HALOS OF OCTOBER 3, 1917, IN TEXAS AND OHIO.[1]

Houston, Texas—The following notes and sketch (fig. 1) of a solar halo observed at Houston, Tex., on October 3, 1917, are furnished by Mr. B. Bunnemeyer, Meteorologist. Of special interest are the oblique arcs of the anthelion marked "*g*", which are shown to meet in the upper part of the 22°-halo.

A perfect solar halo was observed at Houston, Tex., at 11:30 a. m., October 3, 1917, consisting of (*a*) a halo of 22° radius; (*b*) an elliptical circumscribed halo; (*c*) arcs of a halo of 45°; (*d*) supralateral arc tangent to halo of 45°; (*e*) infralateral arcs tangent to halo of 45°; (*f*) parhelic circle of approximately 35° radius with zenith as center; and (*g*) oblique arcs of the anthelion *touching the halo of 22°*. The halo was at its best when first observed. The accompanying sketch (fig. 1) of the phenomenon was prepared by Mr. I. R. Tannehill, assistant observer.[2]

There were no parhelia. The parhelic circle (*f*) and the oblique arcs of the anthelion (*g*) were white; all other circles or arcs of circles exhibited the colors of the rainbow, with the red color toward the sun. The display was indescribably beautiful and caused general comment and numerous inquiries as to its significance. The day was perfect, with an average cloudiness of only 3/10. Cirrus and cirro-stratus clouds surrounded the sun, intermingled with a very few cirro-cumulus. Here and there a few small cumulus clouds drifted across the sky. A faint cirrus haze was also observed. The parhelic circle and oblique arcs of the anthelion seemed to be projected for a large part upon a clear sky. The northern portion of the circumference of the halo of 22° and of the elliptical circumscribed halo were superimposed for a distance of about 40° and the southern for a distance of perhaps 12°.

The phenomenon began to dissolve slowly toward noon and by 2:30 p. m. the last traces had faded away. For twelve days preceding its appearance and for four days following it, the weather was perfect with mostly clear sky.

The time used was that of the 90th meridian.

Gallia, Ohio.—Solar halo phenomena were also observed on this date by Mr. J. S. Houser, Associate Entomologist of the Ohio Agricultural Experiment Station. His description and sketch (fig. 2) follow:

I am inclosing a sketch of parhelia redrawn from a field sketch made at Gallia, Ohio, October 3, 1917, at 2:30 in the afternoon.

Perhaps such phenomena are quite common to you but it was decidedly unusual to me. The semicircular bands of light *A* and *B*, while indistinct, were continuous, and the intensified patches of light *C*, *D*, *E*, *F*, *G*, *H*, *I*, and *J*, appeared with varying degrees of distinctness. Patch *C* was the most distinct of all, but was scarcely more distinct than the X-shaped area *J*. The figure as shown represents the phenomenon in its most glorious stage. It was, of course, constantly changing.

My observations and the field sketch were checked and verified by Dr. Tipton, of Gallia.

[1] Prepared and published by Division of Aerological Investigations.

[2] Additional inquiry of the Houston office force confirms the correctness of this point in the sketch here published as fig. 1.—C. A. Jr.

DEVICE FOR OBSERVING RADIANTS OF AURORAS.

Late in November 1917 the editor received a request from a prominent American physicist for "observations of the aurora relative to focus [apparent focusing of the rays]." In spite of the large number of reports of the great aurora of August 26, 1916, published *in full* in the MONTHLY WEATHER REVIEW for that month, it was not possible to refer to many observations of really useful precision. Many of our observers and readers surely desire to improve the quality of their observations and will welcome the following suggestions put out by the Meteorological Office in London.[1]

Observers of auroras who wish to determine the bearing and elevation of the radiant of the streamers may find the following description of the device adopted at Eskdalemuir of service: A fan of strings is fixed in a window. On the window sill is placed a stand which carries a card in which a large peephole has been punched. The card is moved up and down and to and fro until the strings and the streamers appear to radiate from a common point. It may be assumed that the streamers are parallel lines which only appear to meet on account of perspective. The line joining the peephole to the point where the strings meet must be in the same direction.

Attempts to connect the stray electric waves which are so frequently noticed in wireless telegraphy, with auroras have not met with success hitherto, but the information concerning auroras available in this country [England] has been somewhat meager. To make it more systematic observers are invited to send in reports giving—

(1) Position of radiant [determined perhaps as above].
(2) Angular dimensions and positions of arches.
(3) Some indication of intensity.

[1] *Great Britain*. Meteorological Office circular, No. 8, January 29, 1917, page 3, "Notes and Queries."

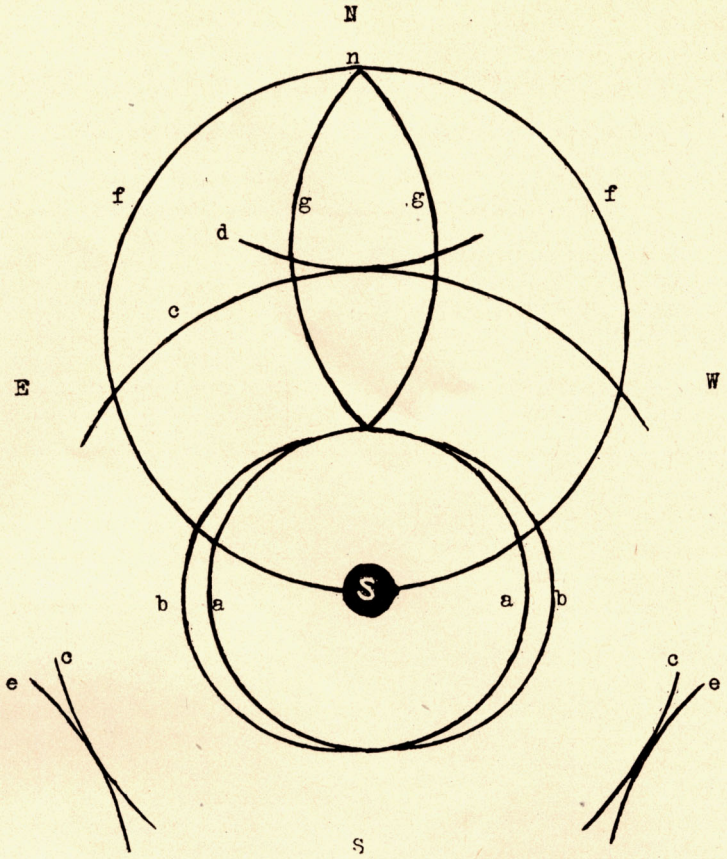

FIG. 1.—Halo phenomena observed at Houston, Tex., Oct. 3, 1917, at 11:30 a. m. Note the intersection of the oblique arcs of the anthelion (*g*, *g*) at the upper summit of the 22° halo (*a*). (90th meridian time.) (I. R. Tannehill, *delin.*)

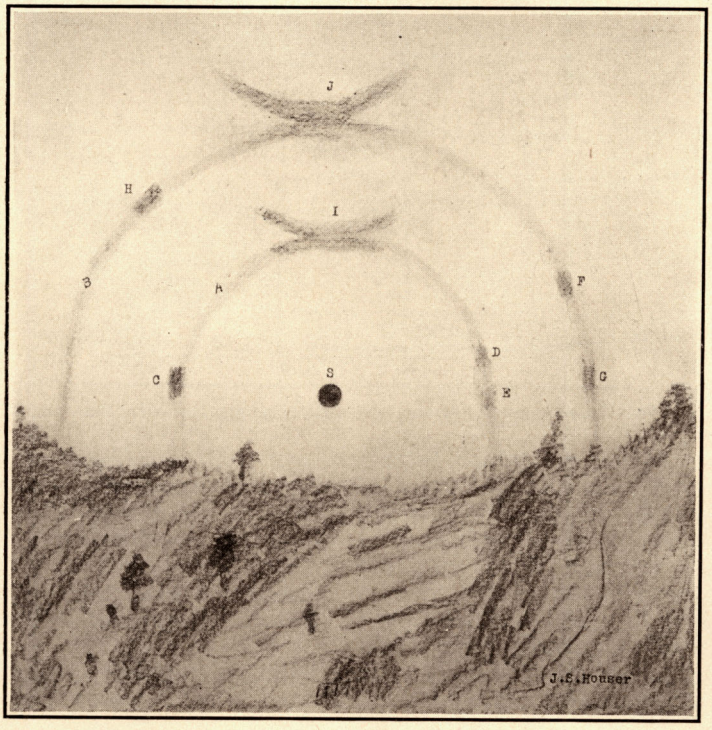

FIG. 2.—Sketch of halo phenomena observed at Gallia, Ohio, Oct. 3, 1917, at 2:30 p. m. (J. S. Houser, *delin.*)