The 4-H Photography Program

The 4-H photography program centers around five manuals. Three manuals take you from beginning photography to intermediate photography to advanced photography. A fourth manual leads you into the darkroom where you learn how to process and print your own film. And a fifth manual introduces you to moviemaking. For your special interests, there are several four-page skill sheets. The skill sheets examine topics like news photography and careers in photography. Here's a list of all the 4-H photography publications.

Unit 1: Adventures with Your Camera
(for the beginning photographer)

Unit 2: Exploring Photography
(for the intermediate photographer)

Unit 3: Mastering Photography
(for the advanced photographer)
  Darkroom Techniques
  (for the person who wants to process and print his own film)
  Exploring Moviemaking
  (for the person who wants to make movies)

Advanced Skill Sheets
(self-determined projects)

Awards Available in 4-H Photography

County:
Four gold medals of honor in photography

State:
An expense-paid trip to National 4-H Congress

National:
Six educational scholarships of $1000 each. In addition, a scholar incentive grant of $500 is given to those national winners whose grades ran in the upper half of their class during the semester they use the $1000 scholarship.

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SLIDE SHOWS

A slide show is one of the best ways to display pictures. Not only can you make the pictures very big, but you can show them to many people at the same time. Since the pictures appear one after another, the slide show is a perfect vehicle for a picture story.

Some of the basic ideas that will help you create a successful slide show are:

1. Use only your best pictures. There's no sense apologizing for poorly exposed or unsharp images. They disturb your audience and interrupt the story you're telling.

2. Use only the slides that best tell the story or demonstrate what you're saying. A picture may be worth ten thousand words, but it has to be powerful and concise.

3. There must be a variety of pace. Some slides should be on the screen for a couple of seconds, while others might linger a bit longer. Actually, some subjects will suggest a rapid succession of slide changes, while others will demand a slower projection rate.

4. Pay attention to the visual continuity. Unless the story calls for it, don't have jarring transitions from one slide to the next. It's a good idea to watch color sequence, composition sequence, and even the succession of horizontal and vertical slides. Too many dramatic changes confuse the audience and distract them from the thread of your idea.

5. Make sure you have an extra projector lamp and know how to make a change when the old lamp is hot.

So far, we've assumed that you're putting a story together with pictures you have already taken. There's also the possibility that you might want to create a story about something that's going to happen. This means that you get the chance to organize the slide show exactly as you want. Find out all you can about the event—it might be something in school, 4-H, or in your community. Get a timetable of what's going to happen and inspect the locations. Decide what you're going to photograph and make all the preparations with your camera equipment, film, flash, and so forth. Then organize the pictures you think you're going to take. One easy way is to make up a 3 x 5-inch index card for each picture. On the card sketch a simple drawing of the shot as you see it. Include the location, the people, the other subjects, the action, and any other important information. When the hour comes to take the pictures, you'll be ready to shoot—at the right time and in the right place. Be ready for the pictures you don't expect as well. Sometimes things happen that make good pictures that weren't in the original script. Take more pictures than you think you'll need. Then you'll have a selection of good ones to choose from when you put the show together.

When you get your slides back from the photofinisher, choose the best ones, and only the ones you need to tell the story. Then put them in order—not only the chronological order of presentation but also in an order that's visually attractive and sensible.

You probably will have something to say about the pictures—a narration to deliver live or on tape. Editing is important here, too. Allow the pictures to be the framework for the story. Pretend that the narration serves as captions for the slides, giving only what information is necessary. Be brief. Choose your words carefully for impact and a pleasing sound. Don't let the narration hold slides on the screen too long—your audience will get bored. Remember that they're used to the fast pace of movies and TV.

Here are some optional ideas that can make a good show even more exciting. You might call them part of showmanship.
SPECIAL EFFECTS

Special effects create unusual looking pictures. Special effects may be as easy as screwing on a certain filter or they may require some experimentation on your part.

Special effects can be your magician's hat. You might be able to pull out a picture of a UFO, creatures ringed in light, or a tree that seems to be exploding. Experiment with different special effects, but don't let them override your good judgment. Fine pictures depend on the subject, composition, lighting, and exposure.

Converging lines are the trademark of a zoom shot. They add a feeling of motion to an unmoving subject.

Zooming

The technique of zooming creates photos that seem to explode with light and color. The technique is easy and works best with a single subject and a simple background. You need a zoom lens and a slow speed film. You might also want to try a tripod for extra long shutter speeds. With the zoom lens attached, select a shutter speed of 1/8 second or slower. Focus on a single subject, preferably unmoving, and set the zoom to either extreme. As you press the shutter release move the zoom control through the whole range of focal lengths. Try different shutter speeds and subjects—you can even try zooming and panning at the same time.

Double Exposure

Double exposure allows you to superimpose images on the same frame of film. You can place a face inside a daisy. You can float a castle in the sky. You can put a moon in a moonless scenic. Some cameras have a double exposure button that when pushed in allows you to cock the shutter without advancing the film. Check your camera manual to see if your camera has such a button.

If your 35 mm camera doesn't have a double-exposure button, try this after your first exposure:

1. Hold the rewind button on the bottom of the camera.
2. Hold the rewind knob immobile.
3. Cock the film advance lever. Be careful not to force it if it doesn't seem to work.
4. You're ready for the second exposure.

Underexpose both the first and second exposure by one stop. Together they'll add up to the correct exposure.

Double exposure photograph by 4-H'er Renee McCabe, Winnaborough, South Carolina.
Shutter Speed Selection

Use the highest shutter speed possible for fast-moving subjects crossing in front of you. For subjects moving directly towards or away from you, slower shutter speeds of 1/125 or 1/60 second will stop the action. Whenever you definitely want to stop the action use the fastest shutter speed possible.

Try some panning shots to heighten the sense of motion. Do you recall panning from Unit 2? It's when you track a moving subject with your camera and take the picture while moving the camera. Panning will keep the subject fairly sharp and blur the rest of the picture. To pan you'll need a fairly slow film, ISO(ASA) 64 or lower, that'll permit the slower shutter speeds. Typical shutter speeds for panning range from 1/15 to 1/125 second. Start out with a shutter speed number that's about the estimated speed of the subject. Example: For a motorcycle traveling at 30 mph, start with a shutter speed of 1/30 second. Also try shutter speeds one stop faster and one stop slower. With panning you never know exactly what the results will look like.

Lenses And Film

When you're on one side of the field, the action might be on the other. That's when a telephoto lens comes in handy. A good telephoto for sports is a 200 mm or 300 mm lens or an 80-200 mm zoom lens. If you don't have a telephoto lens, you can always buy a 2X converter. It will make things twice as large in your pictures. Or you can simply get as close as possible to the action and use a normal lens.

Choose a film on the basis of whether you want stop-action shots or blurred motion shots. For stop-action shots, choose a medium to high speed film. Definitely use a high speed film ISO(ASA) 200 or higher for extremely fast action like car races or for dim-light situations. Many slide films and black-and-white films can be rated at double their...
SPORTS

Leaping, sliding, tumbling, pivoting, soaring, skimming. Now it's here, now it's not. Sports mean lightning-quick reflexes. Sports photography means reflexes one step faster than lightning-quick or a sixth sense of where the action will be.

Opportunities for sports pictures abound from professional games to the shirts and skins pick-up basketball game right down the street. Look and you'll find action everywhere from your little brother taking his first cut with a bat to a big leaguer slamming one out of the park. You'll quickly learn that amateur sports often make for better pictures than professional sports. In professional sports, you may find yourself stranded up in the bleachers. Not even a telephoto lens helps much up there. But in amateur sports you can often stake out a spot on the field. Sometimes you'll find yourself an uninvited part of the action as players stampede by. From constant practice professional players have their moves well-ordered and down pat. It's routine with them. Nothing's routine with amateurs. One minute everything's going along quite smoothly and the next it's pell-mell chaotic topsy-turvy what went wrong. When that happens be ready to take some outstanding photos.

The best opportunities for sports photography are right in your neighborhood. Don't overlook them. Action photo by 4-H'er John Jones, Walnut Cove, North Carolina.
Close-Up Flash

With a small electronic flash, you can stop a butterfly in midair and use the smallest aperture on the lens. Most automatic flashes won’t provide correct exposure when used closer than 2 feet to the subject. If you hold your flash closer than 2 feet to the subject, set it on manual or use a manual flash. You might want to set up your flash for close-up photography. Here’s how to do some test shots:

1. Fasten 4 lens cleaning tissues around the flash head with a rubber band to reduce the light output.

2. Hold the flash 15 inches from the subject (or any other close distance you think is convenient for your work). Always use it at the test distance.

3. Take flash pictures at f/8, f/11, and f/16. Be sure to record which frame was at which f/stop. If you forget, the brightest picture will be at f/8 and the darkest at f/16.

4. If the pictures are under- or overexposed, remove or add lens tissues or adjust the f/stop accordingly. Two lens tissues equal approximately one f/stop. In place of lens cleaning tissues you can use a handkerchief. One layer of handkerchief equals roughly one f/stop.

Strategy

Wildlife falls under the backyard variety which is semi-tame and the genuinely wild animals of forests and fields which flee at the slightest whiff of humans. The easiest way to photograph backyard animals is to attract them with food. Eventually they’ll become used to your presence. With a feeder near a window or a bush behind which you can hide, you’ll be able to conveniently take pictures. A telephoto lens will make your images even larger. An electronic flash will provide motion-stopping light night and day should you need it.

Unfortunately, many animals, like foxes and deer, aren’t likely to be

Composition

Compose nature close-ups much as you would any other pictures. For flowers, toads, turtles, and the like, use an eye-level or even a low-angle shot. Don’t get lazy and take all your pictures from above. A high-angle shot of a toad or a flower usually isn’t too appealing.

A piece of cardboard, black on one side and white on the other, can be used either as a reflector or a dark background for your subjects.

Don’t be afraid to slightly rearrange or clean the scene as you find it. Twigs, dry grass and dead stems often show up as distracting straight lines in a photograph. Look for twigs ahead of time. They’re almost always there. A small log or rock might add form to your picture. If it is appropriate to the subject, add it to the scene.

4-Her Karen Shelby of Ft. Wayne, Indiana, used early morning frontlighting to make this mushroom picture.

To soften the harsh light of a flash, fasten a few tissues over the flash head and open up an f-stop.

With close-up flash, you can use a small aperture to increase depth of field.

A piece of white paper or a white cardboard can be useful as a reflector to add fill-in light or even slight backlighting of nature subjects.
NATURE

Nature photography will bring you beauty and suspense. Camera in hand, you'll leave behind the hum of engines and the squeal of tires. You'll crawl into the damp, mossy domain of a snail lumbering over a mountainous rock. You'll discover patterns radiating in a tree from the network of branches to the corrugations of bark. Through your camera lens, the struggles of a butterfly will become your struggles. You'll see it buffeted by the wind as it clings to a flower. You'll watch it spread its wings wide to catch the warmth of the morning sun. You may even see it spiral upward to challenge a rival butterfly encroaching upon its territory.

From looking at magazines like National Geographic and Audubon, you may think nature photography means venturing to distant lands to photograph an eagle plucking a bass from a lake or a snow leopard stalking an injured mountain goat. Though such exotic subjects are part of nature photography, the everyday things common to your life are even more proper subjects for nature photography. The flowers in your backyard, the pond in the nearby park, the deer in the woods down the road are all part of your world and deserving of understanding. Within them is the beauty of color, form, patterns. With a little effort you'll be able to instill that beauty into your pictures.

Equipment

Different kinds of nature photography call for different methods and equipment. Some need only a simple camera. Others need telephoto lenses and flash. You can't use the same equipment and methods to photograph a deer as you would a bee. A deer is big, hard to approach, and is usually out after dusk or before dawn. A bee is small, easy to approach, and is out on bright, sunny days.

Because much of nature is small it follows that much of nature photography will require close-up pictures. Neither a daisy nor a grasshopper will look too impressive if photographed from a distance of several feet. For small things, you've got to get close. A single-lens-reflex camera is the best kind of camera for close-up work. It lets you see the subject in the exact position it will be in the picture. But you can't get a very big image of a grasshopper with a normal 50 mm lens. A normal 50 mm lens won't focus closer than 18 inches from the subject. Photographed from 18 inches, an inch-long grasshopper will appear to be only about 1/6 of an inch long on film.

Don't despair. There is a variety of close-up accessories like extension tubes, bellows, diopter lenses, macro camera lenses, and teleconverters.

Attaching to the front of the lens barrel like filters, diopter lenses are a simple way of obtaining close-up pictures.

A 2X or 3X teleconverter doesn't allow you to focus any closer to a subject but it does double or triple the image size.

A macro lens is specially designed to permit close focusing. It also provides extra sharp pictures at close-focusing distances.
Light
Light can make or break a landscape photograph. Observe how light affects things. See how its colors and effects vary from hour to hour. Awaken at dawn. Watch how the light at first trickles and then floods into the eastern sky, washing away all but the brightest of stars. See the many subtle colors glowing in the sky. They add a delicate, fragile touch to landscapes. The colors are short-lived, there but for the few minutes the sun hangs just below the horizon. While below the horizon, the sun’s strokes are first dipped into the blue sky and then splattered back onto the landscape, immersing it in a cool icy look.
Above the horizon the sun brushes landscapes with a warm yellow or orange. At sunrise, the soft, yellowish light bathing buildings and tree tops inches earthward along tree trunks as the sun edges skyward. Finally the light touches the ground and pebbles heave shadows big as boulders.

The most versatile and, perhaps the most pleasing light, comes from the low sun of early morning and evening. The low sun can give backlighting, frontlighting, and sidelighting. Low backlighting feathers the outlines of hills, trees, and buildings. It can be used to reduce a scene to pure and simple silhouette. It can bring forth the radiance of subjects, like fields of grass and flowers. Change your position so that the same low sun becomes a raking sidelight. A plowed field that might have been a silhouette with backlighting becomes, with sidelighting, a mountainous row of furrows so real that the dirt seems to crumble within the picture. The deep shadows of sidelighting add form to any landscape. Move to yet another position where the sun gives frontlighting. Normally frontlighting is harsh. But when the sun is low in the sky, it often shines with a soft, yellowish frontlighting that is pleasing.

The light of midday is harsh, overhead, and common. It’s what

As the sun moves, both colors and shadows shift. For these reasons pictures of the same subject under different lighting conditions may seem quite distinct.
LANDSCAPES

Landscape photography is varied. It ranges from a sweeping panorama of snow-covered mountains to a near view of a lone boulder. Landscapes can include barns or skyscrapers, parking lots or forests. They can show a single cloud in the sky or rows of breaking waves. The nice thing about landscape photography is that the scene never moves. You don’t have to rush. It’s not like dashing through composition and exposure to grab a shot of your little brother’s chuckle before it boils into a howl. Instead, you can take your time choosing a scene and setting up equipment.

Though a landscape never moves, it always changes. By moon, by sun, by rain, by snow, the scene drifts from exotic to stark to gloomy to glimmering. That one fixed scene that can’t budge an inch changes colors as the sun moves across the sky, dons new moods at each turn of weather, and rises anew with each passing season. The flow of the light and weather carries the landscape ever along.

Equipment

Equipment needs are small. A 50 mm lens is standard. If you have a telephoto and a wide-angle lens, all the better. If you don’t, the 50 mm lens will usually suffice. Whatever the lens, you’ll probably often use apertures of f/11 and f/16 to provide a sharp picture from foreground to background. Small apertures usually mean slow shutter speeds, so a tripod and cable release will be helpful. Filters are also a good idea. A haze filter will increase detail of distant scenes. To darken a blue sky and make those puffy white clouds pop out on black-and-white film, you’ll need a yellow, orange, red, or polarizing filter. For color film, use a polarizing filter. It will darken the sky and increase the contrast with white clouds. A yellow, orange, or red filter will increase the color of sunsets or create unusual effects during midday.
Outdoor Lighting

When outdoors, diffuse lighting and backlighting are the best choices. The diffuse lighting found in the shade or on a cloudy day has the same effect as light from a north window. It is a soft, uniform lighting. It won't make people squint, and it won't create dark shadows. Older people benefit from the soft qualities of diffuse lighting as wrinkles are minimized. A white cardboard reflector will throw some additional light onto the face should you want to highlight one side.

Backlighting is an exciting lighting technique. Done properly, it makes a person's hair glow within a ring of light. That ring adds a sparkling frame around the face. Backlighting has the additional benefit that the face is actually lit by diffuse light reflected from the sky. The contrast between the bright glow of the ring light in the hair and the soft diffuse light on the face enlivens any portrait.

Backlighting can fool your camera meter. Either take a meter reading directly off your subject's face or stand back and open up 1 or 2 f-stops from what the meter indicates. In either case, bracket the exposure by taking additional pictures at 1 f-stop smaller and 1 f-stop larger. Then you'll be sure of getting a good exposure. You can also use fill-in flash to light the face (see page 6). Or you can use a white cardboard reflector to throw light onto the face of a subject.

The contrast between shadow and light of sidelighting can make a striking portrait. Intensity, mystery, and drama flow from a sidelighted portrait. The simple difference between the darkness of shadow and the brightness of light is effective. It fills a portrait with a conflict and tension that's passed along to the viewer. Book jacket covers often have a sidelighted portrait of the author. The sidelighting is supposed to convey the mysteriousness of the deep well of creativity hidden within the author.
PEOPLE

Everyone takes pictures of people, including you. At birthday parties, on vacations, or just for the fun of it, you've probably taken quite a few people pictures. By now you've learned that the mere sight of a camera sends some people into gyrations. One person, just before she dives into the nearest closet, will shout "Oh no, don't take my picture." Another emerging from that same closet, wildly waving his hands, hollers, "Watch this, I'll stand on one hand and balance an egg on my head." Those who flee the camera and those who seek it out have one thing in common—they like to see pictures of themselves. Everybody does. You can be sure that no matter how they acted in front of your camera, they'll all gather round when you show up with their pictures.

People photography falls under two broad categories: candidis and portraits. You may not have heard the term candid before but most of your people pictures have probably been candid photographs. Candid photographs are natural pictures. They show people at work, at play, at rest. The pictures of your grandmother blowing out her birthday candles are candidis, as are the pictures of your dad washing the car. Candid pictures tend to be spontaneous and informal.

Portraits

Portraits tend to be controlled and formal. The photographer arranges the person and any props in an attempt to show the basic character of a person. A portrait typically concentrates on the face, even though the whole body may be shown. If a person is happy-go-lucky, the portrait should reflect that. If a person is an excellent gymnast, the portrait should reflect both his or her determination and physical prowess needed to become a gymnast. Portraits are usually either honest or flattering. Few portraits display the bad side of a person. Why? Because a portrait usually requires the subject’s participation. Not many people want bad pictures of themselves.

Whether you do portraits or candidis, the most important part of the picture is the person. Not many people are used to being inspected by the glass eye of the camera. Chances are your subject will, at first, feel a little nervous and awkward posing before the camera. When doing a portrait, try to relax the person you’re photographing. Ask him or her for ideas on poses or expressions or props. All the while keep in mind what you want and guide your subject in that direction. Involvement will relax the subject. It will make him feel in control of the situation. Once the subject is relaxed you can proceed with the portrait.
For Black-and-White Film

By far, the most common use of filters for black-and-white pictures is to darken blue skies and, by contrast, to lighten clouds. Ultraviolet radiation in the sky lightens the sky in pictures. You can't see the ultraviolet radiation but the film can. Without filtration, blue skies and clouds in black-and-white pictures would be lighter than what you actually saw. By using a yellow, orange, red, or polarizing filter, you can darken the sky. The yellow filter makes the sky appear as you saw it. The polarizing filter darkens it. The orange further darkens it. And the red filter darkens it dramatically. The polarizing filter can also be used to eliminate reflections from glass or water or even foliage. An orange or red filter will cut through atmospheric haze to sharpen the detail of distant scenes.

Colored filters can do more than darken skies in black-and-white photographs. They can alter the contrast in any black-and-white picture to emphasize some subjects and de-emphasize others. Look at the adjacent pictures. They'll give you an idea of how filters can be used with black-and-white film.

For Color Film

Perhaps the most common filter used in color photography is the skylight filter. A light pink, it eliminates slight unpleasant blue hues from faces photographed in the open shade. In open shade, the blue comes from light reflected from the blue sky. Whether a person is in the shade or sun, a skylight filter can be used to add some warmth to the face.

To darken blue skies on color film, use a polarizing filter. It works best when the sun is at your side as you take the picture. The polarizing filter will also eliminate reflections from glass and water. With color film it will increase the richness of colors for flowers, leaves, and other subjects. Look through the camera and rotate the outer rim of the polarizing filter until you see the effect you want.

Pictures taken with deep red, orange, or blue filters throbb with color. A colored filter doesn't automatically make a picture good but used tastefully, it can make a sunset swim in red or a snowdrift shiver in blue.

Other filters or lens attachments don't change the colors. They yield special effects, such as multiple images, fog, or starbursts. You can turn one apple into five, transform a sun-dappled lake into a fog, or conjure brilliance from a rather dull candle. Used thoughtlessly, filters and lens attachments can be gimmicky. Used thoughtfully, they add zest and variety to your pictures.
A picture taken with daylight film under a tungsten light gives a yellow-red cast to the picture.

Daylight color negative film can often be corrected during printing so that the color cast from tungsten or fluorescent lighting is very slight.

By using tungsten film with a tungsten light, the color balance is normal.

you get into a situation where you know you’ll be taking half a roll indoors with tungsten light and half outdoors, use tungsten film. Add the filter outdoors. It’s bright enough for you to afford the loss of transmitted light.

The advantage of fluorescent lighting is that it’s usually quite bright. It also gives fairly even illumination. The disadvantage is that it gives light of an unusual color. No matter what film you use (we recommend daylight film) you’ll have to add a filter for critical color results. However, this really applies mostly to slide films, because many color-negative films will give acceptable color prints. A professional photographer on assignment will determine the bulb type and age and even make a test before shooting. You’ll be safe in using a color filter that provides average correction for most different bulb types. With daylight film use a CC30M filter. Add 2/3 stop exposure. With tungsten film (only if you have to) use a CC50R filter. Add 1 stop exposure.

SUGGESTED EXISTING LIGHT EXPOSURES

<table>
<thead>
<tr>
<th>Picture Subject</th>
<th>ISO(ASA) 200</th>
<th>ISO(ASA) 400</th>
<th>ISO(ASA) 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor holiday lighting at night</td>
<td>1 sec f/5.6</td>
<td>1/15 sec f/2</td>
<td>1/30 sec f/2</td>
</tr>
<tr>
<td>Brightly lighted city streets</td>
<td>1/30 sec f/2.8</td>
<td>1/60 sec f/2.8</td>
<td>1/60 sec f/4</td>
</tr>
<tr>
<td>Floodlighted buildings, monuments</td>
<td>1/2 sec f/4</td>
<td>1/15 sec f/2</td>
<td>1/30 sec f/2</td>
</tr>
<tr>
<td>Fairs, amusement parks</td>
<td>1/30 sec f/2</td>
<td>1/60 sec f/2.8</td>
<td>1/60 sec f/4</td>
</tr>
<tr>
<td>Subjects by campfires</td>
<td>1/15 sec f/2</td>
<td>1/30 sec f/2</td>
<td>1/60 sec f/2</td>
</tr>
<tr>
<td>Night football, baseball</td>
<td>1/60 sec f/2.8</td>
<td>1/125 sec f/2.8</td>
<td>1/250 sec f/2.8</td>
</tr>
<tr>
<td>Basketball, hockey</td>
<td>1/60 sec f/2</td>
<td>1/125 sec f/2</td>
<td>1/125 sec f/2.8</td>
</tr>
<tr>
<td>Circuses — “Floodlighted” acts</td>
<td>1/30 sec f/2.8</td>
<td>1/60 sec f/2.8</td>
<td>1/125 sec f/2.8</td>
</tr>
<tr>
<td>Spotlighted acts</td>
<td>1/125 sec f/2.8</td>
<td>1/250 sec f/2.8</td>
<td>1/250 sec f/4</td>
</tr>
<tr>
<td>School — stage and auditorium</td>
<td>1/15 sec f/2</td>
<td>1/30 sec f/2</td>
<td>1/60 sec f/2</td>
</tr>
</tbody>
</table>

For color pictures, use tungsten film. You can use daylight film, but your pictures will look yellow-red.

For color pictures, use daylight film.

For color pictures, use either daylight or tungsten film.

Assignment 4
Take existing light pictures under the following conditions:
1. Outdoors at night with street lamps or other lights showing.
2. Indoors using windowlight during the day.
3. Indoors using artificial light. Use both daylight film and tungsten film to compare the results.
4. A time exposure of 1/4 second or longer of any existing light subject.
Outdoors At Night

To photograph a friend under a lonely streetlight, or at a Friday evening football game, you only need a few basic techniques. In dark places, you use fairly slow shutter speeds—1/60 to 1/30 second. To make sure the pictures are sharp, hold your camera very steady. If possible, rest against a wall or post and brace your arms against your body. Gently squeeze the shutter release. If you have to select a shutter speed slower than 1/30 second with a normal lens, set up your trusty tripod.

By bracing against a tree you can get enough extra steadiness to use shutter speeds as slow as 1/15 sec.

Dark places almost always force you to use a large aperture—f/2.8 and larger. Large apertures mean shallow depth of field. Dark places also mean dark viewfinders. Focus carefully so that your subject is sharp.

Getting the right exposure doesn’t need to be a hit-or-miss affair. Luckily, a wide range of exposures will usually look good. Get close enough to your subject so the meter doesn’t see the surrounding darkness. That’s really the best piece of advice—get as close as you can to make your meter reading. Your meter will recommend overexposure if it sees too much of the night surrounding your subject. Incidentally, the meters in some cameras may not be sensitive enough to give accurate readings in the dark. If you can’t get very close or if you think your meter is acting funny, try to estimate the exposure with the table on page 14. Many photographers bracket the recommended reading. That means they take the same picture at 3 different exposures—one with the recommended settings, one with a full stop more exposure, and one with a full stop less.

One of the best times to take pictures outdoors is in the late evening, about 10—20 minutes after the sun has gone down. This way, you’ll get some of the color in the sky to contrast with the artificial lights in the scene. Speaking of color, look for color at night in neon signs, store windows, or whatever appeals to you. After a rainstorm, look for the beautiful reflections of lights in wet pavement or puddles. And don’t forget the possibilities of reflections on other bodies of water, too.
With the camera on a tripod, the photographer used an exposure of 1/2 second, f/8. The red streaks are from a moving car's taillights.

The exposure for this existing light picture was 1/60 second, f/5.6. The film speed was ISO(ASA) 200.
PHOTOLAMPS

Using photolamps for indoor photography is quite enjoyable. The equipment is fairly inexpensive and there's a superb benefit—you get to see exactly what the lighting looks like before you take the picture. Why? Unlike on-camera flash you can see the effects when you move photolamps around. What you see in the viewfinder is what your picture will be. The results are often more pleasing than with a single on-camera flash.

You can use either photoflood lights that don't need reflectors or photolamp bulbs. The photolamp bulbs have clamp-on reflectors and are available from most hardware or discount department stores.

Start out using one lamp. You can make some surprisingly good portraits with only one light. Move it around to get a good idea of how light direction and angle affect the appearance of a subject. Later on you can add reflectors and more lamps.

Any black-and-white film will serve your purpose, although a faster film ISO(ASA) 125—400, will give you shorter exposure times. If you use a color slide film, choose one that is balanced for the light you will use. A film that is color-balanced for tungsten light or photolamp light will work fine. If you select a film for color prints or a daylight color slide film, you'll want to use a filter. The filter will make sure you get normal colors in the picture. The typical choice would be an 80A filter for tungsten bulbs and an 80B for photolamps. These filters, incidentally, require an exposure increase, which a built-in meter will automatically indicate. If your camera does not have a built-in meter, give an extra 2 stops exposure for the 80A and 1 stop for the 80B filter.

The drawings and photographs above show the portraits resulting from different lighting setups. Most often you'll want your subject to appear naturally lighted but without all the drawbacks of direct sunlight. That is, you'll try to avoid very dark shadows. Sometimes, however, you'll want the dark shadows provided by sidelighting. The sidelighting best shows skin texture and facial structure. Extreme sidelighting can hide half the face in darkness conveying a sense of mystery. Experiment with the different lighting positions and even try a white cardboard reflector or two. Decide what effects you like and perfect them. When you’re confident with
Diffusing The Flash

Another way of softening the harshness of flash is to attach a diffuser over the flash. A diffuser can be a special plastic attachment or simply a handkerchief or lens-cleaning tissue. You can hold two lens tissues over the flash or fasten them with a rubber band. If you use two layers of lens cleaning tissue or one layer of handkerchief, open up one f-stop to make up for the loss of light. (Example: If calculator dial indicates f/8, open up to f/5.6).

Fill-In Flash

You can also use flash when you’re outdoors. It will lighten facial shadows and add a twinkle to the eyes. Using flash in this way is called fill-in flash.

The difference between flash outdoors in the daytime and indoors at night is simple. Indoors at night you have to brighten your subject with the flash alone. Outdoors in sunlight you only want to add a little bit of light. You use only 1/2 or 1/4 as much flash light as you’d normally use. The sun gives the rest of the light you need.

Use a slow- or medium-speed film, because on sunny days a high-speed film often forces you to use a shutter speed faster than the flash synch shutter speed. Also use a manual flash or set your automatic unit on manual so it doesn’t vary the light output.

Here’s how to use fill-in flash:

1. Set the ISO(ASA) on the flash to double the ISO(ASA) of the film you are using. Keep the camera set at the actual ISO(ASA) speed of the film.
2. Set the shutter speed dial to the flash shutter speed (usually 1/60 second).
3. Set the aperture as indicated by the meter.
4. On the flash calculator dial, find the distance that corresponds to the aperture in step 3.
5. Position the flash or stand at this distance to take a fill-in flash picture. When finished, reset the dial on the flash to the actual ISO(ASA) of the film.

Here’s an example of this procedure. The film I’m using has an ISO(ASA) of 100. On the flash I set double that ISO(ASA) — 200. Next I set the shutter speed on 1/60 second (my camera’s flash shutter speed). As shown by the meter, I set the aperture to f/16. I look up f/16 on the flash calculator dial. On this dial, 8 feet corresponds to f/16. I take a picture standing 8 feet from the subject.

Bounce Flash

Light directly from the flash is harsh. For softer and more pleasing lighting aim your flash at a white wall or ceiling. The light will bounce off the ceiling and onto your subject. Light from bounced flash is soft and diffuse. It looks much like the light on a cloudy day. Use only a whitish surface for bouncing light onto your subject. A colored surface will give its color to the subject.

Bounce flash is a little like billiards. You have to choose the right angle or you won’t make the shot. Before you bounce flash off a ceiling, estimate the total distance from the flash to the ceiling and from the ceiling to the subject. Look for this distance on your flash calculator dial. Don’t use the f-stop indicated for this distance. Instead, open up 2 additional f-stops. Example: For 15 feet, f/8 is indicated. Use f/4, which is two f-stops larger. A larger f-stop is used because the ceiling absorbs some of the light. Check your flash instructions for any special details about bounce lighting with your flash unit. With some flashes you can bounce light by fastening a white card piggyback onto the flash. The card should extend about 5 inches beyond the flash. Point the flash up at an angle that will reflect light off the card and onto the subject.

Assignment 2

Using the same subject at the same distance, take the following flash pictures:

1. Flash mounted on camera.
2. Flash held off to side of camera.
3. Flash bounced off ceiling or wall.
4. Flash diffused with tissue or handkerchief.
ELECTRONIC FLASH

How can you be sure of getting a picture on the darkest of nights or the dreariest of days? Carry an electronic flash in your camera bag. Flash is especially good for indoor pictures at home or at school. Electronic flashes range in size from portable units small enough to slip into a pocket to studio models so big that you couldn’t stuff them into a car trunk. Some 35 mm cameras have flashes built-in. Compared to the cost of flashcubes or flippflash, an electronic flash may seem expensive. But unlike flashcubes and flippflash, an electronic flash can be used over and over again to provide light for thousands of pictures.

An automatic flash measures the amount of light it puts out. It turns off the light when enough has reached the subject.

A manual flash always sends out the same amount of light.

How Flash Works

Electronic flashes are typically powered by two or four AA (1.5 volt) batteries. When you switch on the flash, a device called a capacitor builds up a charge of electricity. The camera sets off the flash when you take a picture. Like a lightning bolt, the electricity leaps across a gas-filled tube in the flash. That little lightning bolt gives enough light to take a picture. After each flash of light, the unit takes a few seconds to recharge. Soon it will have enough electricity for the next flash of light.

There are two kinds of electronic flashes: manual and automatic. A manual flash always puts out the same amount of light. An automatic flash puts out more light for a far subject and less for a close subject. An automatic flash works with a light sensor. The light sensor measures the amount of light that is reflected from the subject. When enough light has reached the sensor the flash turns off. An automatic flash has two advantages over a manual flash: it saves battery power by switching off the light and it’s more convenient. Why? Because with a manual flash you must adjust the lens aperture according to the subject’s distance. With an automatic flash, you can use just one aperture as long as the subject is within a certain range, say 3—12 feet.

Mount the flash onto the camera by slipping it into a bracket (called a shoe) on top of the camera. Some 35 mm cameras also need to be plugged into the flash. To do this, plug one end of a small cord to the flash and the other end to the X contact of the camera. This cord (called a PC or synch cord) electrically connects the flash to the shutter. This cord is built-in on some cameras. When the shutter fully opens, it completes an electrical circuit and the flash goes off. If the flash went off before or after the shutter was fully open, part of the film would be covered by the shutter and not receive light.

There are a great variety of flashes and cameras. Many of them work in slightly different ways. Read the instructions that come with the flash and with the camera to learn how your camera and flash work together. Here’s the most important thing about your flash: The light from it spreads out and dims as it travels away from the flash. A subject 8 feet from the flash receives four times more light than a subject 16 feet from the flash. Since less light reaches far subjects you need a larger lens opening. A calculator dial on the flash will show you which lens...
LENSES

There are many accessory lenses that fit most SLRs. With them you can make distant subjects seem close; make close subjects seem distant; make very close subjects appear in sharp focus. Each lens contains several pieces of glass called elements. The elements are shaped and arranged in a special way to make things seem closer or farther or to achieve any other effect. The designer also wants the lens to pass as much light as possible, to be lightweight and to be affordable. There are other design criteria as well, but they are complicated and best reserved for a book on lenses.

A camera lens consists of several finely ground pieces of glass called elements. Together, the lens elements correct each other for small errors in transmitting the light. The result is a sharp picture.

A single-lens reflex camera accepts a wide variety of lenses and other attachments.

Normal Lenses

The normal lens is the one that usually comes with a camera. Normal means that it sees your subject the way your eyes see it. Normal also refers to an optical measurement called focal length that is determined by the lens design. For 35 mm cameras, a 50 mm lens (50 mm is the focal length) is normal. Actually, any lens in the 45—55 mm range is a normal lens. Normal lenses make the scenes you photograph appear as you saw them. They don’t make things seem nearer or farther. They don’t change the sizes of things within the scene. Normal lenses usually transmit lots of light (they’re fast lenses) so that you can take pictures in dim-light situations. Before experimenting with telephoto or wide-angle lenses it’s a good idea to fully explore what your normal lens can do.

Camera lenses are classified by their focal length in millimetres, which is usually marked on the front of the lens barrel. The focal length is the distance from the optical center of the lens to the film when the lens is focused on a distant subject. The focal length determines the magnification of the lens. The longer the focal length the greater the magnification. A lens with a focal length twice as long as another lens has twice the magnification.
**Taped Music and/or Narration**

Add an extra dimension to your slide show by playing recorded music. Choose music that compliments your pictures. The tempo should closely match the pace of slide-changing and the mood should fit the subject matter. You don’t have to stick to one song—use several. One of the easiest approaches is to record the music from records on a tape recorder. This way you can choose the parts of the music you want—start them when you want and stop them when appropriate. Some recorders will allow you to fade the music in, make it louder or softer, and fade it out at the end.

Of course, if you can record music, you can also record narration. If you’re uneasy about delivering a speech to the slides while keeping the rest of the show in motion, you can record your talk, perhaps with music in the background. The recorded narration allows you to pay attention to advancing the slides. There are even some gadgets that work with a tape recorder to advance the slides according to prerecorded impulses on the tape. This way you can let the slides take care of themselves and you can concentrate on your talk.

**Multiple Images**

Years ago photographers found that they could project more than one image at a time. All it calls for is some special slide-mounting materials (usually available through a photo dealer) and the will power to cut up your images. These slides are taped together in a special mask and then mounted between two pieces of glass in a metal binder. You can either create a mask for the shapes you want or buy precut masks that have 1, 2, 3, or 4 openings for images.

**Dissolve**

A really sophisticated presentation might be made with two projectors and a dissolve unit. The dissolve unit turns one projector off as it turns the other on. When the images from each projector are the same size and registered on the same place on the screen, one image will fade or dissolve into the next, so that the screen never goes dark between slides.

**Impact with Simplicity**

Remember, however, you can give a smashing slide show with one projector. Strive for simplicity by following the guidelines listed on page 36. Create visual impact through careful editing and continuity in storytelling. As a self assignment, you might try to create a story, just a short one of several minutes, and exercise your skill in storytelling with pictures. Choose a school or 4-H project, or some community project you’ve been involved with.

**Assignment 10**

Make a carefully edited 5-minute slide story about some aspect of your 4-H work. Present it to a group.

Further reading


