

ference.” Every ray of light which comes from the sun is not a simple but a compound *thing*. Here, again, I must explain. The air we breathe is not a simple but a compound *thing*. It is separable at least into four distinct *things*, as different from one another as any four things you can name. Well, then, so of a ray or beam of the sun; it may be separated, split, subdivided, not into four, but into many hundreds, nay, thousands, of perfectly distinct rays or things, or rather of three distinct sorts or species of rays; of which one sort affects the eyes as light; one the sense of feeling and the thermometer as heat; and one the chemical composition of everything it falls upon; and which produces all the effects of photography. Each of these three classes (and I believe there are several more, indeed I have proved the existence of one more) consists of absolutely innumerable *species* or sorts; every one of which is separated from every other by a boundary line, as sharp and as distinct as that which separates Kent and Sussex on a map. A ray of light is a world in miniature, and if I were to set down all that experiment has revealed to us of its nature and constitution, it would take more volumes than there are pages in the manuscript of this lecture.

(29.) When the sun's light is allowed to pass through a small hole in a dark place, the course of the ray or sunbeam may be traced through the air (by reason of the small fine dust that is always floating in it), as a straight line or thread of light of the same apparent size, or very nearly so, from the hole to the opposite wall. But if in the course of such a beam, be held at any point the edge