PHOTO FILTERS

The secret ingredient to many a dynamite photo

by Jack and Sue Drafahl

When we first started in photography, a photographer could fit almost every type of photographic filter in a small camera bag. Today that is almost impossible, as there are hundreds of filters on the market, with new ones constantly being introduced. Photographers can no longer just go out and buy one of each and have things covered. Instead they must analyze their shooting style and buy specific filters to fit their photographic needs.

FILTER TYPES

Before you decide what filters to buy, you first need to decide on how you want to attach the filters to your camera. There are three basic filter systems for your camera. Screw-in filters are most common, and are designed to screw into the finely machined threads on the front of your camera lens. You will need to buy a different-diameter version of each filter you use if you have different diameter lenses. You can buy step-up and step-down adapters to keep filter duplication to a minimum. To avoid image cutoff, use the step-up adapters (which allow you to use a larger-diameter filter on a smaller-diameter lens). Image cutoff can possibly occur with the step-down adapter (which attaches a smaller-diameter filter to a larger-diameter lens), so make sure you use the depth-of-field preview at the smallest f-stop to check for cutoff. You may still need to purchase several different filter sizes if you own large-diameter superwide-angle or long telephoto lenses.

If you plan on using several different filters on a variety of lenses, then the modular filter holder might be the solution. This filter holder has lens threads on one side and a rectangular filter slot on the opposite side. The advantage to this system is that you can buy several holders to accommodate your lens diameters, then use the same filters for each. You can quickly change filters by sliding one out and the next one in. Many holders have two slots, making it easy to use a combination of filters. The modular-system filters are square or rectangular in shape, and are made of plastic, glass and acetate gel.

Special lenses such as fisheye and super telephotos may require the third type of filter. These lenses have a small filter drawer in the middle or rear of the lens.

Since these filters are designed for a specific lens, quite often your selection will be limited.

Three types of filters: The plastic system filter (such as the Cokin shown at left), which is attached lenses of various diameters via a filter holder and adapter ring; the screw-in filter (front left), which screws into the lens's front threads; and the gelatin filter (right), which is attached to the lens via a holder and adapter ring.

BASIC FILTERS

Every filter manufacturer has a different way of grouping filters, which makes your filter selection even more difficult. We think that filters should be grouped as basic filters, advanced filters, and special-effects filters. The basic group includes filters that most photographers would have in their camera bags, regardless of whether they were just beginning or well advanced. The basic filters include a polarizer, UV filter, and a series of light-balancing filters.

The polarizer is one of the most popular filters since it performs a variety of functions. It can reduce reflections from glass and water, make the sky much darker, or increase the color saturation of an image. The older linear polarizers were fine until the newer cameras with built-in TTL metering and/or autofocusing systems which partially polarize light. With such cameras, you must use a circular polarizer, which is more expensive than the linear polarizer.

The polarizer comes in a rotating mount. While viewing through the camera lens, rotate the filter until you see

A polarizing filter can darken a blue sky so that white clouds will really stand out. In black-and-white photography, you can use a red filter to darken the sky, too; but obviously the red filter won't suffice for color work.

the desired effect. Reflections are quite unpredictable, so trial and error is the name of the game. You can obtain the darkest skies with the polarizer when you point your camera at a 90° angle to the sun.

In the past a UV filter came standard when you bought a new lens. With improvement in lens glass, and as the spectral response of film keeps improving, this filter's job has changed to just protecting the front lens element. If you do a lot of outside work that is near mud or water, then this filter may save you some grief.

If you have ever seen pictures taken indoors without a flash they probably turned out quite yellow. Right? Well that is because the photographer didn't use the correct film to match the light source. Conversion filters are designed to help you balance the light source to the film you are using. The 80 series of conversion filters will correct tungsten to daylight so your pictures will not have that yellowish cast. If you need to shoot tungsten-balanced film in daylight, the 85 series of conversion filters corrects the color balance.

If you want to warm the color temperature, then the 81 series of filters would be your choice. Each filter has a letter behind it and increases in warmth as the letters go up. You don't have to get the whole series, as each filter is only slightly different than the next. We recommend the 81A and the 81C for starters. If you take pictures using daylight film in deep shade with blue skies above, then you may want to go to the 81D or 81EF.

Black-and-white photographers would have a different assortment of basic filters. The polarizer would still be of great help, but a whole different set of color filters are used to increase the overall contrast in the scene. The red No. 25 filter gives very dark skies, the green No. 58 improves the density of flesh tones and lightens foliage, and yellow filters give strong cloud contrast in landscape photography.

ADVANCED FILTERS

As a photographers improve and advance to the status of serious amateur or pro, they will undoubtedly add more sophisticated filters to help fine-tune their results. When an exact color balance is required in a scene, the smart photographer reaches for a series of color-compensating (CC) filters. These come in the additive primary colors (red, green, blue) and the subtractive primaries (cyan, magenta, and yellow), with values of 05, 10, 20, 30, 40, and 50. They filters come in both glass and gel form and allow fine color correction. Many of the larger format films will have a suggested CC correction for each box of film. This ensures that a product will have the same color balance when photographed with one box of film to the next.

Photographers who find themselves shooting under fluorescent light will need the assistance of a special fluorescent filter. The two basic types are the FL-D for use with daylight film and the FL-B for use with tungsten film. Since there are over 60 types of fluorescent lights, these filters may not provide perfect color rendition. Testing ahead of time is important if you want to get a critical color balance. If the tests show you are close, you can finish the correction with one of the color-compensating (CC) filters. If you don't have an FL filter, a CC30 magenta filter can get you in the ballpark.

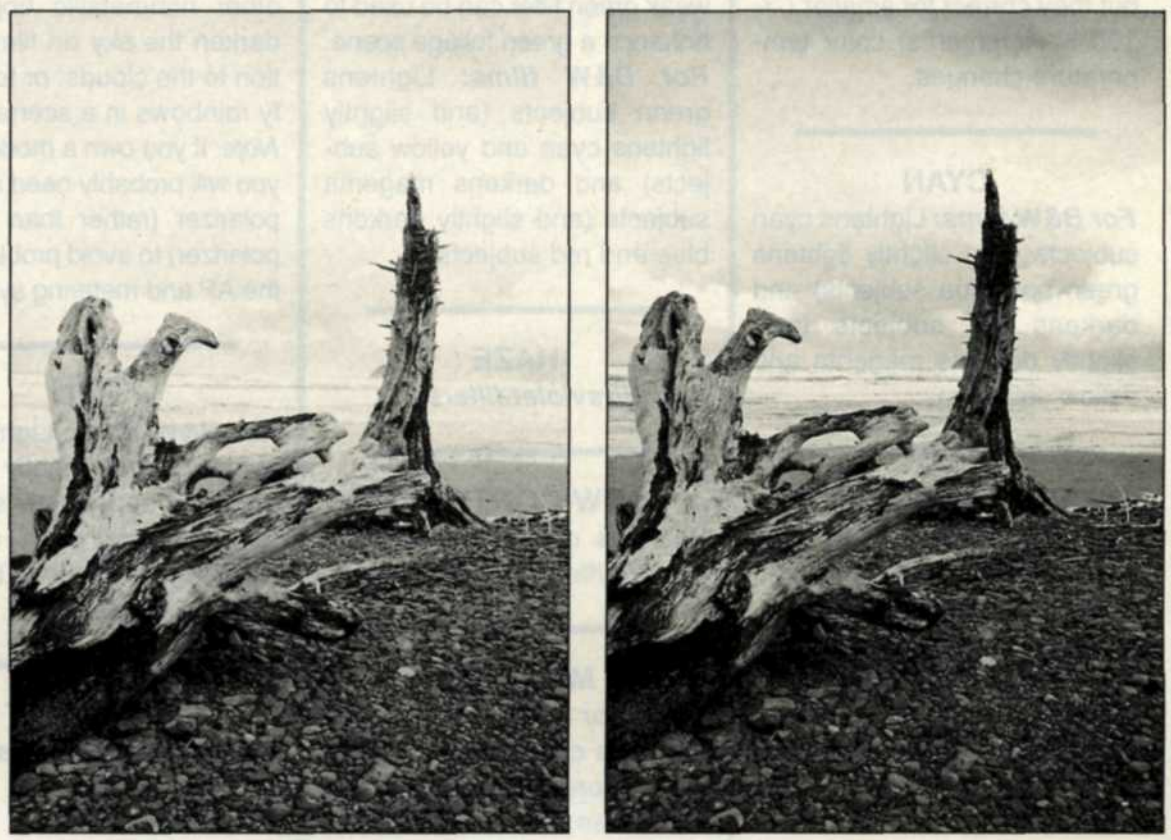
"If you plan on using several different filters on a variety of lenses, then the modular filter holder might be the solution"

Neutral-density filters reduce the amount of light coming through the lens and onto the film. When you use this filter, there is no visible color shift, and the overall image quality is not degraded. Neutral-density filters allow you to capture blurred action and use slow shutter speeds in full daylight. Exposure correction is calculated at one stop for each .30 rating of the filter. (.90 = 3 stops). A polarizing filter can also be substituted as a neutral-density filter.

Contrast-control filters are seldom used in still photography (professional movie cameramen like them) and may never see the inside of your camera bag. The low-contrast filter works by catching light from the highlight and adding it to he shadow areas. One variation of this filter is called a soft-contrast filter, which causes a slight amount of flaring or halation around the highlights.

SPECIAL-EFFECTS FILTERS

It seems that today's movie ratings are based on the caliber of the special effects. This explosion of special effects has found its way into the world of still photography, too. Special-effects filters are constantly being improved, and new effects seem to come out every month.



A graduated filter can be used to bring out detail in a sky that is too bright to record with detail when you expose for the dark foreground.

BLUE

For color films: A blue filter adds an overall blue cast to the photo or "cancels out" an overall yellow color cast. A deep-blue filter and slight underexposure can be used in daytime to create a moonlit effect.

For B&W films: Lightens blue subjects (and slightly lightens cyan and magenta subjects) and darkens yellow subjects (and slightly darkens green and red subjects).

COLOR COMPENSATING

CC filters are designed to compensate for minute overall color casts on color-slide (transparency) films. (Overall color casts on color-print film can be corrected in the printing stage.)

CONVERSION FILTERS

Color films are usually balanced to either 5500 K (daylight) or 3200 K (tungsten) light—causing scenes shot under these precise color temperatures to appear normal. These filters allow you to shoot daylight films under tungsten illumination (80 Series) or tungsten films in daylight (85 Series).

COLOR CORRECTION

Similar to conversion filters, but they correct for smaller (+/- 100 K increments) color temperature changes.

CYAN

For B&W films: Lightens cyan subjects (and slightly lightens green and blue subjects) and darkens red subjects (and slightly darkens magenta and yellow subjects).

DIFFRACTION GRATING

This filter distorts white light source, creating spectral colors. A standard diffraction grating turns white light sources into slashes of rainbow colors; holographic diffraction filters produce specialized patterns.

DIFFUSION

Produces a sharp primary image, overlaid by an unsharp secondary image for a soft effect. A good diffusion filter will maintain contrast.

FLUORESCENT

Helps correct for unpleasant color casts caused by fluorescent lights. Available for tungsten or daylight films. In a pinch, try a CC30M (magenta) filter with daylight-balanced films.

FOG

Creates illusion of fog by producing a soft effect and lowering contrast. Comes in different strengths, as well as graduated versions.

GRADUATED FILTERS

The "top" starts with a full filter effect and gradually reduces to no effect at the halfway point of the filter. Available in neutral density, colors or fog. Helps reduce extreme exposure difference between a bright sky and a dark landscape.

GREEN

For color films: A green filter adds an overall green cast to the photo or "cancels out" an overall magenta color cast. A weak green filter can be used to enhance a green foliage scene.

For B&W films: Lightens green subjects (and slightly lightens cyan and yellow subjects) and darkens magenta subjects (and slightly darkens blue and red subjects).

HAZE

See ultraviolet filters.

LOW-CONTRAST

Reduces contrast without (in theory) effecting image quality.

MAGENTA

For color films: A CC30M filter helps corrects green casts from fluorescent lighting and the green tint from airplane and train windows.

For B&W films: Lightens magenta subjects (and slightly lightens blue and red subjects) and darkens green subjects (and slightly darkens yellow and cyan subjects).

MULTIPLE-IMAGE

Produces multiple images of the subject on one piece of film with one exposure. Commonly creates a central image surrounded by secondary images or a primary image followed by a line of secondary images that imply "speed."

NEUTRAL DENSITY

Neutral-density (ND) filters reduce the amount of light that reaches the film without affecting the color or tonal rendition. Used to produce slower shutter speeds or wider apertures than would otherwise be possible for the film in use. Often used to shoot waterfalls with extremely slow shutter speeds, to cause the water to record as an ethereal blur.

POLARIZER

Polarizing filters allow light that is vibrating in one particular plane to pass through it, and blocks or partially blocks other light rays. Used to reduce reflections on glass, water and other nonmetallic objects; to darken the sky on film in relation to the clouds; or to intensify rainbows in a scene.

Note: If you own a modern SLR, you will probably need a circular polarizer (rather than a linear polarizer) to avoid problems with the AF and metering systems.

RED

For B&W films: Lightens red subjects (and slightly lightens magenta and yellow subjects) and darkens cyan subjects (and slightly darkens blue and green subjects).

SKYLIGHT

See ultraviolet filters.

STAR

Star filters turn point-light sources (such as bare bulbs) into spectacular starbursts with 2–16 points, depending on the filter.

SUNSET

Adds dramatic, vibrant color to a dull sunset scene. Most effective when shooting silhouettes.

TRI-COLOR

For color films: A special effect based on three exposures on one piece of color film—each through one of these specialized red, green and blue filters with a tripod-mounted camera. Moving objects are depicted as magenta, cyan, yellow, green, red or blue ghosts; stationary objects appear normal.

For B&W films: These specialized red, green and blue filters can be used to create color images with three separate black-and-white pictures.

ULTRAVIOLET (UV)

Reduces the bluish cast of atmospheric haze by absorbing ultraviolet light. It works well at higher elevations because UV is especially prevalent. Will not reduce the effects of fog and smog.

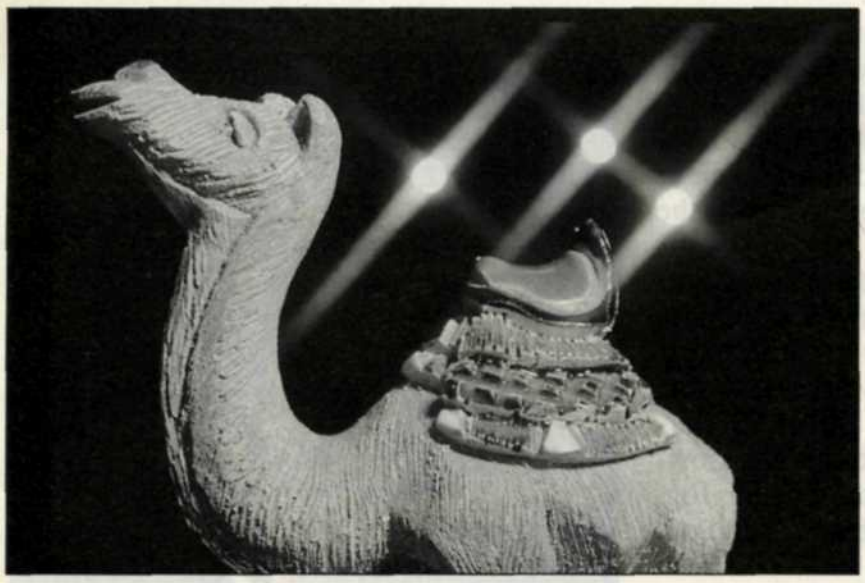
WARMING (81 SERIES)

Corrects the blue cast caused by light that is "cooler" (higher-number K or color temperature) than the film is designed for. Use in the open shade, on overcast and rainy days or to add warmth to fleshtones. Comes in strengths from A–EF.

YELLOW

For color films: Can be used as a substitute for a warming filter (see above).

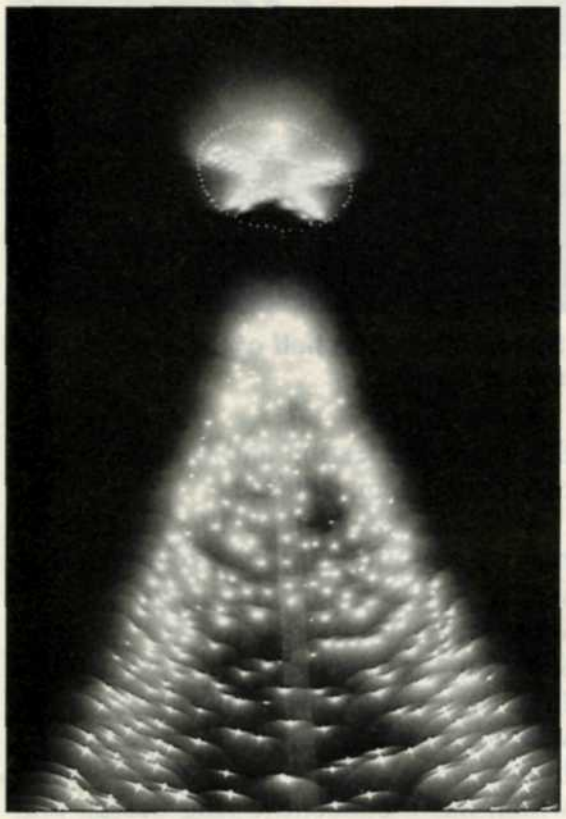
For B&W films: Lightens yellow subjects (and slightly lightens green and red subjects) and darkens blue subjects (and slightly darkens magenta and cyan subjects).



A straburst filter turns point-light sources into stars.

starburst effect. These star or cross-screen filters have a screen sandwiched in-between two pieces of glass (or a grid pattern etched in the filter) which results in star-shaped sparkles emanating from all light sources. Different screen configurations result in different star effects. This is a popular filter when photographing candlelight.

The diffraction or rainbow filter is a new adaptation of the starburst effect filter. Diffraction material is substituted for the grid between two pieces of glass. The complexity of the material will determine how many streaks there will be and the intensity of each. As a bonus, the diffraction streaks break white light sources down into their spectral components, resulting in rainbow-colored streaks.



Fog or mist filters produce a foggy, misty effect, with a glow around light sources.

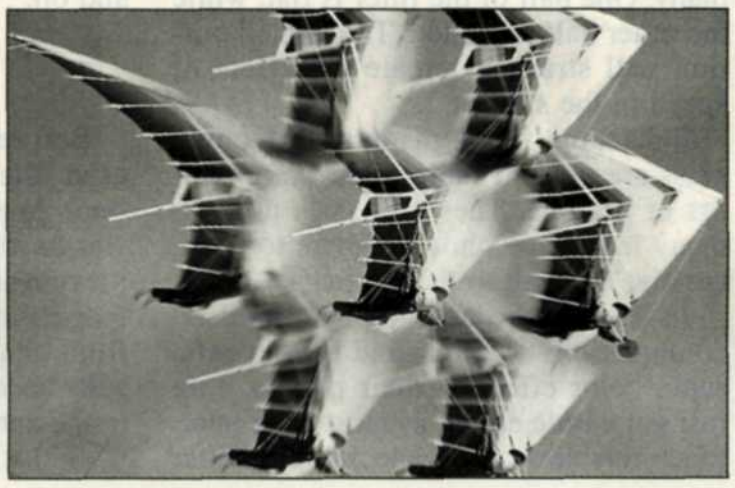
"Probably the most popular special-effects filters are the color graduates."

Again the challenge is deciding which ones to purchase.

Probably the most popular special-effects filters are the color graduates. These filters are usually clear on the bottom and graduate to a color from the center to the top. When the filter is placed over the lens, the color will gradually affect the upper portion of the image. A typical example of its usage is a scenic with a light-blue sky that would record as a deep-sepia sky using the sepia gradated filter. There are dozens of these filters, some with color variations, density changes, and even ones with additional special effects built into the color gradation.

One of the original special-effects filters gives a

Portrait and wedding photographers use a vast selection of soft-focus or diffusion filters to help add that creative



Multi-image prism filters surround a sharp central image of the subject with several unsharp ones.

B+W FILTERS

B+W filters by Schneider offer screw-in glass filters in two formats: economic standard filters with an anti-reflection coating and top-of-the-line multi-coated filters made with high-quality Schott glass. In addition, a new "drop–in" single and double filter unit designed for medium format wedding and portrait photographers is available. The new Pro–Speed filters can be changed quickly while shooting.

CALUMET FILTERS

Calumet offers professionally oriented gelatin Calumet Pro, resin, and polyester filters. Color correction, conversion, neutral density and black and white film filters are available in all three materials. Kits are available.

COKIN FILTERS

The Cokin line includes three distinct filter types: Optilight screw-in filters, Series A square filters (over 25 choices) and Series P rectangular filters (over 50 choices). The Series A (for "amateur") and Series P (for "professional") filters are designed to fit into the modular A and P system filter holders, with the P series being larger to accommodate the larger professional camera lenses. Optilight filters are available in economic theme kits, such as the Mountain Snow, Sky & Ocean, Fashion, Black-and-White and Close-Up Kits.

CONTAX FILTERS

The Contax line of screw-in filters are available in 49–86mm sizes, designed for Carl Zeiss T* lenses used on Contax cameras. Options include filters for both B&W and color photography.

HARRISON & HARRISON

Harrison & Harrison offers hundreds of filters for artistic, as well as scientific purposes. Screw-in and slip-on filters, filters for bayonet-style holders and filters for light sources or windows are among their offerings.

HASSELBLAD FILTERS

Victor Hasselblad Inc. offers its own line of popular high-quality filters for the Hasselblad medium-format camera systems, which shoot 2¼x2¼-inch images on 120 and 220 size (2¼-inch wide) film.

HOYA FILTERS

With Hoya, choices include over 85 different types of screw-in filters, each available in different sizes—many of which rotate for exact control. Selections are geared for color, black-and-white and special-effects photography. New introductions are the Super Circular Polarizer and Hoya HMC Super multicoating. The super multicoating uses 12 layers including an over–coat. The Circular Polarizer is 5mm thick, eliminating corner shading. Hoya also offers a limited selection of slip-on and bayonet-style filters for old TLR cameras.

KODAK/WRATTEN

Kodak Wratten makes precision gelatin filters for professional photography and scientific applications. They feature a thin 0.1mm thickness with excellent optical qualities. Most are available in 3-, 4- and 6-inch squares, plus 14x18-inch size. These filters are easily cut to fit any needed smaller size or shape, or can be used with a gel filter holder. Kodak Wratten gels are available in a wide variety of precise colors, as well as neutral-density filters (from 0.10 to 1.00 in 0.10 increments, plus 2.00, 3.00 and 4.00 densities) and color-compensating filters (in the six primary colors—magenta, yellow, cyan, green, blue and red—in densities from .025 to .50). The neutral-density (and color-compensating) filters can be combined for added density.

LEE FILTERS

Lee Filters offers a wide range of filters for motion picture, theatrical and still photography. New from Lee is a filter holder system that will allow any lens to use a 100mm filter using adapter rings.

touch to their photos. Most filters have a clear center and become softer toward the filter's edge. Some have color at the edges, while others have a sharp center spot, diffused center spot, or even a different color in the center.

The fog and mist filters are another variation of the soft-focus filters. These filters enhance a natural fog, or create fog where there is none. They accomplish this effect by flaring the light source into a mist. Low-contrast subjects recede into the fog, while high-contrast subjects stand out in the mist.

Images created with multi-image prism filters are very obvious, as the center subject becomes 3, 5, 7, or 9 images. In most cases the center image is the sharpest, while the outside images blur to the edges. If you use this filter, do so sparingly, as viewers will tire of too many shots taken with this filter.

"We were amazed at the number of new special-effects filters we discovered while researching this article"

The speed or action filter is similar to the multi-image prism filter except that it has one angled surface instead of many. One half of the filter is flat, while the other half is angled. The angled portion will streak or create the effect of speed in the subject.

Enhancing filters made of didymium glass are used to saturate the warm colors of a scene. These filters is used by many landscape photographers to add a creative warmth to their scenics.

In past years photographers tried all combinations of filters and film to get a sepia color effect in their photos. Life just got a little easier, as most filter manufacturers now have a special sepia filter that takes the testing and frustration out of creating sepia images.

Speed filters blur half of the subject into speed streaks.

We were amazed at the number of new special-effects filters we discovered while researching this article. There were too many to list, so we sorted out some of the most exotic ones to mention. We found the Color Wheel 32, which has 32 rays coming from each light source, and the Soft Ring Diffuser, which has a concentric ring design that retains contrast as the diffusion increases. Pop filters give surrealistic color effects to monochromatic subjects or subjects with distinct white coloring. The Prism Lens filter is a close-up lens with an off-center clear spot, which gives the impression of a double exposure. The BIFO filter is very much like a bifocal lens, with the close-up section at the bottom and normal viewing at the top. The Double Exposure filter is not really a filter, but a mask that allows you to shoot the subject in two different areas of a scene. The possibilities go on and on.

FILTER FACTORS

Before autoexposure anyone who used filters could tell you off the top of their head how much more exposure was needed for a specific filter. The autoexposure systems today give you correct exposures most of the time. Slide films may not always give correct results because some of the metering cells in the autoexposure cameras do not read well through filters. The best way to

know for sure is to run some slide film tests with each filter. Bracket your exposures, and look at the results. If the exposure is off a little, make a note and put the correction with the filter so you will remember next time you use the filter. If you are shooting color negative film, the exposure latitude will cover the filter factor.

Manual exposure through a filter requires knowledge of the filter factor. Once you have determined your basic exposure, use the filter factor to adjust the exposure. A factor of 2X means that you double the exposure or open the lens one stop, 4X means to increase tyhe exposure four times (two stops), and 8X means to increase the exposure by eight times (three stops). If you add two filters together, you multiply the factors together and make the necessary compensation. Unfortunately not all filter manufacturers' methods for determining filter factors are the same, so 2X may vary from filter to filter. The only true way to know is to run tests.

WRAP-UP

We have shown you that there are lots of choices when deciding which filters should end up in your camera bag. So how do you know which ones to purchase? Talk to your photo friends and see what they use. Look in magazines and books and if you see special effects you like, check to see if there is an explanation of how the photo was taken. Visit your local camera store to see the selection they have to offer. They may have books containing illustrations that show you the effect a particular filter will give. When you do decide on a specific filter, have fun with, but don't overuse it. New photographers have a tendency to fill a full roll with multi-image pictures, or have stars bursting everywhere. Selectively pick subjects that demand the use of a filter. Most important, get out and enjoy the additional creative edge that filters give you. ❑

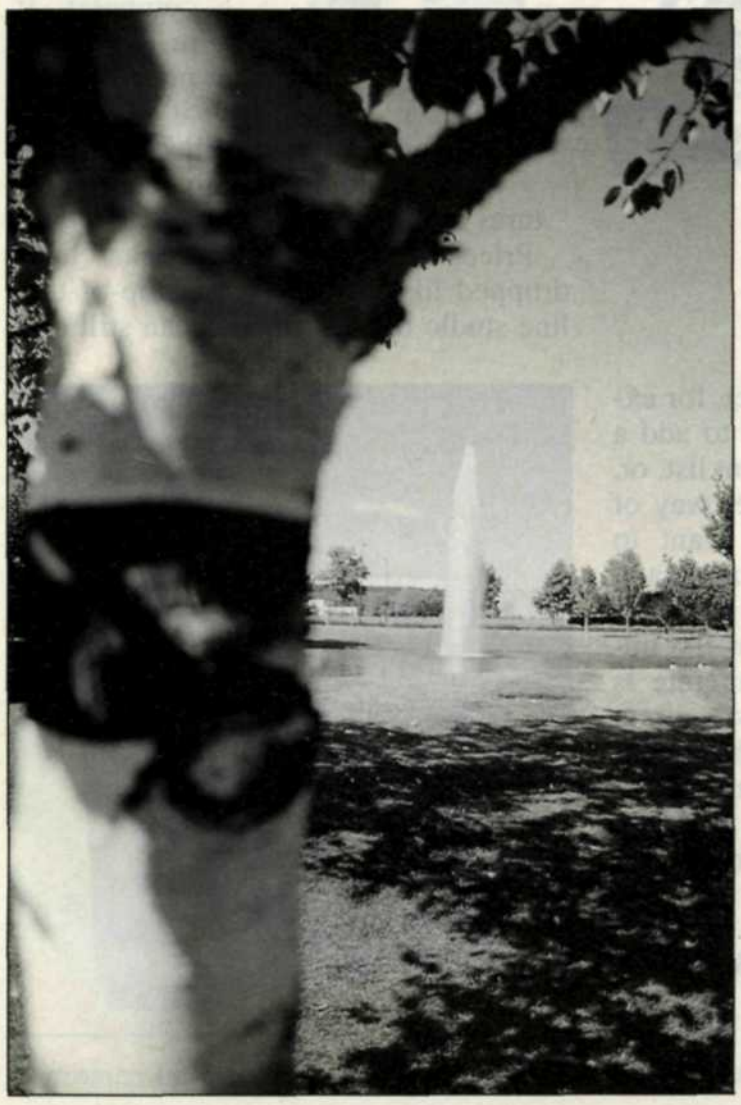
"When you do decide on a specific filter, have fun with it, but don't overuse it"

SINGH-RAY

Singh-Ray Corporation offers precise color-balancing filters, as well as four graduated neutral-density filters (2- and 3-stop gradations in an abrupt hard step or soft gradation). These carry a high price tag, but offer truly neutral color (whereas many cheaper ND filters tend to be greenish). Singh-Ray also make custom filters.

TIFFEN

Tiffen offers screw-in, Bayonet 60, 3x3 squares, 4x4 squares, 4x5 rectangles and rear-mount glass filters. Their Hollywood/FX filters include Pro-Mist (removes harsh edge off sharpness without appearing out-of-focus), as well as Black Pro-Mist (for a subtle change of contrast) and Warm Pro-Mist (for Pro-Mist effects plus added warmth), each in five densities. The Enhancing Filter (didymium glass) produces more saturated reds, browns and oranges on film—excellent for autumn photography. Pro movie cameramen use many Tiffen filters.



Bifo (split-field) filters consist of half a close-up lens mounted in a filter ring. Thus, you can simultaneously focus sharply on both a nearby subject (through the close-up lens half of the filter) and a distant one (through the empty half), even when using wide lens apertures. Both of these photographs were shot with the lens focused on the distant fountain. In the shot on the right, the split-field filter with its glass close-up lens half positioned over the right portion of the lens renders the nearby tree sharply at this focus setting.