COLOUR-BLINDNESS AMONG THE CHINESE*

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THE figures quoted in the literature on the frequency of colour-blindness among the Chinese race are based on the investigations of Chang (1932) and of Kilborn and Beh (1934). Chang investigated 2,296 children in primary schools and high schools; his paper, which is written in Chinese, contains the data set out in Table I.

TABLE I
Percentage Colour-Blind (after Chang)

Sex	Number examined	Number of colour-blind	Percentage
Male	1,164	80	6.9
Female	1,132	19	1.7
Total	2,296	99	4.3

Kilborn and Beh's work is better known to the world, because it is written in English. These authors investigated 1,115 male university students, and found 67 (6.3 per cent.) either completely or incompletely red/green-blind. They concluded their report by combining their figures with those of Chang, and thus gave a colour-blindness incidence of 6.5 per cent. for Chinese males and 1.7 per cent. for Chinese females. The red-blind and the green-blind were apparently grouped together under the category of incompletely red/green-blind, both by Chang and by Kilborn and Beh.

We now wish to call attention to a fuller series of statistics worked out by Fang and Liu (1942), who examined 10,334 individuals (7,333 male and 3,001 female). The examinees consisted of school children, university students, soldiers, and technicians. A total of 454 persons, 409 males (5.59 per cent.) and 45 females

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(1.50 per cent.), was found to be colour-blind. Of these, 227 individuals (50 per cent.) were discovered to have "complete" colour-blindness, and the other half "incomplete" colour-blindness. Under the heading "complete" colour-blindness, the anomalous were separated into the completely red-blind and the completely green-blind, whereas under the heading "incomplete" colour-blindness, they were subdivided into the red-blind, the green-blind, and the red/green-blind.

Recently we had the opportunity of examining 11,061 persons, consisting of unselected men, women, and children from all walks of life. The Ishihara pseudo-isochromatic plates, sixth edition, were used. Whenever there was a doubtful case, the American Optical Company's pseudo-isochromatic plates (1944) were also presented for verification. Our tests were conducted under natural daylight illumination according to Ishihara's instructions. Our findings are summarized in Table II.

TABLE II

Incidence of Colour-Blindness in 11,061 Chinese

Sex	Number examined	Incompletely colour-blind	Red/green-blind	Red-blind	Green-blind	Total colour-blind
Male ...	7,542	3	316	15	41	375
Female...	3,519	—	21	2	2	25
Total ...	11,061	3	337	17	43	400

From the above figures, we estimate that the incidence of colour-blindness in the Chinese is 4.97 per cent. for males, and 0.71 per cent. for females.

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