

Snapshots exposed!

secrets of
setting your camera
correctly for
black-and-white
pictures



A Kodak Publication

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meet your camera

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this book is





for lazy people

... who like to take pictures

You'll never find photography spelled here with a capital P unless it comes at the beginning of a sentence.

Our idea is to describe the easiest way of getting enjoyable, satisfying results with your adjustable camera. Whenever additional equipment comes into the story, we try to keep it comfortably portable and comfortably inexpensive. Photography with a small p should most of all be fun, and fun is generally uncomplicated.

While Michelangelo might conceivably have been able to create

masterpieces with a set of kindergarten crayons, and while you may have achieved excellent results with a simple camera, the avenues opened by more versatile equipment are paved with golden opportunities. Your adjustable camera is a wonder worker. Taking advantage of all these opportunities is literally a snap for it.

We hope this book will be a good introduction to how your camera works, what it can do, and why. A camera can't give its best unless you understand its capabilities and its limitations, too.

We hope even more that the picture-making ideas in this book will launch a chain reaction into your own imagination. After all, cameras are only mechanical contrivances. The most important element in picture making is you.



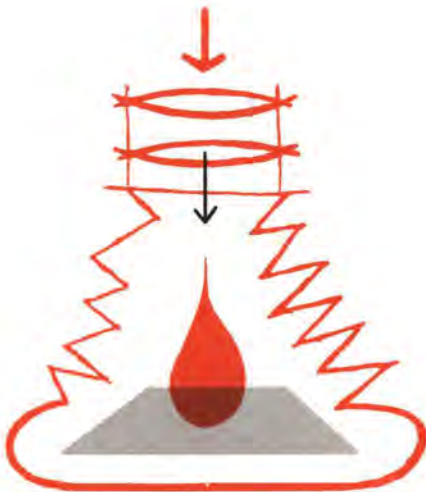
1 meet your camera

why an adjustable camera adjusts

Well, what makes a picture? No, this time we aren't thinking in terms of sunsets or new babies or the gang at a beach party. We're after the stuff that turns a blank strip of film into a photograph.

Of course, light is the engineer. When a certain size splash of light strikes the sensitized film, we get a good picture. A bigger splash or a smaller one won't do the job as well, and depending on how much bigger or smaller, it may not do it at all.

Let's say we picked up just the right splash on a bright, sunny day. The next day, though, may be gray and cloudy. If we let the light reach the film through the same opening and for as long as we did on the sunny day, we can't hope to build up as big a splash. It would be almost the same as expecting to get a suntan as quickly.





The Kodaguide Snapshot Dial features built-in exposure arithmetic—you tell it the kind of sunlight and film you have; it tells you all the equivalent exposures.

exposures and equivalents

Of course we've said that $f/11$, $1/50$ lets in just the right size splash of light on a sunny day. On the same sunny day, if we *double* the size of the lens opening to $f/8$ but leave it uncovered only *half* as long, $1/100$, it might be logical to expect the splash to stay the same size. Surprisingly enough, it does.

With Kodak Verichrome or Plus-X Film $f/11$, $1/50$ is sort of a home base or basic exposure on a sunny day. For every kind of daylight there's a similar basic exposure, usually the opening that goes with a $1/50$ shutter time to accumulate the right size splash. Since $f/8$, $1/100$ is equal to $f/11$, $1/50$, it's called an "equivalent exposure." Each basic exposure has a large family of equivalents. To find them easily, you can use the inexpensive Kodaguide Snapshot Dial, or the Kodak Master Photoguide which contains this dial and many other useful picture-taking aids. Figuring them mentally, though, all you need to do is match the doubling or quadrupling you've done to one element with a halving or quartering of the other.

putting equivalents to work

So what?

Now that's a reasonable question. After all, if $f/11$, $1/50$ gets the right size splash for that bright,

Same scene, same girl, same camera — but see what the widest lens opening, $f/3.5$, and the smallest, $f/22$, do to the fence and background.





The difference? Shutter time on the left is 1/50, the right, 1/200.

sunny day, why bother with all this equivalent business?

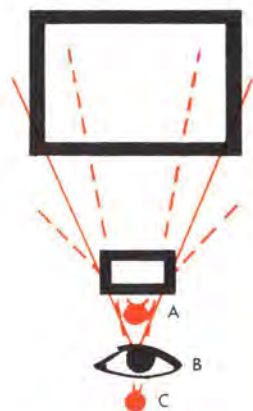
Well, lenses have some unusual characteristics. For example, if the lens opening is quite small, it sees both near and far things very sharply. If you'd like this result in your picture, $f/16$ is a little more desirable to use than $f/11$. But since $f/16$ is only half as large an opening as $f/11$, you'll need a shutter time twice as long as 1/50 to balance things up. This is where the equivalents begin to work. Occasionally you may prefer to have only the subject, itself, sharp, with everything in front and behind rather fuzzy. Pick an equivalent exposure with a wide lens opening, find its matching shutter time, and you're in business.

Often, the shutter time you may need for a picture will determine which equivalent exposure you should use. A person walking close to the camera moves enough in 1/50 second to blur a picture. In 1/200, though, his movement will be so slight that your picture, taken at that shutter time, will be sharp. But remember that since you have cut the time by four, you must increase the opening by four also, to $f/5.6$.

sighting in on the picture

A viewfinder is called a viewfinder because it lets you see the view that will appear in your picture. Except sometimes it doesn't.

If used incorrectly, an eye-level viewfinder can deceive you by including either a great deal more



- A—too close to finder
- B—correct
- C—too far from finder



Bring the images together and you're all focused for snapshotting.

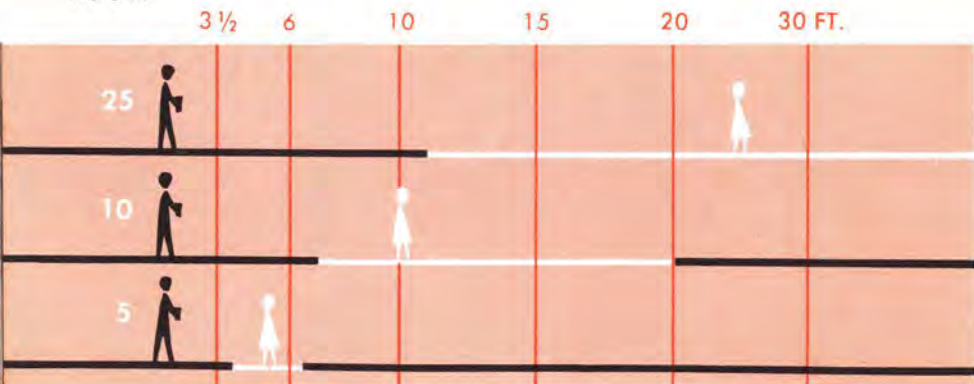
area than the picture will contain or a great deal less. This usually occurs when your eye is too close to the finder or too far away. For perfect results, move the camera toward your eye until you just begin to see all four inner edges of the finder at about the same time. If you must correct your aim, move your head and the camera as if they were one piece.

With reflex-type cameras, small variations in the distance from eye to finder won't produce the radical differences that similar variations cause with eye-level finders. As a general rule, it's best to keep the camera near your waist.

Some Kodak cameras incorporate rangefinders which are coupled with the viewfinder. The superimposed type presents two images, one of which moves across the other when you turn the focusing collar from infinity to the closest focusing point. When the rangefinder's two images come together on the main part of your picture, you know that your subject is in perfect focus.

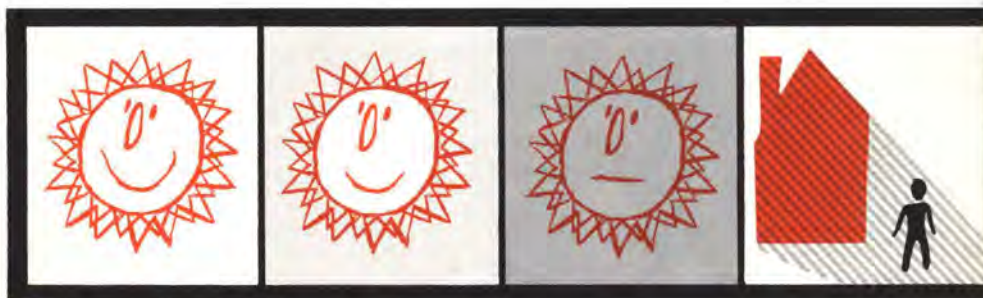
By the way, the range in which a lens opening will picture objects distinctly is called the "depth of field." It depends not only on the opening but on where you focus the lens. For each picture, you must turn the focusing collar so that the distance to the main part of the picture is opposite the mark. Since the depth of field is always deeper behind the point of focus, it usually pays to keep your estimate of focusing distance on the conservative side.

At $f/11$ here's how deep your depth of field will be when the camera is focused at 25 ft, 10 ft, and 5 ft.



some home bases for exposures

So far, all our calculations have been figured for bright sunlight. They work out just as easily for other lighting conditions. When the sun is hazy, our basic exposure for Kodak Verichrome or Plus-X Film is $f/8$, $1/50$. This means we need an opening twice as large as the bright-sunlight opening, $f/11$, to build up the same size splash. All the equivalent exposures can be worked from this home base just as they were from the other. For cloudy-bright light, the basic exposure is $f/5.6$, $1/50$, and on really gray days, $f/4$, $1/50$.



BRIGHT SUN means a clear blue sky with dark shadows on the ground. It gives the most light and requires the briefest exposure to build up the right size splash.

In **HAZY SUN** you can still see the sun's outline but there will be a fine layer of haze over the front of it. Shadows will be much lighter and more transparent.

A **CLOUDY-BRIGHT** day is one in which the sun is barely visible if it's visible at all. Still, there's quite a bit of light although you won't see any shadows.

OPEN SHADE is the special kind you have when the picture subject stands in the shadow of some object but still can see the bright sun overhead.

films—what makes some different

So far we've grouped Kodak Verichrome and Plus-X Films together. There's only a slight difference between them. Film doesn't always see every color the way our eyes do. Plus-X pretty nearly matches the eye's sensitivity, while Verichrome doesn't react quite as much to red light. Prints from both are fairly similar, though. Verichrome pictures



KODAK VERICHROME FILM (left) for brilliant results in everyday snaphooting.
KODAK PLUS-X FILM (center), tops for scenics, color accuracy, enlargeability.
KODAK TRI-X FILM (right) when light is limited or top shutter speed vital.

seem a little more contrasty, a trifle snappier, while Plus-X provides better rendering of clouds, thereby giving outdoor pictures a lift.

Kodak Tri-X Film produces results similar to those with Plus-X but is four times as sensitive. The exposure for Tri-X will always be two lens openings less than that for Plus-X, a real help in cloudy weather when the basic exposure for Plus-X may require an opening beyond the capacity of your camera.

bright subjects and dark ones

Why do you wear light-colored clothes in the summer? Cooler? Of course. Heat rays bounce off a white surface. Light rays do the same. Black and the dark colors are a sponge for both of them.

LIGHT, AVERAGE and DARK subjects all bounce different size splashes of light at the film. When most of a picture is very bright, use one opening *smaller* than the basic exposure; if it's dark, use one opening *larger*.



So, if most of your picture consists of very light colors, it will bounce an extra amount of light at the film. To keep the splash to normal size, then, close the lens down by one opening. Likewise, if most of the picture should be very dark colors, increase the regular exposure one opening.

steadiness – squeezing not stabbing

Just about everybody likes motion pictures, but they ought to be taken with movie cameras. If your camera moves at all while the lens is uncovered, you're bound to smear the picture across the film.

Always squeeze the shutter release gently. Try to hold your breath when you do it. Even the normal breathing motion of the body can make pictures fuzzy at 1/50.

Most folks, if they're careful, can hold a camera steady at 1/50. Your old box camera was probably set at a speed near this. With a great deal of care and practice, some can do a good job at 1/25. Slower speeds, though, will always call for placing the camera on a tripod, table, auto fender, or some other firm support.

the little book with your camera

Generally, it's a good practice to read before you bleed. We're talking about your camera manual. It's the easiest way to keep from wounding your pride. If there are any sticky points, your dealer will be glad to clear them up.

Here's an easy way to test your camera handling steadiness. With a pocket mirror held over the lens by a rubber band, train a flashlight or slide projector on the mirror and aim the camera so you get a sharp reflection on your wall. Then hold the camera in prescribed snapshooting position and squeeze the shutter release as gently as you can. If the reflection jumps, keep working away at getting a softer and softer trigger squeeze.



When snapshooting at 1/50 or 1/25, even slight camera movement can smear pictures. A little practice helps a lot.



2 outdoor picture taking

children, chesnuts, and natural expressions



Cameras and kids go together like beaches and bathing suits. Just make sure your camera is low enough so it will be face to face with your favorite young 'un.

What makes a picture? This may sound a little familiar. Now, though, we're not thinking so much about splashes of light as about what makes those splashes interesting enough to put them on film.

Surveys offer proof positive that people chiefly like to take pictures of other people. A camera gives you the ability to catch the folks you know in the middle of their most characteristic activities, just the way you'd want to remember them. It's the teaming up of the person and what he's doing that makes a picture memorable.

With small children, this is all pretty easy. They're so engrossed in their own business that they don't care too much about that odd-looking thing you're poking at them. You just have to set the lens for the correct exposure, keep the camera low enough to show the child's face, and wait for the expression you want.

But when small children grow up, they acquire that familiar tendency to freeze whenever a camera eye gets in the vicinity. Then they tuck in their shirts and make with a big toothpaste grin. If you can't catch the subject unawares, the next best trick is to talk him into acting as if you weren't around.

Whether it's snapping relaxation, concentration, or imagination, your camera can make an informal but memorable record of people and pets as they really are.



And if you still can't coax a natural expression, try the old chestnut of pretending that you have taken a picture and then snapping a minute later.

We think you'll come to treasure those expressions of concentration, deep thought, wool gathering, or downright exasperation even more than many of the smiling pictures. They help your picture interest to start compounding immediately.

some angles on lighting

Since we've already explored how light works at the film end of the picture, let's swing around to the subject end.

Just about the oldest picture-taking formula is: "Let the sun come over your shoulder and snap." This makes things pretty easy for the snapper, but they can be a trifle brutal on both subject and picture. Our heroic subject squints, squirms, and feels generally uncomfortable. His picture looks it.

To give him a break, both physically and photographically, try turning him so the sun comes from the side. Side-lighted pictures also give the subject's face a soft, rounded, three-dimensional look.

You can make flattering pictures, especially of women, by letting the sunlight come from behind them. This creates a rather pretty halo around their hair. It takes a full extra lens opening, though, and you'll need to shield the lens with the shadow of a hat or hand.

For your next really adventurous mood, take some close-ups in open shade – not the dark kind under the porch roof, but out where you can still see the sky overhead. If the shade is quite soft, try the same basic exposure you'd use for cloudy-dull light, $f/4$, $1/50$.

Side lighting sometimes drags in a new problem. On bright, sunny days, the shadow side of a person's face may be so shadowy that it will turn out as a featureless black blob in the picture. One way to beat this is by moving the subject so his shadow side will be near a light-colored wall, an automobile, or



No direct sunlight here on our slider's face, but there's enough of it reflecting off the slide to light it quite evenly and softly.

some other bright surface. You can keep it in or out of the picture. A flash lamp will do the trick, too. If you arrange the shot so the camera is facing the shadow side, you can keep the flash holder attached. If not, you'll need a Kodak 20-ft Extension Cord so the holder can be set on the ground and pointed up at the subject's shadow side. With SM, SF, No. 5, or No. 25 lamps, the holder can be five to ten feet from the face. Using a flash lamp to lighten the shadows won't change the normal exposure.

a little background on backgrounds

When a background makes your picture look like Fibber McGee's closet, just turn around and try using the sky. Also likely background candidates—water, a beach, grass, distant trees. If none of these are available, just throw the background into soft focus by using a wide lens opening.



Plain backgrounds are usually best — for a small boy a low angle brings in lots of sky; for a friendly pelican what's a better background than his favorite hunting grounds?



If there's no way to get away from a distracting "busy" background, try an equivalent exposure with a wide lens opening and its corresponding shutter time.



bright sun

	Verichrome, Plus-X	Tri-X
front lighting	1/50, f/11	1/50, f/22
side lighting	1/50, f/8 ∇ f/11	1/50, f/16 ∇ f/22
back lighting	1/50, f/8	1/50, f/16

∇ shows settings halfway between the f/ openings marked on cameras.

basic exposures



FRONT LIGHTING is the old, "Let the sun come over your shoulder and shoot," formula. This would work out beautifully if people's faces were perfectly flat, which, of course, they aren't. Wherever parts of the face jut out, places like eyebrows, noses, chins, and cheeks, the bright sun will make heavy, unsightly black shadows just underneath.



SIDE LIGHTING still can't eliminate those dark shadows that come with bright sunlight but it moves them around to the side of the face where they aren't quite so annoying. Best results can be obtained by facing your subject so the light will just get across his or her nose and help to illuminate the side that is away from the sun.



BACK LIGHTING allows the sun to throw bright highlights onto a subject's hair and shoulders while producing a soft, even, and pleasant kind of face lighting. When you make back-lighted snapshots early in the morning or just before sunset, shield the camera lens with a hat or some similar shade to prevent the sun shining directly into it.



SIDE LIGHTING WITH FLASH FILL-IN uses flash to soften shadows. With the flash holder on the ground via an extension cord, SM, SF, No. 5, and No. 25 lamps may be five to ten feet from the subject's face depending on how much fill effect you desire; when on the camera, cover it with a thickness of white handkerchief for normal close-ups.

hazy sun



Verichrome, Plus-X

Tri-X

front lighting	1/50, f/8	1/50, f/16
side lighting	1/50, f/5.6 ∇ f/8	1/50, f/11 ∇ f/16
back lighting	1/50, f/5.6	1/50, f/11

∇ shows settings halfway between the f/ openings marked on cameras.

basic exposures

FRONT LIGHTING with a hazy sun produces quite different results than it does with a bright sun. The light, already diffused by the haze, causes only soft, generally unobjectionable shadows. No matter from what angle you are shooting, hazy sunlight makes it easy to get the kind of outdoor portraits that add lustre to any snapshot album.



SIDE LIGHTING adds a little extra snap to pictures taken by hazy sunlight. Actually the difference is rather small, but note how the slightly brighter areas that the sun throws on our subject's left cheek and chin seem to give the entire snapshot more pep.

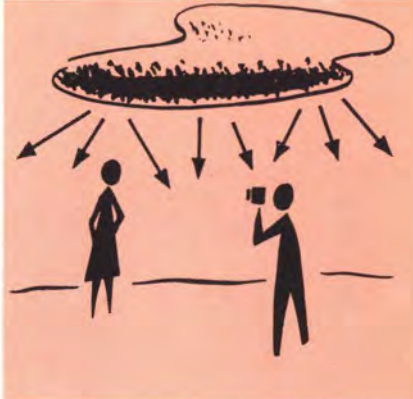


BACK LIGHTING again contributes highlights on the hair and shoulders. Faces come out a soft, even tone and the over-all effect is a pleasing one to most picture takers. As on bright sunny days, shield your lens whenever the sun is so low in the sky that it might shine directly into it.



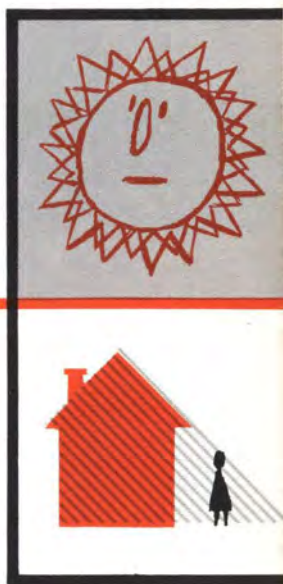
BACK LIGHTING WITH FLASH FILL-IN combines the merits of back-lighted snapshots with extra sparkle from the flash. For close-ups, cover the flash holder with two thicknesses of white handkerchief. With SM or SF lamps shoot at 1/50 about four feet from your subject; with No. 5 or No. 25 lamps at 1/50, six feet should be your closest distance.





cloudy bright

Basic exposure here is $1/50$, $f/5.6$ for Kodak Verichrome and Plus-X Films, $1/50$, $f/11$ for Kodak Tri-X. The sunlight is so broken up by the clouds overhead that there really isn't any need at all to be concerned about its direction. This diffusion is helpful for snapshotting since it virtually eliminates any trace of objectionable shadows.



open shade

Exposures may vary considerably depending upon how deep the shadow is and how much open sky is visible above. A good starting place for Kodak Verichrome and Plus-X Films is $1/50$, $f/4.5$ and for Kodak Tri-X, $1/50$, $f/8$ — $f/11$. Always avoid having your subject partly in the shade and partly in direct sunlight. The results of this will be quite alarming.



what not to include

In a way, taking pictures involves one of the skills of a butcher. You have to know how much to cut off. Always ask yourself, “What should this be a picture of?” and include only the elements you find in your answer.



The painter alone, with his artistic prey, or under critical analysis
— always decide first just what you want your picture to include.

the frame-up

Frames just make some pictures look prettier. They turn up “on location”—a tree, a fence, a flowering branch, a window, a bridge.

A frame is where you find it. Good ones give pictures a tremendous illusion of depth, also help focus attention on the subject.





Nothing's too close for a Kodak Portra Lens. Here are the nearest snapshots possible with a camera focused at $3\frac{1}{2}$ ft and then when it uses 1+, 2+, and 3+ Portra Lenses.

closing in on your subject

A movie would be dull as dust if it had only full-length shots. The close-ups pack the wallop.

All Kodak adjustable cameras are designed to take pictures $3\frac{1}{2}$ feet from a subject, some even closer. For really close close-ups, though, you can count on Kodak Portra Lenses. These attachments mount in front of your camera lens in a Kodak Adapter Ring. The Portra Lens 1+ lets you shoot within 20 inches of an object; the 2+ cuts that down to 13 inches, and the 3+ to 10 inches.

Since the depth of field will then be quite narrow, always make careful measurements of the camera-to-subject distance or have a string tied around the adapter ring with knots to mark the closest your camera can come.

It's one of those things we seldom stop to consider, but because the camera viewfinder is higher than the lens opening, it always sees a slightly different picture than the lens. This makes hardly any difference until you begin getting into Portra Lens range. With a Portra Lens 3+, the top quarter of what appears in the viewer won't be seen by the lens; with 2+ and 1+ lenses, the guillotined areas are $\frac{1}{6}$ and $\frac{1}{8}$, respectively. Compensate by tipping the camera upward.

Here's what happens when you see one picture through the viewfinder but the film sees another one through the lens. In close-up snapping, always compensate for parallax.





action-stopping it or moving along

You can scrap two words from your picture-taking vocabulary. They're "hold it."

Your camera is an action-stopping instrument. It's made to take pictures of things right while they're happening.

Two relationships help in action photography. First, an object coming toward you doesn't seem to be moving as fast as one going by. And, the farther away the movement, the easier it is to follow. This makes it simple, for instance, to get a fine head-on shot of a train, while even your fastest shutter time can't avoid a blur when you snap it from the side.

By the way, even following this chart, you may occasionally begin debating between two shutter times. Just to be on the safe side, always use the shorter one.

Shutter time for both was 1/100. The only difference was the direction of motion. It's easiest to get sharp snapshots when action comes toward your camera.






1/100 is quick enough for ordinary, not too violent movement.



1/200 helps when expressions change quickly, when action is faster.



1/400 does the trick when things get really fast and furious.

table of shutter speeds to record subjects in motion					
approximate speed of subject in miles per hour	characteristic subjects	distance of subject from camera	"easy" zone motion toward or away from camera	"possible" zone motion at about 45° angle to camera	"danger" zone. motion at right angles to camera
			1 speed unit	2 speed units	4 speed units
5-10	pedestrians children boating	25 ft.	1/100	1/200	1/400
		50 ft.	1/50	1/100	1/200
		100 ft.	1/25	1/50	1/100
20-30	baseball motorboats diving	25 ft.	1/200	1/400
		50 ft.	1/100	1/200	1/400
		100 ft.	1/50	1/100	1/200
60 and up	auto races airplanes trains	25 ft.	1/400
		50 ft.	1/200	1/400
		100 ft.	1/100	1/200	1/400

who look the clouds away?

This is how the scene looked but this is the picture we got. The exposure was correct. Who took the clouds away?

Unfortunately, black-and-white film doesn't "see" colors. It sees their different brightnesses and records them as a scale of grays. To us the clouds stand out because we can see the color of the sky. The film "sees" only the comparatively slight difference in brightness, and the sky turns out nearly the same gray as the clouds.

We have a few "traffic cops," though, who can stop some of the sky's blue light from striking the film. The sky is then less bright as far as the film is concerned and turns out a darker gray. These cops, which mount in front of the lens, are the Kodak Wratten Filters K-2, G, and A.

The K-2 filter makes the sky as dark in the picture as it appears to the eye. The others make it even darker, for more spectacular effects. They also make a plain sky darker when you use it as a background.

All these filters actually stop some light of colors other than the ones we want stopped. To compensate for this stopped light, then, we have to allow more exposure when using filters. Each filter has a factor number. This indicates how many times more than normal exposure you must give the picture when you use that filter.



The scene looked like this . . .



but the snapshot came out with the sky all dull. The remedy—a filter to bring out the clouds.

NO FILTER and the clear sky is lighter than it appears to the eye.

K-2 FILTER gives the sky about the same tone it really has.

G FILTER produces a darker sky, helps the subject stand out more sharply.

A FILTER shows darkest background, makes it easy to get spectacular snaps.





At twilight this skyline silhouette took 1/5, f/8 on Verichrome Film



Lens open at f/16, camera was aimed upward on tripod.



This New York scene took a minute at f/16 on Tri-X Film.



filter factors	K-2		G		A	
	factor	★	factor	★	factor	★
Verichrome	2½	1	5	2	*	—
Plus-X	2	1	3	1½	8	3
Tri-X	2	1	3	1½	9	3

★ approximate number of additional lens openings needed when using filter—example: if normal exposure is 1/50 at f/11, with G filter and Plus-X Film it would be 1/50 and half way between f/5.6 and f/8. *A filter can't be used with Verichrome

after dark with 't' and 'b'

Good outdoor pictures at night are almost purely guesswork. Even bright floodlighting seldom matches normal sunlight, so you'll have to use longer exposures than you'd need in the daytime. And since any movement of the camera would spoil the picture, a tripod or some similar support should be standard equipment.

We shelved the "B," "L," and "T" shutter settings back in the beginning pages, but this is where they come to the rescue. On "B" and on "L" the shutter remains open as long as you keep pressing down on the shutter release. It's best for exposures up to ten seconds.

If there is a "T" setting on your camera, it will keep the shutter open even after you release the button. To close it again, you must press the button a second time. "T" should be used for exposures longer than ten seconds. Many cameras without "T" settings can acquire them by acquiring a Kodak TBI Metal Cable Release. This device screws into the shutter and lets you keep it open for long time

If you're going out especially to take night shots, use Kodak Tri-X Film in your camera. Its greater sensitivity keeps your exposure down to a minimum. And if you can, make two or three widely varying exposures of each scene just to make sure you get at least one topnotch picture.

The Kodak TBI Metal Cable Release and a tripod are standard equipment for long exposures.

coming indoors

3

flash lamps for portable sunshine

What makes a picture? That question again? It's been pretty well established by now that light does the trick, and outdoors there's usually plenty of it around. Indoors we generally don't have enough.

That's where flash lamps come in. They're sort of pint-sized, private packages of light, shooting out enough to take one picture just about anywhere you'd like.

They come in many sizes, depending on how much light they flash, how quickly they release it, and how long the flash lasts. When you use the kind your shutter is designed to synchronize with, the shutter will open just as the picture is receiving the greatest amount of light the lamp can throw. Never use any lamp size except the one mentioned in the camera manual. If there's no synchronization, the shutter will open either before or after the lamp flashes and you won't get a picture.

Make sure, too, that the batteries in your flash holder aren't more than six months old or past their expiration date. If they flunk either of these tests, replace them with new photo-flash batteries; regular flashlight batteries don't have the necessary punch.

Lamps of one size always flash the same amount of light. However, as the light travels farther away from the lamp, it begins to fade out pretty rapidly. A subject five feet from a lamp receives, for example, 50 percent more light than one six feet away. Since any exposure depends on how much light shines on the subject, flash exposures are figured by the distance from the lamp to the main part of your picture.

Your camera manual probably has a table of flash guide numbers. It may look like it was written in code. To put it to work, first pick a shutter time. This usually depends, as it did outdoors, on whether the subject is moving and, if so, how fast. If the subject is completely stationary, you may prefer to shoot at 1/25, since this comparatively slow shutter time allows the room light to assist the flash by making the background a little lighter and more detailed.

Next, line up the shutter time with the kind of lamp you are using. Presto—the guide number. Now merely divide this guide number by the distance from the flash lamp to the subject, and the result is the lens opening for the picture. For fast, faultless flash arithmetic, both the Kodaguide Snapshot Dial and the Kodak Master Photoguide contain flash

four footsteps to flash

1	2	3	4
Choose the shutter time you'll need for the picture—1/50 or slower for stationary subjects, 1/100 or faster for action.	Using this chart, match up your film and shutter time with the kind of reflector and flash lamp you have. Result—a guide number.	Divide this guide number by the approximate distance from your flash holder to the main area of the subject.	The number you get from this division is the <i>f</i> /opening you should set for correct exposure.

guide numbers

		With Kodak Standard or BC Flash Holder			
		Satin Finish Reflector		Polished Reflector	
		SM and SF Lamp	No. 5 & 25 Lamp	SM and SF Lamp	No. 5 & 25 Lamp
Shutter Time					
Kodak Verichrome Film	1/25	60	120	75	140
	1/50	60	100	75	125
	1/100	55	90	70	110
	1/200	50	70	60	80
Kodak Plus-X Film	1/25	70	130	85	150
	1/50	70	120	85	140
	1/100	65	100	75	120
	1/200	60	75	70	90
22 Kodak Tri-X Film	1/25	140	250	160	300
	1/50	140	230	160	280
	1/100	130	200	150	240
	1/200	120	160	140	180

exposure computers.

Steer cautiously when attempting flash pictures at distances greater than ten feet. Here the light from the flash becomes quite a bit weaker, and your picture will depend on the kind of film you use and upon the maximum opening of your camera lens.

a few flash don'ts

1) **DON'T** point the flash upward for pictures of people unless you're aiming for a Frankenstein's monster kind of effect. Keep the flash lamp on the same level with the subject's head or preferably a bit higher.

Flash helps freeze those special moments that make pictures really memorable.

Here's an example of how horrible a horror picture you can get with your flash aimed upward. Always keep it on a level with your subject's head, a little higher if possible.





A damaged flash lamp may be difficult to identify, but the Kodak 2-Way Flash-guard keeps it from being a menace.



Shadow frames vanish when a subject moves from the wall.

2) **DON'T** put the subject off to one side of the picture, especially if the distance is greater than six feet. In the center, he'll receive full benefit of the flash.

3) **DON'T** stand a subject close to a wall. Keep him at least two or three feet away from it so his shadow will fall on the floor or far enough down to be out of the picture.

4) **DON'T** aim your flash directly at a shiny surface like a mirror or window. The reflection will flare. Move around so the lamp will not directly face the shiny surface.

Holding a flash holder high and to one side of your camera often helps the quality of flash snapshots but not when it's aimed at a mirror, window, or other such surface. Moving it a foot or two to the right did the trick here.



how flash hits the ceiling – and why

With flash lamps you can pretty well duplicate the soft hazy sunlight that makes such pleasant pictures of people outdoors.

Instead of pointing the flash holder directly at the subject, remove it from the camera and hold it toward a wall or ceiling so its light will bounce off the surface and in the subject's general direction. The distance you divide into the guide number will be the one from the flash holder to the subject. Then give the lens an extra two openings. This additional exposure makes up for the light absorbed by the surface or lost when some reflections stray away from the subject.

This two-opening figure works best with walls or fairly low ceilings that are white or cream-colored. Slightly darker surfaces will take even more extra exposure, and really dark ones don't reflect enough light to make indirect flash practicable at all.



Just one flash lamp bounced off the ceiling helped capture all this juvenile enthusiasm.



the professional touch with photofloods

For impromptu picture taking, flash lamps are the ticket. No fuss, no muss. Pop a bulb into your flash holder, set the exposure, and snap away.

But for shooting at home, especially pictures of subjects that will pretty well stay put, photoflood lamps offer two big advantages. First, they're less expensive per picture. A flash lamp is strictly a one-shot affair; the most common flood lamps will give three to six hours' service. Also, flood lamps let you see exactly what your picture looks like before you snap it.

A flood is just a many times brighter version of our household light bulbs. Exposures with floods, like those with flash, will depend mostly on the distance from the lamp to the subject.

You no longer need large reflectors and stands to use floods. Now you are able to buy lamps with the reflector built right in. Although these reflector

You won't complain about the snapshots that got away when you use flood lamps. They let you see the picture just as your camera does.





While they are more expensive than ordinary photoflood lamps, reflector floods make almost any household lamp base first-rate photographic equipment.

floods cost about four times as much as equally bright lamps without the built-in reflector, the only other equipment they require is the floor lamps or goose-neck lamps you probably have around the house already.

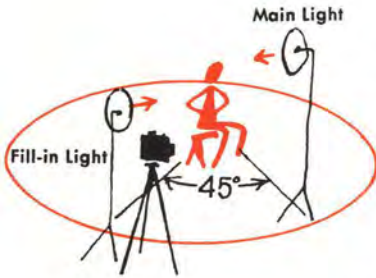
In taking flood-lamp pictures, best results are usually obtained with two or perhaps three lamps. The one providing most of the picture light is the *main* light. It's usually closest to the subject. The *fill-in* light may be every bit as bright, but it is used a little farther away and at an angle which allows it to make the shadows caused by the *main* light a little lighter. The other lights used in Flood-Lighting Recipes are self-explanatory.

floodlighting recipes

Of course one recipe won't make every kind of cake, and our few floodlamp recipes can't possibly make every kind of picture. With floods you can use your imagination and experiment to your heart's content.

Pointing the main lamp upward at the subject's face gives it a horror-picture look. Try pointing all the lamps downward on a pair of hands, keeping the rest of your subject in comparative shadow.

In all picture taking, shadows will appear darker in your pictures than they seem to the eye. Flood lamps seem to wipe out all shadow areas, but if the lights are correctly arranged, the shadows will turn up, soft and pleasant, in the print.



All the exposure data here is based on the use of either two No. 2 photoflood lamps in standard reflectors or two reflector type photoflood lamps.

basic floodlamp exposures

		Verichrome	Plus-X	Tri-X
main	3 1/2'	f/4, 1/50	f/4.5, 1/50	f/8 — f/11 1/50
fill-in	6'			
main	4'	f/3.5, 1/50	f/4, 1/50	f/8, 1/50
fill-in	7'			
main	6'	f/2.8, 1/50	f/3.5, 1/50	f/6.3, 1/50
fill-in	9'			
main	8'	f/2, 1/50	f/2.8, 1/50	f/5.6, 1/50
fill-in	11 1/2'			



Main light alone.



Main light and fill-in light.



Main, fill-in, and hair lights.



Main, fill-in, and background lights.

bringing the outdoors indoors

When enough outdoor lighting comes indoors, we can forget all about flash and flood. Of course there's daylight coming through our windows all day long, but only east windows in the early morning and west windows in the afternoon get much bright, direct sun.

With this direct light, you'll probably have to reflect some of it back into the subject's shadow side. A small, light-walled room may do the trick alone, but if conditions aren't quite this ideal, have someone hold a newspaper or large white card about two feet from the subject. You can use your flash holder, too, just as we suggested for outdoor fill-in, but here, with quarters somewhat closer, cover the front of the reflector with a thickness or two of handkerchief.

Outdoor sunlight made these snapshots possible. Kitchens are particularly good for daylight pictures because their shiny surfaces reflect lots of light.



4 where do we go from here?

the darkroom comes out of the dark



The Kodak Hobbyist Enlarger and Kodacraft Advanced Photo-Lab.



These are the days of do-it-yourself. Just about everyone seems to be a part-time painter, carpenter, or even plumber. It's not hard to add developing and printing your black-and-white pictures to those other handyman skills. In fact, you can make negatives and prints as easily as you snapped the pictures in the first place. And with an inexpensive Kodacraft outfit you'll see those pictures within a few short hours.

Kodacraft outfits accomplish one other small miracle. We don't know the statistics on darkroom widows (or widowers, for that matter), but like golf widows they're a pretty significant chunk of the population. These little kits practically eliminate this breed, and they do it by bringing the darkroom out of the dark.

Except for the brief moment required to load your film into the Kodacraft Roll-Film Tank (it comes with both Kodacraft Photo-Lab Outfits), all operations can be conducted in normal room light. The only ingredient not provided in the kits is an ample supply of running water and that shouldn't offer too much of a problem.

The Kodacraft Photo-Lab Outfit has all the chemicals and equipment for both developing and printing, while the Kodacraft Advanced Photo-Lab, which contains much of the same material, also offers a few deluxe additions. One of them is the Kodacraft Metal Printer, Model A, rather than the

Kodacraft Printing Frame. The printer is a completely self-contained unit which offers utmost ease and control in use.

If you'd like to limit your activities to print making, you can assemble your own outfit with inexpensive Kodak equipment. And when you decide you'd like to blow up those good negatives into 8 by 10-inch or even bigger enlargements, your Kodak dealer will be glad to show you the Kodak Hobbyist Enlarger. It offers a maximum-quality, minimum-price introduction to jumbo pictures you can make yourself.

how to order enlargements

A good picture is too good to be small. You'll probably want an enlargement.

Guard your negative. Keep it in a separate envelope and handle it only by its edges. Even slight scratches or marks turn into real scars in an 8 by 10-inch print.

Before taking the negative to the store where you have your enlargements made, take a good look at the original print. With two L's made of paper, move the borders of the print in. See if eliminating any parts of the picture will make a better enlargement. When you finally decide on the best borders, mark them in the white edges of the print and turn this marked print in with the negative.

You can add extra picture interest to your enlargements by cropping unnecessary outer areas.





Say, "Merry Christmas," in the way your friends will appreciate most, with a personal snapshot. Kodak Christmas Greeting Cards and Kodak Christmas Folders are a wonderful way of sending best wishes.

your camera and Christmas

Despite all good intentions, there are quite a few friends and relatives who hear from us only once a year, at Christmas time. Christmas now not only offers the opportunity to say that long-delayed "hello" but to make it a very personal one. Your nearest photographic supply store will be able to show you samples of the newest Kodak Christmas Greeting Cards. You choose your favorite design, select one of your own negatives, and decide on the quantity you'd like. In a few days the dealer will have your own photographic greetings all ready for early mailing.

P.S. And don't forget that Kodak Protecto Pocket Albums full of prints make excellent gifts at Christmas or any other time. Kodak also has a full selection of larger albums for your day-by-day family record.



Anyone in the family will appreciate a pocket album full of prints.



what makes photography work

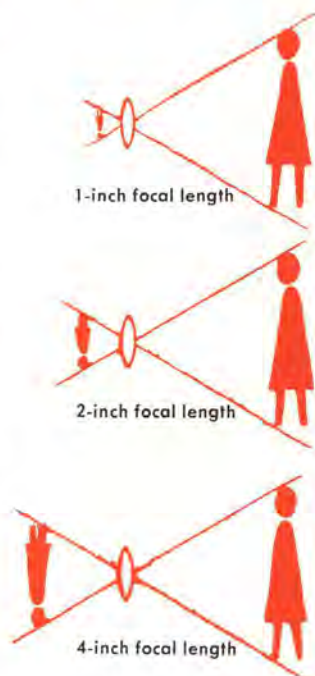
5

focal length and how it's figured

Focal length is the thing about a lens which determines just how large any object will turn out in your picture. It's the distance from the film to a certain place in the lens (your camera's lens is actually several lenses or elements mounted together—the place from which focal length is measured depends on the lens design) when the lens is focused on a far-away point. This is the ∞ marking on your camera and will be as close as the lens ever comes to the film.

There's a direct relationship between focal length and object size. A six-foot man at twenty-five feet comes out $\frac{1}{4}$ -inch high with a one-inch focal-length lens. A two-inch lens makes him twice as big, and a four-inch lens stretches him to a full inch in height.

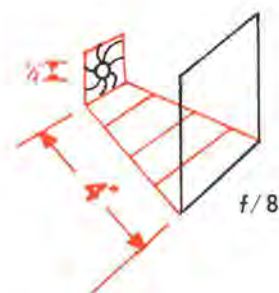
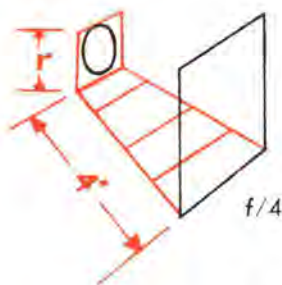
It works out, though, that for size and depth relationships which pretty well match the scene as you see it, lens focal length should equal or slightly exceed the diagonal of its camera's negative size. This is the arrangement you'll find in your Kodak camera.



what f-numbers really mean

Briefly, *f*-numbers are measurements of a lens's light-passing power. Each lens has a maximum *f*-number, as each automobile engine has a maxi-

imum horsepower, although, with the lens on your adjustable camera in mind, it's seldom necessary to call on either. Significantly, $f/4$ on one lens and $f/4$ on another one, even of different focal length, will place the same sized splash of light on a piece of film.



If a lens's focal length is 4 inches, for example, we may find its greatest effective diameter is 1 inch. This effective diameter may be either the same size as the actual diameter of the lens or larger. It depends again on lens design. The maximum f -number is the relationship between the two—4 to 1, or $f/4$. When a diaphragm which reduces its effective diameter to $\frac{1}{2}$ -inch is placed in this lens, the relationship is then 4 to $\frac{1}{2}$, or $f/8$.

Since the focal-length end of the relationship is normally fixed by the picture size, it would seem logical that the way to bring more light to the film would be by making a larger lens. Big windows, after all, do admit more light than little ones. We find, however, that as the effective diameter of a lens increases in relation to its focal length, the problem of designing it to avoid unsharpness becomes quite difficult. For this reason, cameras with $f/2$, $f/2.8$, and $f/3.5$ lenses are relatively expensive.

how film becomes a picture

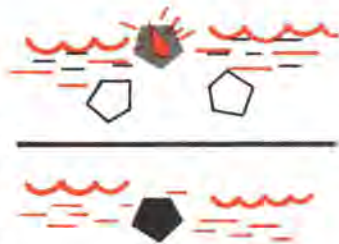
What you insert in your camera looks merely like a roll of paper, but attached inside the roll is the actual photographic film. Its working ingredient, a compound called "silver bromide," rests in a layer of ultra-pure gelatin on a clear support made of cellulose acetate. The picture reaches the film as tiny points of light. Where one of these points strikes a crystal, a reaction takes place. The other crystals remain just as they were.



When all your pictures have been taken, the film is removed from the camera in total darkness (except for Kodak Verichrome which can be handled in dim red light) and immersed in a developer solution. Here the exposed and reacted crystals break

down into black silver and bromine. The other crystals are unchanged.

In the next solution, the fixing bath, both the bromine and the unexposed silver bromide are removed. This leaves only the black silver still firmly sitting in its gelatin and forming your picture in reverse. Wherever the original scene was light there is now a grain of black silver.



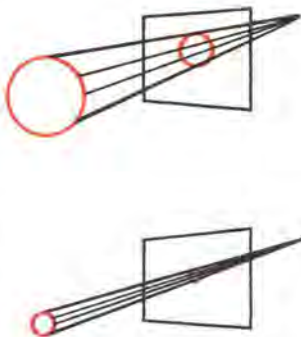
why depth of field has depth

The splash which makes your picture consists of many tiny pinpoints of light. Every part of the scene you photograph sends light through the lens, and this light results in pinpoints which occur at different places behind the lens. Objects the same distance in front, though, will always form their pinpoints in the same plane behind.

When you snap a picture with the lens focused at ten feet, everything exactly ten feet from the lens turns out sharp because its light reaches the film as pinpoints. The objects closer or farther away reach the film as small circles of light either on the way to making pinpoints or spreading out again after having made them. These are what we call "circles of confusion."

If the circles of confusion are extremely small, we can't distinguish them from the pinpoints. This makes the objects near the plane on which you focused appear to be in perfect focus, too. Other objects farther away in either direction will result in progressively larger circles until the objects begin to look fuzzy in the picture.

When the lens's effective diameter is very wide, the circles of confusion also tend to be quite large even when close to the point of focus. When the diameter is small, however, the circles are squeezed down and reduced in size. Since these smaller circles more nearly approach the size of the pinpoints, lens openings like $f/11$ and $f/16$ make it a great deal easier to get both near and far things in sharp focus.



Kodak Verichrome Film and Kodak Plus-X Film (in roll sizes only) have been replaced by a new film called Kodak Verichrome Pan. It is a fine all-round snapshot film somewhat more light sensitive (e.g. requiring less exposure) than either of its predecessors and is panchromatic (sensitive to light of all colors).

In addition there is a new Plus-X Film in 135 magazines and Kodak Panatomic-X Film, a new film made for maximum enlargability.

Although the home bases or basic exposures of these new films differ from those of the old ones, the principles explained in the first 12 pages of the booklet are as valid as ever. Here are tables of camera settings and filter information for the new films along with the pages on which the old tables appear.

		Verichrome Pan, Plus-X	Panatomic-X	Tri-X
Bright Sun (page 13)	front lighting	1/100, f/16	1/50, f/11	1/100, f/22
	side lighting	1/100, f/11	1/50, f/8	1/100, f/16
Hazy Sun (page 14)	front lighting	1/100, f/11	1/50, f/8	1/100, f/16
	side lighting	1/100, f/8	1/50, f/5.6	1/100, f/11
	back lighting	1/100, f/11	1/50, f/8	1/100, f/16

Cloudy Bright and Open Shade (page 15)

	Cloudy Bright	Open Shade
Verichrome Pan	1/100, f/8	1/100, f/5.6
Panatomic-X	1/50, f/5.6	1/50, f/4
Tri-X	1/100, f/11	1/100, f/8

Filter Factors (page 20)

	K2		G		A	
	factor	*	factor	*	factor	*
Verichrome Pan and Plus-X	2	1	2.5	1	8	3
Panatomic-X	2	1	2.5	1	8	3
Tri-X	2	1	3	1½	8	3

Floodlamp Exposures (page 26)

	Verichrome Pan, Plus-X	Panatomic-X	Tri-X
main 3½' fill-in 6'	1/50, f/8	1/50, f/4.5	1/50, f/11
main 4' fill-in 7'	1/50, f/6.3	1/50, f/4	1/50, f/8
main 6' fill-in 9'	1/50, f/5.6	1/50, f/3.5	1/50, f/8
main 8' fill-in 11½'	1/50, f/4	1/50, f/2.8	1/50, f/5.6

Flash Guide Numbers (page 22)

With Kodak Standard or BC Flash Holder and Polished Reflector			
	No. 5 or 25	SM or SF	No. 8
Verichrome Pan and Plus-X	1/25	200	110
	1/50	170	110
	1/100	150	95
	1/200	120	85
Panatomic-X	1/25	110	60
	1/50	100	60
	1/100	85	55
	1/200	65	50
Tri-X	1/25	300	160
	1/50	280	160
	1/100	240	150
	1/200	180	140



We've saved the big secrets for the end!

Maybe you think that since you aren't a professional you probably won't ever get pictures as good as the ones in this book. Here's a surprise.

- * Most of these pictures weren't taken by professionals at all. They were made by folks who snap pictures for fun, just like you do. Nearly all of them used Kodak adjustable cameras costing no more than yours.
- * You can tell, though, that these people probably brought their cameras along lots of times when you might not think of it. This helped them seize some of the wonderful, impromptu opportunities you may miss.
- * They also followed the rules of focusing, exposure and camera steadiness, and they gave some thought to backgrounds. We've helped along a little by cropping some of the pictures but you can do that with your own pictures when you order enlargements. The book tells how.

Here's the only real hint you need to make like an expert. Even the most practiced professional sometimes turns out poor pictures. He just doesn't show them to anybody. He shoots a lot and shows the best.

Eastman Kodak Company • Rochester 4, New York