

## THE EYE AS AN OPTICAL INSTRUMENT.



F the five external senses, with which man is endowed, and by means of which he is directly cognizant of material phenomena existing in the world around him, the sense of sight, by reason of its immense range of action, of its perfect presentation of the geometrical relations of the universe, and of the delicacy of its other cognitive aspects, stands first in order as an instrument of objective knowledge.

But although the eye and vision should have been interesting subjects for investigation, very little was known about this organ or its manner of working until the end of the eighteenth century, when Kepler discovered the passage of light through the eye. Soon after this discovery, the organ of sight was found to be nothing more or less than an optical instrument, of very complicated and ingenious construction.

The eyeball is a nearly spherical body containing within it, three masses of gelatinous substances called humours. These are so arranged as to form a compound lens. The shape of the eye ball is secured by an outer coating called the sclerotic, the chief function of which is to protect the eye from injury, and from external pressure. The sclerotic does not envelop the whole of the eye; the transparent circular tunic forming the anterior segment of the eye is called the cornea. This is nothing more however, than the continuation of the sclerotic forwards; and in consequence of its greater convexity, it projects beyond the line of the sclerotic. It is beautifully transparent and, though apparently homogenous, it is composed of five layers clearly distinguishable from one another. Under the sclerotic is a second covering, the choroid coat, a dark coloured, vascular membrane, which supplies the nourishment necessary for the chemical, and physiological processes concerned in vision. Over the anterior surface of the choroid coat, towards the back of the eye, is distributed the retina. This is a transparent network composed of several layers of fibres and nerve cells, and connected with the choroid by a layer of rods and cones. These latter seem to be the properly