worry over the danger to which they were exposed, played the most significant rôle, as the percentage of female admissions was almost as large in 1919, when hostilities had ceased, as in 1918. The rise in female alcoholic admissions to 17.9 per cent. in 1934 and 1935 is too brief an experience from which a significant change in the trend may be predicted.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE USE OF POLARIZED LIGHT IN THE SIMULTANEOUS COMPARISON OF RETINALLY AND CORTICALLY FUSED COLORS

THE importance of the study of the binocular fusion of colors to present theories of color vision makes the phenomenological study of such cortical mixtures a matter of vital interest.[1] The writers have long been interested in the phenomenological comparison of the "cortical yellow" reported by Hecht and the usual, monocularly mixed yellow. Such a study is best carried out under conditions permitting a simultaneous comparison of the colors. The problem of presenting two adjacent stimulus fields, one of which will be presenting red to one eye and green to the other, while the other field is presenting *both* colors to *each* eye, is a difficult one for the laboratory lacking elaborate equipment. The method outlined below is inexpensive, easily set up and adaptable to other visual demonstrations.

Two light sources are used, one containing a red filter, the other a green filter. The light from each of these sources is projected through a polarizing lens upon a directional screen, which maintains the polarization of the light while reflecting it. Aluminized oil cloth makes an excellent screen, although any material covered with aluminum paint will serve. The polarizing lenses are those furnished by the Polaroid Corporation of Boston, and consist of a plain glass lens containing a polarizing material. If the two polarizing lenses are oriented at right angles to each other the directional screen will be reflecting polarized red light oriented in one direction and polarized green light oriented in the opposite direction. To the observer, the screen will appear as a yellow surface. If, however, the observer will place two more polarizing lenses one before each eye (they may be fitted into a spectacle frame for convenience), one oriented to admit the red light but exclude the green, the other to admit the green but exclude the red, the result will be retinal rivalry, since each eye will be stimulated by a different color. Under the correct conditions, cortical fusion will take place and the "cortical yellow" of Hecht will be observed. Preliminary work seems to indicate that this fusion may be helped by reducing the area of the stimulus field. This may be done by surrounding the screen with a black border of variable width.

In order to get simultaneous comparison of cortically and retinally fused colors, one can place a piece of white paper upon the aluminum screen. For small areas white adhesive tape will serve. The light striking this material will not maintain its orientation but will be depolarized and hence neither the red nor green light from this area will be stopped by the polarizing lens worn by the observer. As a result, the screen presents two adjacent fields of stimulation to the eyes, one field supplying red to one eye and green to the other, the other field supplying both red and green to each eye. The observer is thus able to simultaneously observe both retinal and cortical fusion. Intensity values of the two fields may be adjusted by rotating the screen upon a pivot. Since the light is reflected directly ahead from the aluminized portion of the screen, but reflected at all angles from the paper, rotation will cause a relatively greater loss in intensity for the aluminized part as compared with the paper. The same effect may be obtained by varying the angle from which the observer views the screen.

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[1] S. Hecht, *Proc. Nat. Acad. Sci.*, 14: 237–240.

A PRECISION APPARATUS FOR MIXING GASES IN VARIOUS PROPORTIONS

IN a previous communication[1] we have shown how broken automatic pipettes can be utilized in the construction of some useful laboratory apparatus. The present note describes another appliance of considerable scientific importance also constructed out of two 50 cc automatic pipettes, which were rendered useless because of the breakage of the oval caps, and some other glass apparatus easily obtainable in any laboratory. The recent researches of Blackman,[2] Kidd and West,[3] and Singh[4] on the physiology of higher plants and of Warburg[5] and Keilin[6] on the respiratory enzymes have established that some of the fundamental

[1] Singh and Mathur, SCIENCE, 82: 2139, 626, December 27, 1935.
[2] Blackman, *Proc. Roy. Soc. (Lond.)*, 103B: 491, 1928.
[3] Kidd and West, *Proc. Roy. Soc. (Lond.)*, 106B: 93, 1930.
[4] Singh, Malaviya Commemoration Volume (Allahabad), 1932.
[5] Warburg, *Biochem. Zeitschr.*, 177: 471, 1926.
[6] Keilin, *Proc. Roy. Soc. (Lond.)*, 104B: 206, 1929.