

is, all I wish to convey is, that there is a simple enough experiment which everybody who understands optics knows how to make, which *if the result be of a certain kind*, the reflection of the light is demonstrated—(the converse, be it observed, does not hold good)—in an instant, by merely looking through a small instrument contrived on purpose. Now, Mr Airy, the present astronomer-royal, a person who is not only an excellent astronomer, but who stands very high as an authority on this especial branch of optics, applied this test to the light of the comet's tail on the 27th September, and found it polarized. The tail then shone by reflected light, and there was also another particular indication or character of the polarization impressed, which the same trial afforded, and which enabled him to say positively that the light had been reflected from some source of light agreeing in situation with the sun.

(49.) The tail of the comet then was material substance.\* But now, only conceive what must be the thinness, the almost spiritual lightness of a vapour or fog, which, occupying such an enormous space, would not extinguish

\* I applied the same test to the comet of 1862. There are various modes of making the trial. Mine was by looking at the comet through an achromatized doubly refracting prism, and turning the prism round in its own plane. I could perceive *no* alternate maxima and minima of brightness in the images. But in this case it is the positive result which is conclusive. Everything depends in the first instance on the relative situations of the objects and the eye. And, moreover, the light of the comet of 1862 was far inferior to that of Donati's, rendering the experiment *pro tanto* more delicate—and it is very possible that to septuagenarian eyes, indications of *partial polarization* might escape observation.