A NEW COLOR SCHEME.

Every student of botany, ornithology, or entomology, has found the lack of any well-defined standard or credited nomenclature of color a prolific source of trial and perplexity, while to the common eye there is nothing but confusion in our present methods of designating color. No stronger proof of this is needed than some of the terms used to designate fashionable colors, such as "crushed strawberry," "ashes of roses," "elephant's breath," etc. What more absurd terms could one easily choose to express an intelligible conception. This is no doubt largely due to the fact that there has been no channel through which to introduce reform. It must be done through those who deal largely in material where there is frequent occasion to designate colors. The naturalist might fix his standards and nomenclature, as he has already done, but the great world would go on just the same, ignoring him and his little clique till the end of time. The physicist may speculate and dogmatize on the theories of color and reach admirable results, but find himself unable to alter the nomenclature of either commerce or every-day life. Manufacturers, who depend upon the demands of trade, must provide what is called for in the market or have their wares left on their hands, and find themselves the losers thereby. The ever changing fashions seem almost to necessitate the use of new and striking names for things even themselves very ancient. These facts leave little ground for hope that any reform can be expected through the ordinary channels of trade.

It is very refreshing, however, to find now and then a man who, in the midst of commercial competition, is willing to give some thought to the propagation of scientific truth. About twelve or thirteen years since Mr. Milton Bradley of Springfield, Mass., who was engaged in the manufacture of kindergarten supplies, conceived the idea of reducing the making of colored papers to some method which would be practical and at the same time sufficiently accurate to be of value as a means of education. At my suggestion the solar spectrum was taken as the basis of his scheme. The difficulty of reproducing the beautiful colors of the spectrum in pigments seemed at first almost insurmountable, but after long experiment, and the expenditure of much time and money, it was found that colors could be produced in papers which fairly approximate the colors of the spectrum.

The scheme adopted by Mr. Bradley contains six standard colors, viz., red, orange, yellow, green, blue, violet — colors generally recognized and readily distinguished in the solar spectrum. It was found that, combining these colors in the Maxwell disks, a neutral grey could be produced, while with a less number this would be impossible. These, together with a white and a black, constitute the basis of the system. If a disk of one of these standard colors be placed upon the wheel together with a white disk, and the proportion of the exposed surfaces of the two disks varied, a number of modifications of the color varying from the standard to pure white will be obtained. These are called tints. Similar combinations of the standards with black produce what are called shades. Each of the standard colors is treated in the same manner. If a disk a little larger than the regular size with a border graduated into 100 degrees, be placed behind the disks to be used in combination, the exact proportion of each disk can be determined. The first letter of each color is used as its symbol, except that for black N. (niger) is used to avoid the repetition of B. If we combine red and black in equal proportions, thus, R.50 N.50, we shall get a shade of red. We may designate this as red shade No. 1. In a similar way each color would be treated. Each may be combined with other colors and the symbols written in a similar manner. Red and orange, the former predominating, would be called orange red, written O.R. A given combination of these two colors would be expressed by O.25 R.75. This would in turn have its tints and shades. When the proportions are not needed, R.T., R.S., O.Y., G.B.S., would very simply indicate red tint, red shade, orange yellow, green blue shade, respectively. Thus simply is the eye trained to discern the components of each hue by the aid of the symbols. The simplicity of the system and surpassing beauty and number of hues obtained is striking.

A large series of papers manufactured according to this scheme is already used in kindergartens and many primary schools. One manufacturing firm proposes to use the wheel and disks in connection with the coloring of textile fabrics. The disks are also used in ordering new colors from the factory, where a duplicate set of the disks is used to translate the symbol into the visible effect desired. Architects and artisans find the scheme convenient in studying the effect of adjacent colors. Indeed, a system of color harmonies has already been partly elaborated with this scheme as its basis.

The next most important step is for the physicists to establish the location of these six colors within certain limits of wave-lengths, and then secure some material in which the standard color can be permanently preserved for comparison. What a saving of confusion in the use of color names is thus gained we are hardly able to realize. The following quotation from a pamphlet issued by the Milton Bradley Company, explaining the scheme, will indicate one of the many applications of the scheme:—

"A careful study of these representative combinations of disks will suggest numerous possibilities not mentioned here. One of these is the giving of exact and definite names in the terms of our standards to the common colors. For example, it is well known that under the same name different manufacturers make pigments varying very largely in color.

"If, having a small tablet of millboard or other suitable substance painted with an even coat of Windsor & Newton's light red tube color, we match the color with our disks, we find the nomenclature to be O.24, N.76; while a German color with the same name gives O.18, N.82, both being shades of orange, although the German color is much darker than the other.

"The same test with two tubes of cinnabar green gives Windsor & Newton's, Y.14, G.11½, N.74½; the German, Y.12½, G.11, W.2, N.74½, the first being a shade of a green yellow, and the second a broken green yellow; the shade contains black with the yellow and green, and the broken color has both black and white.

"In Windsor & Newton's chrome yellow we have O.29, Y.71; the German, O.35, Y.45, N.20; the first a pure orange yellow; and the second a shade of a much more orange yellow.

"The following analysis of some other common colors may be interesting, as showing how simple and practical our nomenclature is:—

"Chinese vermillion — R.77, O.23.

"Yellow ochre — O.24, Y.24, N.52.

"Indian red — R.7½, O.17½, N.75.

"Emerald green — G.63, B.14½, N.22½.

"Deep cadmium yellow — R.5½, O.67, Y.20.

"Chrome green, No. 2 — G.16½, Y.5, N.78½."

J. H. Pillsbury.

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