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3 basics of

right shutter speed

The first basic camera control regulates the degree to which you stop action. Out of the half-dozen speed markings on your camera you must learn how to choose the one which will give you the results you have in mind as you look at the scene. How often do you want to freeze action, as in this picture made at 1/500 second? When is action best shown by blur? Which subjects can be stopped by slower speeds such as 1/25 and 1/50 second? For the answers about shutter speed turn to pages 92 and 93.

correct lens opening

The lens opening you pick determines how deep the area of sharpness will be in your picture—how much will be sharp in back of the subject on which you focus, and how much in front. Again you have a choice. But before you choose the setting, consider how your eye looks at the scene. What do you want to emphasize and make sharp: the whole area from foreground to background, as in this picture made at f/8, or just one portion of your scene? There are a number of settings between your wide open stop (often f/3.5) and the smallest lens opening (often f/16). To learn how to choose the one which will give you the depth you want, turn to pages 94 and 95.

proper camera focusing

Is it enough to focus squarely on your main subject—on a face, a child playing, a window, a boat in motion, on a tree or on a distant mountain? If you use your rangefinder or ground glass focusing mechanism correctly and shoot at the right shutter speed, these single objects will usually be sharp. But what about foreground and background? And what about less distant surrounding objects and their relationship to the over-all scene? Will these areas automatically be sharp on your film when they are important to the photograph as a whole?

Here's where you need to make full use of your third basic camera control—proper camera focusing. Correct focus allows you to place your band of sharpness just where you need it. Though lens opening determines how deep this band will be, only correct use of your focusing mechanism will position this band exactly where you want it for the most effective picture result.

Before you make an exposure look at the scene carefully to decide which areas must be sharp. Then adjust your focus to record them that way in the picture. To know just when and how to use this basic camera control turn to pages 96 and 97.

PHOTO COURSE

camera control



PHOTOS BY HAROLD FEINSTEIN

PARALLEL ACTION . . . 1/100 SEC.



. . . 1/500 SEC.



1 *Right shutter speed: your control over moving objects*

How do you want to show motion in the scene you're about to record? Sometimes the subject itself will suggest a specific treatment—blur, partial blur, “frozen” action. Or you may be influenced by your personal reaction to the situation. Whatever your choice, you must know how to set the shutter speed on your camera to get the picture result you want.

Let's suppose you want to stop motion. Why is one shutter speed effective and the other not? Why is the fun car *above* stopped at 1/500 second and blurred at 1/100? As you make an exposure a small image of the moving object is projected on your film. When the object moves the image moves. But whether this image is sharp or not depends on how far it moves across the film plane while the shutter is open. At 1/100, of course, the image moves further across the film plane than at 1/500. But when this distance is short enough, as *above* at 1/500 second, the picture looks sharp.

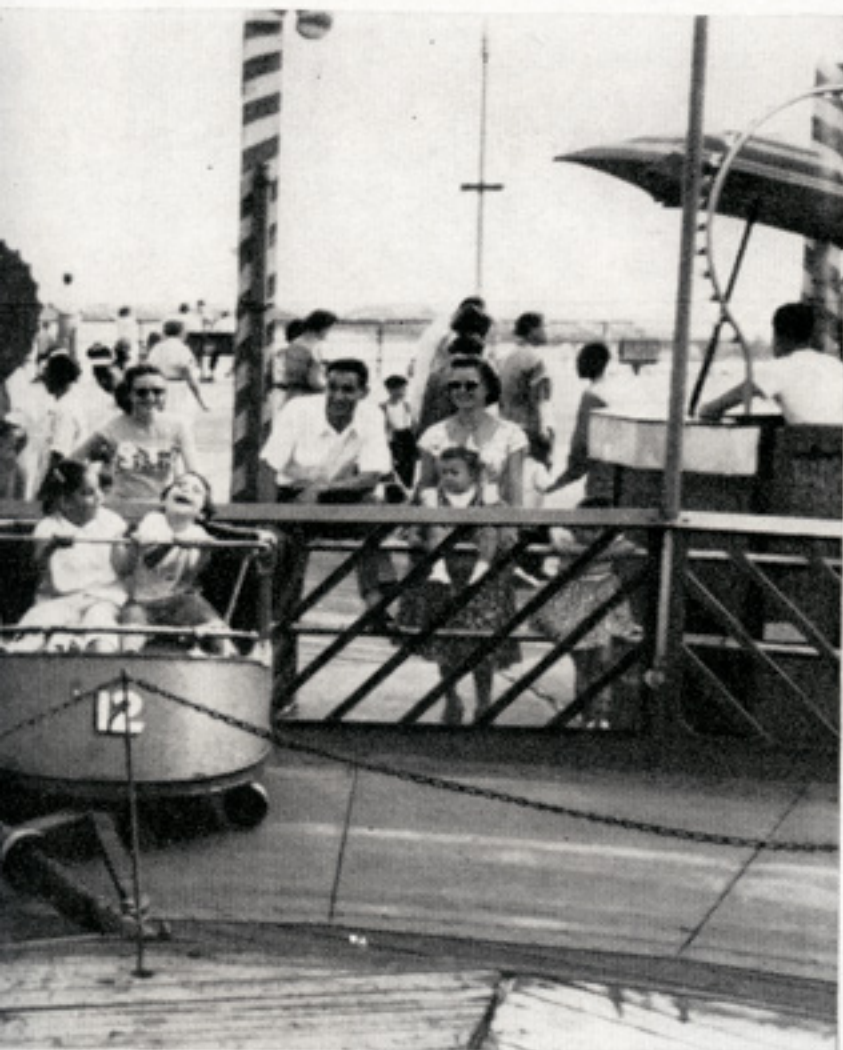
The same principle holds true for all action. If the fun car had been coming diagonally towards the camera its image would have covered less space across the film—and the photographer could have

used a slower shutter speed. By the same principle, action directly towards the camera (or away from it) usually requires the slowest shutter speed of all.

Before you set your shutter speed, however, remember that distance counts, too. Backing off from your subject reduces both image size and the distance the image travels across your film plane. The car *above* could have been stopped at 1/100 by use of a greater camera-to-subject distance.

But suppose you want to show motion by blur? For a fast-moving subject set shutter speed one, two or three speeds slower than the one required to “stop” action. Pick the one which will give you the exact degree of blur you want.

Blurring the background is another story. Ever notice how you move your head to follow rapid action and see it clearly? When you swing your camera to follow motion it's called “panning,” and you get an effect like *above, opp. page*. By moving the camera with the action you actually reduce the distance the image travels across your film plane. The moving object is sharp. You get a real feeling of motion. And best of all you can use a slow shutter speed, like 1/25 second.



TOWARDS CAMERA . . . 1/50 SEC.



. . . 1/200 SEC.



One scene, several rates of motion? What do you do?

Here's a problem faced by everyone who photographs motion. Unless your scene is highly unusual you'll find not just one—but at least two rates of motion in the same picture area. Often these are part of the main subject. Take the situation at *left*. There are three rates of speed in the center of interest: the moving cart, the child's arms in action, the sway of her body.

Oldtime advice was: use a shutter speed which will halt the fastest action. For many situations this is still sound technique. But is it the right treatment for all pictures? Must everything be dead sharp as in the exposure made at 1/200 (*left below*), or totally blurred as in the 1/50 second exposure (*left*)?

That depends on the setup, *and* on what you want to get across. If partial blur fits the picture mood better than complete sharpness, set your camera according to the technique for blurring a fast-moving object, described on the *opposite page*.

Choose a speed which will blur the objects you want to blur, and leave others sharp. In the case *at left*, 1/100 sec. would do the trick if you wanted to show arms blurred, but the car sharp. All other things being equal (shooting distance and rate of motion), you'd need a faster speed to stop motion if the cart were traveling parallel to your film plane. For the reasons why this is so, see text on the *opposite page*.

LENS OPENING: $f/3.5$



LENS OPENING: $f/16$



2 *Correct lens opening: your control for depth of field.*

Let's talk terms for a moment. Lens opening (or f /stop) regulates the intensity of the light which reaches your film. When you move the marker on your camera from a large lens opening to a smaller one—from say $f/2$, 2.8, or 3.5, towards $f/8$, 11, 16—you *decrease* the intensity of illumination which hits the film emulsion.

But something else happens, too. The area which seems sharp (beginning in front of the point on which you focused, and ending behind it) is extended. Your "depth of field" becomes greater in a picture made at $f/16$ (*above right*) than in one photographed at $f/3.5$ (*above*

left). And depth of field at a given f /stop increases as your camera-to-subject distance increases.

What does this mean to you as a photographer? How can you use this control over depth to make your photographs say what you want them to say? There are plenty of times when over-all sharpness is acceptable but doesn't do the most for your subject. One answer is to throw background or foreground out of focus by reducing your depth of field. What you're doing is contrasting a sharp area against a fuzzy one, to put the accent where you want it. The possibilities are unlimited.

Which lens opening should you use for the exposure?

Exposure meter in hand, you see a dial with at least a dozen f/stops (and corresponding shutter speeds) you could use to make the picture. Which one should you choose?

Getting enough light to strike the film is no real problem. From the sample set of five meter combinations (shown at *right*), plus the pictures made using each one, you can see that about the same amount of light strikes the film in each case.

The exposures are equivalent because f/stop has been shifted in inverse proportion to shutter speed. As your speed is moved to 1/100 to let light fall on the film twice as long as at 1/200, the f/stop is made one full stop *smaller*, to cut the light's intensity in half. This balance is maintained all the way down the line. And each f/stop change shown here is one full stop smaller than the one shown above it.

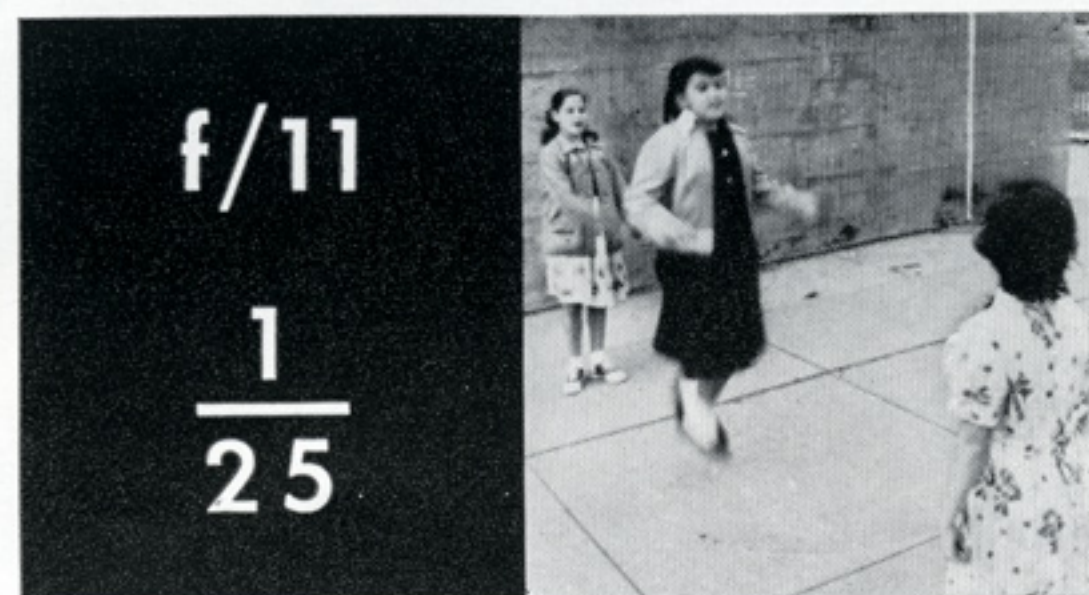
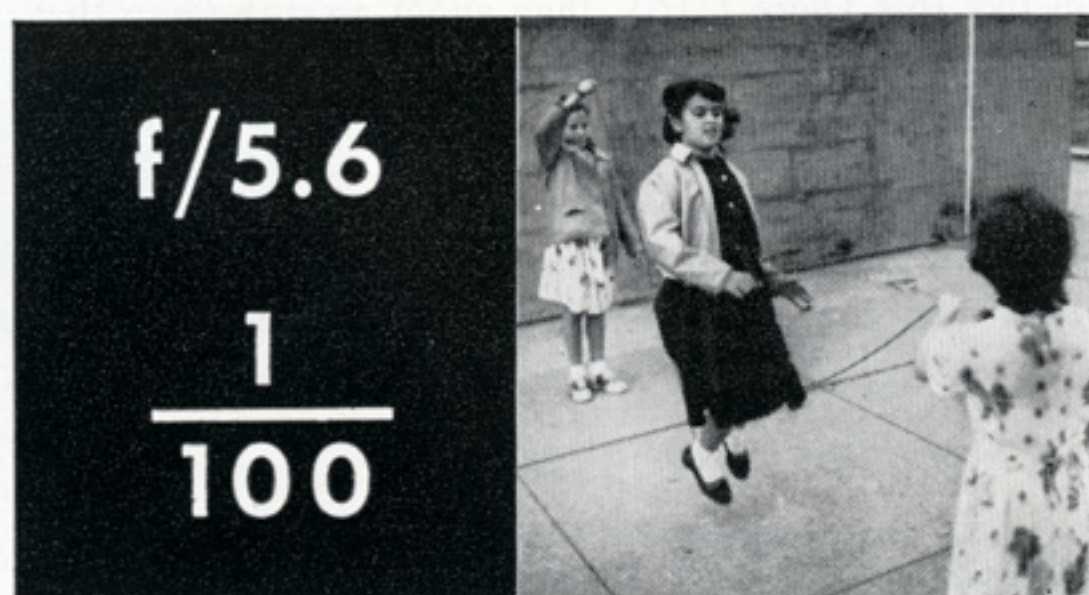
Which are the full stops on *your* camera? Sometimes you're shooting fast and want to alter the settings without consulting your meter. In the series of f/stops shown at *right*, you'd have an additional full stop between f/2.8 and f/4, the largest lens opening shown. But when your camera starts at f/3.5, it runs a bit differently: half stop to f/4—then full stops as shown at *right*. For the record, a half stop separates each of the following: f/4, f/4.5, f/5.6, f/6.3, f/8.

When lens opening comes first

Whenever depth of field is paramount and there is no rapid motion in the scene, f/stop takes precedence over shutter speed. This is the time to make use of a depth of field scale like the one shown on *page 96*. Most modern cameras have them, and they're usually on the lens barrel or on the side focusing knob. After you've focused on your subject you can use this scale to see at a glance just what your depth of field will be at a given stop. If it isn't enough you can pick the stop which will give you the exact depth of field you require for your picture.

F/stop or shutter speed?

Choice of shutter speed, however, can be your first consideration when you're shooting rapid action and depth of field is not a factor. But a scene requiring both greater depth of field plus fast shutter speed is often a problem. Here's where you have to compromise. The scene at *right*, for example, contains each of these elements to a certain degree. To handle similar situations: use your depth of field scale, follow instructions for shooting moving objects shown on *pages 92 and 93*—and play it safe by making several shots of the same scene at equivalent exposures.



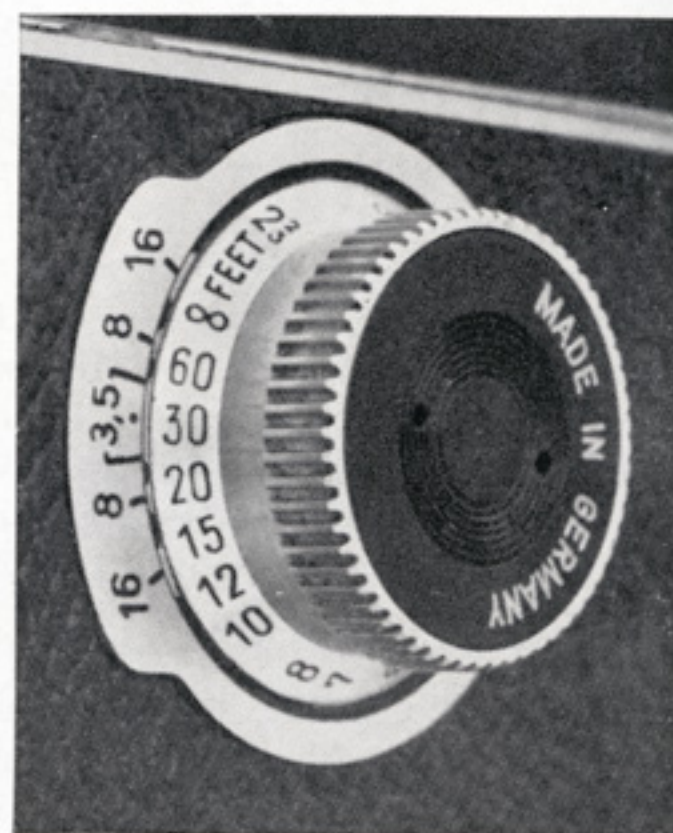
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It doesn't always, in this hit or miss way of shooting. Sometimes as *below*, most of the depth of field falls outside the picture, and a foreground object like the boat may be annoyingly out of focus.

How can this happen when lens opening is set at

f/16—an opening which provides great depth of field? A quick look at the depth of field scale (*below*) tells the tale. With the focusing scale set at 30 feet for the boys, and lens opening at f/16, *only* objects between 15 feet and infinity could possibly be sharp. The boat in the foreground occupies a space between 10 and 13 feet. It is excluded from the sharp area on the scale. It therefore appears out-of-focus on the print.

Is there any solution when you've stopped down as far as you can go—but your picture still isn't sharp from



DEPTH OF FIELD
SCALE SET AT 30 FT.

