

# A HOMOGENEOUS FIELD FOR LIGHT ADAPTATION

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## A HOMOGENEOUS FIELD FOR LIGHT ADAPTATION

Many experiments in the field of visual perception require long sessions in the dark and involve stimuli of small retinal size and low luminance. Since considerable dark adaptation is likely to occur under these conditions, periodic light adaptation may be useful in controlling the adaptive state of the eye to prevent stray light from introducing extraneous cues in the experimental display. Also, since details of the light adaptation field and observation position (illuminated by the light of the adaptation field) provide stimuli which influence experimental judgments in some cases, a homogeneous adaptation field may be desirable.<sup>1</sup> The light adaptation device described below and shown in Fig. 1 was designed for use in presenting to *S* a homogeneous light adaptation field that can be easily used between experimental observations even though *S* is in an otherwise dark observation position.

The adaptation field of the device is provided by a transilluminated white plexiglass diffusing surface (*F*). In the center of this surface is an aperture (*E*) consisting of a tapered slot for the nose and a round hole for the mouth which permits the chin and forehead of *S* to rest directly against the diffusing surface. This aperture is closely fitted to the average *S*'s<sup>2</sup> nose and mouth and, therefore, is not visible when his head is inserted properly. The diffusing surface also curves around the sides of *S*'s head and extends enough above and below the eyes so that when *S* is positioned properly, and the diffusing surface is illuminated, he can see only a homogeneous field of light. The diffusing surface is

sloped away from the frontal plane at a 15 degree angle to allow more comfortable positioning of the face. The advantages of this technique are that it hides *S*'s nose from view and places every visible part of the adaptation field well within the minimum accommodative distance.

Proper positioning of *S*'s head so that only a homogeneous field is seen is insured by two micro-switches which protrude just above the top of the nose slot (*D*) and the bottom of the mouth aperture (*G*). These micro-switches can be adjusted in and out for each *S* to insure that his chin and forehead are pressed directly against the diffusing surface before the adaptation light is turned on. An adjustable chin rest (*H*) is used to support his head at the proper height. When the apparatus is properly fitted to *S*, movement of his head in any direction from the proper viewing position will immediately open at least one of the micro-switches. If *S* takes his head out of the viewing position while the adaptation light is on, therefore, the light source will be turned off before any source of extraneous cues (detail of the apparatus or observation position) can come into view. Any convenient light source may be used as long as an even distribution of light across the diffusing surface is produced. Additional versatility can be gained by mounting the device on a stand of adjustable height and by adding a timer and dimming circuit to the light source. A mechanism to gradually increase the intensity of the light source to its maximum value may be desirable for *S*'s comfort when light adaptation to a field of high brightness is required. If a colored homogeneous field is desired, colored sheets of acetate or any other filter material can be inserted between the light source and diffusing surface. The adaptation device should be placed near the observation position so that *S* can conveniently insert his head for viewing the homogeneous field with minimum movement.

<sup>1</sup> W. C. Gogel. Size cue to visually perceived distance. *Psychol. Bull.*, 62: 217-235, 1965.

<sup>2</sup> The dimensions of the aperture in the prototype were determined from measurements of men on the laboratory staff. This aperture provided a good fit for over 80 male *S*s who subsequently used the apparatus. The only exception was one *S* whose nose had an extremely receding bridge.

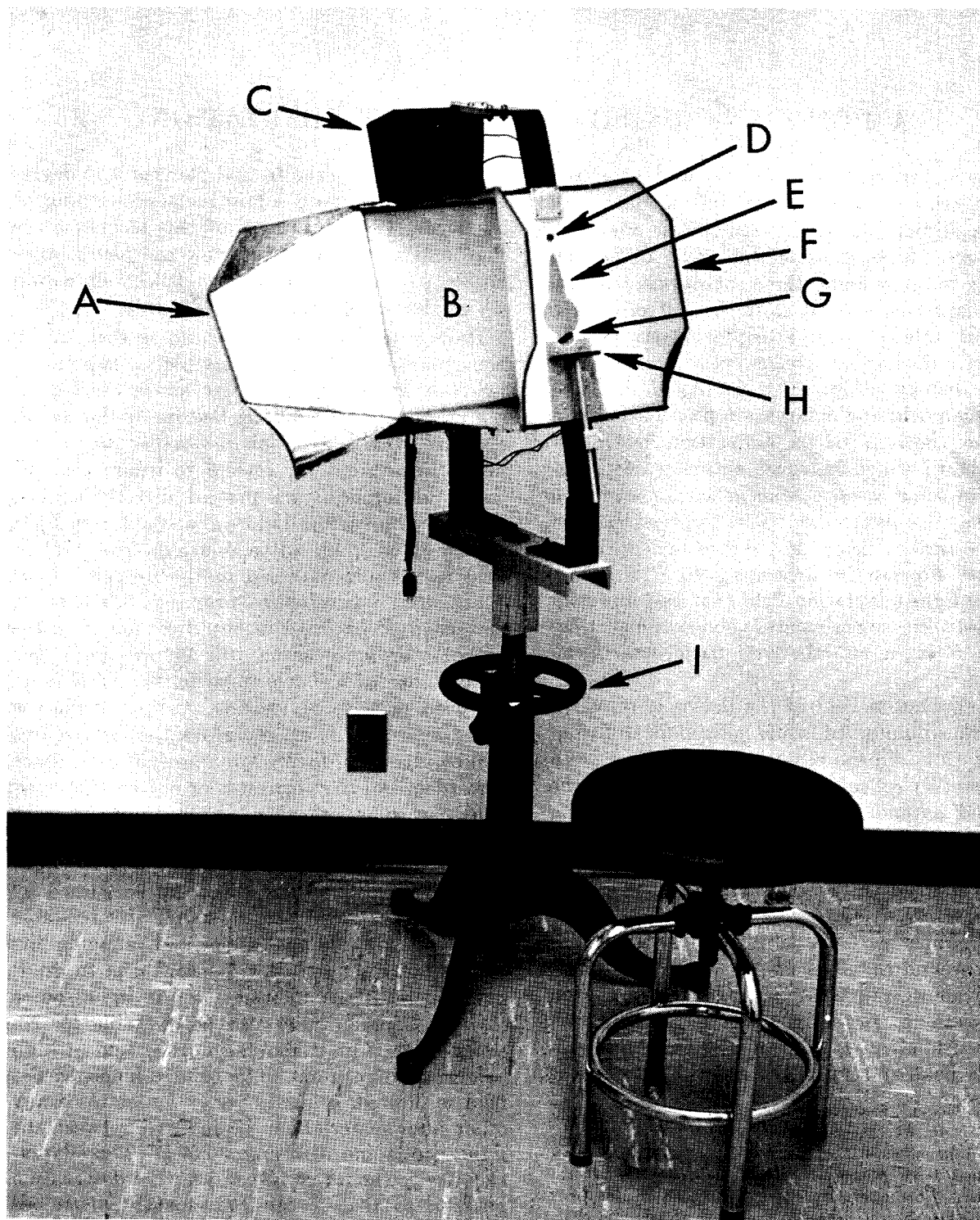


FIGURE 1. A device for presenting a homogeneous field of light for light adaptation. A, reflector for illuminating sides of diffusing surface (folded out from normal position); B, light box serving as light source; C, blower for ventilating space between light source and diffusing surface; D, micro-switch actuated by forehead; E, aperture for nose and mouth; F, diffusing surface; G, microswitch actuated by chin; H, adjustable chin rest; I, adjustable stand.