

an average incidence of 8.2 per cent. and around 1 per cent. for white females; Haupt's report<sup>4</sup> indicates incidence of 7.8 per cent. for white males; and Clement<sup>5</sup> certain incidences given below for Indians, full bloods, mixed bloods of the southwest, and northern Negroes of Connecticut. His Indians numbered 392 full bloods, 232 mixed bloods, his Negroes 323.

The Indians of the present study represent practically the whole of the United States—for instance, one mixed blood from New York City, seven full bloods from North Carolina, seven from California. The various Indian tribes are well represented, though most of the Indians are Pueblos, Navajos and Sioux.

In Table I is given a preliminary report of the results of the investigation to determine the incidence of color blindness among races with the Ishihara test. It is our intention to continue carrying on the investigation, particularly in America and in the countries of Turkey and India.

Upon examination of Table I, it will be seen that the result of testing unselected whites in Colorado agrees well with results gotten by Miles in California and Haupt in Baltimore, *i.e.*, for white males an incidence of about 8.0 per cent. and females 1.0 per cent. Full-blood Indians and Negroes agree fairly well with results gotten by Clement, but our percentage results for mixed-blood Indians do not agree with Clement's results. He obtained for full bloods 2.0 per cent.—mixed bloods 1.2 per cent., and Negroes 3.4 per cent. The Navajos tested by us show a great departure from Indians of other tribes, since they have for males an incidence of 1.1 per cent. This is the first report of testing Mexicans with any color blindness test, though it is not the first time they have been tested. Information has come direct to the author of the testing by Dr. Luis Serrano with the *Mosaics Serrano*—a test derived from the Stilling test—of an incidence of 2.3 per cent. for males and 0.0 per cent. for females, the numbers tested being respectively 609 and 415.

It will be seen upon examining Table I that according to the Ishihara test unselected white males are afflicted with the defect of color blindness more than any one of the others of the racial groups. In fact, when we treat the data with a view to determining whether or not the differences in the proportions are real, we find they are so between unselected white males and the males of any of the other racial groups, full-blood Indians, Negroes and Mexicans, excepting in the case of the mixed-blood Indians, with an approximation to a difference (2:75) in the case of the Jews. When a real difference between the percentages

Detected with the Ishihara Test," *Jour. of Gen. Psy.*, 2, 535-543, 1929.

<sup>4</sup> I. Haupt, "The Nela Test for Color Blindness Applied to School Children," *Jour. Comp. Psychol.*, 7: 179-184, 1922.

<sup>5</sup> Forest Clement, "Comparative Racial Differences in Color Blindness," *SCIENCE*, 72: 203-204, 1930.

is indicated  $D/\sigma_{diff}$  should be 3 and more.<sup>6</sup> We may say, then, that a real difference or a close approximation to it is indicated between unselected whites and the other racial groups here represented, excepting the mixed-blood Indians, and even between them and Mexicans.

As to differences in percentages between the remaining groups, these are not indicated, excepting in the case of full-blood Navajos and the mixed-blood Indians, where there is a close approximation to a difference (the figure is 2.9), between Navajos and Southern Negroes. It is interesting to note that neither the Jewish groups, the Mexican groups, the Negro groups nor the full-blood Indian groups differ among themselves when classified geographically, nor do they differ when classified superficially racially, with the exception mentioned, Navajos and Southern Negroes.

The investigator is not disposed to call the indicated differences racial differences, since they do not hold to racial lines, but he is disposed to think they may be due to some selective factor.

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