | 115 | 16 | 140 | 277·7 | − 9·8 | +65·5 |
| 28·490 | 0 | 7 | 0 | 15 | 274·5 | −10·6 | +76·1 |
| Means ... | ... | ... | 7 | 76 | 277·48 | −10·08 | ... |
| **Group 1682.** A regular spot, *a*. It diminishes in size from May 23 to May 29. A very small spot is seen near it on June 1. | | | | | | | |
| May 23·418 | 6 | 31 | 16 | 88 | 185·6 | − 8·8 | −80·0 |
| 24·375 | 6 | 59 | 8 | 77 | 185·5 | − 8·4 | −67·4 |
| 25 | No photograph. | | (10 | 66 | 185·3 | − 8·2 | −55·1) |
| 26·273 | 17 | 80 | 12 | 55 | 185·0 | − 7·9 | −42·7 |
| 27·445 | 6 | 52 | 4 | 30 | 185·2 | − 7·9 | −27·0 |
| 28·490 | 7 | 47 | 4 | 24 | 185·0 | − 7·3 | −13·4 |
| 29·403 | 4 | 27 | 2 | 14 | 185·2 | − 7·1 | − 1·2 |
| 30·411 | 4 | 25 | 2 | 13 | 184·9 | − 6·9 | +11·9 |
| 31·177 | 5 | 23 | 3 | 12 | 185·0 | − 7·1 | +22·1 |
| June 1·388 | 0 | 22 | 0 | 14 | 184·9 | − 6·7 | +38·1 |
| Means ... | ... | ... | 6 | 39 | 185·16 | − 7·63 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1683.** Two very small spots, *a* and *b*, on May 24. A third spot, *c*, is seen near them on May 26. *b* and *c* have disappeared by May 27, and a fourth spot, *d*, is seen near *a*. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| May 24·375 | 3 | 20 | 2 | 10 | 268·7 | − 3·2 | +15·8 |
| 25 | No photograph. | | (4 | 29 | 269·7 | − 3·0 | +29·4) |
| 26·273 | 6 | 69 | 5 | 47 | 270·7 | − 2·7 | +43·0 |
| 27·445 | 4 | 48 | 4 | 48 | 272·1 | − 2·0 | +59·9 |
| Means ... | ... | ... | 4 | 34 | 270·30 | − 2·73 | ... |
| **Group 1684.** A small spot. | | | | | | | |
| May 27·445 | 0 | 8 | 0 | 15 | 137·0 | +11·3 | −75·2 |
| 28·490 | 0 | 11 | 0 | 12 | 136·8 | +11·7 | −61·6 |
| 29·403 | 3 | 10 | 2 | 8 | 137·1 | +11·5 | −49·3 |
| Means ... | ... | ... | 1 | 12 | 136·97 | +11·50 | ... |
| **Group 1685.** Two small spots on May 29 and 30. No trace of the group can be seen on May 31, but one small spot is seen on June 1. | | | | | | | |
| May 29·403 | 0 | 21 | 0 | 23 | 126·0 | −23·0 | −60·4 |
| 30·411 | 0 | 12 | 0 | 10 | 123·4 | −22·9 | −49·6 |
| 31·177 | 0 | 0 | 0 | 0 | ... | ... | ... |
| June 1·388 | 0 | 18 | 0 | 10 | 126·6 | −24·0 | −20·2 |
| Means ... | ... | ... | 0 | 11 | 125·33 | −23·30 | ... |
| **Group 1686.** Two small spots, *a* and *b*, on May 30. These have moved apart by May 31. *b* has greatly increased in size by June 1, and several very small spots have appeared between *a* and *b*. Only *a* and *b* remain by June 6, and only *a* by June 7. | | | | | | | |
| May 30·411 | 0 | 39 | 0 | 31 | 124·0 | +14·2 | −49·0 |
| 31·177 | 8 | 72 | 5 | 47 | 124·9 | +14·9 | −38·0 |
| June 1·388 | 26 | 190 | 15 | 109 | 123·5 | +14·2 | −23·3 |
| 2·423 | 10 | 230 | 5 | 120 | 123·2 | +14·5 | − 9·9 |
| 3·380 | 16 | 206 | 8 | 108 | 122·7 | +14·1 | + 2·1 |
| 4·400 | 23 | 110 | 13 | 59 | 123·0 | +14·2 | +16·0 |
| 5·384 | 15 | 94 | 9 | 57 | 124·2 | +14·5 | +30·3 |
| 6·245 | 19 | 73 | 13 | 52 | 126·6 | +14·5 | +44·1 |
| 7·416 | 0 | 15 | 0 | 16 | 128·5 | +14·4 | +61·5 |
| 8·284 | 0 | 9 | 0 | 16 | 129·3 | +14·4 | +73·7 |
| Means ... | ... | ... | 7 | 62 | 124·99 | +14·39 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1687.** Two small spots on May 30. The group increases in size, and consists mainly of three spots, *a*, *b*, and *c*. Between *b* and *c* is a group of small spots, which change their position considerably. By June 7 only *a* and *b* remain. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| May 30·411 | 2 | 43 | 2 | 40 | 116·4 | −11·9 | −56·6 |
| 31·177 | 40 | 291 | 30 | 218 | 115·8 | −11·9 | −47·1 |
| June 1·388 | 35 | 510 | 21 | 310 | 114·9 | −11·6 | −31·9 |
| 2·423 | 79 | 491 | 43 | 264 | 114·6 | −11·7 | −18·5 |
| 3·380 | 78 | 614 | 40 | 318 | 116·1 | −12·3 | − 4·5 |
| 4·400 | 82 | 551 | 43 | 286 | 116·8 | −12·6 | + 9·8 |
| 5·384 | 34 | 374 | 19 | 210 | 116·8 | −12·8 | +22·9 |
| 6·245 | 32 | 281 | 20 | 178 | 118·6 | −12·7 | +36·1 |
| 7·416 | 15 | 79 | 13 | 69 | 120·3 | −13·8 | +53·3 |
| 8·284 | 3 | 73 | 4 | 89 | 120·4 | −13·7 | +64·8 |
| 9·162 | 0 | 27 | 0 | 60 | 120·1 | −14·0 | +76·1 |
| Means ... | ... | ... | 21 | 186 | 117·35 | −12·64 | ... |
| **Group 1688.** A group of four spots. The group has entirely changed its appearance by June 2, when it consists of a nearly straight stream of very small spots. It is measured in three clusters on June 2 and 3, and in five on June 4. It has again changed its appearance by the latter date, the stream being now nearly circular. Only two spots are seen on June 5. | | | | | | | |
| June 1·388 | 28 | 140 | 15 | 73 | 136·6 | −12·8 | −10·2 |
| 2·423 | 24 | 110 | 13 | 57 | 136·6 | −12·8 | + 3·5 |
| 3·380 | 7 | 107 | 4 | 58 | 137·4 | −12·9 | +16·8 |
| 4·400 | 1 | 83 | 1 | 51 | 138·7 | −12·5 | +31·7 |
| 5·384 | 0 | 36 | 0 | 26 | 138·0 | −12·6 | +44·1 |
| Means ... | ... | ... | 7 | 53 | 137·46 | −12·72 | ... |
| **Group 1689.** Two spots. On June 2 the following spot has broken up into four very small spots. One of these is measured by itself. | | | | | | | |
| June 1·388 | 3 | 29 | 2 | 18 | 112·9 | + 7·4 | −33·9 |
| 2·423 | 1 | 35 | 1 | 19 | 113·4 | + 7·9 | −19·7 |
| 3·380 | 0 | 28 | 0 | 15 | 114·3 | + 7·4 | − 6·3 |
| 4·400 | 0 | 10 | 0 | 5 | 115·9 | + 7·5 | + 8·9 |
| Means ... | ... | ... | 1 | 14 | 114·13 | + 7·55 | ... |
| **Group 1690.** A fine group, consisting mainly of four spots. On June 6, *c*, which has broken up, is measured in two parts. On June 7, *a* and *b* have joined, and are measured together. *d* has broken up by June 7, and has disappeared by June 11. *c* increases in size after June 10. A small spot has appeared preceding *a* by June 7, and other small spots are seen occasionally. | | | | | | | |
| June 1·388 | 8 | 112 | 26 | 355 | 66·1 | −10·3 | −80·7 |
| 2·423 | 32 | 547 | 43 | 898 | 61·3 | −10·9 | −71·8 |
| 3·380 | 61 | 876 | 60 | 902 | 60·6 | −11·2 | −60·0 |
| **Group 1690—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| June 4·400 | 182 | 1291 | 137 | 967 | 60·5 | −11·3 | −46·5 |
| 5·384 | 143 | 1522 | 85 | 926 | 61·2 | −10·8 | −32·7 |
| 6·245 | 324 | 1928 | 176 | 1052 | 60·9 | −10·8 | −21·6 |
| 7·416 | 208 | 1615 | 106 | 832 | 61·6 | −10·6 | − 5·4 |
| 8·284 | 290 | 1661 | 149 | 851 | 60·9 | −10·6 | + 5·3 |
| 9·162 | 223 | 1378 | 120 | 740 | 62·2 | −10·6 | +18·2 |
| 10·397 | 99 | 1105 | 64 | 692 | 62·9 | −10·4 | +35·2 |
| 11·406 | 96 | 972 | 73 | 748 | 62·5 | −10·1 | +48·3 |
| 12·449 | 120 | 763 | 130 | 827 | 62·2 | − 9·7 | +61·8 |
| 13·404 | 15 | 420 | 31 | 787 | 61·8 | − 9·8 | +74·0 |
| Means ... | ... | ... | 92 | 814 | 61·90 | −10·55 | ... |
| **Group 1691.** Three small spots seen only on this day. | | | | | | | |
| June 3·380 | 0 | 23 | 0 | 14 | 94·7 | −12·5 | −25·9 |
| Means ... | ... | ... | 0 | 14 | 94·7 | −12·5 | ... |
| **Group 1692.** A faint spot. | | | | | | | |
| June 4·400 | 0 | 17 | 0 | 58 | 25·8 | − 2·0 | −81·2 |
| 5·384 | 0 | 19 | 0 | 25 | 25·7 | − 1·7 | −68·2 |
| 6·245 | 0 | 16 | 0 | 15 | 25·3 | − 1·9 | −57·2 |
| Means ... | ... | ... | 0 | 33 | 25·60 | − 1·87 | ... |
| **Group 1693.** Two spots, which separate and diminish in size. | | | | | | | |
| June 7·416 | 10 | 162 | 6 | 94 | 94·0 | −13·5 | +27·0 |
| 8·284 | 14 | 108 | 9 | 71 | 93·7 | −13·6 | +38·1 |
| 9·162 | 0 | 17 | 0 | 14 | 95·4 | −13·4 | +51·4 |
| Means ... | ... | ... | 5 | 60 | 94·37 | −13·50 | ... |
| **Group 1694.** A very large spot, *a*. On June 9 it has three companions, which are measured together on June 10 and 12. On June 11, *a* breaks into two parts, *b* and *c*. Small spots are detached on June 14 and 15. | | | | | | | |
| June 7·416 | 53 | 316 | 83 | 494 | 356·4 | −14·7 | −70·6 |
| 8·284 | 212 | 673 | 210 | 665 | 357·2 | −14·6 | −58·4 |
| 9·162 | 255 | 952 | 194 | 721 | 357·0 | −14·3 | −47·0 |
| 10·397 | 183 | 1192 | 110 | 711 | 357·5 | −14·2 | −30·2 |
| 11·406 | 186 | 1108 | 100 | 600 | 357·1 | −14·3 | −17·1 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| *Group 1694—continued.* | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| June 12·449 | 193 | 1296 | 101 | 674 | 357·0 | −14·2 | − 3·4 |
| 13·404 | 167 | 1195 | 87 | 627 | 357·3 | −14·4 | + 9·5 |
| 14·541 | 138 | 948 | 79 | 543 | 356·7 | −14·5 | +24·0 |
| 15·482 | 108 | 811 | 70 | 529 | 356·8 | −14·7 | +36·5 |
| 16·431 | 88 | 564 | 69 | 449 | 356·8 | −14·5 | +49·0 |
| 17·218 | 91 | 447 | 93 | 457 | 356·3 | −15·1 | +59·0 |
| 18·470 | 23 | 176 | 42 | 389 | 356·8 | −14·7 | +76·0 |
| Means ... | ... | ... | 103 | 572 | 356·91 | −14·52 | ... |
| **Group 1695.** A large spot, which rapidly diminishes in size. On June 11 it breaks into two parts, and the preceding spot is not seen on the next day. A different spot is seen preceding on June 13. On June 14 the group consists of several very faint spots. | | | | | | | |
| June 8·284 | 0 | 162 | 0 | 263 | 344·3 | −15·3 | −71·3 |
| 9·162 | 12 | 168 | 13 | 174 | 344·2 | −15·3 | −59·8 |
| 10·397 | 13 | 146 | 9 | 105 | 344·2 | −14·9 | −43·5 |
| 11·406 | 6 | 111 | 4 | 68 | 344·0 | −15·2 | −30·2 |
| 12·449 | 8 | 28 | 5 | 15 | 343·5 | −14·7 | −16·9 |
| 13·404 | 0 | 16 | 0 | 8 | 344·1 | −14·6 | − 3·7 |
| 14·541 | 0 | 88 | 0 | 47 | 346·3 | −15·4 | +13·6 |
| Means ... | ... | ... | 4 | 97 | 344·37 | −15·06 | ... |
| **Group 1696.** A faint spot. | | | | | | | |
| June 9·162 | 0 | 10 | 0 | 18 | 330·5 | + 8·8 | −73·5 |
| Means ... | ... | ... | 0 | 18 | 330·5 | + 8·8 | ... |
| **Group 1697.** One faint spot on June 11, five on June 12, four on June 13. Of the four seen on June 13 the third has disappeared by June 14, and the two preceding are measured together. | | | | | | | |
| June 11·406 | 0 | 4 | 0 | 2 | 29·8 | + 4·6 | +15·6 |
| 12·449 | 25 | 168 | 15 | 98 | 30·2 | + 5·0 | +29·8 |
| 13·404 | 0 | 136 | 0 | 91 | 31·2 | + 5·1 | +43·4 |
| 14·541 | 0 | 111 | 0 | 103 | 30·1 | + 4·9 | +57·4 |
| Means ... | ... | ... | 4 | 74 | 30·33 | + 4·90 | ... |
| **Group 1698.** Two very small spots. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| June 12·449 | 0 | 8 | 0 | 6 | 311·5 | +15·1 | −48·9 |
| Means ... | .. | ... | 0 | 6 | 311·5 | +15·1 | ... |
| **Group 1699.** A large spot, *a*, with two small companions, on June 14. *a* has broken up by June 16 into two principal spots, *b* and *c*, with small companions. | | | | | | | |
| June 12·449 | 10 | 105 | 19 | 187 | 286·9 | − 8·2 | −73·5 |
| 13·404 | 7 | 130 | 8 | 136 | 286·8 | − 8·5 | −61·0 |
| 14·541 | 19 | 262 | 13 | 191 | 287·1 | − 8·0 | −45·6 |
| 15·482 | 18 | 261 | 11 | 158 | 288·2 | − 7·8 | −32·1 |
| 16·431 | 31 | 313 | 17 | 169 | 288·3 | − 7·4 | −19·5 |
| 17·218 | 26 | 161 | 13 | 83 | 288·6 | − 7·6 | − 8·7 |
| 18·470 | 21 | 91 | 11 | 46 | 288·9 | − 7·0 | + 8·1 |
| 19·484 | 9 | 69 | 5 | 37 | 289·2 | − 7·0 | +21·9 |
| 20·414 | 8 | 23 | 5 | 14 | 288·7 | − 6·9 | +33·8 |
| 21·510 | 3 | 13 | 2 | 10 | 288·8 | − 6·5 | +48·3 |
| Means ... | ... | ... | 10 | 103 | 288·15 | − 7·49 | ... |
| **Group 1700.** A small regular spot. | | | | | | | |
| June 12·449 | 0 | 7 | 0 | 17 | 282·9 | − 1·3 | −77·5 |
| 13·404 | 1 | 18 | 1 | 22 | 282·0 | − 1·5 | −65·8 |
| 14·541 | 0 | 19 | 0 | 15 | 281·9 | − 1·4 | −50·8 |
| 15·482 | 0 | 10 | 0 | 7 | 282·0 | − 1·3 | −38·3 |
| 16·431 | 0 | 13 | 0 | 7 | 282·3 | − 1·3 | −25·5 |
| 17·218 | 0 | 10 | 0 | 5 | 282·1 | − 1·7 | −15·2 |
| 18·470 | 0 | 13 | 0 | 7 | 282·4 | − 1·3 | + 1·6 |
| Means ... | ... | ... | 0 | 11 | 282·23 | − 1·40 | ... |
| **Group 1701.** One spot, *a*, on June 14. Another, *b*, appears on June 15, and has disappeared by June 18. | | | | | | | |
| June 14·541 | 0 | 18 | 0 | 20 | 270·2 | −10·7 | −62·5 |
| 15·482 | 5 | 44 | 4 | 36 | 269·9 | −10·7 | −50·4 |
| 16·431 | 25 | 73 | 16 | 47 | 270·5 | −10·7 | −37·3 |
| 17·218 | 13 | 56 | 8 | 33 | 270·8 | −11·0 | −26·5 |
| 18·470 | 7 | 33 | 4 | 17 | 272·5 | −10·7 | − 8·3 |
| Means ... | ... | ... | 6 | 31 | 270·78 | −10·76 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1702.** A regular spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| June 14·541 | 6 | 80 | 10 | 134 | 260·2 | + 8·6 | −72·5 |
| 15·482 | 11 | 117 | 11 | 117 | 260·6 | + 8·7 | −59·7 |
| 16·431 | 23 | 171 | 17 | 126 | 261·1 | + 8·5 | −46·7 |
| 17·218 | 34 | 204 | 21 | 128 | 261·1 | + 8·1 | −36·2 |
| 18·470 | 31 | 226 | 17 | 121 | 261·1 | + 8·1 | −19·7 |
| 19·484 | 26 | 207 | 13 | 105 | 261·4 | + 8·3 | − 5·9 |
| 20·414 | 29 | 251 | 15 | 127 | 261·4 | + 8·5 | + 6·5 |
| 21·510 | 20 | 196 | 11 | 106 | 261·5 | + 8·6 | +21·0 |
| 22·409 | 24 | 192 | 14 | 117 | 261·6 | + 8·9 | +33·0 |
| 23·416 | 20 | 129 | 15 | 95 | 261·9 | + 9·2 | +46·6 |
| 24·401 | 5 | 65 | 5 | 65 | 262·1 | + 9·2 | +59·9 |
| 25·251 | 2 | 21 | 4 | 33 | 262·9 | + 9·5 | +71·8 |
| Means ... | ... | ... | 13 | 106 | 261·41 | + 8·68 | ... |
| **Group 1703.** Two spots, *a* and *b*, are seen on June 15. Another spot, *c*, is seen near *b* on June 16. *b* has disappeared by June 17, and *a* has divided into two portions. | | | | | | | |
| June 14·541 | 0 | 21 | 0 | 54 | 255·2 | −21·8 | −77·5 |
| 15·482 | 10 | 192 | 14 | 257 | 254·7 | −21·9 | −65·6 |
| 16·431 | 9 | 127 | 9 | 122 | 253·4 | −22·5 | −54·4 |
| 17·218 | 5 | 79 | 3 | 61 | 252·9 | −22·8 | −44·4 |
| 18·470 | 0 | 23 | 0 | 14 | 256·0 | −22·6 | −24·8 |
| Means ... | ... | ... | 5 | 102 | 254·44 | −22·32 | ... |
| **Group 1704.** Three small spots; two are measured together on June 15. | | | | | | | |
| June 15·482 | 2 | 67 | 1 | 36 | 299·5 | − 3·5 | −20·8 |
| 16·431 | 4 | 22 | 2 | 11 | 300·8 | − 3·7 | − 7·0 |
| 17·218 | 0 | 30 | 0 | 15 | 301·1 | − 3·7 | + 3·8 |
| Means ... | ... | ... | 1 | 21 | 300·47 | − 3·63 | ... |
| **Group 1705.** Two irregularly shaped groups, which diminish in size after June 20. Small companions are measured separately on June 17, 21, and 22. | | | | | | | |
| June 15·482 | 6 | 74 | 6 | 73 | 262·9 | −14·3 | −57·4 |
| 16·431 | 20 | 199 | 15 | 147 | 262·8 | −13·9 | −45·0 |
| 17·218 | 25 | 401 | 16 | 254 | 262·9 | −14·5 | −34·4 |
| 18·470 | 47 | 683 | 26 | 375 | 262·9 | −15·0 | −17·9 |
| 19·484 | 33 | 472 | 17 | 248 | 263·3 | −15·2 | − 4·0 |
| 20·414 | 31 | 543 | 17 | 288 | 263·6 | −15·1 | + 8·7 |
| 21·510 | 56 | 512 | 33 | 295 | 264·1 | −14·9 | +23·6 |
| 22·409 | 26 | 266 | 17 | 170 | 262·9 | −14·9 | +34·3 |
| **Group 1705—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| June 23·416 | 42 | 144 | 33 | 116 | 264·1 | −14·9 | +48·8 |
| 24·401 | 0 | 72 | 0 | 72 | 259·7 | −16·0 | +57·5 |
| 25·251 | 0 | 17 | 0 | 26 | 259·7 | −16·7 | +68·6 |
| Means ... | ... | ... | 16 | 188 | 262·63 | −15·04 | ... |
| **Group 1706.** A very large group, consisting of a large spot, *a*, preceding and an irregular mass following. The latter undergoes constant changes. The entire group appears, and is measured as one spot on June 25. On June 27 it appears as two spots on the limb, which are measured separately. | | | | | | | |
| June 15·482 | 27 | 234 | 56 | 518 | 243·4 | +10·2 | −76·9 |
| 16·431 | 116 | 1001 | 145 | 1310 | 240·5 | +10·7 | −67·3 |
| 17·218 | 203 | 1530 | 181 | 1450 | 239·6 | +10·9 | −57·7 |
| 18·470 | 240 | 2188 | 160 | 1482 | 239·6 | +11·0 | −41·2 |
| 19·484 | 312 | 2571 | 177 | 1483 | 239·8 | +11·1 | −27·5 |
| 20·414 | 259 | 3154 | 135 | 1654 | 240·3 | +10·9 | −14·6 |
| 21·510 | 298 | 3762 | 151 | 1917 | 240·2 | +10·9 | − 0·3 |
| 22·409 | 251 | 3463 | 130 | 1799 | 240·7 | +11·1 | +12·1 |
| 23·416 | 284 | 2999 | 163 | 1686 | 241·1 | +10·9 | +25·8 |
| 24·401 | 105 | 2139 | 70 | 1415 | 242·1 | +10·5 | +39·9 |
| 25·251 | 70 | 1512 | 56 | 1212 | 242·2 | +10·4 | +51·1 |
| 26 | No photograph. | | (28 | 821 | 242·4 | + 9·5 | +65·9) |
| 27·445 | 0 | 144 | 0 | 430 | 242·5 | + 8·6 | +80·6 |
| Means ... | ... | ... | 112 | 1321 | 241·11 | +10·52 | ... |
| **Group 1707.** Two small regular spots, *a* and *b*. | | | | | | | |
| June 16·431 | 9 | 53 | 5 | 30 | 331·5 | −14·3 | +23·7 |
| 17·218 | 6 | 111 | 4 | 70 | 332·3 | −14·5 | +35·0 |
| Means ... | ... | ... | 5 | 50 | 331·90 | −14·40 | ... |
| **Group 1708.** A very small spot. | | | | | | | |
| June 19·484 | 0 | 21 | 0 | 12 | 290·3 | −10·7 | +23·0 |
| 20·414 | 1 | 9 | 1 | 6 | 290·8 | −10·8 | +35·9 |
| Means ... | ... | ... | 1 | 9 | 290·55 | −10·75 | ... |
| **Group 1709.** Two very small faint spots. | | | | | | | |
| June 23·416 | 5 | 24 | 2 | 13 | 201·2 | − 9·5 | −14·1 |
| 24·401 | 0 | 15 | 0 | 7 | 201·6 | −10·1 | − 0·6 |
| Means ... | ... | ... | 1 | 10 | 201·40 | − 9·80 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1710.

Two spots, which appear to separate. The following spot diminishes, and has disappeared by June 27, on which day the preceding spot has developed into a large group, which, after some changes, remains as two principal spots, *a* and *b*. *a* has a small companion on June 30 and July 1, and by July 2 has divided into two spots. *b* is measured as two spots on July 1.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| June 23·416 | 32 | 95 | 31 | 95 | 157·3 | −14·5 | −58·0 |
| 24·401 | 29 | 245 | 21 | 179 | 158·3 | −14·5 | −43·9 |
| 25·251 | 18 | 210 | 11 | 130 | 159·8 | −14·6 | −31·3 |
| 26 | No photograph. | | (30 | 415 | 161·1 | −14·2 | −15·4) |
| 27·445 | 90 | 1340 | 48 | 699 | 162·4 | −13·8 | + 0·5 |
| 28·412 | 182 | 1394 | 98 | 749 | 162·8 | −13·5 | +13·8 |
| 29·581 | 120 | 1141 | 73 | 689 | 163·5 | −12·8 | +29·8 |
| 30·409 | 79 | 868 | 56 | 606 | 164·1 | −12·1 | +41·4 |
| July 1·496 | 66 | 713 | 65 | 685 | 165·4 | −11·8 | +57·0 |
| 2·402 | 23 | 327 | 40 | 499 | 165·9 | −11·9 | +69·6 |
| Means ... | ... | ... | 47 | 475 | 162·06 | −13·37 | ... |

### Group 1711.

Three spots on June 24. Only one is seen after June 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 23·416 | 17 | 113 | 29 | 192 | 143·9 | −16·4 | −71·4 |
| 24·401 | 26 | 236 | 26 | 251 | 142·7 | −16·7 | −59·5 |
| 25·251 | 26 | 250 | 20 | 198 | 143·6 | −16·5 | −47·5 |
| 26 | No photograph. | | (12 | 118 | 144·4 | −16·3 | −32·1) |
| 27·445 | 6 | 67 | 3 | 37 | 145·2 | −16·0 | −16·7 |
| 28·412 | 11 | 53 | 6 | 28 | 145·3 | −15·9 | − 3·7 |
| 29·581 | 0 | 33 | 0 | 18 | 145·2 | −15·7 | +11·5 |
| 30·409 | 1 | 38 | 1 | 22 | 144·8 | −15·7 | +22·1 |
| July 1·496 | 0 | 8 | 0 | 5 | 144·5 | −15·5 | +36·1 |
| 2·402 | 0 | 7 | 0 | 6 | 144·6 | −15·5 | +48·3 |
| Means ... | ... | ... | 10 | 88 | 144·42 | −16·02 | ... |

### Group 1712.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 25·251 | 0 | 4 | 0 | 5 | 253·5 | −20·6 | +62·4 |
| Means ... | ... | ... | 0 | 5 | 253·5 | −20·6 | ... |

### Group 1713.

A group of ten spots on June 28. They separate, and form a straight line of spots, the largest being in the middle.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 28·412 | 15 | 176 | 7 | 89 | 143·9 | − 6·2 | − 5·1 |
| 29·581 | 0 | 234 | 0 | 121 | 146·1 | − 5·7 | +12·4 |
| 30·409 | 29 | 474 | 16 | 261 | 146·3 | − 5·9 | +23·6 |
| July 1·496 | 24 | 286 | 15 | 183 | 145·8 | − 6·0 | +37·4 |
| 2·402 | 6 | 172 | 4 | 136 | 146·5 | − 5·9 | +50·2 |
| 3·463 | 7 | 64 | 7 | 71 | 145·3 | − 5·8 | +63·0 |
| Means ... | ... | ... | 8 | 144 | 145·65 | − 5·92 | ... |

### Group 1714.

Seven large spots, *a*, *b*, *c*, *d*, *e*, *f*, and *g*, on June 30, with some smaller spots following. *b* has disappeared by July 2, and *a* begins to break up on July 4. *e* is an irregular mass, which has broken up and partly disappeared by July 4, causing an apparent change of place on that day. On July 5 the group appears as a multitude of small spots, and after this the group consists of the spots *d*, *f*, and *g*, with several small spots at some distance. The small spot following *d* on July 6 is measured with it on July 7.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| June 28·412 | 0 | 13 | 0 | 60 | 65·4 | − 8·4 | −83·6 |
| 29·581 | 0 | 318 | 0 | 763 | 56·5 | −10·1 | −77·2 |
| 30·409 | 39 | 728 | 48 | 928 | 56·8 | −10·0 | −65·9 |
| July 1·496 | 160 | 1252 | 133 | 1055 | 56·3 | − 9·9 | −52·1 |
| 2·402 | 164 | 1451 | 110 | 978 | 56·4 | −10·1 | −39·9 |
| 3·463 | 181 | 1540 | 104 | 881 | 57·0 | −10·1 | −25·3 |
| 4·459 | 193 | 1414 | 102 | 751 | 56·0 | −10·8 | −13·1 |
| 5·326 | 238 | 1176 | 124 | 610 | 55·9 | −10·4 | − 1·7 |
| 6·460 | 117 | 763 | 61 | 408 | 55·1 | −11·0 | +12·4 |
| 7·482 | 48 | 531 | 28 | 305 | 53·5 | −11·3 | +24·3 |
| 8·427 | 51 | 399 | 34 | 266 | 55·2 | −12·0 | +38·7 |
| 9·488 | 24 | 221 | 21 | 189 | 54·4 | −12·1 | +51·8 |
| 10·439 | 0 | 127 | 0 | 162 | 55·0 | −12·4 | +65·1 |
| 11·406 | 0 | 100 | 0 | 259 | 54·8 | −12·1 | +77·7 |
| Means ... | ... | ... | 55 | 544 | 56·31 | −10·76 | ... |

### Group 1715.

A small spot, *a*, is seen on July 1. Several very small spots appear preceding *a* on July 2; and a spot, *b*, somewhat larger than *a*, appears on July 3. On July 5 the group is much broken up. By July 6, *a* and *b* have much increased in size, and appear as broken spots, with a small spot following. By July 8, *a* and *b* have coalesced, and are measured together, and by July 9 the group following is included.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 1·496 | 0 | 21 | 0 | 22 | 50·3 | −19·6 | −58·1 |
| 2·402 | 8 | 38 | 7 | 29 | 51·5 | −19·6 | −44·8 |
| 3·463 | 18 | 158 | 11 | 97 | 54·5 | −19·1 | −27·8 |
| 4·459 | 16 | 208 | 9 | 118 | 54·0 | −19·0 | −15·1 |
| 5·326 | 57 | 284 | 32 | 154 | 53·5 | −18·6 | − 4·1 |
| 6·460 | 154 | 1175 | 86 | 651 | 54·8 | −18·4 | +12·1 |
| 7·482 | 110 | 1777 | 66 | 1069 | 53·6 | −18·8 | +24·4 |
| 8·427 | 218 | 1673 | 150 | 1148 | 54·4 | −18·6 | +37·9 |
| 9·488 | 146 | 1442 | 127 | 1249 | 53·1 | −18·8 | +50·5 |
| 10·439 | 54 | 1062 | 65 | 1270 | 52·1 | −18·6 | +62·2 |
| 11·406 | 25 | 585 | 53 | 1246 | 51·2 | −18·8 | +74·1 |
| Means ... | ... | ... | 55 | 641 | 53·00 | −18·90 | ... |

### Group 1716.

A regular spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| July 4·459 | 3 | 49 | 7 | 103 | 354·4 | −15·1 | −74·7 |
| 5·326 | 29 | 84 | 35 | 99 | 354·5 | −14·9 | −63·1 |
| 6·460 | 17 | 112 | 14 | 90 | 354·7 | −15·4 | −48·0 |
| 7·482 | 31 | 142 | 20 | 91 | 353·9 | −15·3 | −35·3 |
| 8·427 | 17 | 169 | 10 | 97 | 354·8 | −15·4 | −21·7 |
| 9·488 | 25 | 171 | 13 | 92 | 354·1 | −15·3 | − 8·5 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1716—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| July 10·439 | 12 | 121 | 6 | 64 | 354·0 | −15·1 | + 4·1 |
| 11·406 | 12 | 121 | 7 | 67 | 353·8 | −15·1 | +16·7 |
| 12·195 | 19 | 108 | 11 | 65 | 354·1 | −15·0 | +27·4 |
| 13·489 | 10 | 107 | 8 | 80 | 353·8 | −14·8 | +44·1 |
| 14·494 | 2 | 54 | 2 | 54 | 353·5 | −14·9 | +57·2 |
| 15·484 | 0 | 13 | 0 | 20 | 352·7 | −15·0 | +69·5 |
| Means ... | ... | ... | 11 | 77 | 354·03 | −15·11 | ... |
| **Group 1717.** A spot, with smaller spots following, one of which has disappeared by July 6, and the others have coalesced by July 7, to form one spot. | | | | | | | |
| July 5·326 | 10 | 112 | 6 | 66 | 82·4 | −17·3 | +24·8 |
| 6·460 | 22 | 95 | 16 | 68 | 84·1 | −16·6 | +41·4 |
| 7·482 | 8 | 218 | 8 | 206 | 83·9 | −16·9 | +54·7 |
| 8·427 | 5 | 114 | 8 | 168 | 84·4 | −16·6 | +67·9 |
| Means ... | ... | ... | 10 | 127 | 83·70 | −16·85 | ... |
| **Group 1718.** A regular spot, *a*. A faint spot follows *a* on July 9 and the succeeding days. It has divided into two portions by July 12. | | | | | | | |
| July 9·488 | 10 | 140 | 18 | 244 | 290·1 | − 7·5 | −72·5 |
| 10·439 | 17 | 329 | 17 | 345 | 289·6 | − 7·7 | −60·3 |
| 11·406 | 45 | 437 | 33 | 333 | 289·7 | − 7·6 | −47·4 |
| 12·195 | 111 | 488 | 69 | 306 | 291·3 | − 7·8 | −35·4 |
| 13·489 | 99 | 587 | 53 | 316 | 292·1 | − 8·0 | −17·6 |
| 14·494 | 92 | 486 | 48 | 251 | 293·0 | − 8·2 | − 3·3 |
| 15·484 | 84 | 491 | 44 | 256 | 293·2 | − 8·4 | +10·0 |
| 16·459 | 56 | 460 | 32 | 260 | 293·8 | − 8·4 | +23·5 |
| 17·493 | 66 | 345 | 43 | 224 | 293·8 | − 8·8 | +37·2 |
| 18·180 | 79 | 338 | 60 | 254 | 294·1 | − 9·3 | +46·6 |
| 19·641 | 33 | 160 | 42 | 203 | 293·5 | − 9·8 | +65·3 |
| 20·560 | 5 | 74 | 12 | 186 | 293·5 | −10·0 | +77·5 |
| Means ... | ... | ... | 39 | 265 | 292·31 | − 8·46 | ... |
| **Group 1719.** A very small spot on July 12. On July 13 an irregular spot, with two small spots following it. On the next day the group consists of two faint broken patches. By July 15 the preceding patch has become a regular spot. The following patch has disappeared by July 16. A fresh spot has appeared by July 18. | | | | | | | |
| July 12·195 | 0 | 5 | 0 | 3 | 284·9 | +14·4 | −41·8 |
| 13·489 | 1 | 58 | 1 | 32 | 287·2 | +15·0 | −22·5 |
| 14·494 | 0 | 109 | 0 | 57 | 286·0 | +14·5 | −10·3 |
| 15·484 | 11 | 86 | 6 | 43 | 286·9 | +14·5 | + 3·7 |
| 16·459 | 2 | 19 | 1 | 10 | 290·0 | +15·0 | +19·7 |
| 17·493 | 4 | 14 | 3 | 9 | 290·5 | +14·9 | +33·9 |
| 18·180 | 7 | 33 | 5 | 22 | 290·3 | +15·0 | +42·8 |
| Means ... | ... | ... | 2 | 25 | 287·97 | +14·76 | ... |
| **Group 1720.** Two principal spots, *a* and *b*, and a stream of small spots; *a* has divided into two by July 17, and breaks up still further on the succeeding days; *b* at first has two nuclei, but on July 15 and following days there is only one. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| July 12·195 | 38 | 296 | 105 | 845 | 246·3 | + 9·5 | −80·4 |
| 13·489 | 77 | 586 | 85 | 657 | 246·0 | +10·0 | −63·7 |
| 14·494 | 92 | 864 | 72 | 663 | 247·0 | + 9·6 | −49·3 |
| 15·484 | 56 | 960 | 35 | 596 | 247·4 | + 9·3 | −35·8 |
| 16·459 | 63 | 875 | 34 | 478 | 247·7 | + 9·4 | −22·6 |
| 17·493 | 83 | 739 | 42 | 378 | 246·6 | + 9·2 | −10·0 |
| 18·180 | 159 | 849 | 80 | 427 | 248·1 | + 8·9 | + 0·6 |
| 19·641 | 80 | 624 | 43 | 336 | 248·8 | + 8·3 | +20·6 |
| 20·560 | 38 | 487 | 21 | 295 | 250·0 | + 8·0 | +34·0 |
| 21·507 | 28 | 317 | 19 | 224 | 248·2 | + 8·4 | +44·7 |
| 22·475 | 6 | 201 | 5 | 174 | 245·7 | + 9·3 | +55·0 |
| 23·410 | 10 | 117 | 13 | 148 | 245·4 | + 9·2 | +67·1 |
| 24·451 | 0 | 92 | 0 | 245 | 244·5 | + 9·3 | +80·0 |
| Means ... | ... | ... | 43 | 420 | 247·05 | + 9·11 | ... |
| **Group 1721.** A very small spot. | | | | | | | |
| July 14·494 | 0 | 10 | 0 | 7 | 256·6 | + 2·6 | −39·7 |
| Means ... | ... | ... | 0 | 7 | 256·6 | + 2·6 | ... |
| **Group 1722.** A regular spot, *a*, with two companions. These are measured together on July 15 and 17, and with the large spot on July 19. Only the large spot, *a*, is seen on July 20. Two spots, *b* and *c*, have appeared by July 21, following *a*; *b* increases in size, and has broken into two, *d* and *e*, by July 23. | | | | | | | |
| July 14·494 | 0 | 19 | 0 | 53 | 217·2 | − 7·7 | −79·1 |
| 15·484 | 2 | 115 | 2 | 155 | 215·9 | − 7·4 | −67·3 |
| 16·459 | 9 | 218 | 8 | 193 | 216·1 | − 7·0 | −54·2 |
| 17·493 | 43 | 282 | 29 | 192 | 215·6 | − 6·9 | −41·0 |
| 18·180 | 49 | 321 | 29 | 194 | 215·5 | − 6·5 | −32·0 |
| 19·641 | 29 | 217 | 15 | 113 | 216·1 | − 6·3 | −12·1 |
| 20·560 | 17 | 170 | 9 | 87 | 216·6 | − 6·2 | + 0·6 |
| 21·507 | 8 | 285 | 4 | 149 | 214·6 | − 6·3 | +11·1 |
| 22·475 | 0 | 229 | 0 | 127 | 212·8 | − 5·3 | +22·1 |
| 23·410 | 42 | 426 | 25 | 267 | 213·7 | − 5·0 | +35·4 |
| 24·451 | 24 | 370 | 20 | 293 | 214·1 | − 4·5 | +49·6 |
| 25·576 | 0 | 40 | 0 | 50 | 215·9 | − 4·9 | +66·2 |
| Means ... | ... | ... | 12 | 156 | 215·34 | − 6·17 | ... |
| **Group 1723.** A very small spot. | | | | | | | |
| July 16·459 | 0 | 14 | 0 | 8 | 244·9 | −20·8 | −25·4 |
| Means ... | ... | ... | 0 | 8 | 244·9 | −20·8 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1723*.** Three very small spots. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| July 17·493 | 0 | 7 | 0 | 4 | 219·9 | −13·7 | −36·7 |
| Means ... | ... | ... | 0 | 4 | 219·9 | −13·7 | ... |
| **Group 1724.** Three spots on July 16. By the next day each has broken up, the first into three small spots, the second into a regular spot, *a*, and a group of small spots, and the last into a long group of small spots (measured in two) stretching northwards. The first portion of the group has disappeared by July 18, and the last by July 19, leaving only the centre portion, which forms a line of spots on that day. By July 21 the group has much changed, and consists of a large scattered group, with two small spots preceding, which are not seen on the next day. | | | | | | | |
| July 16·459 | 0 | 92 | 0 | 92 | 212·8 | −12·9 | −57·5 |
| 17·493 | 32 | 267 | 22 | 198 | 212·0 | −13·1 | −44·6 |
| 18·180 | 46 | 334 | 29 | 214 | 213·1 | −13·2 | −34·4 |
| 19·641 | 12 | 235 | 6 | 128 | 214·8 | −13·2 | −13·4 |
| 20·560 | 5 | 268 | 3 | 141 | 213·9 | −13·8 | − 2·1 |
| 21·507 | 0 | 350 | 0 | 187 | 214·0 | −12·7 | +10·5 |
| 22·475 | 0 | 261 | 0 | 150 | 213·3 | −12·8 | +22·6 |
| 23·410 | 0 | 68 | 0 | 44 | 212·8 | −14·0 | +34·5 |
| Means ... | ... | ... | 8 | 144 | 213·34 | −13·21 | ... |
| **Group 1725.** Two small spots, measured together. | | | | | | | |
| July 16·459 | 0 | 11 | 0 | 12 | 209·4 | − 6·9 | −60·9 |
| 17·493 | 1 | 17 | 1 | 13 | 209·4 | − 7·8 | −47·2 |
| 18·180 | 0 | 11 | 0 | 7 | 208·4 | − 9·1 | −39·1 |
| Means ... | ... | ... | 0 | 11 | 209·07 | − 7·93 | ... |
| **Group 1726.** Three well-defined spots, with small companions, on July 17. Only one small spot is seen on July 19. | | | | | | | |
| July 17·493 | 8 | 159 | 6 | 98 | 288·4 | −10·7 | +31·8 |
| 18·180 | 6 | 32 | 4 | 23 | 288·7 | −11·6 | +41·2 |
| 19·641 | 0 | 6 | 0 | 8 | 291·9 | −12·8 | +63·7 |
| Means ... | ... | ... | 3 | 43 | 289·67 | −11·70 | ... |
| **Group 1727.** Two faint spots on July 17. A third has appeared by July 18. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| July 17·493 | 0 | 12 | 0 | 6 | 273·1 | −15·4 | +16·5 |
| 18·180 | 5 | 51 | 3 | 30 | 272·5 | −15·4 | +25·0 |
| 19·641 | 4 | 29 | 3 | 22 | 273·2 | −15·6 | +45·0 |
| 20·560 | 0 | 58 | 0 | 59 | 273·7 | −14·9 | +57·7 |
| Means ... | ... | ... | 2 | 29 | 273·13 | −15·33 | ... |
| **Group 1728.** A regular spot, *a*. Small spots are seen following *a* on July 20, 25, and 27. | | | | | | | |
| July 17·493 | 14 | 109 | 43 | 342 | 176·8 | −10·0 | −79·8 |
| 18·180 | 79 | 208 | 146 | 383 | 174·4 | −10·6 | −73·1 |
| 19·641 | 88 | 437 | 78 | 387 | 174·8 | −10·4 | −53·4 |
| 20·560 | 96 | 600 | 67 | 417 | 174·6 | −10·6 | −41·4 |
| 21·507 | 118 | 635 | 71 | 380 | 174·9 | −11·1 | −28·6 |
| 22·475 | 96 | 700 | 52 | 382 | 175·0 | −11·7 | −15·7 |
| 23·410 | 171 | 792 | 89 | 413 | 174·9 | −11·6 | − 3·4 |
| 24·451 | 157 | 794 | 83 | 422 | 174·7 | −11·9 | +10·2 |
| 25·576 | 172 | 716 | 101 | 418 | 175·0 | −12·1 | +25·3 |
| 26·501 | 75 | 575 | 50 | 385 | 175·5 | −11·9 | +38·0 |
| 27·433 | 90 | 483 | 75 | 405 | 175·7 | −11·9 | +50·6 |
| 28·441 | 61 | 303 | 74 | 370 | 175·4 | −11·8 | +63·7 |
| 29·546 | 7 | 161 | 14 | 441 | 174·9 | −11·9 | +77·9 |
| Means ... | ... | ... | 73 | 396 | 175·12 | −11·35 | ... |
| **Group 1729.** A small spot. | | | | | | | |
| July 22·475 | 0 | 24 | 0 | 19 | 241·6 | +15·0 | +50·9 |
| 23·410 | 0 | 5 | 0 | 6 | 241·1 | +14·7 | +62·8 |
| Means ... | ... | ... | 0 | 13 | 241·35 | +14·85 | ... |
| **Group 1730.** Two small spots. The second has increased in size by July 23. The first is not seen on July 24. | | | | | | | |
| July 22·475 | 0 | 47 | 0 | 32 | 151·8 | −16·8 | −38·9 |
| 23·410 | 10 | 100 | 7 | 62 | 150·9 | −17·5 | −27·4 |
| 24·451 | 0 | 35 | 0 | 20 | 149·8 | −18·4 | −14·7 |
| Means ... | ... | ... | 2 | 38 | 150·83 | −17·57 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1731.** Two small spots on July 24. Both have broken up by July 25. Only three spots remain on July 27. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| July 24·451 | 5 | 61 | 4 | 46 | 118·4 | −12·0 | −46·1 |
| 25·576 | 33 | 274 | 20 | 170 | 118·6 | −11·8 | −31·1 |
| 26·501 | 13 | 345 | 7 | 191 | 118·9 | −12·5 | −18·6 |
| 27·433 | 16 | 212 | 8 | 114 | 118·8 | −13·1 | − 6·3 |
| 28·441 | 29 | 169 | 16 | 90 | 118·9 | −12·9 | + 7·2 |
| Means ... | ... | ... | 11 | 122 | 118·72 | −12·46 | ... |
| **Group 1732.** A small spot, *a*. Two others, *b* and *c*, have appeared by July 26. *a* has disappeared by July 27, *c* by July 30, and *b* has broken up into several portions by July 28. | | | | | | | |
| July 24·451 | 0 | 8 | 0 | 15 | 92·3 | −13·4 | −72·2 |
| 25·576 | 0 | 17 | 0 | 16 | 92·8 | −13·0 | −56·9 |
| 26·501 | 0 | 66 | 0 | 48 | 94·5 | −13·2 | −43·0 |
| 27·433 | 13 | 81 | 8 | 49 | 95·9 | −13·3 | −29·2 |
| 28·441 | 28 | 94 | 16 | 52 | 96·4 | −12·9 | −15·3 |
| 29·546 | 11 | 106 | 6 | 56 | 98·3 | −12·4 | + 1·3 |
| 30·482 | 23 | 154 | 13 | 85 | 100·7 | −11·7 | +15·9 |
| 31·459 | 8 | 127 | 5 | 77 | 101·6 | −11·7 | +29·7 |
| Aug. 1·414 | 13 | 67 | 10 | 49 | 103·0 | −11·6 | +43·8 |
| 2·516 | 9 | 54 | 10 | 58 | 104·3 | −12·4 | +59·6 |
| 3·188 | 5 | 28 | 8 | 44 | 104·8 | −13·1 | +69·1 |
| Means ... | ... | ... | 7 | 50 | 98·60 | −12·61 | ... |
| **Group 1733.** Two spots, *a* and *b*, when first seen. A third spot, *c*, has become detached from *b* by July 28. Small companions are seen on July 31 and following days. | | | | | | | |
| July 27·433 | 0 | 94 | 0 | 207 | 51·6 | −21·4 | −73·5 |
| 28·441 | 51 | 291 | 64 | 362 | 50·0 | −21·4 | −61·7 |
| 29·546 | 34 | 352 | 29 | 302 | 49·5 | −21·8 | −47·5 |
| 30·482 | 33 | 401 | 24 | 279 | 49·7 | −21·3 | −35·1 |
| 31·459 | 25 | 414 | 16 | 257 | 49·0 | −21·6 | −22·9 |
| Aug. 1·414 | 90 | 555 | 51 | 318 | 48·8 | −21·7 | −10·4 |
| 2·516 | 74 | 523 | 42 | 298 | 48·4 | −22·2 | + 3·7 |
| 3·188 | 41 | 425 | 23 | 248 | 47·9 | −22·0 | +12·2 |
| 4·409 | 18 | 236 | 11 | 152 | 48·1 | −21·2 | +28·5 |
| 5·488 | 10 | 252 | 8 | 195 | 48·1 | −21·0 | +42·7 |
| 6·389 | 6 | 110 | 6 | 112 | 47·9 | −21·5 | +54·5 |
| 7·451 | 4 | 87 | 7 | 140 | 47·2 | −21·0 | +67·7 |
| Means ... | ... | ... | 23 | 239 | 48·85 | −21·51 | ... |
| **Group 1734.** A small spot. | | | | | | | |
| July 28·441 | 0 | 13 | 0 | 11 | 58·5 | −12·4 | −53·2 |
| Means ... | ... | ... | 0 | 11 | 58·5 | −12·4 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1735.** Two small spots. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| July 31·459 | 0 | 39 | 0 | 31 | 119·5 | −14·1 | +47·6 |
| Aug. 1·414 | 0 | 8 | 0 | 8 | 118·5 | −14·2 | +59·3 |
| Means ... | ... | ... | 0 | 20 | 119·00 | −14·15 | ... |
| **Group 1736.** Two spots, *a* and *b*. Two smaller spots are seen between them on August 5. On August 7 another companion is seen. Only *b* remains on August 9. | | | | | | | |
| Aug. 3·188 | 6 | 38 | 4 | 21 | 8·7 | + 8·0 | −27·0 |
| 4·409 | 0 | 150 | 0 | 76 | 10·0 | + 8·0 | − 9·6 |
| 5·488 | 30 | 185 | 15 | 93 | 11·3 | + 7·5 | + 5·9 |
| 6·389 | 9 | 179 | 5 | 94 | 10·5 | + 7·5 | +17·1 |
| 7·451 | 14 | 167 | 8 | 98 | 9·5 | + 7·4 | +30·0 |
| 8·386 | 14 | 40 | 9 | 27 | 9·2 | + 7·1 | +42·1 |
| 9·210 | 0 | 12 | 0 | 10 | 8·3 | + 6·9 | +52·2 |
| Means ... | ... | ... | 6 | 60 | 9·64 | + 7·49 | ... |
| **Group 1737.** A regular spot, *a*, on August 5. Another spot, *b*, with two companions has appeared by August 8. By August 9, *b* seems to have changed its position, and a new spot, *d*, has appeared. *b* breaks up, and is measured as two on August 12 and 13. | | | | | | | |
| Aug. 5·488 | 25 | 109 | 35 | 155 | 297·7 | −10·7 | −67·7 |
| 6·389 | 32 | 166 | 31 | 158 | 297·9 | −10·4 | −55·5 |
| 7·451 | 35 | 208 | 25 | 147 | 297·9 | −10·5 | −41·6 |
| 8·386 | 57 | 454 | 34 | 278 | 298·1 | −11·3 | −29·0 |
| 9·210 | 101 | 617 | 56 | 340 | 298·3 | −11·9 | −17·8 |
| 10·513 | 128 | 873 | 67 | 463 | 299·1 | −12·2 | + 0·2 |
| 11·457 | 98 | 730 | 53 | 398 | 299·8 | −11·7 | +13·3 |
| 12·401 | 45 | 493 | 26 | 293 | 299·2 | −11·9 | +25·3 |
| 13·407 | 41 | 370 | 27 | 250 | 299·6 | −11·5 | +38·9 |
| 14·541 | 22 | 186 | 19 | 163 | 298·2 | −11·0 | +52·6 |
| 15·428 | 10 | 98 | 12 | 122 | 298·1 | −10·7 | +64·2 |
| 16·407 | 4 | 60 | 9 | 142 | 297·1 | −10·8 | +76·1 |
| Means ... | ... | ... | 33 | 242 | 298·42 | −11·22 | ... |
| **Group 1738.** A regular spot, *a*. Several small spots have appeared following *a* by August 7, forming a long stream on the succeeding days. | | | | | | | |
| Aug. 5·488 | 0 | 13 | 0 | 40 | 286·5 | −12·1 | −78·9 |
| 6·389 | 0 | 60 | 0 | 79 | 288·2 | −11·7 | −65·2 |
| 7·451 | 47 | 313 | 40 | 277 | 287·0 | −11·5 | −52·5 |
| 8·386 | 64 | 526 | 44 | 368 | 286·6 | −11·4 | −40·5 |
| 9·210 | 53 | 422 | 32 | 253 | 287·5 | −11·7 | −28·6 |
| 10·513 | 76 | 472 | 41 | 254 | 287·7 | −11·5 | −11·2 |
| 11·457 | 64 | 509 | 33 | 267 | 287·9 | −11·1 | + 1·4 |
| 12·401 | 57 | 433 | 31 | 237 | 288·4 | −11·3 | +14·5 |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1738—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Aug. 13·407 | 54 | 356 | 33 | 213 | 288·9 | −11·1 | +28·2 |
| 14·541 | 47 | 294 | 35 | 216 | 289·4 | −11·1 | +43·8 |
| 15·428 | 26 | 178 | 25 | 171 | 290·1 | −11·1 | +56·2 |
| 16·407 | 17 | 106 | 25 | 161 | 289·8 | −11·1 | +68·8 |
| 17·430 | 1 | 26 | 5 | 122 | 290·0 | −11·1 | +82·6 |
| Means ... | ... | ... | 26 | 204 | 288·31 | −11·37 | ... |
| **Group 1739.** Two small spots. | | | | | | | |
| Aug. 7·451 | 1 | 27 | 1 | 27 | 36·2 | −11·2 | +56·7 |
| Means ... | ... | ... | 1 | 27 | 36·2 | −11·2 | ... |
| **Group 1740.** A group of very small spots. By August 9 the preceding spot has broken into two, which are measured together. Only one spot is seen on August 10. | | | | | | | |
| Aug. 7·451 | 2 | 15 | 1 | 8 | 332·5 | +21·0 | − 7·0 |
| 8·386 | 3 | 77 | 2 | 40 | 333·3 | +20·4 | + 6·2 |
| 9·210 | 23 | 77 | 12 | 41 | 333·0 | +21·0 | +16·9 |
| 10·513 | 0 | 23 | 0 | 15 | 336·0 | +22·0 | +37·1 |
| Means ... | ... | ... | 4 | 26 | 333·70 | +21·10 | ... |
| **Group 1741.** Two small spots. | | | | | | | |
| Aug. 8·386 | 0 | 28 | 0 | 21 | 13·1 | +15·6 | +46·0 |
| Means ... | ... | ... | 0 | 21 | 13·1 | +15·6 | ... |
| **Group 1742.** One large spot when first seen; it has broken up into a group of small spots by August 9, which continually change in number and position. | | | | | | | |
| Aug. 8·386 | 0 | 64 | 0 | 144 | 249·1 | +12·1 | −78·0 |
| 9·210 | 1 | 85 | 1 | 99 | 250·5 | +11·9 | −65·6 |
| 10·513 | 5 | 128 | 4 | 98 | 249·2 | +13·5 | −49·7 |
| 11·457 | 9 | 192 | 6 | 119 | 250·8 | +13·5 | −35·7 |
| 12·401 | 10 | 77 | 6 | 42 | 251·5 | +13·2 | −22·4 |
| 13·407 | 12 | 134 | 6 | 68 | 253·0 | +13·7 | − 7·7 |
| 14·541 | 0 | 67 | 0 | 35 | 253·1 | +12·7 | + 7·5 |
| 15·428 | 1 | 37 | 1 | 19 | 254·5 | +13·0 | +20·6 |
| **Group 1742—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Aug. 16·407 | 12 | 161 | 8 | 95 | 253·3 | +13·0 | +32·3 |
| 17·430 | 4 | 98 | 3 | 71 | 253·4 | +12·9 | +46·0 |
| 18·191 | 9 | 41 | 8 | 38 | 254·6 | +11·7 | +57·2 |
| 19·475 | 2 | 8 | 2 | 12 | 252·0 | +11·7 | +71·4 |
| Means ... | ... | ... | 4 | 70 | 252·08 | +12·74 | ... |
| **Group 1743.** A group of four well-defined spots, the two smallest, long. 272°·1 being measured together. | | | | | | | |
| Aug. 9·210 | 12 | 68 | 8 | 47 | 272·9 | +12·8 | −43·2 |
| Means ... | ... | ... | 8 | 47 | 272·9 | +12·8 | ... |
| **Group 1745.** Two spots, *a* and *b*. There is a small companion on August 11, and a different one on August 12. By that day *b* has broken into two. On August 13 there are three small spots following *a*, two of which have disappeared by the next day. *b* has broken up into a group of small spots by August 16, and is not seen after August 17. | | | | | | | |
| Aug. 10·513 | 0 | 33 | 0 | 60 | 224·5 | + 6·8 | −74·4 |
| 11·457 | 19 | 192 | 19 | 199 | 225·3 | + 6·6 | −61·2 |
| 12·401 | 12 | 233 | 9 | 174 | 226·1 | + 6·1 | −47·8 |
| 13·407 | 44 | 326 | 27 | 193 | 227·8 | + 6·4 | −32·9 |
| 14·541 | 29 | 298 | 16 | 158 | 227·6 | + 6·5 | −18·0 |
| 15·428 | 41 | 284 | 24 | 155 | 227·7 | + 6·6 | − 6·2 |
| 16·407 | 25 | 235 | 14 | 119 | 228·4 | + 6·8 | + 7·4 |
| 17·430 | 18 | 171 | 10 | 91 | 229·6 | + 6·3 | +22·2 |
| 18·191 | 20 | 113 | 12 | 67 | 230·8 | + 6·3 | +33·4 |
| 19·475 | 11 | 56 | 9 | 44 | 231·5 | + 6·7 | +50·9 |
| 20·492 | 0 | 15 | 0 | 17 | 231·6 | + 7·1 | +64·5 |
| Means ... | ... | ... | 13 | 116 | 228·26 | + 6·56 | ... |
| **Group 1746.** Two spots on August 12. On the second day there are two spots close together measured as one. | | | | | | | |
| Aug. 12·401 | 2 | 28 | 1 | 21 | 232·3 | −19·5 | −41·6 |
| 13·407 | 0 | 18 | 0 | 11 | 233·8 | −19·1 | −26·9 |
| Means ... | ... | ... | 1 | 16 | 233·05 | −19·30 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1747.** Four small faint spots on August 13, three being measured together; of these one has disappeared by August 14, and the other two are measured separately. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Aug. 13·407 | 0 | 26 | 0 | 16 | 226·3 | − 8·7 | −34·4 |
| 14·541 | 6 | 60 | 3 | 32 | 226·5 | − 9·1 | −19·1 |
| Means ... | ... | ... | 2 | 24 | 226·40 | − 8·90 | ... |
| **Group 1748.** A regular spot. | | | | | | | |
| Aug. 14·541 | 18 | 111 | 31 | 198 | 174·3 | −13·8 | −71·3 |
| 15·428 | 31 | 203 | 35 | 226 | 173·6 | −14·2 | −60·3 |
| 16·407 | 48 | 320 | 38 | 257 | 173·4 | −14·0 | −47·6 |
| 17·430 | 56 | 395 | 36 | 257 | 173·1 | −14·1 | −34·3 |
| 18·191 | 105 | 435 | 62 | 256 | 172·9 | −14·1 | −24·5 |
| 19·475 | 104 | 465 | 55 | 249 | 172·8 | −14·1 | − 7·8 |
| 20·492 | 62 | 426 | 34 | 230 | 173·3 | −13·9 | + 6·2 |
| 21·492 | 68 | 331 | 39 | 189 | 173·0 | −13·8 | +19·2 |
| 22·499 | 58 | 351 | 37 | 244 | 172·9 | −14·2 | +32·4 |
| 23·211 | 51 | 280 | 37 | 205 | 173·3 | −13·4 | +42·2 |
| 24·577 | 7 | 137 | 8 | 150 | 172·8 | −14·0 | +59·8 |
| 25·459 | 5 | 53 | 10 | 94 | 172·6 | −13·6 | +71·2 |
| Means ... | ... | ... | 35 | 213 | 173·17 | −13·93 | ... |
| **Group 1749.** A small spot. | | | | | | | |
| Aug. 16·407 | 0 | 17 | 2 | 9 | 231·9 | − 9·0 | +10·9 |
| Means ... | ... | ... | 2 | 9 | 231·9 | − 9·0 | ... |
| **Group 1750.** A group of faint spots. Only one spot is seen on August 20. | | | | | | | |
| Aug. 18·191 | 13 | 65 | 6 | 32 | 187·8 | + 6·0 | − 9·6 |
| 19·475 | 19 | 58 | 9 | 29 | 188·7 | + 5·4 | + 8·1 |
| 20·492 | 0 | 31 | 0 | 16 | 187·1 | + 5·1 | +20·0 |
| 21·492 | 4 | 23 | 3 | 14 | 190·2 | + 6·2 | +36·4 |
| 22·499 | 0 | 3 | 0 | 2 | 190·9 | + 6·6 | +50·4 |
| 23·211 | 12 | 61 | 12 | 60 | 190·9 | + 6·7 | +59·8 |
| Means ... | ... | ... | 5 | 26 | 189·27 | + 6·00 | ... |
| **Group 1751.** A group of four faint spots. | | | | | | | |
| Aug. 18·191 | 24 | 56 | 14 | 33 | 166·2 | +20·3 | −31·2 |
| 19·475 | 5 | 35 | 3 | 18 | 165·3 | +20·5 | −15·3 |
| Means ... | ... | ... | 9 | 26 | 165·75 | +20·40 | ... |
| **Group 1752.** A small spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Aug. 19·475 | 1 | 4 | 1 | 4 | 233·9 | − 9·8 | +53·3 |
| Means ... | ... | ... | 1 | 4 | 233·9 | − 9·8 | ... |
| **Group 1753.** Two well-defined spots. | | | | | | | |
| Aug. 20·492 | 16 | 94 | 16 | 94 | 223·3 | −13·8 | +56·2 |
| Means ... | ... | ... | 16 | 94 | 223·3 | −13·8 | ... |
| **Group 1754.** Two large spots, *a* and *b*, with smaller spots between them. *b* decreases in size, and is not seen on September 1, by which day the group as a whole has very much increased in size, and consists of several fine spots, which have become two large spots with small companions by September 2. | | | | | | | |
| Aug. 23·211 | 19 | 136 | 35 | 280 | 57·0 | −11·0 | −74·1 |
| 24·577 | 40 | 418 | 39 | 426 | 54·6 | − 9·3 | −58·4 |
| 25·459 | 32 | 465 | 24 | 360 | 54·8 | − 9·3 | −46·6 |
| 26·457 | 43 | 439 | 26 | 275 | 55·7 | − 9·3 | −32·6 |
| 27·509 | 45 | 450 | 25 | 248 | 57·2 | −10·6 | −17·1 |
| 28·480 | 10 | 332 | 5 | 175 | 58·4 | −10·7 | − 3·1 |
| 29·444 | 27 | 266 | 14 | 141 | 58·7 | −10·7 | +10·0 |
| 30 | No photograph. | | (35 | 201 | 57·3 | −10·5 | +20·3) |
| 31·210 | 89 | 426 | 55 | 261 | 55·9 | −10·2 | +30·5 |
| Sept. 1·399 | 44 | 564 | 34 | 436 | 56·8 | − 9·8 | +47·1 |
| 2·391 | 107 | 815 | 113 | 876 | 56·6 | −10·1 | +60·0 |
| 3·423 | 16 | 263 | 32 | 494 | 55·9 | − 9·6 | +72·9 |
| Means ... | ... | ... | 36 | 348 | 56·58 | −10·09 | ... |
| **Group 1755.** Two small spots. They have greatly increased in size, and a new spot has appeared by August 28. | | | | | | | |
| Aug. 26·457 | 0 | 60 | 0 | 35 | 110·9 | −14·6 | +22·6 |
| 27·509 | 24 | 121 | 16 | 81 | 111·9 | −14·9 | +37·6 |
| 28·480 | 11 | 276 | 9 | 238 | 111·3 | −15·1 | +49·8 |
| 29·444 | 12 | 285 | 14 | 350 | 111·6 | −14·8 | +62·9 |
| Means ... | ... | ... | 10 | 176 | 111·43 | −14·85 | ... |
| **Group 1756.** A well-defined spot with three fainter spots preceding on August 28. The preceding spot increases in size after August 29. One of the middle spots has disappeared by September 1, and the other has broken into a number of very small spots by September 2. | | | | | | | |
| Aug. 27·509 | 11 | 195 | 13 | 212 | 12·3 | − 5·1 | −62·0 |
| 28·480 | 9 | 235 | 8 | 183 | 13·2 | − 4·9 | −48·3 |
| 29·444 | 32 | 330 | 20 | 204 | 14·3 | − 4·5 | −34·4 |
| 30 | No photograph. | | (37 | 266 | 16·1 | − 4·7 | −21·0) |
| 31·210 | 102 | 636 | 53 | 328 | 17·9 | − 4·9 | − 7·5 |
| Sept. 1·399 | 39 | 355 | 20 | 185 | 20·8 | − 4·8 | +11·1 |
| 2·391 | 57 | 552 | 32 | 315 | 21·4 | − 5·1 | +24·8 |
| 3·423 | 46 | 484 | 30 | 324 | 22·7 | − 4·7 | +39·7 |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1756—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Sept. 4·525 | 22 | 359 | 19 | 320 | 22·9 | − 4·9 | +54·5 |
| 5·414 | 8 | 240 | 10 | 316 | 23·5 | − 4·4 | +66·8 |
| 6·408 | 2 | 115 | 6 | 327 | 22·7 | − 4·4 | +79·2 |
| 7·273 | 0 | 12 | 0 | 43 | 13·4 | − 5·6 | +81·2 |
| Means ... | ... | ... | 21 | 252 | 18·43 | − 4·83 | ... |
| **Group 1756*.** A small spot. | | | | | | | |
| Aug. 27·509 | 0 | 31 | 0 | 37 | 8·2 | + 6·1 | −66·1 |
| 28·480 | 0 | 29 | 0 | 24 | 7·8 | + 6·6 | −55·7 |
| Means ... | ... | ... | 0 | 31 | 8·00 | + 6·35 | ... |
| **Group 1757.** Two spots which increase in size and have coalesced by September 3. This spot has divided into three by September 5, but is measured as one except on September 9. Small companions are seen on August 29, September 5 and 7. | | | | | | | |
| Aug. 28·480 | 10 | 123 | 23 | 337 | 340·9 | +10·7 | −80·6 |
| 29·444 | 29 | 300 | 36 | 374 | 341·3 | +11·2 | −67·4 |
| 30 | No photograph. | | (55 | 433 | 341·0 | +10·0 | −56·1) |
| 31·210 | 106 | 702 | 74 | 491 | 340·6 | + 8·7 | −44·8 |
| Sept. 1·399 | 73 | 971 | 41 | 552 | 340·9 | +10·6 | −28·8 |
| 2·391 | 135 | 1127 | 71 | 592 | 340·7 | +10·6 | −15·9 |
| 3·423 | 64 | 795 | 32 | 399 | 341·1 | +10·7 | − 1·9 |
| 4·525 | 53 | 718 | 27 | 368 | 341·0 | +10·3 | +12·6 |
| 5·414 | 68 | 456 | 37 | 252 | 341·3 | +10·6 | +24·6 |
| 6·408 | 37 | 308 | 23 | 194 | 341·3 | +10·5 | +37·8 |
| 7·273 | 49 | 298 | 38 | 229 | 342·0 | + 9·9 | +49·8 |
| 8·404 | 19 | 176 | 21 | 199 | 341·7 | + 9·9 | +64·4 |
| 9·410 | 9 | 63 | 19 | 130 | 341·0 | +10·4 | +77·0 |
| Means ... | ... | ... | 38 | 350 | 341·14 | +10·32 | ... |
| **Group 1758.** Two very small spots. | | | | | | | |
| Aug. 29·444 | 0 | 21 | 0 | 10 | 45·1 | − 6·8 | − 3·6 |
| Means ... | ... | ... | 0 | 10 | 45·1 | − 6·8 | ... |
| **Group 1759.** A regular spot, *a*. A small companion is seen on September 3, and another on September 7. | | | | | | | |
| Sept. 1·399 | 0 | 29 | 0 | 69 | 293·7 | −12·1 | −76·0 |
| 2·391 | 16 | 87 | 20 | 112 | 291·9 | −12·1 | −64·7 |
| 3·423 | 21 | 136 | 17 | 114 | 292·9 | −12·1 | −50·1 |
| 4·525 | 18 | 154 | 12 | 101 | 292·8 | −12·1 | −35·6 |
| 5·414 | 21 | 197 | 12 | 114 | 293·1 | −12·3 | −23·6 |
| 6·408 | 18 | 205 | 10 | 111 | 293·2 | −12·3 | −10·3 |
| 7·273 | 24 | 175 | 13 | 94 | 293·5 | −12·4 | + 1·3 |
| 8·404 | 22 | 134 | 12 | 75 | 293·7 | −12·6 | +16·4 |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1759—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Sept. 9·410 | 23 | 105 | 14 | 64 | 293·7 | −12·7 | +29·7 |
| 10·260 | 32 | 116 | 23 | 82 | 293·4 | −12·6 | +40·6 |
| 11·208 | 10 | 69 | 9 | 64 | 294·6 | −12·7 | +54·4 |
| 12·229 | 1 | 38 | 1 | 54 | 293·9 | −13·0 | +67·3 |
| Means ... | ... | ... | 12 | 88 | 293·37 | −12·42 | ... |
| **Group 1760.** A small spot on September 4, which has divided into two by the next day. | | | | | | | |
| Sept. 4·525 | 0 | 43 | 0 | 23 | 327·8 | −11·7 | − 0·6 |
| 5·414 | 28 | 236 | 15 | 127 | 327·8 | −11·5 | +11·1 |
| 6·408 | 0 | 107 | 0 | 62 | 328·0 | −11·3 | +24·5 |
| 7·273 | 8 | 66 | 5 | 43 | 328·3 | −11·8 | +36·1 |
| Means ... | ... | ... | 5 | 64 | 327·98 | −11·58 | ... |
| **Group 1761.** Three small spots. | | | | | | | |
| Sept. 5·414 | 0 | 39 | 0 | 21 | 304·9 | −12·2 | −11·8 |
| Means ... | ... | ... | 0 | 21 | 304·9 | −12·2 | ... |
| **Group 1762.** A very small spot. | | | | | | | |
| Sept. 5·414 | 0 | 10 | 0 | 6 | 286·1 | −11·2 | −30·6 |
| Means ... | ... | ... | 0 | 6 | 286·1 | −11·2 | ... |
| **Group 1763.** A very large spot. The following portion, which is of irregular shape, has become detached by September 13 and 14, and is measured in five portions. These have disappeared by September 15. The nucleus has divided into two portions by September 14, and the whole spot by September 17, although still measured as one. Some small spots are seen near the principal spots on September 14, 18, and 19. | | | | | | | |
| Sept. 8·404 | 26 | 246 | 52 | 498 | 203·8 | −13·4 | −73·5 |
| 9·410 | 59 | 506 | 66 | 566 | 203·8 | −13·5 | −60·2 |
| 10·260 | 164 | 832 | 136 | 697 | 203·1 | −13·3 | −49·7 |
| 11·208 | 219 | 885 | 147 | 592 | 203·7 | −13·1 | −36·5 |
| 12·229 | 154 | 1149 | 90 | 671 | 202·6 | −12·8 | −24·0 |
| 13·178 | 194 | 1294 | 106 | 703 | 202·5 | −13·2 | −11·7 |
| 14·558 | 128 | 1195 | 69 | 644 | 202·7 | −13·2 | + 6·6 |
| 15·389 | 95 | 816 | 54 | 464 | 203·3 | −13·6 | +18·2 |
| 16·572 | 90 | 741 | 58 | 479 | 203·0 | −13·6 | +33·6 |
| 17·180 | 117 | 616 | 85 | 448 | 203·0 | −14·2 | +41·7 |
| 18·507 | 51 | 375 | 55 | 403 | 203·1 | −14·1 | +59·3 |
| 19·214 | 40 | 338 | 62 | 533 | 203·2 | −14·6 | +68·7 |
| Means ... | ... | ... | 82 | 558 | 203·15 | −13·55 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1764.

A group of faint spots.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Sept. 13·178 | 0 | 85 | 0 | 64 | 256·6 | −16·3 | +42·4 |
| 14·558 | 0 | 137 | 0 | 162 | 257·4 | −15·7 | +61·3 |
| Means ... | .. | ... | 0 | 113 | 257·00 | −16·00 | ... |

### Group 1765.

Two faint spots, measured as one, on September 16. On the next day the group appears as three well-defined spots with some very small companions. On September 19 only three spots are seen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 16·572 | 6 | 61 | 5 | 50 | 122·4 | −15·3 | −47·0 |
| 17·180 | 22 | 127 | 16 | 88 | 122·6 | −14·9 | −38·7 |
| 18·507 | 16 | 151 | 9 | 87 | 123·9 | −14·6 | −19·9 |
| 19·214 | 3 | 53 | 2 | 30 | 121·0 | −15·2 | −13·5 |
| Means ... | .. | ... | 8 | 64 | 122·48 | −15·00 | ... |

### Group 1766.

A small spot on September 19. A second is seen near it on September 21. On September 22 the group consists of four small spots which are measured in pairs.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 19·214 | 2 | 22 | 2 | 16 | 85·5 | +16·3 | −49·0 |
| 20·561 | 0 | 5 | 0 | 3 | 86·4 | +16·7 | −30·5 |
| 21·443 | 0 | 32 | 0 | 17 | 83·3 | +16·1 | −21·8 |
| 22·441 | 22 | 110 | 11 | 57 | 83·4 | +16·9 | − 8·4 |
| Means ... | ... | ... | 3 | 23 | 84·65 | +16·50 | ... |

### Group 1767.

A large regular spot. A small spot is seen near it on September 25.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 21·443 | 12 | 91 | 27 | 202 | 28·7 | − 2·9 | −76·4 |
| 22·441 | 14 | 146 | 16 | 168 | 28·3 | − 3·1 | −63·5 |
| 23·428 | 12 | 142 | 10 | 114 | 28·2 | − 2·7 | −50·6 |
| 24·574 | 4 | 91 | 3 | 57 | 28·3 | − 2·4 | −35·4 |
| 25·407 | 9 | 273 | 5 | 153 | 28·4 | − 2·4 | −24·3 |
| 26·447 | 18 | 250 | 9 | 129 | 28·9 | − 2·1 | −10·1 |
| 27·132 | 66 | 279 | 34 | 142 | 28·3 | − 2·1 | − 1·7 |
| 28·469 | 27 | 228 | 14 | 120 | 28·8 | − 2·4 | +16·4 |
| 29·164 | 35 | 264 | 20 | 149 | 28·9 | − 2·8 | +25·6 |
| 30·195 | 33 | 197 | 21 | 128 | 28·2 | − 2·7 | +38·6 |
| Oct. 1·388 | 7 | 107 | 6 | 93 | 28·1 | − 2·7 | +54·3 |
| 2·171 | 15 | 91 | 19 | 110 | 28·6 | − 3·1 | +65·1 |
| 3·381 | 0 | 13 | 0 | 36 | 26·6 | − 2·9 | +79·0 |
| Means ... | ... | ... | 14 | 123 | 28·33 | − 2·64 | ... |

### Group 1768.

A large regular spot.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitud from Central Meridian |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Sept. 21·443 | 0 | 65 | 0 | 197 | 23·9 | + 7·3 | −81·2 |
| 22·441 | 15 | 150 | 20 | 201 | 23·2 | + 7·0 | −68·6 |
| 23·428 | 9 | 120 | 8 | 106 | 23·1 | + 7·1 | −55·7 |
| 24·574 | 0 | 154 | 0 | 101 | 23·0 | + 7·2 | −40·7 |
| 25·407 | 65 | 354 | 37 | 202 | 23·3 | + 7·4 | −29·4 |
| 26·447 | 45 | 432 | 23 | 224 | 23·3 | + 7·5 | −15·7 |
| 27·132 | 95 | 440 | 48 | 224 | 22·8 | + 7·7 | − 7·2 |
| 28·469 | 62 | 406 | 32 | 208 | 23·3 | + 7·8 | +10·9 |
| 29·164 | 66 | 418 | 35 | 222 | 23·5 | + 7·5 | +20·2 |
| 30·195 | 66 | 320 | 39 | 191 | 23·3 | + 7·7 | +33·7 |
| Oct. 1·388 | 20 | 246 | 15 | 189 | 23·4 | + 7·7 | +49·6 |
| 2·171 | 33 | 206 | 32 | 202 | 23·5 | + 7·5 | +60·0 |
| 3·381 | 0 | 61 | 0 | 118 | 23·3 | + 7·8 | +75·7 |
| Means ... | ... | ... | 22 | 183 | 23·30 | + 7·48 | ... |

### Group 1769.

A number of small spots irregularly distributed. The group is measured in two clusters on September 25, but it becomes more scattered on the succeeding days until September 28, after which date many of the spots disappear.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 25·407 | 0 | 38 | 0 | 27 | 7·7 | +16·6 | −45·0 |
| 26·447 | 7 | 139 | 4 | 82 | 8·4 | +16·8 | −30·6 |
| 27·132 | 44 | 166 | 24 | 91 | 7·8 | +17·8 | −22·2 |
| 28·469 | 15 | 143 | 8 | 73 | 8·7 | +17·1 | − 3·7 |
| 29·164 | 25 | 138 | 13 | 71 | 8·6 | +17·4 | + 5·3 |
| 30·195 | 7 | 17 | 3 | 9 | 8·0 | +17·3 | +18·4 |
| Means ... | ... | ... | 9 | 59 | 8·20 | +17·17 | ... |

### Group 1770.

A regular spot. A very small spot is seen near it on September 28.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sept. 25·407 | 6 | 89 | 8 | 117 | 344·4 | +12·1 | −68·3 |
| 26·447 | 10 | 87 | 9 | 75 | 344·1 | +12·1 | −54·9 |
| 27·132 | 26 | 154 | 19 | 113 | 343·1 | +12·3 | −46·9 |
| 28·469 | 17 | 143 | 10 | 81 | 344·2 | +12·1 | −28·2 |
| 29·164 | 35 | 194 | 19 | 103 | 344·3 | +12·0 | −19·0 |
| 30·195 | 41 | 175 | 20 | 88 | 344·5 | +12·2 | − 5·1 |
| Oct. 1·388 | 14 | 162 | 7 | 83 | 345·1 | +12·0 | +11·3 |
| 2·171 | 28 | 145 | 15 | 78 | 345·2 | +12·0 | +21·7 |
| 3·381 | 10 | 112 | 6 | 71 | 345·2 | +11·8 | +37·6 |
| 4·567 | 6 | 38 | 5 | 32 | 345·2 | +11·7 | +53·3 |
| 5·200 | 2 | 16 | 2 | 17 | 345·3 | +11·4 | +61·7 |
| Means ... | ... | ... | 11 | 78 | 344·60 | +11·97 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1771.** A small spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Sept. 26·447 | 0 | 27 | 0 | 16 | 15·9 | − 8·1 | −23·1 |
| 27·132 | 8 | 24 | 4 | 13 | 15·4 | − 7·8 | −14·6 |
| 28·469 | 0 | 12 | 0 | 6 | 15·9 | − 8·0 | + 3·5 |
| 29·164 | 3 | 18 | 2 | 9 | 16·0 | − 8·5 | +12·7 |
| Means ... | ... | ... | 2 | 11 | 15·80 | − 8·10 | ... |
| **Group 1772.** A small spot. | | | | | | | |
| Sept. 28·469 | 0 | 20 | 0 | 10 | 25·7 | +13·4 | +13·3 |
| Means ... | ... | ... | 0 | 10 | 25·7 | +13·4 | ... |
| **Group 1773.** Two large regular spots, *a* and *b*. Several small spots are also seen near *b*. | | | | | | | |
| Oct. 1·388 | 28 | 276 | 50 | 510 | 262·5 | −16·9 | −71·3 |
| 2·171 | 125 | 606 | 146 | 727 | 261·8 | −16·9 | −61·7 |
| 3·381 | 111 | 933 | 87 | 745 | 261·7 | −16·5 | −45·9 |
| 4·567 | 154 | 971 | 98 | 619 | 261·7 | −16·6 | −30·2 |
| 5·200 | 207 | 1156 | 122 | 680 | 261·2 | −16·5 | −22·4 |
| 6·398 | 171 | 1135 | 92 | 619 | 261·3 | −16·5 | − 6·4 |
| 7·417 | 158 | 1054 | 86 | 576 | 261·8 | −16·4 | + 7·5 |
| 8·184 | 173 | 1051 | 97 | 597 | 260·8 | −16·7 | +16·6 |
| 9·446 | 117 | 750 | 78 | 495 | 261·5 | −16·6 | +34·0 |
| 10·151 | 118 | 709 | 89 | 532 | 261·4 | −16·6 | +43·1 |
| 11·162 | 95 | 537 | 98 | 543 | 261·4 | −16·8 | +56·4 |
| 12·268 | 59 | 263 | 106 | 465 | 261·1 | −16·7 | +70·8 |
| 13·155 | 3 | 49 | 8 | 134 | 255·5 | −18·9 | +76·9 |
| Means ... | ... | ... | 89 | 557 | 261·05 | −16·82 | ... |
| **Group 1774.** Two spots, *a* and *b*. *a* has increased in size by October 5, and become a well-defined regular spot; *b* has broken up and forms on October 5, and the succeeding days a train of small spots following *a*. *a* has broken up by October 8, and the group consists on October 9, and the succeeding days, of a number of small spots irregularly distributed. | | | | | | | |
| Oct. 4·567 | 13 | 114 | 7 | 66 | 262·7 | − 1·2 | −29·2 |
| 5·200 | 51 | 258 | 28 | 138 | 263·6 | − 1·0 | −20·0 |
| 6·398 | 20 | 246 | 10 | 124 | 265·0 | − 1·0 | − 2·7 |
| 7·417 | 34 | 258 | 18 | 132 | 266·3 | − 0·5 | +12·0 |
| 8·184 | 37 | 145 | 20 | 78 | 264·9 | − 0·9 | +20·7 |
| 9·446 | 0 | 87 | 0 | 55 | 265·6 | − 0·8 | +38·1 |
| 10·151 | 10 | 74 | 7 | 56 | 266·5 | − 0·5 | +48·2 |
| 11·162 | 28 | 74 | 29 | 76 | 265·5 | − 1·4 | +60·5 |
| 12·268 | 20 | 101 | 35 | 185 | 264·0 | − 3·9 | +73·7 |
| Means ... | ... | ... | 16 | 101 | 264·90 | − 1·24 | ... |

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1775.** A regular spot. It has broken up into several small spots by October 13. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Oct. 5·200 | 8 | 21 | 41 | 110 | 200·7 | −13·3 | −82·9 |
| 6·398 | 11 | 91 | 15 | 124 | 201·4 | −13·4 | −66·3 |
| 7·417 | 24 | 141 | 22 | 127 | 201·2 | −13·6 | −53·1 |
| 8·184 | 37 | 177 | 27 | 130 | 200·6 | −13·3 | −43·6 |
| 9·446 | 10 | 145 | 6 | 86 | 200·9 | −13·6 | −26·6 |
| 10·151 | 10 | 164 | 5 | 92 | 200·6 | −13·6 | −17·7 |
| 11·162 | 24 | 135 | 13 | 73 | 200·5 | −14·1 | − 4·5 |
| 12·268 | 13 | 81 | 7 | 44 | 200·0 | −14·7 | + 9·7 |
| 13·155 | 12 | 72 | 7 | 42 | 199·6 | −14·7 | +21·0 |
| 14·151 | 4 | 28 | 3 | 19 | 200·4 | −15·1 | +34·9 |
| Means ... | ... | ... | 15 | 85 | 200·59 | −13·94 | ... |
| **Group 1776.** A small spot. Two others are seen near it on October 11. | | | | | | | |
| Oct. 7·417 | 0 | 20 | 0 | 24 | 191·1 | −11·6 | −63·2 |
| 8·184 | 7 | 22 | 6 | 19 | 191·3 | −11·7 | −52·9 |
| 9·446 | 4 | 17 | 3 | 11 | 193·0 | −12·5 | −34·5 |
| 10·151 | 3 | 9 | 2 | 5 | 193·5 | −12·4 | −24·8 |
| 11·162 | 1 | 23 | 1 | 12 | 192·0 | −12·6 | −13·0 |
| Means ... | ... | ... | 2 | 14 | 192·18 | −12·16 | ... |
| **Group 1777.** A small spot with a very small companion on the first day. | | | | | | | |
| Oct. 17·212 | 0 | 18 | 0 | 25 | 55·5 | + 6·5 | −69·6 |
| 18·147 | 3 | 12 | 2 | 11 | 57·7 | + 6·3 | −55·0 |
| Means ... | ... | ... | 1 | 18 | 56·60 | + 6·40 | ... |
| **Group 1778.** A spot which has very much decreased in size by October 18. | | | | | | | |
| Oct. 17·212 | 5 | 57 | 8 | 84 | 54·7 | +14·9 | −70·4 |
| 18·147 | 2 | 4 | 2 | 4 | 54·8 | +15·1 | −57·9 |
| Means ... | ... | ... | 5 | 44 | 54·75 | +15·00 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1779.

A large regular spot, *a*, followed by a stream of smaller spots. Of these, two, *b* and *c*, are of considerable size. *a* moves rapidly forward in longitude on October 17, 18, and 19; and more slowly subsequently. It decreases in size until October 21, but has slightly recovered by the succeeding day. It is very much larger on October 26 than on October 25 and 27. *b* and *c* diminish in size from day to day, *c* having disappeared by October 23. The smaller spots of the group undergo constant changes.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Oct. 17·212 | 0 | 59 | 0 | 258 | 40·8 | + 6·8 | −84·3 |
| 18·147 | 51 | 351 | 82 | 652 | 37·8 | + 7·8 | −74·9 |
| 19·416 | 51 | 606 | 45 | 538 | 40·1 | + 7·4 | −55·9 |
| 20·509 | 73 | 668 | 49 | 443 | 40·5 | + 8·0 | −41·1 |
| 21·272 | 81 | 663 | 46 | 388 | 41·0 | + 7·9 | −30·5 |
| 22·418 | 65 | 732 | 33 | 380 | 42·6 | + 7·3 | −13·8 |
| 23·165 | 90 | 779 | 45 | 389 | 42·6 | + 7·2 | − 4·0 |
| 24·175 | 119 | 613 | 61 | 311 | 43·7 | + 7·1 | +10·4 |
| 25·558 | 18 | 371 | 11 | 219 | 46·5 | + 6·8 | +31·4 |
| 26·273 | 61 | 410 | 40 | 272 | 46·6 | + 6·4 | +41·0 |
| 27·422 | 31 | 232 | 27 | 206 | 46·5 | + 6·7 | +56·1 |
| 28·436 | 6 | 121 | 9 | 164 | 45·8 | + 7·1 | +68·8 |
| Means ... | ... | ... | 37 | 352 | 42·88 | + 7·21 | ... |

### Group 1780.

A very small spot on October 18. Two small spots on October 19.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 18·147 | 0 | 8 | 0 | 5 | 151·1 | − 8·7 | +38·4 |
| 19·416 | 1 | 29 | 2 | 27 | 152·0 | − 8·6 | +56·0 |
| Means ... | ... | ... | 1 | 16 | 151·55 | − 8·65 | ... |

### Group 1781.

A very small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 18·147 | 4 | 11 | 2 | 6 | 83·8 | +13·4 | −28·9 |
| Means ... | ... | ... | 2 | 6 | 83·8 | +13·4 | ... |

### Group 1782.

Two spots, *a* and *b*. They have moved away from each other and diminished in size by October 20. *b* has disappeared by October 21.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 19·416 | 5 | 106 | 4 | 77 | 139·5 | −10·6 | +43·5 |
| 20·509 | 0 | 29 | 0 | 29 | 139·2 | −10·5 | +57·6 |
| 21·272 | 0 | 18 | 0 | 23 | 141·9 | −10·5 | +70·4 |
| Means ... | ... | ... | 1 | 43 | 140·20 | −10·53 | ... |

### Group 1783.

A regular spot, *a*, followed by several small spots. *a* diminishes in size after October 26, and the small spots have all disappeared by October 28.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Oct. 20·509 | 0 | 19 | 0 | 47 | 3·7 | − 3·1 | −77·9 |
| 21·272 | 10 | 145 | 15 | 245 | 359·4 | − 4·0 | −72·1 |
| 22·418 | 64 | 326 | 57 | 291 | 1·2 | − 3·9 | −55·2 |
| 23·165 | 79 | 439 | 56 | 311 | 2·2 | − 3·5 | −44·4 |
| 24·175 | 104 | 475 | 61 | 279 | 2·9 | − 3·7 | −30·4 |
| 25·558 | 51 | 542 | 27 | 281 | 4·4 | − 3·9 | −10·7 |
| 26·273 | 56 | 444 | 29 | 226 | 4·4 | − 3·9 | − 1·2 |
| 27·422 | 63 | 404 | 32 | 210 | 4·9 | − 3·9 | +14·5 |
| 28·436 | 31 | 260 | 18 | 150 | 6·0 | − 3·6 | +29·0 |
| 29·431 | 13 | 191 | 9 | 131 | 5·8 | − 3·7 | +41·9 |
| 30·170 | 22 | 158 | 18 | 130 | 6·3 | − 4·3 | +52·0 |
| 31·155 | 17 | 111 | 21 | 132 | 5·9 | − 4·5 | +64·6 |
| Nov. 1·407 | 0 | 17 | 0 | 58 | 6·0 | − 4·0 | +81·3 |
| Means ... | ... | ... | 26 | 192 | 4·08 | − 3·85 | ... |

### Group 1784.

A very small spot on October 22, three spots on October 23, six spots, measured in three clusters, on October 24. On October 25 and the succeeding days the group consists of a stream of small spots, *a* and *b*, the first and last of the stream, being the largest. *b* has broken up and diminished in size by October 27.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 22·418 | 0 | 6 | 0 | 7 | 355·7 | −17·4 | −60·7 |
| 23·165 | 15 | 73 | 14 | 63 | 355·0 | −15·0 | −51·6 |
| 24·175 | 42 | 190 | 29 | 130 | 354·7 | −15·3 | −38·6 |
| 25·558 | 29 | 207 | 16 | 118 | 356·6 | −15·2 | −18·5 |
| 26·273 | 29 | 319 | 15 | 172 | 356·0 | −15·3 | − 9·6 |
| 27·422 | 44 | 243 | 23 | 131 | 357·8 | −15·1 | + 7·4 |
| 28·436 | 21 | 159 | 11 | 91 | 358·4 | −14·9 | +21·4 |
| 29·431 | 32 | 149 | 20 | 96 | 357·1 | −15·2 | +33·2 |
| 30·170 | 43 | 276 | 32 | 198 | 355·6 | −15·6 | +41·3 |
| 31·155 | 44 | 305 | 40 | 273 | 354·1 | −15·8 | +52·8 |
| Nov. 1·407 | 7 | 92 | 9 | 132 | 352·4 | −14·7 | +67·7 |
| Means ... | ... | ... | 19 | 128 | 355·76 | −15·41 | ... |

### Group 1785.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 23·165 | 0 | 8 | 0 | 9 | 108·1 | +14·0 | +61·5 |
| Means ... | ... | ... | 0 | 9 | 108·1 | +14·0 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

### Group 1786.

Two large spots, *a* and *b*, on October 25. Both have broken up by October 27, though on that day (as also on October 28) the spots are grouped for measurement so as to correspond nearly with *a* and *b*. On October 29 and the succeeding days the group has broken up further and spread out into a long stream of spots, but the largest portions of *a* and *b* are still recognisable and form well-defined spots. The letters are therefore still attached to them. Only *a* remains after November 1.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Oct. 25·558 | 10 | 243 | 14 | 422 | 303·1 | − 8·6 | −72·0 |
| 26·273 | 80 | 624 | 92 | 719 | 302·5 | − 8·6 | −63·1 |
| 27·422 | 71 | 783 | 54 | 588 | 303·9 | − 8·6 | −46·5 |
| 28·436 | 57 | 698 | 35 | 428 | 304·2 | − 8·8 | −32·8 |
| 29·431 | 66 | 775 | 37 | 424 | 304·5 | − 8·9 | −19·4 |
| 30·170 | 71 | 604 | 36 | 316 | 304·0 | − 9·0 | −10·3 |
| 31·155 | 70 | 452 | 36 | 233 | 304·2 | − 9·5 | + 2·9 |
| Nov. 1·407 | 21 | 248 | 11 | 138 | 305·3 | − 9·7 | +20·6 |
| 2·422 | 12 | 120 | 7 | 75 | 305·8 | − 9·4 | +34·5 |
| 3·132 | 24 | 149 | 17 | 106 | 305·3 | − 9·9 | +43·4 |
| 4·114 | 10 | 44 | 9 | 42 | 306·0 | − 9·9 | +57·0 |
| Means ... | ... | ... | 32 | 317 | 304·44 | − 9·17 | ... |

### Group 1787.

A small spot.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 27·422 | 0 | 5 | 0 | 9 | 280·3 | −10·4 | −70·1 |
| 28·436 | 0 | 5 | 0 | 5 | 280·0 | −10·7 | −57·0 |
| Means ... | ... | ... | 0 | 7 | 280·15 | −10·55 | ... |

### Group 1788.

A large regular spot, *a*. Some very small spots are seen near it on November 3–4.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 28·436 | 12 | 70 | 24 | 146 | 262·8 | −15·7 | −74·2 |
| 29·431 | 29 | 159 | 34 | 186 | 261·7 | −15·6 | −62·2 |
| 30·170 | 65 | 269 | 59 | 247 | 260·5 | −15·4 | −53·8 |
| 31·155 | 60 | 315 | 44 | 229 | 260·4 | −15·1 | −40·9 |
| Nov. 1·407 | 45 | 335 | 26 | 195 | 260·3 | −15·1 | −24·4 |
| 2·422 | 59 | 408 | 32 | 219 | 260·3 | −14·6 | −11·0 |
| 3·132 | 69 | 366 | 36 | 193 | 259·8 | −14·9 | − 2·1 |
| 4·114 | 83 | 389 | 44 | 210 | 260·0 | −14·6 | +11·0 |
| 5·122 | 75 | 325 | 44 | 190 | 260·1 | −14·9 | +24·3 |
| 6·129 | 49 | 260 | 33 | 175 | 260·2 | −14·7 | +37·7 |
| 7·130 | 41 | 192 | 35 | 164 | 260·3 | −15·2 | +51·0 |
| 8·121 | 28 | 126 | 34 | 154 | 260·1 | −15·0 | +63·9 |
| 9·139 | 12· | 61 | 30 | 155 | 260·0 | −15·2 | +77·3 |
| Means ... | ... | ... | 37 | 189 | 260·50 | −15·08 | ... |

### Group 1789.

A short stream of very small spots on November 1. Only one spot is seen on November 2. The group consists of a number of very small scattered spots on November 3. Only one spot is seen on November 4. The group is not seen at all on November 5. On November 6 and 7 the group consists of a regular spot, *a*, followed at a little distance by three very small spots close together, which are measured as one.

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| 1885. d | | | | | ° | ° | ° |
| Nov. 1·407 | 0 | 37 | 0 | 19 | 270·8 | − 1·4 | −13·9 |
| 2·422 | 0 | 14 | 0 | 7 | 271·8 | − 0·4 | + 0·5 |
| 3·132 | 2 | 30 | 1 | 14 | 271·2 | − 1·8 | + 9·3 |
| 4·114 | 0 | 22 | 0 | 12 | 270·3 | − 1·2 | +21·3 |
| 5·122 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 6·129 | 23 | 112 | 18 | 92 | 274·3 | − 2·9 | +51·8 |
| 7·130 | 13 | 68 | 17 | 87 | 275·7 | − 2·7 | +66·4 |
| Means ... | ... | ... | 5 | 33 | 272·35 | − 1·73 | ... |

### Group 1790.

A small spot on November 7. Two other small spots are seen preceding it on November 8. The first of these, *a*, increases in size very rapidly, and has become a large regular spot by November 10. A great number of smaller spots have appeared by November 9; these follow *a* at a little distance, but the stream does not lie along a parallel of latitude as is generally the case. They have all disappeared except one spot by November 13. *a* has partially broken up by November 12.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 7·130 | 8 | 22 | 4 | 12 | 192·5 | −14·4 | −16·8 |
| 8·121 | 15 | 70 | 8 | 37 | 194·3 | −14·2 | − 1·9 |
| 9·139 | 27 | 217 | 15 | 118 | 196·5 | −13·8 | +13·8 |
| 10·121 | 101 | 606 | 61 | 360 | 196·4 | −13·7 | +26·6 |
| 11·126 | 50 | 602 | 35 | 413 | 196·3 | −13·5 | +39·7 |
| 12·142 | 36 | 357 | 32 | 314 | 196·2 | −13·4 | +53·0 |
| 13·185 | 17 | 103 | 25 | 151 | 198·2 | −12·8 | +68·7 |
| Means ... | ... | ... | 26 | 201 | 195·77 | −13·69 | ... |

### Group 1791.

Two small spots on November 7. Not seen on November 8. Two small spots, *a* and *b*, on November 9 and 10. A third, *c*, is seen on November 11. *a* moves forward on November 9, 10 and 11.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nov. 7·130 | 5 | 32 | 3 | 18 | 183·1 | − 2·8 | −26·2 |
| 8·121 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 9·139 | 5 | 33 | 3 | 16 | 184·7 | − 2·2 | + 2·0 |
| 10·121 | 12 | 40 | 6 | 22 | 185·4 | − 1·8 | +15·6 |
| 11·126 | 0 | 27 | 0 | 16 | 186·4 | − 1·9 | +29·8 |
| Means ... | ... | ... | 2 | 14 | 184·90 | − 2·18 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1792.** A regular spot. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Nov. 8·121 | 4 | 32 | 7 | 50 | 125·0 | + 6·1 | −71·2 |
| 9·139 | 8 | 44 | 7 | 42 | 124·5 | + 6·4 | −58·2 |
| 10·121 | 0 | 29 | 0 | 21 | 124·8 | + 6·3 | −45·0 |
| 11·126 | 2 | 12 | 1 | 7 | 124·9 | + 6·3 | −31·7 |
| 12·142 | 2 | 10 | 1 | 5 | 125·3 | + 6·0 | −17·9 |
| Means ... | ... | ... | 3 | 25 | 124·90 | + 6·22 | ... |
| **Group 1793.** A regular spot. | | | | | | | |
| Nov. 10·121 | 11 | 53 | 33 | 160 | 88·8 | +14·1 | −81·0 |
| 11·126 | 28 | 127 | 36 | 163 | 89·5 | +14·3 | −67·1 |
| 12·142 | 39 | 191 | 33 | 163 | 89·7 | +13·8 | −53·5 |
| 13·185 | 45 | 229 | 30 | 151 | 90·2 | +13·8 | −39·3 |
| 14·127 | 36 | 226 | 21 | 129 | 90·4 | +14·0 | −26·6 |
| 15·491 | 28 | 202 | 14 | 104 | 91·1 | +14·3 | − 7·9 |
| 16·428 | 24 | 200 | 12 | 102 | 90·9 | +14·0 | + 4·3 |
| 17·477 | 24 | 158 | 13 | 85 | 90·9 | +14·0 | +18·0 |
| 18·419 | 19 | 143 | 11 | 84 | 90·8 | +13·8 | +30·3 |
| 19·246 | 19 | 120 | 13 | 81 | 90·7 | +13·7 | +41·2 |
| 20·148 | 15 | 86 | 12 | 72 | 90·4 | +13·4 | +52·8 |
| 21·453 | 0 | 22 | 0 | 32 | 90·5 | +13·3 | +70·0 |
| Means ... | ... | ... | 19 | 111 | 90·33 | +13·88 | ... |
| **Group 1794.** A very small spot. | | | | | | | |
| Nov. 11·126 | 9 | 13 | 5 | 7 | 140·9 | −12·0 | −15·7 |
| 12·142 | 0 | 6 | 0 | 3 | 141·6 | −12·6 | − 1·6 |
| Means ... | ... | ... | 3 | 5 | 141·25 | −12·30 | ... |
| **Group 1795.** A very large spot, *a*, followed by a large spot, *b*. A number of very small spots are seen in the immediate neighbourhood of *a* and *b*, especially on November 16 and 20. *b* and nearly all the small spots have disappeared by November 21. Both *a* and *b* diminish in size after passing the central meridian on November 19. | | | | | | | |
| Nov. 13·185 | 63 | 295 | 124 | 647 | 52·5 | +15·5 | −77·0 |
| 14·127 | 134 | 592 | 146 | 684 | 52·9 | +15·7 | −64·1 |
| 15·491 | 156 | 948 | 112 | 676 | 54·3 | +15·4 | −44·7 |
| 16·428 | 152 | 1161 | 93 | 701 | 54·2 | +15·1 | −32·4 |
| 17·477 | 187 | 1315 | 102 | 711 | 53·1 | +14·6 | −19·8 |
| 18·419 | 196 | 1287 | 101 | 664 | 52·9 | +14·6 | − 7·6 |
| 19·246 | 123 | 1105 | 63 | 569 | 52·9 | +14·6 | + 3·4 |
| **Group 1795—*continued.*** | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Nov. 20·148 | 172 | 862 | 92 | 460 | 53·1 | +14·7 | +15·5 |
| 21·453 | 99 | 575 | 62 | 356 | 54·4 | +14·8 | +33·9 |
| 22·155 | 97 | 478 | 68 | 334 | 54·3 | +14·7 | +43·1 |
| 23·211 | 75 | 327 | 72 | 314 | 55·0 | +14·1 | +57·9 |
| 24·153 | 15 | 208 | 22 | 310 | 55·2 | +14·0 | +70·3 |
| Means ... | ... | ... | 88 | 536 | 53·73 | +14·82 | ... |
| **Group 1796.** Five small spots on November 14, of which four are measured in two pairs. The group lengthens out on the succeeding days, and becomes a straggling stream of small spots. The members of the group change from day to day. | | | | | | | |
| Nov. 14·127 | 17 | 73 | 12 | 52 | 74·4 | −17·6 | −42·6 |
| 15·491 | 13 | 122 | 7 | 72 | 74·4 | −18·0 | −24·6 |
| 16·428 | 36 | 173 | 20 | 94 | 74·0 | −18·2 | −12·6 |
| 17·477 | 19 | 91 | 10 | 49 | 73·5 | −19·0 | + 0·6 |
| 18·419 | 4 | 33 | 2 | 18 | 80·1 | −16·2 | +19·6 |
| Means ... | ... | ... | 10 | 57 | 75·28 | −17·80 | ... |
| **Group 1797.** A stream of small spots. Only one spot is seen on November 24. The group is not visible on November 25, but one spot is seen on November 26. | | | | | | | |
| Nov. 17·477 | 0 | 19 | 0 | 29 | 2·8 | − 3·6 | −70·1 |
| 18·419 | 10 | 131 | 9 | 120 | 3·6 | − 3·6 | −56·9 |
| 19·246 | 21 | 138 | 14 | 101 | 2·9 | − 3·5 | −46·6 |
| 20·148 | 27 | 89 | 16 | 53 | 5·3 | − 3·3 | −32·3 |
| 21·453 | 5 | 129 | 2 | 66 | 9·7 | − 2·9 | −10·8 |
| 22·155 | 7 | 167 | 4 | 63 | 5·1 | − 3·7 | − 6·1 |
| 23·211 | 0 | 54 | 0 | 28 | 9·9 | − 3·4 | +12·8 |
| 24·153 | 0 | 9 | 0 | 5 | 9·2 | − 4·0 | +24·3 |
| 25·157 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 26·257 | 0 | 15 | 0 | 10 | 1·6 | − 4·0 | +44·4 |
| Means ... | ... | ... | 5 | 48 | 5·57 | − 3·56 | ... |
| **Group 1798.** Three small spots, of which the two preceding are measured together on November 19. One of this pair has disappeared by November 20, but a small spot has appeared near the following spot, and is measured with it. | | | | | | | |
| Nov. 19·246 | 4 | 76 | 4 | 72 | 107·3 | +13·1 | +57·8 |
| 20·148 | 0 | 35 | 0 | 54 | 108·8 | +13·0 | +71·2 |
| Means ... | ... | ... | 2 | 63 | 108·05 | +13·05 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of Umbra. | Projected Area of Whole Spot. | Area for Group. Umbra. | Area for Group. Whole Spot. | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| **Group 1799.** Three very small spots close together and measured as one. | | | | | | | |
| 1885. d<br>Nov. 23·211 | 1 | 18 | 1 | 10 | °<br>340·0 | °<br>−11·4 | °<br>−17·1 |
| Means ... | ... | ... | 1 | 10 | 340·0 | −11·4 | ... |
| **Group 1800.** A small spot. | | | | | | | |
| Nov. 26·257 | 0 | 17 | 0 | 9 | 312·7 | −12·6 | − 4·5 |
| Means ... | ... | ... | 0 | 9 | 312·7 | −12·6 | ... |
| **Group 1801.** Two small spots, *a* and *b*, on November 28. Only *b* remains on November 29. | | | | | | | |
| Nov. 28·162 | 12 | 38 | 7 | 23 | 321·1 | −21·5 | +29·1 |
| 29·142 | 4 | 15 | 3 | 11 | 319·7 | −21·5 | +40·6 |
| Means ... | ... | ... | 5 | 17 | 320·40 | −21·50 | ... |
| **Group 1802.** Two very small spots, *a* and *b*. | | | | | | | |
| Nov. 28·162 | 1 | 14 | 1 | 6 | 291·8 | −12·7 | − 0·2 |
| 29·142 | 0 | 12 | 0 | 6 | 293·4 | −12·9 | +14·3 |
| Means ... | ... | ... | 1 | 6 | 292·60 | −12·80 | ... |
| **Group 1803.** A number of very small spots on December 2. The preceding spot, *a*, increases in size on the following days. On December 3 the smaller spots follow it closely in a short stream. On December 4 *a* alone is seen. On December 5 three spots are seen close to *a*. | | | | | | | |
| Dec. 2·447 | 2 | 77 | 2 | 54 | 277·9 | +13·6 | +42·3 |
| 3·183 | 20 | 147 | 18 | 125 | 278·7 | +13·8 | +52·8 |
| 4·554 | 0 | 51 | 0 | 95 | 281·7 | +14·4 | +73·9 |
| 5·257 | 1 | 68 | 3 | 232 | 279·9 | +14·8 | +81·3 |
| Means ... | ... | ... | 6 | 127 | 279·55 | +14·15 | ... |
| **Group 1804.** Two small spots. | | | | | | | |
| 1885. d<br>Dec. 9·226 | 3 | 22 | 2 | 17 | °<br>195·4 | °<br>−11·7 | °<br>+49·2 |
| Means ... | ... | ... | 2 | 17 | 195·4 | −11·7 | ... |
| **Group 1805.** A very small spot. | | | | | | | |
| Dec. 9·226 | 0 | 6 | 0 | 5 | 95·7 | −13·1 | −50·5 |
| Means ... | ... | ... | 0 | 5 | 95·7 | −13·1 | ... |
| **Group 1806.** A large regular spot, *a*, with double nucleus. Small spots are seen near it on December 14–19. *a* has divided into two distinct spots by December 17. These are not measured separately until December 18, when they are lettered *b* and *c*. | | | | | | | |
| Dec. 10·470 | 4 | 52 | 9 | 117 | 53·3 | +15·6 | −76·5 |
| 11·406 | 25 | 148 | 30 | 177 | 53·3 | +15·5 | −64·1 |
| 12·193 | 30 | 233 | 27 | 205 | 53·6 | +15·5 | −53·6 |
| 13·194 | 42 | 307 | 29 | 213 | 53·2 | +15·6 | −40·8 |
| 14·157 | 48 | 291 | 28 | 172 | 53·1 | +15·5 | −28·3 |
| 15·471 | 49 | 280 | 26 | 148 | 53·7 | +15·3 | −10·3 |
| 16·474 | 53 | 275 | 28 | 144 | 53·5 | +15·2 | + 2·7 |
| 17·192 | 49 | 268 | 26 | 143 | 53·9 | +15·4 | +12·6 |
| 18·192 | 32 | 183 | 18 | 105 | 53·3 | +15·5 | +25·2 |
| 19·139 | 38 | 155 | 25 | 102 | 52·9 | +14·6 | +37·3 |
| 20·164 | 22 | 96 | 18 | 80 | 53·3 | +14·5 | +51·1 |
| 21·279 | 4 | 59 | 5 | 74 | 52·4 | +14·4 | +65·0 |
| Means ... | ... | ... | 22 | 140 | 53·29 | +15·22 | ... |
| **Group 1807.** Two small spots, *a* and *b*. *b* has disappeared by December 13, and another small spot, *c*, has formed. | | | | | | | |
| Dec. 12·193 | 3 | 26 | 2 | 16 | 77·9 | −19·2 | −29·3 |
| 13·194 | 4 | 37 | 2 | 19 | 79·7 | −17·8 | −14·3 |
| Means ... | ... | ... | 2 | 18 | 78·80 | −18·50 | ... |

## Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1808.** Two small faint spots, *a* and *b*. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Dec. 13·194 | 3 | 29 | 2 | 19 | 54·6 | − 8·0 | −39·4 |
| 14·157 | 0 | 25 | 0 | 13 | 55·8 | − 8·3 | −25·6 |
| Means ... | ... | ... | 1 | 16 | 55·20 | − 8·15 | ... |
| **Group 1809.** Two very small spots. | | | | | | | |
| Dec. 14·157 | 0 | 8 | 0 | 7 | 23·9 | − 3·5 | −57·5 |
| Means ... | ... | ... | 0 | 7 | 23·9 | − 3·5 | ... |
| **Group 1810.** Two very small spots on December 18. On December 19 and the succeeding days a short stream of spots, of which *a* and *b*, the first and last, are the largest. *a* moves forward rapidly in longitude. Only *a* and *b* remain on December 22, and only *a* on December 23. | | | | | | | |
| Dec. 18·192 | 2 | 18 | 1 | 9 | 27·8 | −11·7 | − 0·3 |
| 19·139 | 30 | 137 | 16 | 71 | 26·5 | −11·7 | +10·9 |
| 20·164 | 31 | 168 | 18 | 95 | 28·7 | −11·1 | +26·5 |
| 21·279 | 9 | 95 | 6 | 65 | 29·8 | −10·9 | +42·4 |
| 22·189 | 17 | 68 | 15 | 62 | 32·4 | −10·9 | +57·0 |
| 23·149 | 0 | 23 | 0 | 37 | 34·8 | −11·1 | +72·0 |
| Means ... | ... | ... | 9 | 57 | 30·00 | −11·23 | ... |
| **Group 1811.** A small spot. | | | | | | | |
| Dec. 19·139 | 0 | 10 | 0 | 8 | 67·8 | +10·8 | +52·2 |
| Means ... | ... | ... | 0 | 8 | 67·8 | +10·8 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1812.** Two small spots, *a* and *b*. Only *b* is seen on December 23. *b* moves rapidly forward in longitude. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Dec. 20·164 | 7 | 30 | 3 | 16 | 25·2 | − 4·2 | +23·0 |
| 21·279 | 0 | 20 | 0 | 13 | 24·5 | − 4·8 | +37·1 |
| 22·189 | 0 | 36 | 0 | 27 | 25·0 | − 4·6 | +49·6 |
| 23·149 | 0 | 8 | 0 | 9 | 24·2 | − 4·7 | +61·4 |
| Means ... | ... | ... | 1 | 16 | 24·73 | − 4·58 | ... |
| **Group 1813.** A large regular spot, *a*. A very small spot is seen near it on December 24 and 25. | | | | | | | |
| Dec. 20·164 | 15 | 102 | 30 | 211 | 287·5 | +16·7 | −74·7 |
| 21·279 | 36 | 225 | 36 | 245 | 286·6 | +16·6 | −60·8 |
| 22·189 | 50 | 299 | 39 | 235 | 287·7 | +16·8 | −47·7 |
| 23·149 | 66 | 290 | 43 | 189 | 287·7 | +16·9 | −35·1 |
| 24·490 | 55 | 351 | 30 | 194 | 288·2 | +17·2 | −16·9 |
| 25·130 | 64 | 366 | 34 | 196 | 288·3 | +17·4 | − 8·4 |
| 26·143 | 72 | 355 | 38 | 189 | 288·5 | +17·2 | + 5·1 |
| 27·143 | 68 | 343 | 38 | 193 | 288·6 | +17·2 | +18·4 |
| 28·144 | 50 | 292 | 31 | 183 | 288·9 | +17·1 | +31·9 |
| 29·516 | 29 | 147 | 25 | 123 | 289·0 | +17·7 | +50·1 |
| 30·127 | 12 | 123 | 12 | 125 | 288·6 | +17·5 | +57·7 |
| 31·150 | 5 | 61 | 9 | 103 | 288·2 | +17·2 | +70·7 |
| Means ... | ... | ... | 30 | 182 | 288·15 | +17·13 | ... |
| **Group 1813*.** Two very small spots. | | | | | | | |
| Dec. 21·279 | 0 | 5 | 0 | 5 | 284·1 | − 6·8 | −63·3 |
| Means ... | ... | ... | 0 | 5 | 284·1 | − 6·8 | ... |
| **Group 1814.** Two small spots on December 21, one on December 22, three on December 23, two on December 25. None are seen on December 24, but there is a large group of faculæ in the place the spots would occupy. | | | | | | | |
| Dec. 21·279 | 0 | 24 | 0 | 13 | 11·2 | − 4·4 | +23·8 |
| 22·189 | 1 | 17 | 1 | 11 | 16·2 | − 4·4 | +40·8 |
| 23·149 | 2 | 50 | 1 | 42 | 15·5 | − 4·2 | +52·7 |
| 24·490 | 0 | 0 | 0 | 0 | ... | ... | ... |
| 25·130 | 0 | 30 | 0 | 74 | 15·3 | − 3·8 | +78·6 |
| Means ... | ... | ... | 0 | 28 | 14·55 | − 4·20 | ... |

Areas and Heliographic Positions of Groups of Sun Spots—*continued.*

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1815.** A regular spot, *a*, followed by a short stream of small spots. The group diminishes in size from day to day, and all the small spots have disappeared by December 29. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Dec. 23·149 | 5 | 53 | 12 | 115 | 246·3 | −16·2 | −76·5 |
| 24·490 | 24 | 135 | 23 | 133 | 246·2 | −16·2 | −58·9 |
| 25·130 | 42 | 214 | 34 | 176 | 245·3 | −16·3 | −51·4 |
| 26·143 | 29 | 220 | 19 | 144 | 244·6 | −17·1 | −38·8 |
| 27·143 | 23 | 146 | 13 | 84 | 245·6 | −16·8 | −24·6 |
| 28·144 | 12 | 111 | 6 | 58 | 247·3 | −16·7 | − 9·7 |
| 29·516 | 0 | 51 | 0 | 26 | 247·4 | −16·0 | + 8·5 |
| 30·127 | 0 | 30 | 0 | 16 | 247·6 | −16·2 | +16·7 |
| Means ... | ... | ... | 13 | 94 | 246·29 | −16·44 | ... |
| **Group 1816.** Two small spots, *a* and *b*. | | | | | | | |
| Dec. 24·490 | 0 | 31 | 0 | 20 | 270·1 | − 1·8 | −35·0 |
| 25·130 | 1 | 30 | 1 | 16 | 271·4 | − 1·9 | −25·3 |
| Means ... | ... | ... | 1 | 18 | 270·75 | − 1·85 | ... |

| Date. Greenwich Civil Time. | Projected Area of | | Area for Group. | | Mean Longitude of Group. | Mean Latitude of Group. | Longitude from Central Meridian. |
|---|---|---|---|---|---|---|---|
| | Umbra. | Whole Spot. | Umbra. | Whole Spot. | | | |
| **Group 1817.** Three small spots on December 24. Of these only the first, *a*, is seen on December 25, but *a* is followed by two clusters of very small spots on that day. On December 26 only two spots are seen. On December 27 and 28 only one spot is seen. | | | | | | | |
| 1885. d | | | | | ° | ° | ° |
| Dec. 24·490 | 0 | 74 | 0 | 78 | 243·5 | − 8·1 | −61·6 |
| 25·130 | 8 | 20 | 6 | 17 | 244·4 | − 7·3 | −52·3 |
| 26·143 | 12 | 40 | 7 | 25 | 246·3 | − 7·2 | −37·1 |
| 27·143 | 0 | 6 | 0 | 3 | 246·0 | − 7·1 | −24·2 |
| 28·144 | 0 | 11 | 0 | 5 | 245·0 | − 8·7 | −12·0 |
| Means ... | ... | ... | 3 | 26 | 245·04 | − 7·68 | ... |
| **Group 1818.** A very small spot. | | | | | | | |
| Dec. 25·130 | 0 | 6 | 0 | 6 | 355·4 | − 3·4 | +58·7 |
| Means ... | ... | ... | 0 | 6 | 355·4 | − 3·4 | ... |

ROYAL OBSERVATORY, GREENWICH.

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# TOTAL PROJECTED AREAS

OF

# SUN SPOTS AND FACULÆ

FOR EACH DAY

IN THE YEARS

# 1874–1885.

## TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ FOR EACH DAY FROM 1874 APRIL 17 TO 1877 DECEMBER 31 DEDUCED FROM THE MEASUREMENTS OF THE PHOTOGRAPHS OF THE SUN TAKEN AT THE ROYAL OBSERVATORY, GREENWICH, AT THE OBSERVATORY OF HARVARD COLLEGE, CAMBRIDGE, U.S.A., AND AT THE MELBOURNE OBSERVATORY, AUSTRALIA.

The Projected Area is the Area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Greenwich Civil Time is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight. The decimal of the day has not been given for days when neither spots nor faculæ were observed on the photographs.

The dates for which no photographic Record is at present available are indicated by the words "No photograph." As these are numerous in the present table, no attempt has been made to supply approximate numbers for them by interpolation from the days immediately before and after those for which photographs are lacking.

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1874. d | | | | 1874. d | | | | 1874. d | | | | 1874. d | | | |
| Apr. 17·5 | 0 | 208 | 0 | May 26·4 | 61 | 419 | 1869 | July 4·4 | 288 | 2414 | 215 | Aug. 12·4 | 326 | 2000 | 2144 |
| 18·5 | 0 | 117 | 0 | 27 | No | photo | graph. | 5 | No | photo | graph. | 13 | No | photo | graph. |
| 19 | No | photo | graph. | 28 | No | photo | graph. | 6·5 | 661 | 3748 | 3886 | 14·5 | 428 | 2722 | 225 |
| 20 | 0 | 0 | 0 | 29 | No | photo | graph. | 7·5 | 511 | 3813 | 2242 | 15·4 | 376 | 2605 | 265 |
| 21 | 0 | 0 | 0 | 30·5 | 87 | 502 | 0 | 8·5 | 551 | 3904 | 709 | 16 | No | photo | graph. |
| 22 | 0 | 0 | 0 | 31 | No | photo | graph. | 9·5 | 477 | 3177 | 379 | 17·5 | 336 | 1922 | 0 |
| 23 | 0 | 0 | 0 | | | | | 10·5 | 286 | 2110 | 0 | 18 | No | photo | graph. |
| 24 | No | photo | graph. | June 1·5 | 88 | 468 | 0 | 11 | No | photo | graph. | 19·5 | 157 | 1274 | 0 |
| 25 | No | photo | graph. | 2·5 | 104 | 580 | 540 | 12 | No | photo | graph. | 20·6 | 205 | 1604 | 3353 |
| 26 | No | photo | graph. | 3 | No | photo | graph. | 13·5 | 169 | 973 | 584 | 21·5 | 185 | 947 | 1124 |
| 27·6 | 0 | 150 | 0 | 4·5 | 86 | 468 | 0 | 14·5 | 61 | 398 | 0 | 22·5 | 113 | 715 | 316 |
| 28·6 | 53 | 285 | 0 | 5·5 | 23 | 361 | 0 | 15·4 | 236 | 829 | 1379 | 23 | No | photo | graph. |
| 29·7 | 53 | 306 | 0 | 6 | No | photo | graph. | 16·5 | 93 | 838 | 2166 | 24·5 | 98 | 616 | 527 |
| 30·6 | 72 | 415 | 0 | 7 | No | photo | graph. | 17·5 | 164 | 1193 | 0 | 25·5 | 81 | 441 | 1569 |
| | | | | 8 | 0 | 0 | 0 | 18·5 | 231 | 1238 | 1084 | 26·4 | 97 | 446 | 1880 |
| | | | | 9 | 0 | 0 | 0 | 19 | No | photo | graph. | 27·5 | 58 | 324 | 2157 |
| May 1·5 | 62 | 467 | 0 | 10 | No | photo | graph. | 20·5 | 304 | 1570 | 4155 | 28·4 | 33 | 274 | 2167 |
| 2·5 | 102 | 563 | 0 | 11·5 | 0 | 97 | 0 | 21·5 | 321 | 1317 | 2790 | 29·5 | 44 | 305 | 1446 |
| 3 | No | photo | graph. | 12·4 | 0 | 58 | 0 | 22 | No | photo | graph. | 30 | No | photo | graph. |
| 4·6 | 96 | 877 | 0 | 13·4 | 38 | 243 | 0 | 23·5 | 194 | 1299 | 1011 | 31·5 | 0 | 133 | 0 |
| 5·5 | 85 | 748 | 0 | 14 | No | photo | graph. | 24·6 | 141 | 863 | 588 | | | | |
| 6·4 | 47 | 1028 | 0 | 15·6 | 0 | 215 | 0 | 25·5 | 74 | 423 | 785 | | | | |
| 7·5 | 234 | 1729 | 0 | 16 | No | photo | graph. | 26 | No | photo | graph. | Sept. 1·5 | 15 | 152 | 507 |
| 8·6 | 250 | 2241 | 0 | 17 | No | photo | graph. | 27 | No | photo | graph. | 2·4 | 19 | 173 | 2008 |
| 9·5 | 333 | 2204 | 0 | 18 | No | photo | graph. | 28 | No | photo | graph. | 3 | No | photo | graph. |
| 10 | No | photo | graph. | 19·5 | 53 | 938 | 0 | 29 | No | photo | graph. | 4·6 | 24 | 222 | 1825 |
| 11·5 | 106 | 1276 | 667 | 20 | No | photo | graph. | 30·5 | 240 | 1452 | 1088 | 5·4 | 15 | 109 | 2884 |
| 12 | No | photo | graph. | 21 | No | photo | graph. | 31·4 | 284 | 1565 | 708 | 6 | No | photo | graph. |
| 13 | No | photo | graph. | 22·6 | 89 | 899 | 0 | | | | | 7 | No | photo | graph. |
| 14 | No | photo | graph. | 23·5 | 71 | 801 | 0 | | | | | 8 | No | photo | graph. |
| 15 | No | photo | graph. | 24·5 | 32 | 475 | 0 | Aug. 1 | No | photo | graph. | 9·6 | 11 | 176 | 247 |
| 16·4 | 47 | 381 | 0 | 25·5 | 32 | 361 | 1601 | 2 | No | photo | graph. | 10·4 | 11 | 170 | 251 |
| 17 | No | photo | graph. | 26 | No | photo | graph. | 3·4 | 368 | 1975 | 464 | 11 | No | photo | graph. |
| 18·4 | 0 | 89 | 0 | 27·6 | 54 | 514 | 0 | 4 | No | photo | graph. | 12·4 | 64 | 462 | 2101 |
| 19 | No | photo | graph. | 28 | No | photo | graph. | 5 | No | photo | graph. | 13 | No | photo | graph. |
| 20·4 | 85 | 595 | 0 | 29·4 | 160 | 1353 | 0 | 6·4 | 304 | 1528 | 2403 | 14·5 | 16 | 63 | 6045 |
| 21·6 | 10 | 426 | 0 | 30·4 | 225 | 1974 | 600 | 7 | No | photo | graph. | 15·5 | 0 | 35 | 1192 |
| 22·5 | 35 | 539 | 0 | | | | | 8·5 | 230 | 1317 | 2049 | 16 | No | photo | graph. |
| 23 | No | photo | graph. | July 1 | No | photo | graph. | 9 | No | photo | graph. | 17 | No | photo | graph. |
| 24 | No | photo | graph. | 2·5 | 147 | 1205 | 3830 | 10·4 | 214 | 1247 | 4180 | 18 | No | photo | graph. |
| 25 | No | photo | graph. | 3·5 | 73 | 907 | 837 | 11·5 | 281 | 1796 | 3114 | 19·5 | 0 | 25 | 543 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1874. d | | | | 1874. d | | | | 1875. d | | | | 1875. d | | | |
| Sept. 20 | No | photo | graph. | Nov. 17·6 | 109 | 466 | 0 | Jan. 1 | No | photo | graph. | Mar. 1·1 | 146 | 797 | 1400 |
| 21 | No | photo | graph. | 18 | No | photo | graph. | 2·5 | 53 | 355 | 0 | 2·2 | 99 | 533 | 1064 |
| 22·5 | 133 | 658 | 781 | 19 | No | photo | graph. | 3 | No | photo | graph. | 3·3 | 31 | 236 | 347 |
| 23 | No | photo | graph. | 20·5 | 147 | 919 | 1180 | 4 | No | photo | graph. | 4 | No | photo | graph. |
| 24·4 | 150 | 846 | 673 | 21 | No | photo | graph. | 5·6 | 19 | 87 | 1342 | 5·4 | 33 | 186 | 420 |
| 25·4 | 166 | 895 | 609 | 22 | No | photo | graph. | 6·5 | 0 | 0 | 607 | 6·1 | 34 | 299 | 412 |
| 26·5 | 159 | 823 | 776 | 23·5 | 93 | 637 | 1827 | 7 | No | photo | graph. | 7·1 | 93 | 795 | 211 |
| 27 | No | photo | graph. | 24·5 | 64 | 538 | 0 | 8 | No | photo | graph. | 8·9 | 16 | 292 | 0 |
| 28·5 | 163 | 1030 | 733 | 25 | No | photo | graph. | 9 | No | photo | graph. | 9·5 | 46 | 353 | 1529 |
| 29·5 | 158 | 1527 | 4659 | 26 | No | photo | graph. | 10 | No | photo | graph. | 10·5 | 27 | 241 | 914 |
| 30·5 | 166 | 1312 | 0 | 27·5 | 75 | 435 | 358 | 11 | No | photo | graph. | 11·6 | 60 | 355 | 1408 |
| | | | | 28 | No | photo | graph. | 12 | No | photo | graph. | 12·7 | 40 | 217 | 694 |
| | | | | 29 | No | photo | graph. | 13 | No | photo | graph. | 13·1 | 57 | 378 | 804 |
| Oct. 1·5 | 269 | 1795 | 2473 | 30 | No | photo | graph. | 14 | No | photo | graph. | 14·6 | 46 | 302 | 0 |
| 2 | No | photo | graph. | | | | | 15 | No | photo | graph. | 15·6 | 46 | 304 | 0 |
| 3·5 | 353 | 2620 | 1625 | | | | | 16·5 | 10 | 70 | 1425 | 16·1 | 21 | 254 | 0 |
| 4 | No | photo | graph. | Dec. 1 | No | photo | graph. | 17 | No | photo | graph. | 17·8 | 62 | 407 | 306 |
| 5·5 | 291 | 1921 | 2273 | 2 | No | photo | graph. | 18 | No | photo | graph. | 18·6 | 104 | 435 | 1027 |
| 6 | No | photo | graph. | 3 | 0 | 0 | 0 | 19 | No | photo | graph. | 19·7 | 53 | 508 | 472 |
| 7 | No | photo | graph. | 4·4 | 0 | 0 | 316 | 20 | No | photo | graph. | 20·1 | 75 | 632 | 2700 |
| 8·5 | 115 | 886 | 2008 | 5 | No | photo | graph. | 21 | No | photo | graph. | 21·2 | 108 | 784 | 2108 |
| 9 | No | photo | graph. | 6 | No | photo | graph. | 22·5 | 218 | 1023 | 2042 | 22·7 | 72 | 620 | 333 |
| 10·4 | 117 | 715 | 963 | 7·4 | 28 | 219 | 101 | 23 | No | photo | graph. | 23·4 | 292 | 1287 | 500 |
| 11 | No | photo | graph. | 8 | No | photo | graph. | 24 | No | photo | graph. | 24·1 | 205 | 1389 | 560 |
| 12 | No | photo | graph. | 9·7 | 5 | 316 | 323 | 25·6 | 0 | 83 | 405 | 25·4 | 186 | 909 | 827 |
| 13·5 | 45 | 173 | 0 | 10 | No | photo | graph. | 26·7 | 0 | 27 | 225 | 26·6 | 87 | 541 | 411 |
| 14 | No | photo | graph. | 11·5 | 83 | 394 | 1001 | 27·6 | 0 | 0 | 793 | 27·4 | 50 | 351 | 485 |
| 15·5 | 52 | 241 | 709 | 12·7 | 92 | 823 | 296 | 28 | 0 | 0 | 0 | 28·5 | 48 | 351 | 1483 |
| 16 | No | photo | graph. | 13 | No | photo | graph. | 29 | No | photo | graph. | 29·7 | 75 | 573 | 1114 |
| 17 | No | photo | graph. | 14·5 | 84 | 527 | 0 | 30·6 | 0 | 0 | 1152 | 30·7 | 117 | 563 | 0 |
| 18 | No | photo | graph. | 15 | No | photo | graph. | 31·5 | 0 | 0 | 1204 | 31·8 | 120 | 567 | 253 |
| 19·5 | 67 | 462 | 0 | 16 | No | photo | graph. | | | | | | | | |
| 20·5 | 82 | 383 | 0 | 17·6 | 22 | 302 | 0 | | | | | Apr. 1·6 | 17 | 511 | 0 |
| 21 | No | photo | graph. | 18·5 | 0 | 154 | 0 | | | | | 2·5 | 91 | 495 | 507 |
| 22·6 | 72 | 373 | 2187 | 19 | No | photo | graph. | Feb. 1·8 | 0 | 122 | 946 | 3 | No | photo | graph. |
| 23·5 | 48 | 218 | 300 | 20 | No | photo | graph. | 2 | No | photo | graph. | 4·6 | 0 | 99 | 902 |
| 24 | No | photo | graph. | 21 | No | photo | graph. | 3 | No | photo | graph. | 5·5 | 0 | 31 | 350 |
| 25 | No | photo | graph. | 22 | No | photo | graph. | 4·5 | 28 | 147 | 177 | 6·4 | 4 | 98 | 328 |
| 26 | 0 | 0 | 0 | 23 | No | photo | graph. | 5·7 | 21 | 225 | 405 | 7·7 | 5 | 105 | 267 |
| 27 | 0 | 0 | 0 | 24 | No | photo | graph. | 6·8 | 38 | 170 | 353 | 8·5 | 0 | 27 | 0 |
| 28·5 | 0 | 0 | 4110 | 25 | No | photo | graph. | 7·2 | 36 | 215 | 428 | 9·1 | 0 | 22 | 0 |
| 29 | 0 | 0 | 0 | 26 | No | photo | graph. | 8·7 | 13 | 93 | 697 | 10·6 | 52 | 393 | 980 |
| 30 | No | photo | graph. | 27 | No | photo | graph. | 9·2 | 23 | 119 | 883 | 11 | No | photo | graph. |
| 31 | No | photo | graph. | 28 | No | photo | graph. | 10·7 | 0 | 40 | 987 | 12 | No | photo | graph. |
| | | | | 29 | No | photo | graph. | 11·2 | 15 | 47 | 1834 | 13·6 | 174 | 1036 | 327 |
| | | | | 30 | No | photo | graph. | 12 | No | photo | graph. | 14·5 | 204 | 1035 | 597 |
| Nov. 1 | No | photo | graph. | 31 | No | photo | graph. | 13 | No | photo | graph. | 15·7 | 150 | 939 | 509 |
| 2 | No | photo | graph. | | | | | 14·0 | 0 | 19 | 333 | 16·5 | 219 | 963 | 848 |
| 3·6 | 126 | 687 | 0 | | | | | 15 | 0 | 0 | 0 | 17·5 | 162 | 868 | 1162 |
| 4·5 | 164 | 896 | 1642 | | | | | 16 | 0 | 0 | 0 | 18·5 | 130 | 634 | 715 |
| 5·5 | 167 | 899 | 798 | | | | | 17·1 | 0 | 0 | 131 | 19·4 | 69 | 446 | 688 |
| 6·6 | 118 | 856 | 0 | | | | | 18·4 | 42 | 148 | 957 | 20·6 | 54 | 322 | 1398 |
| 7·5 | 168 | 997 | 344 | | | | | 19 | No | photo | graph. | 21·7 | 0 | 224 | 921 |
| 8 | No | photo | graph. | | | | | 20·1 | 144 | 765 | 1450 | 22·7 | 0 | 55 | 658 |
| 9·6 | 212 | 1115 | 0 | | | | | 21·5 | 327 | 1594 | 0 | 23·7 | 0 | 0 | 324 |
| 10 | No | photo | graph. | | | | | 22·5 | 321 | 1606 | 0 | 24·5 | 0 | 0 | 303 |
| 11·5 | 12 | 289 | 0 | | | | | 23·5 | 371 | 1978 | 275 | 25·5 | 42 | 205 | 1079 |
| 12·4 | 0 | 93 | 1340 | | | | | 24 | No | photo | graph. | 26·5 | 46 | 456 | 0 |
| 13·5 | 37 | 158 | 810 | | | | | 25·5 | 365 | 1795 | 522 | 27·5 | 156 | 1014 | 1122 |
| 14 | No | photo | graph. | | | | | 26·6 | 264 | 1463 | 0 | 28·5 | 205 | 1258 | 1102 |
| 15 | No | photo | graph. | | | | | 27·0 | 242 | 1380 | 166 | 29·6 | 267 | 1795 | 0 |
| 16·5 | 131 | 707 | 505 | | | | | 28·0 | 239 | 1232 | 1145 | 30·5 | 129 | 1421 | 0 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1875. d | | | | 1875. d | | | | 1875. d | | | | 1875. d | | | |
| May 1·1 | 251 | 1573 | 337 | June 28·6 | 30 | 216 | 402 | Aug. 23·5 | 92 | 370 | 1347 | Oct. 18·2 | 0 | 37 | 751 |
| 2 | No | photo | graph. | 29·5 | 42 | 237 | 0 | 24·7 | 28 | 306 | 0 | 19 | No | photo | graph. |
| 3·5 | 215 | 1417 | 0 | 30·1 | 65 | 323 | 769 | 25·8 | 36 | 288 | 0 | 20 | No | photo | graph. |
| 4·1 | 140 | 1083 | 0 | | | | | 26·6 | 35 | 205 | 0 | 21·4 | 0 | 43 | 81 |
| 5·5 | 128 | 873 | 0 | | | | | 27·5 | 54 | 300 | 0 | 22 | No | photo | graph. |
| 6·5 | 97 | 433 | 0 | | | | | 28·6 | 39 | 200 | 0 | 23 | No | photo | graph. |
| 7·8 | 44 | 204 | 983 | July 1 | No | photo | graph. | 29·5 | 60 | 233 | 0 | 24 | No | photo | graph. |
| 8 | No | photo | graph. | 2·4 | 55 | 304 | 204 | 30·4 | 37 | 208 | 269 | 25·5 | 75 | 419 | 743 |
| 9·5 | 0 | 0 | 372 | 3·6 | 29 | 179 | 135 | 31·4 | 15 | 97 | 1740 | 26·4 | 61 | 376 | 0 |
| 10·7 | 0 | 0 | 364 | 4 | No | photo | graph. | | | | | 27·1 | 97 | 621 | 1008 |
| 11·6 | 0 | 0 | 420 | 5·4 | 22 | 66 | 0 | | | | | 28·1 | 109 | 624 | 180 |
| 12 | 0 | 0 | 0 | 6·4 | 12 | 52 | 0 | | | | | 29·0 | 85 | 863 | 469 |
| 13·7 | 0 | 0 | 282 | 7 | No | photo | graph. | Sept. 1·5 | 0 | 0 | 909 | 30 | No | photo | graph. |
| 14·6 | 0 | 0 | 404 | 8·6 | 0 | 31 | 598 | 2·8 | 0 | 0 | 908 | 31 | No | photo | graph. |
| 15·6 | 0 | 0 | 719 | 9·6 | 41 | 232 | 0 | 3 | 0 | 0 | 0 | | | | |
| 16 | No | photo | graph. | 10·6 | 61 | 245 | 529 | 4 | 0 | 0 | 0 | | | | |
| 17·5 | 0 | 0 | 478 | 11 | No | photo | graph. | 5 | No | photo | graph. | | | | |
| 18·8 | 0 | 0 | 287 | 12·6 | 33 | 166 | 278 | 6 | 0 | 0 | 0 | | | | |
| 19·1 | 0 | 0 | 395 | 13·6 | 12 | 132 | 401 | 7 | 0 | 0 | 0 | Nov. 1·7 | 113 | 672 | 339 |
| 20·1 | 0 | 0 | 223 | 14·6 | 0 | 81 | 542 | 8 | 0 | 0 | 0 | 2·4 | 130 | 479 | 0 |
| 21·5 | 0 | 0 | 124 | 15 | No | photo | graph. | 9·4 | 0 | 28 | 634 | 3·8 | 57 | 388 | 1120 |
| 22·7 | 0 | 15 | 407 | 16·1 | 0 | 0 | 451 | 10 | No | photo | graph. | 4 | No | photo | graph. |
| 23 | 0 | 0 | 0 | 17·6 | 0 | 54 | 1151 | 11·7 | 0 | 59 | 0 | 5 | No | photo | graph. |
| 24·5 | 0 | 117 | 815 | 18·5 | 0 | 0 | 115 | 12 | No | photo | graph. | 6 | 0 | 0 | 0 |
| 25 | No | photo | graph. | 19 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 7 | No | photo | graph. |
| 26·6 | 0 | 44 | 0 | 20·7 | 0 | 0 | 542 | 14·5 | 20 | 92 | 329 | 8·5 | 0 | 0 | 231 |
| 27·6 | 9 | 48 | 80 | 21 | 0 | 0 | 0 | 15·5 | 5 | 98 | 521 | 9 | No | photo | graph. |
| 28·6 | 12 | 35 | 209 | 22·6 | 0 | 0 | 625 | 16·4 | 0 | 58 | 865 | 10 | 0 | 0 | 0 |
| 29 | No | photo | graph. | 23·0 | 0 | 0 | 437 | 17·1 | 0 | 0 | 188 | 11 | No | photo | graph. |
| 30 | No | photo | graph. | 24·5 | 0 | 20 | 325 | 18·7 | 0 | 0 | 695 | 12 | 0 | 0 | 0 |
| 31·6 | 0 | 0 | 317 | 25·4 | 0 | 39 | 485 | 19 | No | photo | graph. | 13·0 | 0 | 0 | 709 |
| | | | | 26·5 | 14 | 127 | 614 | 20 | No | photo | graph. | 14 | No | photo | graph. |
| | | | | 27·6 | 0 | 114 | 0 | 21 | 0 | 0 | 0 | 15·4 | 0 | 7 | 440 |
| | | | | 28·5 | 48 | 255 | 231 | 22 | 0 | 0 | 0 | 16 | No | photo | graph. |
| | | | | 29·5 | 54 | 364 | 125 | 23 | No | photo | graph. | 17 | No | photo | graph. |
| June 1·5 | 3 | 80 | 0 | 30·6 | 50 | 324 | 0 | 24·6 | 0 | 0 | 609 | 18·4 | 76 | 307 | 396 |
| 2·5 | 45 | 275 | 1418 | 31·5 | 40 | 310 | 0 | 25·6 | 0 | 0 | 717 | 19·4 | 67 | 376 | 738 |
| 3·6 | 97 | 828 | 549 | | | | | 26 | No | photo | graph. | 20·5 | 148 | 615 | 0 |
| 4·5 | 133 | 884 | 137 | | | | | 27·5 | 26 | 158 | 579 | 21 | No | photo | graph. |
| 5·6 | 189 | 1014 | 0 | | | | | 28·7 | 42 | 366 | 0 | 22·4 | 204 | 835 | 403 |
| 6 | No | photo | graph. | Aug. 1 | No | photo | graph. | 29·5 | 47 | 338 | 168 | 23·5 | 189 | 832 | 0 |
| 7 | No | photo | graph. | 2·5 | 133 | 848 | 149 | 30·5 | 62 | 251 | 0 | 24 | No | photo | graph. |
| 8·5 | 93 | 818 | 0 | 3·5 | 93 | 394 | 0 | | | | | 25·6 | 133 | 715 | 144 |
| 9 | No | photo | graph. | 4 | No | photo | graph. | | | | | 26·1 | 67 | 479 | 264 |
| 10·6 | 56 | 407 | 659 | 5·5 | 32 | 140 | 560 | | | | | 27·1 | 40 | 383 | 174 |
| 11·6 | 46 | 242 | 308 | 6 | No | photo | graph. | Oct. 1·1 | 0 | 148 | 0 | 28 | No | photo | graph. |
| 12 | No | photo | graph. | 7 | No | photo | graph. | 2·4 | 52 | 426 | 224 | 29·1 | 39 | 276 | 647 |
| 13 | No | photo | graph. | 8 | No | photo | graph. | 3 | No | photo | graph. | 30·1 | 25 | 168 | 371 |
| 14·7 | 0 | 0 | 459 | 9 | 0 | 0 | 0 | 4·7 | 30 | 226 | 682 | | | | |
| 15 | 0 | 0 | 0 | 10·5 | 0 | 0 | 186 | 5·6 | 36 | 183 | 485 | | | | |
| 16·5 | 38 | 295 | 253 | 11·6 | 0 | 0 | 444 | 6·4 | 14 | 105 | 823 | | | | |
| 17·5 | 161 | 1008 | 0 | 12 | No | photo | graph. | 7·4 | 47 | 183 | 381 | | | | |
| 18 | No | photo | graph. | 13·5 | 0 | 0 | 696 | 8·7 | 0 | 50 | 414 | Dec. 1 | No | photo | graph. |
| 19·5 | 242 | 1430 | 184 | 14 | 0 | 0 | 0 | 9·4 | 0 | 34 | 83 | 2 | No | photo | graph. |
| 20·6 | 182 | 980 | 0 | 15 | No | photo | graph. | 10·5 | 11 | 57 | 0 | 3 | No | photo | graph. |
| 21·7 | 96 | 677 | 997 | 16·4 | 0 | 0 | 221 | 11·4 | 0 | 0 | 250 | 4 | No | photo | graph. |
| 22·5 | 162 | 1027 | 0 | 17 | 0 | 0 | 0 | 12·1 | 0 | 0 | 896 | 5 | No | photo | graph. |
| 23·5 | 305 | 1386 | 1003 | 18 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 6 | No | photo | graph. |
| 24·5 | 318 | 1425 | 333 | 19 | 0 | 0 | 0 | 14 | No | photo | graph. | 7 | No | photo | graph. |
| 25·6 | 257 | 1216 | 0 | 20·7 | 0 | 50 | 203 | 15 | No | photo | graph. | 8·1 | 0 | 0 | 446 |
| 26·5 | 132 | 884 | 0 | 21·5 | 36 | 217 | 213 | 16 | No | photo | graph. | 9 | No | photo | graph. |
| 27·5 | 88 | 510 | 672 | 22·6 | 73 | 343 | 1493 | 17 | 0 | 0 | 0 | 10 | No | photo | graph. |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1875. d | | | | 1876. d | | | | 1876. d | | | | 1876. d | | | |
| Dec. 11 | No | photo | graph. | Jan. 1 | 0 | 0 | 0 | Mar. 1·1 | 43 | 368 | 0 | Apr. 28 | 0 | 0 | 0 |
| 12 | No | photo | graph. | 2 | No | photo | graph. | 2·6 | 4 | 32 | 0 | 29 | 0 | 0 | 0 |
| 13 | No | photo | graph. | 3 | No | photo | graph | 3 | 0 | 0 | 0 | 30 | No | photo | graph. |
| 14·4 | 0 | 35 | 0 | 4 | No | photo | graph | 4·4 | 0 | 0 | 273 | | | | |
| 15·1 | 13 | 114 | 193 | 5·5 | 0 | 24 | 0 | 5 | No | photo | graph | | | | |
| 16·1 | 30 | 287 | 396 | 6 | No | photo | graph | 6·4 | 24 | 58 | 319 | May 1·4 | 0 | 0 | 279 |
| 17·5 | 111 | 599 | 347 | 7 | No | photo | graph | 7·4 | 8 | 30 | 985 | 2·5 | 0 | 0 | 51 |
| 18·0 | 84 | 674 | 1040 | 8 | No | photo | graph | 8·5 | 0 | 0 | 411 | 3·5 | 0 | 0 | 220 |
| 19 | No | photo | graph. | 9 | No | photo | graph | 9·4 | 8 | 53 | 387 | 4·5 | 0 | 0 | 550 |
| 20·1 | 31 | 471 | 0 | 10 | No | photo | graph | 10·5 | 18 | 85 | 326 | 5 | 0 | 0 | 0 |
| 21·1 | 49 | 379 | 229 | 11·1 | 6 | 59 | 255 | 11·5 | 19 | 88 | 507 | 6·4 | 0 | 0 | 191 |
| 22·1 | 56 | 314 | 0 | 12·1 | 0 | 42 | 385 | 12 | No | photo | graph | 7·6 | 73 | 250 | 347 |
| 23·6 | 52 | 299 | 149 | 13·1 | 0 | 0 | 505 | 13·6 | 70 | 278 | 466 | 8·5 | 71 | 248 | 392 |
| 24·5 | 26 | 119 | 57 | 14 | No | photo | graph | 14·6 | 88 | 311 | 671 | 9·5 | 57 | 265 | 0 |
| 25 | No | photo | graph. | 15 | No | photo | graph | 15·6 | 78 | 257 | 650 | 10·5 | 52 | 213 | 305 |
| 26 | No | photo | graph. | 16 | No | photo | graph | 16·4 | 99 | 387 | 0 | 11·5 | 43 | 174 | 445 |
| 27 | No | photo | graph. | 17 | No | photo | graph | 17·5 | 124 | 657 | 0 | 12·6 | 52 | 206 | 541 |
| 28 | No | photo | graph. | 18·5 | 43 | 223 | 256 | 18·5 | 109 | 463 | 0 | 13·5 | 39 | 189 | 292 |
| 29 | No | photo | graph. | 19·5 | 177 | 946 | 445 | 19·7 | 143 | 619 | 332 | 14 | No | photo | graph. |
| 30·1 | 3 | 34 | 210 | 20·7 | 99 | 877 | 0 | 20·5 | 141 | 561 | 0 | 15·6 | 0 | 11 | 218 |
| 31 | No | photo | graph. | 21·7 | 92 | 814 | 716 | 21·1 | 78 | 548 | 1041 | 16·5 | 0 | 0 | 597 |
| | | | | 22·5 | 104 | 737 | 0 | 22·5 | 275 | 958 | 1128 | 17·7 | 0 | 0 | 365 |
| | | | | 23·5 | 111 | 740 | 0 | 23·7 | 90 | 820 | 951 | 18 | 0 | 0 | 0 |
| | | | | 24·5 | 203 | 932 | 0 | 24·5 | 177 | 925 | 847 | 19 | 0 | 0 | 0 |
| | | | | 25·5 | 159 | 805 | 1036 | 25·4 | 163 | 849 | 542 | 20·6 | 0 | 0 | 208 |
| | | | | 26·7 | 0 | 302 | 0 | 26 | No | photo | graph. | 21·5 | 0 | 0 | 175 |
| | | | | 27·5 | 27 | 189 | 0 | 27·1 | 53 | 560 | 0 | 22·9 | 0 | 0 | 518 |
| | | | | 28·1 | 10 | 60 | 0 | 28·7 | 9 | 304 | 1330 | 23 | No | photo | graph. |
| | | | | 29·4 | 0 | 66 | 376 | 29·6 | 52 | 203 | 371 | 24 | No | photo | graph. |
| | | | | 30 | No | photo | graph | 30·5 | 15 | 84 | 144 | 25·6 | 0 | 33 | 163 |
| | | | | 31·5 | 12 | 43 | 346 | 31·5 | 0 | 0 | 130 | 26·6 | 0 | 33 | 425 |
| | | | | | | | | | | | | 27·6 | 6 | 34 | 736 |
| | | | | Feb. 1 | No | photo | graph | | | | | 28 | No | photo | graph. |
| | | | | 2·5 | 9 | 45 | 0 | | | | | 29 | 0 | 0 | 0 |
| | | | | 3 | No | photo | graph | Apr. 1 | No | photo | graph. | 30 | 0 | 0 | 0 |
| | | | | 4·5 | 2 | 12 | 0 | 2·5 | 0 | 0 | 286 | 31 | 0 | 0 | 0 |
| | | | | 5 | No | photo | graph | 3·4 | 0 | 0 | 141 | | | | |
| | | | | 6 | No | photo | graph | 4·4 | 0 | 4 | 75 | | | | |
| | | | | 7 | No | photo | graph | 5 | 0 | 0 | 0 | June 1·4 | 0 | 0 | 116 |
| | | | | 8·7 | 0 | 0 | 225 | 6·7 | 0 | 35 | 434 | 2 | No | photo | graph. |
| | | | | 9 | No | photo | graph | 7·4 | 0 | 0 | 99 | 3·6 | 0 | 0 | 391 |
| | | | | 10·4 | 4 | 106 | 0 | 8·5 | 0 | 29 | 131 | 4·7 | 0 | 0 | 207 |
| | | | | 11 | No | photo | graph | 9·6 | 0 | 24 | 319 | 5 | No | photo | graph. |
| | | | | 12·7 | 123 | 763 | 0 | 10·7 | 0 | 67 | 723 | 6 | 0 | 0 | 0 |
| | | | | 13·6 | 225 | 1029 | 0 | 11·5 | 0 | 51 | 592 | 7 | 0 | 0 | 0 |
| | | | | 14·6 | 259 | 1209 | 244 | 12·7 | 11 | 122 | 0 | 8 | 0 | 0 | 0 |
| | | | | 15·1 | 178 | 1181 | 189 | 13·1 | 12 | 80 | 0 | 9 | 0 | 0 | 0 |
| | | | | 16·7 | 213 | 1415 | 0 | 14·6 | 22 | 86 | 590 | 10 | No | photo | graph. |
| | | | | 17·1 | 232 | 1388 | 0 | 15·5 | 14 | 47 | 593 | 11 | No | photo | graph. |
| | | | | 18·4 | 194 | 944 | 66 | 16·5 | 0 | 16 | 368 | 12 | 0 | 0 | 0 |
| | | | | 19·5 | 180 | 860 | 0 | 17·7 | 0 | 115 | 257 | 13 | 0 | 0 | 0 |
| | | | | 20 | No | photo | graph | 18·6 | 0 | 38 | 0 | 14 | 0 | 0 | 0 |
| | | | | 21·7 | 22 | 341 | 282 | 19 | No | photo | graph. | 15 | 0 | 0 | 0 |
| | | | | 22·4 | 41 | 184 | 533 | 20·5 | 0 | 0 | 461 | 16 | 0 | 0 | 0 |
| | | | | 23 | 0 | 0 | 0 | 21·0 | 0 | 0 | 361 | 17 | No | photo | graph. |
| | | | | 24·5 | 0 | 0 | 212 | 22 | 0 | 0 | 0 | 18·5 | 0 | 0 | 313 |
| | | | | 25 | 0 | 0 | 0 | 23·6 | 0 | 0 | 266 | 19·6 | 0 | 0 | 347 |
| | | | | 26·4 | 24 | 139 | 563 | 24·4 | 0 | 0 | 293 | 20·5 | 0 | 0 | 298 |
| | | | | 27 | No | photo | graph | 25·6 | 0 | 0 | 308 | 21·4 | 0 | 29 | 572 |
| | | | | 28·6 | 32 | 121 | 368 | 26·0 | 0 | 0 | 243 | 22·6 | 8 | 26 | 452 |
| | | | | 29·6 | 17 | 153 | 0 | 27 | 0 | 0 | 0 | 23·6 | 9 | 39 | 0 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1876. d | | | | 1876. d | | | | 1876. d | | | | 1876. d | | | |
| June 24·7 | 0 | 38 | 0 | Aug. 21 | 0 | 0 | 0 | Oct. 18·1 | 4 | 93 | 510 | Dec. 13·6 | 0 | 0 | 344 |
| 25 | No | photo | graph. | 22·6 | 7 | 79 | 0 | 19·5 | 53 | 262 | 762 | 14 | 0 | 0 | 0 |
| 26·4 | 0 | 11 | 0 | 23·4 | 22 | 74 | 0 | 20·1 | 28 | 288 | 491 | 15 | No | photo | graph. |
| 27·6 | 0 | 70 | 0 | 24 | No | photo | graph. | 21·1 | 52 | 322 | 489 | 16 | No | photo | graph. |
| 28·6 | 12 | 58 | 209 | 25·6 | 62 | 177 | 276 | 22 | No | photo | graph. | 17 | No | photo | graph. |
| 29·1 | 31 | 126 | 151 | 26·7 | 11 | 129 | 259 | 23·2 | 55 | 439 | 0 | 18·0 | 37 | 178 | 268 |
| 30 | 0 | 0 | 0 | 27 | No | photo | graph. | 24 | No | photo | graph. | 19·2 | 55 | 445 | 0 |
| | | | | 28·6 | 7 | 87 | 477 | 25·2 | 44 | 215 | 0 | 20·1 | 95 | 579 | 0 |
| | | | | 29·5 | 0 | 18 | 312 | 26·0 | 29 | 136 | 0 | 21·1 | 72 | 257 | 0 |
| July 1 | No | photo | graph. | 30·6 | 14 | 89 | 0 | 27·1 | 25 | 141 | 0 | 22·5 | 171 | 1281 | 0 |
| 2 | No | photo | graph. | 31·5 | 26 | 81 | 0 | 28 | No | photo | graph. | 23·1 | 85 | 532 | 0 |
| 3·6 | 94 | 413 | 1040 | | | | | 29 | No | photo | graph. | 24 | No | photo | graph. |
| 4·6 | 28 | 332 | 237 | | | | | 30 | No | photo | graph. | 25 | No | photo | graph. |
| 5·6 | 41 | 233 | 206 | Sept. 1·6 | 31 | 129 | 0 | 31 | 0 | 0 | 0 | 26 | No | photo | graph. |
| 6·6 | 19 | 182 | 168 | 2·6 | 0 | 320 | 0 | | | | | 27·0 | 107 | 631 | 0 |
| 7·4 | 31 | 158 | 607 | 3 | No | photo | graph. | | | | | 28 | No | photo | graph. |
| 8·5 | 63 | 235 | 0 | 4·6 | 0 | 98 | 890 | | | | | 29·1 | 48 | 178 | 0 |
| 9 | No | photo | graph. | 5·6 | 0 | 8 | 656 | Nov. 1 | 0 | 0 | 0 | 30 | 0 | 0 | 0 |
| 10·5 | 9 | 43 | 371 | 6·5 | 0 | 0 | 182 | 2·6 | 53 | 221 | 348 | 31 | No | photo | graph. |
| 11·6 | 0 | 44 | 642 | 7 | 0 | 0 | 0 | 3·8 | 32 | 308 | 833 | | | | |
| 12·5 | 0 | 0 | 560 | 8 | 0 | 0 | 0 | 4·7 | 23 | 123 | 471 | | | | |
| 13·6 | 0 | 0 | 297 | 9 | No | photo | graph. | 5 | No | photo | graph. | | | | |
| 14·6 | 0 | 0 | 319 | 10 | No | photo | graph. | 6 | No | photo | graph. | | | | |
| 15 | 0 | 0 | 0 | 11 | No | photo | graph. | 7 | 0 | 0 | 0 | | | | |
| 16 | No | photo | graph. | 12 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | | | | |
| 17·5 | 0 | 0 | 96 | 13 | No | photo | graph. | 9·6 | 0 | 27 | 198 | | | | |
| 18 | 0 | 0 | 0 | 14·6 | 30 | 168 | 599 | 10 | No | photo | graph. | | | | |
| 19·6 | 0 | 64 | 0 | 15·7 | 57 | 197 | 567 | 11 | No | photo | graph. | | | | |
| 20·6 | 18 | 75 | 385 | 16·6 | 32 | 176 | 0 | 12 | No | photo | graph. | | | | |
| 21·6 | 19 | 91 | 556 | 17 | No | photo | graph. | 13·7 | 0 | 143 | 279 | | | | |
| 22·5 | 22 | 113 | 368 | 18·4 | 63 | 261 | 95 | 14·6 | 39 | 144 | 219 | | | | |
| 23 | No | photo | graph. | 19 | No | photo | graph. | 15·5 | 104 | 334 | 254 | | | | |
| 24·6 | 18 | 127 | 722 | 20 | 0 | 0 | 0 | 16·5 | 82 | 313 | 0 | | | | |
| 25·5 | 39 | 179 | 346 | 21·5 | 0 | 0 | 456 | 17 | No | photo | graph. | | | | |
| 26·5 | 36 | 126 | 0 | 22·4 | 0 | 0 | 965 | 18·1 | 32 | 177 | 0 | | | | |
| 27·4 | 31 | 80 | 0 | 23 | No | photo | graph. | 19·5 | 80 | 322 | 214 | | | | |
| 28·6 | 0 | 30 | 110 | 24 | No | photo | graph. | 20·1 | 16 | 122 | 104 | | | | |
| 29·6 | 0 | 0 | 632 | 25·1 | 0 | 0 | 104 | 21·0 | 8 | 129 | 171 | | | | |
| 30 | No | photo | graph. | 26·1 | 0 | 0 | 105 | 22 | No | photo | graph. | | | | |
| 31·1 | 8 | 81 | 477 | 27·6 | 47 | 367 | 496 | 23 | No | photo | graph. | | | | |
| | | | | 28·5 | 120 | 505 | 0 | 24 | 0 | 0 | 0 | | | | |
| | | | | 29·5 | 195 | 728 | 0 | 25 | No | photo | graph. | | | | |
| Aug. 1·6 | 0 | 0 | 426 | 30·6 | 89 | 737 | 0 | 26 | No | photo | graph. | | | | |
| 2·5 | 0 | 0 | 286 | | | | | 27 | 0 | 0 | 0 | | | | |
| 3·6 | 0 | 0 | 116 | | | | | 28 | 0 | 0 | 0 | | | | |
| 4 | 0 | 0 | 0 | Oct. 1 | No | photo | graph. | 29·5 | 0 | 0 | 109 | | | | |
| 5 | 0 | 0 | 0 | 2·6 | 49 | 452 | 0 | 30 | 0 | 0 | 0 | | | | |
| 6 | No | photo | graph. | 3·6 | 48 | 409 | 0 | | | | | | | | |
| 7·5 | 0 | 74 | 263 | 4·5 | 56 | 257 | 0 | | | | | | | | |
| 8 | 0 | 0 | 0 | 5·4 | 52 | 194 | 399 | | | | | | | | |
| 9·5 | 0 | 0 | 92 | 6·6 | 23 | 89 | 343 | Dec. 1 | 0 | 0 | 0 | | | | |
| 10 | 0 | 0 | 0 | 7 | No | photo | graph. | 2 | 0 | 0 | 0 | | | | |
| 11 | 0 | 0 | 0 | 8 | No | photo | graph. | 3 | No | photo | graph. | | | | |
| 12 | No | photo | graph. | 9 | 0 | 0 | 0 | 4 | No | photo | graph. | | | | |
| 13 | No | photo | graph. | 10 | 0 | 0 | 0 | 5 | No | photo | graph. | | | | |
| 14 | 0 | 0 | 0 | 11·6 | 4 | 34 | 0 | 6·5 | 0 | 0 | 110 | | | | |
| 15·7 | 0 | 0 | 179 | 12·5 | 55 | 189 | 61 | 7 | 0 | 0 | 0 | | | | |
| 16·5 | 0 | 50 | 0 | 13 | No | photo | graph. | 8 | No | photo | graph. | | | | |
| 17·5 | 70 | 193 | 0 | 14 | No | photo | graph. | 9 | No | photo | graph. | | | | |
| 18·7 | 16 | 199 | 0 | 15 | No | photo | graph. | 10 | No | photo | graph. | | | | |
| 19·7 | 19 | 153 | 0 | 16·1 | 40 | 222 | 0 | 11 | No | photo | graph. | | | | |
| 20 | No | photo | graph. | 17·5 | 81 | 389 | 409 | 12 | 0 | 0 | 0 | | | | |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1877. d | | | | 1877. d | | | | 1877. d | | | | 1877. d | | | |
| Jan. 1 | No | photo | graph. | Mar. 1·1 | 44 | 191 | 0 | Apr. 28·1 | 0 | 60 | 122 | June 24 | No | photo | graph. |
| 2 | No | photo | graph. | 2 | No | photo | graph. | 29 | No | photo | graph. | 25·4 | 46 | 134 | 271 |
| 3 | 0 | 0 | 0 | 3·0 | 22 | 316 | 0 | 30·6 | 10 | 58 | 580 | 26 | No | photo | graph. |
| 4 | 0 | 0 | 0 | 4 | No | photo | graph. | | | | | 27·5 | 0 | 0 | 118 |
| 5 | 0 | 0 | 0 | 5·1 | 18 | 336 | 0 | | | | | 28·5 | 16 | 49 | 95 |
| 6·1 | 0 | 73 | 0 | 6 | No | photo | graph. | | | | | 29·5 | 43 | 129 | 729 |
| 7 | No | photo | graph. | 7 | No | photo | graph. | May 1·1 | 0 | 78 | 232 | 30 | No | photo | graph. |
| 8·0 | 0 | 30 | 0 | 8·6 | 0 | 60 | 0 | 2·1 | 6 | 101 | 145 | | | | |
| 9·1 | 0 | 15 | 0 | 9·1 | 0 | 58 | 324 | 3·4 | 21 | 79 | 0 | | | | |
| 10·1 | 29 | 353 | 147 | 10·6 | 0 | 34 | 200 | 4·5 | 23 | 148 | 0 | July 1 | No | photo | graph. |
| 11·2 | 38 | 417 | 260 | 11 | No | photo | graph. | 5·4 | 17 | 54 | 0 | 2 | No | photo | graph. |
| 12·1 | 44 | 273 | 259 | 12 | No | photo | graph. | 6 | No | photo | graph. | 3·4 | 16 | 48 | 0 |
| 13·0 | 29 | 302 | 0 | 13 | No | photo | graph. | 7·4 | 39 | 113 | 642 | 4·4 | 5 | 57 | 143 |
| 14 | No | photo | graph. | 14 | 0 | 0 | 0 | 8·4 | 42 | 200 | 748 | 5·4 | 2 | 49 | 0 |
| 15·6 | 196 | 805 | 1012 | 15 | No | photo | graph. | 9·5 | 41 | 140 | 435 | 6 | 0 | 0 | 0 |
| 16 | No | photo | graph. | 16 | 0 | 0 | 0 | 10·5 | 79 | 283 | 0 | 7 | 0 | 0 | 0 |
| 17·1 | 161 | 924 | 0 | 17·5 | 10 | 76 | 0 | 11·6 | 74 | 367 | 0 | 8 | No | photo | graph. |
| 18·0 | 122 | 974 | 0 | 18·4 | 83 | 357 | 0 | 12 | No | photo | graph. | 9 | 0 | 0 | 0 |
| 19·0 | 88 | 1023 | 0 | 19·6 | 59 | 397 | 0 | 13 | No | photo | graph. | 10·4 | 0 | 0 | 200 |
| 20·1 | 70 | 619 | 0 | 20 | No | photo | graph. | 14 | No | photo | graph. | 11·1 | 0 | 0 | 130 |
| 21 | No | photo | graph. | 21·2 | 25 | 236 | 298 | 15·5 | 39 | 179 | 0 | 12·5 | 0 | 0 | 184 |
| 22·1 | 43 | 289 | 119 | 22·5 | 18 | 61 | 131 | 16·1 | 17 | 142 | 0 | 13 | 0 | 0 | 0 |
| 23·5 | 18 | 100 | 0 | 23·5 | 0 | 0 | 381 | 17·1 | 11 | 129 | 204 | 14·1 | 10 | 49 | 0 |
| 24·5 | 13 | 65 | 215 | 24·5 | 0 | 0 | 555 | 18·4 | 29 | 112 | 750 | 15 | No | photo | graph. |
| 25·1 | 0 | 83 | 273 | 25 | No | photo | graph. | 19 | No | photo | graph. | 16 | No | photo | graph. |
| 26·5 | 0 | 39 | 282 | 26 | No | photo | graph. | 20 | No | photo | graph. | 17 | 0 | 0 | 0 |
| 27·0 | 0 | 17 | 0 | 27·6 | 0 | 0 | 335 | 21 | No | photo | graph. | 18·5 | 10 | 26 | 258 |
| 28 | No | photo | graph. | 28 | 0 | 0 | 0 | 22 | No | photo | graph. | 19 | No | photo | graph. |
| 29·5 | 0 | 0 | 197 | 29 | 0 | 0 | 0 | 23 | No | photo | graph. | 20·5 | 0 | 0 | 326 |
| 30·5 | 0 | 9 | 194 | 30 | 0 | 0 | 0 | 24·5 | 33 | 157 | 0 | 21·5 | 0 | 0 | 244 |
| 31·1 | 0 | 15 | 0 | 31·4 | 0 | 0 | 264 | 25·5 | 45 | 143 | 0 | 22 | No | photo | graph. |
| | | | | | | | | 26·4 | 31 | 157 | 554 | 23 | 0 | 0 | 0 |
| | | | | | | | | 27 | No | photo | graph. | 24 | 0 | 0 | 0 |
| | | | | | | | | 28·4 | 0 | 0 | 246 | 25 | 0 | 0 | 0 |
| | | | | | | | | 29·4 | 0 | 0 | 107 | 26 | 0 | 0 | 0 |
| Feb. 1 | No | photo | graph. | | | | | 30 | 0 | 0 | 0 | 27 | No | photo | graph. |
| 2·1 | 5 | 25 | 0 | Apr. 1 | No | photo | graph. | 31 | 0 | 0 | 0 | 28 | No | photo | graph. |
| 3·6 | 0 | 32 | 0 | 2 | No | photo | graph. | | | | | 29 | 0 | 0 | 0 |
| 4 | No | photo | graph. | 3 | No | photo | graph. | | | | | 30·4 | 0 | 0 | 49 |
| 5 | No | photo | graph. | 4·6 | 0 | 0 | 535 | | | | | 31·4 | 0 | 0 | 110 |
| 6·1 | 0 | 11 | 0 | 5·6 | 0 | 0 | 219 | June 1 | No | photo | graph. | | | | |
| 7·5 | 25 | 116 | 0 | 6·5 | 3 | 25 | 81 | 2 | No | photo | graph. | | | | |
| 8·5 | 39 | 194 | 0 | 7·5 | 2 | 28 | 458 | 3·5 | 11 | 36 | 293 | | | | |
| 9 | No | photo | graph. | 8 | No | photo | graph. | 4·4 | 50 | 301 | 125 | Aug. 1 | No | photo | graph. |
| 10·1 | 36 | 218 | 232 | 9 | 0 | 0 | 0 | 5·4 | 70 | 334 | 0 | 2·5 | 30 | 74 | 0 |
| 11 | No | photo | graph. | 10 | No | photo | graph. | 6·5 | 54 | 277 | 0 | 3·5 | 0 | 24 | 128 |
| 12 | No | photo | graph. | 11 | 0 | 0 | 0 | 7·4 | 70 | 281 | 0 | 4 | 0 | 0 | 0 |
| 13 | No | photo | graph. | 12·4 | 0 | 0 | 136 | 8·5 | 71 | 307 | 0 | 5 | No | photo | graph. |
| 14 | No | photo | graph. | 13 | 0 | 0 | 0 | 9·4 | 90 | 404 | 0 | 6 | No | photo | graph. |
| 15 | No | photo | graph. | 14 | 0 | 0 | 0 | 10 | No | photo | graph. | 7 | 0 | 0 | 0 |
| 16·5 | 29 | 127 | 307 | 15 | No | photo | graph. | 11·5 | 43 | 239 | 416 | 8 | No | photo | graph. |
| 17·5 | 20 | 89 | 132 | 16·1 | 87 | 685 | 0 | 12 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 18 | No | photo | graph. | 17·5 | 111 | 634 | 177 | 13 | No | photo | graph. | 10 | No | photo | graph. |
| 19·6 | 0 | 0 | 174 | 18 | No | photo | graph. | 14·4 | 0 | 0 | 555 | 11 | No | photo | graph. |
| 20 | 0 | 0 | 0 | 19·5 | 53 | 278 | 310 | 15·4 | 0 | 0 | 320 | 12 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 20·5 | 36 | 187 | 697 | 16·4 | 0 | 0 | 279 | 13 | No | photo | graph. |
| 22 | No | photo | graph. | 21 | No | photo | graph. | 17 | 0 | 0 | 0 | 14·5 | 0 | 0 | 143 |
| 23 | 0 | 0 | 0 | 22 | No | photo | graph. | 18 | 0 | 0 | 0 | 15 | No | photo | graph. |
| 24 | 0 | 0 | 0 | 23·4 | 82 | 372 | 0 | 19 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 25 | No | photo | graph. | 24·4 | 63 | 202 | 0 | 20 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 26·0 | 0 | 57 | 187 | 25·4 | 67 | 213 | 0 | 21 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 27·5 | 40 | 146 | 656 | 26 | No | photo | graph. | 22 | 0 | 0 | 0 | 19 | No | photo | graph. |
| 28 | No | photo | graph. | 27·6 | 25 | 134 | 355 | 23 | No | photo | graph. | 20 | 0 | 0 | 0 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1877. d | | | | 1877. d | | | | 1877. d | | | | 1877. d | | | |
| Aug. 21 | 0 | 0 | 0 | Sept. 23 | No | photo | graph. | Oct. 26·1 | 15 | 215 | 0 | Nov. 28·5 | 142 | 669 | 0 |
| 22·5 | 8 | 32 | 94 | 24·4 | 0 | 0 | 265 | 27 | No | photo | graph. | 29·1 | 85 | 631 | 0 |
| 23·5 | 22 | 104 | 458 | 25·1 | 0 | 20 | 336 | 28 | No | photo | graph. | 30·4 | 120 | 459 | 0 |
| 24·4 | 32 | 246 | 744 | 26·6 | 18 | 75 | 271 | 29 | No | photo | graph. | | | | |
| 25 | No | photo | graph. | 27·5 | 10 | 41 | 472 | 30·5 | 280 | 1265 | 654 | | | | |
| 26 | No | photo | graph. | 28·4 | 9 | 53 | 0 | 31·4 | 281 | 1482 | 0 | Dec. 1 | No | photo | graph. |
| 27 | No | photo | graph. | 29·5 | 5 | 16 | 276 | | | | | 2·5 | 58 | 233 | 568 |
| 28·5 | 30 | 82 | 0 | 30 | No | photo | graph. | | | | | 3·1 | 30 | 206 | 507 |
| 29·6 | 22 | 59 | 61 | | | | | | | | | 4 | No | photo | graph. |
| 30 | No | photo | graph. | | | | | Nov. 1·4 | 272 | 1772 | 608 | 5 | 0 | 0 | 0 |
| 31·4 | 7 | 31 | 0 | | | | | 2·1 | 207 | 1620 | 189 | 6 | 0 | 0 | 0 |
| | | | | Oct. 1·4 | 5 | 14 | 133 | 3·5 | 237 | 1092 | 0 | 7 | 0 | 0 | 0 |
| | | | | 2 | 0 | 0 | 0 | 4·5 | 152 | 842 | 0 | 8 | 0 | 0 | 0 |
| | | | | 3 | 0 | 0 | 0 | 5·4 | 107 | 583 | 383 | 9 | No | photo | graph. |
| Sept. 1·5 | 0 | 0 | 880 | 4 | No | photo | graph. | 6 | No | photo | graph. | 10 | 0 | 0 | 0 |
| 2 | No | photo | graph. | 5·4 | 0 | 0 | 261 | 7·1 | 37 | 246 | 991 | 11 | 0 | 0 | 0 |
| 3 | No | photo | graph. | 6·4 | 0 | 0 | 276 | 8·4 | 0 | 0 | 307 | 12 | 0 | 0 | 0 |
| 4·5 | 19 | 87 | 216 | 7 | No | photo | graph. | 9 | No | photo | graph. | 13 | 0 | 0 | 0 |
| 5·5 | 52 | 246 | 337 | 8 | 0 | 0 | 0 | 10·4 | 0 | 0 | 227 | 14 | 0 | 0 | 0 |
| 6·4 | 75 | 300 | 221 | 9 | 0 | 0 | 0 | 11 | No | photo | graph. | 15 | No | photo | graph. |
| 7·4 | 77 | 445 | 0 | 10 | No | photo | graph. | 12·4 | 0 | 0 | 128 | 16 | No | photo | graph. |
| 8 | No | photo | graph. | 11 | 0 | 0 | 0 | 13 | No | photo | graph. | 17 | 0 | 0 | 0 |
| 9·5 | 72 | 316 | 0 | 12 | 0 | 0 | 0 | 14·5 | 62 | 180 | 0 | 18 | 0 | 0 | 0 |
| 10 | No | photo | graph. | 13 | No | photo | graph. | 15 | No | photo | graph. | 19 | No | photo | graph. |
| 11 | No | photo | graph. | 14 | No | photo | graph. | 16·5 | 31 | 113 | 0 | 20 | No | photo | graph. |
| 12·4 | 65 | 202 | 260 | 15 | 0 | 0 | 0 | 17·6 | 29 | 52 | 0 | 21·1 | 0 | 34 | 171 |
| 13 | No | photo | graph. | 16 | 0 | 0 | 0 | 18 | No | photo | graph. | 22 | No | photo | graph. |
| 14 | No | photo | graph. | 17·4 | 0 | 0 | 97 | 19 | No | photo | graph. | 23 | No | photo | graph. |
| 15 | No | photo | graph. | 18 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 24 | No | photo | graph. |
| 16 | No | photo | graph. | 19 | No | photo | graph. | 21 | No | photo | graph. | 25 | No | photo | graph. |
| 17 | No | photo | graph. | 20 | 0 | 0 | 0 | 22·5 | 35 | 123 | 338 | 26 | 0 | 0 | 0 |
| 18·5 | 2 | 45 | 333 | 21 | No | photo | graph. | 23·4 | 62 | 306 | 475 | 27 | No | photo | graph. |
| 19 | No | photo | graph. | 22 | No | photo | graph. | 24·1 | 53 | 590 | 190 | 28 | 0 | 0 | 0 |
| 20·1 | 0 | 24 | 0 | 23 | 0 | 0 | 0 | 25·2 | 73 | 753 | 0 | 29 | No | photo | graph. |
| 21·5 | 2 | 22 | 214 | 24·4 | 0 | 0 | 171 | 26·6 | 168 | 828 | 0 | 30 | No | photo | graph. |
| 22 | 0 | 0 | 0 | 25 | No | photo | graph. | 27·2 | 94 | 759 | 0 | 31·5 | 0 | 23 | 246 |

## TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ FOR EACH DAY IN THE YEARS 1878–1881, DEDUCED FROM THE MEASUREMENTS OF THE PHOTOGRAPHS OF THE SUN TAKEN AT THE ROYAL OBSERVATORY, GREENWICH, AT DEHRA DÛN IN INDIA, AT THE MELBOURNE OBSERVATORY, AUSTRALIA, AND AT THE ROYAL ALFRED OBSERVATORY, MAURITIUS.

The Projected Area is the Area as it is measured on the Photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Greenwich Civil Time is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight. The decimal of the day has not been given for days when neither spots nor faculæ were observed on the photographs.

Dates for which the areas are given in brackets indicate days for which no photographic Record is at present available; in these cases the areas have been obtained by interpolation from the measures of photographs taken on the days immediately preceding and following the day for which the photograph is lacking. These interpolated values have been used in taking the mean daily areas for each rotation and for each year, given in the last section of this volume.

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1878. d | | | | 1878. d | | | | 1878. d | | | | 1878. d | | | |
| Jan. 1 | 0 | 0 | 0 | Feb. 10 | 0 | 0 | 0 | Mar. 22 | 0 | 0 | 0 | May 1 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 2 | ( 0 | 0 | 0) |
| 3 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 3 | ( 0 | 0 | 0) |
| 4 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 14·3 | 0 | 0 | 282 | 26 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6 | ( 0 | 0 | 174) | 15 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 7·5 | 0 | 0 | 347 | 16 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 29·3 | 0 | 0 | 328 | 8 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 10·5 | 0 | 0 | 63 | 19 | 0 | 0 | 0 | 31 | ( 0 | 0 | 0) | 10·5 | 0 | 0 | 115 |
| 11 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | | | | | 11 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | | | | | 12 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | Apr. 1 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| 14 | ( 0 | 0 | 0) | 23 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 15 | ( 0 | 0 | 0) | 24 | 0 | 0 | 0 | 3·3 | 0 | 0 | 146 | 15 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 17·5 | 0 | 0 | 700 | 26 | 0 | 7 | 0 | 5·2 | 0 | 18 | 395 | 17 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 27·2 | 0 | 7 | 265 | 6 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 19 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | | | | | 8 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | | | | | 9 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | Mar. 1 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 22 | 0 | 0 | 0 |
| 23·6 | 87 | 239 | 0 | 2 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| 24 | (65 | 210 | 0) | 3 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 24 | 0 | 0 | 0 |
| 25·1 | 43 | 180 | 0 | 4·5 | 62 | 257 | 409 | 13 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| 26·1 | 0 | 136 | 0 | 5·4 | 28 | 125 | 1026 | 14·3 | 0 | 0 | 130 | 26 | (35 | 144 | 403) |
| 27 | ( 0 | 91 | 0) | 6·1 | 3 | 50 | 0 | 15 | 0 | 0 | 0 | 27·5 | 69 | 288 | 806 |
| 28 | ( 0 | 45 | 0) | 7 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 28·1 | 54 | 442 | 702 |
| 29 | 0 | 0 | 0 | 8·4 | 0 | 0 | 588 | 17 | 0 | 0 | 0 | 29·1 | 100 | 636 | 944 |
| 30 | 0 | 0 | 0 | 9·2 | 0 | 0 | 247 | 18 | 0 | 0 | 0 | 30·1 | 83 | 492 | 62 |
| 31 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 31·4 | 120 | 552 | 461 |
| | | | | 11·3 | 3 | 28 | 0 | 20 | 0 | 0 | 0 | | | | |
| | | | | 12·5 | 69 | 308 | 0 | 21 | 0 | 0 | 0 | | | | |
| Feb. 1 | 0 | 0 | 0 | 13·3 | 43 | 369 | 0 | 22 | 0 | 0 | 0 | June 1·1 | 105 | 489 | 0 |
| 2 | 0 | 0 | 0 | 14·5 | 51 | 252 | 0 | 23 | 0 | 0 | 0 | 2·3 | 42 | 338 | 478 |
| 3·2 | 24 | 182 | 0 | 15·3 | 91 | 514 | 0 | 24 | 0 | 0 | 0 | 3·3 | 45 | 157 | 0 |
| 4 | (30 | 207 | 0) | 16·2 | 50 | 347 | 0 | 25 | 0 | 0 | 0 | 4·4 | 12 | 67 | 684 |
| 5·2 | 36 | 231 | 0 | 17 | (35 | 227 | 0) | 26 | 0 | 0 | 0 | 5·1 | 0 | 10 | 1845 |
| 6 | (24 | 170 | 174) | 18·2 | 20 | 106 | 0 | 27 | 0 | 0 | 0 | 6·5 | 0 | 12 | 282 |
| 7 | (12 | 110 | 347) | 19·1 | 0 | 0 | 347 | 28 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 8·5 | 0 | 49 | 521 | 20 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1878. d | | | | 1878. d | | | | 1878. d | | | | 1878. d | | | |
| June 10·5 | 0 | 19 | 0 | Aug. 7·5 | 0 | 0 | 97 | Oct. 3 | 0 | 0 | 0 | Dec. 1 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 12·5 | 0 | 0 | 102 | 9 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 8·5 | 0 | 0 | 60 | 6 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 16·5 | 0 | 0 | 75 | 12·2 | 0 | 0 | 169 | 10 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 13·3 | 0 | 0 | 180 | 11 | 0 | 0 | 0 |
| 21·4 | 0 | 0 | 236 | 18 | (0 | 0 | 0) | 14 | 0 | 0 | 0 | 12 | 0 | 0 | 0 |
| 22·4 | 0 | 0 | 535 | 19 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 20 | (0 | 0 | 0) | 16 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 16·3 | 0 | 0 | 54 |
| 26·5 | 17 | 80 | 103 | 23 | 0 | 0 | 0 | 19·5 | 0 | 0 | 289 | 17·2 | 0 | 0 | 42 |
| 27·5 | 41 | 188 | 369 | 24 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 28·5 | 39 | 194 | 271 | 25 | 0 | 0 | 0 | 21·5 | 0 | 0 | 322 | 19·4 | 5 | 28 | 233 |
| 29·5 | 3 | 38 | 40 | 26 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 20·2 | 4 | 11 | 102 |
| 30 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| | | | | 28 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 22 | 0 | 0 | 0 |
| | | | | 29 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| July 1 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 24 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | | | | | 28 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | | | | | 29·3 | 8 | 66 | 231 | 27 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | Sept. 1 | 0 | 0 | 0 | 30·2 | 13 | 94 | 368 | 28 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 2·6 | 11 | 64 | 58 | 31·2 | 24 | 146 | 222 | 29 | 0 | 0 | 0 |
| 7 | (0 | 0 | 0) | 3·5 | 27 | 119 | 257 | | | | | 30 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 4·4 | 38 | 201 | 279 | | | | | 31 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 5·2 | 37 | 233 | 0 | Nov. 1·5 | 33 | 158 | 153 | | | | |
| 10 | 0 | 0 | 0 | 6·5 | 71 | 259 | 0 | 2·3 | 26 | 149 | 0 | | | | |
| 11 | 0 | 0 | 0 | 7·4 | 64 | 287 | 0 | 3·3 | 26 | 140 | 0 | | | | |
| 12 | 0 | 0 | 0 | 8·3 | 70 | 354 | 0 | 4·2 | 18 | 128 | 0 | | | | |
| 13 | 0 | 0 | 0 | 9·6 | 52 | 265 | 0 | 5·5 | 31 | 130 | 0 | | | | |
| 14 | (0 | 0 | 0) | 10·6 | 55 | 249 | 85 | 6·3 | 21 | 109 | 0 | | | | |
| 15 | 0 | 0 | 0 | 11·5 | 44 | 210 | 332 | 7·5 | 26 | 91 | 0 | | | | |
| 16·5 | 0 | 0 | 449 | 12·4 | 36 | 144 | 775 | 8·3 | 16 | 69 | 291 | | | | |
| 17·5 | 0 | 0 | 71 | 13·5 | 18 | 64 | 445 | 9·2 | 9 | 23 | 228 | | | | |
| 18 | 0 | 0 | 0 | 14·5 | 0 | 0 | 117 | 10 | 0 | 0 | 0 | | | | |
| 19 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | | | | |
| 20 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | | | | |
| 21 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | | | | |
| 22 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | | | | |
| 23 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | | | | |
| 24 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 16·5 | 0 | 0 | 106 | | | | |
| 25 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | | | | |
| 26·4 | 5 | 18 | 272 | 22 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | | | | |
| 27·5 | 0 | 0 | 35 | 23 | 0 | 0 | 0 | 19·5 | 0 | 0 | 113 | | | | |
| 28 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 20·3 | 3 | 20 | 70 | | | | |
| 29 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 21·3 | 2 | 16 | 93 | | | | |
| 30 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 22·2 | 0 | 23 | 146 | | | | |
| 31 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | | | | |
| | | | | 28 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | | | | |
| Aug. 1 | 0 | 0 | 0 | 29·2 | 0 | 0 | 65 | 25 | 0 | 0 | 0 | | | | |
| 2 | 0 | 0 | 0 | 30·5 | 0 | 0 | 213 | 26 | 0 | 0 | 0 | | | | |
| 3 | 0 | 0 | 0 | | | | | 27 | 0 | 0 | 0 | | | | |
| 4 | 0 | 0 | 0 | | | | | 28 | 0 | 0 | 0 | | | | |
| 5 | 0 | 0 | 0 | Oct. 1·4 | 0 | 0 | 477 | 29·5 | 0 | 0 | 217 | | | | |
| 6·5 | 0 | 0 | 79 | 2 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | | | | |

Total Projected Areas of Sun Spots and Faculæ—*continued*.

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1879. d | | | | 1879. d | | | | 1879. d | | | | 1879. d | | | |
| Jan. 1 | 0 | 0 | 0 | Mar. 1 | 0 | 0 | 0 | Apr. 28 | 0 | 0 | 0 | June 25 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 26 | (28 | 71 | 0) |
| 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 27·4 | 55 | 142 | 0 |
| 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | | | | | 28·5 | 65 | 232 | 0 |
| 5 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | | | | | 29 | (61 | 271 | 0) |
| 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | May 1 | 0 | 0 | 0 | 30·5 | 56 | 309 | 0 |
| 7 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | | | | |
| 8 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | | | | |
| 9 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | July 1·1 | 61 | 464 | 0 |
| 10 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2·4 | 44 | 204 | 487 |
| 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3·1 | 49 | 246 | 1584 |
| 12 | (0 | 0 | 0) | 12·3 | 0 | 0 | 80 | 7 | 0 | 0 | 0 | 4·5 | 17 | 94 | 841 |
| 13 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 8 | (0 | 56 | 1021) | 5·4 | 6 | 51 | 1260 |
| 14 | 0 | 0 | 0 | 14·2 | 0 | 0 | 161 | 9·1 | 0 | 111 | 2042 | 6 | (3 | 26 | 707) |
| 15 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 10·4 | 25 | 80 | 572 | 7·5 | 0 | 0 | 154 |
| 16 | 0 | 0 | 0 | 16·2 | 0 | 0 | 136 | 11 | (16 | 55 | 286) | 8 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 17·2 | 0 | 0 | 167 | 12·5 | 7 | 30 | 0 | 9 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 19·3 | 0 | 0 | 147 | 19·1 | 0 | 0 | 88 | 14 | 0 | 0 | 0 | 11·5 | 31 | 178 | 487 |
| 20·2 | 0 | 0 | 259 | 20 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 12·4 | 45 | 410 | 0 |
| 21·2 | 0 | 0 | 584 | 21 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 13 | (35 | 319 | 0) |
| 22·2 | 0 | 0 | 105 | 22 | 0 | 0 | 0 | 17·4 | 0 | 0 | 375 | 14·4 | 24 | 227 | 0 |
| 23 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 15·1 | 40 | 222 | 0 |
| 24 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 19·5 | 0 | 0 | 150 | 16·4 | 8 | 97 | 0 |
| 25 | 0 | 0 | 0 | 25·3 | 0 | 0 | 386 | 20 | (0 | 0 | 75) | 17 | (4 | 49 | 67) |
| 26 | 0 | 0 | 0 | 26·3 | 0 | 0 | 259 | 21 | 0 | 0 | 0 | 18·4 | 0 | 0 | 133 |
| 27 | 0 | 0 | 0 | 27·2 | 0 | 0 | 268 | 22 | 0 | 0 | 0 | 19 | (0 | 0 | 89) |
| 28 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 20 | (0 | 0 | 44) |
| 29 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| 30·3 | 6 | 43 | 199 | 30 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 22 | 0 | 0 | 0 |
| 31·3 | 0 | 8 | 419 | 31 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| | | | | | | | | 27 | 0 | 0 | 0 | 24 | 0 | 0 | 0 |
| | | | | | | | | 28 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| | | | | | | | | 29 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| Feb. 1·3 | 0 | 0 | 246 | | | | | 30 | 0 | 0 | 0 | 27 | (0 | 0 | 0) |
| 2·2 | 0 | 0 | 265 | Apr. 1 | 0 | 0 | 0 | 31 | (0 | 0 | 0) | 28 | 0 | 0 | 0 |
| 3·2 | 0 | 0 | 350 | 2 | 0 | 0 | 0 | | | | | 29 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | | | | | 30·4 | 0 | 0 | 169 |
| 5 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | June 1 | 0 | 0 | 0 | 31 | 0 | 0 | 0 |
| 6·2 | 0 | 0 | 211 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | | | | |
| 7 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | | | | |
| 8 | 0 | 0 | 0 | 7·5 | 0 | 0 | 186 | 4 | 0 | 0 | 0 | Aug. 1 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 8·5 | 0 | 0 | 203 | 5 | (0 | 0 | 0) | 2·4 | 0 | 0 | 60 |
| 10 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | (0 | 0 | 30) |
| 11 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 12·5 | 0 | 0 | 178 | 11 | 0 | 0 | 0 | 8 | (0 | 0 | 94) | 5 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 12 | (16 | 80 | 0) | 9·5 | 0 | 0 | 183 | 6 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 13 | (32 | 160 | 0) | 10 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 15 | (0 | 0 | 0) | 14 | (48 | 240 | 0) | 11 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 16 | (0 | 0 | 0) | 15·6 | 64 | 320 | 0 | 12 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 16·1 | 58 | 413 | 0 | 13 | 0 | 0 | 0 | 10 | (4 | 49 | 175) |
| 18 | 0 | 0 | 0 | 17·6 | 64 | 276 | 525 | 14·5 | 0 | 0 | 90 | 11·4 | 8 | 97 | 350 |
| 19 | 0 | 0 | 0 | 18·5 | 62 | 323 | 136 | 15 | (0 | 0 | 45) | 12·5 | 81 | 222 | 333 |
| 20 | 0 | 0 | 0 | 19·5 | 46 | 215 | 0 | 16 | 0 | 0 | 0 | 13·4 | 59 | 152 | 138 |
| 21 | 0 | 0 | 0 | 20·1 | 36 | 204 | 0 | 17 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 21·1 | 29 | 176 | 844 | 18 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 22·1 | 29 | 166 | 1430 | 19 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 23·1 | 0 | 104 | 624 | 20 | 0 | 0 | 0 | 17 | (0 | 0 | 0) |
| 25 | 0 | 0 | 0 | 24 | (0 | 52 | 312) | 21 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 19 | (0 | 0 | 0) |
| 27 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1879. d | | | | 1879. d | | | | 1879. d | | | | 1880. d | | | |
| Aug. 22 | 0 | 0 | 0 | Oct. 19·2 | 70 | 609 | 554 | Dec. 16·5 | 11 | 33 | 3198 | Jan. 1 | 0 | 0 | 0 |
| 23 | (0 | 0 | 0) | 20·4 | 126 | 519 | 306 | 17·4 | 47 | 242 | 322 | 2 | 0 | 0 | 0 |
| 24 | (0 | 0 | 0) | 21·5 | 48 | 266 | 233 | 18·3 | 50 | 258 | 241 | 3·5 | 25 | 79 | 505 |
| 25 | 0 | 0 | 0 | 22 | (24 | 133 | 117) | 19·4 | 60 | 270 | 356 | 4·2 | 33 | 161 | 1242 |
| 26 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 20·2 | 36 | 294 | 112 | 5·2 | 113 | 506 | 1053 |
| 27 | (27 | 137 | 939) | 24 | 0 | 0 | 0 | 21·2 | 48 | 297 | 105 | 6·3 | 91 | 544 | 0 |
| 28·1 | 53 | 273 | 1878 | 25·5 | 0 | 0 | 75 | 22 | (32 | 198 | 70) | 7·2 | 128 | 836 | 509 |
| 29 | (57 | 291 | 1073) | 26 | 0 | 0 | 0 | 23 | (16 | 99 | 35) | 8 | (127 | 762 | 255) |
| 30·5 | 61 | 308 | 267 | 27 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 9·1 | 125 | 687 | 0 |
| 31·2 | 24 | 224 | 0 | 28 | 0 | 0 | 0 | 25 | (0 | 0 | 0) | 10·3 | 139 | 769 | 861 |
| | | | | 29 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 11·3 | 109 | 603 | 1159 |
| | | | | 30 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 12·5 | 147 | 569 | 1162 |
| Sept. 1·5 | 74 | 313 | 0 | 31 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 13·3 | 73 | 546 | 332 |
| 2·5 | 54 | 277 | 0 | | | | | 29 | 0 | 0 | 0 | 14·3 | 147 | 824 | 943 |
| 3·5 | 51 | 289 | 0 | | | | | 30 | 0 | 0 | 0 | 15·2 | 160 | 792 | 912 |
| 4·4 | 50 | 245 | 0 | Nov. 1 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 16·3 | 203 | 900 | 1315 |
| 5·2 | 24 | 115 | 0 | 2 | 0 | 0 | 0 | | | | | 17·5 | 121 | 539 | 1197 |
| 6 | (21 | 106 | 173) | 3 | 0 | 0 | 0 | | | | | 18 | (81 | 337 | 677) |
| 7·2 | 18 | 96 | 346 | 4 | ( 0 | 0 | 34) | | | | | 19·4 | 40 | 134 | 156 |
| 8·4 | 0 | 0 | 465 | 5 | ( 0 | 0 | 68) | | | | | 20·2 | 10 | 81 | 892 |
| 9 | 0 | 0 | 0 | 6·4 | 0 | 0 | 102 | | | | | 21·2 | 0 | 26 | 351 |
| 10 | 0 | 0 | 0 | 7·5 | 99 | 438 | 796 | | | | | 22 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 8·2 | 74 | 497 | 667 | | | | | 23 | 0 | 0 | 0 |
| 12 | ( 0 | 0 | 0) | 9·2 | 58 | 470 | 980 | | | | | 24·3 | 0 | 7 | 360 |
| 13 | 0 | 0 | 0 | 10·2 | 62 | 486 | 0 | | | | | 25·2 | 0 | 0 | 657 |
| 14 | 0 | 0 | 0 | 11·2 | 49 | 568 | 0 | | | | | 26·5 | 0 | 20 | 1272 |
| 15 | 0 | 0 | 0 | 12·6 | 152 | 487 | 131 | | | | | 27·6 | 0 | 0 | 406 |
| 16 | 0 | 0 | 0 | 13·5 | 90 | 388 | 0 | | | | | 28 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 14·5 | 44 | 261 | 231 | | | | | 29 | (31 | 145 | 269) |
| 18 | 0 | 0 | 0 | 15·5 | 27 | 163 | 0 | | | | | 30·5 | 62 | 289 | 538 |
| 19 | 0 | 0 | 0 | 16·2 | 17 | 78 | 390 | | | | | 31·4 | 100 | 572 | 1097 |
| 20 | 0 | 0 | 0 | 17·2 | 16 | 66 | 799 | | | | | | | | |
| 21 | 0 | 0 | 0 | 18·5 | 0 | 12 | 298 | | | | | | | | |
| 22 | 0 | 0 | 0 | 19·5 | 0 | 0 | 172 | | | | | Feb. 1·2 | 216 | 940 | 2125 |
| 23 | 0 | 0 | 0 | 20 | ( 0 | 0 | 86) | | | | | 2·5 | 163 | 782 | 914 |
| 24·4 | 17 | 73 | 368 | 21 | 0 | 0 | 0 | | | | | 3·3 | 168 | 1100 | 94 |
| 25·6 | 17 | 54 | 541 | 22 | 0 | 0 | 0 | | | | | 4·5 | 239 | 1005 | 1035 |
| 26·6 | 29 | 66 | 252 | 23 | 0 | 0 | 0 | | | | | 5·5 | 249 | 1073 | 1354 |
| 27·5 | 13 | 38 | 620 | 24 | 0 | 0 | 0 | | | | | 6·2 | 248 | 1105 | 1365 |
| 28 | ( 9 | 26 | 414) | 25·6 | 3 | 14 | 174 | | | | | 7·2 | 234 | 1114 | 1688 |
| 29 | ( 4 | 13 | 207) | 26 | 0 | 0 | 0 | | | | | 8 | (224 | 1137 | 1325) |
| 30 | 0 | 0 | 0 | 27 | (11 | 37 | 158) | | | | | 9·4 | 214 | 1159 | 962 |
| | | | | 28·5 | 21 | 74 | 316 | | | | | 10·1 | 138 | 778 | 1645 |
| | | | | 29·2 | 0 | 104 | 0 | | | | | 11·2 | 133 | 792 | 439 |
| Oct. 1 | (14 | 42 | 115) | 30 | (8 | 102 | 0) | | | | | 12·5 | 68 | 342 | 1140 |
| 2·6 | 28 | 85 | 229 | | | | | | | | | 13·4 | 20 | 155 | 1304 |
| 3·4 | 28 | 103 | 0 | | | | | | | | | 14·1 | 0 | 0 | 2787 |
| 4·6 | 0 | 0 | 741 | Dec. 1·2 | 16 | 100 | 0 | | | | | 15·2 | 0 | 0 | 652 |
| 5 | 0 | 0 | 0 | 2·6 | 42 | 195 | 0 | | | | | 16·1 | 0 | 0 | 1473 |
| 6·5 | 0 | 0 | 35 | 3·5 | 19 | 120 | 89 | | | | | 17 | 0 | 0 | 0 |
| 7·5 | 6 | 34 | 210 | 4·5 | 4 | 20 | 0 | | | | | 18·6 | 0 | 0 | 199 |
| 8·1 | 0 | 51 | 1332 | 5 | 0 | 0 | 0 | | | | | 19 | 0 | 0 | 0 |
| 9 | (32 | 120 | 666) | 6·5 | 0 | 0 | 1325 | | | | | 20 | 0 | 0 | 0 |
| 10·6 | 63 | 188 | 0 | 7 | 0 | 0 | 0 | | | | | 21·4 | 11 | 33 | 124 |
| 11·5 | 0 | 161 | 0 | 8 | 0 | 0 | 0 | | | | | 22·2 | 28 | 182 | 702 |
| 12 | ( 3 | 141 | 317) | 9 | 0 | 0 | 0 | | | | | 23·3 | 55 | 317 | 1545 |
| 13 | ( 6 | 121 | 634) | 10 | 0 | 0 | 0 | | | | | 24·3 | 52 | 261 | 927 |
| 14·4 | 8 | 101 | 951 | 11 | 0 | 0 | 0 | | | | | 25·5 | 55 | 308 | 0 |
| 15·5 | 14 | 66 | 0 | 12 | 0 | 0 | 0 | | | | | 26·5 | 55 | 308 | 0 |
| 16·5 | 0 | 34 | 256 | 13 | 0 | 0 | 0 | | | | | 27·4 | 56 | 262 | 492 |
| 17·2 | 0 | 34 | 0 | 14 | 0 | 0 | 0 | | | | | 28·2 | 99 | 280 | 673 |
| 18·5 | 163 | 666 | 780 | 15 | 0 | 0 | 0 | | | | | 29·2 | 88 | 258 | 1474 |

## Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1880. d | | | | 1880. d | | | | 1880. d | | | | 1880. d | | | |
| Mar. 1·5 | 72 | 249 | 698 | Apr. 28·3 | 206 | 975 | 2665 | June 24·5 | 426 | 1854 | 0 | Aug. 21·5 | 173 | 844 | 2923 |
| 2·3 | 64 | 281 | 2074 | 29·4 | 162 | 692 | 384 | 25·1 | 201 | 1756 | 0 | 22·3 | 85 | 571 | 721 |
| 3·2 | 40 | 249 | 1246 | 30·5 | 168 | 634 | 293 | 26 | (237 | 1682 | 345) | 23·2 | 103 | 509 | 915 |
| 4·5 | 7 | 71 | 542 | | | | | 27·1 | 272 | 1608 | 690 | 24·2 | 35 | 134 | 212 |
| 5·6 | 0 | 0 | 360 | | | | | 28·5 | 72 | 362 | 1033 | 25 | 0 | 0 | 0 |
| 6·2 | 39 | 102 | 1874 | May 1·4 | 145 | 471 | 383 | 29·6 | 98 | 453 | 1547 | 26 | 0 | 0 | 0 |
| 7·2 | 24 | 79 | 2492 | 2·3 | 133 | 585 | 202 | 30·5 | 99 | 397 | 549 | 27 | 0 | 0 | 0 |
| 8·3 | 34 | 253 | 2071 | 3·5 | 141 | 631 | 3570 | | | | | 28·5 | 53 | 199 | 545 |
| 9·3 | 83 | 385 | 1481 | 4·2 | 98 | 616 | 1544 | | | | | 29·2 | 58 | 251 | 0 |
| 10·6 | 46 | 196 | 312 | 5·3 | 97 | 638 | 2287 | July 1 | (83 | 343 | 665) | 30·3 | 125 | 585 | 0 |
| 11·5 | 31 | 199 | 1022 | 6·5 | 129 | 700 | 1092 | 2·4 | 67 | 289 | 780 | 31·5 | 122 | 725 | 1414 |
| 12·5 | 50 | 181 | 743 | 7·4 | 123 | 637 | 360 | 3·5 | 65 | 277 | 217 | | | | |
| 13·5 | 68 | 304 | 617 | 8·5 | 140 | 839 | 153 | 4·4 | 87 | 282 | 398 | | | | |
| 14·2 | 120 | 625 | 1298 | 9·2 | 155 | 713 | 0 | 5·4 | 86 | 289 | 899 | Sept. 1·4 | 61 | 457 | 460 |
| 15·2 | 116 | 519 | 115 | 10·2 | 185 | 969 | 0 | 6·1 | 37 | 272 | 3394 | 2·5 | 68 | 369 | 350 |
| 16·6 | 53 | 256 | 184 | 11·5 | 113 | 541 | 414 | 7 | (82 | 389 | 2041) | 3·6 | 51 | 240 | 1145 |
| 17·5 | 46 | 176 | 247 | 12·5 | 101 | 380 | 871 | 8·4 | 127 | 505 | 688 | 4·4 | 70 | 282 | 1052 |
| 18·6 | 12 | 114 | 86 | 13·4 | 84 | 319 | 911 | 9·5 | 48 | 200 | 799 | 5·2 | 101 | 420 | 765 |
| 19·5 | 0 | 25 | 273 | 14·4 | 0 | 101 | 550 | 10·4 | 7 | 21 | 508 | 6·3 | 152 | 719 | 1129 |
| 20·6 | 0 | 0 | 405 | 15·4 | 0 | 0 | 368 | 11·1 | 3 | 10 | 276 | 7·6 | 196 | 806 | 2506 |
| 21 | 0 | 0 | 0 | 16·3 | 0 | 0 | 177 | 12·4 | 0 | 0 | 373 | 8·5 | 420 | 1626 | 205 |
| 22 | 0 | 0 | 0 | 17·5 | 0 | 0 | 312 | 13·4 | 0 | 40 | 268 | 9·4 | 561 | 2332 | 0 |
| 23 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 14·4 | 0 | 0 | 143 | 10·6 | 871 | 3073 | 1378 |
| 24 | 0 | 0 | 0 | 19·2 | 0 | 0 | 180 | 15·5 | 0 | 0 | 360 | 11·3 | 1064 | 3948 | 0 |
| 25·5 | 0 | 0 | 318 | 20·5 | 16 | 75 | 512 | 16 | (0 | 0 | 1834) | 12·3 | 938 | 3773 | 0 |
| 26 | 0 | 0 | 0 | 21·5 | 11 | 39 | 228 | 17·0 | 0 | 0 | 3307 | 13·6 | 680 | 3089 | 1419 |
| 27·2 | 9 | 33 | 189 | 22·3 | 0 | 0 | 241 | 18 | (0 | 0 | 2006) | 14·2 | 629 | 2785 | 0 |
| 28 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 19·6 | 0 | 0 | 704 | 15·2 | 371 | 1615 | 1521 |
| 29·2 | 31 | 138 | 796 | 24·2 | 14 | 49 | 642 | 20·6 | 58 | 368 | 795 | 16·6 | 158 | 679 | 1757 |
| 30·3 | 65 | 322 | 319 | 25·5 | 69 | 292 | 1206 | 21·5 | 141 | 688 | 389 | 17·5 | 135 | 443 | 1470 |
| 31·3 | 51 | 293 | 1845 | 26·5 | 201 | 730 | 965 | 22·2 | 171 | 994 | 595 | 18·6 | 134 | 570 | 2932 |
| | | | | 27·6 | 253 | 1111 | 146 | 23·6 | 177 | 990 | 2782 | 19 | (102 | 427 | 2246) |
| | | | | 28·5 | 324 | 1424 | 379 | 24·6 | 124 | 661 | 1536 | 20·5 | 69 | 284 | 1560 |
| | | | | 29·4 | 305 | 1783 | 733 | 25 | ( 84 | 474 | 1880) | 21·2 | 103 | 406 | 0 |
| Apr. 1·5 | 44 | 202 | 744 | 30·3 | 464 | 2273 | 489 | 26·6 | 43 | 286 | 2223 | 22·5 | 51 | 326 | 466 |
| 2·2 | 59 | 313 | 122 | 31·3 | 482 | 2009 | 298 | 27·4 | 28 | 214 | 1648 | 23·3 | 47 | 247 | 0 |
| 3·5 | 90 | 350 | 113 | | | | | 28·1 | 41 | 314 | 1497 | 24·4 | 70 | 343 | 495 |
| 4 | (84 | 339 | 699) | | | | | 29·5 | 32 | 112 | 1555 | 25·4 | 80 | 481 | 1940 |
| 5·5 | 78 | 328 | 1284 | June 1·4 | 277 | 1246 | 513 | 30·5 | 9 | 70 | 2094 | 26·3 | 102 | 494 | 1476 |
| 6 | (66 | 287 | 927) | 2·6 | 122 | 472 | 1139 | 31·4 | 9 | 36 | 1315 | 27·4 | 135 | 757 | 2112 |
| 7·4 | 54 | 246 | 569 | 3·2 | 79 | 342 | 553 | | | | | 28·3 | 342 | 1494 | 1184 |
| 8·5 | 21 | 105 | 660 | 4·6 | 5 | 65 | 564 | Aug. 1 | (46 | 349 | 851) | 29·6 | 556 | 2932 | 979 |
| 9·3 | 13 | 59 | 356 | 5 | 0 | 0 | 0 | 2·3 | 82 | 661 | 387 | 30·3 | 624 | 2874 | 0 |
| 10 | 0 | 0 | 0 | 6·3 | 17 | 62 | 0 | 3·6 | 187 | 977 | 230 | | | | |
| 11 | 0 | 0 | 0 | 7·6 | 7 | 29 | 0 | 4·2 | 262 | 1138 | 0 | Oct. 1·5 | 426 | 2139 | 847 |
| 12·4 | 114 | 471 | 63 | 8·2 | 11 | 76 | 71 | 5·2 | 291 | 1422 | 432 | 2·4 | 225 | 1550 | 0 |
| 13·5 | 126 | 336 | 263 | 9·2 | 19 | 159 | 478 | 6·1 | 229 | 1159 | 1579 | 3·3 | 429 | 2054 | 2551 |
| 14·2 | 63 | 271 | 1057 | 10·5 | 55 | 234 | 806 | 7·1 | 303 | 1260 | 403 | 4·3 | 182 | 965 | 814 |
| 15·3 | 19 | 115 | 1212 | 11·2 | 42 | 126 | 626 | 8·2 | 327 | 1372 | 461 | 5·2 | 129 | 428 | 550 |
| 16·5 | 0 | 12 | 108 | 12·4 | 30 | 104 | 0 | 9·6 | 305 | 1434 | 1239 | 6·3 | 62 | 290 | 859 |
| 17·4 | 0 | 0 | 220 | 13 | (15 | 52 | 315) | 10·4 | 403 | 1634 | 1760 | 7·6 | 61 | 305 | 1818 |
| 18 | 0 | 0 | 0 | 14·1 | 0 | 0 | 630 | 11·5 | 257 | 1676 | 1073 | 8·6 | 5 | 128 | 1851 |
| 19·4 | 0 | 0 | 326 | 15·2 | 32 | 112 | 289 | 12·5 | 426 | 1851 | 2540 | 9·3 | 51 | 178 | 0 |
| 20·5 | 0 | 0 | 927 | 16·2 | 30 | 167 | 144 | 13·5 | 381 | 1612 | 1360 | 10·3 | 51 | 222 | 521 |
| 21·4 | 0 | 0 | 441 | 17·3 | 100 | 451 | 842 | 14 | (336 | 1589 | 906) | 11·5 | 18 | 190 | 1496 |
| 22·1 | 0 | 0 | 717 | 18·5 | 185 | 809 | 2004 | 15 | (290 | 1566 | 453) | 12·4 | 21 | 176 | 1649 |
| 23·5 | 0 | 0 | 487 | 19·5 | 345 | 1382 | 2155 | 16·1 | 245 | 1543 | 0 | 13·6 | 44 | 285 | 1666 |
| 24 | 0 | 0 | 0 | 20·3 | 329 | 1371 | 425 | 17·6 | 241 | 1040 | 948 | 14·2 | 93 | 435 | 2154 |
| 25·3 | 53 | 388 | 923 | 21·5 | 402 | 1706 | 1491 | 18·2 | 276 | 1258 | 821 | 15·2 | 74 | 372 | 1262 |
| 26·3 | 142 | 634 | 1534 | 22·2 | 347 | 1531 | 0 | 19·5 | 232 | 1328 | 1301 | 16·2 | 91 | 447 | 783 |
| 27·6 | 170 | 994 | 4578 | 23·5 | 485 | 2073 | 0 | 20·2 | 254 | 1261 | 915 | 17·3 | 94 | 430 | 333 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. |
| 1880. | d | | | | 1880. | d | | | | 1881. | d | | | | 1881. | d | | | |
| Oct. | 18·6 | 83 | 398 | 832 | Dec. | 15 | (46 | 180 | 1404) | Jan. | 1·5 | 164 | 594 | 0 | Mar. | 1·3 | 22 | 56 | 1569 |
| | 19·3 | 230 | 824 | 167 | | 16·2 | 19 | 55 | 1496 | | 2 | (219 | 889 | 1454) | | 2 | (19 | 49 | 2298) |
| | 20 | (282 | 1215 | 493) | | 17·3 | 46 | 161 | 1616 | | 3·2 | 274 | 1184 | 2907 | | 3·3 | 16 | 41 | 3026 |
| | 21·3 | 334 | 1606 | 819 | | 18·3 | 59 | 172 | 698 | | 4·2 | 242 | 1140 | 4131 | | 4·2 | 24 | 59 | 2272 |
| | 22·3 | 302 | 1325 | 228 | | 19·2 | 62 | 248 | 0 | | 5·5 | 153 | 663 | 1499 | | 5·3 | 47 | 124 | 1554 |
| | 23·2 | 323 | 1561 | 1864 | | 20·2 | 63 | 295 | 0 | | 6·4 | 162 | 814 | 1394 | | 6·2 | 32 | 126 | 0 |
| | 24·3 | 293 | 1269 | 1405 | | 21·4 | 105 | 329 | 508 | | 7·5 | 104 | 768 | 295 | | 7·5 | 14 | 56 | 1623 |
| | 25·4 | 153 | 695 | 927 | | 22·3 | 105 | 400 | 1245 | | 8 | (117 | 639 | 148) | | 8·4 | 12 | 126 | 1503 |
| | 26·3 | 82 | 315 | 223 | | 23·4 | 117 | 544 | 740 | | 9·1 | 130 | 509 | 0 | | 9·3 | 46 | 467 | 3816 |
| | 27·3 | 110 | 431 | 63 | | 24·4 | 181 | 712 | 1018 | | 10·2 | 174 | 467 | 0 | | 10·3 | 321 | 1126 | 5181 |
| | 28·3 | 72 | 242 | 0 | | 25 | (128 | 555 | 509) | | 11·3 | 102 | 364 | 0 | | 11·5 | 254 | 1286 | 2202 |
| | 29·3 | 62 | 204 | 228 | | 26·2 | 74 | 398 | 0 | | 12·3 | 55 | 188 | 1241 | | 12·4 | 451 | 1421 | 2372 |
| | 30·6 | 0 | 41 | 1170 | | 27·3 | 172 | 911 | 1728 | | 13·3 | 40 | 193 | 1535 | | 13·2 | 494 | 2110 | 2007 |
| | 31·3 | 41 | 87 | 1785 | | 28·3 | 106 | 481 | 728 | | 14·3 | 21 | 91 | 519 | | 14·5 | 396 | 2338 | 2286 |
| | | | | | | 29·2 | 151 | 589 | 0 | | 15·3 | 0 | 0 | 156 | | 15·5 | 467 | 2416 | 4402 |
| | | | | | | 30·3 | 157 | 774 | 463 | | 16 | 0 | 0 | 0 | | 16·4 | 486 | 2364 | 3374 |
| Nov. | 1·3 | 78 | 317 | 915 | | 31·6 | 270 | 1086 | 0 | | 17·3 | 130 | 613 | 0 | | 17·5 | 399 | 1780 | 1809 |
| | 2·5 | 69 | 463 | 1684 | | | | | | | 18·3 | 41 | 782 | 0 | | 18·5 | 295 | 1556 | 2245 |
| | 3·5 | 62 | 283 | 1179 | | | | | | | 19·4 | 152 | 1107 | 1579 | | 19·5 | 262 | 1401 | 1779 |
| | 4·6 | 52 | 175 | 1390 | | | | | | | 20·3 | 155 | 1021 | 851 | | 20·2 | 425 | 1939 | 971 |
| | 5·3 | 45 | 144 | 314 | | | | | | | 21·5 | 114 | 468 | 753 | | 21·3 | 387 | 1914 | 3486 |
| | 6 | 0 | 0 | 0 | | | | | | | 22·2 | 24 | 242 | 338 | | 22·6 | 450 | 2002 | 2666 |
| | 7 | 0 | 0 | 0 | | | | | | | 23·2 | 12 | 149 | 2230 | | 23·2 | 350 | 1568 | 3241 |
| | 8·4 | 0 | 15 | 847 | | | | | | | 24·3 | 114 | 590 | 1384 | | 24·3 | 278 | 1154 | 4522 |
| | 9·4 | 3 | 35 | 1527 | | | | | | | 25·2 | 208 | 1005 | 940 | | 25·4 | 136 | 730 | 1521 |
| | 10 | 0 | 0 | 0 | | | | | | | 26·3 | 439 | 1362 | 184 | | 26·1 | 32 | 318 | 712 |
| | 11 | 0 | 0 | 0 | | | | | | | 27·2 | 419 | 1342 | 0 | | 27·3 | 32 | 80 | 0 |
| | 12 | 0 | 0 | 0 | | | | | | | 28·2 | 384 | 1292 | 1959 | | 28·5 | 16 | 66 | 1046 |
| | 13·3 | 17 | 71 | 546 | | | | | | | 29·2 | 561 | 1869 | 4738 | | 29·5 | 31 | 152 | 1947 |
| | 14·3 | 103 | 330 | 846 | | | | | | | 30·2 | 786 | 2490 | 4986 | | 30·4 | 9 | 158 | 1107 |
| | 15·3 | 291 | 934 | 516 | | | | | | | 31·5 | 328 | 1845 | 1266 | | 31·5 | 64 | 297 | 403 |
| | 16·4 | 126 | 775 | 223 | | | | | | | | | | | | | | | |
| | 17·3 | 224 | 819 | 0 | | | | | | | | | | | | | | | |
| | 18·1 | 70 | 885 | 0 | | | | | | | | | | | | | | | |
| | 19·5 | 188 | 1210 | 879 | | | | | | Feb. | 1·3 | 387 | 1378 | 1473 | | | | | |
| | 20·6 | 213 | 1150 | 1374 | | | | | | | 2 | (363 | 1378 | 3436) | Apr. | 1·4 | 98 | 719 | 753 |
| | 21 | (164 | 774 | 1466) | | | | | | | 3·3 | 339 | 1378 | 5399 | | 2·5 | 132 | 698 | 1520 |
| | 22·4 | 115 | 398 | 1558 | | | | | | | 4·3 | 320 | 1433 | 2311 | | 3·3 | 139 | 548 | 2086 |
| | 23·3 | 47 | 142 | 912 | | | | | | | 5·5 | 233 | 1108 | 0 | | 4·6 | 150 | 675 | 2854 |
| | 24·3 | 158 | 697 | 1349 | | | | | | | 6·2 | 253 | 1123 | 1876 | | 5·3 | 140 | 524 | 4308 |
| | 25·5 | 273 | 1540 | 1332 | | | | | | | 7·3 | 509 | 1624 | 2956 | | 6·5 | 68 | 374 | 2096 |
| | 26·2 | 398 | 2076 | 1515 | | | | | | | 8·3 | 335 | 1520 | 2442 | | 7·4 | 33 | 250 | 1567 |
| | 27·6 | 315 | 2101 | 1071 | | | | | | | 9·4 | 230 | 1117 | 3153 | | 8·5 | 64 | 321 | 1033 |
| | 28·3 | 524 | 2154 | 374 | | | | | | | 10·5 | 169 | 883 | 0 | | 9·5 | 100 | 509 | 1414 |
| | 29·4 | 444 | 1868 | 453 | | | | | | | 11·1 | 267 | 857 | 0 | | 10·2 | 64 | 309 | 0 |
| | 30·5 | 236 | 1347 | 481 | | | | | | | 12·5 | 152 | 636 | 1169 | | 11·3 | 74 | 333 | 0 |
| | | | | | | | | | | | 13·1 | 153 | 562 | 0 | | 12·2 | 92 | 464 | 2775 |
| | | | | | | | | | | | 14·3 | 138 | 570 | 3210 | | 13·4 | 131 | 541 | 1492 |
| Dec. | 1·2 | 201 | 1232 | 0 | | | | | | | 15·3 | 192 | 592 | 1300 | | 14·2 | 160 | 645 | 3658 |
| | 2 | (177 | 1051 | 371) | | | | | | | 16·4 | 182 | 682 | 5515 | | 15·2 | 183 | 823 | 1489 |
| | 3·2 | 152 | 870 | 742 | | | | | | | 17·3 | 201 | 780 | 8219 | | 16·2 | 169 | 901 | 904 |
| | 4·3 | 173 | 1117 | 2714 | | | | | | | 18·3 | 261 | 868 | 5511 | | 17·2 | 225 | 872 | 534 |
| | 5 | (204 | 1151 | 1948) | | | | | | | 19·3 | 185 | 833 | 2011 | | 18·5 | 167 | 781 | 2920 |
| | 6·2 | 234 | 1185 | 1182 | | | | | | | 20·3 | 199 | 843 | 1381 | | 19·2 | 268 | 971 | 4660 |
| | 7·2 | 279 | 1463 | 1423 | | | | | | | 21·4 | 344 | 1239 | 1674 | | 20·3 | 406 | 1518 | 3362 |
| | 8 | (223 | 1300 | 983) | | | | | | | 22·1 | 107 | 983 | 0 | | 21·2 | 315 | 1382 | 0 |
| | 9·3 | 166 | 1136 | 543 | | | | | | | 23·2 | 308 | 1031 | 0 | | 22·2 | 308 | 1398 | 0 |
| | 10·5 | 155 | 926 | 2082 | | | | | | | 24·3 | 215 | 834 | 2093 | | 23·4 | 280 | 1261 | 1616 |
| | 11·5 | 182 | 807 | 1128 | | | | | | | 25·4 | 182 | 613 | 5814 | | 24 | (214 | 1154 | 1669) |
| | 12·3 | 110 | 566 | 476 | | | | | | | 26·5 | 85 | 275 | 1288 | | 25·3 | 147 | 1047 | 1721 |
| | 13·3 | 99 | 430 | 1220 | | | | | | | 27·1 | 84 | 259 | 5362 | | 26·6 | 163 | 928 | 1790 |
| | 14 | (72 | 305 | 1312) | | | | | | | 28·2 | 0 | 54 | 1243 | | 27·3 | 121 | 573 | 3135 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. |
| 1881. | d | | | | 1881. | d | | | | 1881. | d | | | | 1881. | d | | | |
| Apr. | 28·4 | 49 | 352 | 1148 | June | 21·5 | 38 | 117 | 1356 | Aug. | 14·3 | 0 | 0 | 589 | Oct. | 5·3 | 106 | 619 | 1393 |
| | 29·3 | 0 | 59 | 734 | | 22·4 | 12 | 55 | 580 | | 15·5 | 0 | 0 | 1149 | | 6·3 | 157 | 784 | 2237 |
| | 30·4 | 10 | 26 | 1116 | | 23·5 | 51 | 189 | 977 | | 16·5 | 0 | 0 | 947 | | 7·4 | 197 | 1055 | 1605 |
| | | | | | | 24·5 | 178 | 640 | 2337 | | 17·4 | 27 | 69 | 1730 | | 8·3 | 136 | 875 | 2880 |
| | | | | | | 25·2 | 99 | 543 | 3161 | | 18·3 | 0 | 153 | 0 | | 9·3 | 95 | 911 | 1551 |
| | | | | | | 26 | (184 | 964 | 2337) | | 19·3 | 4 | 65 | 1033 | | 10·3 | 113 | 1054 | 912 |
| | | | | | | 27·3 | 269 | 1385 | 1513 | | 20·5 | 39 | 154 | 1616 | | 11·3 | 146 | 1025 | 1890 |
| May | 1·2 | 17 | 85 | 1136 | | 28·5 | 434 | 2216 | 3218 | | 21 | (63 | 275 | 1641) | | 12·3 | 198 | 1096 | 2775 |
| | 2·3 | 0 | 49 | 0 | | 29·4 | 523 | 2235 | 1186 | | 22·4 | 86 | 396 | 1665 | | 13·3 | 108 | 792 | 1669 |
| | 3·4 | 0 | 21 | 957 | | 30·5 | 312 | 1550 | 1916 | | 23·4 | 158 | 753 | 1152 | | 14·4 | 143 | 647 | 368 |
| | 4·3 | 26 | 66 | 884 | | | | | | | 24·4 | 251 | 1319 | 2247 | | 15·4 | 120 | 639 | 1078 |
| | 5·5 | 55 | 251 | 1201 | | | | | | | 25·3 | 250 | 1645 | 875 | | 16·3 | 93 | 575 | 3510 |
| | 6·4 | 55 | 254 | 1766 | | | | | | | 26·4 | 425 | 1831 | 1821 | | 17·4 | 233 | 1222 | 1824 |
| | 7·4 | 41 | 249 | 1629 | | | | | | | 27·4 | 609 | 2641 | 831 | | 18·4 | 278 | 1257 | 1066 |
| | 8·2 | 75 | 342 | 440 | July | 1·5 | 352 | 1446 | 1777 | | 28·4 | 558 | 2677 | 2123 | | 19·5 | 332 | 1912 | 654 |
| | 9·5 | 72 | 419 | 1154 | | 2·4 | 168 | 1149 | 2520 | | 29·3 | 455 | 2433 | 1719 | | 20·5 | 511 | 2542 | 581 |
| | 10·3 | 87 | 252 | 2175 | | 3·1 | 225 | 963 | 2486 | | 30·5 | 503 | 3014 | 3263 | | 21·3 | 427 | 2218 | 2065 |
| | 11·4 | 33 | 209 | 439 | | 4·4 | 139 | 535 | 3205 | | 31 | (471 | 2661 | 3358) | | 22·3 | 325 | 2112 | 1355 |
| | 12·5 | 79 | 410 | 644 | | 5·5 | 106 | 543 | 2955 | | | | | | | 23·3 | 410 | 1893 | 2045 |
| | 13·4 | 102 | 422 | 2922 | | 6·4 | 136 | 506 | 2111 | | | | | | | 24·3 | 340 | 1856 | 350 |
| | 14·5 | 66 | 389 | 1335 | | 7·1 | 121 | 746 | 2625 | | | | | | | 25·4 | 397 | 1580 | 898 |
| | 15·2 | 64 | 387 | 1631 | | 8 | (140 | 852 | 1992) | | | | | | | 26·4 | 156 | 892 | 2482 |
| | 16·3 | 70 | 403 | 1235 | | 9·4 | 158 | 957 | 1358 | | | | | | | 27·3 | 23 | 518 | 1539 |
| | 17·2 | 59 | 261 | 1146 | | 10 | (223 | 1246 | 2619) | Sept. | 1·4 | 439 | 2308 | 3453 | | 28·3 | 21 | 138 | 764 |
| | 18·6 | 50 | 288 | 1008 | | 11·5 | 288 | 1534 | 3879 | | 2 | (317 | 1722 | 2538) | | 29·5 | 9 | 68 | 2238 |
| | 19·4 | 84 | 316 | 1747 | | 12·5 | 271 | 1399 | 2119 | | 3·0 | 194 | 1135 | 1623 | | 30·6 | 0 | 34 | 467 |
| | 20·4 | 86 | 399 | 1510 | | 13·5 | 225 | 1316 | 2823 | | 4·7 | 159 | 1010 | 472 | | 31·3 | 0 | 0 | 632 |
| | 21·4 | 107 | 428 | 915 | | 14·5 | 205 | 1213 | 2646 | | 5·3 | 257 | 1167 | 1457 | | | | | |
| | 22·2 | 95 | 347 | 938 | | 15·4 | 186 | 1079 | 1553 | | 6·4 | 191 | 970 | 2682 | | | | | |
| | 23·6 | 183 | 533 | 2695 | | 16·4 | 141 | 687 | 1709 | | 7·6 | 236 | 1016 | 1645 | | | | | |
| | 24·4 | 118 | 514 | 1940 | | 17·1 | 77 | 281 | 0 | | 8·2 | 193 | 777 | 2978 | | | | | |
| | 25·4 | 225 | 792 | 733 | | 18·5 | 118 | 497 | 1701 | | 9·3 | 169 | 1164 | 2631 | | | | | |
| | 26·3 | 144 | 676 | 475 | | 19·5 | 188 | 812 | 1795 | | 10·2 | 245 | 1187 | 1373 | Nov. | 1·2 | 0 | 57 | 2316 |
| | 27·3 | 166 | 1039 | 1304 | | 20·1 | 176 | 747 | 3233 | | 11·2 | 264 | 1716 | 358 | | 2·3 | 0 | 50 | 285 |
| | 28·2 | 288 | 1246 | 2449 | | 21·4 | 310 | 1177 | 3301 | | 12·3 | 311 | 1824 | 1032 | | 3·3 | 28 | 111 | 764 |
| | 29·1 | 295 | 1282 | 946 | | 22 | (266 | 1168 | 2773) | | 13·6 | 565 | 2108 | 1481 | | 4·3 | 28 | 151 | 2317 |
| | 30·5 | 292 | 1573 | 2093 | | 23·1 | 232 | 1158 | 2245 | | 14·4 | 399 | 1914 | 2243 | | 5·5 | 50 | 197 | 1132 |
| | 31·4 | 309 | 1675 | 1359 | | 24·4 | 307 | 2013 | 1100 | | 15·6 | 354 | 1670 | 2144 | | 6·3 | 43 | 188 | 1470 |
| | | | | | | 25·5 | 637 | 2851 | 2167 | | 16·6 | 245 | 1258 | 1467 | | 7·3 | 37 | 470 | 1090 |
| | | | | | | 26·5 | 681 | 3024 | 3462 | | 17·5 | 241 | 1344 | 708 | | 8·3 | 42 | 480 | 504 |
| | | | | | | 27·2 | 545 | 2238 | 1428 | | 18·2 | 232 | 1208 | 2392 | | 9·5 | 145 | 596 | 440 |
| | | | | | | 28·4 | 571 | 2741 | 1683 | | 19·2 | 239 | 1357 | 2686 | | 10·2 | 138 | 706 | 866 |
| June | 1·4 | 381 | 2230 | 1166 | | 29·4 | 652 | 2789 | 2040 | | 20·5 | 248 | 1098 | 1423 | | 11·3 | 210 | 1053 | 712 |
| | 2·4 | 365 | 1874 | 928 | | 30·5 | 579 | 2745 | 874 | | 21·3 | 177 | 957 | 1617 | | 12·4 | 285 | 1191 | 1159 |
| | 3·4 | 374 | 1701 | 487 | | 31 | (539 | 2537 | 2002) | | 22·3 | 161 | 798 | 739 | | 13·5 | 341 | 1577 | 1904 |
| | 4·4 | 267 | 1457 | 1712 | | | | | | | 23·3 | 144 | 741 | 1037 | | 14·3 | 156 | 1165 | 1536 |
| | 5·1 | 213 | 854 | 2265 | | | | | | | 24·4 | 137 | 643 | 852 | | 15·3 | 109 | 1096 | 1104 |
| | 6·5 | 90 | 304 | 2355 | | | | | | | 25·5 | 98 | 614 | 803 | | 16·1 | 301 | 1413 | 2284 |
| | 7 | (69 | 245 | 1977) | | | | | | | 26·5 | 125 | 655 | 1553 | | 17·5 | 523 | 2444 | 2266 |
| | 8·5 | 47 | 185 | 1599 | Aug. | 1·4 | 498 | 2328 | 3130 | | 27·6 | 134 | 738 | 2645 | | 18·5 | 590 | 2492 | 2342 |
| | 9·2 | 73 | 416 | 1634 | | 2·5 | 358 | 1808 | 5295 | | 28·5 | 183 | 820 | 2412 | | 19·5 | 487 | 2200 | 1661 |
| | 10·4 | 142 | 584 | 4247 | | 3·1 | 246 | 1224 | 3927 | | 29·5 | 194 | 922 | 2408 | | 20·5 | 565 | 2279 | 1373 |
| | 11·4 | 131 | 839 | 4645 | | 4·5 | 159 | 953 | 2150 | | 30·5 | 203 | 654 | 1041 | | 21·5 | 523 | 2832 | 842 |
| | 12 | (157 | 971 | 3144) | | 5·6 | 145 | 703 | 831 | | | | | | | 22·3 | 391 | 2311 | 745 |
| | 13·4 | 182 | 1103 | 1643 | | 6·5 | 113 | 766 | 608 | | | | | | | 23·5 | 436 | 2673 | 638 |
| | 14·4 | 140 | 864 | 1177 | | 7 | (142 | 829 | 990) | | | | | | | 24·3 | 299 | 1895 | 626 |
| | 15·2 | 195 | 1107 | 1345 | | 8·6 | 171 | 891 | 1371 | | | | | | | 25·3 | 250 | 1438 | 1422 |
| | 16·2 | 157 | 799 | 330 | | 9·6 | 109 | 538 | 1711 | | | | | | | 26·4 | 249 | 997 | 938 |
| | 17·2 | 170 | 756 | 944 | | 10·6 | 97 | 411 | 1944 | Oct. | 1·4 | 119 | 628 | 1191 | | 27·6 | 77 | 456 | 1286 |
| | 18·2 | 159 | 656 | 2155 | | 11·4 | 81 | 344 | 2929 | | 2·6 | 121 | 591 | 1261 | | 28·5 | 118 | 476 | 932 |
| | 19 | (103 | 447 | 1906) | | 12·3 | 65 | 256 | 2223 | | 3·4 | 112 | 525 | 1555 | | 29·5 | 144 | 898 | 1039 |
| | 20·4 | 46 | 237 | 1657 | | 13·3 | 29 | 175 | 1635 | | 4·5 | 119 | 545 | 728 | | 30·1 | 187 | 531 | 0 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1881. d | | | | 1881. d | | | | 1881. d | | | | 1881. d | | | |
| Dec. 1·3 | 134 | 908 | 1814 | Dec. 9·3 | 128 | 695 | 1263 | Dec. 17·5 | 197 | 976 | 217 | Dec. 25·2 | 8 | 54 | 1265 |
| 2·4 | 535 | 1762 | 1455 | 10·3 | 78 | 483 | 2978 | 18·5 | 244 | 1002 | 979 | 26·2 | 31 | 136 | 1058 |
| 3·5 | 429 | 2219 | 1895 | 11·2 | 86 | 472 | 3540 | 19·5 | 160 | 756 | 1546 | 27·2 | 67 | 299 | 703 |
| 4·2 | 339 | 1989 | 2132 | 12·3 | 160 | 658 | 4096 | 20·6 | 121 | 568 | 946 | 28·2 | 43 | 332 | 1864 |
| 5·3 | 357 | 1865 | 1488 | 13·3 | 136 | 1061 | 3216 | 21·5 | 187 | 530 | 2512 | 29·1 | 55 | 246 | 1635 |
| 6·4 | 385 | 1724 | 1627 | 14·5 | 276 | 1506 | 1612 | 22·3 | 45 | 366 | 631 | 30·2 | 47 | 207 | 1926 |
| 7·3 | 332 | 1515 | 1698 | 15·3 | 206 | 1442 | 1228 | 23·2 | 13 | 201 | 1137 | 31·3 | 17 | 291 | 2251 |
| 8·3 | 234 | 1254 | 0 | 16·3 | 215 | 1366 | 272 | 24·3 | 0 | 0 | 611 | | | | |

## TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ FOR EACH DAY IN THE YEARS 1882–1885, DEDUCED FROM THE MEASUREMENTS OF THE PHOTOGRAPHS OF THE SUN TAKEN AT THE ROYAL OBSERVATORY, GREENWICH, AT DEHRA DÛN IN INDIA, AND AT THE ROYAL ALFRED OBSERVATORY, MAURITIUS.

The Projected Area is the Area as it is measured on the Photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disc.

The Greenwich Civil Time is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight. The decimal of the day has not been given for days when neither spots nor faculæ were observed on the photograph.

Dates for which the areas are given in brackets indicate days for which no photographic Record is at present available. In these cases the areas have been obtained by interpolation from the measures of photographs taken on the days immediately preceding and following the day for which the photograph is lacking. These interpolated values have been used in taking the mean daily areas for each rotation and for each year, given in the last section of the volume.

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1882 d | | | | 1882 d | | | | 1882 d | | | | 1882 d | | | |
| Jan. 1·2 | 53 | 242 | 1070 | Feb. 10·5 | 249 | 1710 | 1313 | Mar. 22·4 | 537 | 2369 | 2535 | May 1·5 | 83 | 320 | 687 |
| 2·2 | 84 | 339 | 304 | 11·5 | 325 | 1498 | 2199 | 23·5 | 496 | 2329 | 2320 | 2·5 | 110 | 614 | 2675 |
| 3·5 | 76 | 461 | 1097 | 12·5 | 368 | 1663 | 1236 | 24·4 | 254 | 1801 | 2652 | 3·6 | 211 | 730 | 1321 |
| 4·2 | 40 | 199 | 977 | 13·1 | 176 | 1290 | 3118 | 25·4 | 495 | 2027 | 838 | 4·3 | 122 | 663 | 1607 |
| 5·2 | 114 | 493 | 835 | 14·5 | 360 | 1617 | 1291 | 26·5 | 385 | 1994 | 2394 | 5·5 | 327 | 1102 | 2527 |
| 6·2 | 134 | 708 | 644 | 15·5 | 347 | 1833 | 688 | 27·4 | 311 | 1514 | 2839 | 6·5 | 416 | 1565 | 2495 |
| 7·4 | 120 | 713 | 1483 | 16·4 | 295 | 1501 | 1705 | 28·2 | 130 | 1081 | 2703 | 7·5 | 444 | 1848 | 3532 |
| 8·2 | 41 | 354 | 732 | 17·6 | 306 | 1149 | 1116 | 29·2 | 112 | 815 | 1531 | 8·4 | 515 | 2156 | 3332 |
| 9·4 | 23 | 127 | 993 | 18·5 | 205 | 1006 | 2676 | 30·4 | 126 | 772 | 2183 | 9·1 | 270 | 1961 | 3344 |
| 10 | (46 | 270 | 1013) | 19·6 | 120 | 553 | 786 | 31·4 | 202 | 761 | 4527 | 10·5 | 595 | 2470 | 4353 |
| 11 | (68 | 414 | 1032) | 20·3 | 52 | 604 | 1536 | | | | | 11·5 | 481 | 2466 | 1004 |
| 12 | (91 | 557 | 1052) | 21 | (122 | 650 | 1495) | | | | | 12·6 | 589 | 3050 | 2721 |
| 13·5 | 114 | 700 | 1072 | 22·4 | 191 | 696 | 1455 | Apr. 1·4 | 136 | 661 | 2778 | 13·4 | 801 | 3268 | 3285 |
| 14·2 | 90 | 480 | 1450 | 23·3 | 58 | 448 | 1542 | 2·6 | 92 | 583 | 1464 | 14·5 | 801 | 4009 | 2754 |
| 15·2 | 83 | 360 | 1099 | 24·2 | 61 | 390 | 3171 | 3·6 | 131 | 549 | 1401 | 15·4 | 893 | 4168 | 3569 |
| 16·2 | 73 | 394 | 1267 | 25·2 | 25 | 259 | 799 | 4·5 | 213 | 894 | 4409 | 16·5 | 1196 | 4792 | 3851 |
| 17·2 | 57 | 358 | 1549 | 26·5 | 22 | 136 | 651 | 5·6 | 178 | 875 | 1922 | 17·6 | 973 | 4926 | 6380 |
| 18·2 | 49 | 300 | 2090 | 27·4 | 46 | 174 | 773 | 6·6 | 168 | 1069 | 3178 | 18·4 | 873 | 5104 | 2744 |
| 19·3 | 41 | 480 | 1405 | 28·3 | 59 | 180 | 1140 | 7·3 | 284 | 1152 | 1560 | 19·6 | 578 | 3727 | 1244 |
| 20·2 | 74 | 506 | 1068 | | | | | 8·4 | 277 | 1122 | 4951 | 20·4 | 461 | 3114 | 1816 |
| 21·5 | 161 | 559 | 1060 | | | | | 9·5 | 148 | 734 | 3441 | 21·5 | 586 | 2482 | 3013 |
| 22·4 | 58 | 444 | 2925 | Mar. 1·4 | 55 | 273 | 1471 | 10·1 | 86 | 590 | 4075 | 22·1 | 203 | 1676 | 4621 |
| 23·3 | 61 | 426 | 1624 | 2·4 | 98 | 500 | 1635 | 11·5 | 344 | 1634 | 2368 | 23·1 | 122 | 1136 | 3357 |
| 24·6 | 204 | 553 | 456 | 3·6 | 179 | 929 | 1670 | 12·1 | 195 | 1257 | 3385 | 24·1 | 82 | 826 | 1288 |
| 25·3 | 52 | 457 | 149 | 4·5 | 265 | 1079 | 1452 | 13·2 | 217 | 2141 | 2554 | 25·1 | 43 | 484 | 2603 |
| 26·3 | 60 | 568 | 575 | 5·2 | 144 | 814 | 2063 | 14·5 | 665 | 3907 | 1668 | 26·5 | 77 | 270 | 925 |
| 27·2 | 85 | 600 | 3007 | 6·2 | 123 | 928 | 1096 | 15·3 | 382 | 3433 | 4827 | 27·4 | 72 | 292 | 826 |
| 28·4 | 170 | 888 | 285 | 7·3 | 138 | 1005 | 999 | 16·5 | 614 | 5025 | 294 | 28·1 | 52 | 298 | 1111 |
| 29·2 | 101 | 662 | 1811 | 8·2 | 203 | 1239 | 1377 | 17·6 | 1388 | 6750 | 2768 | 29·5 | 98 | 478 | 1387 |
| 30 | (112 | 671 | 1609) | 9·3 | 246 | 1385 | 3740 | 18·5 | 1535 | 7638 | 3773 | 30·4 | 124 | 615 | 366 |
| 31 | (124 | 679 | 1408) | 10·2 | 259 | 1362 | 6501 | 19·2 | 638 | 6537 | 2527 | 31·4 | 179 | 712 | 608 |
| | | | | 11·2 | 282 | 1686 | 4757 | 20·4 | 1175 | 6808 | 3847 | | | | |
| | | | | 12·3 | 232 | 1592 | 3423 | 21·4 | 1364 | 6892 | 2316 | | | | |
| Feb. 1·4 | 135 | 688 | 1207 | 13·6 | 426 | 1634 | 1649 | 22·2 | 490 | 3839 | 3174 | June 1·3 | 125 | 676 | 1233 |
| 2·2 | 105 | 733 | 3055 | 14·4 | 417 | 1473 | 1884 | 23·5 | 516 | 3074 | 2524 | 2·3 | 124 | 720 | 1055 |
| 3·5 | 129 | 650 | 2371 | 15·6 | 182 | 890 | 622 | 24·5 | 371 | 1838 | 3430 | 3·4 | 177 | 679 | 1853 |
| 4·2 | 85 | 636 | 2337 | 16·4 | 159 | 790 | 653 | 25·2 | 99 | 791 | 2593 | 4·5 | 127 | 591 | 1725 |
| 5·2 | 79 | 612 | 2161 | 17·6 | 132 | 691 | 657 | 26·4 | 75 | 459 | 1461 | 5·5 | 96 | 447 | 790 |
| 6·2 | 116 | 728 | 2179 | 18·5 | 176 | 778 | 873 | 27·2 | 52 | 596 | 2665 | 6·1 | 74 | 400 | 1097 |
| 7·3 | 121 | 1167 | 567 | 19·5 | 160 | 857 | 0 | 28·6 | 118 | 463 | 1063 | 7·5 | 41 | 264 | 1110 |
| 8·3 | 208 | 1498 | 1032 | 20·4 | 314 | 1575 | 491 | 29 | (86 | 316 | 1176) | 8·1 | 32 | 154 | 748 |
| 9 | (229 | 1604 | 1172) | 21·5 | 414 | 2249 | 2164 | 30·6 | 54 | 169 | 1289 | 9·5 | 79 | 346 | 2873 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1882 d | | | | 1882 d | | | | 1882 d | | | | 1882 d | | | |
| June 10·2 | 59 | 312 | 1173 | Aug. 7 | (20 | 143 | 2021) | Oct. 4·1 | 449 | 2633 | 1783 | Dec. 1·2 | 133 | 1161 | 1596 |
| 11·4 | 120 | 736 | 2285 | 8·6 | 0 | 15 | 2266 | 5·3 | 301 | 1804 | 1679 | 2·3 | 43 | 352 | 1831 |
| 12·4 | 211 | 948 | 3807 | 9·6 | 52 | 199 | 1017 | 6·1 | 260 | 1107 | 1953 | 3·2 | 4 | 92 | 2794 |
| 13·3 | 99 | 946 | 1339 | 10·4 | 88 | 646 | 2211 | 7·5 | 45 | 270 | 938 | 4·4 | 0 | 0 | 1497 |
| 14·5 | 259 | 1531 | 1750 | 11·6 | 263 | 1261 | 3166 | 8·5 | 28 | 85 | 2428 | 5·2 | 0 | 44 | 1114 |
| 15·5 | 280 | 1553 | 1563 | 12·4 | 237 | 1118 | 3973 | 9·4 | 7 | 38 | 1841 | 6·2 | 7 | 89 | 614 |
| 16·4 | 330 | 1755 | 2947 | 13 | (188 | 883 | 2646) | 10·2 | 17 | 116 | 1308 | 7·2 | 31 | 118 | 1141 |
| 17·5 | 433 | 1842 | 5486 | 14·5 | 138 | 648 | 1318 | 11·2 | 22 | 147 | 1072 | 8·2 | 36 | 171 | 795 |
| 18 | (335 | 1549 | 4207) | 15·5 | 132 | 548 | 1119 | 12·2 | 34 | 260 | 1658 | 9·5 | 121 | 558 | 1168 |
| 19 | (236 | 1256 | 2927) | 16·6 | 42 | 271 | 729 | 13·4 | 115 | 519 | 1682 | 10·2 | 98 | 660 | 739 |
| 20·4 | 138 | 963 | 1648 | 17·2 | 16 | 199 | 1988 | 14·3 | 91 | 783 | 2196 | 11·2 | 78 | 747 | 2429 |
| 21·3 | 37 | 620 | 1031 | 18·1 | 61 | 325 | 1089 | 15·2 | 130 | 849 | 2013 | 12·3 | 118 | 817 | 1185 |
| 22·2 | 58 | 572 | 1056 | 19 | (200 | 994 | 2675) | 16·2 | 118 | 1165 | 2398 | 13·4 | 145 | 746 | 1081 |
| 23·4 | 99 | 519 | 1877 | 20·5 | 338 | 1663 | 4260 | 17·3 | 251 | 1203 | 713 | 14·3 | 40 | 608 | 66 |
| 24·4 | 58 | 295 | 1551 | 21·5 | 432 | 1844 | 3765 | 18·3 | 273 | 1786 | 669 | 15·3 | 51 | 735 | 1180 |
| 25·5 | 52 | 264 | 2120 | 22·4 | 488 | 2505 | 1735 | 19·3 | 265 | 1855 | 949 | 16·2 | 79 | 722 | 2196 |
| 26·4 | 54 | 279 | 917 | 23·5 | 459 | 2253 | 1848 | 20·5 | 523 | 2166 | 1597 | 17·2 | 62 | 623 | 1791 |
| 27·5 | 276 | 896 | 2732 | 24·6 | 313 | 1813 | 760 | 21·2 | 338 | 1746 | 1577 | 18·2 | 76 | 703 | 1128 |
| 28·4 | 180 | 1609 | 953 | 25·6 | 342 | 1457 | 883 | 22·6 | 370 | 1934 | 2540 | 19·5 | 106 | 474 | 689 |
| 29·2 | 166 | 1408 | 1213 | 26·4 | 287 | 1132 | 2566 | 23·5 | 763 | 2988 | 3144 | 20·4 | 59 | 393 | 1730 |
| 30·3 | 135 | 1431 | 2236 | 27·4 | 123 | 943 | 1433 | 24·2 | 391 | 2652 | 4839 | 21·5 | 53 | 230 | 2608 |
| | | | | 28 | (140 | 780 | 1368) | 25·5 | 588 | 3033 | 2096 | 22·5 | 77 | 305 | 1145 |
| | | | | 29·4 | 157 | 616 | 1303 | 26·5 | 657 | 2913 | 2548 | 23·5 | 38 | 122 | 0 |
| July 1·4 | 326 | 1546 | 5161 | 30·6 | 43 | 339 | 1188 | 27·3 | 452 | 2570 | 3545 | 24·2 | 23 | 242 | 1136 |
| 2·5 | 207 | 895 | 4408 | 31·4 | 22 | 185 | 1932 | 28·2 | 373 | 2541 | 2203 | 25·2 | 36 | 142 | 1838 |
| 3·5 | 201 | 826 | 2394 | | | | | 29·6 | 749 | 3174 | 526 | 26·3 | 41 | 244 | 596 |
| 4 | (168 | 675 | 2607) | | | | | 30·2 | 458 | 2566 | 1316 | 27·2 | 48 | 226 | 1885 |
| 5·5 | 134 | 524 | 2819 | Sept. 1·3 | 58 | 267 | 2149 | 31·4 | 610 | 2714 | 2945 | 28·2 | 64 | 387 | 1801 |
| 6 | (85 | 332 | 2872) | 2·4 | 313 | 1244 | 1751 | | | | | 29·3 | 88 | 432 | 2822 |
| 7·4 | 35 | 140 | 2924 | 3·6 | 337 | 1259 | 1763 | | | | | 30·2 | 196 | 801 | 3289 |
| 8·1 | 18 | 70 | 2612 | 4·5 | 404 | 1667 | 1603 | | | | | 31·2 | 302 | 1461 | 3690 |
| 9·6 | 0 | 0 | 2143 | 5·3 | 776 | 2997 | 1015 | | | | | | | | |
| 10·4 | 26 | 91 | 2629 | 6·5 | 399 | 2119 | 2541 | Nov. 1·6 | 509 | 2161 | 2424 | | | | |
| 11·3 | 39 | 219 | 2366 | 7·4 | 404 | 1416 | 1328 | 2·4 | 401 | 1864 | 1770 | | | | |
| 12·5 | 110 | 515 | 1310 | 8·4 | 170 | 698 | 1320 | 3·4 | 223 | 1473 | 1132 | | | | |
| 13·2 | 55 | 447 | 1133 | 9·5 | 133 | 514 | 2595 | 4·4 | 254 | 1568 | 1649 | | | | |
| 14·5 | 168 | 762 | 1996 | 10 | (80 | 381 | 2794) | 5·2 | 338 | 1663 | 3385 | | | | |
| 15·6 | 198 | 1248 | 1907 | 11·4 | 26 | 247 | 2992 | 6·4 | 294 | 1829 | 2211 | | | | |
| 16·5 | 115 | 1023 | 4229 | 12·5 | 42 | 239 | 3531 | 7·2 | 300 | 1664 | 5790 | | | | |
| 17·4 | 135 | 923 | 3678 | 13·5 | 84 | 483 | 1250 | 8·6 | 461 | 1995 | 2393 | | | | |
| 18·5 | 226 | 1156 | 3132 | 14 | (139 | 769 | 1574) | 9·4 | 449 | 2230 | 1770 | | | | |
| 19·5 | 256 | 1085 | 2132 | 15·4 | 193 | 1055 | 1897 | 10·6 | 534 | 1570 | 1358 | | | | |
| 20·5 | 210 | 1032 | 2386 | 16·2 | 85 | 927 | 1805 | 11·5 | 595 | 2421 | 2109 | | | | |
| 21·5 | 200 | 1150 | 2715 | 17 | (214 | 1198 | 1605) | 12·2 | 294 | 1889 | 2007 | | | | |
| 22·1 | 137 | 954 | 3074 | 18·4 | 342 | 1468 | 1405 | 13·2 | 482 | 2307 | 1733 | | | | |
| 23·6 | 186 | 972 | 2823 | 19·1 | 162 | 1135 | 3939 | 14·2 | 609 | 2887 | 1729 | | | | |
| 24·4 | 170 | 773 | 4755 | 20·4 | 213 | 959 | 785 | 15·2 | 806 | 3341 | 2485 | | | | |
| 25·2 | 61 | 343 | 1330 | 21·3 | 107 | 874 | 1204 | 16·1 | 872 | 4005 | 1568 | | | | |
| 26·4 | 81 | 302 | 2794 | 22·6 | 185 | 788 | 2204 | 17·3 | 783 | 4639 | 2494 | | | | |
| 27·4 | 59 | 298 | 1598 | 23·2 | 98 | 666 | 1307 | 18·5 | 1649 | 5423 | 3546 | | | | |
| 28·2 | 0 | 170 | 1226 | 24·2 | 83 | 417 | 1662 | 19·6 | 1324 | 5371 | 1101 | | | | |
| 29·4 | 34 | 399 | 2602 | 25·6 | 237 | 1355 | 1332 | 20·4 | 756 | 4229 | 1635 | | | | |
| 30 | (41 | 508 | 2318) | 26·4 | 428 | 1691 | 2906 | 21·5 | 529 | 3261 | 507 | | | | |
| 31·5 | 48 | 617 | 2034 | 27·4 | 510 | 2292 | 3236 | 22·3 | 368 | 3443 | 2936 | | | | |
| | | | | 28·4 | 731 | 2713 | 3571 | 23·4 | 337 | 2853 | 2980 | | | | |
| | | | | 29·2 | 527 | 3148 | 2273 | 24·5 | 475 | 2159 | 2084 | | | | |
| Aug. 1 | (124 | 763 | 1979) | 30·4 | 777 | 3695 | 788 | 25·4 | 478 | 1947 | 1903 | | | | |
| 2·4 | 200 | 908 | 1923 | | | | | 26·5 | 363 | 1665 | 1675 | | | | |
| 3·6 | 111 | 735 | 2384 | | | | | 27·5 | 454 | 2079 | 1299 | | | | |
| 4·5 | 84 | 673 | 1401 | Oct. 1·5 | 926 | 3949 | 1187 | 28·5 | 550 | 2292 | 3208 | | | | |
| 5 | (62 | 472 | 1588) | 2·6 | 856 | 3561 | 2671 | 29·2 | 275 | 1809 | 3376 | | | | |
| 6·5 | 39 | 271 | 1775 | 3·4 | 878 | 3120 | 2794 | 30·3 | 132 | 1534 | 3184 | | | | |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1883 d | | | | 1883 d | | | | 1883 d | | | | 1883 d | | | |
| Jan. 1·2 | 359 | 2019 | 2965 | Mar. 1·2 | 36 | 222 | 268 | Apr. 29·1 | 121 | 495 | 2354 | June 26·4 | 392 | 3020 | 978 |
| 2·4 | 645 | 2758 | 1348 | 2·6 | 32 | 88 | 691 | 30·5 | 48 | 314 | 504 | 27·4 | 590 | 3798 | 1273 |
| 3·2 | 384 | 2475 | 2635 | 3·5 | 0 | 38 | 225 | | | | | 28·4 | 663 | 4429 | 1394 |
| 4·2 | 330 | 2363 | 2429 | 4·5 | 0 | 21 | 1337 | | | | | 29·4 | 1004 | 5090 | 521 |
| 5·2 | 354 | 2195 | 1969 | 5·5 | 0 | 0 | 1030 | May 1·4 | 35 | 297 | 793 | 30·4 | 925 | 5296 | 222 |
| 6·5 | 300 | 1499 | 1005 | 6·4 | 0 | 0 | 939 | 2·2 | 42 | 208 | 2136 | | | | |
| 7·2 | 145 | 1014 | 1924 | 7·5 | 27 | 125 | 616 | 3·4 | 11 | 192 | 752 | | | | |
| 8·4 | 54 | 338 | 564 | 8·6 | 36 | 255 | 1307 | 4·5 | 15 | 139 | 294 | July 1·4 | 767 | 4112 | 182 |
| 9·4 | 81 | 329 | 1354 | 9·4 | 86 | 184 | 2110 | 5·5 | 17 | 142 | 737 | 2·1 | 467 | 3827 | 3050 |
| 10·3 | 106 | 712 | 3088 | 10·4 | 27 | 359 | 2260 | 6·4 | 20 | 168 | 1705 | 3·2 | 472 | 3336 | 1739 |
| 11·2 | 101 | 629 | 1982 | 11 | (56 | 589 | 2011) | 7·1 | 38 | 337 | 2193 | 4·5 | 501 | 2856 | 1059 |
| 12·2 | 134 | 803 | 3002 | 12·6 | 85 | 819 | 1762 | 8·1 | 88 | 493 | 1154 | 5·4 | 411 | 2228 | 1172 |
| 13·2 | 177 | 1267 | 2070 | 13·5 | 189 | 1045 | 1155 | 9·1 | 123 | 828 | 1426 | 6·4 | 312 | 1670 | 1077 |
| 14·2 | 249 | 1631 | 2685 | 14·2 | 121 | 975 | 1399 | 10·1 | 103 | 789 | 1604 | 7·5 | 147 | 1473 | 562 |
| 15·5 | 284 | 1630 | 77 | 15·4 | 196 | 923 | 452 | 11·4 | 172 | 1025 | 1523 | 8 | (149 | 1337 | 652) |
| 16·6 | 400 | 2437 | 1440 | 16·5 | 151 | 1101 | 2249 | 12·2 | 167 | 932 | 3914 | 9·6 | 151 | 1201 | 742 |
| 17·2 | 238 | 2342 | 2550 | 17·4 | 186 | 1167 | 1953 | 13·5 | 193 | 1266 | 695 | 10·4 | 235 | 1485 | 736 |
| 18·2 | 234 | 2297 | 2121 | 18·2 | 137 | 1300 | 2403 | 14·2 | 189 | 1207 | 1615 | 11·5 | 317 | 1993 | 2459 |
| 19·2 | 363 | 2120 | 769 | 19·2 | 133 | 1322 | 1787 | 15·4 | 187 | 918 | 607 | 12·3 | 210 | 2090 | 1689 |
| 20 | (257 | 1524 | 964) | 20·2 | 126 | 1195 | 1580 | 16·5 | 182 | 948 | 546 | 13·4 | 365 | 2649 | 1893 |
| 21·2 | 150 | 928 | 1158 | 21·2 | 125 | 1246 | 1254 | 17·4 | 246 | 1099 | 308 | 14 | (418 | 2591 | 1603) |
| 22·4 | 136 | 726 | 1907 | 22·6 | 259 | 1738 | 1442 | 18·5 | 137 | 776 | 385 | 15·5 | 471 | 2532 | 1312 |
| 23·4 | 74 | 390 | 560 | 23·5 | 238 | 1712 | 329 | 19·5 | 113 | 684 | 676 | 16·2 | 256 | 2116 | 787 |
| 24 | (81 | 415 | 1452) | 24·5 | 325 | 1977 | 291 | 20·1 | 66 | 456 | 2793 | 17 | (378 | 2692 | 2114) |
| 25 | (87 | 439 | 2345) | 25·6 | 197 | 1231 | 768 | 21·4 | 29 | 160 | 1066 | 18 | (501 | 3267 | 3442) |
| 26·4 | 94 | 464 | 3237 | 26·5 | 158 | 1136 | 1330 | 22·4 | 0 | 12 | 546 | 19·6 | 623 | 3843 | 4769 |
| 27·2 | 68 | 514 | 1117 | 27·4 | 51 | 743 | 807 | 23·4 | 18 | 110 | 312 | 20·2 | 436 | 3847 | 2924 |
| 28·2 | 57 | 404 | 2382 | 28·4 | 144 | 967 | 658 | 24·5 | 0 | 47 | 1403 | 21·5 | 638 | 4356 | 3440 |
| 29·2 | 90 | 503 | 1828 | 29·4 | 169 | 1374 | 1642 | 25·4 | 0 | 36 | 914 | 22 | (687 | 4589 | 3831) |
| 30·4 | 82 | 517 | 900 | 30·2 | 242 | 1563 | 2024 | 26 | (0 | 18 | 491) | 23 | (736 | 4821 | 4222) |
| 31·4 | 55 | 295 | 323 | 31·6 | 289 | 1640 | 2455 | 27·6 | 0 | 0 | 68 | 24·4 | 785 | 5054 | 4613 |
| | | | | | | | | 28·4 | 0 | 0 | 157 | 25·6 | 752 | 4547 | 1950 |
| | | | | | | | | 29·4 | 0 | 8 | 230 | 26·4 | 507 | 2710 | 1249 |
| | | | | | | | | 30·6 | 9 | 31 | 71 | 27·4 | 544 | 2917 | 946 |
| Feb. 1·2 | 124 | 576 | 1124 | Apr. 1·5 | 287 | 1929 | 333 | 31·4 | 26 | 185 | 139 | 28·4 | 456 | 2560 | 1848 |
| 2·2 | 124 | 654 | 1912 | 2·4 | 328 | 2064 | 639 | | | | | 29·4 | 307 | 1695 | 2327 |
| 3·4 | 148 | 845 | 1000 | 3·4 | 351 | 2203 | 1145 | | | | | 30 | (257 | 1544 | 1816) |
| 4·5 | 157 | 781 | 183 | 4·1 | 319 | 1823 | 1272 | June 1·4 | 104 | 483 | 252 | 31·5 | 206 | 1392 | 1306 |
| 5·6 | 186 | 815 | 647 | 5·6 | 405 | 2403 | 2344 | 2·5 | 400 | 2024 | 1382 | | | | |
| 6·5 | 293 | 1235 | 2398 | 6·4 | 348 | 2546 | 1693 | 3·4 | 384 | 2350 | 1844 | | | | |
| 7·2 | 222 | 1496 | 3951 | 7·5 | 138 | 1360 | 477 | 4·4 | 470 | 2956 | 704 | Aug. 1·4 | 84 | 563 | 982 |
| 8·2 | 190 | 1535 | 2662 | 8·6 | 234 | 1214 | 755 | 5·4 | 340 | 2199 | 176 | 2·2 | 39 | 278 | 1582 |
| 9·5 | 373 | 2234 | 1765 | 9·4 | 200 | 1125 | 1879 | 6·4 | 227 | 1745 | 1255 | 3·6 | 20 | 91 | 273 |
| 10·2 | 229 | 1930 | 1318 | 10·6 | 137 | 846 | 1149 | 7·1 | 150 | 1355 | 1480 | 4 | (25 | 116 | 559) |
| 11·5 | 288 | 1776 | 995 | 11·1 | 74 | 529 | 1275 | 8·6 | 228 | 1102 | 556 | 5 | (30 | 141 | 844) |
| 12·2 | 204 | 1856 | 1200 | 12·4 | 288 | 1506 | 941 | 9·4 | 65 | 748 | 0 | 6 | (35 | 166 | 1130) |
| 13·4 | 307 | 2154 | 2234 | 13·3 | 321 | 2550 | 3131 | 10·1 | 49 | 492 | 1071 | 7·4 | 40 | 191 | 1415 |
| 14·2 | 212 | 1943 | 2755 | 14·2 | 392 | 3339 | 4860 | 11·1 | 29 | 474 | 768 | 8·3 | 26 | 298 | 1377 |
| 15·2 | 216 | 2178 | 2098 | 15 | (472 | 3155 | 3263) | 12·5 | 87 | 724 | 979 | 9·4 | 31 | 315 | 1133 |
| 16·6 | 382 | 1677 | 1388 | 16·5 | 552 | 2970 | 1666 | 13·4 | 110 | 1170 | 476 | 10·4 | 39 | 561 | 2130 |
| 17·3 | 246 | 1499 | 2502 | 17·1 | 421 | 3331 | 1217 | 14·5 | 175 | 1315 | 1041 | 11·4 | 114 | 657 | 728 |
| 18·2 | 196 | 1225 | 3129 | 18·4 | 274 | 3432 | 559 | 15·4 | 75 | 998 | 1510 | 12·5 | 156 | 826 | 551 |
| 19·2 | 122 | 1120 | 2617 | 19·1 | 368 | 2971 | 1293 | 16·5 | 69 | 681 | 957 | 13·4 | 139 | 818 | 1102 |
| 20·2 | 93 | 645 | 2096 | 20·5 | 164 | 1632 | 0 | 17·4 | 88 | 669 | 882 | 14·4 | 122 | 799 | 1040 |
| 21·2 | 56 | 445 | 2894 | 21·4 | 222 | 1402 | 0 | 18·6 | 197 | 1133 | 734 | 15·4 | 84 | 482 | 1459 |
| 22·2 | 43 | 365 | 1596 | 22·4 | 137 | 1339 | 729 | 19·2 | 112 | 1119 | 2483 | 16·5 | 119 | 512 | 3273 |
| 23·5 | 0 | 0 | 210 | 23·6 | 117 | 677 | 1260 | 20·6 | 358 | 2040 | 1164 | 17·1 | 68 | 600 | 3722 |
| 24·2 | 0 | 55 | 924 | 24·6 | 103 | 431 | 1222 | 21·4 | 497 | 2572 | 1700 | 18·4 | 126 | 696 | 4037 |
| 25·2 | 9 | 63 | 1877 | 25·5 | 207 | 815 | 1200 | 22·2 | 307 | 2731 | 1945 | 19·4 | 79 | 506 | 1523 |
| 26·5 | 69 | 319 | 1208 | 26·4 | 120 | 705 | 1230 | 23·4 | 495 | 3022 | 2054 | 20·4 | 70 | 394 | 330 |
| 27·6 | 53 | 372 | 739 | 27·2 | 93 | 481 | 1462 | 24·2 | 231 | 2392 | 1923 | 21·4 | 88 | 629 | 844 |
| 28·5 | 55 | 317 | 755 | 28·2 | 101 | 519 | 977 | 25·6 | 435 | 2895 | 1917 | 22·4 | 86 | 870 | 1067 |

Total Projected Areas of Sun Spots and Faculæ—*continued*.

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1883 d | | | | 1883 d | | | | 1883 d | | | | 1884 d | | | |
| Aug. 23·4 | 175 | 1048 | 1568 | Oct. 20·5 | 370 | 2354 | 1057 | Dec. 17·3 | 168 | 1191 | 3576 | Jan. 1 | (163 | 1245 | 3198) |
| 24·4 | 171 | 1118 | 514 | 21·5 | 385 | 2102 | 885 | 18·3 | 101 | 776 | 2351 | 2·2 | 84 | 820 | 2980 |
| 25·4 | 182 | 1005 | 2731 | 22·5 | 320 | 1692 | 1700 | 19·3 | 114 | 1026 | 4486 | 3·1 | 67 | 773 | 1936 |
| 26·5 | 243 | 1196 | 316 | 23·2 | 213 | 1123 | 2528 | 20·3 | 165 | 1721 | 5327 | 4·4 | 61 | 960 | 2025 |
| 27·4 | 155 | 1222 | 704 | 24·3 | 172 | 966 | 2969 | 21·5 | 384 | 2751 | 2500 | 5·3 | 146 | 1641 | 2932 |
| 28·4 | 502 | 1763 | 309 | 25·4 | 125 | 1272 | 1370 | 22·3 | 371 | 3721 | 2907 | 6·2 | 242 | 2517 | 2975 |
| 29 | (474 | 2246 | 662) | 26·3 | 131 | 1497 | 1740 | 23·2 | 567 | 4475 | 2734 | 7·2 | 387 | 3401 | 2953 |
| 30·5 | 446 | 2728 | 1014 | 27·5 | 271 | 2054 | 1181 | 24·3 | 546 | 4401 | 1511 | 8·3 | 348 | 3634 | 3408 |
| 31·3 | 480 | 3056 | 1567 | 28·6 | 315 | 2147 | 1848 | 25·2 | 548 | 4778 | 2057 | 9·3 | 337 | 3533 | 2063 |
| | | | | 29·6 | 361 | 2209 | 1680 | 26·2 | 729 | 4348 | 2252 | 10·3 | 426 | 4245 | 1918 |
| | | | | 30·3 | 397 | 2512 | 2600 | 27·2 | 587 | 3659 | 2110 | 11·5 | 783 | 4351 | 655 |
| Sept. 1·4 | 547 | 3193 | 344 | 31·3 | 460 | 2647 | 3387 | 28·2 | 518 | 2926 | 2844 | 12·5 | 410 | 3302 | 1512 |
| 2 | (589 | 3287 | 696) | | | | | 29·2 | 402 | 2522 | 3852 | 13·2 | 460 | 2712 | 3052 |
| 3·4 | 632 | 3381 | 1047 | | | | | 30 | (322 | 2096 | 3634) | 14·3 | 163 | 1945 | 2161 |
| 4·4 | 512 | 3072 | 1788 | Nov. 1·3 | 303 | 2496 | 2235 | 31 | (243 | 1671 | 3416) | 15·2 | 230 | 1777 | 2481 |
| 5·5 | 470 | 2831 | 881 | 2·3 | 244 | 1989 | 3284 | | | | | 16 | (255 | 2040 | 3412) |
| 6 | (370 | 2355 | 573) | 3·2 | 312 | 1935 | 4042 | | | | | 17·3 | 279 | 2303 | 4343 |
| 7·1 | 269 | 1879 | 265 | 4·2 | 304 | 1832 | 4819 | | | | | 18·4 | 330 | 2326 | 3596 |
| 8·5 | 334 | 1823 | 2165 | 5·4 | 339 | 1811 | 2710 | | | | | 19·3 | 278 | 2164 | 2291 |
| 9·6 | 307 | 1670 | 1195 | 6·3 | 252 | 1351 | 2809 | | | | | 20·5 | 427 | 2272 | 4501 |
| 10·4 | 275 | 1666 | 3056 | 7·2 | 148 | 1152 | 2363 | | | | | 21·4 | 311 | 2215 | 961 |
| 11 | (353 | 2010 | 2909) | 8·2 | 98 | 723 | 2015 | | | | | 22·3 | 226 | 1894 | 2753 |
| 12·5 | 430 | 2354 | 2761 | 9·5 | 164 | 1158 | 1192 | | | | | 23·1 | 229 | 1576 | 2554 |
| 13·5 | 515 | 2698 | 1864 | 10·5 | 385 | 1832 | 1429 | | | | | 24·5 | 240 | 1301 | 848 |
| 14·4 | 596 | 3028 | 2424 | 11 | (455 | 2138 | 1422) | | | | | 25·4 | 190 | 1573 | 1624 |
| 15·5 | 614 | 2929 | 118 | 12·5 | 525 | 2444 | 1414 | | | | | 26 | (310 | 1708 | 3953) |
| 16·5 | 571 | 2622 | 603 | 13·5 | 546 | 3093 | 587 | | | | | 27·5 | 430 | 1843 | 6281 |
| 17·4 | 418 | 2352 | 836 | 14·6 | 599 | 3581 | 603 | | | | | 28·5 | 498 | 2618 | 2235 |
| 18·5 | 348 | 1879 | 2904 | 15·6 | 897 | 4702 | 1592 | | | | | 29·4 | 278 | 2129 | 2400 |
| 19·5 | 174 | 1352 | 1710 | 16·2 | 588 | 4542 | 2329 | | | | | 30·3 | 253 | 2243 | 1963 |
| 20·3 | 154 | 1031 | 653 | 17·5 | 804 | 4524 | 947 | | | | | 31·3 | 269 | 2668 | 3688 |
| 21·2 | 105 | 624 | 633 | 18·2 | 549 | 4188 | 1934 | | | | | | | | |
| 22·3 | 73 | 610 | 1485 | 19·5 | 663 | 4054 | 3876 | | | | | | | | |
| 23·5 | 70 | 302 | 1299 | 20·4 | 560 | 3864 | 3290 | | | | | Feb. 1·5 | 516 | 3287 | 4132 |
| 24·6 | 0 | 0 | 383 | 21·4 | 448 | 2762 | 1571 | | | | | 2·3 | 318 | 2783 | 1734 |
| 25·4 | 0 | 0 | 659 | 22·4 | 403 | 2707 | 1245 | | | | | 3 | (450 | 2985 | 1397) |
| 26·6 | 0 | 48 | 268 | 23·5 | 316 | 2562 | 3294 | | | | | 4·5 | 581 | 3187 | 1059 |
| 27·4 | 19 | 79 | 807 | 24·4 | 232 | 2211 | 2153 | | | | | 5·2 | 313 | 2713 | 1609 |
| 28·4 | 41 | 226 | 548 | 25·2 | 134 | 1574 | 1783 | | | | | 6·2 | 333 | 2684 | 2296 |
| 29·4 | 33 | 256 | 1095 | 26·5 | 173 | 905 | 1936 | | | | | 7·4 | 310 | 2368 | 2240 |
| 30·1 | 39 | 273 | 763 | 27·5 | 141 | 851 | 908 | | | | | 8·3 | 264 | 1858 | 2028 |
| | | | | 28·5 | 153 | 801 | 1226 | | | | | 9·2 | 166 | 1499 | 3189 |
| | | | | 29·4 | 148 | 889 | 1277 | | | | | 10·5 | 312 | 1735 | 3695 |
| Oct. 1·5 | 27 | 226 | 598 | 30·3 | 176 | 1236 | 2392 | | | | | 11·4 | 303 | 1603 | 4484 |
| 2·6 | 67 | 535 | 1222 | | | | | | | | | 12·5 | 240 | 1521 | 1078 |
| 3·3 | 89 | 520 | 1028 | | | | | | | | | 13·4 | 316 | 1696 | 3887 |
| 4·3 | 93 | 677 | 1239 | Dec. 1 | (142 | 977 | 2281) | | | | | 14·6 | 580 | 2478 | 3240 |
| 5·5 | 150 | 663 | 930 | 2·2 | 107 | 717 | 2169 | | | | | 15·5 | 454 | 2575 | 2136 |
| 6·5 | 180 | 922 | 1556 | 3 | (68 | 462 | 1725) | | | | | 16·5 | 416 | 2248 | 2427 |
| 7·1 | 186 | 1126 | 1840 | 4·4 | 29 | 206 | 1281 | | | | | 17 | (407 | 2258 | 3347) |
| 8·1 | 278 | 1437 | 2424 | 5·5 | 0 | 0 | 1199 | | | | | 18·4 | 397 | 2268 | 4267 |
| 9·3 | 368 | 2193 | 2425 | 6·5 | 14 | 180 | 419 | | | | | 19 | (343 | 2068 | 3040) |
| 10·5 | 678 | 3585 | 2681 | 7·6 | 73 | 400 | 1340 | | | | | 20·5 | 289 | 1868 | 1813 |
| 11·2 | 561 | 3960 | 3391 | 8·3 | 79 | 621 | 1661 | | | | | 21·5 | 196 | 1606 | 192 |
| 12·2 | 630 | 4173 | 2023 | 9·2 | 89 | 768 | 1298 | | | | | 22·3 | 151 | 1631 | 1354 |
| 13·4 | 1091 | 5399 | 1622 | 10·3 | 151 | 1325 | 1401 | | | | | 23·4 | 231 | 1456 | 1773 |
| 14·5 | 1124 | 5396 | 1969 | 11·5 | 468 | 2244 | 2493 | | | | | 24·5 | 224 | 1576 | 3629 |
| 15·4 | 1145 | 6142 | 4155 | 12·3 | 309 | 2056 | 3225 | | | | | 25·5 | 289 | 1364 | 3631 |
| 16·5 | 700 | 4546 | 3007 | 13·5 | 386 | 2457 | 2325 | | | | | 26·5 | 360 | 1853 | 4046 |
| 17·4 | 498 | 3333 | 5361 | 14·3 | 269 | 1886 | 1419 | | | | | 27·2 | 204 | 1542 | 2221 |
| 18·4 | 377 | 2604 | 1690 | 15·5 | 174 | 1168 | 881 | | | | | 28 | (313 | 2001 | 2989) |
| 19·3 | 359 | 2555 | 2479 | 16·5 | 173 | 1109 | 624 | | | | | 29·6 | 422 | 2460 | 3756 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1884 d | | | | 1884 d | | | | 1884 d | | | | 1884 d | | | |
| Mar. 1·4 | 304 | 2469 | 4540 | Apr. 29·5 | 233 | 2444 | 194 | June 26·5 | 0 | 367 | 338 | Aug. 23·4 | 123 | 1096 | 1115 |
| 2·6 | 375 | 2376 | 2204 | 30·4 | 140 | 2321 | 78 | 27·5 | 48 | 536 | 819 | 24·5 | 68 | 1045 | 1294 |
| 3·3 | 230 | 2153 | 1947 | | | | | 28·4 | 73 | 630 | 432 | 25·2 | 219 | 1226 | 669 |
| 4 | (289 | 2097 | 2170) | | | | | 29·4 | 85 | 845 | 288 | 26·4 | 190 | 1459 | 1241 |
| 5·5 | 348 | 2040 | 2393 | May 1·3 | 184 | 2095 | 1252 | 30·5 | 165 | 1293 | 1346 | 27·2 | 271 | 1835 | 1838 |
| 6·3 | 187 | 2022 | 1570 | 2·4 | 168 | 1208 | 1428 | | | | | 28·4 | 199 | 1336 | 2114 |
| 7·5 | 300 | 1691 | 1247 | 3·6 | 29 | 886 | 111 | | | | | 29·5 | 165 | 1635 | 524 |
| 8 | (302 | 1911 | 991) | 4·5 | 39 | 640 | 358 | July 1 | (201 | 1550 | 1433) | 30 | (124 | 1277 | 492) |
| 9·5 | 304 | 2132 | 734 | 5·4 | 50 | 846 | 279 | 2 | (237 | 1807 | 1519) | 31 | (83 | 919 | 460) |
| 10·6 | 314 | 2256 | 1088 | 6·4 | 27 | 589 | 396 | 3·3 | 273 | 2064 | 1606 | | | | |
| 11·2 | 184 | 1995 | 1947 | 7·2 | 54 | 641 | 1972 | 4·2 | 417 | 2457 | 1723 | | | | |
| 12·6 | 288 | 1616 | 488 | 8·3 | 35 | 299 | 1348 | 5·4 | 257 | 2015 | 2194 | Sept. 1 | (41 | 562 | 427) |
| 13 | (260 | 1688 | 702) | 9·5 | 94 | 974 | 460 | 6 | (204 | 1550 | 1978) | 2·4 | 0 | 204 | 395 |
| 14·6 | 232 | 1760 | 916 | 10 | (209 | 1649 | 775) | 7 | (152 | 1085 | 1761) | 3·4 | 0 | 128 | 1143 |
| 15·5 | 423 | 2657 | 1370 | 11·2 | 323 | 2323 | 1089 | 8·3 | 99 | 620 | 1545 | 4·2 | 8 | 101 | 1419 |
| 16·4 | 314 | 2368 | 675 | 12·3 | 279 | 2343 | 2033 | 9·2 | 116 | 617 | 1743 | 5·4 | 0 | 68 | 568 |
| 17·5 | 376 | 2144 | 1220 | 13·2 | 315 | 2021 | 1840 | 10·2 | 56 | 497 | 1506 | 6·3 | 20 | 207 | 1078 |
| 18·4 | 348 | 2318 | 2247 | 14·3 | 291 | 1847 | 962 | 11·2 | 49 | 375 | 1074 | 7·7 | 125 | 558 | 2133 |
| 19·5 | 336 | 2248 | 1395 | 15·3 | 246 | 1598 | 1423 | 12·3 | 137 | 635 | 1187 | 8·4 | 79 | 632 | 1296 |
| 20·4 | 328 | 2172 | 1212 | 16·3 | 322 | 1542 | 2780 | 13 | (123 | 586 | 1227) | 9·2 | 132 | 1061 | 1329 |
| 21·5 | 336 | 1839 | 2672 | 17·3 | 227 | 1686 | 2726 | 14 | (109 | 538 | 1268) | 10·5 | 197 | 1634 | 1722 |
| 22·2 | 314 | 1949 | 3465 | 18·1 | 293 | 1712 | 1878 | 15 | (95 | 489 | 1308) | 11·5 | 288 | 1927 | 2148 |
| 23·6 | 289 | 1784 | 1398 | 19·3 | 317 | 2015 | 3399 | 16 | (81 | 441 | 1349) | 12·4 | 471 | 2503 | 1723 |
| 24·3 | 225 | 1740 | 2190 | 20 | (300 | 1804 | 2878) | 17 | (67 | 392 | 1389) | 13·4 | 497 | 2804 | 1132 |
| 25·3 | 287 | 1562 | 1510 | 21·3 | 282 | 1592 | 2357 | 18 | (53 | 344 | 1430) | 14 | (525 | 2871 | 1274) |
| 26·3 | 203 | 1291 | 2775 | 22·3 | 315 | 1792 | 2179 | 19·4 | 39 | 296 | 1470 | 15·4 | 553 | 2937 | 1415 |
| 27·3 | 178 | 978 | 2048 | 23·3 | 274 | 1621 | 1801 | 20·4 | 44 | 296 | 1439 | 16·5 | 341 | 2384 | 1763 |
| 28·3 | 116 | 815 | 2481 | 24·6 | 204 | 1803 | 263 | 21 | (61 | 398 | 1224) | 17·4 | 429 | 2243 | 2157 |
| 29·3 | 66 | 713 | 2475 | 25·1 | 357 | 1995 | 1591 | 22 | (77 | 499 | 1010) | 18·4 | 347 | 1764 | 1485 |
| 30·2 | 42 | 508 | 1504 | 26·2 | 298 | 1956 | 2062 | 23 | (94 | 600 | 796) | 19·6 | 293 | 1848 | 1075 |
| 31·3 | 54 | 615 | 2952 | 27·1 | 361 | 1952 | 3287 | 24·4 | 111 | 702 | 581 | 20·4 | 298 | 1924 | 1367 |
| | | | | 28·3 | 379 | 2382 | 2565 | 25·5 | 125 | 684 | 613 | 21·4 | 248 | 1802 | 1764 |
| | | | | 29·2 | 398 | 2338 | 1733 | 26·5 | 125 | 856 | 1142 | 22·5 | 300 | 1981 | 1479 |
| | | | | 30·6 | 304 | 1832 | 1465 | 27·2 | 96 | 742 | 1138 | 23·4 | 309 | 1931 | 1496 |
| Apr. 1·3 | 130 | 810 | 2445 | 31·2 | 202 | 1942 | 1983 | 28 | (110 | 874 | 1135) | 24·6 | 231 | 1704 | 1512 |
| 2·4 | 221 | 2177 | 771 | | | | | 29 | (125 | 1005 | 1133) | 25·5 | 304 | 2098 | 1048 |
| 3·2 | 562 | 3430 | 3076 | | | | | 30 | (139 | 1137 | 1130) | 26 | (284 | 1876 | 1980) |
| 4·5 | 414 | 3907 | 1689 | June 1·2 | 197 | 1619 | 1895 | 31·4 | 154 | 1269 | 1128 | 27·2 | 264 | 1654 | 2912 |
| 5·4 | 500 | 4048 | 5299 | 2 | (193 | 1510 | 2477) | | | | | 28 | (262 | 1625 | 2452) |
| 6·2 | 468 | 3473 | 4016 | 3·2 | 189 | 1401 | 3058 | | | | | 29 | (261 | 1597 | 1991) |
| 7·3 | 279 | 2427 | 1032 | 4·3 | 114 | 1204 | 2371 | Aug. 1·4 | 286 | 2237 | 1792 | 30·5 | 259 | 1568 | 1531 |
| 8·3 | 310 | 2384 | 3616 | 5 | (177 | 1246 | 1722) | 2·4 | 352 | 2355 | 1556 | | | | |
| 9·6 | 279 | 2034 | 640 | 6·2 | 239 | 1288 | 1073 | 3·6 | 363 | 1841 | 1117 | | | | |
| 10·6 | 261 | 2090 | 841 | 7·2 | 198 | 1135 | 1068 | 4·3 | 244 | 1955 | 745 | Oct. 1 | (262 | 1585 | 1644) |
| 11·3 | 336 | 2302 | 2964 | 8 | (163 | 982 | 1077) | 5·5 | 67 | 820 | 1480 | 2·4 | 265 | 1602 | 1756 |
| 12 | (223 | 1779 | 2604) | 9 | (128 | 829 | 1086) | 6·5 | 55 | 551 | 1398 | 3·5 | 393 | 2183 | 1752 |
| 13·4 | 109 | 1255 | 2244 | 10 | (93 | 675 | 1095) | 7·5 | 29 | 331 | 557 | 4·4 | 326 | 1962 | 947 |
| 14·3 | 86 | 865 | 3240 | 11·4 | 58 | 522 | 1104 | 8·5 | 69 | 535 | 1099 | 5·1 | 346 | 2145 | 3015 |
| 15·3 | 97 | 717 | 1589 | 12·5 | 91 | 567 | 492 | 9·4 | 60 | 536 | 715 | 6·3 | 307 | 1793 | 3743 |
| 16·4 | 105 | 763 | 1760 | 13·1 | 93 | 582 | 734 | 10·6 | 127 | 732 | 292 | 7·5 | 337 | 1979 | 1540 |
| 17·3 | 186 | 920 | 550 | 14·6 | 87 | 600 | 707 | 11·5 | 76 | 833 | 755 | 8·5 | 381 | 1979 | 441 |
| 18·3 | 185 | 1275 | 2831 | 15·4 | 104 | 593 | 510 | 12·6 | 78 | 739 | 278 | 9·5 | 195 | 1922 | 351 |
| 19·5 | 157 | 1696 | 1009 | 16·6 | 59 | 524 | 0 | 13·3 | 138 | 1101 | 1511 | 10·3 | 207 | 1579 | 1823 |
| 20·2 | 203 | 1893 | 2720 | 17 | (58 | 545 | 0) | 14·4 | 97 | 961 | 1800 | 11·2 | 202 | 1538 | 2396 |
| 21·5 | 185 | 1476 | 519 | 18 | (57 | 565 | 0) | 15·5 | 82 | 756 | 1052 | 12·2 | 141 | 1126 | 3182 |
| 22·6 | 319 | 2136 | 408 | 19 | (57 | 586 | 0) | 16·4 | 47 | 428 | 1225 | 13·4 | 71 | 712 | 1278 |
| 23·4 | 250 | 2579 | 1125 | 20·6 | 56 | 607 | 0 | 17·5 | 61 | 427 | 451 | 14·5 | 10 | 363 | 1856 |
| 24·4 | 370 | 2736 | 720 | 21·5 | 43 | 402 | 0 | 18·6 | 53 | 372 | 1163 | 15·2 | 39 | 305 | 2683 |
| 25·3 | 511 | 2694 | 2744 | 22·1 | 51 | 553 | 886 | 19 | (53 | 464 | 1070) | 16·2 | 35 | 344 | 1358 |
| 26·5 | 450 | 2945 | 163 | 23·4 | 38 | 369 | 0 | 20·4 | 53 | 556 | 976 | 17·2 | 13 | 261 | 357 |
| 27·2 | 446 | 2918 | 1647 | 24·5 | 18 | 212 | 150 | 21·4 | 191 | 970 | 1692 | 18·4 | 66 | 458 | 982 |
| 28 | (340 | 2681 | 921) | 25·6 | 16 | 302 | 0 | 22·4 | 217 | 1385 | 1971 | 19·5 | 22 | 313 | 421 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | | Greenwich Civil Time. | | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. | | | Umbræ. | Whole Spots. | Faculæ. |
| 1884 | d | | | | 1884 | d | | | | 1885 | d | | | | 1885 | d | | | |
| Oct. | 20·2 | 62 | 330 | 1107 | Dec. | 17·2 | 108 | 764 | 2382 | Jan. | 1·2 | 36 | 434 | 1914 | Mar. | 1·4 | 156 | 1222 | 1511 |
| | 21·2 | 83 | 444 | 1227 | | 18·2 | 107 | 805 | 2221 | | 2·3 | 58 | 339 | 2985 | | 2·6 | 147 | 1608 | 1126 |
| | 22·5 | 90 | 908 | 1451 | | 19·5 | 118 | 1348 | 150 | | 3·2 | 119 | 489 | 1743 | | 3·2 | 289 | 1749 | 794 |
| | 23·5 | 191 | 1239 | 2489 | | 20·2 | 175 | 1419 | 933 | | 4·2 | 83 | 486 | 3831 | | 4·5 | 402 | 2744 | 658 |
| | 24 | (382 | 1958 | 1814) | | 21·5 | 321 | 1812 | 1139 | | 5·2 | 40 | 525 | 1821 | | 5·6 | 245 | 3271 | 730 |
| | 25·5 | 573 | 2677 | 1138 | | 22·5 | 354 | 2152 | 1515 | | 6·5 | 5 | 127 | 0 | | 6·2 | 470 | 3235 | 1648 |
| | 26·5 | 551 | 2754 | 1807 | | 23 | (310 | 2027 | 1539) | | 7·5 | 0 | 69 | 0 | | 7·5 | 347 | 2737 | 1356 |
| | 27·4 | 286 | 2104 | 1075 | | 24·3 | 266 | 1901 | 1562 | | 8·5 | 0 | 60 | 0 | | 8·2 | 324 | 2668 | 3232 |
| | 28·3 | 256 | 1879 | 1708 | | 25·2 | 282 | 2330 | 2737 | | 9·5 | 0 | 36 | 41 | | 9·5 | 178 | 1389 | 4261 |
| | 29·6 | 332 | 1877 | 471 | | 26·3 | 250 | 1827 | 1378 | | 10·3 | 4 | 40 | 2084 | | 10·5 | 115 | 1017 | 1648 |
| | 30·4 | 267 | 1701 | 895 | | 27·2 | 200 | 1838 | 2609 | | 11 | (9 | 70 | 2013) | | 11·5 | 97 | 993 | 2537 |
| | 31·4 | 293 | 1621 | 2687 | | 28·2 | 253 | 1512 | 1886 | | 12·5 | 14 | 99 | 1942 | | 12·4 | 150 | 986 | 1538 |
| | | | | | | 29·2 | 175 | 1226 | 1716 | | 13·5 | 46 | 167 | 944 | | 13·5 | 207 | 1071 | 1441 |
| | | | | | | 30·2 | 113 | 929 | 1979 | | 14·2 | 30 | 161 | 1729 | | 14·3 | 138 | 998 | 1848 |
| Nov. | 1·2 | 264 | 1341 | 3739 | | 31·3 | 72 | 734 | 2115 | | 15·2 | 36 | 104 | 2375 | | 15·5 | 129 | 986 | 685 |
| | 2·2 | 86 | 656 | 2625 | | | | | | | 16·3 | 17 | 145 | 984 | | 16·3 | 85 | 785 | 1164 |
| | 3·4 | 34 | 244 | 823 | | | | | | | 17·2 | 26 | 262 | 1269 | | 17·4 | 88 | 528 | 501 |
| | 4·6 | 30 | 197 | 778 | | | | | | | 18·2 | 40 | 476 | 2723 | | 18·5 | 42 | 384 | 962 |
| | 5·4 | 18 | 116 | 2171 | | | | | | | 19 | (195 | 1247 | 2475) | | 19·4 | 22 | 260 | 772 |
| | 6·3 | 21 | 110 | 1675 | | | | | | | 20·2 | 349 | 2018 | 2226 | | 20·6 | 11 | 126 | 1270 |
| | 7·4 | 8 | 40 | 522 | | | | | | | 21·2 | 313 | 2223 | 3281 | | 21·2 | 27 | 76 | 1963 |
| | 8·0 | 0 | 0 | 781 | | | | | | | 22·2 | 322 | 1890 | 3119 | | 22·2 | 2 | 21 | 2166 |
| | 9·2 | 0 | 15 | 2782 | | | | | | | 23·4 | 224 | 1855 | 721 | | 23·4 | 0 | 0 | 300 |
| | 10·5 | 96 | 639 | 1181 | | | | | | | 24·2 | 282 | 1288 | 1785 | | 24·4 | 2 | 35 | 0 |
| | 11·3 | 167 | 1077 | 2598 | | | | | | | 25·5 | 148 | 923 | 333 | | 25·4 | 10 | 99 | 325 |
| | 12·3 | 189 | 1268 | 2651 | | | | | | | 26·2 | 165 | 1093 | 2969 | | 26·5 | 27 | 390 | 848 |
| | 13·2 | 156 | 1101 | 2738 | | | | | | | 27·5 | 164 | 1192 | 784 | | 27·5 | 58 | 575 | 1196 |
| | 14·5 | 73 | 777 | 326 | | | | | | | 28·2 | 224 | 1396 | 2339 | | 28·5 | 113 | 870 | 1440 |
| | 15·5 | 26 | 315 | 0 | | | | | | | 29·1 | 246 | 1345 | 2701 | | 29·2 | 119 | 874 | 1100 |
| | 16·2 | 38 | 253 | 2110 | | | | | | | 30·6 | 153 | 1077 | 0 | | 30·4 | 77 | 748 | 0 |
| | 17·3 | 17 | 175 | 1237 | | | | | | | 31·2 | 304 | 1344 | 2678 | | 31·4 | 139 | 1019 | 48 |
| | 18·3 | 30 | 213 | 2797 | | | | | | | | | | | | | | | |
| | 19·5 | 80 | 417 | 1046 | | | | | | | | | | | | | | | |
| | 20·3 | 64 | 724 | 3109 | | | | | | | | | | | | | | | |
| | 21·3 | 131 | 713 | 1677 | | | | | | Feb. | 1·4 | 321 | 1492 | 1994 | Apr. | 1·4 | 175 | 964 | 559 |
| | 22·2 | 113 | 835 | 1161 | | | | | | | 2·5 | 217 | 1477 | 0 | | 2·4 | 68 | 1069 | 65 |
| | 23·2 | 134 | 995 | 1630 | | | | | | | 3·2 | 294 | 1905 | 1304 | | 3·4 | 88 | 886 | 0 |
| | 24·3 | 141 | 1216 | 888 | | | | | | | 4·4 | 287 | 2225 | 241 | | 4·4 | 112 | 1091 | 270 |
| | 25·3 | 168 | 1052 | 1317 | | | | | | | 5·5 | 335 | 1825 | 275 | | 5·5 | 129 | 1261 | 208 |
| | 26·3 | 98 | 959 | 2486 | | | | | | | 6·2 | 313 | 1697 | 851 | | 6·2 | 264 | 1445 | 3992 |
| | 27 | (98 | 831 | 2644) | | | | | | | 7·5 | 258 | 1786 | 375 | | 7·4 | 186 | 1477 | 284 |
| | 28·3 | 98 | 702 | 2802 | | | | | | | 8·2 | 327 | 2353 | 860 | | 8·2 | 210 | 2105 | 2355 |
| | 29·5 | 102 | 581 | 776 | | | | | | | 9·5 | 322 | 2076 | 1883 | | 9·2 | 271 | 2613 | 1993 |
| | 30 | (129 | 1101 | 1635) | | | | | | | 10·5 | 309 | 1808 | 1293 | | 10·1 | 430 | 3082 | 961 |
| | | | | | | | | | | | 11·2 | 180 | 1783 | 3188 | | 11·5 | 306 | 2520 | 373 |
| | | | | | | | | | | | 12·5 | 265 | 1622 | 1540 | | 12·2 | 229 | 2445 | 969 |
| Dec. | 1·2 | 156 | 1621 | 2493 | | | | | | | 13·3 | 257 | 1612 | 2109 | | 13·3 | 206 | 2166 | 1619 |
| | 2·3 | 218 | 1575 | 1632 | | | | | | | 14·3 | 255 | 1850 | 1622 | | 14·5 | 95 | 1070 | 347 |
| | 3·3 | 231 | 1477 | 895 | | | | | | | 15·2 | 293 | 2105 | 761 | | 15·5 | 70 | 612 | 278 |
| | 4·5 | 239 | 1439 | 402 | | | | | | | 16·2 | 335 | 2591 | 1555 | | 16·2 | 72 | 524 | 2037 |
| | 5·5 | 202 | 1338 | 427 | | | | | | | 17·4 | 428 | 2498 | 735 | | 17·4 | 40 | 457 | 1301 |
| | 6·3 | 156 | 1323 | 2540 | | | | | | | 18·5 | 272 | 2026 | 0 | | 18·4 | 35 | 401 | 200 |
| | 7·4 | 128 | 996 | 874 | | | | | | | 19·1 | 239 | 1870 | 1360 | | 19·5 | 40 | 376 | 90 |
| | 8·3 | 117 | 863 | 1843 | | | | | | | 20·2 | 239 | 1299 | 3952 | | 20·4 | 59 | 443 | 1118 |
| | 9·2 | 137 | 849 | 2177 | | | | | | | 21·4 | 158 | 918 | 1250 | | 21·4 | 78 | 589 | 1802 |
| | 10·3 | 156 | 956 | 1434 | | | | | | | 22·2 | 128 | 1051 | 2051 | | 22·4 | 101 | 850 | 1859 |
| | 11·3 | 124 | 979 | 1719 | | | | | | | 23·5 | 77 | 671 | 1036 | | 23·4 | 107 | 924 | 1670 |
| | 12·3 | 96 | 793 | 908 | | | | | | | 24·5 | 62 | 538 | 1329 | | 24·2 | 83 | 789 | 820 |
| | 13·2 | 118 | 699 | 1443 | | | | | | | 25·2 | 24 | 414 | 1849 | | 25·4 | 116 | 794 | 1839 |
| | 14·4 | 94 | 583 | 2189 | | | | | | | 26·2 | 33 | 195 | 1144 | | 26·5 | 112 | 783 | 1175 |
| | 15·3 | 65 | 346 | 2096 | | | | | | | 27·2 | 53 | 283 | 2574 | | 27·4 | 118 | 884 | 1238 |
| | 16·5 | 64 | 456 | 352 | | | | | | | 28·2 | 107 | 760 | 2952 | | 28·4 | 190 | 1186 | 867 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1885 d | | | | 1885 d | | | | 1885 d | | | | 1885 d | | | |
| Apr. 29·3 | 197 | 1306 | 1526 | June 24·4 | 164 | 2771 | 2675 | Aug. 18·2 | 171 | 710 | 2664 | Oct. 13·2 | 15 | 121 | 1536 |
| 30·4 | 143 | 1466 | 1095 | 25·3 | 116 | 2014 | 3438 | 19·5 | 142 | 626 | 2081 | 14·2 | 4 | 28 | 850 |
| | | | | 26 | (107 | 1783 | 1851) | 20·5 | 79 | 566 | 1027 | 15·4 | 0 | 0 | 222 |
| | | | | 27·4 | 97 | 1551 | 263 | 21·5 | 72 | 354 | 1571 | 16·4 | 0 | 0 | 759 |
| | | | | 28·4 | 207 | 1635 | 631 | 22·5 | 58 | 353 | 200 | 17·2 | 5 | 134 | 1591 |
| May 1·4 | 199 | 1594 | 1951 | 29·6 | 120 | 1726 | 436 | 23·2 | 82 | 477 | 1185 | 18·1 | 60 | 386 | 1580 |
| 2·4 | 194 | 1693 | 1513 | 30·4 | 148 | 2107 | 883 | 24·6 | 47 | 555 | 1858 | 19·4 | 58 | 741 | 984 |
| 3·6 | 164 | 1700 | 1384 | | | | | 25·5 | 37 | 518 | 907 | 20·5 | 73 | 716 | 1275 |
| 4·5 | 215 | 1801 | 2256 | | | | | 26·5 | 43 | 499 | 1082 | 21·3 | 91 | 826 | 1557 |
| 5·3 | 325 | 1858 | 1094 | | | | | 27·5 | 80 | 797 | 313 | 22·4 | 129 | 1064 | 1176 |
| 6·5 | 293 | 2261 | 1255 | July 1·5 | 250 | 2281 | 1711 | 28·5 | 40 | 994 | 590 | 23·2 | 184 | 1299 | 1521 |
| 7·5 | 215 | 2127 | 2092 | 2·4 | 202 | 1993 | 2150 | 29·4 | 99 | 1202 | 569 | 24·2 | 265 | 1278 | 519 |
| 8·4 | 313 | 2238 | 1398 | 3·5 | 205 | 1761 | 1629 | 30 | (198 | 1483 | 285) | 25·6 | 108 | 1363 | 237 |
| 9·4 | 191 | 1763 | 1290 | 4·5 | 213 | 1671 | 707 | 31·2 | 297 | 1764 | 1416 | 26·3 | 226 | 1797 | 2354 |
| 10·5 | 62 | 1082 | 639 | 5·3 | 334 | 1679 | 3416 | | | | | 27·4 | 209 | 1667 | 2764 |
| 11·4 | 69 | 870 | 266 | 6·5 | 310 | 2141 | 1191 | | | | | 28·4 | 127 | 1313 | 1349 |
| 12·4 | 62 | 615 | 1223 | 7·5 | 197 | 2669 | 758 | | | | | 29·4 | 140 | 1274 | 1061 |
| 13 | (46 | 419 | 859) | 8·4 | 292 | 2397 | 1122 | Sept. 1·4 | 157 | 1920 | 438 | 30·2 | 201 | 1307 | 1840 |
| 14·4 | 29 | 223 | 494 | 9·5 | 206 | 1975 | 2365 | 2·4 | 315 | 2581 | 1938 | 31·2 | 191 | 1183 | 1416 |
| 15·4 | 16 | 139 | 520 | 10·4 | 83 | 1640 | 2014 | 3·4 | 147 | 1678 | 1235 | | | | |
| 16·4 | 23 | 172 | 768 | 11·4 | 82 | 1244 | 1804 | 4·5 | 93 | 1273 | 185 | | | | |
| 17·5 | 12 | 208 | 580 | 12·2 | 168 | 897 | 3084 | 5·4 | 124 | 1178 | 300 | | | | |
| 18·4 | 79 | 589 | 453 | 13·5 | 188 | 1339 | 2015 | 6·4 | 57 | 735 | 868 | Nov. 1·4 | 73 | 729 | 680 |
| 19·4 | 95 | 896 | 596 | 14·5 | 186 | 1542 | 1798 | 7·3 | 81 | 551 | 1742 | 2·4 | 71 | 542 | 94 |
| 20·5 | 351 | 2030 | 1948 | 15·5 | 153 | 1664 | 981 | 8·4 | 67 | 556 | 887 | 3·1 | 95 | 545 | 1177 |
| 21·6 | 362 | 2431 | 2889 | 16·5 | 131 | 1688 | 1053 | 9·4 | 91 | 674 | 588 | 4·1 | 93 | 455 | 1189 |
| 22·5 | 451 | 2743 | 1367 | 17·5 | 250 | 1951 | 1694 | 10·3 | 196 | 948 | 2414 | 5·1 | 75 | 325 | 587 |
| 23·4 | 349 | 2615 | 1790 | 18·2 | 430 | 2177 | 1874 | 11·2 | 229 | 954 | 1709 | 6·1 | 72 | 372 | 1408 |
| 24·4 | 381 | 2858 | 2282 | 19·6 | 245 | 1709 | 1733 | 12·2 | 155 | 1187 | 402 | 7·1 | 67 | 314 | 941 |
| 25 | (379 | 2686 | 2332) | 20·6 | 161 | 1657 | 2158 | 13·2 | 194 | 1379 | 583 | 8·1 | 47 | 228 | 881 |
| 26·3 | 377 | 2514 | 2382 | 21·5 | 154 | 1588 | 1096 | 14·6 | 128 | 1332 | 457 | 9·1 | 52 | 355 | 624 |
| 27·4 | 221 | 2009 | 2353 | 22·5 | 102 | 1462 | 714 | 15·4 | 95 | 816 | 737 | 10·1 | 124 | 728 | 1111 |
| 28·5 | 128 | 1116 | 3279 | 23·4 | 234 | 1508 | 1170 | 16·6 | 96 | 802 | 748 | 11·1 | 89 | 781 | 1218 |
| 29·4 | 70 | 895 | 3969 | 24·5 | 186 | 1361 | 1104 | 17·2 | 139 | 743 | 1990 | 12·1 | 77 | 564 | 1613 |
| 30·4 | 51 | 526 | 2473 | 25·6 | 205 | 1046 | 685 | 18·5 | 67 | 526 | 1262 | 13·2 | 125 | 627 | 1730 |
| 31·2 | 85 | 604 | 3149 | 26·5 | 88 | 986 | 670 | 19·2 | 45 | 413 | 838 | 14·1 | 187 | 891 | 1149 |
| | | | | 27·4 | 119 | 870 | 1034 | 20·6 | 0 | 5 | 231 | 15·5 | 197 | 1272 | 0 |
| | | | | 28·4 | 169 | 870 | 3392 | 21·4 | 12 | 188 | 804 | 16·4 | 212 | 1534 | 288 |
| | | | | 29·5 | 51 | 619 | 2809 | 22·4 | 51 | 406 | 454 | 17·5 | 230 | 1583 | 222 |
| June 1·4 | 100 | 1081 | 1526 | 30·5 | 56 | 556 | 1642 | 23·4 | 21 | 262 | 347 | 18·4 | 229 | 1594 | 543 |
| 2·4 | 146 | 1413 | 973 | 31·5 | 33 | 581 | 697 | 24·6 | 4 | 245 | 0 | 19·2 | 167 | 1439 | 1003 |
| 3·4 | 162 | 1854 | 1414 | | | | | 25·4 | 80 | 754 | 966 | 20·1 | 214 | 1072 | 645 |
| 4·4 | 288 | 2063 | 1939 | | | | | 26·4 | 80 | 935 | 361 | 21·5 | 104 | 726 | 531 |
| 5·4 | 193 | 2045 | 444 | | | | | 27·1 | 239 | 1063 | 753 | 22·2 | 104 | 645 | 1281 |
| 6·2 | 375 | 2298 | 1625 | | | | | 28·5 | 121 | 952 | 578 | 23·2 | 76 | 399 | 1418 |
| 7·4 | 287 | 2187 | 1213 | Aug. 1·4 | 103 | 630 | 776 | 29·2 | 164 | 1032 | 1147 | 24·2 | 15 | 217 | 1211 |
| 8·3 | 519 | 2686 | 1539 | 2·5 | 84 | 577 | 1131 | 30·2 | 147 | 709 | 1590 | 25·2 | 0 | 0 | 405 |
| 9·2 | 490 | 2552 | 2327 | 3·2 | 52 | 491 | 1157 | | | | | 26·3 | 0 | 32 | 639 |
| 10·4 | 295 | 2443 | 472 | 4·4 | 18 | 387 | 583 | | | | | 27·5 | 0 | 0 | 246 |
| 11·4 | 288 | 2195 | 284 | 5·5 | 65 | 559 | 1851 | | | | | 28·2 | 13 | 52 | 412 |
| 12·4 | 357 | 2375 | 2114 | 6·4 | 48 | 516 | 485 | Oct. 1·4 | 69 | 791 | 1288 | 29·1 | 4 | 27 | 437 |
| 13·4 | 190 | 1915 | 645 | 7·5 | 103 | 817 | 3100 | 2·2 | 201 | 1048 | 2384 | 30·1 | 0 | 0 | 820 |
| 14·5 | 163 | 1546 | 1602 | 8·4 | 138 | 1190 | 3310 | 3·4 | 121 | 1119 | 1149 | | | | |
| 15·5 | 188 | 1811 | 2124 | 9·2 | 190 | 1281 | 1409 | 4·6 | 173 | 1123 | 367 | | | | |
| 16·4 | 324 | 2536 | 2260 | 10·5 | 209 | 1528 | 910 | 5·2 | 268 | 1451 | 505 | | | | |
| 17·2 | 403 | 3029 | 2168 | 11·5 | 190 | 1623 | 2272 | 6·4 | 202 | 1472 | 362 | Dec. 1·5 | 0 | 0 | 295 |
| 18·5 | 370 | 3434 | 661 | 12·4 | 126 | 1264 | 1462 | 7·4 | 216 | 1473 | 440 | 2·4 | 2 | 77 | 114 |
| 19·5 | 381 | 3339 | 256 | 13·4 | 151 | 1230 | 970 | 8·2 | 254 | 1395 | 1611 | 3·2 | 20 | 147 | 524 |
| 20·4 | 329 | 3980 | 656 | 14·5 | 123 | 1017 | 639 | 9·4 | 131 | 999 | 69 | 4·6 | 0 | 51 | 246 |
| 21·5 | 377 | 4483 | 222 | 15·4 | 109 | 800 | 707 | 10·2 | 141 | 956 | 1967 | 5·3 | 1 | 68 | 308 |
| 22·4 | 300 | 3921 | 941 | 16·4 | 106 | 899 | 1670 | 11·2 | 148 | 769 | 2322 | 6·1 | 0 | 0 | 272 |
| 23·4 | 400 | 3504 | 2348 | 17·4 | 78 | 690 | 848 | 12·3 | 92 | 445 | 1617 | 7·2 | 0 | 0 | 445 |

Total Projected Areas of Sun Spots and Faculæ—*continued.*

| Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | | Greenwich Civil Time. | Projected Areas. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. | | Umbræ. | Whole Spots. | Faculæ. |
| 1885 d | | | | 1885 d | | | | 1885 d | | | | 1885 d | | | |
| Dec. 8·2 | 0 | 0 | 657 | Dec. 14·2 | 48 | 324 | 1216 | Dec. 20·2 | 75 | 396 | 827 | Dec. 26·1 | 121 | 647 | 475 |
| 9·2 | 3 | 28 | 683 | 15·5 | 49 | 280 | 0 | 21·3 | 49 | 428 | 2021 | 27·1 | 126 | 746 | 369 |
| 10·5 | 4 | 52 | 121 | 16·5 | 53 | 275 | 0 | 22·2 | 68 | 420 | 1801 | 28·1 | 86 | 642 | 286 |
| 11·4 | 25 | 148 | 812 | 17·2 | 49 | 268 | 792 | 23·1 | 73 | 424 | 1271 | 29·5 | 54 | 423 | 249 |
| 12·2 | 33 | 259 | 852 | 18·2 | 34 | 201 | 987 | 24·5 | 79 | 591 | 892 | 30·1 | 65 | 461 | 508 |
| 13·2 | 49 | 373 | 919 | 19·1 | 68 | 303 | 822 | 25·1 | 124 | 711 | 895 | 31·2 | 50 | 383 | 614 |

ROYAL OBSERVATORY, GREENWICH.

# MEAN AREAS

AND

# MEAN HELIOGRAPHIC LATITUDE

OF

# SUN SPOTS AND FACULÆ

FOR EACH ROTATION OF THE SUN

FROM

## 1874 APRIL 27 TO 1886 JANUARY 16

AND

FOR EACH YEAR

FROM

## 1874-1885.

MEAN AREAS of SUN SPOTS and FACULÆ, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at the OBSERVATORY of HARVARD COLLEGE, CAMBRIDGE, U.S.A., at the MELBOURNE OBSERVATORY, AUSTRALIA, at DEHRA DÛN in INDIA, and at the ROYAL ALFRED OBSERVATORY, MAURITIUS, for each synodic ROTATION of the SUN, and for each YEAR, from 1874 April 27 to 1886 January 16.

The Mean Areas have been formed by taking the Means of the Areas for each day of observation throughout each Rotation of the Sun and throughout each Year, the projected Areas being the Areas as measured on the photographs and expressed in millionths of the Sun's apparent disk, and the Areas Corrected for Foreshortening being expressed in millionths of the Sun's visible hemisphere.

The Rotations adopted in the following table (which is intended to supersede those for the years 1873–1885 printed in the Greenwich Observations for 1884 and 1885) correspond to the synodic rotation of the Sun, and the commencement of each is defined by the coincidence of the assumed prime meridian with the central meridian, the assumed prime meridian being that meridian which passed through the ascending node at mean noon on January 1, 1854, and the assumed period of the Sun's sidereal rotation being 25·38 days. The rotations adopted in the volumes of Greenwich Observations, 1877 to 1883, correspond, on the other hand, to the sidereal rotation of the Sun, the commencement of each being defined by the coincidence of the assumed prime meridian with the ascending node. The numeration of the rotations is in continuation of Carrington's series (*Observations of Solar Spots made at Redhill* by R. C. Carrington, F.R.S.), No. 1 being the rotation commencing 1853 November 9. The dates of commencement of the rotations are given in GREENWICH CIVIL TIME, reckoning from midnight.

| No. of Rotation. | Date of Commencement of each Rotation. | | | No. of Days on which Photographs were taken. | Mean of Daily Areas. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Projected. | | | Corrected for Foreshortening. | | |
| | | | | | Umbræ. | Whole Spots. | Faculæ. | Umbræ. | Whole Spots. | Faculæ. |
| | | | d | | | | | | | |
| 275 | 1874 | April | 27·56 | 17 | 98 | 833 | 39 | 64 | 597 | 68 |
| 276 | | May | 24·79 | 13 | 42 | 335 | 185 | 28 | 243 | 211 |
| 277 | | June | 20·99 | 20 | 219 | 1590 | 921 | 140 | 1069 | 1171 |
| 278 | | July | 18·19 | 14 | 251 | 1399 | 1897 | 198 | 1175 | 2325 |
| 279 | | August | 14·42 | 20 | 115 | 767 | 1138 | 80 | 566 | 1452 |
| 280 | | September | 10·67 | 14 | 149 | 1001 | 1749 | 113 | 788 | 1932 |
| 281 | | October | 7·95 | 13 | 56 | 318 | 791 | 42 | 242 | 841 |
| 282 | | November | 4·23 | 14 | 107 | 643 | 629 | 67 | 458 | 767 |
| 283 | | December | 1·55 | 9 | 35 | 304 | 226 | 21 | 192 | 283 |
| 284 | | December | 28·88 | 5 | 60 | 307 | 1083 | 41 | 207 | 1336 |
| 285 | 1875 | January | 25·21 | 22 | 31 | 173 | 607 | 29 | 155 | 704 |
| 286 | | February | 21·55 | 25 | 116 | 679 | 633 | 87 | 530 | 734 |
| 287 | | March | 20·87 | 24 | 95 | 570 | 570 | 63 | 395 | 659 |
| 288 | | April | 17·16 | 25 | 85 | 571 | 489 | 60 | 417 | 577 |
| 289 | | May | 14·39 | 21 | 30 | 217 | 344 | 19 | 137 | 387 |
| 290 | | June | 10·66 | 21 | 109 | 593 | 272 | 75 | 416 | 328 |
| 291 | | July | 7·80 | 24 | 24 | 156 | 317 | 15 | 97 | 433 |
| 292 | | August | 4·01 | 21 | 25 | 136 | 268 | 20 | 117 | 342 |
| 293 | | August | 31·26 | 20 | 2 | 22 | 406 | 3 | 21 | 466 |
| 294 | | September | 27·51 | 19 | 19 | 137 | 306 | 12 | 87 | 371 |
| 295 | | October | 24·81 | 17 | 60 | 338 | 375 | 41 | 236 | 387 |
| 296 | | November | 21·11 | 13 | 72 | 415 | 340 | 51 | 323 | 398 |
| 297 | | December | 18·42 | 11 | 20 | 158 | 163 | 11 | 90 | 218 |
| 298 | 1876 | January | 14·76 | 17 | 62 | 406 | 200 | 44 | 322 | 209 |
| 299 | | February | 11·11 | 24 | 76 | 428 | 201 | 48 | 271 | 283 |
| 300 | | March | 9·44 | 24 | 75 | 373 | 414 | 52 | 264 | 483 |
| 301 | | April | 5·74 | 25 | 2 | 28 | 242 | 1 | 19 | 304 |
| 302 | | May | 2·99 | 23 | 17 | 72 | 291 | 11 | 48 | 340 |
| 303 | | May | 30·21 | 21 | 1 | 6 | 128 | 1 | 5 | 140 |
| 304 | | June | 26·41 | 23 | 17 | 98 | 270 | 14 | 80 | 287 |
| 305 | | July | 23·61 | 23 | 10 | 56 | 159 | 6 | 36 | 185 |
| 306 | | August | 19·84 | 19 | 14 | 87 | 222 | 9 | 59 | 248 |

Mean Areas of Sun Spots and Faculæ—*continued.*

| No. of Rotation. | Date of Commencement of each Rotation. | | | No. of Days on which Photographs were taken. | Mean of Daily Areas. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Projected. | | | Corrected for Foreshortening. | | |
| | | | | | Umbræ. | Whole Spots. | Faculæ. | Umbræ. | Whole Spots. | Faculæ. |
| | | | d | | | | | | | |
| 307 | 1876 | September | 16·09 | 20 | 42 | 220 | 151 | 27 | 145 | 186 |
| 308 | | October | 13·37 | 18 | 29 | 177 | 251 | 28 | 177 | 321 |
| 309 | | November | 9·67 | 16 | 23 | 105 | 91 | 18 | 81 | 127 |
| 310 | | December | 6·99 | 13 | 52 | 314 | 47 | 41 | 233 | 52 |
| 311 | 1877 | January | 3·32 | 23 | 37 | 279 | 129 | 28 | 205 | 161 |
| 312 | | January | 30·66 | 15 | 10 | 59 | 69 | 10 | 56 | 97 |
| 313 | | February | 27·00 | 16 | 20 | 142 | 159 | 16 | 101 | 206 |
| 314 | | March | 26·31 | 17 | 17 | 108 | 189 | 14 | 85 | 235 |
| 315 | | April | 22·58 | 20 | 34 | 158 | 211 | 22 | 106 | 240 |
| 316 | | May | 19·81 | 18 | 32 | 146 | 145 | 19 | 90 | 155 |
| 317 | | June | 16·02 | 20 | 6 | 23 | 107 | 4 | 14 | 125 |
| 318 | | July | 13·22 | 17 | 3 | 10 | 66 | 2 | 6 | 73 |
| 319 | | August | 9·43 | 17 | 11 | 52 | 172 | 11 | 54 | 191 |
| 320 | | September | 5·68 | 16 | 21 | 98 | 174 | 14 | 73 | 134 |
| 321 | | October | 2·95 | 15 | 1 | 14 | 54 | 3 | 40 | 58 |
| 322 | | October | 30·24 | 20 | 104 | 592 | 225 | 71 | 403 | 273 |
| 323 | | November | 26·55 | 18 | 29 | 166 | 69 | 18 | 99 | 69 |
| 324 | | December | 23·87 | 19 | 0 | 1 | 70 | 0 | 2 | 81 |
| 325 | 1878 | January | 20·21 | 22 | 11 | 66 | 47 | 5 | 28 | 30 |
| 326 | | February | 16·55 | 27 | 13 | 71 | 94 | 7 | 39 | 78 |
| 327 | | March | 15·88 | 25 | 4 | 26 | 45 | 2 | 13 | 68 |
| 328 | | April | 12·17 | 25 | 0 | 0 | 5 | 0 | 0 | 6 |
| 329 | | May | 9·42 | 27 | 24 | 129 | 232 | 15 | 81 | 203 |
| 330 | | June | 5·63 | 27 | 4 | 20 | 72 | 4 | 24 | 98 |
| 331 | | July | 2·82 | 25 | 0 | 1 | 31 | 0 | 0 | 32 |
| 332 | | July | 30·03 | 25 | 0 | 0 | 9 | 0 | 0 | 14 |
| 333 | | August | 26·27 | 28 | 19 | 87 | 84 | 13 | 61 | 103 |
| 334 | | September | 22·53 | 27 | 0 | 0 | 54 | 0 | 0 | 65 |
| 335 | | October | 19·81 | 27 | 9 | 48 | 67 | 6 | 34 | 73 |
| 336 | | November | 16·12 | 27 | 0 | 2 | 28 | 0 | 3 | 34 |
| 337 | | December | 13·43 | 28 | 0 | 1 | 15 | 1 | 2 | 25 |
| 338 | 1879 | January | 9·77 | 26 | 0 | 2 | 95 | 0 | 1 | 121 |
| 339 | | February | 6·11 | 25 | 0 | 0 | 14 | 0 | 0 | 15 |
| 340 | | March | 5·44 | 28 | 0 | 0 | 55 | 0 | 0 | 72 |
| 341 | | April | 1·75 | 23 | 18 | 101 | 158 | 10 | 66 | 199 |
| 342 | | April | 29·01 | 24 | 2 | 12 | 167 | 1 | 6 | 143 |
| 343 | | May | 26·23 | 23 | 0 | 0 | 15 | 0 | 0 | 11 |
| 344 | | June | 22·44 | 22 | 23 | 129 | 207 | 15 | 84 | 232 |
| 345 | | July | 19·64 | 23 | 6 | 19 | 48 | 6 | 18 | 52 |
| 346 | | August | 15·86 | 20 | 19 | 99 | 190 | 14 | 73 | 153 |
| 347 | | September | 12·11 | 23 | 7 | 25 | 205 | 5 | 21 | 218 |
| 348 | | October | 9·39 | 22 | 19 | 113 | 160 | 18 | 94 | 195 |
| 349 | | November | 5·68 | 24 | 29 | 168 | 196 | 23 | 139 | 243 |
| 350 | | December | 2·99 | 24 | 12 | 68 | 217 | 7 | 37 | 204 |
| 351 | | December | 30·32 | 26 | 67 | 347 | 565 | 52 | 270 | 657 |
| 352 | 1880 | January | 26·66 | 25 | 94 | 470 | 875 | 74 | 372 | 921 |
| 353 | | February | 23·00 | 27 | 51 | 232 | 861 | 36 | 180 | 927 |
| 354 | | March | 21·32 | 26 | 35 | 151 | 424 | 24 | 107 | 461 |
| 355 | | April | 17·60 | 27 | 94 | 461 | 949 | 77 | 405 | 926 |
| 356 | | May | 14·84 | 27 | 101 | 462 | 407 | 63 | 286 | 478 |
| 357 | | June | 11·04 | 23 | 158 | 746 | 796 | 122 | 557 | 1077 |
| 358 | | July | 8·24 | 24 | 60 | 325 | 1109 | 49 | 265 | 1119 |
| 359 | | August | 4·45 | 25 | 206 | 993 | 849 | 147 | 731 | 1031 |

Mean Areas of Sun Spots and Faculæ—*continued.*

| No. of Rotation. | Date of Commencement of each Rotation. | | | No. of Days on which Photographs were taken. | Mean of Daily Areas. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Projected. | | | Corrected for Foreshortening. | | |
| | | | | | Umbræ. | Whole Spots. | Faculæ. | Umbræ. | Whole Spots. | Faculæ. |
| | | | a | | | | | | | |
| 360 | 1880 | August | 31·69 | 26 | 275 | 1148 | 1051 | 207 | 896 | 1178 |
| 361 | | September | 27·96 | 26 | 201 | 966 | 1005 | 146 | 734 | 1270 |
| 362 | | October | 25·25 | 27 | 79 | 371 | 647 | 50 | 231 | 739 |
| 363 | | November | 21·56 | 22 | 189 | 979 | 1126 | 151 | 759 | 1375 |
| 364 | | December | 18·88 | 24 | 135 | 586 | 817 | 100 | 437 | 929 |
| 365 | 1881 | January | 15·21 | 27 | 260 | 1071 | 1586 | 187 | 772 | 1772 |
| 366 | | February | 11·56 | 26 | 131 | 514 | 2542 | 106 | 420 | 2894 |
| 367 | | March | 10·88 | 27 | 239 | 1133 | 2138 | 160 | 760 | 2210 |
| 368 | | April | 7·18 | 27 | 135 | 630 | 1490 | 93 | 475 | 1802 |
| 369 | | May | 4·44 | 27 | 122 | 569 | 1401 | 93 | 424 | 1542 |
| 370 | | May | 31·65 | 23 | 159 | 797 | 1836 | 117 | 587 | 1973 |
| 371 | | June | 27·85 | 24 | 223 | 1112 | 2254 | 161 | 803 | 2420 |
| 372 | | July | 25·06 | 25 | 240 | 1133 | 1832 | 165 | 776 | 2015 |
| 373 | | August | 21·28 | 25 | 307 | 1569 | 1821 | 214 | 1088 | 2116 |
| 374 | | September | 17·54 | 27 | 154 | 828 | 1616 | 113 | 612 | 1949 |
| 375 | | October | 14·82 | 27 | 155 | 832 | 1286 | 103 | 585 | 1497 |
| 376 | | November | 11·12 | 28 | 321 | 1595 | 1319 | 227 | 1142 | 1517 |
| 377 | | December | 8·44 | 27 | 103 | 551 | 1516 | 78 | 434 | 1959 |
| 378 | 1882 | January | 4·77 | 22 | 89 | 508 | 1248 | 68 | 397 | 1416 |
| 379 | | February | 1·11 | 26 | 164 | 917 | 1599 | 118 | 677 | 1877 |
| 380 | | February | 28·45 | 27 | 262 | 1325 | 1954 | 189 | 952 | 2031 |
| 381 | | March | 27·76 | 27 | 437 | 2615 | 2820 | 313 | 1935 | 2907 |
| 382 | | April | 24·03 | 26 | 429 | 2099 | 2553 | 343 | 1688 | 2736 |
| 383 | | May | 21·26 | 27 | 143 | 790 | 1758 | 107 | 582 | 1880 |
| 384 | | June | 17·46 | 24 | 137 | 734 | 2405 | 84 | 493 | 2298 |
| 385 | | July | 14·66 | 23 | 109 | 658 | 2344 | 82 | 495 | 2542 |
| 386 | | August | 10·88 | 24 | 248 | 1160 | 1947 | 182 | 859 | 1872 |
| 387 | | September | 7·12 | 25 | 324 | 1514 | 2062 | 255 | 1202 | 2185 |
| 388 | | October | 4·40 | 27 | 305 | 1592 | 1940 | 245 | 1296 | 2134 |
| 389 | | October | 31·69 | 27 | 553 | 2664 | 2136 | 398 | 2016 | 2424 |
| 390 | | November | 28·00 | 28 | 88 | 589 | 1545 | 61 | 421 | 1730 |
| 391 | | December | 25·32 | 26 | 225 | 1365 | 1933 | 161 | 966 | 2192 |
| 392 | 1883 | January | 21·66 | 25 | 175 | 1106 | 1710 | 123 | 794 | 1792 |
| 393 | | February | 18·00 | 26 | 64 | 432 | 1402 | 44 | 308 | 1549 |
| 394 | | March | 17·33 | 28 | 222 | 1515 | 1348 | 151 | 1073 | 1617 |
| 395 | | April | 13·62 | 26 | 163 | 1170 | 1355 | 105 | 755 | 1483 |
| 396 | | May | 10·86 | 26 | 136 | 803 | 892 | 99 | 596 | 1031 |
| 397 | | June | 7·07 | 27 | 335 | 2242 | 1222 | 224 | 1563 | 1499 |
| 398 | | July | 4·27 | 20 | 428 | 2765 | 2046 | 296 | 2037 | 2130 |
| 399 | | July | 31·47 | 25 | 98 | 625 | 1366 | 78 | 551 | 1776 |
| 400 | | August | 27·71 | 23 | 394 | 2176 | 1324 | 278 | 1589 | 1647 |
| 401 | | September | 23·97 | 27 | 337 | 1971 | 1749 | 253 | 1478 | 2311 |
| 402 | | October | 21·26 | 27 | 361 | 2197 | 2060 | 248 | 1606 | 2469 |
| 403 | | November | 17·56 | 25 | 233 | 1589 | 1893 | 180 | 1302 | 2268 |
| 404 | | December | 14·88 | 24 | 310 | 2485 | 2720 | 220 | 1909 | 3151 |
| 405 | 1884 | January | 11·22 | 25 | 345 | 2392 | 2562 | 240 | 1716 | 2858 |
| 406 | | February | 7·56 | 23 | 312 | 1937 | 2795 | 234 | 1434 | 3154 |
| 407 | | March | 5·89 | 25 | 249 | 1688 | 1693 | 168 | 1181 | 2168 |
| 408 | | April | 2·19 | 25 | 291 | 2207 | 1879 | 210 | 1651 | 2157 |
| 409 | | April | 29·45 | 26 | 211 | 1580 | 1425 | 147 | 1184 | 1751 |
| 410 | | May | 26·68 | 19 | 154 | 1073 | 1200 | 107 | 795 | 1602 |
| 411 | | June | 22·88 | 17 | 119 | 849 | 1188 | 83 | 661 | 1209 |
| 412 | | July | 20·08 | 21 | 125 | 939 | 1060 | 93 | 757 | 1151 |
| 413 | | August | 16·30 | 24 | 124 | 929 | 1203 | 89 | 646 | 1534 |
| 414 | | September | 12·55 | 22 | 327 | 1991 | 1667 | 235 | 1477 | 2010 |

Mean Areas of Sun Spots and Faculæ—*continued*.

| No. of Rotation. | Date of Commencement of each Rotation. | | | No. of Days on which Photographs were taken. | Mean of Daily Areas. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Projected. | | | Corrected for Foreshortening. | | |
| | | | | | Umbræ. | Whole Spots. | Faculæ. | Umbræ. | Whole Spots. | Faculæ. |
| | | | d | | | | | | | |
| 415 | 1884 | October | 9·83 | 26 | 171 | 1076 | 1642 | 115 | 760 | 2029 |
| 416 | | November | 6·13 | 26 | 99 | 742 | 1700 | 63 | 471 | 1988 |
| 417 | | December | 3·44 | 26 | 175 | 1241 | 1561 | 117 | 852 | 1932 |
| 418 | | December | 30·77 | 25 | 98 | 643 | 1756 | 69 | 473 | 1936 |
| 419 | 1885 | January | 27·11 | 27 | 264 | 1712 | 1396 | 173 | 1178 | 1688 |
| 420 | | February | 23·45 | 28 | 144 | 1133 | 1596 | 100 | 800 | 1937 |
| 421 | | March | 22·76 | 27 | 131 | 1141 | 854 | 89 | 791 | 1038 |
| 422 | | April | 19·04 | 26 | 138 | 1140 | 1235 | 95 | 844 | 1507 |
| 423 | | May | 16·27 | 27 | 247 | 1789 | 1731 | 168 | 1270 | 2016 |
| 424 | | June | 12·47 | 26 | 244 | 2432 | 1448 | 168 | 1712 | 1817 |
| 425 | | July | 9·67 | 27 | 141 | 1170 | 1508 | 104 | 914 | 1829 |
| 426 | | August | 5·89 | 26 | 118 | 951 | 1284 | 77 | 670 | 1492 |
| 427 | | September | 2·13 | 28 | 110 | 863 | 876 | 77 | 633 | 1100 |
| 428 | | September | 29·40 | 27 | 125 | 870 | 1179 | 93 | 666 | 1404 |
| 429 | | October | 26·70 | 27 | 132 | 891 | 1013 | 94 | 620 | 1136 |
| 430 | | November | 23·01 | 28 | 22 | 142 | 589 | 17 | 120 | 723 |
| 431 | | December | 20·33 | 26 | 135 | 936 | 842 | 90 | 654 | 975 |

The above Table supersedes the corresponding Tables given in the volumes of Greenwich Observations for 1884 and 1885.

MEAN AREAS of SUN SPOTS and FACULÆ for each YEAR from 1874 to 1885.

The Mean Projected Areas are expressed in millionths of the Sun's apparent disk.

The Mean Areas corrected for foreshortening are expressed in millionths of the Sun's visible hemisphere.

| Year. | No. of Days on which Photographs were taken. | Mean of Daily Areas. | | | | | |
|---|---|---|---|---|---|---|---|
| | | Projected. | | | Corrected for Foreshortening. | | |
| | | Umbræ. | Whole Spots. | Faculæ. | Umbræ. | Whole Spots. | Faculæ. |
| 1874 | 141 | 121 | 820 | 826 | 84 | 604 | 994 |
| 1875 | 263 | 57 | 341 | 426 | 40 | 248 | 503 |
| 1876 | 271 | 31 | 175 | 217 | 22 | 126 | 257 |
| 1877 | 235 | 26 | 150 | 138 | 19 | 108 | 162 |
| 1878 | 347 | 6 | 34 | 62 | 4 | 22 | 67 |
| 1879 | 318 | 10 | 55 | 129 | 7 | 38 | 136 |
| 1880 | 341 | 124 | 588 | 813 | 91 | 440 | 921 |
| 1881 | 348 | 196 | 946 | 1723 | 140 | 681 | 1951 |
| 1882 | 343 | 248 | 1293 | 2015 | 188 | 1000 | 2154 |
| 1883 | 340 | 251 | 1600 | 1605 | 175 | 1154 | 1864 |
| 1884 | 315 | 208 | 1458 | 1688 | 148 | 1079 | 2034 |
| 1885 | 359 | 145 | 1125 | 1251 | 100 | 807 | 1485 |

The Means of Daily Areas for the Year 1874 refer to a period of eight months, from 1874 April 27 to 1874 December 18.

Many of the photographs taken at Greenwich during the early part of the Year 1874 do not show the Faculæ with sufficient distinctness to allow of their measurement.

The above Table supersedes the coresponding Tables given in the volumes of Greenwich Observations for 1884 and 1885.

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at the OBSERVATORY of HARVARD COLLEGE, CAMBRIDGE, U.S.A., at the MELBOURNE OBSERVATORY, AUSTRALIA, at DEHRA DÛN in INDIA, and at the ROYAL ALFRED OBSERVATORY, MAURITIUS, for each synodic ROTATION of the SUN, and for each YEAR, from 1874 April 27 to 1886 January 16.

The numbers given in the accompanying table have been formed as follows:—

The Heliographic Latitude of each Spot for each day has been multiplied by its Area (corrected for foreshortening), and the sum of the products, for Spots North of the Equator, has been divided by the sum of the corresponding Areas to form Mean Heliographic Latitude of Spotted Area North of Equator; similarly for Spots South of the Equator. In forming the Mean Heliographic Latitude of entire Spotted Area, the algebraic sum of the products for Spots North and South of the Equator has been divided by the sum of the Areas; and for the Mean Distance from the Equator for all Spots, the numerical sum of the products, without regard to the sign of the latitude, has been similarly divided.

The mean Areas have been formed by dividing the sum of the Daily Areas (corrected for foreshortening) by the number of days of observation for each Rotation of the Sun and for each Year, and are expressed in millionths of the Sun's visible hemisphere.

The dates of commencement of the Rotations are given in GREENWICH CIVIL TIME, reckoning from midnight.

| No. of Rotation | Date of Commencement of each Rotation. | No. of Days on which Photographs were taken. | Spots North of the Equator. | | Spots South of the Equator. | | Mean Heliographic Latitude of entire Spotted Area. | Mean Distance from Equator of all Spots. |
|---|---|---|---|---|---|---|---|---|
| | | | Mean of Daily Areas. | Mean Heliographic Latitude. | Mean of Daily Areas. | Mean Heliographic Latitude. | | |
| | d | | | ° | | ° | ° | ° |
| 275 | 1874 Apr. 27·56 | 17 | 117 | 8·06 | 481 | 8·71 | − 5·42 | 8·58 |
| 276 | May 24·79 | 13 | 159 | 11·19 | 84 | 8·84 | + 4·29 | 10·38 |
| 277 | June 20·99 | 20 | 613 | 12·09 | 457 | 9·03 | + 3·07 | 10·78 |
| 278 | July 18·19 | 14 | 861 | 7·27 | 314 | 18·13 | + 0·48 | 10·17 |
| 279 | Aug. 14·42 | 20 | 140 | 2·94 | 426 | 15·20 | −10·62 | 12·17 |
| 280 | Sept. 10·67 | 14 | 43 | 11·06 | 745 | 11·93 | −10·68 | 11·88 |
| 281 | Oct. 7·95 | 13 | 56 | 9·51 | 186 | 12·87 | − 7·66 | 12·09 |
| 282 | Nov. 4·23 | 14 | 214 | 9·50 | 244 | 15·58 | − 3·86 | 12·73 |
| 283 | Dec. 1·55 | 9 | 163 | 6·27 | 29 | 6·78 | + 4·38 | 6·35 |
| 284 | Dec. 28·88 | 5 | 128 | 6·57 | 79 | 13·42 | − 1·08 | 9·20 |
| 285 | 1875 Jan. 25·21 | 22 | 130 | 17·29 | 25 | 11·95 | +12·53 | 16·42 |
| 286 | Feb. 21·55 | 25 | 373 | 16·23 | 157 | 9·17 | + 8·73 | 14·14 |
| 287 | Mar. 20·87 | 24 | 193 | 13·39 | 202 | 14·30 | − 0·77 | 13·85 |
| 288 | Apr. 17·16 | 25 | 312 | 9·38 | 106 | 10·02 | + 4·47 | 9·55 |
| 289 | May 14·39 | 21 | 8 | 10·37 | 129 | 10·34 | − 9·15 | 10·34 |
| 290 | June 10·60 | 21 | 171 | 6·96 | 245 | 8·28 | − 2·01 | 7·74 |
| 291 | July 7·80 | 24 | 97 | 10·22 | 0 | ... | +10·22 | 10·22 |
| 292 | Aug. 4·01 | 21 | 116 | 7·39 | 1 | 10·30 | + 7·29 | 7·40 |
| 293 | Aug. 31·26 | 20 | 19 | 13·30 | 3 | 16·29 | + 9·84 | 13·65 |
| 294 | Sept. 27·51 | 19 | 17 | 10·51 | 69 | 8·25 | − 4·48 | 8·70 |
| 295 | Oct. 24·81 | 17 | 196 | 11·05 | 40 | 7·39 | + 7·93 | 10·43 |
| 296 | Nov. 21·11 | 13 | 21 | 12·01 | 302 | 8·66 | +11·96 | 8·88 |
| 297 | Dec. 18·42 | 11 | 5 | 10·23 | 85 | 9·86 | − 8·75 | 9·86 |
| 298 | 1876 Jan. 14·76 | 17 | 44 | 12·27 | 279 | 12·51 | − 9·15 | 12·48 |
| 299 | Feb. 11·11 | 24 | 18 | 9·06 | 253 | 13·04 | −11·56 | 12·78 |
| 300 | Mar. 9·44 | 24 | 194 | 14·66 | 70 | 8·64 | + 8·46 | 13·06 |
| 301 | Apr. 5·74 | 25 | 9 | 10·91 | 10 | 10·68 | − 0·83 | 10·78 |
| 302 | May 2·99 | 23 | 0 | ... | 48 | 13·54 | −13·54 | 13·54 |
| 303 | May 30·21 | 21 | 2 | 0·60 | 3 | 0·66 | − 0·19 | 0·63 |
| 304 | June 26·41 | 23 | 23 | 6·12 | 57 | 7·30 | − 3·40 | 6·96 |
| 305 | July 23·61 | 23 | 4 | 10·10 | 32 | 8·95 | − 6·95 | 9·06 |
| 306 | Aug. 19·84 | 19 | 0 | ... | 59 | 11·03 | −11·03 | 11·03 |
| 307 | Sept. 16·09 | 20 | 2 | 11·40 | 143 | 5·97 | − 5·80 | 6·02 |

Mean Heliographic Latitude of Sun Spots—*continued.*

| No. of Rotation. | Date of Commencement of each Rotation. | No. of Days on which Photographs were taken. | Spots North of the Equator. | | Spots South of the Equator. | | Mean Heliographic Latitude of entire Spotted Area. | Mean Distance from Equator of all Spots. |
|---|---|---|---|---|---|---|---|---|
| | | | Mean of Daily Areas. | Mean Heliographic Latitude. | Mean of Daily Areas. | Mean Heliographic Latitude. | | |
| | d | | | ° | | ° | ° | ° |
| 308 | 1876 Oct. 13·37 | 18 | 33 | 10·49 | 144 | 11·16 | − 7·17 | 11·04 |
| 309 | Nov. 9·67 | 16 | 19 | 1·91 | 62 | 10·69 | − 7·73 | 8·64 |
| 310 | Dec. 6·99 | 13 | 233 | 10·35 | 0 | ... | +10·35 | 10·35 |
| 311 | 1877 Jan. 3·32 | 23 | 199 | 9·94 | 6 | 8·01 | + 9·39 | 9·88 |
| 312 | Jan. 30·66 | 15 | 52 | 9·16 | 4 | 7·48 | + 8·08 | 9·05 |
| 313 | Feb. 27·00 | 16 | 14 | 7·46 | 86 | 10·48 | − 7·90 | 10·04 |
| 314 | Mar. 26·31 | 17 | 2 | 0·40 | 83 | 14·43 | −14·01 | 14·03 |
| 315 | Apr. 22·58 | 20 | 61 | 10·90 | 45 | 10·32 | + 1·86 | 10·65 |
| 316 | May 19·81 | 18 | 14 | 8·95 | 77 | 10·07 | − 7·22 | 9·90 |
| 317 | June 16·02 | 20 | 4 | 10·31 | 10 | 12·80 | − 5·72 | 12·03 |
| 318 | July 13·22 | 17 | 4 | 12·31 | 2 | 12·04 | + 2·93 | 12·21 |
| 319 | Aug. 9·43 | 17 | 54 | 8·90 | 0 | ... | + 8·90 | 8·90 |
| 320 | Sept. 5·68 | 16 | 45 | 8·95 | 27 | 7·93 | + 2·64 | 8·57 |
| 321 | Oct. 2·95 | 15 | 0 | ... | 40 | 8·10 | − 8·10 | 8·10 |
| 322 | Oct. 30·24 | 20 | 0 | ... | 403 | 8·27 | − 8·27 | 8·27 |
| 323 | Nov. 26·55 | 18 | 0 | ... | 99 | 10·24 | −10·24 | 10·24 |
| 324 | Dec. 23·87 | 19 | 2 | 7·50 | 0 | ... | + 7·50 | 7·50 |
| 325 | 1878 Jan. 20·21 | 22 | 16 | 7·65 | 12 | 8·37 | + 0·56 | 7·96 |
| 326 | Feb. 16·55 | 27 | 38 | 6·41 | 1 | 7·95 | + 6·24 | 6·43 |
| 327 | Mar. 15·88 | 25 | 13 | 7·66 | 0 | ... | + 7·66 | 7·66 |
| 328 | Apr. 12·17 | 25 | 0 | ... | 0 | ... | ... | ... |
| 329 | May 9·42 | 27 | 81 | 8·26 | 0 | ... | + 8·26 | 8·26 |
| 330 | June 5·63 | 27 | 23 | 13·62 | 1 | 6·70 | +13·17 | 13·47 |
| 331 | July 2·82 | 25 | 1 | 15·30 | 0 | ... | +15·30 | 15·30 |
| 332 | July 30·03 | 25 | 0 | ... | 0 | ... | ... | ... |
| 333 | Aug. 26·27 | 28 | 61 | 3·87 | 0 | ... | + 3·87 | 3·87 |
| 334 | Sept. 22·53 | 27 | 0 | ... | 0 | ... | ... | ... |
| 335 | Oct. 19·81 | 27 | 34 | 10·50 | 0 | ... | +10·50 | 10·50 |
| 336 | Nov. 16·12 | 27 | 3 | 4·14 | 0 | ... | + 4·14 | 4·14 |
| 337 | Dec. 13·43 | 28 | 0 | ... | 2 | 1·57 | − 1·57 | 1·57 |
| 338 | 1879 Jan. 9·77 | 26 | 0 | ... | 1 | 23·75 | −23·75 | 23·75 |
| 339 | Feb. 6·11 | 25 | 0 | ... | 0 | ... | ... | ... |
| 340 | Mar. 5·44 | 28 | 0 | ... | 0 | ... | ... | ... |
| 341 | Apr. 1·75 | 23 | 0 | ... | 66 | 20·81 | −20·81 | 20·81 |
| 342 | Apr. 29·01 | 24 | 6 | 14·25 | 0 | ... | +14·25 | 14·25 |
| 343 | May 26·23 | 23 | 0 | ... | 0 | ... | ... | ... |
| 344 | June 22·44 | 22 | 32 | 8·34 | 53 | 26·65 | −13·47 | 19·75 |
| 345 | July 19·64 | 23 | 14 | 9·97 | 4 | 17·40 | + 3·46 | 11·74 |
| 346 | Aug. 15·86 | 20 | 73 | 27·86 | 0 | ... | +27·86 | 27·86 |
| 347 | Sept. 12·11 | 23 | 15 | 24·64 | 6 | 23·11 | +11·00 | 24·20 |
| 348 | Oct. 9·39 | 22 | 16 | 20·48 | 77 | 22·93 | −15·40 | 22·50 |
| 349 | Nov. 5·68 | 24 | 13 | 30·46 | 127 | 21·94 | −17·16 | 22·71 |
| 350 | Dec. 2·99 | 24 | 0 | ... | 37 | 19·77 | −19·77 | 19·77 |
| 351 | Dec. 30·32 | 26 | 143 | 21·38 | 127 | 15·68 | + 3·91 | 18·69 |
| 352 | 1880 Jan. 26·66 | 25 | 298 | 22·03 | 75 | 17·49 | +14·10 | 21·12 |
| 353 | Feb. 23·00 | 27 | 87 | 19·92 | 93 | 26·03 | − 3·87 | 23·08 |
| 354 | Mar. 21·32 | 26 | 60 | 17·90 | 47 | 21·83 | + 0·46 | 19·63 |
| 355 | Apr. 17·60 | 27 | 404 | 23·46 | 1 | 28·10 | +23·37 | 23·47 |
| 356 | May 14·84 | 27 | 281 | 14·68 | 4 | 21·19 | +14·14 | 14·78 |
| 357 | June 11·04 | 23 | 87 | 23·39 | 470 | 22·16 | +15·08 | 22·35 |
| 358 | July 8·24 | 24 | 224 | 17·73 | 41 | 33·02 | + 9·88 | 20·10 |
| 359 | Aug. 4·45 | 25 | 627 | 18·98 | 103 | 18·06 | +13·75 | 18·85 |
| 360 | Aug. 31·69 | 26 | 318 | 20·47 | 578 | 17·44 | − 3·99 | 18·52 |
| 361 | Sept. 27·96 | 26 | 354 | 19·01 | 379 | 19·67 | − 0·99 | 19·35 |
| 362 | Oct. 25·25 | 27 | 125 | 20·54 | 106 | 15·82 | + 3·87 | 18·38 |
| 363 | Nov. 21·56 | 22 | 486 | 20·88 | 273 | 13·78 | + 8·43 | 18·33 |
| 364 | Dec. 18·88 | 24 | 317 | 22·70 | 120 | 24·45 | − 9·70 | 23·18 |

Mean Heliographic Latitude of Sun Spots—*continued.*

| No. of Rotation. | Date of Commencement of each Rotation. | No. of Days on which Photographs were taken. | Spots North of the Equator. | | Spots South of the Equator. | | Mean Heliographic Latitude of entire Spotted Area. | Mean Distance from Equator of all Spots. |
|---|---|---|---|---|---|---|---|---|
| | | | Mean of Daily Areas. | Mean Heliographic Latitude. | Mean of Daily Areas. | Mean Heliographic Latitude. | | |
| | d | | | ° | | ° | ° | ° |
| 365 | 1881 Jan. 15·21 | 27 | 471 | 17·93 | 301 | 16·88 | + 4·38 | 17·52 |
| 366 | Feb. 11·56 | 26 | 195 | 18·65 | 225 | 19·32 | − 1·72 | 19·01 |
| 367 | Mar. 10·88 | 27 | 378 | 15·89 | 382 | 20·14 | − 2·22 | 18·03 |
| 368 | Apr. 7·18 | 27 | 210 | 12·48 | 265 | 18·02 | − 4·53 | 15·57 |
| 369 | May 4·44 | 27 | 149 | 16·91 | 275 | 18·72 | − 6·16 | 18·08 |
| 370 | May 31·65 | 23 | 292 | 19·01 | 295 | 14·88 | + 2·04 | 16·86 |
| 371 | June 27·85 | 24 | 523 | 18·73 | 281 | 17·10 | + 6·21 | 18·16 |
| 372 | July 25·06 | 25 | 631 | 20·89 | 145 | 17·26 | +13·77 | 20·21 |
| 373 | Aug. 21·28 | 25 | 847 | 18·47 | 241 | 20·77 | + 9·76 | 18·98 |
| 374 | Sept. 17·54 | 27 | 507 | 17·80 | 105 | 17·89 | +11·65 | 17·81 |
| 375 | Oct. 14·82 | 27 | 444 | 16·61 | 141 | 18·13 | + 8·21 | 16·98 |
| 376 | Nov. 11·12 | 28 | 886 | 16·14 | 256 | 19·61 | + 8·13 | 16·91 |
| 377 | Dec. 8·44 | 27 | 381 | 23·00 | 52 | 24·70 | +17·24 | 23·26 |
| 378 | 1882 Jan. 4·77 | 22 | 289 | 16·03 | 107 | 19·59 | + 6·40 | 17·00 |
| 379 | Feb. 1·11 | 26 | 340 | 10·94 | 337 | 16·22 | − 2·57 | 13·57 |
| 380 | Feb. 28·45 | 27 | 116 | 13·64 | 836 | 12·98 | − 9·72 | 13·06 |
| 381 | Mar. 27·76 | 27 | 339 | 14·01 | 1597 | 22·06 | −15·76 | 20·66 |
| 382 | Apr. 24·03 | 26 | 652 | 18·32 | 1037 | 23·04 | − 7·07 | 21·22 |
| 383 | May 21·26 | 27 | 203 | 18·09 | 379 | 15·88 | − 4·03 | 16·65 |
| 384 | June 17·46 | 24 | 247 | 15·66 | 246 | 15·37 | + 0·17 | 15·52 |
| 385 | July 14·66 | 23 | 328 | 14·82 | 166 | 14·04 | + 5·11 | 14·56 |
| 386 | Aug. 10·88 | 24 | 651 | 15·81 | 208 | 16·64 | + 7·95 | 16·01 |
| 387 | Sept. 7·12 | 25 | 566 | 12·68 | 636 | 22·14 | − 5·75 | 17·68 |
| 388 | Oct. 4·40 | 27 | 776 | 16·60 | 520 | 22·07 | + 1·10 | 18·79 |
| 389 | Oct. 31·69 | 27 | 1142 | 18·27 | 873 | 18·94 | + 2·15 | 18·56 |
| 390 | Nov. 28·00 | 28 | 213 | 14·77 | 208 | 14·19 | + 0·47 | 14·48 |
| 391 | Dec. 25·32 | 26 | 263 | 8·07 | 703 | 13·82 | − 7·86 | 12·25 |
| 392 | 1883 Jan. 21·66 | 25 | 469 | 8·33 | 324 | 16·41 | − 1·76 | 11·63 |
| 393 | Feb. 18·00 | 26 | 143 | 9·42 | 165 | 13·42 | − 2·85 | 11·57 |
| 394 | Mar. 17·33 | 28 | 363 | 12·16 | 710 | 14·40 | − 5·41 | 13·64 |
| 395 | Apr. 13·62 | 26 | 233 | 10·32 | 522 | 18·00 | − 9·26 | 15·63 |
| 396 | May 10·86 | 26 | 172 | 12·66 | 424 | 13·62 | − 6·04 | 13·35 |
| 397 | June 7·07 | 27 | 545 | 10·46 | 1017 | 15·37 | − 6·35 | 13·66 |
| 398 | July 4·27 | 20 | 360 | 10·69 | 1677 | 15·11 | −10·55 | 14·33 |
| 399 | July 31·47 | 25 | 78 | 13·48 | 473 | 13·67 | − 9·81 | 13·64 |
| 400 | Aug. 27·71 | 23 | 410 | 11·75 | 1179 | 17·14 | − 9·69 | 15·75 |
| 401 | Sept. 23·97 | 27 | 403 | 11·46 | 1075 | 12·77 | − 6·16 | 12·42 |
| 402 | Oct. 21·26 | 27 | 416 | 10·99 | 1190 | 11·67 | − 5·80 | 11·49 |
| 403 | Nov. 17·56 | 25 | 440 | 14·87 | 862 | 11·43 | − 2·55 | 12·60 |
| 404 | Dec. 14·88 | 24 | 753 | 12·12 | 1156 | 10·80 | − 1·76 | 11·32 |
| 405 | 1884 Jan. 11·22 | 25 | 932 | 10·67 | 784 | 16·24 | − 1·62 | 13·22 |
| 406 | Feb. 7·56 | 23 | 859 | 10·01 | 575 | 13·28 | + 0·67 | 11·32 |
| 407 | Mar. 5·89 | 25 | 381 | 10·59 | 800 | 11·04 | − 4·06 | 10·90 |
| 408 | Apr. 2·19 | 25 | 115 | 9·31 | 1536 | 11·67 | −10·21 | 11·50 |
| 409 | Apr. 29·45 | 26 | 219 | 10·37 | 965 | 10·88 | − 6·96 | 10·79 |
| 410 | May 26·68 | 19 | 297 | 11·71 | 498 | 10·88 | − 2·44 | 11·19 |
| 411 | June 22·88 | 17 | 316 | 11·13 | 345 | 10·83 | − 0·34 | 10·97 |
| 412 | July 20·08 | 21 | 318 | 6·75 | 439 | 7·52 | − 1·53 | 7·20 |
| 413 | Aug. 16·30 | 24 | 416 | 9·57 | 231 | 13·01 | + 1·51 | 10·80 |
| 414 | Sept. 12·55 | 22 | 1074 | 12·91 | 404 | 11·71 | + 6·19 | 12·58 |
| 415 | Oct. 9·83 | 26 | 219 | 12·94 | 541 | 12·06 | − 4·86 | 12·31 |
| 416 | Nov. 6·13 | 26 | 188 | 8·03 | 283 | 8·36 | − 1·81 | 8·23 |
| 417 | Dec. 3·44 | 26 | 577 | 8·11 | 275 | 10·73 | + 2·02 | 8·96 |
| 418 | Dec. 30·77 | 25 | 100 | 7·72 | 373 | 11·16 | − 7·16 | 10·43 |
| 419 | 1885 Jan. 27·11 | 27 | 298 | 4·72 | 880 | 12·21 | − 7·92 | 10·31 |
| 420 | Feb. 23·45 | 28 | 169 | 7·37 | 631 | 13·25 | − 8·89 | 12·01 |
| 421 | Mar. 22·76 | 27 | 493 | 10·51 | 298 | 15·73 | + 0·61 | 12·58 |

Mean Heliographic Latitude of Sun Spots—*continued.*

| No. of Rotation. | Date of Commencement of each Rotation. | No. of Days on which Photographs were taken. | Spots North of the Equator. | | Spots South of the Equator. | | Mean Heliographic Latitude of entire Spotted Area. | Mean Distance from Equator of all Spots. |
|---|---|---|---|---|---|---|---|---|
| | | | Mean of Daily Areas. | Mean Heliographic Latitude. | Mean of Daily Areas. | Mean Heliographic Latitude. | | |
| | d | | | ° | | ° | ° | ° |
| 422 | 1885 Apr. 19·04 | 26 | 363 | 11·99 | 480 | 10·86 | − 1·01 | 11·35 |
| 423 | May 16·27 | 27 | 419 | 12·76 | 851 | 12·23 | − 3·98 | 12·40 |
| 424 | June 12·47 | 26 | 686 | 10·58 | 1026 | 13·42 | − 3·80 | 12·28 |
| 425 | July 9·67 | 27 | 217 | 9·34 | 697 | 13·13 | − 7·79 | 12·23 |
| 426 | Aug. 5·89 | 26 | 175 | 9·83 | 496 | 11·44 | − 5·91 | 11·02 |
| 427 | Sept. 2·13 | 28 | 178 | 10·23 | 455 | 10·80 | − 4·89 | 10·64 |
| 428 | Sept. 29·40 | 27 | 188 | 7·86 | 478 | 12·64 | − 6·87 | 11·30 |
| 429 | Oct. 26·70 | 27 | 287 | 14·38 | 333 | 11·47 | + 0·49 | 12·81 |
| 430 | Nov. 23·01 | 28 | 106 | 15·11 | 14 | 11·45 | +11·98 | 14·68 |
| 431 | Dec. 20·33 | 26 | 159 | 12·58 | 496 | 10·27 | − 4·73 | 10·83 |

The above Table supersedes the corresponding Tables given in the volumes of Greenwich Observations for 1884 and 1885.

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS for each YEAR from 1874 to 1885.

| Year. | No. of Days on which Photographs were taken. | Spots North of the Equator. | | Spots South of the Equator. | | Mean Heliographic Latitude of entire Spotted Area. | Mean Distance from Equator of all Spots. |
|---|---|---|---|---|---|---|---|
| | | Mean of Daily Areas. | Mean Heliographic Latitude. | Mean of Daily Areas. | Mean Heliographic Latitude. | | |
| | | | ° | | ° | ° | ° |
| 1874 | 141 | 263 | 9·03 | 340 | 12·19 | − 2·93 | 10·81 |
| 1875 | 263 | 145 | 12·00 | 103 | 10·11 | + 2·81 | 11·22 |
| 1876 | 271 | 40 | 11·83 | 87 | 10·87 | − 3·77 | 11·17 |
| 1877 | 235 | 38 | 9·69 | 70 | 9·51 | − 2·74 | 9·57 |
| 1878 | 347 | 21 | 7·60 | 1 | 7·12 | + 6·90 | 7·58 |
| 1879 | 318 | 11 | 21·14 | 27 | 22·32 | − 9·34 | 21·96 |
| 1880 | 341 | 269 | 19·99 | 171 | 19·10 | + 4·79 | 19·64 |
| 1881 | 348 | 454 | 18·20 | 226 | 18·50 | + 6·00 | 18·30 |
| 1882 | 343 | 442 | 15·96 | 557 | 19·28 | − 3·69 | 17·81 |
| 1883 | 340 | 339 | 10·99 | 815 | 13·92 | − 6·60 | 13·06 |
| 1884 | 315 | 478 | 10·65 | 601 | 11·74 | − 1·82 | 11·26 |
| 1885 | 359 | 280 | 10·54 | 526 | 12·43 | − 4·44 | 11·77 |

The Means of Daily Areas, etc., for the Year 1874, refer to a period of eight months, from 1874 April 27 to 1874 December 18.

The above Table supersedes the corresponding Tables given in the volumes of Greenwich Observations for 1884 and 1885.

ROYAL OBSERVATORY, GREENWICH.

# PHOTO-HELIOGRAPHIC RESULTS.

1874–1885.