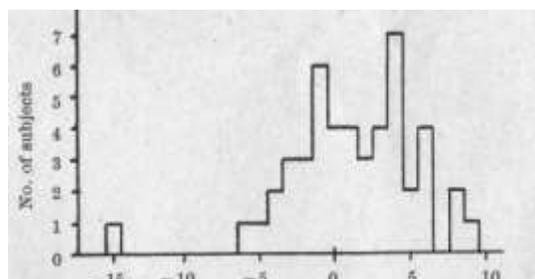


### Tactile-vision: Thermal and Texture Cues in the Discrimination of Black and White

TEMPERATURE and texture have both been suggested as possible normal explanations of the 'skin-vision' phenomenon<sup>1</sup>. Neither of them explains Russian claims of perception at a distance (claims not supported by \* Barrett and Rice-Evans<sup>2</sup> using a low level of illumination); however, they do provide potential cues in situations where touch is involved. Colourants may give surfaces with characteristic textures and the colour of a surface will affect the amount of heat it absorbs. Recently, Buckhout<sup>3</sup> found that, even with illumination provided by a 40-W bulb (a good source of infra-red radiation), out of 80 subjects not one could distinguish between 10 colours in 90 presentations. He controlled texture by covering the colours with a thin layer of plastic. In the experiment reported here I investigated what part both texture and temperature might play in a very simple situation: that of a black-white discrimination.

The apparatus used was a 9 in. x 7 in. x 20 in. light-proof box comprising two compartments separated by a sheet of frosted glass. In one was a 60-W lamp and in the other a stack of 72 stimulus cards: 24 each of black, white, and half black and half white photographs of size 2.5 in. x 3.5 in. With one hand inside the box the subject went through the pack of cards, feeling each in turn and then guessing its type. After each "guess" he posted the card out through a chute in the side of the box, providing himself with knowledge of results. The subjects were given two sessions: one with the light on and one with it off. They were not aware of this difference and the order of the two conditions was alternated between them. The cards were shuffled in between sessions.

Forty-eight students were tested. The mean number of correct guesses expected by chance is 24/72 for each condition. The observed means were 25.3 for light on



No. of correct guesses more with light than without  
Fig. 1

and 24.2 for light off. Clearly texture was not used as a cue. Subtracting the dark from their corresponding light scores gave the results shown in Fig. 1. A Wilcoxon matched-pairs signed-ranks test gave a significance of  $P = 0.014$ , which can be seen to be due not to a few high scorers but rather to the group as a whole: discriminative ability being spread thin among the subjects. Under the hypothesis black and white is the easiest colour discrimination task, and yet subjects score only one or two correct guesses more than is expected by chance. It remains possible that with a lengthy series of trials this skill could be developed: subjects often reported holding a number of different hypotheses one after the other, and it might be that here they find difficulty in selecting the relevant aspects of their sensations.

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<sup>1</sup> Liddle, D., *Discovery*, 25, 22 (1964).

<sup>2</sup> Barrett, S. M., and Rice-Evans, P., *Nature*, **203**, 993 (1964).

<sup>3</sup> Buckhout, B., *Percept. Mot. Skills*, **20**, 191 (1965).