LIGHT SOURCE
Society of Television Lighting Directors

Nomenclature—Part III: Filters

by Bentley Miller

Since the dawn of time, Man has been fascinated and delighted by color—the colors of a rainbow or of light filtering down from a blue sky, and the exquisite golden beauty of the 'magic hour'. Man has in short, always had a strong emotional reaction/connection with the colors that occur in his surroundings. So it should come as no surprise that light and color play an increasingly important role in our highly visual world. Extensive testing has been done on Man's reaction to different colors, and that there is now a breadth of information available, even though scientists have merely scratched the surface. For example, it has been discovered that pink is an excellent color for jail cells for its calming effect on people under stress.

Throughout our history, we have associated certain colors with specific emotions. Red for example, is associated with passion—either love or anger. Blue is regarded as being cold, remote, distant—and through the creative use of a filter, it is used to indicate a lack of vitality. Green is the color of envy and has been since ancient times. (How often have we heard in conversation that someone is green with envy?)

The Eye/Brain Theory

Earlier I mentioned the blue sky and the golden rays of sunset. As you may or may not know, the sky isn't really blue and the setting sun isn't really a golden orange-red color. These colors are only apparent visual phenomena caused by the influences of our atmosphere and our own perceptions (the eye/brain theory). Human vision is not a purely mechanical proposition; our vision is a complex process of photochemical reactions, nerve impulses and interpretation by the brain.

The vision process is as follows: in response to light, a photochemical process in the retina makes it possible for the light-sensitive mosaic layer of photoreceptors to initiate an impulse, which travels along a complex nerve system connected to the brain. The primary photo-reaction results in the generation of an impulse train which travels through the layers of the retina to the optic nerve and on to the brain. In the brain, the impulse train is decoded and interpreted, producing vision. The result then, is that we don't see only with our eyes; they are part of the chain of receptors and we actually 'see' with our brain, which does the interpretive and correlating functions. Our eyes are the color and shading sensors, yet our brain performs the function of perception. That's why our eyes/brain can be fooled—as the following experiment indicates. Our vision system is adaptive, dependent of the prevailing light conditions. This exerpt comes from *The Complete Tiffen Filter Manual*:

Place a table lamp near a window through which diffuse daylight enters. Turn the lamp on, then lay a clean sheet of white paper beneath it. Keep your eye on the paper as you switch off the lamp. Note that the color of the white paper will now appear 'cooler', more bluish. Turn the lamp on again and observe how much 'warmer' in tint the paper appears. The yellowish incandescent light has cancelled out some extra blue of the diffused sunlight. In the course of our daily activities, we usually fail to notice such differences in light sources and their effects on things they illuminate because our eye/brain receptor systems adjust automatically to accept most normal lighting as white. We subconsciously assume that a sheet of white paper must be white no matter how the conditions under which we view it may vary.[1]

Light rays (as we recall from past discussions) are purely electromagnetic energy. This energy reaches us only after travell-