XVII. *On an Anomalous Case of Vision with regard to Colours.*
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(*Read January 19. 1824.*)

As the following anomalous case relating to the vision of colours, appears to possess some remarkable peculiarities, I have considered it of sufficient importance to be submitted to the Royal Society of Edinburgh.

J. B., aged 60 years, served in early life an apprenticeship to a farmer ; but, disliking agricultural pursuits, became a tailor, and afterwards entered into the Navy, and served in several general actions. After quitting the sea-service, he resumed his trade, and in the employment of which he now continues. From his childhood, it appears, he was unable to point out colours by their proper names ; or, excepting in a few cases, to distinguish one colour from another. From the nature of his avocation, this circumstance must have often been to him the source of much inconvenience ; and during his whole life, he has found the utmost embarrassment from it. He has remarked, that his inability of distinguishing colours, has cut him off from the enjoyment of many innocent and harmless pleasures. If a painting were placed before him, abounding with the most beautiful varieties of colour, it would only present a dull and cloudy appearance ; and hence he has never made a practice of stopping at print-shops, or of visiting any scenic representations. In early life, he once visited a panoramic exhibition, and he remarked, that his mortification was extreme, when he found every one around him delighted with the splendour of the scenes ;

whereas, to him, to adopt his own words, the whole presented nothing but "a smoky appearance." The face of Nature also, which, to the perfectly organised eye, presents so many exquisite varieties of colour, and so many beautiful diversities of light and shade, has always appeared to him under a dark and murky aspect. While others have contemplated, with high gratification, the splendour of the setting sun, or the glory of the rainbow, he has seen but little to admire; and, when led by the chances of a seaman's life, into the Mediterranean, where a bright sun, and a pure and cloudless sky, lend to the glowing tints and the vivid colouring of Nature, charms unknown to the climates of the North, the contrast produced no peculiar effect on him: nor has this arisen from a morbid constitution of mind; for, on the contrary, he is remarkably happy and cheerful; and, from all the information I have been able to obtain respecting him, has always been distinguished for his steadiness, cheerfulness, and good conduct.

From several opportunities that I have had of examining into the peculiarities of his case, I have drawn up the following brief observations.

Of Whites, he appears to have a very good idea, and so also of Greys;—he having selected five pieces of cloth of the latter colour, and arranged them according to their varieties of shade, with perfect ease. By candle-light, however, he mistook a thread of pink silk for grey, and, under the same circumstances, confounded flax-flower blue (No. 29. WERNER'S Nomenclature of Colours by SYME) with the same colour.

On SYME's page of Blacks being presented to him, he thought the whole to be dark-green. At first he pointed out the specimen which had the darkest tone; but after a few minutes, he remarked, that they all appeared the same. When specimens of basalt and hornblende were placed before him, he could perceive

no difference, although the former had a greyish, and the latter a greenish hue. Between raven and fine velvet black he could perceive no difference. His master furnished me with the following fact. Being desired to repair an article of dress that required black silk, he employed crimson; and a similar mistake occurred on two other occasions.

Both indigo and Prussian Blue (24. and 25. of SYME) he regarded as black. China and azure blue (26, 27. *ibid.*) he considered to be blue, but thought them good matches for carmine-red (90.), when placed by its side. Ultramarine blue (28.), he thought to be the same as lake-red; and when a light lake-coloured wafer was laid on a piece of azure-blue cloth, he thought the resemblance very perfect. Flax-flower blue (29.), he could distinguish as blue. His master informed me, that he once confounded sky-blue with green when repairing some article of dress; and on another occasion, when a young gentleman's dark-blue coat was brought to him for immediate repair; the mother of the lad was surprised to find the elbow of the coat repaired with crimson*.

SYME's Purples he regarded in general as blues; the only one to which he could perfectly adapt his notion of that colour, being the imperial purple (39.) of a specimen of fluor-spar. To the pale blackish purple, the colour of the porcelain jasper, he would only give the name of dark colour. A blue lilac he called a lead colour; nor could he trace a shade of purple in the sweet-scented violet, or in a plum. From all the information I could obtain, he regarded purple as a slight modification of blue.

Greens were to him a source of much embarrassment. On a particular occasion, I requested him to bring me eight or ten

* In one of Dr NICHOLLS' cases, published in the *Médico-Chirurgical Transactions*, the following anomalous circumstance is recorded. "CHARLES was in the Navy, and, several years ago, he purchased a blue uniform coat and waistcoat, " with red breeches to match the blue."

specimens of cloth, of different shades of that colour. This, I found from his master, was the occasion of much uneasiness to him ; and he at last was compelled to ask one of his fellow-workmen to point out the green bundle to him, although they had been charged not to assist him in his difficulty. His master having discovered this circumstance, substituted some pieces of black and brown for some of the greens ; and he, unaware of the change, furnished the following as varieties of green.

Four specimens of dark bottle-green.

One	reddish-black,	(21)	} SYME.
One	.. raven-black,	(22)	
One	liver-brown,	(104)	
One	blackish-brown,	(108)	

When SYME's specimen of verdigris-green was placed before him, he declined giving any name to it, but remarked that it was certainly not green. The beautiful green of the emerald (52.), he called pale orange ; and to grass-green he applied the same remark as to verdigris. Duck-green, which forms so interesting a feature in the neck of the mallard, he named brown or green, displaying much uncertainty ; and the same ambiguity was manifested, when olive-green was shown him. On another occasion, being requested to point out two colours in the page, that resembled each other, he immediately fixed on the two last-mentioned, and again called them brown.

All his ideas of green appeared to be extremely confused. On being told that SYME's specimens were varieties of that colour, and requested to point out one that bore a resemblance to the green fields, he expressed his surprise at the remark, and contended that they bore no resemblance to it. The darker kinds of green he considered to be brown ; those of a middle tone ambiguous ; and the lighter kinds, as in the case of emerald-green, of a pale orange colour.

He experienced no difficulty with any of the brighter varieties of Yellow. From a number of pieces of different coloured cloth, he immediately selected a specimen of this colour; and a fragment of high-coloured sulphur he thought a beautiful example of the same. Gallstone-yellow he conceived to be orange. Wax-yellow (13.), which, in the Vegetable Kingdom, exists in the greenish parts of the nonpareil apple, he supposed might be a green. His ideas of yellow were, however, on the whole very correct.

His notions of Orange were very imperfect. The common marigold, he called Yellow; and a sample of fine orpiment, Orange; and likewise equally choice specimens of reddish and deep reddish orange he termed Brown.

Of the Reds, he considered carmine, lake, and crimson to be blues;—the latter, indeed, a dark-blue, agreeing with the instance of the coat before alluded to. When a great snapdragon was placed before him, he called the margin of its upper lip, which was purplish-red, a dark colour, and thought it a very good match for my black coat. The part also near the throat of the corolla, and which was of a light bluish-red, he called light sky-blue. The yellow palate he distinguished perfectly; but as that colour gradually lost itself in the purplish-red, he gave it the name of *black*. He remarked, that, when a boy, the ruddy cheeks and arms of the milk-maidens, always appeared to him of a bluish tone; and, on being shown a rosy child, he persisted in the same remark. The carnation, pink, and the cock's-comb presented also the same appearance. Scarlet-red he distinguished readily by its proper name. Veinous blood* he assimilated to brown or black; and the brown disk of the common

* Mr DALTON, in vol. v. p. 33. of the Manchester Transactions, remarks, that, in his own case, blood appears not unlike bottle-green; and, it is worthy of notice, that, in the present case, it was termed, "not a black, but nearly so."

marigold, and the iron-flint, although presenting so marked a difference to the perfectly formed eye, appeared to display no variety to him. To the latter, indeed, he gave the name of *olive*. The colours of the common garden rose and peach blossom, were both designated lead-colour. To him, therefore, some of the sweetest and most delicate colours of creation presented but little beauty.

In the case of Browns, there was much uncertainty ; in the greater variety of cases assimilating them to green. Mineral pitch, although clearly a variety of brown, he considered to be black ; and liver-brown he designated in the same manner. Chesnut-brown he could not distinguish. An article of dress, indeed, of the latter colour, he repaired with silk of an olive-green ; and, on another occasion, he considered covered buttons of a bottle-green, as a perfect match for a dress of a blackish-brown. Two fragments of cloth, one a duck-green, and the other a liver-brown, were placed before him, and he was unable to point out the difference.

From his having regarded crimson-red both as dark-blue and black, it was anticipated that he would confound the two latter. This accordingly took place, when the indigo and Prussian blues of SYME'S Nomenclature of Colours were shown him, calling them both black, notwithstanding they exhibited a marked distinction in that excellent work.

From the preceding observations it appears, that the only colours he was capable of distinguishing with certainty (by day), were White, Yellow, and Grey ; and that in the proper perception of the following colours, there appeared to be varied degrees of uncertainty.

Colours proposed for Observation.	Perceptions of the proposed Colours.
BLACK.	Generally Green, in particular cases Crimson.
BLUE.	Darker kinds, Crimson and Black. Those of a middle tone Carmine and Lake. Those of a lighter kind able in general to distinguish.
PURPLE.	Appeared to be Blue, excepting in the case of a very bright Purple.
GREEN.	Confounded in general with Black and Brown. Greens of a darker kind appeared Brown. Those of a middle tone uncertain as to name. Greens of a lighter kind Dark-Yellow.
ORANGE.	Darker kinds Brown. Lighter kinds Yellow.
RED.	Carmine, Lake, and Crimson appeared Blue.
BROWN.	Green.

Since the above was written, the following circumstance occurred. He was sent to obtain some patterns of green baize, and having procured five varieties, placed them on his return in the shop-window. In the course of the day, his master called on him, to state the prices of the patterns he had obtained, at the same time placing before him two pieces of crimson cloth, and three of the green baize, and he, unconscious of the difference, fixed prices on each.

On being informed of the circumstance, I prepared two excellent specimens of the above colours, and placed them before him, first on a white ground, secondly on a yellow ground, and, lastly, on one of a green colour, and, in each case, he regarded the two colours, to use his own words, "as well matched." *

* A philosophical friend who was present, placed the colours under several different circumstances, but with the same uniformity of effect.

The day being favourable on which the last experiment was performed, a vivid and well-formed solar spectrum was thrown on the wall. He pronounced it to be composed of two colours, yellow and light blue ; and which, in a former conversation, he described as the ordinary appearance of the rainbow. The vivid and brilliant red of the spectrum he could by no means distinguish. Its general appearance he regarded as in some degree beautiful ; but the bursts of pleasure which escaped from my children, as they contemplated the brilliant colours in succession, appeared to excite in him the greatest surprise. I afterwards found, that he considered the prism as a thing moderately interesting, but as by no means meriting the praises which had been bestowed on it.

His eyes appear to be exceedingly well formed, and time has but slightly impaired their powers. According to the opinion of my friend Mr TRACEY, surgeon, they appear to possess all the essentials necessary to good sight, namely, *perfect transparency of the several humours, a proper degree of convexity of the cornea and ball of the eye*, and to which may be added, *the perfectly healthy functions of its appendages* ; the proofs of which are discovered in the just adaptation of the eye to distance. In his communication to me on the subject, Mr TRACEY observes, “ If I might adduce any one point (which, under common circumstances, I should not be disposed to notice) I should say the “ grey colour of the irides is much fainter than usual ; and that “ the pupillæ are extremely small.” The cause of the last-mentioned fact, is no doubt to be attributed to the constant exercise of the eyes by candle-light, it being known, that, persons similarly occupied, are of necessity obliged to bring the object very near, and thus, from long habit, produce artificially a permanent diminution in the magnitude of the pupillæ.

In the present limited state of our information on this very interesting and curious subject, and with so few cases that have

been hitherto presented to the philosopher, it may be premature to offer any very decided observations on the cause. The objects of a true and legitimate philosophy are perhaps best fulfilled, by diligently collecting facts, and, by cautiously deducing inferences from them, to form gradually the successive links of a chain, which shall ultimately lead to the true cause.

Of the hypotheses that have been proposed to account for the phenomena in question, that which refers it to an insensibility of the retina to certain impressions of light, appears at once the most simple and philosophical. Some eyes, it is well known, are capable of performing the general functions of vision, and are yet unable to perceive those minute impressions of light, which to other eyes are readily perceptible. A retina may be perfectly adapted to receive the due and proper effect of a beam of light, and yet, from some peculiarity in its organization, incapable of perceiving all its component parts. In the present case, the general objects of vision, as relate to form, distance, and magnitude, were perfectly fulfilled, and the sensations arising from white, yellow, grey, and the lighter varieties of blue, appeared in general to be correct ; and it would therefore appear probable, that the retina was sufficiently sensible to receive correct impressions from pure white, up to colour of a certain intensity ; and, beyond which, its power being enfeebled, it communicated only imperfect and confused ideas*.

In the cases published by Dr NICHOLLS, in the *Medico-Chirurgical Transactions*, the anomaly appeared in some measure hereditary ; in one instance being derived through the father, and

* The point where this change appeared to take place, with respect to blue, was between ultramarine and flax-flower blue, corresponding to 28. and 29. of SYME.

in the other through the mother. In some families, this peculiarity of vision appears to be transmitted through a son, without affecting in the smallest degree a daughter; and in other cases precisely the reverse. In the present instance, however, the anomaly appears to have originated with the individual, no member of his family being similarly circumstanced,—he having always regarded himself as a singular and unfortunate exception to the whole.

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