

FIG. 2.—Barogram at Providence, R. I., March 3-4, 1906.

This temperature fluctuation is shown by the accompanying tracings from the thermograph and barograph. The instrumental corrections of the sheets have been applied in making the tracings, but the reduction of the pressure to sea level has not been made. The elevation of the barometer is 214 feet above the sea. The rise and fall and second rise are well shown. They occurred at night and early morning, overcoming the diurnal changes.

HALOS OF MARCH 1-4, 1906.

Several accounts, some of them quite minute descriptions, of halo phenomena seen during the first four days of March have come to this office from widely scattered points in the western half of the country. Of those reporting to us the first to see the halos was apparently David L. Holmes, of Kellogg, Sonoma County, Cal., who writes:

Yesterday [March 1], for about an hour, between 4 and 5 p. m., there appeared in the sky a circle of white light around the sun, the sun being directly in its center. Vertically above the sun, on the outer edge of the circle, was a bright spot much like the sun in its glare, and at a space of 90° below and on each side of this [were other] bright spots. The fourth, just below the sun, was missing, and the circle [was] incomplete. Outside of this circle was a rainbow,¹ and at the highest part of this bow another bow, which was inverted, touched it. (See fig. 1.) The sun was in the southwest and the rainbows appeared first. Long, flat, slate-colored clouds were in the sky, about a mile high (above Mount St. Helena).

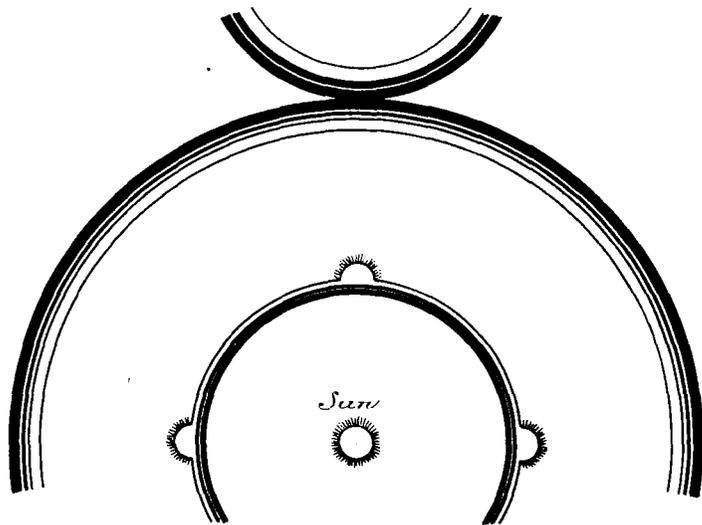


FIG. 1.—Halos seen at Kellogg, Cal., March 1, 1906.

My father told me that twenty-four or twenty-five years ago, while down in the San Joaquin Valley, he saw a rainbow in the shape of a perfect triangle, and with no bright circle or lights.

¹ A colored halo, somewhat resembling a rainbow in appearance. The true rainbow is seen in the part of the sky opposite the sun.—EDITOR.

On March 3 many persons in western Colorado saw the phenomena. Mr. J. B. Willsea, Cooperative Observer at Fruita, Mesa County, Colo., writes:

At about 9 a. m. to-day [March 3], a solar halo made its appearance and lasted until about 11:30 a. m.

Inclosed you will find a crude diagram of the same, as nearly as I can represent it. (See fig. 2.)

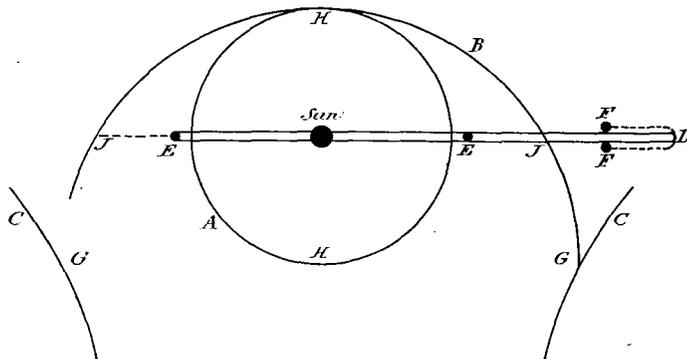


FIG. 2.—Halos seen at Fruita, Colo., March 3, 1906.

There were three perpendicular circles,² A, B, and C, or rather four circles, as the two C's were a pair, of similar appearance. There was also a horizontal circle, DE.

The circle A was about 45° in diameter, with the two bright spots a degree or two outside the circumference. B was about 90° in diameter and the two C's, I think, about 180° in diameter, while the horizontal circle was about 90° in diameter, with its center not far from the zenith, moving, of course, with the sun.³

The circles were not complete, but showed, toward noon, about as the diagram represents.

A large part of B and most of the C's were below the horizon, and their appearance varied from time to time.

The circles A, B, and the C's were rainbow colored throughout, while DE was white, with possibly a light blue tinge. The extreme eastern, or rather southeastern, part of DE passed through the sun, the "dogs" on either side, EE, and the points JJ.

Toward the northwestern part of the circle DE appeared two white spots or "dogs," wider than the band of the circle, but no more brilliant than the rest of the white circle; they were about 90° apart (90° of the white circle—heretofore I have spoken of degrees of the circle of the heavens).

"Dogs" appeared at HH and GG; the latter (GG) were on a horizontal plane with lower H, but no "dogs" appeared at JJ, and none in the circle DE save FF and EE.

The points GG, HH, and EE were very brilliantly colored, but the spots at EE were brilliant only on the side toward the sun, while the side of the spot or "dog" away from the sun was of pale blue, but brighter than those at FF.

The circle DE was more constant than the others in its appearance and form, showing for a long time a perfect circle.

At the point H above the sun, the outside of the arc, for a few degrees, seemed of a marked brown color.

From Grand Junction, about fifteen miles southeast of Fruita, we have received the following account by Mr. George H. Ferguson:

Saturday morning, March 3, there was a very unusual display of solar halos. The inclosed drawing (fig. 3) shows quite clearly the position of the different lines. All were of prismatic colors, with the red nearest the sun, except the circumzenithal circle and the two mock suns on the side opposite the sun, which were white.

The second drawing shows a slight change, there being a difference of about one hour between the two.

The two short segments of circles a were hardly distinguishable, but I am quite sure they were there. It also seemed to me that the two mock suns b were segments of circles as I have represented in the drawing, but I could not feel certain about it.

The heavy lines show where they were especially bright.

The Daily Sentinel, of Grand Junction, printed a description in its issue of March 3, 1906, from which we make the following extracts:

² By a "perpendicular circle" the writer evidently means a circle whose center is not at or near the zenith.—EDITOR.

³ These angular diameters are unsatisfactory—the radii of the two C circles should have been measured and the locations of their centers stated more definitely.—EDITOR.

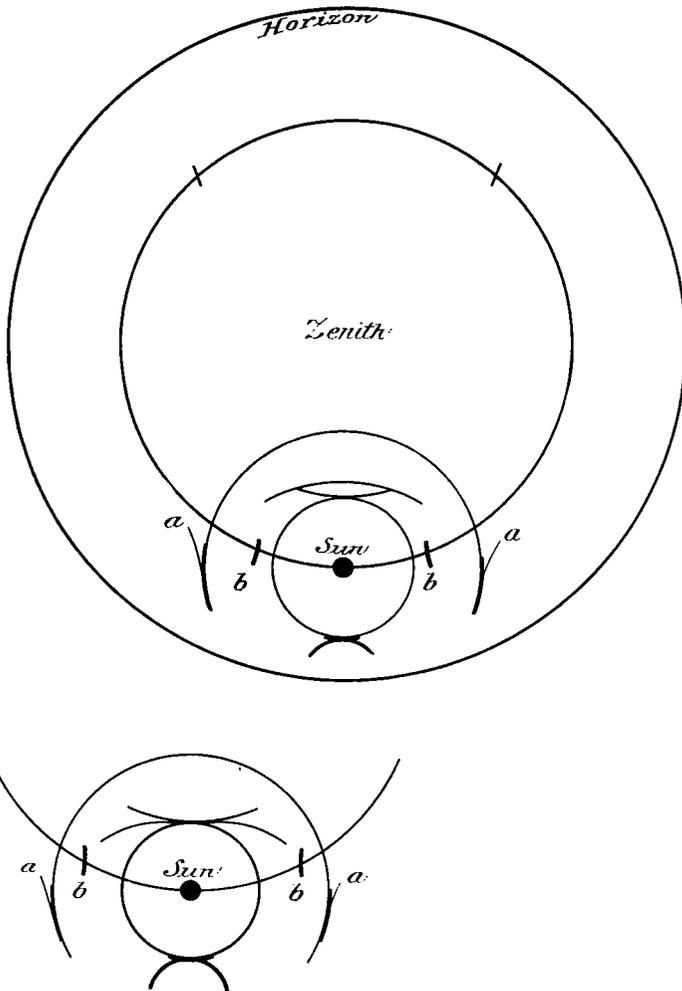


FIG. 3.—Halos seen by George H. Ferguson, Grand Junction, March 3, 1906.

This morning the inhabitants of the city and valley were privileged to witness one of the prettiest and most interesting displays in the heavens imaginable.

In the northwest, in the northeast, in the southeast and in the southwest and entirely across the northern sky appeared the sun dogs and solar halos; some were in colors and resembled rainbows, while others were of silver white.

Mr. Hardinge, the local weather observer, stated that the display was made up of a full complement of solar halos and mock suns, the latter better known as sun dogs; there was one ring of about 45°, and then a great ring apparently through the sun and around the zenith. The first two rings were prismatic in their makeup, being of varied colors, while the latter ring was white.

From a sketch and description by Dr. C. P. Blachly, Cooperative Observer at Manhattan, Kans., Mr. Geo. F. Freeman, a photographer, has made many blue prints, one of which was forwarded through the official in charge at Kansas City, Mo. Part of this is reproduced in fig. 4. The description states that:

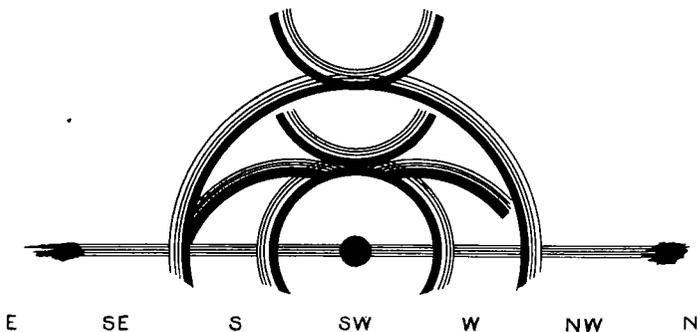


FIG. 4.—Halos seen at Manhattan, Kans.

They [the halos] were visible for several hours; the drawing, however, shows the appearance at 4:10 o'clock. Their positions remained the same, but different parts varied in intensity. The long horizontal halo extending through the sun, and nearly around the horizon except the northeast, was white, with brighter nodes at intervals. The one immediately around the sun, the elliptical one, and the first reversed bow were red on the side toward the sun, bright whitish yellow in the middle and light violet on the side away from the sun; the large halo and the outer reversed one were deep vermillion on the side toward the sun, rich orange in the middle, and deep violet on the outside. The elliptical halo seemed to have a distinct reentrant curve just above the sun. The sky was evenly hazy throughout; next day a heavy snowstorm followed.

The blue print states that the halos were seen on Sunday, March 3, but the calendar shows that March 3 was Saturday. The weather maps show that the heavy snowstorm which came next day occurred Monday, the 5th; therefore the halos were presumably seen Sunday, March 4.

The following description is reprinted from an article by S. D. F., in the report for March of the Kansas section of the Climatological Service of the Weather Bureau:

AN UNUSUAL SOLAR HALO.

A solar halo of unusual beauty and appearance was observed at Topeka, Kans., on the afternoon of Sunday, March 4, 1906.

At 4:40 p. m. [central time] there were seen segments of five prismatic colored halos about the sun. These are roughly represented by the following diagram, fig. 5:

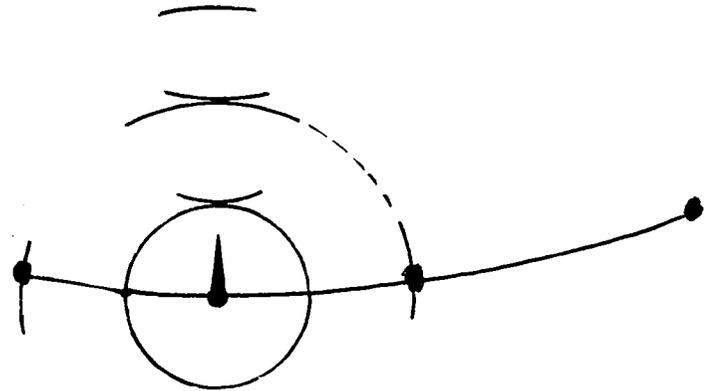


FIG. 5.—Halos seen at Topeka, Kans., March 4, 1906.

A halo of 22° completely encircled the sun. An arc about 40° long of a 22° halo, turned with its convex side to the sun, touched the upper portion of the first halo. Encircling these were three segments of a 46° halo, arranged above and on each side of the sun. At times the upper arc and the segment on the north side of the sun were faintly united, making 160° of the halo visible. Above these, touching the upper arc of the 46° halo and turned convexly to the sun, was a 40° segment of a halo, in which the colors were unusually well separated. Above this arc could be seen a faintly-defined segment of another halo turned with its concave side to the sun. At the points where the white circle crossed the 46° halo white parhelia, or mock suns, appeared brightly, and a white pillar of light could be seen extending upward from the sun nearly to the innermost halo. The white circle extended from its intersection with the south segment of the 46° halo to 190° azimuth, ending in a faint parhelion.

In each of the colored halos the prismatic colors were arranged with the red on the side nearest the sun, being on the inner side of the encircling halos and on the outer side of the ones turned convexly to the sun.

These halos were visible with varying degrees of distinctness for about an hour, when the outer ones began to disappear. By sunset only the upper portion of the innermost halo and the pillar of light were visible.

During this time the sky was overcast with a thin, whitish sheet of cirro-stratus clouds, which had been present most of the day and had produced a single halo from 10:50 a. m. till the others appeared.

Mr. T. B. Jennings, Section Director at Topeka, writes that his own observations of the halo agreed fully with those of his assistant, Mr. Snowden D. Flora, as given above.

A good description of similar halos may be found in Loomis's Treatise on Meteorology, pp. 216-225 (1883 edition), Section V of Chapter VIII. The student may also find articles discussing the theory in the MONTHLY WEATHER REVIEW, January, 1905, Vol. XXXIII, pp. 11-13, and June, 1902, Vol. XXX, p. 317.

*That is, 10° E. of N., since azimuths are counted from S. to W., etc.