

membership of the association will be limited to those who will be asked to attend this meeting. The committee merely sought, by the means indicated, to bring together a body much larger and more representative than itself, which may constitute a nucleus for the association, and to whose judgment the committee may submit its recommendations.

The committee is not empowered to define authoritatively either the purposes or the scope of the association, or the conditions for membership in it. It is, however, to be expected that the association's future policy with regard to these matters will be determined at the meeting to be held next month.

Since the previous announcement of the *personnel* of the committee, the following members have been added to it:

- G. B. Frankforter,
University of Minnesota,
- H. B. Mumford,
University of Illinois,
- C. E. Bessey,
University of Nebraska,
- Samuel B. Harding,
University of Indiana,
- Percy Bordwell,
University of Iowa,
- T. S. P. Tatlock,
University of Michigan,
- J. W. Garner,
University of Illinois,
- C. D. Adams,
Dartmouth College.

The chairman of the committee, Professor John Dewey, of Columbia University, or the undersigned, will welcome suggestions from any member of the university teaching profession relating to the plan of organization and the future work of the proposed association.

ARTHUR O. LOVEJOY,
Secretary

BALTIMORE,
November 3, 1914

ATMOSPHERIC OPTICAL PHENOMENA

TO THE EDITOR OF SCIENCE: The letters from Messrs. H. W. Farwell and A. W. Freeman,

published in SCIENCE, October 23, 1914, pp. 595-596, are two of the many recent indications of the fact that more attention is now being given than formerly to the observation of atmospheric-optical phenomena. The meteor seen by Mr. Freeman was not, as he supposes, a tertiary rainbow, but the circumzenithal arc of a solar halo. This particular arc is also known as the upper quasi-tangent arc of the halo of 46 degrees.

The complex halo observed by Mr. Freeman at Fredericksburg, Va., November 2, 1913, was visible, in various degrees of development, on November 1 and 2, at a great number of places throughout the eastern half of the United States, and constituted the most remarkable display of the kind heretofore recorded in this country. It should be noted that the small arc, convex to the sun, marked "rainbow" in Mr. Freeman's drawing, was the same phenomenon as that observed by Mr. Farwell, *i. e.*, the circumzenithal arc of a halo. The term "rainbow" is highly inappropriate for this or any other halo phenomenon.

Mr. Freeman's observation is noteworthy on account of including the rare phenomenon of the anthelion—a white mock-sun directly opposite the sun in azimuth, and at the same altitude above the horizon. The large outer circle, shown in the drawing, extending around the horizon, is the parhelic circle, a well-known though rather uncommon phenomenon. The inner, partial circle, drawn parallel to this, is decidedly unusual. It appears to be a secondary parhelic circle, produced by the upper vertical parheliion of the 22-degree halo serving as luminous source. This and other secondary halo phenomena produced by parhelia have been described by Bravais and Besson.

The August number of the *Monthly Weather Review*, which has just appeared, contains a translation of a recent memoir by Besson describing all known forms of halo. No such comprehensive account of these phenomena has heretofore been published in English. The same number of the *Review* contains an extensive report on the halos of November 1-2, 1913.

C. FITZHUGH TALMAN
U. S. WEATHER BUREAU