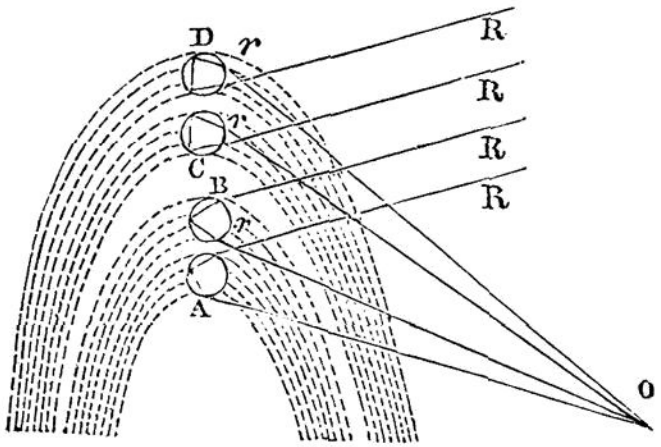
occasioned by their suffering two refractions and one reflection. Let *a* be a drop of water, and S a beam of light, which, when it falls upon the drop, is refracted and decomposed into the primitive colours; but on the second surface the several rays suffer reflection, and are a second time refracted, and may reach the eye of an observer in their separate or uncombined state. The same effect is produced when a glass globule is held between the eye and the sun, for a spectrum will be seen reflected from the second surface of the globe. Supposing an infinite number of these globes to be between the sun and the observer, and to have every possible position in relation to the eye, their spectra would be united, and continuous lines of light, or a bow, would be produced.

Let A B C D be drops of rain, and R A, R B, R C, R D, be rays of light falling upon them. The light may fall upon the drop in every possible position, and the effects produced will vary according to the incidence of the rays. If they



should fall upon the axis they will be transmitted without refraction; if near to the axis on either side, they will be refracted to some point called a focus, behind the drop; those which fall near the top or bottom of the drop will be refracted, but, falling very obliquely upon the second surface, will be reflected, as shown in the diagram, either once or twice, according to circumstances, and be carried by refraction to the eye of the observer.

When a ray of light falls upon the top of the drops and is reflected, as in A and B, it may be refracted and meet the eye of the observer at O, or it may suffer a second reflection and be thrown upward. But when the ray falls upon the