

getting some sand into his right eye. I have reason to know that his surroundings are not the most sanitary in the world and I am therefore not surprised to learn that the abraded cornea did not heal up, but shortly after the hurt developed a superficial but central ulcer. In other words he has infected the primary corneal wound. His vision is now 6-18, or $\frac{1}{3}$ of normal; he complains of some pain in the eye and he is unable to do his work. There is also considerable true photophobia, some pericorneal injection and a good deal of lachrymation. The ulcer presents the appearance of a rather dense central opacity, whose edges, translucent and grayish, gradually fade off into the transparent cornea. A close examination shows that the excavation made by the ulcer is a comparatively small and shallow one, and that its nebulous

edges are not produced by destruction of the overlying epithelium but are the result of an infiltration of tissue changes going on underneath the epithelial layer. Asking the patient to stand before the window in a half light we notice that when the bright image of its cross bars falls upon the centre of the cornea it is distorted or broken in one small and central spot only—indicating the whereabouts of the loss of substance. Outside of that the corneal epithelium presents an unbroken surface to the window image. The opacity surrounding the ulcer must be due to some change that underlies the epithelial layers of the cornea.

The following pictures will indicate what really does occur, and what the meaning of the infiltration is.

Figure 1 shows a vertical section of an

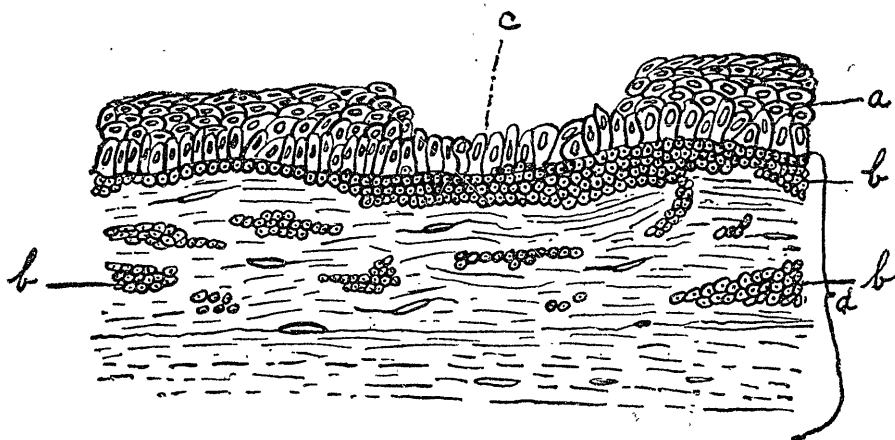


Figure 1. First stage of Corneal Ulcer.

a. Epithelial layer.
c. A defect in it.

b. Collections of infiltrating round cells.
d. Substantia propria.

ulcer in its earliest stage. Inoculation has occurred at *c* (where the epithelium has been removed), and the anterior elastic lamina has been destroyed, and its place taken by migrated round cells such as one observes in most inflammatory processes. Isolated collections of wandering cells (as at *b*) occupy various situations in the neighborhood, and add to the opaque appearance of the cornea. In both our patients, it is the congested vessels which have supplied these wandering leucocytes. Later on it

will be seen that, when under the influence of proper remedies, repair begins, these same vessels give off (new formed) branches which extend into the true substance of the cornea, and act as carriers of material whereby the corneal excavation is filled up.

In the second stage (see fig. 2), the entire epithelial layer is removed, and a free communication is established between the ulcerated portion and its surrounding collection of leucocytes. The ulcer is now filled with corneal debris, cellular masses, germs