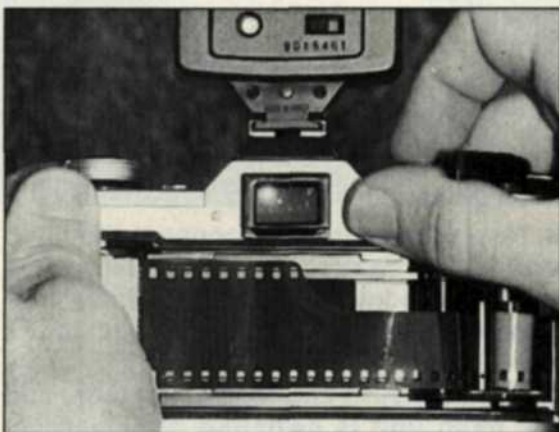


CREATIVE FLASH & LIGHT



10. To make sure you've hooked everything up properly, turn the flash unit on, wait for the ready light to come on (with many of today's cameras, a flash-ready light in the viewfinder will light, so you don't have to take the camera from your eye to see it), cock the camera, and push the shutter button. The flash unit should fire.



11. Now you can turn the flash unit off and put a roll of film into the camera. (If the flash is on when you advance the film to frame 1, it will fire each time you push the shutter button.) Now you're ready to start shooting flash photos.

ration of the flash serves as your "shutter speed"—it controls the duration of the exposure. All you have to do is set the lens to the right f-stop. The simplest way to do this is by using the exposure calculator on the flash unit. First, tell the calculator how much light the film you're using needs, by setting the calculator's film-speed index to the ISO speed (or EI) of the film you're using.



2. Next, focus on your subject, and read the focused-upon distance (the flash-to-subject distance) on the lens barrel.



3. Locate the flash-to-subject distance on the calculator, and opposite it you will find the correct f-stop to use for the picture. In this example, the focused-upon distance is 12 feet, and opposite it is f/8, so you'd set the lens to f/8 to make the shot.

4. Looking at the exposure calculator, you'll notice that the farther away you get from your subject, the larger the lens aperture you must use. When the subject is a long way off, you won't be able to open the lens enough to provide proper exposure. This is why it's not wise to use flash from the stands at a football game or other event where you're a long way from your subjects—they'll be too far away from the flash unit for it to light them sufficiently.

$$\frac{\text{Guide Number}}{\text{Distance}} = \text{f-stop}$$

$$\frac{80}{10'} = f/8$$

5. Another way to determine the correct f-stop to use for a flash photo is by using the flash unit's guide number. This is a (sometimes optimistic) rating of a flash unit's illuminating power, provided by the manufacturer. Just divide the flash-to-subject distance into the guide number, and the result is the f-stop to use. If the guide number is 80 for the film speed you're using, and the flash unit is 10 feet from your subject, 80 divided by 10 equals f/8.



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EXPOSURE



1. Virtually all electronic flash units on the market today feature automatic exposure control; but we're going to cover manual flash exposure, so you'll understand the principles involved.

When shooting with electronic flash, the very brief (usually $\frac{1}{1000}$ or shorter) du-

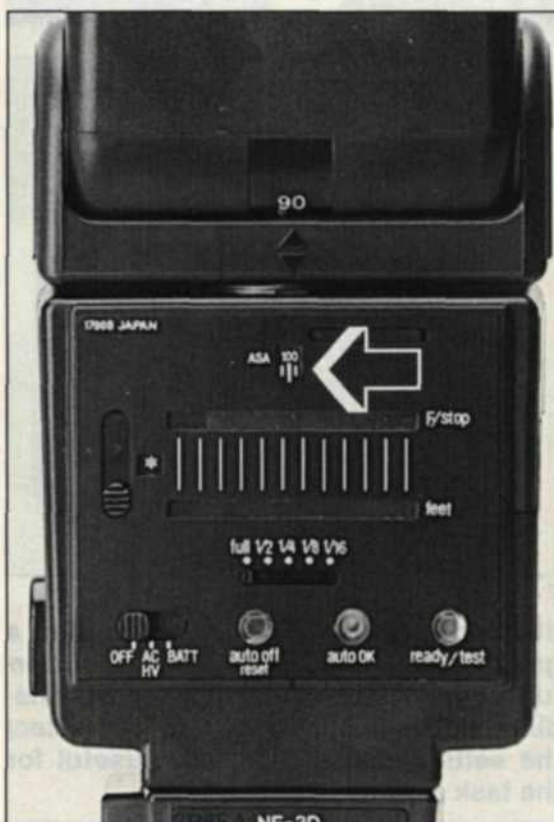


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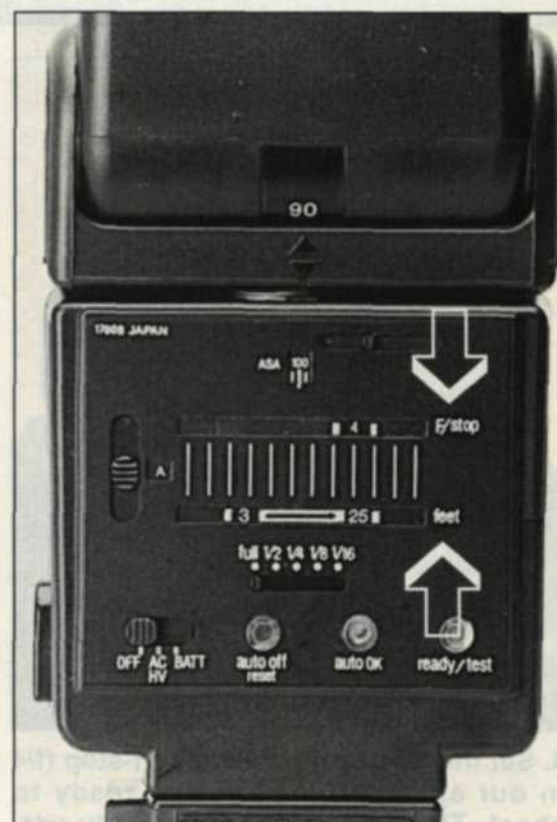
EXPOSURE WITH AUTOFLASH



1. Automatic flash units contain sensors that read light reflected from the scene, and cut the flash duration short as necessary to provide proper exposure within a selected flash-to-subject range.



2. With automatic units, as with manual units, you start by telling the flash unit's computer how sensitive to light the film you're using is—in other words, set the film's ISO (ASA) speed on the flash unit's film-speed index. (Dedicated flash units read the film speed automatically from the camera's electronics.)



3. Next, look at the flash unit's exposure scale to see what f-stop should be used with that film speed. Here, it's f/4, and the usable autoflash range is 3-25 feet.



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6.-10. Since the manufacturer's guide number might not be accurate for your particular shooting circumstances, it's wise to shoot your own guide-number test, using your flash unit under the conditions you normally encounter.

Have a friend sit on a chair 10 feet from your camera/flash unit, holding a series of cards marked with your lens's f-numbers thereupon. Shoot a series of flash shots (being sure to give the flash unit plenty of time to recycle between exposures—30 seconds should be sufficient), one at each f-stop on your lens, with your friend



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holding the appropriately marked card for each shot. After the film has been processed, examine it, and pick the best exposure. Multiply the f-number on the card in that frame by 10 (the flash-to-subject distance), and you've got your guide number for that flash unit and film.

Notes: If you find yourself shooting in a larger or darker-walled room than the one in which you shot this test, or outdoors at night, you'll have to give more exposure than indicated by the guide number. Conversely, if you shoot in a smaller room with more reflective walls,



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you'll have to give less exposure than the test indicated. Guide numbers are guides, not ironclad laws. Also, manufacturers' guide numbers for years were given for ASA (ISO) 25 film. Today they are generally given for ISO 100 film. When comparing flash unit ratings, make sure both units' guide numbers are given for the same film speed—an ISO 100 guide number will be twice as high as an ISO 25 guide number. Along the same lines, guide numbers given in feet will be 3.28X higher than guide numbers given in meters.

CREATIVE FLASH & LIGHT



4. Set the lens to the indicated f-stop (f/4 in our example), and you're ready to shoot. The flash will automatically provide proper exposures within the distance range selected.



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5.-7. Many of today's autoexposure flash units, like this one from Sunpak, provide several operating ranges—one that provides a small aperture (5) when you need great depth of field (or necessity, this setting also provides the most limited



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distance range), one that provides a great operating distance (at a large aperture—photo 6), and one or more intermediate settings. This way, you can select the setting that will be most useful for the task at hand.



8. The most automatic of the automatic flash units are those built into compact point-and-shoot 35mm cameras. They automatically charge and fire when needed (when the light drops below a certain level). Rather than alter flash duration to control exposure, as independent automatic flash units do, these built-in units always fire at full power and duration, and utilize an automated guide-number method of exposure control: They're keyed to the camera's autofocus system, and set the appropriate lens aperture for the focused camera-to-subject (flash-to-subject) distance. A few 35mm SLRs utilize this system, too.



9. The most versatile automatic flash units are dedicated ones that provide through-the-lens, off-the-film (TTL-OTF) exposure control. (Note: The camera also must have this capability—some cameras don't.) With TTL flash, you can set the lens to any aperture, and point the flash head in any direction—the camera's metering circuit will read the exposure off the film, and cut the flash duration short as necessary to provide proper exposure. (Note: If you are shooting at a small lens aperture, and the flash isn't powerful enough to light a distant subject at that aperture, the camera will warn you of this by means of a signal in the viewfinder.

The auto capabilities of this Nikon F4S/SB-24 TTL combination would fill a book—the instruction manual for the SB-24 flash is as thick as the manual for the pro F4S camera.



10. Several of the newer autofocus 35mm SLRs have TTL flash units built in, like this Minolta Maxxum 3xi. For more power, you can add an accessory TTL unit to the camera's hot-shoe.

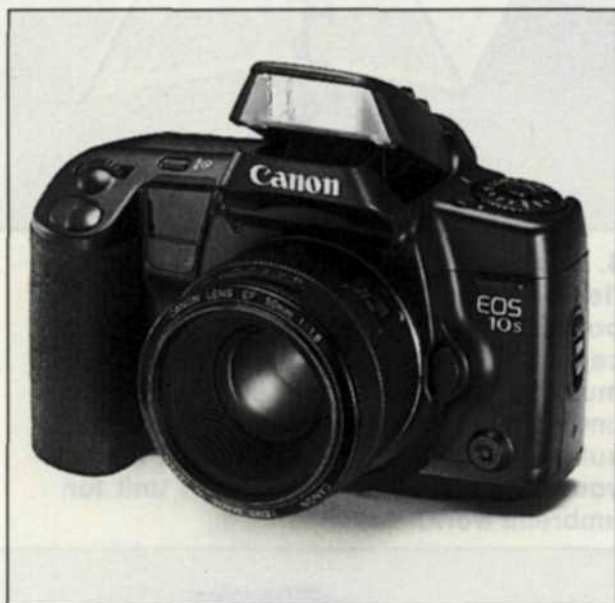


11. One thing to look out for when using automatic flash is the infamous foreground object. If there is an object in your scene that is closer to the flash than your main subject, the flash will probably expose the closer object properly, and underexpose the main subject. In such situations, set the flash unit for manual exposure control, and calculate exposure based on the flash-to-main-subject distance in the manner described earlier.

It's best to avoid situations like this altogether, because the flash unit can't evenly light subjects at different distances—nearby subjects will be more brightly lit than more distant ones. More on this in the section on problems.

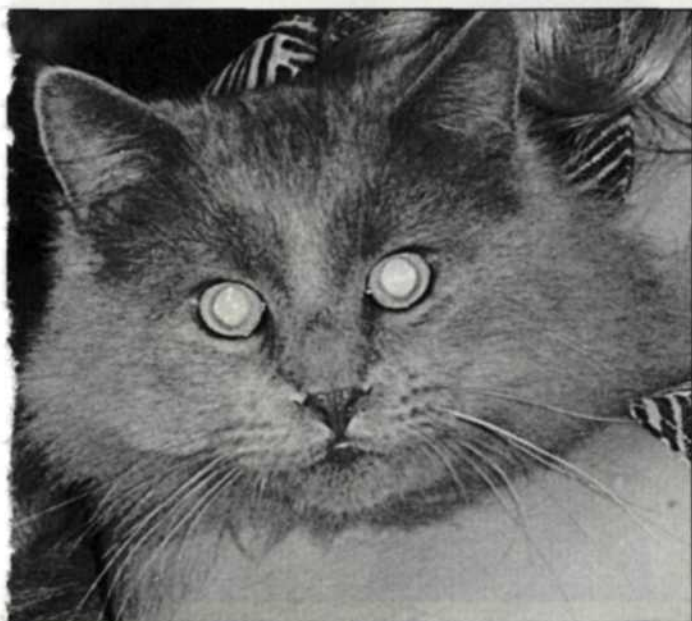
just the flash duration to produce proper exposure, (5) indicate in the viewfinder whether the flash exposure was sufficient for a good photo, and (6) make the exposure by existing light if the flash isn't recycled and ready to go when you trip the shutter.

With some systems (TTL flash), the camera's meter reads the light at the film and controls exposure whether flash is used or not. These systems will even balance flash and existing-light exposures automatically for flash-fill work. See the instruction manuals for your camera and flash unit to determine just which dedicated features apply to your setup.



10. "Photography in the dark" is possible with many AF cameras (good for surveillance work). The camera (or its flash) sends out a patterned infrared beam that illuminates a dimly lit subject sufficiently for the camera to autofocus on it, enabling you to take flash pictures when it's too dark to see to focus.

PROBLEMS AND WHAT TO DO ABOUT THEM



1. You might find that when you shoot flash pictures of people or animals, particularly from some distance, they will appear to have large red or (with some animals) green (in color) or white (in black-and-white) pupils. This effect is aptly called "red-eye."



2. Red-eye occurs because the flash unit is too close to the camera lens (so its light is reflected off the subject's retinas right back into the lens), and it can be minimized by removing the flash unit from the camera and holding it at arm's length above and to one side of the camera. This requires the use of a PC extension cord, which you can buy at most camera stores. (Take your flash unit and camera with you, to be sure you get a compatible cord.)



3. Several manufacturers of cameras with built-in flash units (which can't be moved off-camera) have come up with interesting, innovative, and fairly effective ways to reduce red-eye. The flash unit in this Olympus IS-1 emits a rapid series of preflashes that "stop down" the subject's eyes before the exposure is made, thus greatly reducing the red-eye effect.



4. Probably the biggest problem for serious flash users is the fact that you can't

preview the lighting effect—there is no lighting until the flash is triggered, and then it's gone, well, in a flash! The light doesn't last long enough to be evaluated. One way around this problem is to use a studio flash unit that has a built-in modeling light. These units are expensive, though; a less-costly, albeit less-efficient, solution is to get a photoflood bulb and position it next to your flash unit as a modeling light.



5. Since flash exposure is based on the flash-to-subject distance, you can't properly expose all the subjects in a scene if they're at different distances from the flash unit.

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6.&7. There are two ways to handle this situation: Move the subjects so they are



7 the same distance from the flash (6), or move the flash off-camera so it is the same distance from all subjects (7).

A BRIEF COURSE IN LIGHTING WITH ONE LIGHT



1. You don't need a lot of lights to produce nice flash photos. One flash unit and a little knowledge will suffice.

Here's an example of the most common (and probably the worst) way to use a single flash unit to light a portrait subject: mounted on the camera. Thus positioned, the flash unit produces (1) dull flat frontal lighting, and (2) an annoying shadow on the wall behind the subject. Fortunately, the model didn't know there was an annoying shadow behind her, so only the photographer was annoyed.

2. You can eliminate the shadow by (1) moving your model farther from the wall, or (2) raising the flash unit up high enough so that the shadow will fall out of the picture area. Option 2 has the added benefit of eliminating the flat, unexciting look of direct frontal lighting.



This light position—45° to one side of the camera and 45° above it—is a good starting point for the mainlight in portraiture. Notice the modeling on the subject's face provided by the shadows.

Note: When you use the flash unit off-camera, remember to use the *flash-to-subject* distance, not the camera-to-subject distance read off the lens's focusing scale, for exposure calculations. Handy hint: You can tape the flash unit to a light stand or any handy object when using it off-camera, so you can use both hands to hold the camera.



3. The direct light of the flash unit might be too harsh for a portrait subject. You can soften it by "bouncing" (reflecting) the flash off a large, white surface, such as a sheet of white poster board, or (used for this shot) a photographic umbrella reflector made specifically for that purpose.



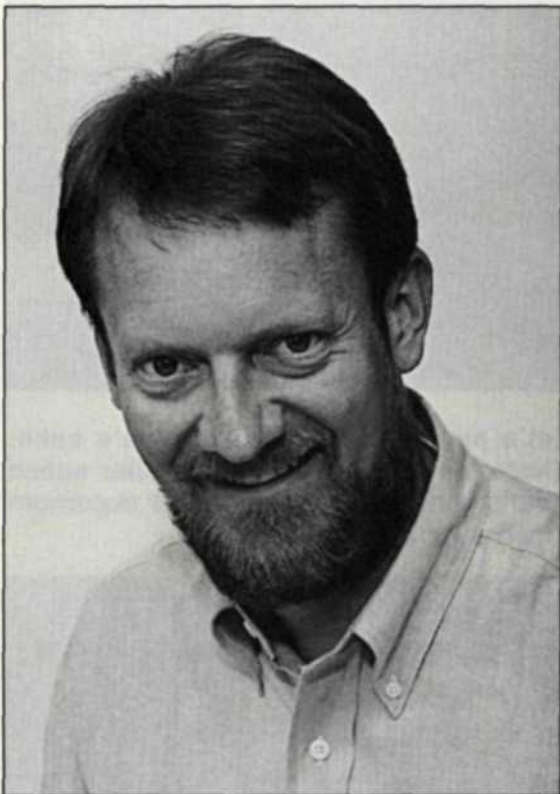
4. Here's a photographic umbrella reflector made specifically for that purpose. You can buy one at your local camera shop. Note: Because the light must travel from the flash unit to the umbrella reflector and then back to the subject, and some of it is lost en route, you need a fairly powerful flash unit for umbrella work.



5. The advantage of the soft light produced by umbrella flash is that it's very forgiving—there are no harsh shadows to shout "bad lighting" at the viewer. If you have only one flash unit, bounce it (that's "bounce" as in reflect, not as in dribble), and you'll be pleased with what you can do with that single unit.



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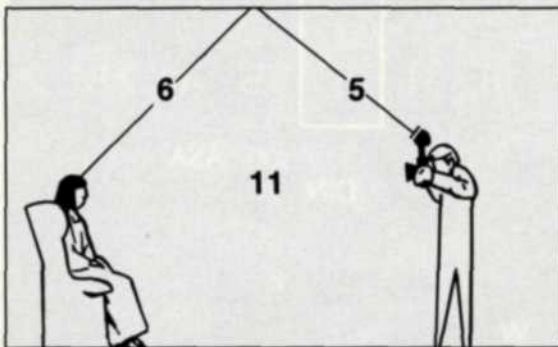
6.-8. If you don't have an umbrella or other reflector, you can bounce the flash off a nearby light-toned wall or ceiling. The wall is the better choice, because it reflects side- or side/frontlighting (6), depending on whether you position your subject with the wall directly to one side, or with the wall more in front. Ceiling bounce light (7) generally comes from too high an angle to produce flattering people pictures, but is useful for providing overall illumination while eliminating the flat look of on-camera flash (8).

Note: Beware of bouncing the flash off colored walls—they'll reflect their colors onto the subject.



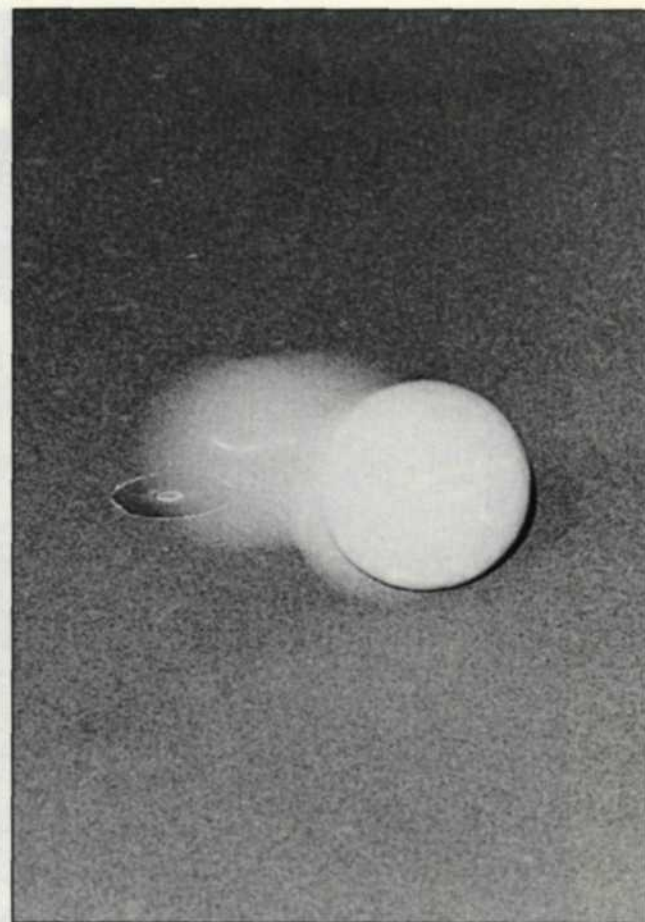
9. How do you determine exposure for bounce flash? The easiest and most accurate way is with a flash meter, which is a specialized (and fairly expensive) light meter that reads the brief flash burst and tells you the proper f-stop to use for the shot. If you use multiple-flash lighting setups, you'll need a flash meter for accurate exposure control.

Note: Some 35mm SLRs with TTL auto flash will accurately read bounced flash



and multiple-flash setups.

10. Lacking a flash meter, you can measure the distance from the flash unit to the reflecting surface, add to that the distance from the reflecting surface to the subject, then use the sum of the two distances to calculate the f-stop using the flash unit's exposure calculator or guide number. Then open the lens one stop from this calculated exposure, and



bracket exposures.

11. Remember how we said that the flash unit's short duration serves as your shutter speed when you're shooting with electronic flash? It does under normal circumstances. However, if you set the camera's shutter speed for a very long exposure, the existing light might register on the film along with the flash exposure, resulting in a ghost image of a moving subject (as mentioned earlier). You can use this information to combine the action-stopping power of electronic flash with a long ambient-light exposure to show motion in an unusual way. Here, the short-duration flash froze the cueball's motion, while the long shutter speed allowed the existing light to register a ghost image of the moving ball.

When deliberately producing ghost images, the best procedure is to first determine the proper f-stop for the flash exposure, and set that. Then, determine the proper shutter speed for the existing light at that f-stop, and set that. Then, just shoot.

A few of the newer AF SLRs permit both standard and rear-curtain flash sync. With standard sync, the flash fires at the start of the long exposure; with rear-curtain sync, it fires at the end. If you make a long exposure of a subject moving from left to right across the frame, with normal flash sync, the flash will freeze the subject at its original position at frame left, then the existing-light exposure will record a blurred ghost image ahead of that image as the subject moves across the frame—a not-too-natural effect. With rear-curtain sync, the existing-light exposure is made first, recording a blurred ghost image as the subject moves across the frame; then the flash fires at the end of the exposure time, sharply freezing the subject at frame right, with the ghost-image "speed streaks" behind it—a more natural effect.