

gone conclusion that hydrogen peroxide is inhibitory to certain bacteria, mostly anaerobic and facultative anaerobic types devoid of catalase.¹⁵ Many of the pathogenic cocci are of this type. There may, in certain surgical cases, be merits to the slow but steady generation of hydrogen peroxide as brought about by an enzyme system. The difficulties of preparation,

however, would outweigh any, probably rather limited usefulness.

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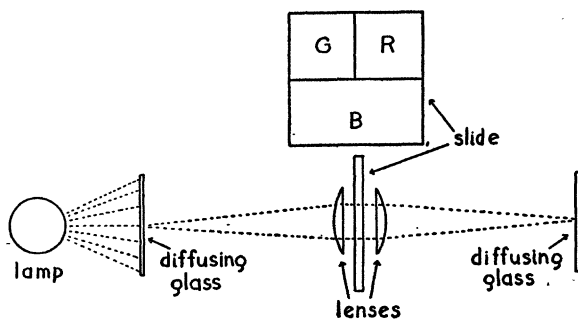
SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE THREE-COLOR MIXER USING FILTERED COLORS

THE method of color mixing most commonly used in psychological laboratories is the rotating disc or color wheel. Though this method is excellent for many purposes, it has certain disadvantages inherent to the use of surface pigments: (1) mixtures are relatively low in saturation (particularly in the case of yellow produced by a mixture of red and green); (2) complementary mixtures are gray rather than white; (3) brightness can not be controlled independently of room illumination without sacrifice of saturation. These disadvantages can be avoided with mixtures produced with filtered colors.

A device which the author recently built uses an extremely simple principle to provide mixtures of three filtered colors. The general design would seem to be of potential value for such uses as (1) measurement of hue (and saturation) discrimination thresholds in both human beings and animals, (2) detection and analysis of color blindness, (3) specification of pigments in terms of three-color components by matching with three color mixtures, (4) classroom demonstrations of color mixing.

The optical system for accomplishing the trichromatic mixture is shown in Fig. 1. Gelatin color filters



Optical System of Color Mixer

FIG. 1

are mounted between glass, forming a square slide. One upper quadrant of the slide is red, the other quadrant is green, and the bottom half is blue. The filters used in the author's apparatus are Wratten

¹⁵ J. W. MacLeod and J. Gordon, *Jour. Path. Bact.*, 25: 139, 1922.

gelatin filters of numbers 29 (red), 47 (green) and 61 (blue).

This color mixing slide is supported on a two-way sliding mount between two lenses. Light from one diffusing screen is focused by the lenses upon another diffusing screen. Both screens are of flashed opal glass. Between the two lenses the light rays are parallel, and whatever colors intercept the light beam at this point become uniformly mixed on the second diffusing screen.

Two adjustments of the color-mixing slide are provided by means of levers moving along graduated scales. One lever moves the slide horizontally, thus changing the red-green proportion in the mixture. The other lever moves the slide vertically, thus adjusting the blue component. More specifically, by the two directions of movement, the slide can be adjusted to transmit any one of the three colors singly, or combinations of the three colors in any proportions. On the stimulus screen one can, therefore, obtain any color around or within the color circle. Due to the lack of homogeneity of the filtered colors, however, the resulting mixtures do not quite equal spectral mixtures in saturation. On the other hand, the mixtures far exceed in saturation those obtained on the color wheel.

That the color-mixing principle described here is successful was adequately demonstrated by a single unit built by the author while at the University of Missouri. Color mixtures of good saturation, moderately high brightness and uniform distribution were obtained.

The apparatus is particularly recommended for the demonstration of color-mixing principles. If intended for this purpose, the apparatus should be built so that the stimulus screen can be removed easily and the separate colors being mixed thus exposed to view.

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