## HALO PHENOMENA OBSERVED DURING AUGUST, 1918.

By WILLIS RAY GREGG, Meteorologist.

*Halo phenomena observed during August, 1918.*

| Station. | Altitude. | Latitude. | Longitude. | Date. | Form observed. | Time of— Beginning. | Time of— Ending. | Theodolite readings. Time. | Radius inside. | Radius outside. | Length of arc. | Distance from sun or moon. | Altitude of sun or moon. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m. | ° ′ | ° ′ | | | | | | ° | ° | ° | ° | ° |
| Broken Arrow, Okla.* | 233 | 36 02 | 95 49 | 3 | Solar halo, 22° | 10:25 a. m. | 3:30 p. m. | 11:50 a. m. | 21.5 | 22.2 | 360 | | 70.2 |
| Canton, N. Y. | 137 | 44 36 | 75 10 | 6 | Solar halo, 22° | 12:00 m. | 12:40 p. m. | | | | | | |
| | | | | 7 | Solar halo, 22° | 7:30 a. m. | 1:00 p. m. | | | | | | |
| | | | | 16 | Lunar halo, 22° | 9:30 p. m. | 10:30 p. m. | | | | | | |
| | | | | 22 | Solar halo, 22° | 1:45 p. m. | 3:00 p. m. | | | | | | |
| | | | | 22 | Lunar halo, 22° | 10:00 p. m. | | | | | | | |
| | | | | 30 | Solar halo, 22° | 1:35 p. m. | 2:30 p. m. | | | | | | |
| Cincinnati, Ohio | 191 | 39 06 | 84 30 | None. | | | | | | | | | |
| Dayton, Ohio | 274 | 39 46 | 84 10 | None. | | | | | | | | | |
| Drexel, Nebr.* | 396 | 41 20 | 96 16 | None. | | | | | | | | | |
| Ellendale, N. Dak.* | 444 | 45 59 | 98 34 | 2 | Solar halo, 22° | 1:10 p. m. | 1:25 p. m. | | | | | | |
| | | | | 3 | Solar halo, 22° | 8:00 a. m. | 8:35 a. m. | 8:10 a. m. | | | 100 | | 28 |
| | | | | 23 | Solar halo, 22° | 7:15 a. m. | 8:00 a. m. | | | | | | |
| Groesbeck, Tex.* | 141 | 31 30 | 96 28 | 6 | Solar halo, 22° | 10:40 a. m. | 6:48 p. m. | 10:47 a. m. | 22 | 24 | 360 | | 63 |
| | | | | 6 | Upper tangent arc. | 4:13 p. m. | 4:27 p. m. | 4:15 p. m. | | | 20 | 22 | 37 |
| | | | | 6 | Lower tangent arc. | 4:00 p. m. | 4:20 p. m. | 4:02 p. m. | | | 10 | 23 | 40 |
| | | | | 7 | Solar halo, 22° | 11:15 a. m. | 12:37 p. m. | 11:26 a. m. | 22 | 23 | 360 | | 69 |
| Leesburg, Ga.* | 85 | 31 47 | 84 14 | None. | | | | | | | | | |
| Madison, Wis. | 297 | 43 05 | 89 23 | 5 | Solar halo, 22° | 9:40 a. m. | 10:00 a. m. | | | | | | |
| | | | | 7 | Solar halo, 22° | 7:50 a. m. | 9:00 a. m. | | | | | | |
| | | | | 9 | Solar halo, 22° | 12:30 p. m. | | | | | | | |
| | | | | 21 | Solar halo, 22° | 7:00 a. m. | 9:00 a. m. | | | | | | |
| Nashville, Tenn. | 166 | 36 10 | 86 47 | None. | | | | | | | | | |
| Royal Center, Ind.* | 227 | 40 53 | 86 29 | 27 | Solar halo, 22° | 8:42 a. m. | 12:30 p. m. | | | | | | |
| | | | | 30 | Solar halo, 22° | 11:45 a. m. | 12:15 p. m. | | | | | | |

| Station. | Date. | Colors.** | Degree of brightness. | Clouds. Amount. | Clouds. Kind. | Clouds. Direction. | Station pressure. | Precipitation. Last previous ended. | Precipitation. First subsequent began. |
|---|---|---|---|---|---|---|---|---|---|
| Broken Arrow, Okla.* | 3 | Y | Dim | 6 | Ci. St. | s. | Falling | 9:00 p. m., 25th | D. N. p., 7th. |
| Canton, N. Y. | 6 | | | 1 | Ci. St. | w. | Rising | 8:00 a. m., 6th | 8:00 p. m., 6th. |
| | 7 | O. Y. G. | Dim | 2 | Ci. St. | w. | Stationary | 8:00 p. m., 6th | 8:32 p. m., 7th. |
| | 16 | R. O. Y. G. B. | Dim | 1 | Ci. St. | w. | Stationary | 9:50 a. m., 14th | 9:27 p. m., 21st. |
| | 22 | O. Y. G. | Dim | 1 | Ci. St. | w. | Falling | 9:27 p. m., 21st | D. N. a., 24th. |
| | 22 | R. O. Y. G. | Dim | 4 | Ci. St. | w. | Falling | 9:27 p. m., 21st | D. N. a., 24th. |
| | 30 | R. O. Y. G. | Dim | 2 | Ci. St. | w. | Falling | 8:00 p. m., 29th | 8:00 a. m., 31st. |
| Cincinnati, Ohio | | | | | | | | | |
| Dayton, Ohio | | | | | | | | | |
| Drexel, Nebr.* | | | | | | | | | |
| Ellendale, N. Dak.* | 2 | R | Dim | 8 | Ci. St. | nnw. | Falling | 10:50 p. m., 31st | 3:05 p. m., 2d. |
| | 3 | R | Dim | 3<br>4 | Ci. St.<br>A. St. | nw.<br>nw. | Falling | 4:10 p. m., 2d | 6:10 p. m., 3d. |
| | 23 | | Bright | 2<br>3 | Ci. St.<br>A. St. | w.<br>w. | Rising | 12:00 m., 21st | 6:30 p. m., 23d. |
| Groesbeck, Tex.* | 6 | R. O. Y. G. B.<br>I. V. | Brilliant | 8 | Ci. St. | s. | Falling | 4:29 p. m., 5th | 12:48 p. m., 8th. |
| | 6 | R. O. Y. G. B.<br>I. V. | Bright | 8 | Ci. St. | n. | Falling | 4:29 p. m., 5th | 12:48 p. m., 8th. |
| | 6 | R. O. Y. G. B.<br>I. V. | Bright | 8 | Ci. St. | n. | Falling | 4:29 p. m., 5th | 12:48 p. m., 8th. |
| | 7 | O. Y. G. B. | Dim | 8 | Ci. St. | se. | Falling | 4:29 p. m., 5th | 12:48 p. m., 8th. |
| Leesburg, Ga.* | | | | | | | | | |
| Madison, Wis. | 5 | R | Bright | 10 | Ci. St. | nw. | Stationary | 11:30 a. m., 4th | 9:00 a. m., 8th. |
| | 7 | R | Bright | 3<br>Few. | Ci. St.<br>Cu. | nw.<br>..... | Stationary | 11:30 a. m., 4th | 9:00 a. m., 8th. |
| | 9 | O | Brilliant | 5 | Ci. St. | sw. | Falling | 9:30 a. m., 8th | 8:02 a. m., 10th. |
| | 21 | R | Bright | 5<br>5 | Ci. St.<br>A. St. | nw.<br>nw. | Stationary | 5:22 p. m., 17th | 7:00 p. m., 22d. |
| Nashville, Tenn. | | | | | | | | | |
| Royal Center, Ind.* | 27 | R. B. | Dim | 4 | Ci. St. | sw. | Falling | 4:30 p. m., 26th | 5:40 a. m., 28th. |
| | 30 | R. B. | Dim | 7 | Ci. St. | w. | Falling | 10:50 a. m., 30th | D. N. p., 30th. |

*Aerological station.

** Beginning with part nearest sun or moon. R, red; O, orange; etc.

## SOUTH CAROLINA METEOR OF APRIL 23, 1918.

By RICHARD H. SULLIVAN, Meteorologist.

[Dated: Weather Bureau Office, Columbia, S. C., June 5, 1918.]

A remarkable meteoric phenomenon was witnessed throughout South Carolina and portions of adjacent States between 7.20 and 7.42 p. m., Eastern Standard (75th Mer.) Time, on April 23, 1918.

The meteor came out of the firmament from the north like a flash of lightning, and exploded with three distinct prongs of light like an immense skyrocket. It cast a noticeable glare on the twilight, and left a cloud of whitish-gray smoke or cosmic dust suspended aloft similar in many respects to a cloud from a shrapnel shell or aerial dynamite bomb. The position of the meteor at the time of explosion, as closely as could be ascertained, was as follows: As viewed from Charlotte, N. C., altitude 65°, azimuth 60°; Charleston, S. C., altitude 10°, azimuth 155°; Columbia, S. C., altitude 30°, azimuth 172°.

The cosmic cloud apparently remained stationary for 22 minutes, and during this period the wind velocity at the earth's surface ranged from 8 to 10 miles per hour from the southwest. After the explosion the length of the cloud appeared to be about twice the apparent diameter of the full moon, and its width about half its length. Its position in the sky appeared to be east and west, and it was so high that reflections from the far-set