Woodland Photography With Daylight Ektachrome

Most outdoor color photography is done in bright sunshine; even subjects in wooded regions are usually photographed on bright days when they are at least partly sunlit. By sensitive selection of the subject material, careful focusing and exposure very beautiful pictures can be obtained under these conditions, as the work of Jeannette Klute so well demonstrates. But only too frequently woodland photographs are a failure because ofthe spotty appearance produced by the sharp discontinuity between deep shade and patches of sunlight. Scenes with narrow horizons and details of nature can sometimes be photographed to attain more delicate and subtle results by the subdued light of an overcast day - a practice that was discouraged by film manufacurers during the first years of color film and is still considered risky by many amateur photographers. An argument opposed to this way of working is the statement that the color saturationof an object increases with the intensity of illumination and that, therefore, sunlight is desirable. Aside from the fact that color saturation may not be an ultimate consideration, the exposure of the film for high color saturation must be scaled to the brightness of the most highly colored objects, placing their values not too high on the exposure curve or their colors will be excessively diluted with white. However, when photographing sunlit scenes bright parts of the subject must be scaled high, thus causing desaturation of their colors, in order to avoid underexposure of the shadows. In subdued light, on the other hand, where subject contrast is lower, the brightest objects may be placed midway on the exposure curve rendering their hues in their full richness.

At least as important in outdoor photography as the diffusion of light is its color which will tint with its hues all that it illuminates. A clear sky will cast over all shaded areas a blue tone whose intensity will vary with atmospheric conditions. Under an overcast sky the spectral quality of illumination is determined by the heaviness of the cloud cover, the time of day, the

reflectivity of nearby objects and the overhead canopy of leaves. The influence of the last factor, important under all weather conditions, may be appreciated by considering the filtering effect on the light of green summer foliage as compared with red and yellow autumn leaves. Because the eye and mind in judging colors make automatic compensations, which color film does not do, for chromatic variations, it is often difficult to compensate photographically for these effects. Never-the-less, in most cases the quality of light is largely determined by the condition of the sky above. On a heavily overcast, gray day this source is very nearly neutral or white, whereas sky light passing through thin clouds retains a good measure of blue. At the far extreme, objects in open shade on a clear day are illuminated by the unobstructed blue dome of the sky, whose intensity increases with altitude on mountainous country. In color prints, and to a lessor degree in transparencies, a blue cast from the sky is generally not acceptable emotionally. The reason for this is that we make subconscious, mental conversions of colors to what we feel are intrinsic to the objects themselves, that is, to the colors they seem to have in white light. A blue cast is discounted in our minds so that we do not see it - at least not in its full intensity. Photographs on the other hand, like the pink tinted mountain tops at sunset, are seen in contrast with their surroundings, giving us color perspective, which serve to accent what we have subconsciously dismissed at the scene as aberration of color. Therefore, it is advisable to attempt to portray natural objects in photographs in what we feel to be their intrinsic colors.

To eliminate excess blue in diffused light requires the use of blue absorbing filters over the camera lens. Most satisfactory for this purpose are the Wratten Light Balancing filters 81 to 81EF which have replaced the earlier CC13 to CC15 series. The choice of filter for different conditions is mostly a matter of judgment. Eastman Kodak Company recommends the 1A filter for reducing excess blueishness in outdoor color photography in open shade under a clear, blue sky. They make no mention of the possible use in this connection of the 81 series filters, which were designed especially for use with Type B color film.

In my experience the 1A filter is completely inadequate for eliminating more than the merest traces of blue. The explanation of its ineffectiveness is probably to be found in its low absorption above a wavelength of 400 millimicrons, in which range the 81 series filters have appreciable density. However, I have found that the equivalent of an 81D filter is hardly adequate for removing blue in open shade at high altitudes on a clear day, a fact probably due to the high proportion of ultraviolet light under these conditions. Although I have not tried the combination, the use of a 1A filter in conjuction with the 81 series filters might, because of its greater near-ultraviolet absorption, be quite effective in reducing blue. In the woods on overcast, gray days no filter or the least absorbing of the series is sufficient. On days with a light overcast or a partly cloudy sky a yellower filter is needed and then the 81A to 81C or even 81D, depending on the blueness of the light, should be used. Unfortunately I can give no rules or data to guide in the choice of a filter. It has been suggested that the correct filter could be selected from color temperature measurments, but this is not so since color temperature meters measure correctly the color temperature of the incident light only, whereas it is the reflected light from the subject, which is derived not only from the sky and clouds but by reflection from the environment, that concerns us.

Besides light quality, account must be taken of other factors in woodland photography which can complicate the photographic process and greatly increase exposure times. One of these, the dimness of the light that may be encountered in deep woods, will itself make long exposures at small apertures necessary; another is the factor for bellows extension which in close-up photography becomes very significant and must not be forgotten. A third factor that may increase exposures more than any other, and is very often neglected, is reciprocity failure of the emulsion. This phenomenon refers to non-linearity of emulsion response under exposure conditions of weak light with long exposure times, and the extreme reverse. Although all emulsions are subject to reciprocity failure it is a much less important factor with non-color emulsions than with color film.

The difference is due to the slowness of color film as well as to its multilayer structure whose lower layers receive the least light and are therefore the first to be effected by reciprocity failure. Thus we see that the first noticable effect of the phenomenon should be a color shift towards blue since the top layer is blue sensitive. Complicating this situation further is the functional relationship between reciprocity failure and wave length of the exposing light; the three layers of the emulsion sensitive to three parts of the spectrum do not exhibit identical reciprocity failure characteristics, resulting in other color shifts in even weaker light. To compensate for these effects it is not only necessary to increase exposures over the indicated value in poor light but to correct the color shift with filters. Fortunately most of the color shift is to blue which can be corrected very well by the 81 series filters. Hense with very long exposures the blue shift can be corrected by using a denser filter than was indicated by the blueness of the light. Because reciprocity failure of color film is not a simple relationship, depending on wave length as well as exposure time, it is difficult to asign factors for its precise compensation. However, by plotting empirical factors against exposure times before applying the factors for those transparencies that were correctly exposed the following relationship was obtained:

| exposure time including all factors except for recip. fail. | empirical reciprocity failure factor |
|---|---|
| 15 sec. | 1.25 |
| 30 sec. | 1.5 |
| 1 min. | 2.0 |
| 2½ min. | 3.0 |
| 3½ min. | 3.5 |
| 4½ min. | 4.0 |
| 6 min. | 4.5 |
| over 6 min. | over 5.0 |

This curve is of course subject to correction and refinement but shows clearly how important the reciprocity failure phenomenon becomes for long exposures and how disasterous its neglect could be.

It is now apparent why photography of woodland subjects may require such prolonged exposures. To the basic exposure time for the chosen aperture

must be applied a filter factor of 1.2 for filter 81 to 2 for filter 81EF, or the multiple of the individual factors for any combination of filters. A factor for the decrease in the effective aperture owing to bellows extension may multiplythe exposure by as much as 2.5 times in extreme cases. Last but not least there is the reciprocity failure factor. Together all factors could combine to produce an an increase of the basic exposure by as much as 16 times. With such long exposures considerable difficulty may be experienced in photographing any but the most rigid subjects. However, on quiet days and in the early mornings even flowers can be photographed with long exposures. Also, if motion is not constant and not very great intermittent exposures can be given during still periods with entirely satisfactory results.

Mention should be made of the problem of eliminating blue from the shadows in subjects partly in the sun. In this case correction or light balancing filters cannot be used because they adversely alter the colors in the sun lighted parts of the picture. Much reduction of shadow blueness without altering general color balance will be accomplished however with a properly oriented, light-polarizing filter. The full factor for this filter must always be applied.

The kinds of subjects that I have photographed in the woods include wild flowers, wet leaves, pools of water, rain drops on grass, spider webs covered with dew, mushrooms, bark of trees and many other such details of which there is no end in number or variety and among which are the most beautiful things to be seen in the forest. They all change from day to day and from one condition of weather to another - from rain to sun, from sogginess to dryness - so that there are endless opportunities for admiration of nature as well as for photography for those who have the aptitude for appreciation and the curiosity to look.