Colour Reproduction with Two Components

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A demonstration was given of a two-component colour projection method like that recently described by Edwin Land. Special attention was drawn to the way in which bluish colours can be perceived in an image in which, according to the CIE specifications, only red, white and various shades of pink can be present.

Discussion

Franken asked whether a photo with larger colour surfaces rather than one of many small objects would have the same surprising effect.

[Bouman: The effect such as that shown in the foregoing demonstrations is present if it is a question of what Land called "total images". This expression means images in which nuances of colour appear bound to objects within the visual field. For instance, for a photometric field that, as a rule, originates from the opening in an apparatus, the effect will be practically absent. It is also absent if one of the two projections is simply derived from the other.

Ten Doesschate: What happens if the images are given to one eye at a time?

Bouman: We took duplicate stereoscopic photos, one through the red and the other through the green filter. Subsequently the diapositives were made visible to testees in a stereoscope in the usual way.

Normally depth is present but no coloured image evolves. Nevertheless, one obtains the well-known competition phenomenon between the differently coloured images of left and right eye.

Dekking: I can picture to myself how the green originates through induction and, by the mixture of his green with the inducing red, all the colours on the right side of the colour triangle. It is not clear to me, however, how one can expect blue and I have not been able to see it on the projected plates.

Bouman: Most observers also see blue in the Land demonstrations I have just shown, principally in all the black or dark blue sections of the object-space photographed.

The origin of this blue is explained by the fact that the lines connecting the colours with their induced complementary contrast in the colour triangle have a common point of intersection (culmination point for the colour induction) , which in relation to the white and red mixture appearing on the projection is shifted to the blue side.

As a result the colour evaluated as white on the projection induces a mutation to blue in the dark parts.