COLOUR

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THE discussion of shade classification has probably been going on since the first catalogue editor who listed two shades of the same value started to receive readers' comments. The pronouncements in recent issues of STAMP COLLECTING on " Carmine & Scarlet " have thrown much light on the distinction of those shades in the issues discussed. You may remember the comment of the Printer's reader quoted in " Ubique " on September 3rd. " . . . no two eyes see alike. Obviously they have no common basis on which to agree. I think the only real answer is the refraction of light through a prism, working on the principle that every colour has a different rate of vibration ".

Let us examine this statement of opinion, in the hope that after being told " What Happens Under the Lamp ", and being given a chemical account of the occurrence of " rust ", the regular reader of "S.C." will not find this article too small beer. The analysis of colours is referred ultimately to the rate of vibration of " pure colours " as seen when white light is refracted through a prism, producing a rainbow-like array (called the visible spectrum) following the order: violet, blue, green, yellow, orange, red, with a continuous change between them. When seen in a spectroscope, one of the instruments used for the measurement of the frequency of light, these colours appear very bright and intense, like those you see transiently in a soap bubble, or reflected on the surface of a puddle on which a trace of oil has been dropped. This is because they are pure colours. That is to say that the eye is receiving only one frequency, for each colour, and the appropriate part of the nervous mechanism of the eye is being stimulated to a high degree. If the observer stares into the instrument fatigue soon results and the colour appears to lose its intensity. This weakness, common to the other human senses to some extent, of a non-persistent efficiency, should be borne in mind.

In the production of coloured impressions on paper one is obliged to use dyes or pigments. These materials, when light falls upon them, absorb some parts of the spectrum and reflect the rest. (Neither absorption or reflection need be total, but between them they must account for all the light of each frequency falling on the surface initially.) One reason why artists find it so difficult to reproduce the brilliance of many of Nature's colour effects is because pigments which totally absorb all frequencies except one are unknown, and the striking colours seen in the sky or in a butterfly's wing are not themselves due to reflected light alone. At its best a dye may reflect only a narrow range, nearly but not quite all of the other colours being absorbed. The great majority of dyes and pigments are far less efficient and their colours are anything but pure.

In order to give the effect of carmine, for instance, the light falling on the colour must contain the range of frequencies of which carmine is composed and the pigment must reflect these and absorb the rest. The colour will appear to change in quality if some of the necessary frequencies are enhanced in intensity in the light source, and conversely if some of the frequencies are entirely missing the colour will appear drab, and in a way lose its " life ".

In addition, as you may remember from " What happens under the Lamp ", some dyes emit frequencies of their own as a result of absorption, particularly of ultra-violet rays. This is termed " fluorescence ", and gives an effect of brilliance to the colour.

When it comes to the classification of stamps we cannot all use the elaborate instruments of the colour scientist to measure the amount of light of each frequency absorbed throughout the whole spectrum. We must rely on our eyes. Let us be a little more optimistic than the Printer's reader and assume that most normal eyes see colours very similarly. The trouble comes in remembering them, and in describing them in words. To avoid this we must work by comparison.

To use the principle of comparison we require not only standard pigments but a standard light source. The latter is just as essential as other stamps or a colour chart, for the reasons outlined above. An examination of typical light sources show that those which produce their light from a heated substance, e.g. the sun or an electric filament lamp, emit a continuous spectrum of colours. The light from flames and fluorescent or neon tubes is generally found to consist of a number of lines of individual colours and therefore of single frequencies. Although the latter may be efficient as illumination, since whole sections of the spectrum (in between the lines that are there) are missing, colours which require some of these frequencies cannot be observed in their full quality. Furthermore, users' eyes are required to see objects by reflection of single frequencies only, and fatigue is often experienced. Many light sources of both types emit some ultra-violet rays as well. I therefore suggest that for shade comparison the best light is that from a North window, and the best artificial light is provided by a high candle-power electric filament lamp. (Under 100 watts the red-yellow end of the spectrum is enhanced compared with daylight.)

To avoid fatigue, and a subsequent falling-off in contrasts, long periods of comparison of similar shades should be avoided, and a uniform neutral background should be used whenever possible.

The best standard pigments are, I consider, the stamps themselves, bearing in mind that it is very difficult to demonstrate the principle, often invoked, that all the stamps of one printing are identical in shade. Therefore, if you wish to obtain the shade varieties listed in a catalogue, buy them from the catalogue publishers. If this is not possible for one reason or another, either resolve to abandon the idea of having more than one shade, or collect as many different shades as possible, and classify them yourself. Never, never, please, believe that because only two shades are listed that is the maximum number obtainable. It is the maximum number that the publisher feels justified in describing as saleably different in his reference collection. Each description may, and very often does, cover a group of several shades differing appreciably among themselves.

A comparative difference in shade between two stamps each listed in different parts of the catalogue as scarlet should not cause surprise in view of the limitations of our colour vocabulary. There is not space in the catalogue for " bright orange red with a faintly lemonish tinge ", and the editor must use his terms to emphasise the distinction between differing shades in the same stamp.

If a colour-chart could be published containing a thousand or more shades it might be useful—it could then cover the " pale " to " deep " range as well as the " bright " to " dull ", but it would still suffer from deficiencies in the inks. Even when " matched to actual stamps " (I quote), the chemical composition of the pigments will almost certainly not be the same, and so under a light source different from that under which the " matching " was done, the reflected and possibly fluorescent colours would not appear to be the same as that of the stamps. After a time, in addition, differences may well arise due to deterioration of the chart due to exposure.

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My moral : stick to your own stamps and comparison as a guide, and do not pay fancy prices unless you have satisfied yourself that the shade offered only turns up once in several dozen copies. To refer to specific examples of George VI stamps, the 10s. Bermuda S.G.119, at present under discussion in the columns of " S.C.", has a frame so deep in colour as to resemble the 12a. India of 1937 and 1941. The paper surface should not be taken as a criterion as printings of 119a have appeared that respond to the chalky paper test. They also show variations in shade of paper, vignette, and frame, some being deeper than others in the latter respect but none approaching deep lake. Early examples of 119a show brown gum, and have frequently been offered as 119 in error. Other examples of stamps showing multiple shades are Bahamas 173, Cyprus 160, Falklands 99, Hong-Kong 149a, Jamaica 123a, Nigeria 58c, St. Kitts 74a and their respective companions, which differ from the commonest shade without approaching the scarcity of the highly-priced stamp. I have so far over 20 shades of the Jamaica 1½d. used on piece, none of which really coincides with the true S.G.123a as purchased.