## Sunspot Activity.

| | Number of observations | Reduction-factor on Wolfs unit | | Number of comparisons |
|---|---|---|---|---|
| | | whole disc | central zone | |
| Catania | 47 | 0.86 | 0.76 | 41 |
| Greenwich | 86 | 0.84 | 0.89 | 72 |
| Kiew | 37 | 1.00 | 1.13 | 32 |
| Lyons | 62 | 0.99 | 0.92 | 58 |
| Madrid | 73 | 0.78 | 0.79 | 60 |
| Roma/Campidoglio | 79 | 1.01 | 0.87 | 68 |
| South Hadley | 46 | 0.95 | 0.93 | 33 |
| Stonyhurst | 45 | 1.03 | 1.03 | 36 |
| Tokyo | 65 | 0.56 | 0.57 | 55 |
| Wellington | 18 | 0.91 | 0.79 | 16 |
| Zürich | 75 | 0.60 | 0.60 | — |

| | Relative-numbers for the whole sun disc. | | | Relative-numbers for the central circle zone | | | Relative-numbers for the four quadrants divided from the North-Pole of the Sun | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | NW | NE | SW | SE | NW | NE | SW | SE | NW | NE | SW | SE |
| 1938 | Jan. | Febr. | March | Jan. | Febr. | March | January | | | | February | | | | March | | | |
| 1 | 117 a | M 62 c | 74 | 45 | 43 | 31 | †45$_1$ | †11 | †56 | † 6 | 18$_1$ | 24 | 0 | 20 | 21 | 0 | 39 | 14 |
| 2 | E 109 c | 73 b | 67 d | 28 | 37 | 16 | 41 | 18$_1$ | 50 | 0 | 32 | 11 | 0 | 30 | 22$_1$ | 0 | 38 | 7 |
| 3 | W 86 c | 68 d | 62 | 7 | 44 | 8 | 34$_1$ | 25 | 27 | 0 | 32 | 0 | 7 | 29 | 15 | 0 | 27 | 20 |
| 4 | 76 | 94 | 45 d | 11 | 36 | 8 | 28 | 36 | 12 | 0 | 32 | 7$_1$* | 16$_1$ | 39 | 0 | 10 | 17 | 18$_1$ |
| 5 | 80 d | E 85 ac | 43 | 36 | 26 | 9 | 15 | 57 | 8 | 0 | 20 | 0 | 30$_1$* | 35$_1$ | 0 | 13 | 11 | 19 |
| 6 | 101 a | 128 | W 52 c | 45 | 48 | 8 | †34 | †63 | † 8 | † 0 | 32$_1$* | 15$_2$ | 35$_1$ | 46 | 10$_1$ | 14 | 8 | 20 |
| 7 | E 102 c | 124 d | 78 d | 44 | 49 | 17 | 63$_1$* | 32$_1$ | 0 | 7 | 14 | 25 | 35 | 50 | 17$_1$* | 35$_1$ | 7 | 19$_1$ |
| 8 | 86 | 110 | E 71 c | 36 | 57 | 20 | † 35 | †32 | † 0 | † 0 | 16 | 14 | 31 | 49 | 8 | 34 | 0 | 29$_1$ |
| 9 | 59 | 101 b | 97 a | 10 | 71 | 11 | 22 | 37 | 0 | 0 | 0 | 20 | 31 | 50 | 7 | 59$_1$*$_1$ | 5 | 26 |
| 10 | 92 | 133 b | M 106 ac | 50 | 56 | 50 | 20 | 50 | 0 | 22$_2$ | †14 | †29 | †56 | †33 | 29 | 29 | 28$_1$ | 20 |
| 11 | 98 ad | E 137 cd | E 134 c | 73 | 50 | 54 | 44 | 35 | 5 | 14 | 0 | 29 | 71 | 37$_1$ | 24 | 30$_1$* | 40$_1$ | 40$_2$ |
| 12 | 104 d | E 161 cd | 124 a | 58 | 45 | 38 | †67 | †35 | †13 | †12 | † 0 | †43$_1$ | †41 | †75 | 22 | 18 | 33 | 51 |
| 13 | 106 | 169 | 161 | 10 | 51 | 51 | 44 | 52 | 10 | 0 | †18 | †40 | †22 | †91 | 40$_1$ | 16$_1$ | 75$_2$* | 30 |
| 14 | 111 | 200 b | 140 | 9 | 87 | 49 | 40 | 62 | 9 | 0 | 25 | 42$_2$*$_1$ | 37$_1$* | 96$_1$*$_1$ | 37 | 25$_1$* | 62 | 25$_1$ |
| 15 | 118 | 171 | M 145 c | 0 | 123 | 18 | 35 | 83 | 0 | 0 | 43$_1$ | 17 | 35 | 76 | 34 | 12$_1$ | 53 | 46$_1$*$_2$ |
| 16 | 134 | E 205 ac | 161 d | 20 | 146 | 50 | 32 | 95 | 0 | 7$_1$* | †39 | †36$_1$ | †55 | †74$_1$ | 45$_1$* | 20 | 41 | 55$_1$* |
| 17 | 110 b | 171 aad | 149 a | 51 | 113 | 32 | †29 | †72 | † 0 | † 9 | 55 | 12 | 59 | 45 | 47$_1$* | 15 | 49 | 29 |
| 18 | 110 b | 174 a | 105 | 87 | 102 | 30 | 51 | 45 | 0 | 14 | 61$_1$* | 8$_1$* | 83 | 22 | 27 | 15 | 28 | 35 |
| 19 | E 104 c | 145 | 80 | 56 | 32 | 23 | 78 | 0 | 0 | 26$_1$ | 56$_2$* | 0 | 63 | 26 | 19 | 7 | 21 | 33 |
| 20 | M 119 c | 98 | 77 d | 31 | 14 | 46 | †67 | †10 | † 0 | †41$_1$ | 28 | 0 | 47 | 23 | 11 | 7 | 17$_1$ | 42$_1$* |
| 21 | 123 a | M 109 c | 86 | 35 | 21 | 43 | †57 | †16 | † 8 | †36 | 14 | 7 | 69$_1$ | 19 | 16$_1$ | 0 | 19 | 51$_1$ |
| 22 | 122 | 91 | 64 a | 56 | 35 | 38 | 59$_1$ | 17$_1$ | 20 | 26 | 10 | 8 | 55 | 18$_1$ | 8 | 0 | 26$_1$* | 30 |
| 23 | 149 | W 90 ac | 71 | 66 | 20 | 19 | †39 | †37 | †27 | †52 | 8$_1$ | 17 | 45$_1$* | 20 | 8 | 0 | 26$_1$* | 37$_1$ |
| 24 | 108 | M 92 c | 66 | 35 | 27 | 35 | 38 | 16$_1$ | 34$_1$* | 20$_1$* | 11 | 20 | 56$_1$ | 5 | 15$_2$* | 0 | 13 | 38 |
| 25 | 94 | E 83 c | 59 | 29 | 39 | 40 | 26$_1$ | 24$_2$ | 31$_1$* | 13 | 0 | 34$_1$ | 42 | 7$_1$ | 0 | 0 | 25$_2$* | 34 |
| 26 | 76 a | 81 a | 34 b | 22 | 17 | 26 | 18 | 32 | 19 | 7 | 0 | 41$_1$* | 40 | 0 | 0 | 0 | 21 | 13 |
| 27 | W 67 cd | M 97 ac | 52 d | 23 | 32 | 30 | 32$_1$ | 28 | 7 | 0 | †16 | †11 | †44 | †16$_1$ | † 0 | † 0 | †41 | † 9 |
| 28 | 76 | 85 | 55 | 22 | 47 | 34 | 36 | 32$_1$* | 8 | 0 | 24 | 8 | 46 | 7$_1$* | 7$_1$* | 0 | 31 | 17 |
| 29 | 59 | | M 65 c | 0 | | 26 | 20 | 31$_1$ | 0 | 8$_1$ | | | | | 0 | 0 | 30 | 35$_1$ |
| 30 | 79 d | | 73 | 0 | | 14 | †32 | †19 | † 0 | †22 | | | | | 7 | 0 | 42 | 24 |
| 31 | 76 | | 86 d | 11 | | 41 | 32 | 35 | 0 | 9 | | | | | 0 | 7 | 33 | 46 |
| Mean | 98.4 | 119.2 | 86.5 | 32.5 | 52.4 | 29,5 | 39.1 | 36.7 | 11.4 | 11.3 | 22.1 | 18.5 | 41.1 | 37.1 | 16.0 | 11.8 | 29.2 | 29.4 |
| | | | | | | | N | S | W | E | N | S | W | E | N | S | W | E |
| Mean for the half-hemispheres . . . . . | | | | | | | 75.8 | 22.7 | 50.5 | 48.0 | 40.6 | 78.2 | 63.2 | 55.6 | 27.8 | 58.6 | 45.2 | 41.2 |

a = Passage of an average sized group through the central meridian.
b = Passage of a large group or spot through the central meridian.
c = New formation of a group developing into a middle sized or large centre of activity: E, on the eastern part of the sun's disc; W, on the western part; M, in the central circle zone.
d = Entrance of a large or average sized centre of activity on the east limb.

The small numbers indicate the number of NEW FORMATIONS of groups; small numbers marked with an asterisk mean small one day-groups.
† Greenwich, Lyon, Madrid, Stonyhurst or Tokyo numbers.

## Intensity of the ultra-violet Radiation (Mount Wilson).

The figures give the ratio ultra-violet ($\lambda = 0.32\ \mu$) to green ($\lambda = 0.50\ \mu$). Ratio for June 1924 = 1).

| 1938 | Jan. | Febr. | March | 1938 | Jan. | Febr. | March | 1938 | Jan. | Febr. | March |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 12 | 1.14 | | | 23 | | 0.96 | |
| 2 | | | | 13 | 1.19 | | | 24 | 1.00 | 0.98 | 1.26 |
| 3 | 1.14 | | | 14 | | | 0.93 | 25 | 0.93 | 0.96 | 1.29 |
| 4 | 0.97 | | | 15 | | | 1.26 | 26 | 1.19 | | 1.37 |
| 5 | 0.99 | 1.16 | | 16 | | | 1.20 | 27 | 1.11 | | 1.28 |
| 6 | 1.02 | 1.16 | | 17 | | 0.93 | | 28 | 1.19 | | |
| 7 | | 1.19 | | 18 | | | 1.16 | 29 | | | |
| 8 | | | | 19 | | | 1.14 | 30 | | | |
| 9 | 1.01 | | 1.05 | 20 | 1.28 | 0.97 | | 31 | | | 1.40 |
| 10 | 1.11 | | | 21 | 1.22 | 0.97 | 1.32 | | | | |
| 11 | 1.06 | | | 22 | 1.01 | 0.98 | 1.32 | Mean | 1.09 | 1.03 | 1.23 |

*Zurich*, May 26, 1938.

*W. Brunner.*

## Sunspot Activity.

| | Number of observations | Reduction-factor on Wolfs unit | | Number of comparisons |
|---|---|---|---|---|
| | | whole disc | central zone | |
| Catania | 55 | 0.79 | 0.72 | 50 |
| Greenwich | 78 | 0.75 | 0.82 | 69 |
| Kiew | 74 | 0.97 | 0.98 | 68 |
| Lyons | 67 | 1.00 | 0.95 | 62 |
| Madrid | 60 | 0.63 | 0.63 | 54 |
| Roma/Monte Mario | 79 | 0.86 | 0.85 | 75 |
| South Hadley | 49 | 0.75 | 0.75 | 43 |
| Stonyhurst | 70 | 0.98 | 0.97 | 63 |
| Tokyo | 52 | 0.54 | 0.53 | 51 |
| Wellington | 14 | 0.99 | 0.83 | 13 |
| Zürich | 83 | 0.60 | 0.60 | — |

| | Relative-numbers for the whole sun disc. | | | Relative-numbers for the central circle zone | | | Relative-numbers for the four quadrants divided from the North-Pole of the Sun | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | NW | NE | SW | SE | NW | NE | SW | SE | NW | NE | SW | SE |
| 1938 | April | May | June | April | May | June | April | | | | May | | | | June | | | |
| 1 | 83 | E 115 c | 113 | 29 | 28 | 46 | 0 | 7 | 29 | 47 | 23 | $32_1$ | 8 | $52_1$ | 32 | $39_1$* | $35_1$* | 7 |
| 2 | 81 ad | 134 | 100 a | 23 | 65 | 33 | 0 | $18_1$ | $27_1$ | 36 | 20 | 37 | 7 | 70 | $35_1$ | 24 | 23 | 18 |
| 3 | 80 | EW 160aaacc | 107 a | 15 | 96 | 26 | 0 | 22 | 22 | 36 | $34_1$ | 20 | 34 | $72_1$*$_1$ | 56 | 5 | 19 | $27_1$ |
| 4 | 80 | 137 aad | 103 | 33 | 67 | 44 | 0 | 25 | $17_1$ | 38 | † 43 | † 0 | † 49 | †45 | 51 | 0 | 15 | 37 |
| 5 | 91 d | 123 | 91 d | 44 | 34 | 37 | 0 | 21 | 19 | $51_1$ | 27 | 0 | 61 | 35 | 38 | $14_1$ | 11 | 28 |
| 6 | 95 a | 138 a | 86 a | 56 | 29 | 34 | $21_1$ | 0 | 17 | 57 | 20 | 8 | 47 | $63_1$* | 26 | 26 | 14 | 20 |
| 7 | 95 d | 136 d | M 134 c | 50 | 7 | 57 | 11 | 7 | 36 | 41 | 19 | 17 | 68 | 32 | $27_1$ | $62^3$ | 18 | 27 |
| 8 | 85 a | EM 153ccd | W 139 ac | 25 | 47 | 45 | 8 | 14 | 35 | 28 | 16 | $40_2$ | 60 | $37_1$* | 23 | $72_1$* | $29_1$ | 15 |
| 9 | 87 d | 156 d | 115 | 32 | 49 | 57 | 0 | 20 | 26 | 41 | 26 | 38 | 35 | $57_1$*$_1$ | 17 | 56 | 33 | 9 |
| 10 | 103 d | 151 bd | 115 a | 46 | 44 | 51 | $8_1$ | 31 | 24 | 40 | 20 | 49 | 30 | $52_1$* | †22 | †$63_1$ | †19 | † 9 |
| 11 | 110 a | 149 | 106 b | 38 | 56 | 49 | 7 | 28 | 29 | 46 | 29 | 44 | 42 | 34 | $39_1$* | 35 | 18 | 14 |
| 12 | 97 | 143 ad | 99 | 25 | 71 | 61 | 0 | 32 | 40 | 25 | 30 | 31 | 38 | 44 | 54 | 10 | $28_1$ | 7 |
| 13 | M 119 c | 151 | 91 d | 34 | 52 | 30 | $12_1$ | 36 | 37 | $34_1$ | $58_1$ | 12 | 30 | $51_1$* | †48 | †22 | †$11_1$* | †14 |
| 14 | 115 b | 135 ad | 88 | 38 | 31 | 12 | 44 | 6 | 20 | 45 | $44_1$ | 11 | 25 | 55 | †40 | †$32_1$ | † 3 | †14 |
| 15 | 117 d | 131 a | 87 | 44 | 48 | 26 | 39 | $15_1$* | $16_1$ | 47 | 46 | 0 | 28 | 57 | $35_1$*$_1$ | $34_1$*$_1$ | $8_1$ | 10 |
| 16 | 133 aad | 105 | 76 d | 40 | 48 | 33 | $42_1$* | 8 | 44 | 39 | 27 | 0 | 29 | 49 | 25 | 36 | 7 | 8 |
| 17 | 107 | E 91 ac | 76 | 34 | 37 | 44 | 21 | 0 | 48 | 38 | 17 | 0 | 34 | $40_1$ | 11 | 46 | 19 | 0 |
| 18 | 112 | 87 ad | 56 a | 19 | 47 | 34 | 18 | 0 | $36_1$* | $58_1$ | 8 | 0 | 41 | 38 | 11 | 31 | 14 | 0 |
| 19 | 100 | 95 | 69 | 33 | 43 | 25 | 10 | 7 | 28 | 55 | 7 | 0 | 37 | 51 | 17 | $43_1$* | 9 | 0 |
| 20 | 99 | 116 a | 76 | 37 | 56 | 38 | 7 | 7 | $32_1$* | 53 | † 11 | † 0 | † 55 | †52 | $19_1$ | 42 | 7 | $8_1$ |
| 21 | 89 b | E 106 ac | E 103 c | 47 | 39 | 64 | $8_1$ | 7 | 30 | 44 | † 4 | † 0 | † 35 | †$71_2$ | $29_1$ | $58_1$ | 9 | 7 |
| 22 | 75 a | M 124 c | 101 ab | 50 | 45 | 77 | 8 | 0 | 35 | 32 | † 0 | †$12_1$ | † 60 | †56 | 24 | $61_1$ | 9 | $7_1$*$_1$ |
| 23 | E 82 cddd | M 119 bc | 98 | 43 | 76 | 83 | 7 | $16_1$ | 35 | 24 | $0_1$ | 37 | $42_1$ | 40 | 79 | $8_1$* | 11 | 0 |
| 24 | 95 a | 172 aa | 88 | 34 | 123 | 48 | 0 | 23 | $53_1$* | 19 | 64 | 24 | 49 | 35 | $78_1$* | 0 | 10 | 0 |
| 25 | E 92 c | 161 | 76 | 10 | 82 | 0 | 0 | $39_1$ | 34 | 19 | 62 | 30 | 62 | 7 | 58 | 0 | $18_1$ | 0 |
| 26 | 92 d | M 152 c | 72 | 13 | 52 | 11 | 0 | 38 | 27 | 27 | 46 | $41_1$ | 58 | 7 | 46 | $11_1$ | 15 | 0 |
| 27 | 124 dd | 126 | EE 108ccdd | 67 | 21 | 27 | 16 | 39 | 25 | 44 | 52 | 25 | 42 | 7 | 35 | $27_2$ | $10_1$ | $36_2$ |
| 28 | 144 aad | 99 | 106 | 54 | 24 | 37 | 23 | 39 | 17 | 65 | † 41 | †$34_1$* | † 24 | † 0 | 29 | 19 | 8 | 50 |
| 29 | 144 | ME 104 cc | 128 | 52 | 32 | 20 | 43 | 21 | 26 | 54 | 40 | $23_1$ | $17_1$ | $24_1$ | $30_1$*$_1$ | 24 | $13_1$ | 61 |
| 30 | 105 | 89 | 119 | 28 | 35 | 71 | 25 | 20 | 8 | 52 | $43_1$ | 12 | 7 | 27 | 14 | 13 | 16 | 76 |
| 31 | | E 91 acd | | | 41 | | | | | | $37_1$ | $19_1$ | 27 | 8 | | | | |
| Mean | 101.0 | 127.4 | 97.5 | 36.4 | 49.2 | 40.7 | 12.6 | 18.2 | 29.1 | 41.2 | 29.5 | 19.2 | 38.1 | 40.9 | 34.9 | 30.4 | 15.3 | 17.0 |
| | | | | | | | N | S | W | E | N | S | W | E | N | S | W | E |
| Mean for the half-hemispheres . . . . . | | | | | | | 30.8 | 70.2 | 41.7 | 59.4 | 48.7 | 79.0 | 67.6 | 60.1 | 65.4 | 32.3 | 50.2 | 47.4 |

a = Passage of an average sized group through the central meridian.
b = Passage of a large group or spot through the central meridian.
c = New formation of a group developing into a middle sized or large centre of activity: E, on the eastern part of the sun's disc; W, on the western part; M, in the central circle zone.
d = Entrance of a large or average sized centre of activity on the east limb.

The small numbers indicate the number of NEW FORMATIONS of groups; small numbers marked with an asterisk mean small one day-groups.
† Greenwich, Lyon, Madrid, Stonyhurst or Tokyo numbers.

## Intensity of the ultra-violet Radiation (Mount Wilson).

The figures give the ratio ultra-violet ($\lambda = 0.32\ \mu$) to green ($\lambda = 0.50\ \mu$). Ratio for June 1924 = 1).

| 1938 | April | May | June | 1938 | April | May | June | 1938 | April | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.23 | | | 12 | | 0.97 | 0.98 | 23 | | 0.96 | 0.90 |
| 2 | 1.16 | | 1.04 | 13 | | | | 24 | | 0.99 | 0.85 |
| 3 | 1.11 | 1.17 | 0.96 | 14 | | 0.98 | 0.98 | 25 | | 0.93 | 0.90 |
| 4 | | 1.06 | 1.02 | 15 | | | | 26 | 1.07 | | 0.93 |
| 5 | | | 0.96 | 16 | | | 0.93 | 27 | 1.13 | | 0.96 |
| 6 | 1.46 | 1.13 | 0.96 | 17 | 1.05 | | | 28 | | 1.07 | 1.05 |
| 7 | 1.47 | 1.13 | 0.90 | 18 | | 1.00 | 0.96 | 29 | | 1.02 | 1.07 |
| 8 | 1.31 | 1.07 | 0.91 | 19 | 1.10 | | | 30 | | 0.97 | 1.04 |
| 9 | 1.22 | 1.08 | 1.05 | 20 | 1.20 | | | 31 | | | |
| 10 | 1.20 | 1.03 | | 21 | 1.12 | 1.04 | | | | | |
| 11 | | | | 22 | 1.07 | 1.07 | 0.90 | Mean | 1.19 | 1.04 | 0.96 |

*Zurich*, September 20, 1938.

*W. Brunner.*

## Sunspot Activity.

| | Number of observations | Reduction-factor on Wolfs unit | | Number of comparisons |
|---|---|---|---|---|
| | | whole disc | central zone | |
| Catania | 73 | 0.70 | 0.66 | 71 |
| Greenwich | 76 | 0.79 | 0.83 | 72 |
| Kiew | 51 | 0.90 | 0.91 | 49 |
| Lyons | 73 | 1.07 | 1.00 | 71 |
| Madrid | 59 | 0.56 | 0.57 | 56 |
| Roma/Monte Mario | 75 | 0.87 | 0.86 | 72 |
| South Hadley | | | | |
| Stonyhurst | 59 | 0.96 | 0.91 | 57 |
| Tokyo | 54 | 0.48 | 0.45 | 52 |
| Wellington | | | | |
| Zürich | 88 | 0.60 | 0.60 | — |

| 1938 | Relative-numbers for the whole sun disc. | | | Relative-numbers for the central circle zone | | | Relative-numbers for the four quadrants divided from the North-Pole of the Sun | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | NW | NE | SW | SE | NW | NE | SW | SE | NW | NE | SW | SE |
| | July | Aug. | Sept. | July | Aug. | Sept. | July | | | | August | | | | September | | | |
| 1 | 119 ad | 144 ddd | 106 d | 106 | 0 | 56 | 14 | 7 | $12_1$* | $86_1$ | $18_1$ | 15 | $78_1$ | 33 | 9 | 46 | 9 | 42 |
| 2 | E 116 ac | 121 | 124 ad | 87 | 7 | 73 | †14 | †$10_1$ | †58 | †34 | $14_1$* | $18_1$ | 56 | 33 | 0 | $74_1$*$_1$ | 22 | 28 |
| 3 | 157 a | EW 121 cc | 101 a | 72 | 8 | 55 | 16 | 26 | $102_1$*$_1$ | 13 | $14_2$ | 26 | 35 | $46_1$ | 22 | 45 | 8 | 26 |
| 4 | 151 dd | 153 d | 107 | 39 | 43 | 70 | 18 | 36 | 77 | 20 | $54_3$* | $26_1$* | 21 | 52 | 18 | 39 | $32_1$ | $18_1$ |
| 5 | 141 | 132 dd | 120 b | 23 | 59 | 59 | 20 | 43 | 50 | 28 | 15 | $39_1$ | 7 | 71 | 41 | 29 | 32 | 18 |
| 6 | E 184 cd | 133 a | 136 | 66 | 73 | 80 | $35_1$ | $62_1$*$_1$ | 43 | 44 | 21 | 30 | 21 | 61 | 76 | $14_1$* | $26_1$* | 20 |
| 7 | 175 b | 135 aaa | 100 a | 61 | 68 | 67 | 36 | $50_1$ | 32 | 57 | 14 | 22 | 30 | 69 | 63 | 9 | 24 | 4 |
| 8 | 186 d | 150 d | 88 a | 74 | 47 | 9 | 48 | 35 | 33 | 70 | $22_1$ | 16 | 53 | 59 | 52 | 17 | 19 | 0 |
| 9 | 175 d | 158 | 74 | 99 | 58 | 10 | 36 | 46 | 10 | 83 | $32_1$* | 25 | 47 | 54 | 37 | $17_1$ | 20 | 0 |
| 10 | 183ab | 161 ab | 75 | 78 | 68 | 15 | $40_1$* | 37 | 27 | $79_1$ | 21 | 25 | $69_1$* | 46 | †40 | †$23_1$* | †11 | †0 |
| 11 | 205 | 173 ad | 67 d | 103 | 76 | 0 | 49 | 26 | 54 | $76_1$ | $35_2$ | 29 | 81 | 28 | $28_1$* | 28 | 11 | 0 |
| 12 | 211 a | 132 | 59 | 92 | 49 | 28 | 38 | 26 | 64 | 83 | 47 | 7 | 51 | 27 | 8 | 36 | $15_1$* | 0 |
| 13 | 229 | 124 | 44 | 124 | 25 | 16 | 22 | $44_1$ | 91 | 72 | †36 | †0 | †47 | †$38_1$* | 7 | 29 | 8 | 0 |
| 14 | E 208 bc | 107 bd | 48 | 139 | 20 | 31 | $22_1$* | 37 | 66 | $83_1$ | 17 | $15_1$ | $49_1$* | 26 | 24 | 17 | 0 | $7_1$* |
| 15 | 200 a | 102 | 44 d | 97 | 7 | 36 | $49_2$ | $25_1$ | 104 | 22 | 16 | 24 | 50 | 12 | 14 | 30 | 0 | 0 |
| 16 | 173 | E 119 ac | 47 a | 74 | 26 | 17 | 46 | 16 | $89_1$* | $22_1$ | 7 | $58_3$ | 35 | 19 | $18_1$ | 29 | 0 | 0 |
| 17 | 161 | 106 | 46 | 35 | 38 | 20 | 40 | $24_1$ | 78 | 19 | 7 | 58 | 33 | 8 | 34 | 12 | 0 | 0 |
| 18 | 148 d | 100 | 65 | 25 | 38 | 34 | 35 | 25 | 79 | 9 | $20_1$* | 51 | 21 | 8 | 32 | $24_2$* | $9_1$ | 0 |
| 19 | E 151 ac | 104 | 55 d | 42 | 69 | 23 | $50_2$ | 23 | 64 | $14_1$ | $32_1$ | 39 | 19 | $14_1$ | $23_1$* | 16 | 8 | 8 |
| 20 | EM 153 cc | 76 | 57 | 46 | 36 | 16 | $53_2$ | $34_1$ | 49 | 17 | 18 | 27 | 16 | 15 | $20_1$ | 16 | 0 | $21_1$* |
| 21 | 147 | 65 a | 56 ad | 41 | 27 | 14 | $57_1$* | $43_2$* | 18 | 29 | $36_1$ | $14_1$*$_1$ | 8 | 7 | 30 | 0 | 0 | 26 |
| 22 | E 118 c | 72 | 70 | 43 | 22 | 12 | 33 | $50_1$*$_1$ | 0 | 35 | 42 | 15 | 8 | 7 | 21 | 0 | 0 | 49 |
| 23 | M 157 acd | M 94 ac | 86 | 77 | 32 | 13 | $53_1$ | $53_1$ | 0 | 51 | 36 | 15 | $12_1$ | $31_1$*$_1$ | 10 | $8_1$* | 0 | 68 |
| 24 | 189 aad | 86 | 97 d | 114 | 32 | 29 | †56 | †62 | †13 | †54 | 25 | 15 | 38 | 8 | 8 | 0 | 9 | 80 |
| 25 | 202 | 113 c | MM 131 acc | 103 | 22 | 66 | $93_1$ | 15 | 16 | $78_1$* | 25 | $37_1$*$_1$ | 35 | $16_1$* | 20 | $36_1$*$_3$ | 7 | 68 |
| 26 | 179 a | 103 | 150 | 67 | 31 | 100 | 66 | 8 | $32_1$* | $73_1$* | $23_1$* | 39 | 31 | 10 | 21 | $55_1$*$_1$ | 20 | 54 |
| 27 | 156 | 91 d | 143 ab | 28 | 24 | 89 | 64 | 0 | 29 | 63 | 7 | 37 | $38_2$* | 9 | 29 | 40 | 41 | 33 |
| 28 | 151 a | 94 a | 137 | 61 | 18 | 85 | 55 | $7_1$ | 35 | 54 | 0 | 49 | $29_1$* | 16 | 35 | 20 | 58 | $24_1$ |
| 29 | 151 aa | 114 d | 125 a | 74 | 27 | 57 | 44 | 15 | 44 | 48 | 17 | 40 | 18 | $39_2$* | 28 | 23 | 50 | 24 |
| 30 | 139 a | E 105 cd | M 131 c | 71 | 25 | 48 | 22 | 15 | $102_1$*$_1$ | 0 | $16_1$* | 52 | 0 | $37_1$ | 41 | $32_2$ | 35 | 23 |
| 31 | 109 | 98 | | 28 | 31 | | 14 | 7 | 81 | 7 | †10 | †52 | †0 | †40 | | | | |
| Mean | 165.3 | 115.7 | 89.6 | 70.6 | 35.7 | 40.9 | 39.9 | 29.3 | 50.1 | 45.9 | 22.5 | 29.5 | 33.4 | 30.3 | 27.0 | 25.5 | 15.8 | 21.4 |
| | | | | | | | N | S | W | E | N | S | W | E | N | S | W | E |
| Mean for the half-hemispheres . . . . . | | | | | | | 69.2 | 96.0 | 90.0 | 75.2 | 52.0 | 63.7 | 55.9 | 59.8 | 52.4 | 37.2 | 42.8 | 46.8 |

a Passage of an average sized group through the central meridian.
b Passage of a large group or spot through the central meridian.
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## Intensity of the ultra-violet Radiation (Mount Wilson).

The figures give the ratio ultra-violet ($\lambda = 0.32\ \mu$) to green ($\lambda = 0.50\ \mu$). Ratio for June 1924 = 1).

| 1938 | July | Aug. | Sept. | 1938 | July | Aug. | Sept. | 1938 | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.10 | 0.84 | 0.93 | 12 | 1.01 | 0.88 | 0.93 | 23 | 0.88 | 0.91 | 1.02 |
| 2 | 1.05 | 0.85 | 0.97 | 13 | | 0.98 | 0.93 | 24 | 0.93 | | 0.97 |
| 3 | 1.09 | 0.81 | 0.98 | 14 | 0.93 | 1.02 | | 25 | 1.00 | 0.88 | 0.93 |
| 4 | 1.05 | 0.85 | 1.06 | 15 | 0.97 | 0.98 | | 26 | 0.93 | 0.88 | 0.88 |
| 5 | | | 0.99 | 16 | 0.99 | 1.06 | 0.88 | 27 | 1.03 | 0.82 | |
| 6 | | | 0.97 | 17 | 0.96 | 1.03 | | 28 | 0.97 | 0.96 | |
| 7 | | 0.85 | 0.99 | 18 | | 1.08 | | 29 | 0.93 | 0.93 | |
| 8 | | | 1.05 | 19 | 0.84 | 1.05 | 0.94 | 30 | 0.90 | 1.10 | 1.02 |
| 9 | | | 1.01 | 20 | 0.80 | | 0.93 | 31 | | 1.02 | |
| 10 | | 0.88 | 0.96 | 21 | | 0.98 | 0.90 | | | | |
| 11 | 0.94 | | 0.90 | 22 | 0.84 | | 0.85 | Mean | 0.96 | 0.94 | 0.96 |

*Zurich*, December 10, 1938.

*W. Brunner.*

## Sunspot Activity.

| | Number of observations | Reduction-factor on Wolfs unit | | Number of comparisons |
|---|---|---|---|---|
| | | whole disc | central zone | |
| Catania | 56 | 0.88 | 0.87 | 43 |
| Greenwich | 60 | 0.78 | 0.86 | 46 |
| Kiew | 18 | 0.92 | 1.07 | 12 |
| Lyons | 44 | 1.06 | 1.06 | 42 |
| Madrid | | | | |
| Roma/Monte Mario | 67 | 0.86 | 0.85 | 55 |
| South Hadley | 39 | 0.85 | 0.79 | 33 |
| Stonyhurst | 54 | 1.00 | 0.99 | 36 |
| Tokyo | 67 | 0.51 | 0.50 | 52 |
| Wellington | | | | |
| Zürich | 70 | 0.60 | 0.60 | — |

| 1938 | Relative-numbers for the whole sun disc. Oct. | Nov. | Dec. | Relative-numbers for the central circle zone Oct. | Nov. | Dec. | Relative-numbers for the four quadrants divided from the North-Pole of the Sun: NW | NE | SW | SE | NW | NE | SW | SE | NW | NE | SW | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | October | | | | November | | | | December | | | |
| 1 | 130 | 146 a | 97 d | 57 | 65 | 0 | †18 | †34 | †38 | †38 | $32_1$* | 47 | 20 | $47_1$*$_2$ | 50 | 14 | 24 | 9 |
| 2 | 94 | 143 | 82 | 37 | 91 | 16 | 38 | $27_1$* | 13 | 16 | †45 | †48 | †9 | †41 | 29 | 24 | 18 | 11 |
| 3 | 55 | 162 a | E 64 c | 44 | 92 | 8 | 24 | 16 | 7 | 8 | $82_1$*$_1$ | $38_2$* | 10 | 32 | 23 | 8 | 13 | $20_1$ |
| 4 | M 90 ac | 128 aad | 82 ad | 55 | 71 | 11 | †9 | †$25_1$ | †9 | †30 | 52 | 32 | 20 | 24 | 31 | $7_1$ | 10 | 34 |
| 5 | M 106 acd | 112 | 58 | 58 | 41 | 11 | $46_1$ | $40_1$*$_1$ | $20_1$*$_1$ | 0 | 47 | $16_1$ | 16 | 33 | 18 | 7 | 0 | 33 |
| 6 | M 102 c | M 167 cd | 90 d | 56 | 63 | 40 | 53 | $35_1$ | 14 | 0 | $48_1$ | $39_2$ | 22 | 58 | $20_1$ | $14_1$* | 0 | 56 |
| 7 | 92 | 176 d | E 117 aac | 27 | 54 | 46 | 45 | 37 | 10 | 0 | 52 | 24 | $22_1$* | 78 | 16 | $14_1$* | $25_1$ | $62_1$ |
| 8 | 102 | 159 | 106 | 14 | 41 | 50 | 50 | 36 | $16_1$ | 0 | 55 | 7 | 10 | 87 | 7 | 0 | $50_1$* | 49 |
| 9 | 143 d | 138 | E 130 cd | 50 | 78 | 59 | 49 | $72_1$*$_2$ | 13 | 9 | 42 | 0 | 7 | 89 | $21_3$* | $10_1$ | $41_1$ | 58 |
| 10 | 152 | 131 b | 124 aa | 80 | 95 | 43 | $61_2$* | $78_1$ | 0 | 13 | $36_1$ | 0 | 11 | $84_1$ | †0 | †17 | †63 | †44 |
| 11 | 132 b | 125 a | W 129 c | 82 | 88 | 60 | †10 | †62 | †$8_1$ | †47 | 25 | 0 | 62 | 38 | 0 | $30_1$*$_1$ | $67_1$*$_1$ | 32 |
| 12 | 134 b | EE 134 ccd | E 154 aac | 76 | 90 | 68 | 84 | 23 | 7 | $20_1$ | 8 | $7_1$ | 63 | $56_2$ | $7_1$* | 35 | $70_1$* | $42_1$ |
| 13 | 121 | M 152 acd | 124 aad | 87 | 58 | 67 | 88 | 8 | 0 | $25_1$ | 0 | 26 | 88 | $38_1$ | 19 | 17 | 62 | 26 |
| 14 | 122 | 152 | 151 a | 40 | 64 | 82 | $96_1$* | 8 | 0 | 18 | 0 | $35_1$ | 89 | 28 | 25 | 24 | 71 | 31 |
| 15 | 103 | 161 a | 120 a | 19 | 73 | 58 | 69 | 16 | 9 | 9 | 0 | 45 | 88 | 28 | †22 | †12 | †62 | †25 |
| 16 | 78 | E 157 ac | 105 | 23 | 58 | 31 | 48 | 14 | 8 | 8 | 17 | $34_1$ | 96 | 10 | †18 | †21 | †45 | †17 |
| 17 | M 71 c | 137 | 76 | 11 | 72 | 17 | 32 | $16_1$* | $23_1$ | 0 | †18 | †34 | †75 | †11 | †8 | †16 | †22 | †26 |
| 18 | 31 d | 115 aa | 77 | 0 | 39 | 32 | 12 | 0 | 11 | 8 | 16 | 29 | 65 | 5 | †14 | †17 | †23 | †26 |
| 19 | 20 | 106 a | 87 add | 0 | 35 | 51 | 0 | 0 | 12 | 8 | 40 | 7 | 59 | 0 | †21 | †17 | †20 | †38 |
| 20 | E 58 cd | 97 | 89 a | 8 | 47 | 36 | 0 | $19_1$ | 14 | $25_2$* | $43_1$ | 8 | 46 | 0 | †24 | †14 | †24 | †26 |
| 21 | 55 | 78 | 88 | 0 | 19 | 31 | $8_1$* | 27 | 11 | 9 | 34 | 0 | $44_1$ | 0 | †10 | †14 | †31 | †13 |
| 22 | 46 | 56 | 88 | 17 | 7 | 24 | $8_1$ | 29 | 0 | 9 | $41_1$* | 0 | 15 | 0 | $17_1$* | 25 | 30 | 16 |
| 23 | E 61 c | 61 d | 81 | 22 | 0 | 11 | 12 | 32 | 0 | $17_1$ | 34 | 11 | 16 | 0 | †11 | †$33_1$* | †24 | †15 |
| 24 | 66 a | M 79 c | 88 d | 54 | 17 | 54 | †18 | †28 | †0 | †$27_1$ | 30 | $35_2$ | 14 | 0 | $16_1$* | 27 | 16 | 29 |
| 25 | 91 aa | E 94 c | 82 ab | 69 | 22 | 48 | 7 | 42 | 11 | $31_1$ | $25_1$* | 53 | $8_1$ | $8_1$ | †9 | †25 | †21 | †21 |
| 26 | 104 ad | 85 a | 73 | 71 | 40 | 45 | 35 | 16 | 16 | 37 | 22 | 45 | 8 | 10 | 37 | 8 | 19 | 9 |
| 27 | 114 | 110 | 73 | 71 | 97 | 43 | †32 | †26 | †39 | †$21_1$ | 14 | 61 | 7 | 28 | †49 | †0 | †13 | †11 |
| 28 | M 138 c | 107 ab | 69 | 75 | 82 | 20 | †14 | †$59_2$ | †47 | †$22_1$* | 40 | 37 | 0 | 30 | †67 | †0 | †9 | †8 |
| 29 | 148 ad | 103 | 64 d | 30 | 84 | 8 | 34 | 46 | $58_1$ | 10 | †64 | †10 | †24 | †0 | 36 | 0 | 11 | 17 |
| 30 | 159 | 95 | 44 a | 39 | 54 | 8 | †36 | †51 | †62 | †11 | 62 | 8 | 25 | 0 | 15 | 0 | 17 | 12 |
| 31 | E 155 ac | | 63 d | 44 | | 16 | 16 | $70_1$*$_1$ | $48_1$* | $21_1$ | | | | | 14 | 0 | $24_1$* | $25_1$* |
| Mean | 99.1 | 122.2 | 92.7 | 42.4 | 57.9 | 35.3 | 33.9 | 32.0 | 16.9 | 16.0 | 34.1 | 24.5 | 34.6 | 28.8 | 21.1 | 14.5 | 29.8 | 27.1 |
| | | | | | | | N | S | W | E | N | S | W | E | N | S | W | E |
| Mean for the half-hemispheres . . . . . | | | | | | | 65.9 | 32.9 | 50.8 | 48.0 | 58.7 | 63.4 | 68.8 | 53.3 | 35.6 | 56.9 | 50.9 | 41.6 |

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The figures give the ratio ultra-violet ($\lambda = 0.32\ \mu$) to green ($\lambda = 0.50\ \mu$). Ratio for June 1924 1).

| 1938 | Oct. | Nov. | Dec. | 1938 | Oct. | Nov. | Dec. | 1938 | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | | | 12 | 1.05 | 0.79 | 0.79 | 23 | 0.78 | | |
| 2 | | | | 13 | | 0.84 | | 24 | | | |
| 3 | 1.10 | | 0.68 | 14 | | 0.82 | | 25 | 0.71 | | |
| 4 | 1.11 | 0.90 | 0.70 | 15 | | | | 26 | 0.74 | | 0.96 |
| 5 | 1.10 | 0.82 | 0.65 | 16 | 0.96 | | | 27 | 0.84 | | |
| 6 | | | 0.62 | 17 | 0.96 | | | 28 | 0.85 | | 1.03 |
| 7 | 0.88 | 0.88 | | 18 | 0.93 | | | 29 | 0.87 | | |
| 8 | | | 0.70 | 19 | 0.80 | | | 30 | 0.82 | | |
| 9 | 0.93 | 0.85 | | 20 | | 0.78 | | 31 | | | |
| 10 | | | | 21 | 0.90 | 0.70 | | | | | |
| 11 | 0.99 | | | 22 | 0.85 | | | Mean | 0.91 | 0.82 | 0.77 |

*Zurich*, March 20, 1939.

*W. Brunner.*