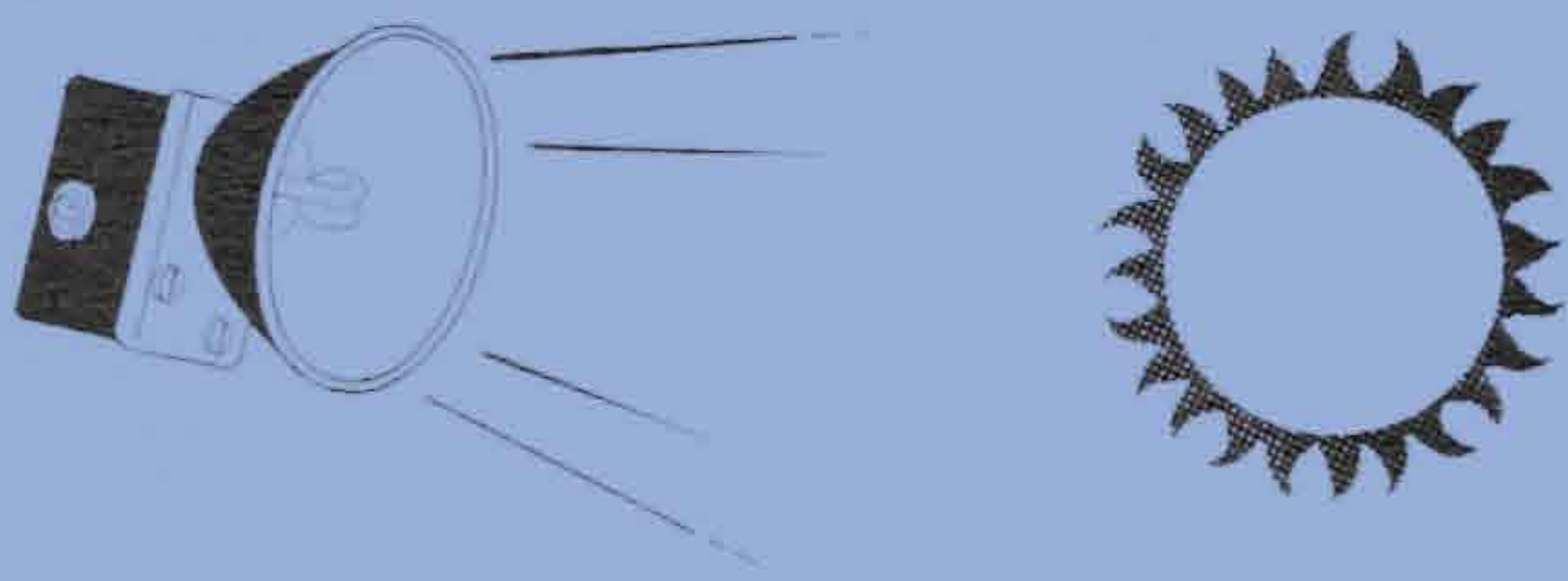
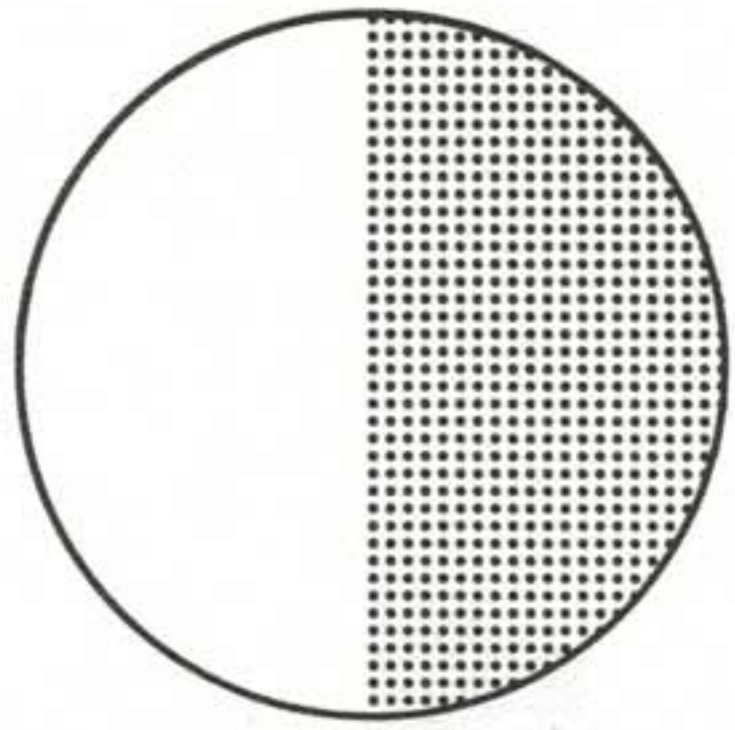


SYNCRO SUNLIGHT

MIXING STROBE WITH SUNLIGHT

NORMAN ENTERPRISES
1268 HUMBRACHT CIRCLE
BARTLETT, IL 60103



ARRIVING AT A LIGHTING RATIO

Lighting ratio is the relationship between illumination created by the key and fill light sources. The ratio you select will be governed by the film used, type of daylight (such as cloudy days versus crisp sunny days) and the lighting effect you desire in the photograph.

Some photographers use a 3 to 1 ratio, which means the exposure created by the fill light is 50% (one F stop) less than the illumination created by the key light. This is called 3 to 1 rather than 2 to 1 ratio because the fill light is adding illumination to the highlights as well as the shadows. These two units of key light added to one unit of full light make a total of three light units, giving us a 3 to 1 ratio as shown in figure 1.

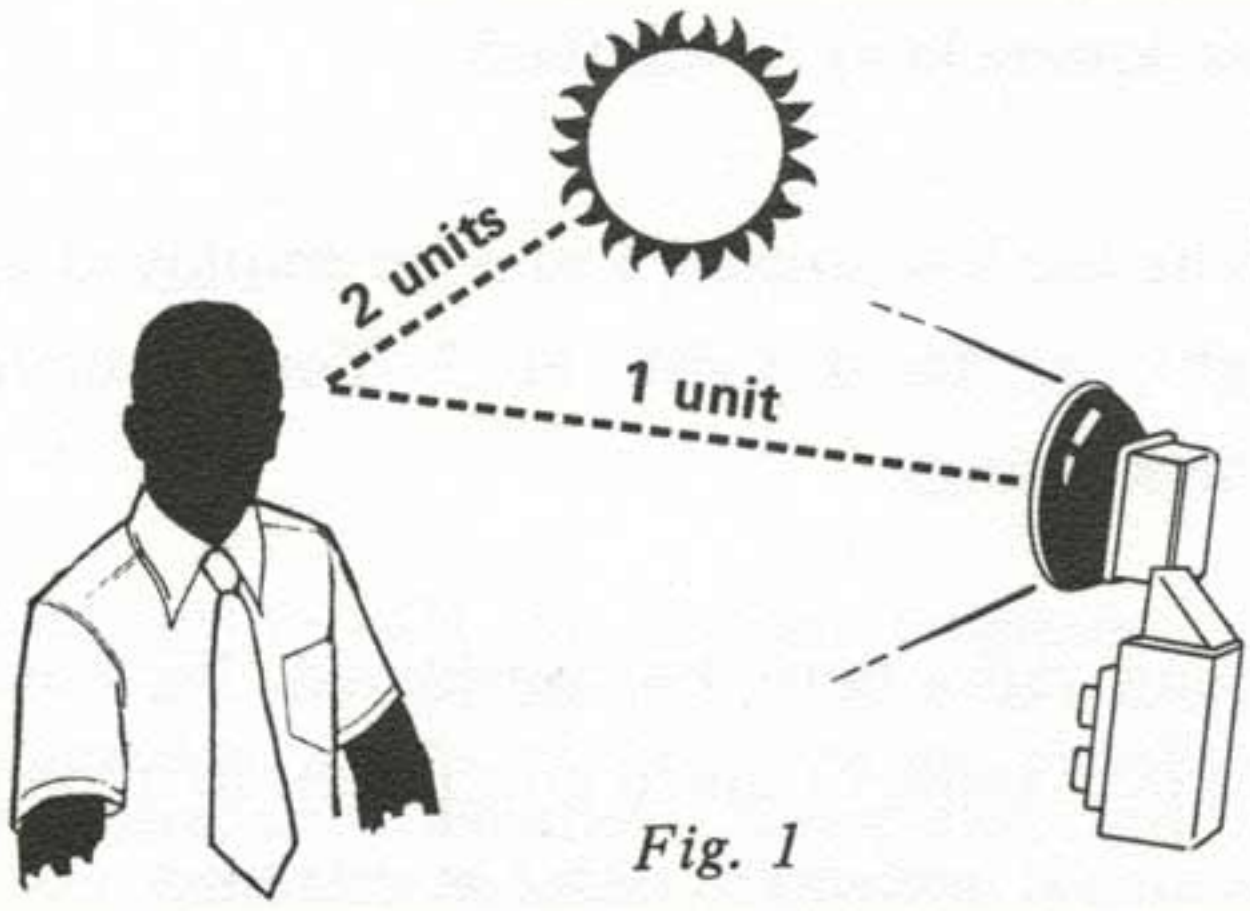


Fig. 1

Many photographers use a 5 to 1 ratio with syncro-sunlight. This means the key light provides 4 times greater illumination than the fill source. In other words, the fill light is 25% of the key or 2 F stops less. This 5 to 1 ratio is especially useful on hazy or cloudy days where the soft 'north light' effect requires very little fill in.

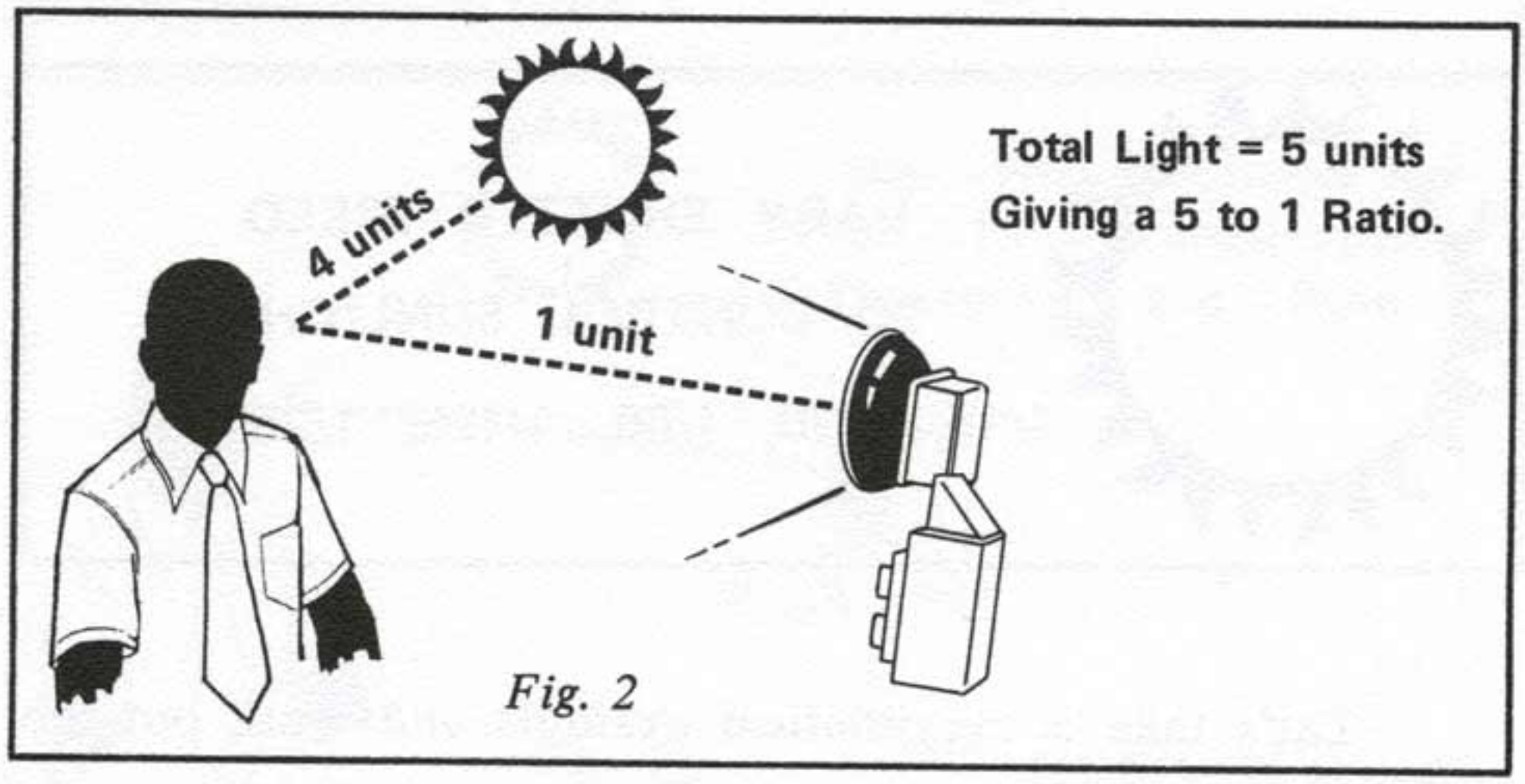
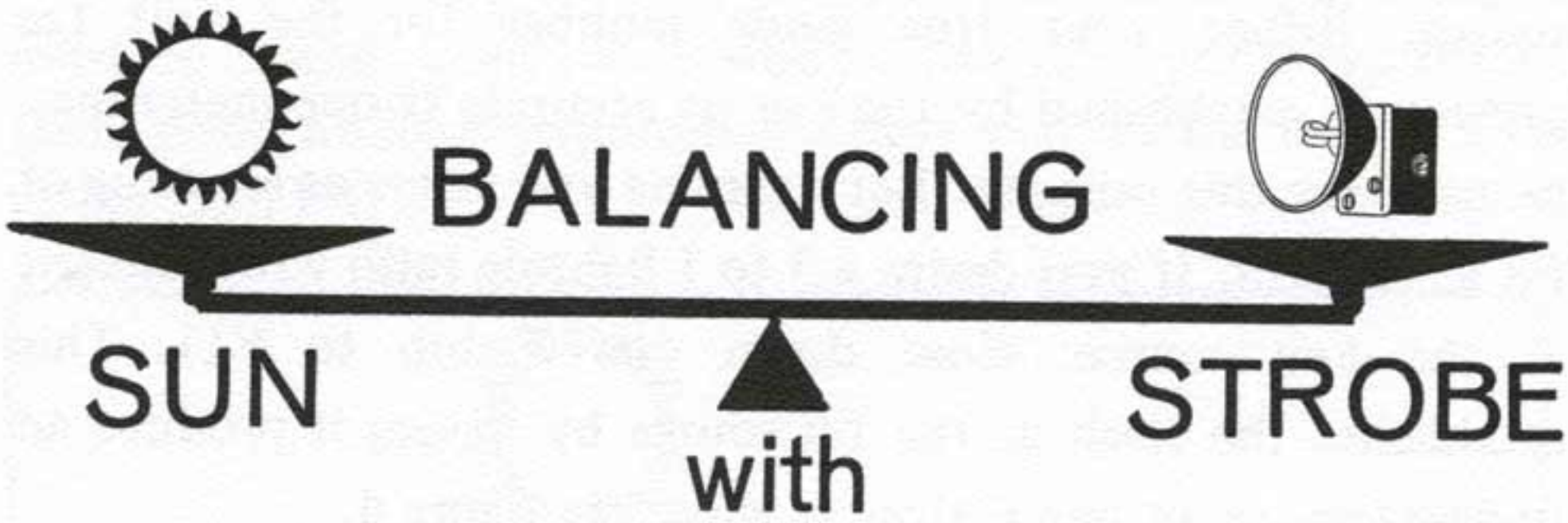
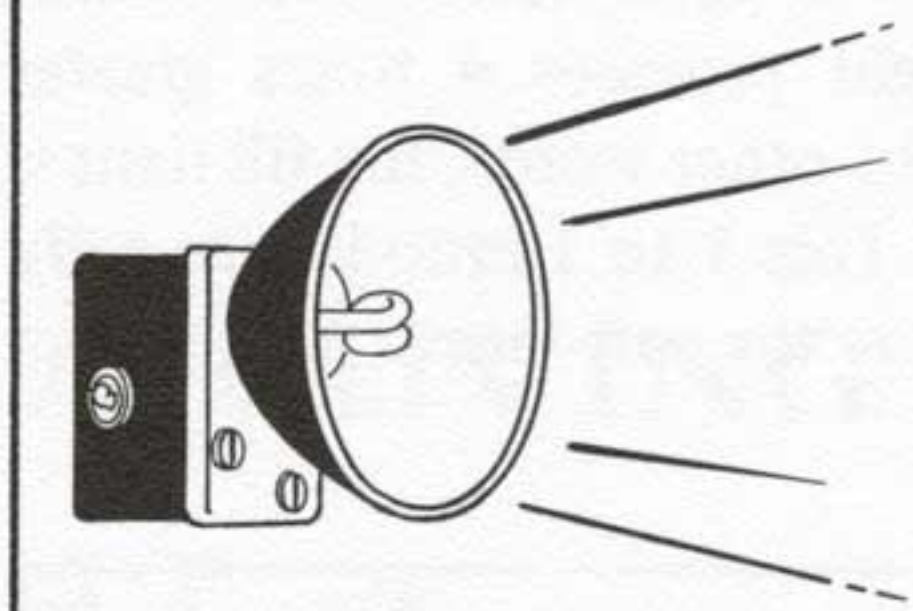


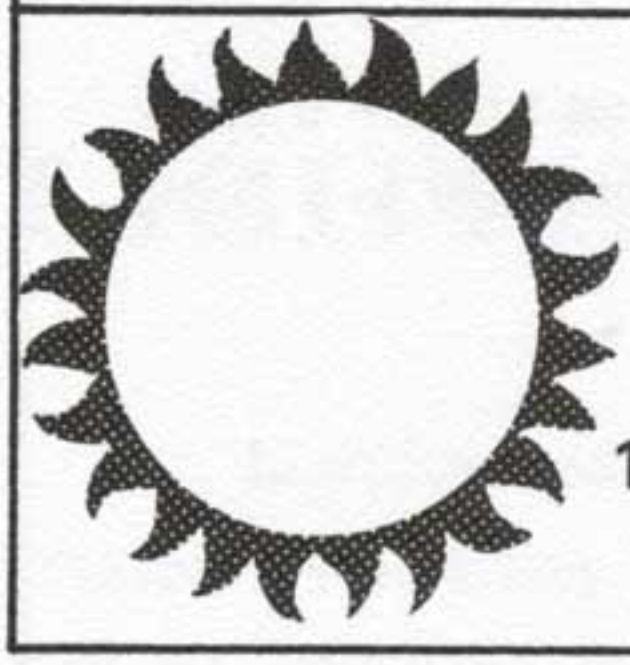
Fig. 2



If you choose sunlight as your key source, the electronic flash output will be used for balancing the desired lighting ratio. A simple rule to remember for balancing light is that you vary lens opening to control the effect of electronic flash. You vary shutter speed to control the effect of sunlight. See figure 3. Increasing the shutter speed decreases the effect of sunlight on the photograph, but has very little or no effect on the amount of flash recorded by your film. It should be noted, however, that cameras with cloth focal plane shutters generally do not sync with electronic flash at shutter speeds faster than 1/60 second. Copal shutters sync only at about 1/125 second.



VARY F STOP
TO CONTROL FLASH
f4, f5.6, f8, f11, f16 etc.



VARY SHUTTER SPEED
TO CONTROL SUNLIGHT
1/15, 1/30, 1/60, 1/125, 1/250 etc.

Fig. 3

Let's take a hypothetical example and work out the details. First, you determine the F stop required to properly expose the film, using the electronic flash as your only light source. Either your true guide number for the unit (as previously established by test) or an accurate strobe meter may be used for this purpose. Let's assume you arrive at a setting of F8 at six feet. If you desire a 3 to 1 lighting ratio with sunlight as the key source, close down one F stop to F11. This establishes the flash as the fill source by having it produce an underexposure of one F stop, as shown in figure 4.

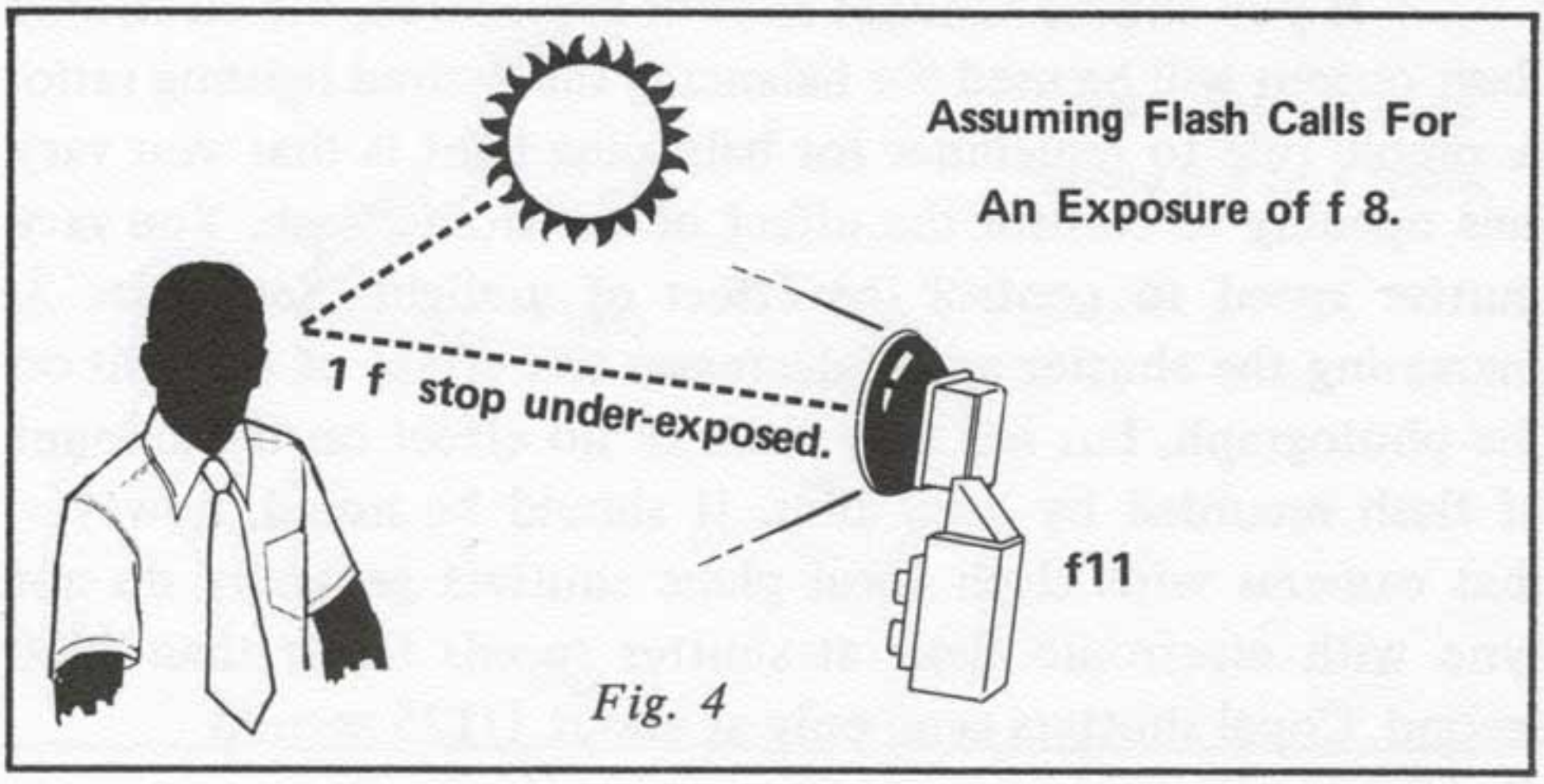


Fig. 4

Next, use an incident-type light meter and read the sunlight in order to determine the shutter speed required when using F11 as your lens opening.

Let's say the meter indicates a shutter speed of 1/125 second when aperture is stopped down to F11. Simply use these indicated settings, and the proper exposure and balance will be achieved as shown in figure 5.

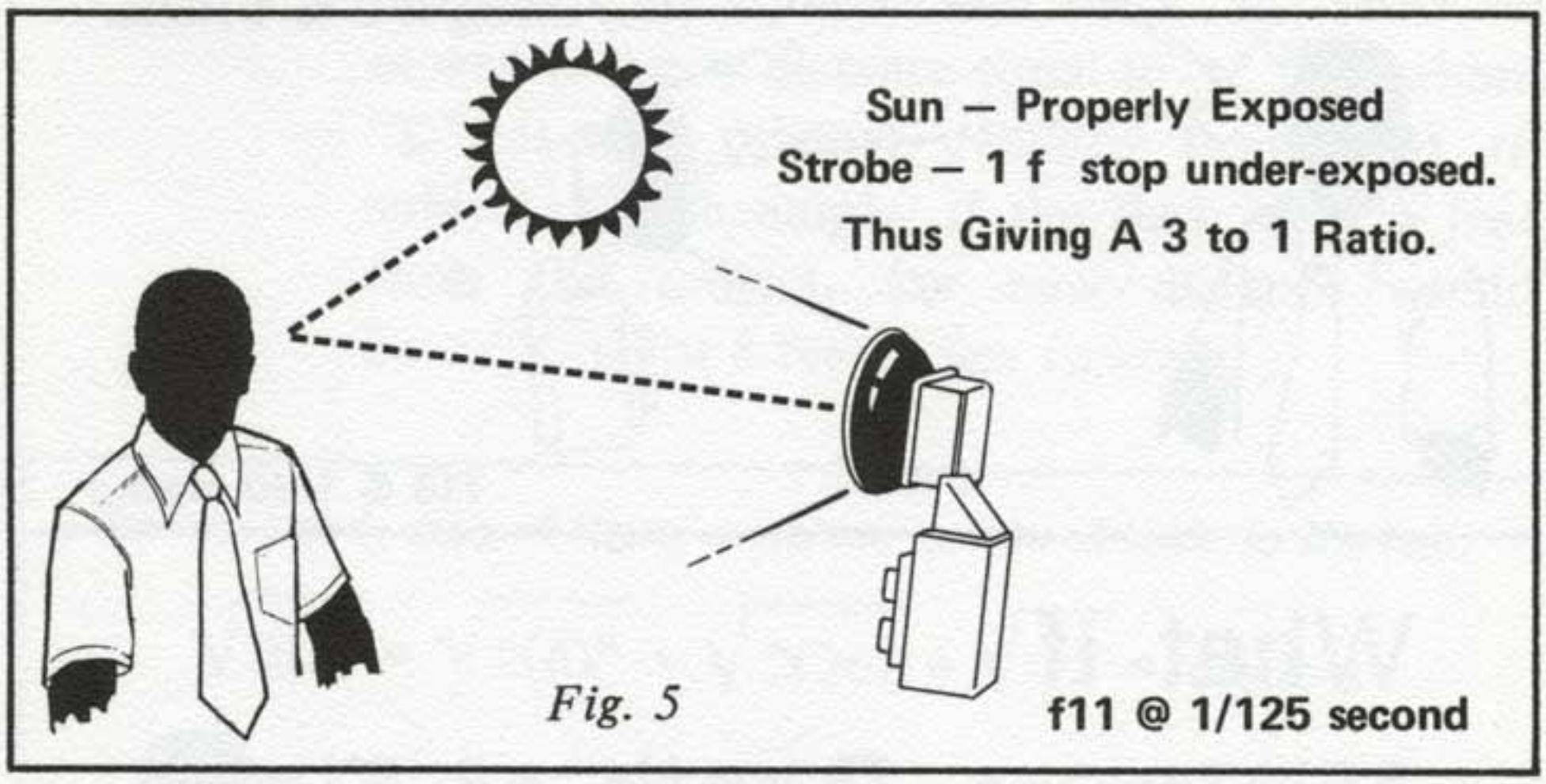


Fig. 5

If you desire a 5 to 1 ratio, the camera lens diaphragm must be closed down two F stops below the normal electronic flash guide number requirement; thus you set the lens at F16 rather than F8.

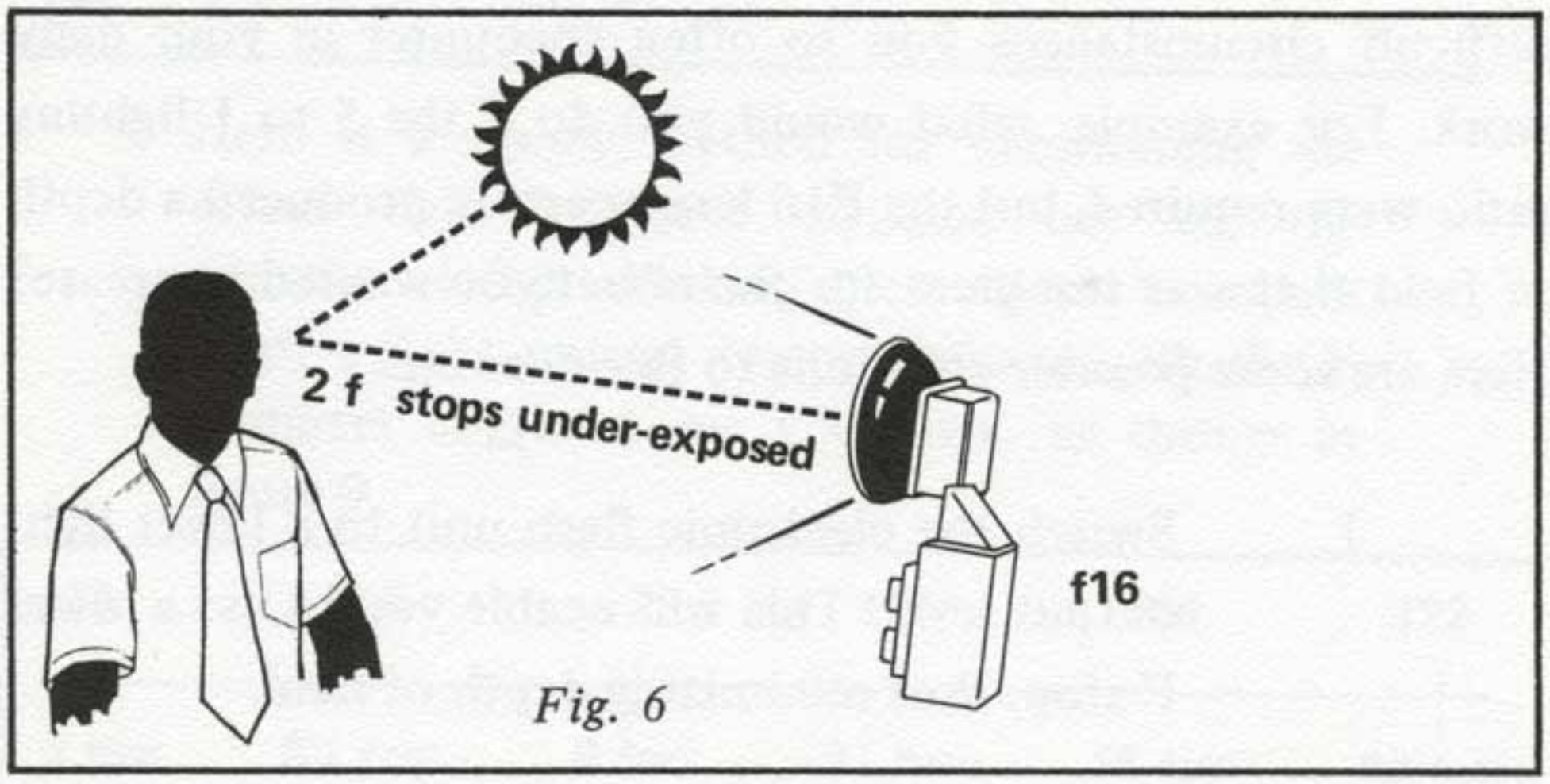


Fig. 6

One step-saving rule to remember when using a 5 to 1 lighting ratio is to double your normal electronic flash guide numbers. This automatically yields the two-stop diaphragm reduction needed for proper balance.

Just as before, use the incident light meter and determine the correct shutter speed for F16. This will be 1/60 second, provided the sunlight hasn't changed.

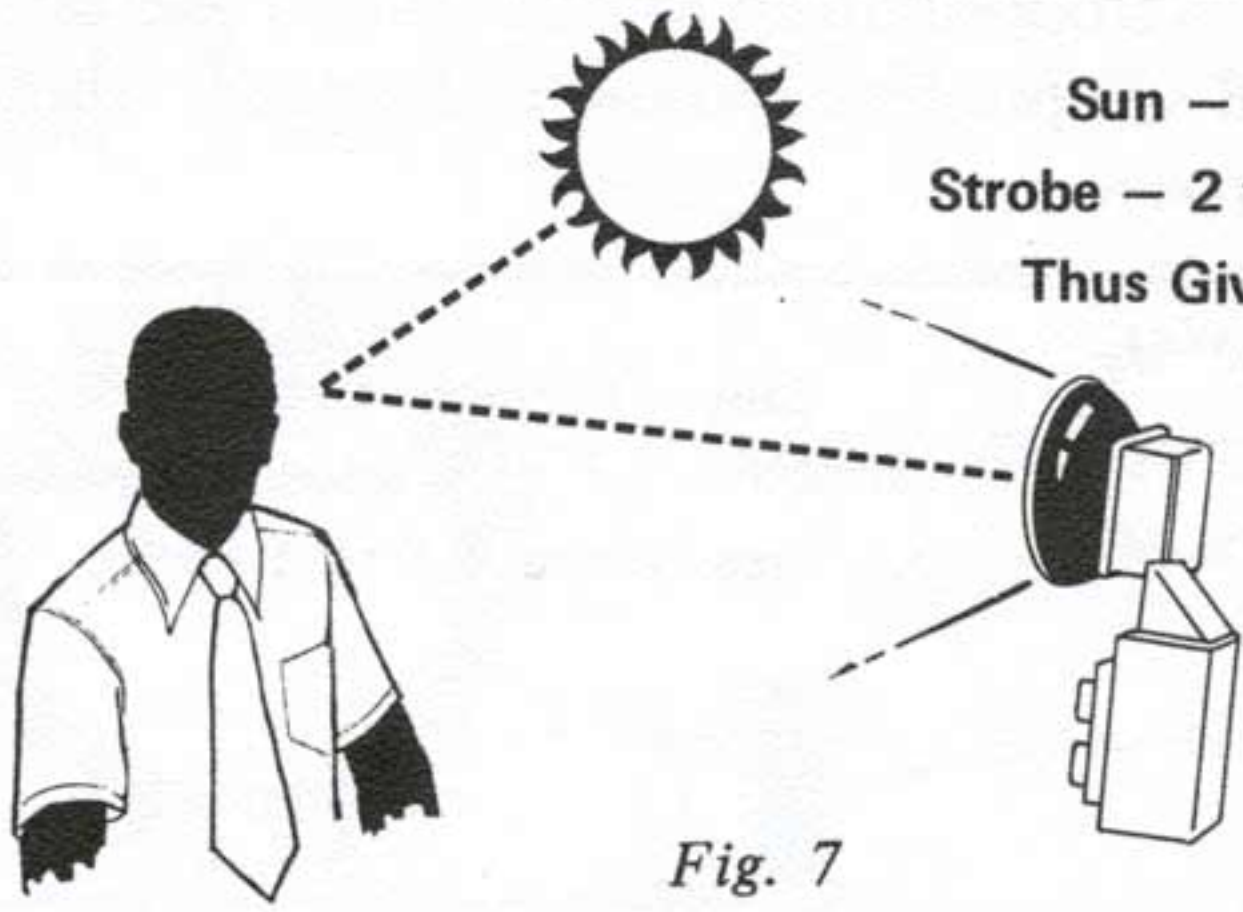


Fig. 7

What if Minimum Depth of Field is Needed?

The data we have covered thus far does not reflect those difficult circumstances you so often encounter in your daily work. For example, what would you do if the 5 to 1 lighting ratio were required, but the F16 lens aperture produced a depth of field that was too great for the effect you wanted to create? Here are some possible solutions to this dilemma.

1. Switch the electronic flash unit to a lower light output level. This will enable you to use a lower F stop, thus minimizing depth of field.

2. Place a diffuser over the lamphead reflector, thus reducing the light output and allowing you to use a larger lens opening.

3. Place a neutral density filter over the camera lens. This will of course reduce the effective output of both the electronic flash and sunlight.

4. Move the electronic flash back from the subject. Doubling this distance will give an effective reduction of two F stops. If a one F stop reduction is required, the flash unit must be moved to a new distance equal to $\sqrt{2D^2}$, where "D" is the original distance from light to subject. For example, if the flash were 6 feet from the subject, the new distance would be $\sqrt{2(6)^2}$ or 8 feet. See figure 8.

To lose one f stop of light, move the lamphead back to 8½ feet.

$$\sqrt{2D^2} = \sqrt{2(6)^2} = \sqrt{2(36)} = \sqrt{72} = 8\frac{1}{2} \text{ feet}$$

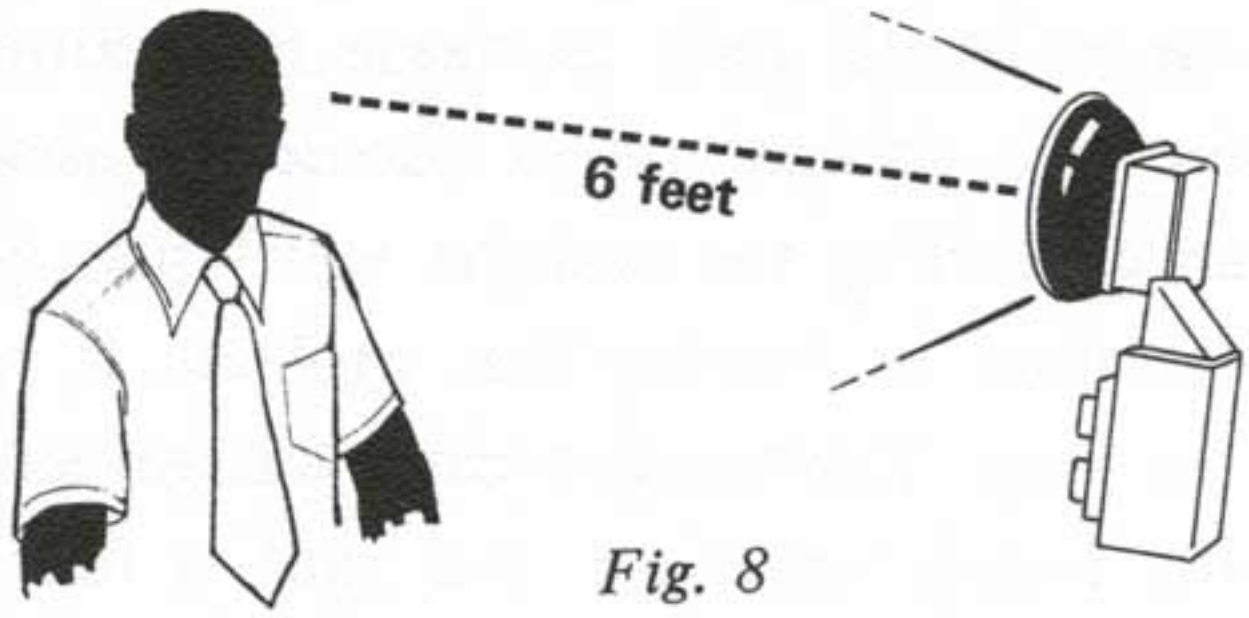
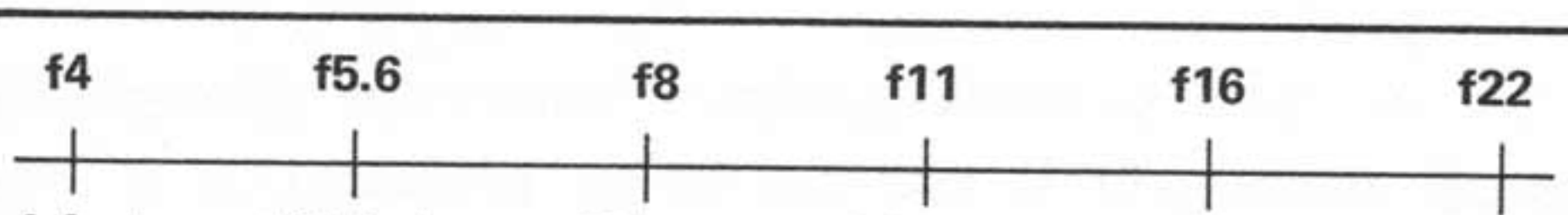


Fig. 8

Here is a simple method for determining the effect light-to-subject distance has on the amount of light striking the subject. Correlate relative light output versus distance with the F numbers engraved on your lens as shown in figure 9.



Moving the light from 4 feet to 5½ feet reduces output by one f stop and from 5½ feet to 8 feet results in a further reduction of one f stop, etc.

Fig. 9

WHAT IF THE SUBJECT IS IN

MOTION

What if the subject is in motion and the relatively slow shutter speed will not freeze the action? The resultant photograph may have a ghost image at the point of motion. You may wish to use the electronic flash as the key light source, thus enabling the short duration of the flash to freeze the action. This, however, will cause the background to assume the same general exposure as that created by the sunlight, which may be undesirable. Another method of solving this problem is to reduce the output of the flash. This works because a larger lens opening is required for proper exposure and thus a faster shutter speed is needed to expose properly for sunlight.

YOUR SKILL IS NEEDED!

As you probably noticed, syncro-sun photography requires much skill if you are to be proficient at it. The information contained herein should be second nature if you are to apply it effectively in your everyday work. Your reward will be the results obtained from applying these principles to many hours of practice and experimentation.