through the post-operative period that are as long as some of those obtained by us with galactose feeding.

The influence of galactose feeding with respect to healing of the dog's operative wound is apparently of significance. It is very well known that the abdominal incision of the depancreatized dog becomes infected and does not heal. We obtained complete healing of the mid-line incision of the dogs which lived 30 and 41 days, and in the other dogs, which lived 10 days or more, there was more or less healing. Apparently there is no other conclusion than that galactose feeding had some influence in bringing about these favorable results.

Grateful appreciation is expressed to Smith, Kline, and French, Inc., Philadelphia, Pa., for donations of galactose.

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THE INCIDENCE OF COLOR BLINDNESS AMONG RACES[1]

IN SCIENCE in 1930,[2] the writer announced the beginning of an experimental study of the incidence of color blindness among Indians. Since then there have been, under his direction, expeditions to test various races in America by trained investigators, *i.e.*, four expeditions to test Indians—at Santa Fé and Albuquerque, New Mexico; Holy Rosary and St. Francis Missions in South Dakota; Haskell Institute at Lawrence, Kansas; in Colorado and New Mexico at various points, where we tested Utes, Apaches and Navajo; three expeditions to test Mexicans, the native-born (Spanish-Americans) and another to test immigrant Mexicans in Colorado, and still another to test the natives of Old Mexico in Mexico City; three expeditions to test Negroes, one in Tennessee, one in North Carolina and still another in Colorado. The unselected whites and Jews were tested in and around Denver.

The first three Indian expeditions were made possible by a joint grant between the National Research Council and the University of Denver. All the other expeditions were financed by the university.

The test used in the present investigation was the Ishihara Color Blindness Test, which has been used rather extensively in this country, particularly by Miles, Haupt and Clement. Our procedure was to test one eye at a time, but followed the general directions of the author of the test. By means of automobile goggles, with the glasses punched out and exchangeable blinds, one eye was tested at a time. It should be said that no case of monocular color blindness was discovered by the investigator. No case of total blindness was brought to light; consequently these results are for complete and incomplete red-green blindness. With results from the same test Miles[3] has reported for various groups of white males

[1] Paper read before the Colorado-Wyoming Academy of Sciences on November 25, 1932.

[2] T. R. Garth, "The Color Blindness of Indians," SCIENCE, 71: 468, 1930.

[3] W. R. Miles, "One Hundred Cases Color Blindness

TABLE I

THE INCIDENCE OF COLOR-BLINDNESS AMONG RACES OBTAINED WITH THE ISHIHARA COLOR-BLINDNESS TEST BY GARTH *et al.*

Racial group	Males			Females		
	Number tested	Color-Blind		Number tested	Color-Blind	
		No.	Per cent.		No.	Per cent.
Whites, unselected	795	67	8.4	232	3	1.3
" Jews	200	8	4.0	175	0	0
Indians, F. B. var. tribes	562	14	2.5	337	0	0
" " " Navajo	535	6	1.1	456	3	0.7
" mixed bloods	480	25	5.2	523	4	0.8
Mexicans, Old Mexico	571	13	2.3	494	3	0.6
" immigrants	523	13	2.5	469	4	0.9
Spanish-Americans	346	13	3.8	390	3	0.8
Negroes, Southern	538	21	3.9	496	4	0.8
" Northern	254	7	2.8	165	0	0

an average incidence of 8.2 per cent. and around 1 per cent. for white females; Haupt's report[4] indicates incidence of 7.8 per cent. for white males; and Clement[5] 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 is indicated $D/\sigma_{diff.}$ should be 3 and more.[6] 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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