

clusively on some particular part of the retina; it being evident that if the light, coming from any other object, were allowed to act, together with the former, on the same part, the two actions would interfere with one another, and only a confused impression would result. The objects in a room, for example, are all throwing light on a sheet of paper laid on the floor; but this light being spread equally over every part of the surface of the paper, furnishes no means of distinguishing the sources from which each portion of the light has proceeded; or, in other words, of recognising the respective figures, situations, and colours of the objects themselves. We shall now proceed to consider the modifications to be introduced into the structure of the organ, in order to retain these objects.

§ 2. *Modes of accomplishing the Objects of Vision.*

LET us suppose that it were proposed to us, as a problem, to invent an apparatus, by which, availing ourselves of the known properties of light, we might procure the concentration of all the rays proceeding from the respective points of the object to be viewed, on separate points of the retina, and obtain likewise the exclusion of all other rays; and also to contrive that the points of the retina, so illuminated, should have the same relative situations among one another, which the corresponding points of the surrounding objects have in nature. In other words, let us suppose ourselves called upon to devise a method of forming on the retina a faithful delineation, in miniature, of the external scene.

As it is a fundamental law in optics that the rays of light, while they are transmitted through the same medium, proceed in straight lines, the simplest mode of accomplishing the proposed end would be to admit into the eye, and convey to each particular point of the retina, only a single ray proceeding directly from that part of the object which is to be depicted on it, and to exclude all other rays. For car-