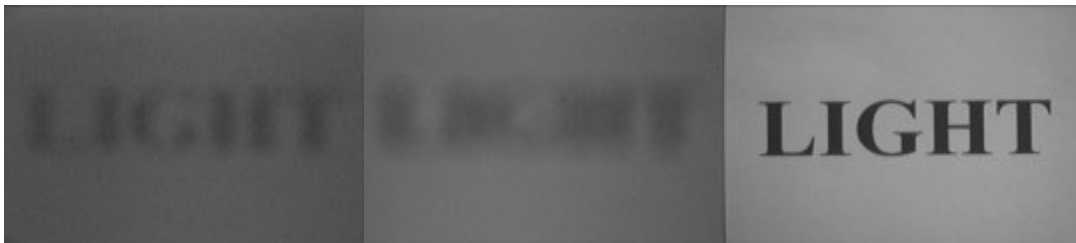


Answer #302

The "pinhole image" seen in the photographs is what appears on the camera CCD, as a real image would appear of the camera had an actual lens. Below are the two pinhole images (left and center) and a photograph of the word "LIGHT" (right) taken with the camera in the same position using a standard 45-mm fixed focus lens.

From this we note that the pinhole image is inverted (as is the image of the lens) and smaller than the object (It fits onto the CCD in the tiny camera!). In fact, the pinhole image is not an "image" in the strict physics definition of the word, because there is no "focus" of rays from a point on the object to a corresponding point on the image. The rays simply spread out as they pass through the pinhole, resulting in the difference between the two pinhole "images" seen in the photographs.



As can be seen in the pictures above, the image of the 0.032 inch pinhole (at the center above) is (b) the same size, (a) brighter, and (b) blurrier compared with the 0.020 inch pinhole (at the left above). The size is about the same because the object distance (from the pinhole to the LIGHT sign) and image distance (from the pinhole to the CCD) are the same. The image is brighter (more light gets through the hole) and fuzzier (the pinhole provides less resolution) because the pinhole is larger.

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