

ter of an Hour, full East, from behind one of the small dark Clouds, and soon after several others full North. These Streams of Light were of the same dusky red Colour as the Vapour, just appear'd, and vanish'd instantly. I saw eight or ten of these at once, about the Breadth of the Rainbow, of different Heights, several Degrees above the Horizon, and look'd like so many red Pillars in the Air; and no sooner did they disappear, but others shew'd themselves in different Places. In about half an Hour, this Colour of the Vapour gradually chang'd itself towards the usual White, and spread itself much wider and higher; and after that, appear'd as common.

I am, SIR,

Your most obedient

humble Servant,

Tim. Neve.

Peterborough,
Jan. 29, 1735-6.

X. *An Observation of two Parhelia, or Mock-Suns, seen at Wittenberg in Saxony, on Dec. 31, 1735. O. S. Jan. 11, 1736. N. S. by John-Frid. Weidler, F. R. S. &c. Translated from the Latin by T. S. M. D. F. R. S.*

TAB. II. FIG. 4.

THIS Day, a little after 10 in the Morning, a Friend told me, that several Suns were to be seen in the Heavens: Whereupon I went directly into the Garden adjoining to my House, and immediately saw near the Sun S, on its Left or Western Side (1) the

the *Parhelion* B, as big as the true Sun. This *Mock-Sun* (2) was amidst little, round, white Clouds, set thick, and close to one another. (3) The Part of the *Parhelion* which faced the West was not round, but broken, having about a third Part of its Circumference open, and shooting out the long bright Stream or Tail BH. (4) To this, both above and below, adhered another Stream FG (5) somewhat curved, (6) with its Horns turn'd from the Sun Westward. (7) The Middle of this *Mock-Sun* shone with so great a Light, that the naked Eye could not bear it; wherefore I view'd it attentively through a Glass darken'd with the Smoak of a Wax-candle. (8) The Light of the *Parhelion* B appear'd much weaker than that of the true Sun. (9) Its Circumference which faced the Sun, was red: Likewise (10) that Part of the Stream FG, which was towards the Sun, was Purple. Within the red Border appear'd the other Colours of the Rainbow, as Yellow, Green and Azure. And the Stream BH was likewise embellish'd with Red and Yellow. Both Edges of this were reddish, and its Middle yellowish. (11) The Sun S, was 15 Degrees and half above the Horizon; and its Image B was near the same Altitude, for I then found it to be 14 Degrees. (12) I measured the Distance from S to B, more than once, and found it to be 20 Degrees. (13) The Arch FG was near six Degrees in Length. (14) Most of the South part of the Hemisphere was overspread with white Clouds, intersperfed here and there with some darker ones. There were some thin Clouds before the true Sun, through which its Rays easily passed. (15) When thicker Clouds surrounded the Sun, the Brightness of the *Parhelion* was lessen'd. (16) The *Parhelion*

lion

lion was now and then hid by dark Clouds. (17) The thin white Clouds, with which the Northern Part of the Sky was overspread, reach'd up to the *Zenith*. (18) Soon after my first observing the *Parhelion B*, as I look'd up to the *Zenith*, I saw the beautiful Rainbow CDE parallel to the Horizon, with its Horns turn'd to the North. It had the usual Colours of the Rainbow, all very distinct. The Purple was on the Side facing the Sun; next to it was the Yellow, then the Green, and last the Azure. (19) A Line drawn from the Sun's Centre to the Middle D of the *Iris* tended to the *Zenith*, and was a Portion of that vertical Circle, in which the Sun then was. (20) The Point D was 61 Degrees distant from the Horizon; wherefore the Diameter of the Rainbow was 58 Degrees: (21) However, there was but Part of the Rainbow CDE seen, the Ends of which were sometimes but 38 Degrees from one another: For more or less of it appear'd at different Times, but scarcely above a fourth Part of its Circumference at any Time. (22) It was sometimes seen among small white Clouds, which were about the *Zenith*, and sometimes in a clear Sky. It lasted till the Sun and most part of the Sky was overcast by thick Clouds. (23) The Thickness of the Rainbow CK, as well as I could estimate by the bare Eye, was one Degree of a great Circle.

But as the neighbouring Houses prevented my having a free Prospect Eastward from my Garden, I went to another Place, whence I had a full View of the Hemisphere. And having reach'd thither a little before Eleven, I immediately saw another *Parhelion A* to the East, (24) 20 Degrees from the Sun, as the foregoing was, and rais'd 15 Degrees above the Horizon. (25)

This

This *Mock-Sun* was not inferior to the other B, in Brightness, for the naked Eye could no more bear it than that. (26) Its Light was white; (27) its Figure round, and its Size equal to that of the Sun S. (28) This *Parhelion* A, shot out the Stream IL, which was rectilinear, white and resplendent, eight Degrees long, and, as far as I could possibly discover, void of Colours; (29) for it appear'd among small white broken Clouds, and lasted somewhat longer than the former, without changing its Figure. (30) Upon the Sun's being hid by thick Clouds about half an Hour after Eleven, both these *Mock-Suns* disappear'd, but became visible again, upon the Sun's shining bright.

The Whole of the *Phænomena* observed in these *Parhelia* comes to this: That the true Sun, S, was accompanied by two *Parhelia*, both 20 Degrees distant from the Sun, one on each Side, and having nearly the same Altitude with the Sun from the *Horizon*. Above the *Parhelia*, part of a Rainbow surrounded the *Zenith*; and each of the *Parhelia* sent forth a bright luminous Stream or Tail, one rectilinear and white, the other somewhat curved and coloured. Moreover, from the western *Parhelion*, a Stream parallel to the *Horizon*, and somewhat pointed, extended itself on the Side opposite to the Sun; and this Scene lasted the two Hours of Ten and Eleven before Noon, until thick Clouds put an end to it. There was no Appearance of an entire Crown, such as usually accompanies *Parhelia*, and encircles the Sun; although I observed the Tract of the Sky near the Sun, both with the naked Eye and through Glasses.

As to the State of the Heavens on the 11th of *January*, when the *Parhelia* were observed; early in the

the Morning a thick Fog overspread the *Horizon*; about nine o'Clock this Fog condensed into small Drops of Rain, which fell slowly: Soon after, the Vapours were collected into thin Clouds, particularly in that Part about the Sun. Then the Sky became clear about the North, and there blew a gentle Wind a little to the South of the East.

After Noon, Clouds gather'd to the West; about 30 Minutes after Twelve, the whole Hemisphere was overcast, but in the Evening it became clear and serene on all Sides. On the following Days, from the 12th to the 17th of *January*, N. S. the Sky was constantly cloudy or dark, and the Sun seldom seen thro' the breaks of the Clouds. On the 18th Day, the Weather clear'd up, which lasted three Days. On the 21st, that I am writing these Observations, the whole Surface of our Hemisphere is overcast with Clouds; and therefore this Appearance of *Parbelia* has not been attended with any uncommon Weather.

N. B. The Publisher having sent Mr. Professor *Weidler* an Account of Mr. *Neve's* Observation of the *Mock-Suns*, seen by him in *England*, which seem to agree in so many Circumstances with those seen by the other in *Germany*: the Professor saith in his Answer, "That it seems to him very worthy of Remark, that *Parbelia*, so very much alike, should appear two subsequent Days in Places so distant from each other; which indicates a similar State of the Air or Atmosphere in both." This extraordinary Incident put the Professor upon writing an Essay on the Cause of *Parbelia*, and accordingly he hath published a small Pamphlet in Quarto, intituled, *Jo. Friderici Weidleri commentatio de Parbeliis mense Januarii Anno M.DCC.XXXVI. prope Petroburgum Angliæ, & Vitemburgæ Saxonum visis. Accedit de Rubore Cæli igneo mense Decembri Anno 1737. observato Corollarium. Vitemburgiæ, 1738. in 4to.*

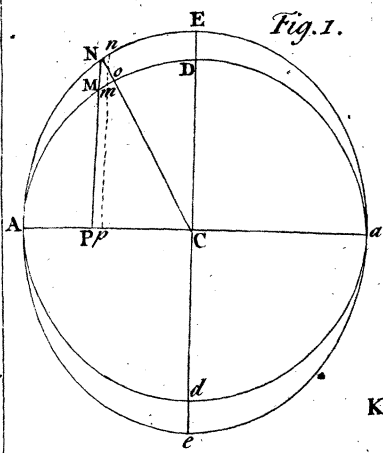


Fig. 1.

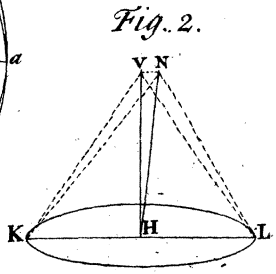


Fig. 2.

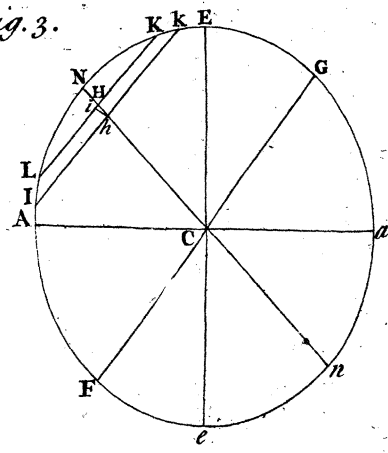


Fig. 3.

Fig. 4.

Fig. 5.

