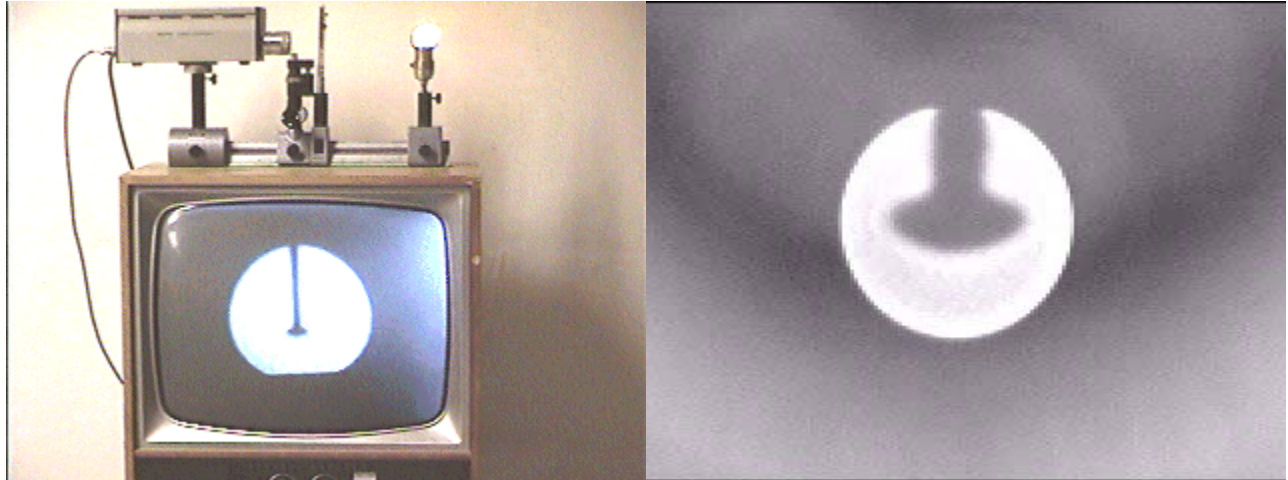


Answer #237

The answer is (b): the camera will "see" an inverted pinhead, as shown in the photograph at the right below, and seen in an mpeg video as the pinhead is raised into the light using the screw setup on which the pin is mounted, as seen in the photograph at the left below.



Because the pinhead is very close to the lens - inside its *near point*, or the closest point at which it can focus light - the pinhead casts a shadow on the camera light sensor (vidicon), but does not produce an image. The shadow is on the bottom half of the vidicon, as is the *top* of any image produced by the lens, because it is imaging objects some distance away and a convex camera lens produces a real, inverted image on the vidicon. Therefore, the camera thinks that the shadow of the pinhead is at the top of the field of view of the camera.

This is how the eye lens works, and this demonstration models the behavior of the eye in this regard. To demonstrate this, you need a small piece of dark construction paper and a small pin like the one in the photographs. Neatly make a small symmetrical hole in the center of a small piece (about 1-2 inches square) of the construction paper. Hold the paper in front of one eye, about one inch from your eye with the pinhole in the center of your eye. Then slowly raise the head of the pin (not the point) into the path *between* the pinhole and your eye, as shown by Gwen in the photograph below. Be careful not to poke yourself in the eye with the pin.



As you *raise* the pinhole into the light you will see its shadow come into view from the top of your eye, just as the pinhead in our demonstration video enters from the top. This demonstrates that the image on the eye is upside down, being produced by a convex lens viewing objects at a large distance from your eye (greater than the focal length of the eye). See [Demonstration O1-04](#) for further information.

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