HALO PHENOMENA OBSERVED DURING MARCH, 1919.

By WILLIS RAY GREGG, METEOROLOGIST.

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	1	Solar halo, 22°	9:00 a.m.	10:17 a.m.	9:00 a.m.	22	23	270		23.5
				2	Solar halo, 22°	12:00 m.	3:00 p.m.						
				3	Solar halo, 22°	1:45 p.m.	3:00 p.m.	1:55 p.m.	22	23	90		43
				6	Solar halo, 22°	7:00 a.m.	7:25 a.m.				Partial.		
				6	Parhelion, right, 22°	7:00 a.m.	7:25 a.m.						
				6	Parhelion, left, 22°	7:00 a.m.	7:25 a.m.						
				12	Solar halo, 22°	8:30 a.m.	12:40 p.m.				Partial.		
				28	Solar halo, 22°	11:50 a.m.	3:00 p.m.						
				29	Solar halo, 22°	8:00 a.m.	9:55 a.m.						
				29	Solar halo, 22°	11:45 a.m.	2:00 p.m.						
				30	Solar halo, 22°	3:00 p.m.	4:00 p.m.						
Canton, N. Y.	137	44 36	75 10	4	Solar halo, 22°	11:10 a.m.	11:25 a.m.						
				6	Solar halo, 22°	11:20 a.m.	1:30 p.m.						
				8	Solar halo, 22°	2:35 p.m.	2:45 p.m.						
				8	Lunar halo, 22°	7:15 p.m.	9:00 p.m.						
				13	Solar halo, 22°	1:00 p.m.							
				14	Solar halo, 22°	7:30 a.m.	8:35 a.m.						
Cincinnati, Ohio	191	39 06	84 30	3	Solar halo, 22°	2:15 p.m.	2:40 p.m.						
				10	Solar halo, 22°	12:45 p.m.	2:50 p.m.						
				12	Lunar halo, 22°	10:10 p.m.	10:20 p.m.						
Dayton, Ohio	274	39 46	84 10	2	Solar halo, 22°	3:50 p.m.	4:15 p.m.						
				4	Solar halo, 22°	8:55 a.m.	9:25 a.m.						
				10	Solar halo, 22°	1:20 p.m.	1:45 p.m.						
				12	Lunar halo, 22°	8:45 p.m.	9:10 p.m.						
Drexel, Nebr.*	396	41 20	96 16	3	Solar halo, 22°	9:23 a.m.	11:00 a.m.	9:37 a.m.	22	22.5	200		27
				6	Solar halo, 22°	11:15 a.m.	1:30 p.m.	12:30 p.m.	22	22.5	130		42
				8	Solar halo, 22°	9:00 a.m.	1:00 p.m.	10:09 a.m.	22	22.5	200		33
				8	Parhelion, right, 22°	9:00 a.m.	10:30 a.m.	10:09 a.m.			5	28	33
				8	Parhelion, left, 22°	9:00 a.m.	10:30 a.m.	10:09 a.m.			5	28	33
				16	Parhelion, right, 22°	7:00 a.m.	7:25 a.m.	7:16 a.m.				23	5
				16	Parhelion, left, 22°	7:00 a.m.	7:16 a.m.	7:16 a.m.				23	5
Ellendale, N. Dak.*	444	45 59	98 34	1	Solar halo, 22°	12:28 p.m.	3:30 p.m.	1:40 p.m.	23	23.5	360		36
				3	Parhelion, right, 22°	4:30 p.m.	5:35 p.m.	4:50 p.m.			4	22	16
				3	Parhelion, left, 22°	4:30 p.m.	5:35 p.m.	4:50 p.m.			4	22	16
				3	Light pillar	4:30 p.m.	5:35 p.m.	4:50 p.m.			3		
				18	Solar halo, 22°	8:45 a.m.	10:00 a.m.	9:10 a.m.	20.5	21.5	360		23
				18	Parhelion, right, 22°	7:40 a.m.	8:58 a.m.				3		
				18	Parhelion, left, 22°	7:40 a.m.	8:58 a.m.				3		
				18	Lunar halo, 22°			2:30 a.m.					
				19	Solar halo, 22°	12:05 p.m.	1:00 p.m.	12:10 p.m.	21	22	360		
				30	Solar halo, 22°	8:45 a.m.	9:17 a.m.	8:50 a.m.	21	22	160		26
				30	Parhelion, right, 22°	8:52 a.m.	9:20 a.m.	8:55 a.m.			5	22	26
Groesbeck, Tex.*	141	31 30	96 28		None								
Leesburg, Ga.*	85	31 47	84 14	1	Solar halo, 22°	11:40 a.m.	1:15 p.m.	11:45 a.m.	22		360		
				2	Solar halo, 22°	3:00 p.m.	3:08 p.m.	3:04 p.m.	22		140		
				5	Solar halo, 22°	12:40 p.m.	2:40 p.m.	1:15 p.m.	22		120		
				6	Lunar halo, 22°	6:40 p.m.	D. N. p.m.	7:25 p.m.	22		320		
				7	Solar halo, 22°	12:55 p.m.	5:20 p.m.	2:15 p.m.	22		360		
				7	Parhelion, left, 22°	4:09 p.m.	5:20 p.m.	4:18 p.m.				22	16
				7	Lunar halo, 22°	6:15 p.m.	D. N. p.m.	7:30 p.m.	22		360		
				9	Solar halo, 22°	11:10 a.m.	11:50 a.m.	11:15 a.m.	22		360		
				10	Solar halo, 22°	9:50 a.m.	10:02 a.m.	9:55 a.m.	22		35		
				10	Lunar halo, 22°	6:25 p.m.	D. N.	6:37 p.m.	22		200		
				12	Lunar halo, 22°	9:15 p.m.	D. N.	11:00 p.m.	22		360		
				13	Lunar halo, 22°	7:27 p.m.	D. N.	8:40 p.m.	22		360		
				14	Lunar halo, 22°	6:55 p.m.	D. N.	9:05 p.m.	22		360		
				16	Lunar halo, 22°	8:40 p.m.	D. N.	9:30 p.m.	22		360		
				17	Solar halo, 22°	8:06 a.m.	9:10 a.m.	8:07 a.m.	22		180		
				24	Solar halo, 22°	4:30 p.m.	4:35 p.m.	4:30 p.m.	22		60		
				25	Solar halo, 22°	1:27 p.m.	3:00 p.m.	1:30 p.m.	22		120		
				25	Parhelion, right, 22°	4:20 p.m.	4:35 p.m.	4:30 p.m.				22	17
				26	Solar halo, 22°	9:45 a.m.	11:05 a.m.	9:45 a.m.	22	23	360		
				29	Solar halo, 22°	11:25 a.m.	11:45 a.m.	11:30 a.m.	22		75		
				30	Solar halo, 22°	3:25 p.m.	4:27 p.m.	3:52 p.m.	22		80		
Madison, Wis.	297	43 05	89 23	1	Solar halo, 22°	8:00 a.m.	3:00 p.m.						
				1	Parhelion, left, 22°	4:30 p.m.	5:00 p.m.						
				2	Solar halo, 22°	9:00 a.m.	12:30 p.m.						
				2	Parhelion, right, 22°	4:00 p.m.	Sunset.						
				2	Parhelion, left, 22°	4:30 p.m.	4:40 p.m.						
				2	Upper tangent arc	11:00 a.m.	12:30 p.m.						
				2	Lower tangent arc	11:00 a.m.	12:30 p.m.						
				2	Circumzenithal arc	4:00 p.m.	4:20 p.m.						
				3	Solar halo, 22°	7:48 a.m.	9:00 a.m.						
				6	Solar halo, 22°	7:43 a.m.	5:30 p.m.						
				7	Solar halo, 22°	Sunrise.							
				7	Parhelion, right, 22°	8:57 a.m.							
				7	Parhelion, left, 22°	8:47 a.m.							
				7	Upper tangent arc	7:43 a.m.	12:40 p.m.						
				7	Lower tangent arc	8:00 a.m.	12:40 p.m.						
				7	Circumscribed halo	11:20 a.m.	12:40 p.m.						
				7	Solar halo, 46°	7:43 a.m.	12:00 p.m.						
				7	Circumzenithal arc	7:43 a.m.	9:00 a.m.						
				7	Parhelic circle	11:45 a.m.							
				7	Paranthelion, right, 120°	12:00 m.	1:00 p.m.						
				7	Paranthelion, left, 120°	12:00 m.	1:00 p.m.						
				8	Solar halo, 22°	7:40 a.m.	4:00 p.m.						
				8	Parhelion, right, 22°	7:48 a.m.	3:30 p.m.						
				8	Parhelion, left, 22°	7:48 a.m.							
				8	Upper tangent arc	8:15 a.m.							
				8	Solar halo, 46°	7:48 a.m.	3:30 p.m.						
				8	Circumzenithal arc	7:54 a.m.	8:40 a.m.						
				8	Parhelic circle	11:00 a.m.							
				8	Paranthelion, right, 120°	11:12 a.m.							
				8	Paranthelion, left, 120°	11:12 a.m.							

* Aerological station.

Halo phenomena observed during March, 1919—Continued.

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.	° ′	° ′						°	°	°	°	°
Madison, Wis. (continued)				9	Parhelion, right, 22°	7:15 a. m.	7:25 a. m.						
				12	Solar halo, 22°	2:42 p. m.	4:20 p. m.						
				12	Lunar halo, 22°	6:40 p. m.	D. N. P.						
				16	Solar halo, 22°	1:00 p. m.	Sunset						
				16	Lunar halo, 22°	Sunset	9:30 p. m.						
				16	Parhelion, right, 22°	4:00 p. m.	Sunset						
				16	Parhelion, left, 22°	4:00 p. m.	Sunset						
				16	Paraselene, right, 22°	Sunset	9:30 p. m.						
				16	Paraselene, left, 22°	Sunset	9:30 p. m.						
				16	Lunar halo, 46°	8:30 p. m.	9:30 p. m.						
				21	Parhelion, right, 22°	7:00 a. m.	7:10 a. m.						
				22	Solar halo, 22°	2:45 p. m.	3:00 p. m.						
				22	Parhelion, right, 22°	5:00 p. m.	Sunset						
				22	Parhelion, left, 22°	5:00 p. m.	5:10 p. m.						
				23	Solar halo, 22°	4:07 p. m.	4:30 p. m.						
				23	Upper tangent arc	4:12 p. m.	4:25 p. m.						
				24	Solar halo, 22°	10:45 a. m.	3:00 p. m.						
				24	Upper tangent arc	10:45 a. m.	11:30 a. m.						
				25	Solar halo, 22°	12:15 p. m.	1:00 p. m.						
Nashville, Tenn	166	36 10	86 47	10	Solar halo, 22°	9:30 a. m.	1:00 p. m.	11:55 a. m.					
				12	Solar halo, 22°	6:30 p. m.	8:25 p. m.	7:00 p. m.					
				25	Solar halo, 22°	4:30 p. m.	5:30 p. m.	4:40 p. m.					
Rochester, N. Y	159	43 8	77 42	8	Solar halo, 22°	3:55 p. m.	4:30 p. m.	4:05 p. m.	21.7	22.7	300		17
				8	Upper tangent arc	3:55 p. m.	4:30 p. m.				30	23	
				8	Solar halo, 46°	3:55 p. m.	4:03 p. m.				170		
				8	Circumzenithal arc	3:55 p. m.	4:03 p. m.	3:55 p. m.			40	65	18.3
				13	Solar halo, 22°		5:50 p. m.	5:40 p. m.			75		1.5
				13	Lunar halo, 22°	6:40 p. m.	9:00 p. m.	7:45 p. m.			360		
Royal Center, Ind*	225	40 53	86 29	3	Solar halo, 22°	11:20 a. m.	1:30 p. m.	11:50 a. m.	21	23	360	22	42
				6	Solar halo, 22°	7:20 a. m.	1:30 p. m.	12:00 m.			180	22	
				7	Parhelion, right, 22°	7:00 a. m.	7:40 a. m.	7:20 a. m.				22	
				7	Parhelion, left, 22°	7:00 a. m.	7:40 a. m.	7:20 a. m.				22	
				12, 13	Lunar halo, 22°	7:50 p. m.	3:10 a. m.	9:00 p. m.			360	22	
				13	Solar halo, 22°	11:15 a. m.	12:30 p. m.	11:46 a. m.			180	22	
				24	Solar halo, 22°	11:30 a. m.	2:00 p. m.	1:00 p. m.			270	22	
				25	Solar halo, 22°	11:15 a. m.	12:15 p. m.	11:46 a. m.			360	22	
Tatoosh Island*, Wash	26	48 23	124 44	4	Solar halo, 22°	11:26 a. m.	12:00 m.						
				4	Solar halo, 22°	2:26 p. m.	4:52 p. m.						
				4	Parhelion, right, 22°	4:32 p. m.	4:33 p. m.						
				4	Parhelion, left, 22°	4:45 p. m.	4:52 p. m.						
				5	Solar halo, 22°	8:55 a. m.	9:33 a. m.						
				5	Parhelion, right, 22°	8:55 a. m.	9:33 a. m.						
				6	Solar halo, 22°	11:07 a. m.	11:55 a. m.						
				7	Solar halo, 22°	11:06 a. m.	11:23 a. m.						
				7	Parhelion, right, 46°	11:12 a. m.	11:23 a. m.						
				7	Parhelic circle	11:12 a. m.	11:23 a. m.						
				8	Solar halo, 22°	11:50 a. m.							
				8	Parhelion, right, 22°	11:50 a. m.	3:03 p. m.						
				8	Parhelion, left, 22°	11:50 a. m.	3:03 p. m.						
				8	Light pillar	6:14 p. m.	6:33 p. m.						
				9	Solar halo, 22°	7:51 a. m.	8:17 a. m.						
				11	Lunar halo, 22°	7:28 p. m.	D. N. P.						
				12	Solar halo, 22°	11:54 a. m.	5:15 p. m.						
				12	Parhelion, left, 22°	12:08 p. m.	12:15 p. m.						
				20	Solar halo, 22°	12:15 p. m.	4:12 p. m.						
				20	Parhelion, right, 22°	2:35 p. m.	4:28 p. m.						
				20	Parhelion, left, 22°	2:10 p. m.	4:28 p. m.						
				21	Solar halo, 22°	10:07 a. m.	6:17 p. m.						
				21	Parhelion, right, 22°	9:50 a. m.	10:40 a. m.						
				21	Parhelion, left, 22°	10:07 a. m.	10:40 a. m.						
				21	Light pillar	6:27 p. m.	6:44 p. m.						
				22	Lunar halo, 22°	4:25 a. m.	5:40 a. m.						
				22	Paraselene, right, 22°	4:25 a. m.	5:06 a. m.						
				22	Upper tangent arc	4:38 a. m.	5:40 a. m.						
				22	Solar halo, 22°	7:17 a. m.	12:05 p. m.						
				22	Parhelion, right, 22°	7:59 a. m.	9:30 a. m.						
				22	Lower tangent arc	10:13 a. m.	10:25 a. m.						
				24	Lunar halo, 22°	4:30 a. m.	5:27 a. m.						
				24	Solar halo, 22°	3:15 p. m.	6:07 p. m.						
				24	Parhelion, right, 22°	4:40 p. m.	5:00 p. m.						
				24	Parhelion, left, 22	4:40 p. m.	5:00 p. m.						
				24	Upper tangent arc	5:01 p. m.	5:34 p. m.						
				25	Solar halo, 22°	8:46 a. m.	10:10 a. m.						
				25	Parhelion, right, 22°	7:45 a. m.	10:10 a. m.						
				25	Parhelion, left, 22°	7:45 a. m.	10:15 a. m.						
				25	Parhelic circle	8:50 a. m.	8:53 a. m.						
				26	Solar halo, 22°	6:56 a. m.	8:25 a. m.						
				26	Solar halo, 22°	1:17 p. m.	6:10 p. m.						
				26	Parhelion, left, 22°	5:35 p. m.	5:40 p. m.						
				29	Solar halo, 22°	2:25 p. m.	3:10 p. m.						
				29	Parhelion, right, 22°	2:25 p. m.	2:40 p. m.						
				29	Parhelion, left, 22°	2:25 p. m.	2:40 p. m.						
				29	Solar halo, 22°	5:00 p. m.	6:15 p. m.						
				31	Solar halo, 22°	9:49 a. m.	9:55 a. m.						
				31	Solar halo, 22°	3:58 p. m.	5:59 p. m.						
				31	Parhelion, right, 22°	5:54 p. m.	5:59 p. m.						
				31	Parhelion, left, 22°	5:54 p. m.	5:59 p. m.						
York, N. Y	232	42 52	77 53	4	Solar halo, 22°			8:30 a. m.			260		21.5
				9	Solar halo, 22°			4:00 p. m.			280		18
				10	Lunar halo, 22°			9:45 p. m.			360		
				11	Solar halo, 22°			8:30 a. m.			300		23

*Aerological station.

Halo phenomena observed during March, 1919—Continued.

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.*	1	Y	Bright	9	Ci. st.	wsw.	Stationary	9:40 a. m., 28th	9:50 a. m., 4th.
	2	Y	Faint	9	A. st.	w.	Stationary	9:40 a. m., 28th	9:50 a. m., 4th.
	3	Y	Faint	8	Ci. st.	wsw.	Falling	9:40 a. m., 28th	9:50 a. m., 4th.
	6	Y	Dim	8	A. st.	w.	Stationary	D. N., p., 4th	11:35 a. m., 6th.
	6								
	6								
	12	Y	Dim	10	Ci. st.	w.	Rising	4:40 p. m., 10th	3:05 p. m., 13th.
	28	R	Bright	6	Ci.	w.	Stationary	7:45 a. m., 26th	7:12 a. m., 2d.
	29	Y	Dim	10	A. st.	sw.	Stationary	7:45 a. m., 26th	7:12 a. m., 2d.
	29	Y	Dim	10	A. st.	sw.			
	30	Y	Dim	3 5	Ci. st. St. cu.	w. ne.	Stationary	7:45 a. m., 26th	7:12 a. m., 2d.
Canton, N. Y.	4	O	Dim	2	Ci. st.	w.	Falling	12:12 p. m., 1st	3:42 p. m., 4th.
	6	O	Dim	2	Ci. st.	w.	Rising	D. N., a., 5th	6:57 a. m., 7th.
	8		Dim	1	Ci. st.	w.	Falling	8:19 a. m., 7th	D. N., a., 9th.
	8		Dim	2	Ci. st.	w.	Falling		
	13		Dim	2	Ci.	w.	Rising	D. N., a., 13th	D. N., a., 16th.
	14		Dim	1	Ci. st.	w.	Stationary	D. N., a., 13th	D. N., a., 16th.
Cincinnati, Ohio	3	R, O	Dim	5	Ci. st.	nw.	Falling	5:15 p. m., 28th	1:00 a. m., 5th.
	10	R, O, Y, G, B	Brilliant	3 7	Ci. st. A. st.	w. w.	Falling	9:05 a. m., 9th	8:30 p. m., 10th.
	12		Bright	9	Ci. st.	nw.	Falling	D. N., p., 10th	4:10 a. m., 14th.
Dayton, Ohio	2		Dim	7	Ci. st.	sw.	Stationary	8:10 a. m., 1st	D. N., a., 5th.
	4		Dim	8	Ci. st.	w.	Falling	8:10 a. m., 1st	D. N., a., 5th.
	10		Dim	7	Ci. st.	w.	Falling	8:50 a. m., 9th	7:40 p. m., 10th.
	12		Dim	7	Ci. st.	w.	Stationary	8:55 p. m., 10th	8:05 p. m., 13th.
Drexel, Nebr.*	3	O, Y, G, B	Dim	6 3	Ci. st. A. st.	wsw. wsw.	Falling	7:00 a. m., 28th	5:45 p. m., 3d.
	6	O, Y, G, B	Dim	3 4	Ci. st. A. st.	sw. sw.	Falling	10:22 a. m., 6th	4:50 p. m., 6th.
	8	O, Y, G	Dim	6	Ci. st.	sw.	Falling	7:15 a. m., 7th	10:45 a. m., 9th.
	8	O, W	Dim						
	8	O, W	Dim						
	16	W	Dim	4 3	Ci. st. St. cu.	sw. wsw.	Rising	1:05 p. m., 15th	8:35 p. m., 24th.
	16	W	Dim	4 3	Ci. st. St. cu.	sw. wsw.			
Ellendale, N. Dak.*	1	R	Bright	6	St. cu.	nw.	Rising	9:55 a. m., 1st	10:45 a. m., 2d.
	3		Bright	1	A. st.	w.	Falling	1:30 p. m., 3d	D. N., a., 6th.
	3		Bright	2	A. cu.	w.			
	3		Bright	1 2	A. st. A. cu.	w. w.			
	18		Dim	3	Ci. st.	wnw.	Falling	8:45 p. m., 14th	10:00 a. m., 22d.
	18		Dim						
	18		Dim						
	18		Dim	4	Ci. St.	w.			
	19		Dim	7	Ci. St.	w.	Rising	8:45 p. m., 14th	10:00 a. m., 27th.
	30		Dim	3 2	Ci. St. Cu	w. ne.	Rising	8:25 a. m., 25th	2:00 p. m., 1st.
	30	R	Dim	3 2	Ci. St. Cu	w. ne.			
Groesbeck, Tex.*									
Leesburg, Ga.*	1	R, O, Y, G	Bright	6 4	Ci. St. A. Cu	w. w.	Falling	11:40 a. m., 1st	D. N. a., 2d.
	2	R, O, Y, G	Dim	4 6	Ci. St. A. St.	w. w.	Stationary	11:28 a. m., 2d	2:58 p. m., 5th.
	5	R, O, Y, G	Bright	4 5	Ci. St. St. cu	sw. sw.	Falling	11:28 a. m., 2d	2:58 p. m., 5th.
	6			9	Ci. St.	w.	Stationary	9:45 a. m., 6th	6:50 a. m., 8th.
	7	R, Y, G	Dim	9	Ci. St.	w.	Stationary	9:45 a. m., 6th	6:50 a. m., 8th.
	7	R, Y, G	Bright	1 6	Ci. cu Ci. St.	w. w.	Stationary		
	7			10	Ci. St.		Rising		
	9	R, O, Y	Bright	2 5	Ci. Ci. St.	w. w.	Stationary	D. N. a., 9th	6:30 a. m., 11th.
	10	R, Y	Dim	2 7	Ci. Ci. St.	w. w.	Falling	D. N. a., 9th	6:30 a. m., 11th.
	10			7	Ci. St.	w.	Stationary		
	12			7	Ci. St.	w.	Stationary	8:15 a. m., 11th	6:14 a. m., 14th.
	13			5 4	Ci. St. A. St.	nw. nw.	Stationary	8:15 a. m., 11th	6:14 a. m., 14th.
	14			6 3	Ci. St. A. St.	nw. nw.	Stationary	6:17 a. m., 14th	7:39 a. m., 15th.
	16	R	Dim	8 2	Ci. St. St. cu.	sw. w.	Stationary	6:40 p. m., 15th	10:50 a. m., 17th.
	17	R	Dim	1 5	Ci. Ci. St.	sw. sw.	Falling	6:40 p. m., 15th	10:50 a. m., 17th.
	24			5	Ci. St.	sw.	Stationary	3:53 p. m., 17th	2:45 p. m., 26th.
	25	R	Dim	5	Ci. St.	w.	Falling	3:53 p. m., 17th	2:45 p. m., 26th.
	25	R, Y, B	Dim	7 2	Ci. St. A. St.	w. sw.	Stationary		
	26	R, O, Y	Bright	4 Few	Ci. St. Ci. cu	ssw. ssw.	Falling	3:53 p. m., 17th	2:45 p. m., 26th.
	29			6	Ci.	w.	Falling	D. N. a., 27th	10:38 a. m., 4th.
	30	R, Y	Bright	2 3	Ci. Ci. St.	w. w.	Stationary	D. N. a., 27th	10:38 a. m., 4th.
Madison, Wis.	1	R	Dim	10	Ci. St.	w.	Stationary	9:00 p. m., 28th	11:00 p. m., 3d.
	1		Bright						
	2	R	Brilliant	10	Ci. St.	w.	Stationary	9:00 p. m., 28th	11:00 p. m., 3d.
	2	R	Bright	2	Ci. St.	w.			
	2	R	Dim	2	Ci. St.	w.			
	2	R	Brilliant	8	Ci. St.	w.			
	2								
	2	B, Y, R	Brilliant	2	Ci. St.	w.			
	3	W	Dim	10	Ci. St.	w.	Falling	9:00 p. m., 28th	11:00 p. m., 3d.
	6	R, Y, G, B	Bright	8	Ci.	w.	Stationary	5:50 p. m., 4th	D. N. a., 10th.
	7	R	Brilliant				Stationary	5:50 p. m., 4th	D. N. a., 10th.
	7	R	Brilliant						
	7	R	Brilliant						
	7	R	Brilliant						

*Aerological station.

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

Halo phenomena observed during March, 1919—Continued.

Station.	Date.	Colors.†	Degree of brightness.	Clouds.			Station pressure.	Precipitation.	
				Amount.	Kind.	Direction.		Last previous ended.	First subsequent began.
Madison, Wis. (continued)	7	R	Brilliant						
	7	R	Brilliant						
	7		Bright						
	7	W	Brilliant						
	7	R	Brilliant						
	7		Dim						
	7		Dim						
	8	R	Bright	10	Ci. st.	w.	Falling	5:50 p. m., 4th	D. N. a., 10th.
	8	R	Brilliant						
	8	R	Bright						
	8	R	Brilliant						
	8		Dim						
	8	W	Brilliant						
	8		Dim						
	8		Bright						
	8		Dim						
	9	R	Bright	4	Ci. st.	w.	Rising	5:50 p. m., 4th	D. N. a., 10th.
	12	R	Bright	10	Ci.	w.	Falling	3.00 p. m., 10th	10:30 a. m., 13th.
					Ci. st.				
	12		Dim	3	Ci.	w.	Rising		
				7	Ci. st.	w.			
	16	R	Brilliant	10	Ci. st.	w.	Rising	12:15 p. m., 16th	8:00 p. m., 17th.
	16	R	Brilliant						
	16	W							
	16	W							
	16	W							
	16	W							
	16	W							
	21	R	Brilliant	Few.	Ci. st.	w.	Stationary	6:40 p. m., 20th	4:00 p. m., 25th.
	22	W		6	Ci.	w.	Stationary	6:40 p. m., 20th	4:00 p. m., 25th.
	22	R	Bright						
	22	R							
	23	W	Dim	10	Ci. st.	w.	Falling	6:40 p. m., 20th	4:00 p. m., 25th.
	23	R	Bright						
	24	R	Brilliant	10	Ci. st.	w.	Falling	6:40 p. m., 20th	4:00 p. m., 25th.
	24	R	Brilliant						
	25		Dim	4	Ci. st.	w.	Falling	6:40 p. m., 20th	4:00 p. m., 25th.
Nashville, Tenn	10	R, O, Y, G, B	Bright	7	Ci. st.	w.	Falling	9:50 p. m., 8th	1:30 a. m., 14th.
	12		Bright	10	Ci. st.		Stationary	9:50 p. m., 8th	1:30 a. m., 14th.
	25	R	Dim	7	Ci. st.	w.	Stationary	1:10 p. m., 17th	5:55 a. m., 26th.
Rochester, N. Y	8	R, O, Y	Brilliant	5	Ci. st.	sw.	Falling	2:30 p. m., 7th	12:35 a. m., 9th.
				5	A. st.				
	8	W	Brilliant						
	8		Dim						
	8		Dim						
	13	R	Dim	7	Ci.	w.	Rising	3:00 p. m., 13th	4:00 p. m., 15th.
				2	Ci. st.	nw.			
	13	W	Bright	9	Ci. st.	nw.			
Royal Center, Ind.*	3	R, O, Y, G, B	Bright	10	Ci. st.	w.	Falling	D. N. P., 28th	D. N. P., 4th.
	6	R	Dim	4	Ci. st.	nw.	Falling	D. N. a., 5th	4:02 p. m., 8th.
				5	St. cu.	nw.			
	7		Dim	10	A. st.	nw.	Rising	D. N. a., 5th	4:02 p. m., 8th.
	7		Dim	10	A. st.	nw.			
	12, 13	R, O, Y, G, B	Bright	8	Ci. st.	w.	Stationary	2:40 p m., 10th	3:42 p. m., 13th.
	13	R	Dim	2	Ci. st.	w.	Falling		
				1	Ci. cu.	w.			
	24	R, B	Dim	6	Ci. st.	w.	Falling	1:15 p. m., 21st	D. N. a., 26th.
	25	R	Dim	8	Ci. st.	sw.	Falling	1:15 p. m., 21st	D. N. a., 26th.
Tatoosh Island, Wash	4	O, V	Bright	3	Ci. st.	w.	Rising	10:12 a. m., 4th	12:05 p. m., 4th.
				3	Cu.	w.			
	4	R, O, Y, B, V	Dim	2	Ci. st.	nw.	Rising	1:42 p. m., 4th	3:19 p. m., 4th.
				3	A. st.	w.			
	4	R, B	Dim	5	Ci.	w.			
				2	Cu.	w.			
	4	R, B	Dim	5	Ci.	w.			
				2	Cu.	w.			
	5	R, B	Dim	Few.	A. st.	w.	Falling	8:50 a. m., 5th	9:36 a. m., 5th.
				9	St.	e.			
	5	R, Y, B, V	Bright						
	6	W	Dim	1	Ci. st.	nw.	Rising	11:07 a. m., 6th	1:14 p. m., 6th.
				6	St. cu.	nw.			
	7	W	Dim	5	Ci. st.	nw.	Falling	10:10 a. m., 7th	11:49 a. m., 7th.
				5	St. cu.	s.			
	7	W	Dim						
	7	W	Dim						
	8			1	Ci. st.	sw.	Rising	6:30 a. m., 8th	1:24 p. m., 9th.
				1	Cu.				
	8	W	Dim						
	8	W	Dim						
	8	Y	Dim	Few.	Ci. st.	n.			
				Few.	St. cu.				
	9		Dim	Few.	Ci. st.	w.	Rising	6:30 a. m., 8th	1:24 p. m., 9th.
				6	St. cu.	sw.			
	11	W	Dim	1	Ci. st.	sw.	Rising	6:40 p. m., 11th	D. N. p., 12th.
				3	A. cu.	sw.			
	12	W	Dim	5	Ci.	s.	Falling	6:40 p. m., 11th	D. N. p., 12th.
				Few.	Cu.	se.			
	12	R, B, W	Dim	5	Ci.	s.			
				Few.	Cu.	se.			
	20	W	Dim	3	Ci. st.	nw.	Stationary	6:10 a. m., 18th	7:30 p. m., 22d.
				6	A. st.	w.			
	20	R, Y, B, W	Bright	1	Ci. st.	nw.			
				2	A. st.	w.			
	20	R, B, W	Bright	5	Ci. st.	nw.			
				3	A. st.	w.			
	21	W	Dim	2	Ci. st.	nw.	Falling	6:10 a. m., 18th	7:30 p. m., 22d.
	21	W	Dim	1	Ci. st.	nw.			
	21	W	Dim						

*Aerological station.

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Halo phenomena observed during March, 1919—Continued.

Station.	Date.	Colors.†	Degree of brightness.	Clouds.			Station pressure.	Precipitation.	
				Amount.	Kind.	Direction.		Last previous ended.	First subsequent began
Tatoosh Island, Wash. (continued)	21								
	22	W	Dim	2 1	Ci. st. A. st.	w. w.	Falling	6:10 a. m., 18th	7:30 p. m., 22d.
	22	W	Dim						
	22	W	Dim						
	22	R, Y, B	Bright	2 4	Ci. st. A. st.	sw. w.	Rising		
	22	W	Dim	2 2	Ci. st. Ci. cu.	sw. w.			
	22	W	Dim	6	Ci. st.	sw.			
	24	W	Dim	7	Ci. st.		Falling	D. N. p., 22d	6:52 a. m., 27th.
	24	W	Dim	Few. Few.	Ci. st. St. cu.	nw. sw.			
	24	R, Y, B	Bright	Few. Few.	Ci. st. St. cu.	nw. sw.			
	24	R, Y, B	Bright						
	24	R, Y, B	Bright	Few. Few.	Ci. st. St. cu.	nw. sw.			
	25	W	Dim	1 Few.	Ci. st. St. cu.	nw. e.	Rising	D. N. p., 22d	6:52 a. m., 27th.
	25	R, B	Bright	1 Few.	Ci. st. St. cu.	nw. e.			
	25	R, B	Bright						
	25	W	Dim	1 Few.	Ci. st. St. cu.	nw. e.			
	26	R	Dim	2	A. st.	w.	Falling	D. N. p., 22d	6:52 a. m., 27th.
	26	R, Y, B	Bright	7	Ci. st.	w.			
	26	R, Y, B	Bright	9	Ci. st.	w.			
	29	W	Dim	2 7	Ci. st. St. cu.		Falling	D. N. p., 28th	D. N. a., 30th.
	29	R, B	Dim			se.			
	29	R, B	Dim						
	29	R, Y, B	Bright	3 6	Ci. st. St. cu.	se. se.	Rising	D. N. p., 28th	D. N. a., 30th.
	31	O	Dim	4 5	Ci. cu. St. cu.	sw. s.	Falling	D. N. p., 30th	11:50 a.m., 3d.
	31	O	Dim	2 7	Ci. st. A. st.	sw. sw.			
	31	W	Dim						
	31	R, O, Y, G, B, V	Brilliant	Few. 9	Ci. st. A. st.	s. s.			
York, N. Y	4	O	Dim	8	A. st. St. cu.	s.	Falling	D. N. a., 1st	8:00 a. m., 5th.
	9	O	Dim	2 8	A. st. St.	sw.	Falling	11:00 a. m., 9th	4:15 p. m., 9th.
	10	W	Bright	3	Ci. st.	w.	Rising	4:30 p. m., 9th	D. N. p., 10th.
	11	R, Y	Dim	4	Ci. st	w.	Stationary	D. N. a., 11th	1:00 p. m., 11th.

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

NOTES.

As indicated in the table, unusually brilliant halo phenomena were observed in different parts of the country on March 7 and 8, 1919, particularly in the north-central States. At Drexel, Nebr., on the 8th, the measured distance of parhelia from the sun was 28°, the altitude of the sun at the time, 10:09 a. m., being 33°.

At Madison, Wis., there were visible at noon on the 7th halos of 22° and 46°, parhelic circle, paranthelia of 120°, parhelia, and a complete circumscribed halo. Early on the 7th and 8th there were also seen brilliant upper tangent arcs and a circumzenithal arc. This upper arc was so bright that a lady in Milwaukee reported by telephone to the local Weather Bureau office that she saw the "sun" overhead at 10 a. m.

Similar displays are described in special reports by Mr. Patrick Connor, meteorologist, Kansas City, Mo., and Mr. A. D. Sanial, assistant observer, La Crosse, Wis. At Kansas City the forms observed included halos of 22° and 46°, parhelia, upper tangent arcs and circumzenithal arc; at La Crosse, halo of 22°, parhelia, upper and lower tangent arcs, and parhelic circle.