

---

VIII. *An Account of a Rainbow seen on the Ground. Communicated in a Letter from the Reverend Benj. Langwith, D. D. Rector of Petworth, to Dr. Jurin, Secr. R. S.*

*Petworth, Dec. 17. 1721.*

ON the 7th of *September* last, about Nine in the Morning, I was riding with some Friends over *Port-Mead* near *Oxford*. The Morning had been Misty, and the Grass was very wet with the Dew. We had not been long out, before the Air clear'd up, and the Sun began to shine very bright. We soon after had the Satisfaction of seeing a Rainbow upon the Ground, whose Colours were very near as lively as those of the common *Iris*: This was extended upon the Ground for some Hundreds of Yards, and the Colours were so strong, that it might have been seen much farther, had it not been terminated by the Bank, and Hedge of the Field. It is hardly worth while to observe, that it continually chang'd its Place as we mov'd along, since this is no more than happens in other Rainbows. The more remarkable Particulars were these :

1st. That the Figure of it was not round, but oblong ; being as I conceive, a Portion of an *Hyperbola*.

2. That the Convex Part of it was turn'd towards the Eye, and the *Vertex* was at a small Distance before us.

3. That

3. That the Colours took up less Space, and were much more lively in those Parts of the *Iris* that were near us, than in those at a Distance.

These *Phænomena* may easily be accounted for, by comparing this *Iris* D C E, Fig. 2. with the common *Iris* k i E e form'd by Drops falling in the Air at a small Distance from the Eye of the Spectator, H, and touching the Ground with the lower Part of its Arch in E, the vertical Point of the *Iris* D C E. Produce the Cone H k i E e : Its Interfection with the Plane of the Horizon will give the Figure of the *Iris* D C E. Hence it follows,

1st. That as the Angle e H G happens to be greater, equal to, or less than 90 deg. the Figure will be an *Hyperbola*, *Parabola*, or *Ellipsis*.

2. That as the Sun was about 30 deg. high, when we view'd the *Phænomena*, the *Iris* was an *Hyperbola*.

3. That the Arches of the same *Iris*, consisting of Colours of different Refrangibility, may also in some Cases be different Sections of the Cone.

4. That since the Angle e H F is always given ; from the Height of the Point of View H G, and the Sun's Altitude S L A, the Dimensions of these *Iris*'s are easily determin'd.

*I am, &c.*

Ben. Langwith.



Fig. 1.

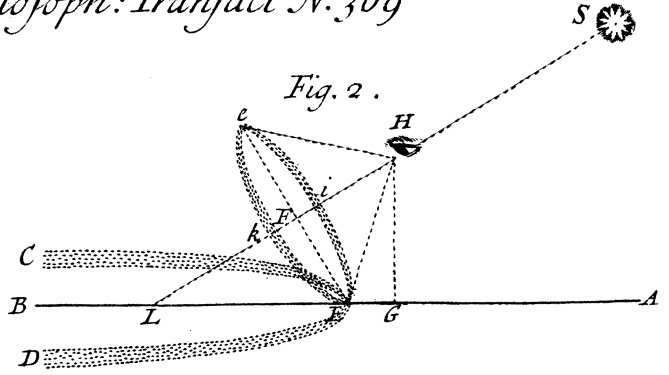


Fig. 2.

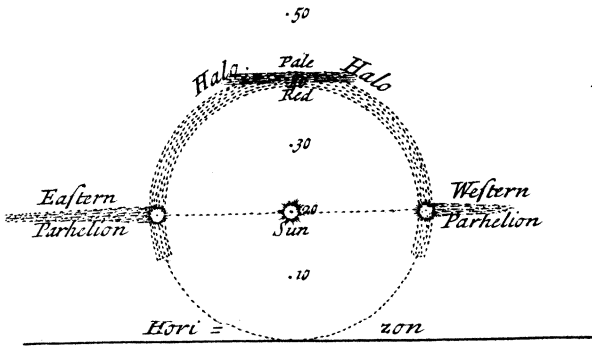


Fig. 3.

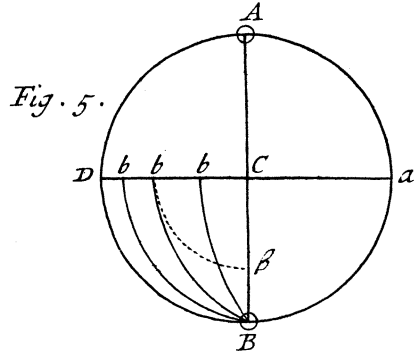


Fig. 5.

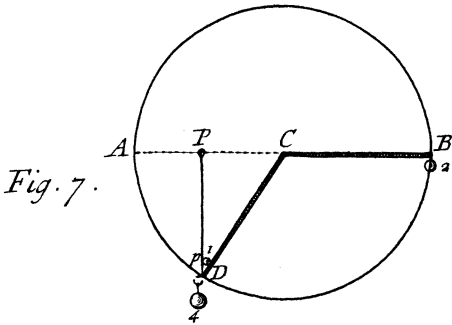


Fig. 7.

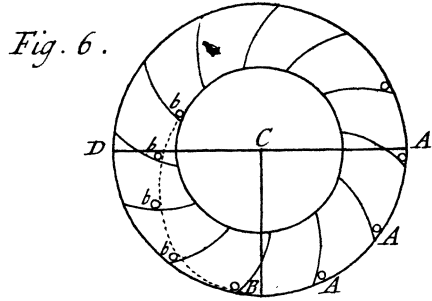


Fig. 6.

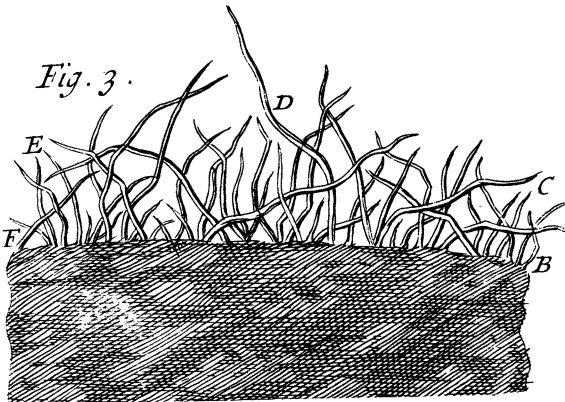


Fig. 3.

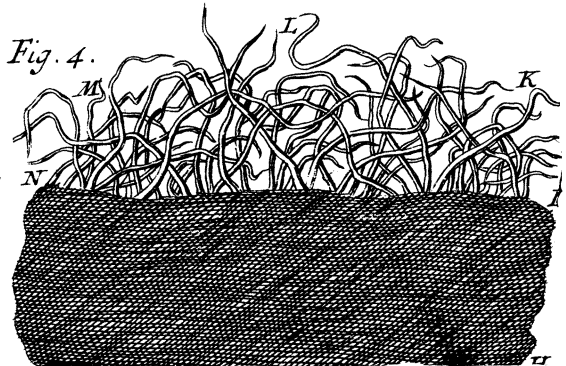


Fig. 4.