

III. *A Description of the great Meteor which was on the 6th of March, 171 $\frac{5}{6}$ . sent in a Letter from the late Reverend Mr. Roger Cotes, Plumian Professor at Cambridge, to Robert Danye, D. D. Rector of Spofforth in Yorkshire.*

THE appearance of the Meteor was very nearly the same with us here at *Cambridge* as with you, excepting that the triangular Streams of Light were not so permanent as you seem to describe them, and the Point to which they all converg'd was distant from the Zenith about 20 Degrees, its Azimuth lying between the South and the East at about 10 Degrees from the South, towards which Point of the Compass the Wind tended. The position of this point of Convergence may be more accurately determin'd, if there be occasion: For at a quarter after Seven, when the appearance to us was in its greatest perfection, it lay nearly in the middle between the two bright Stars, in the heads of *Castor* and *Pollux*. I am told that some Streams were seen to shoot forth immediately after Sun set, and that they did not perfectly cease till about 3 or 4 in the morning.

It was after Seven before I had notice of this uncommon sight. At first I saw only two or three of the triangular

triangular Streams towards the North and North-West: These were not of long Duration, but were succeeded by others which appear'd and vanished again by turns, arising from, and ascending up to Places in the Heavens, of very different Altitudes above the *Horizon*. From the time I began to view them, they continued to ascend more and more copiously, being propagated still further and further from the North towards the West and East, and directed always to the Heads of *Gemini*, till at length when they seem'd almost to meet at the Point of Convergence, they began to ascend up towards it from the Southern Parts also and all around it; insomuch that at a Quarter after Seven, we had a perfect Canopy of Rays over us: The bottom of this Canopy did no where reach down to the *Horizon*; for near the North, where it descended the most, its Altitude was about 10 or 15 Degrees; and near the South where it descended the least, its altitude was about 40 Degrees. It remain'd in this State about 2 Minutes, during which time, we saw several Colours, some fainter and more permanent, others brighter, but quickly vanishing. Thus in the West I observ'd the Rays to be ting'd for some considerable time with an obscure and heavy Red; and in one of the brightest Streams at another time, there suddenly broke out a very vivid Red which was instantly and gradually succeeded by the other Prismatic Colours, all vanishing in about a Second of Time. These Colours affected the Sense so strongly, that I thought them to be more intense than those of the brightest Rainbow I had ever seen. A small time before the Appearance lost it's perfection, we were surpriz'd to observe a Shaking and Trembling of the Streams chiefly in their upper Parts, during which,

which their Convergence was confounded, and the whole Heaven seem'd to be in a Convulsion. At the same time I cou'd perceive Waves of light towards the North, which moved upwards, and in their motion cross'd the streams, lying parallel to the Horizon. These Waves were different from those broad ones, which you mention, and which I also took notice of: Their breadth seem'd to be about a Degree, their length about 90 Degrees; and I can compare them to nothing better than to those slender Waves upon the surface of stagnant Water, which are made by casting in a small Stone.

About seven or eight Years ago, I happen'd to see a Meteor which it will be of use to describe to you. Along the Horizon in the North, there lay a white and luminous, and seemingly dense matter in the form of a Cloud represented by a b c d; the length of it, a b, was about 10 or 15 Degrees. From this there arose, directly upwards, pointed streams of the like luminous and white matter, which yet did not appear in any part of it to be so dense as the former; and grew gradually more and more rare in its upper Parts so as to vanish almost insensibly at the Points. There was some little difference in the height of these streams, but they generally ascended up to about 4 degrees above the Horizon. They were very numerous and contiguous to each other, and seem'd to be compos'd of very slender parallel filaments or Rays. This was the common appearance, and the only remarkable Thing which I farther observed was, that sometimes a Fire or Flame would break out in the Cloud, a b c d, and move along it in a direction parallel to the Horizon: And during this motion, a pointed Stream directly over the Fire seem'd to run along with it, and to pass by the  
other

other more fix'd Streams to which it always kept it self parallel.

I am persuaded that the late Appearance was of the same Kind with this, which, I have now been describing. For let A B, represent the plane of the Horizon, C the place of the Spectator. E F, a fund of Vapours or Exhalations at a considerable height above us, diffus'd every way into a large and spacious Plane, parallel to the Horizon. This Fund of mixt matter by Fermentation will emit Streams from it self, such as EG, F H, &c. which, if the Wind be perfectly still, will ascend perpendicularly upwards; if it be boisterous and irregular, they will be blended and confounded together; but if it be very gentle and uniform, as it was at the time of our Appearance, they will be inclined towards the point of the Horizon, which is opposite to that from which the Wind blows. Now if A D B represent the concave of the Heavens and a Line, C D, be drawn parallel to the Columns E G, F G, &c. 'tis certain by the Rules of Perspective, that these Columns will appear upon that concave to converge all around towards the Point D: Thus the Column, E G, will seem to arise from the Point e, to ascend up to g, and to take up the Space e g; and in like manner the Arch f h will be the Projection of the Column F H. From hence it is evident that the reason why the triangular Streams ascended at first only from the Northern Parts of the Heavens was this: The Fund of Matter, E F, was not yet arriv'd by its motion to the Line C D. After it had pass'd that Line, it is plain they must appear to ascend from all Quarters. A great number of Columns being therefore dispos'd to emit Light, at the same time, caus'd that perfect Canopy, which, I described above. The reason why that Canopy descended lower in the North, than in the South, was this: The shining Columns

lums which had not yet pass'd the Line C D, were more numerous and more remote from it than those which had pass'd it; for if the Point E, be farther distant from C D than the Point F, the Arch A e, must needs be less than the Arch B f. An irregular gust of Wind blowing upon and shaking the Columns, was (I suppose) the Cause of that trembling, which appear'd in the triangular Streams, and the Cause also which destroy'd that fine appearance of the Canopy. The slender circular waves seen at the same time might also be explain'd from the same Cause. I need not detain you any longer by endeavouring to make out some other particulars of this unusual Appearance: I fear I have been already too tedious. However I will not omit to mention a very easy Contrivance by which the Thing may be tolerably well represented to view. Take a Hoop and round about it fasten several straight Sticks parallel to each other, but all inclin'd to the plane of the Hoop, hold this plane parallel to the Horizon, and in that posture move it with Sticks over a Candle, the shadows of the Sticks upon the Ceiling of your Room, will converge to a point not directly over the Candle, (as they would have done, had the Sticks been perpendicular to the plane of the Hoop) but to the Point in which a Line drawn from the Candle parallel to the Sticks, shall intersect the plane of the Ceiling.

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