

Usual colour names		Violet	Blue	Blue-green	Green	Yellow-green	Yellow	Orange	Red
Names used by subject	R. eye	Light blue	Blue	Blue-green	Green	Yellow	Yellow	R. yellow	Red
	L. eye	Grey	Grey		Green		Grey	Grey	Grey

Visual acuity was corrected as follows, without correcting astigmatism: R. eye to 4/36 with -4.0 d.; L. eye to 4/18 with -1.0 d. With these corrections he did the Ishihara test (25 plates): R. eye, all correct; L. eye, none legible whatever.

Perimeter test: R. eye normal with 1 cm. disks of red, yellow, green and blue. L. eye normal with 5 cm. disks of red, yellow and blue, but 1 cm. disk of green sufficed. No central scotoma, but red was less saturated in central area, L. eye.

Independently of Prof. Lowenstein, a colorimeter test showed that the right eye was normal but had a slight weakness in red, but the left eye was normal only for green, since red, yellow and blue were equated with greys of normally equivalent brightness.

After six to seven weeks, when the other tests were done, the right eye gave the same result, but the left eye had improved to about 1/25 normal thresholds for red, yellow and blue. This corresponded to the perimeter test, in which the left eye had 1/25 normal sensitivity to these colours.

The Edridge-Green Beads and the Holmgren Wools confirmed that colour vision was normal with the right eye, while green was the only colour seen clearly with the left eye. The colour perception spectrometer gave the result shown in the accompanying table.

The subject knew that he could see only green clearly with the left eye, and identified it as the colour he called green with the right eye.

The bearing of this case on theories of colour vision is important. It would be expected that primary colours, on any theory, might be lost independently of each other through shock or injury, and/or that colours lower in the scale of evolution, on any theory, would be retained longer after injury or shock, while those more recently evolved would recover last.

*Willmer's 2-colour theory*¹. Red and violet are the only primaries. Loss of these would give total blindness; partial loss would give darkening of both ends of spectrum and proportional loss of green. The theory is not supported.

Young-Helmholtz 3-colour theory. Green might be retained while red and violet-blue were lost, but both ends of spectrum would be extremely darkened.

*Walls's modified 3-colour theory*². Weakness of colour vision is due to shifting of sensitivity curves so that they overlap. Red and blue-violet might be lost, but both ends of spectrum would be darkened, and, since all three sensitivity curves would now overlap in the middle, 'green' would be greatly brightened and would be wholly replaced by grey. No support is given to either form of the Helmholtz theory.

Ladd-Franklin's evolutionary theory. If yellow and blue are lost, then both red and green must be lost, too, since they evolved later and depend on the integrity of the blue and yellow sensations.

Edridge-Green's theory. The dichromic form of colour vision discriminates the ends of the spectrum as yellow and blue, and evolves out of monochromic vision, in which only grey is seen. It develops into trichromic colour vision, in which green is added between yellow and blue. In the case reported green

is distinguished from the ends of the spectrum, which are both grey, and it lends no support to the theory.

Hering's 4-colour theory. Blue and yellow, and/or red and green, could be lost while the corresponding brightness sensations remained. Green could be retained, as in the case reported, while red, yellow and blue were lost, if the dissimilative process of the red-green pair became checked at the neutral point and could not proceed towards red.

*Houstoun's modification of Hering's theory*³. The changes from red to green and from yellow to blue depend on the proportions of red to green and of yellow to blue responses. Yellow and blue light might both excite yellow and blue responses equally frequently, giving yellow-blue blindness. Green light might still excite the normal preponderance of green over red responses, and red light excite both red and green responses equally often, so that the normal change over failed to proceed further than the neutral point. This would explain the case described.

In general, it may be concluded that the case described strongly negates all colour theories except Hering's, while Houstoun's modification of this theory is the most fully supported.

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¹ *Nature*, 151, 213, 632 (1943); 152, 190 (1943).

² Walls, G. L., "The Vertebrate Eye", 88ff. (1942).

³ Houstoun, R. A., "Vision and Colour Vision", ch. 14 (1932).

Cannibalism in *Aurelia*

PLANULÆ of *Aurelia* were washed out of the brooding pits of the mother medusa and allowed to settle down in small dishes about 35 mm. wide and about 7 mm. high (very suitable for microscopic investigation). These dishes were gently placed in large basins (capacity about two litres) and left undisturbed until the larvæ got hold of their substratum. This usually took about 36 hours, after which time the basins were placed under running sea water, thus giving the larvæ access to their natural food. However, it was observed that certain scyphistomæ attacked their neighbours. The 'aggressor' would extend its body until the mouth would reach the 'victim'; then the mouth would be widened so as to enclose the greater part of the victim, which would resist and stick firmly to the substratum. A struggle would take place, but at last the whole body of the victim would be taken in the coelenteron of the aggressor. The scyphistomæ usually bud off a number of individuals which separate and settle down round the mother-scyphistoma, but cannibalism has not been observed among members of such a group.

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