water into the eye while the eyelids are held apart, and cover the cornea with a thin plate of glass. The optic nerve entrance and the vessels of the retina can then be distinctly seen slightly magnified."

In this experiment we in reality neutralize the refracting condensing power of the convex surface of the cornea. The water, filling up the space between the cornea and the piece of glass, changes the *convex* to a plane surface. From this it is evident that as the fundus of the eye comes in view, when its refractive power is to a certain extent neutralized, *therefore the blackness of the pupil and the invisibility of the parts behind it depend solely upon the refraction of the light by the ocular media.*

This phenomenon of refraction may be demonstrated with any small camera obscura by simply placing a piece of pasteboard behind the ground glass so as to exclude all light from the camera except what reaches it through the lens; the ground glass being in focus, distinct images of objects in front of the lens are formed on its surface, notwithstanding which, the interior of the *camera* when viewed through the lens appears absolutely black.

In the camera obscura we have an imitation of the eye, its ground glass screen representing the retina, and its lens—the cornea and lens of the eye.

This can also be very simply demonstrated with an ordinary pill box, by making a circular aperture in the centre of the lid about half an inch in diameter, and cementing behind it a convex lens of $1\frac{1}{2}$ inch focus. If the bottom of the box is exactly at the principal focus of the lens, namely $1\frac{1}{2}$ inches behind the (optical centre of the) lens, rays of light from distant objects in front of the aperture will form a focus at the bottom of the box, where an inverted image of those objects is formed. The aperture of this box may be exposed to the brightest sun light, and still its interior will appear perfectly dark, and nothing will be seen behind it except the reflections of light from the surfaces of the lens. We might imagine that the rays of the sun, entering the aperture, would illuminate the whole of its interior, so that the eye of an observer, occupying some position in front, would be able to see some portion of the bottom of the box. We must remember however that the beam of solar light, after passing through the convex lens, is converged to a focus and illuminates a portion of the bottom of the box not larger than the head of a pin.

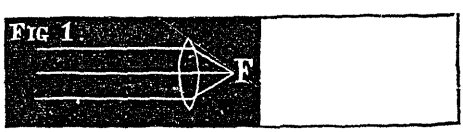

FIG 1.