intensified when viewed through the violet film, and appeared to the writer as if almost self-luminous. They glowed with a beautiful pink light, as if the bush was decorated with fairy lights.

But words fail to describe the many beautiful color changes to be seen in viewing different flowers and colored objects.

Ordinary straw looks as if it had been dyed in a dilute magenta bath, and ordinary yellow varnished wood appears as if stained with carmine. Sombre golds and citrines, and browns appear scarlets and deep reds, and a curtain dyed of a rich shade of olive, when strongly illuminated with sunlight, glowed with a superb crimson. Foliage of a deep green shade, when viewed with the violet film, looks a deep plum color, more resembling a bronze, or the color of the beetroot leaf, and an ordinary green beech tree growing beside a copper beech look both the same color when viewed through the film. A field of rich green grass or hay, dotted here and there with patches of buttercups, becomes transformed into a beautiful sight, the grass being a dull plum color in its shadows, and a claret in its strong lights, while the buttercups are masses of vermilion.

**An Interesting Property.**

From the fact that this violet film throws some colors into greater contrast to each other, and therefore into greater prominence, there arises the interesting property of its being able to show up some colored objects at a distance, which are undistinguishable to the unaided eye.

This property might prove a valuable one under some conditions. Here are cases in point. In a far distant field were clusters of buttercup flowers, almost imperceptible at the distance. On looking through the film they became easily visible, *standing out from a dull plum-colored background, in masses* of scarlet. Distant brown flowers were at once seen through the film, when they were not distinguishable to the naked eye. A hillside in the far distance was carefully scrutinized with the naked eye to try and distinguish any colored objects, but none were visible. On applying this violet film to the eyes there were seen patches of faint red here and there along the hillside. These patches turned out to be clusters of yellow-broom bushes in flower.

The ordinary brown wallflower can be distinguished by the film at a far greater distance than it is possible without it, because, instead of its being a soft tertiary brown color, easily merging into obscurity, it becomes changed into vermilion or a poppy red.

An alcoholic solution of chlorophyl, although of a rich green color to the naked eye, assumes a dull ruby red color under the violet film. This same modification is also observed in a green solution made with Wool Green and a little Naphthol Yellow. With these two dyestuffs one can make up a very dilute solution to match in color a solution of Naphthol Green.

To the unaided eye these two dye solutions, in test tubes, appear exactly similar when held up to the light; but if they be viewed with the film a remarkable difference is observed, the compound green looks red, while the Naphthol Green looks blue. A miscellaneous collection of shades of russet, yellow, buff, old golds, olives, salmon, reds, pinks, orange, berry, etc., although widely differing from each other to the ordinary vision, when viewed through the violet film all appear of one class of reds, varying only in depth of tone. A clear pure tone of green dyed with Aniline Yellow and Wool Green appears a black, while its lighter tints appear dull shades of red under the film.

**Absorption Spectra.**

All these extraordinary changes in appearance can, of course, be easily explained, from a knowledge of the absorption spectra of the colors under examination, and of the violet itself. A strongly colored violet film shows a spectrum consisting of only two luminous broad bands. These are first, the extreme red from the line A in the spectrum, through cherry red on towards scarlet red between the lines C and D. (See 5). Then comes a strong band of total absorption, or darkness from C ½ D, on towards the line F in the blue-green. So that, yellow, yellow-green and green, are all absorbed.

Then the second luminous band begins faintly beyond the E lines toward F—say E ½ F—and extends through the blue, blue-violet and violet, to the end of the spectrum. (See 5.) From this, it will be seen that, with a strongly colored film, all the colors viewed will assume only two classes of colors, i.e., classes of reds, and classes of blues and violets. All the others, which come in between the extremes of the dark absorption *band, will appear dark shades, or blacks, and it is only the red* present in the composition of the yellow, that makes it appear red under the violet film. If a homogeneous yellow could be found, it would appear black under such a film.

Absorption spectrum No. 1 shows approximately the locality of absorption in a moderately strong solution of chlorophyl green. The curve shows strong absorption in the cherry red, extending from line B to C, and on through the orange-red towards the line D. Then follows free transmission from the yellow, through the yellow-green to the E lines in the green, from which there is a gradual and increasing absorption towards the violet at the end of the spectrum. Absorption spectrum 2 is that of Cobalt Blue Glass, showing free transmission of the extreme red rays from A to B ½ C, then follows absorption, greatest at the orange-yellow line D, and diminishing at the E lines in the green.

Spectrum 3 shows the faint absorption in the violet end of a *dilute yellow with the free transmission of all the rest of* the spectrum, and curve 4 shows the effect of the combination of spectra 2 and 3, which constitutes Simler's erythroscope. By comparing spectrum 4 with that of chlorophyl No. 1, it will be observed that the luminous or freely transmitted part of chlorophyl, extending all through the yellow and yellow-green, corresponds exactly to the dark or absorbed part of the Simler combination No. 4. So that the only light that is common to them both is the red light, and it is this transmitted extreme red light that gives to the foliage its red appearance when viewed through the erythroscope.

Spectrum 5 shows the absorption curve of a film of Methyl Violet 3B, which will be observed completely absorbs that part of the spectrum reflected from chlorophyl, its absorption curve extending from the line C in the cherry red through yellow and yellow-green, and the green at lines E on to blue-green between E and F.

*It will be seen that this curve has not the slight absorption* in the violet, as shown in Simler's apparatus (spectrum 4), but this is compensated by the freer transmission of the red rays.

**Autumn Tints.**

On viewing Nature during the autumn time with this violet film, the color changes become very marked, as the foliage at this time has a yellow or russet appearance which becomes *greatly accentuated with the film. The autumn tinted foliage* glows with ruby or scarlet, and an elder tree, having only a few leaves here and there of a yellow tinge appeared like a copper beech hanging with cherry red fruit, which stood clearly out against the dark colored background of foliage.

A yellow cornfield during harvest operations is indeed a wonderful sight. The harvesters seem to be working among long purple red grass, while the gathered sheaves or "stooks" appear a dull magenta color. Towards sunset, when the light becomes "warm" in color, the magic effect is more pronounced, and the beauty of the scene can scarcely be imagined.