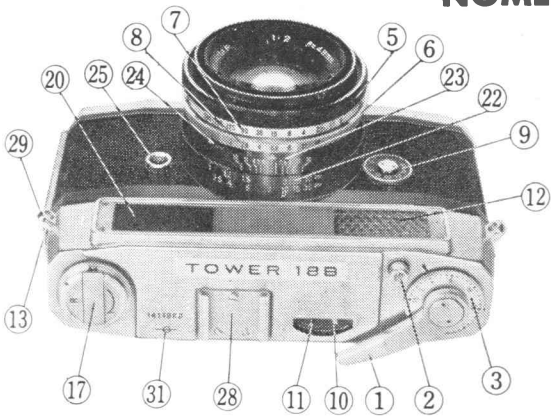
NO. 18B

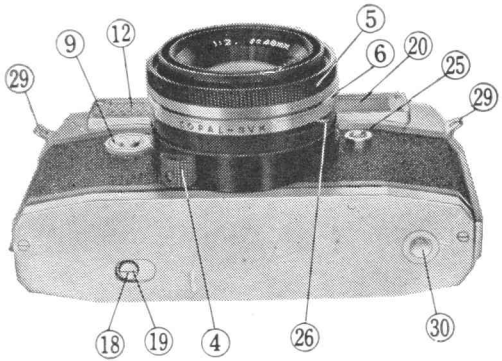
TOWER

35mm CAMERA

User's Manual

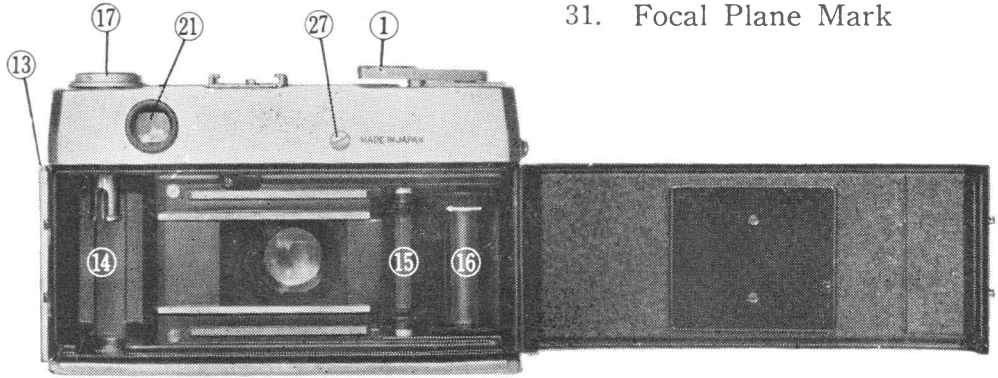
NOMENCLATURE





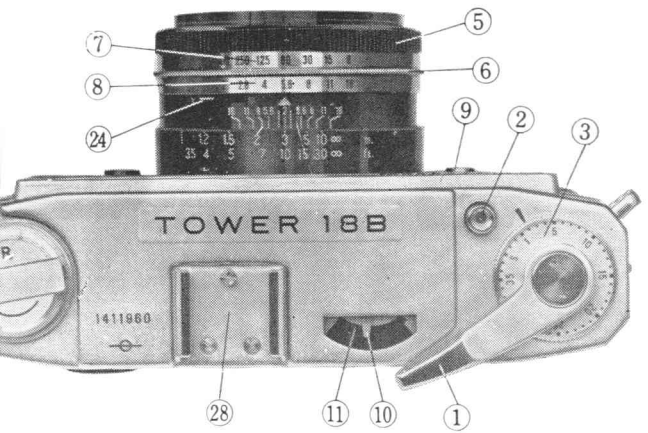
1. Cocking Lever
2. Shutter Button
3. Exposure Counter
4. Focusing Lever
5. Exposure Control Ring (Aperture Adjustment)
6. Shutterspeed Control
7. Shutterspeed Scale
8. Aperture Scale
9. Filmspeed Dial
10. Exposure Control Pointer
11. Meter Needle
12. Photocell Window
13. Backlid Catch

14. Cartridge Chamber
15. Sprocket
16. Take-up Spool
17. Rewind Crank
18. Sprocket Release Button
19. Rewind Indication
20. Viewfinder Window
21. Eyepiece
22. Distance Scale
23. Depth of Field Scale
24. Synchroflash M-X Adjustment
25. Synchroflash Terminal
26. Self-timer Lever
27. Zero Point
28. Accessory Clip
29. Strap Eyelets
30. Tripod Socket
31. Focal Plane Mark



GENERAL DESCRIPTION

CAUTION: Read these instructions carefully for a thorough understanding of the functions of this camera before trying out the actions of the cocking lever (1), dials, and controls.



CROSS-COUPLED EXPOSURE METER The TOWER 18B has a built-in wide-range exposure meter which permits an extremely broad range of light-intensity measurement and exposure control without shift of scale. Simple, botherfree operation is possible with all types of subjects, from bright snow scenes and beach shots down to darkly lit interiors where full aperture and slowest shutterspeed must be used even with high-speed (ASA 100 and up) film.

To use built-in exposure meter for

automatic exposure control.

1) **First set the filmspeed dial** (9) **to the ASA rating of the film in use.** Unless this is done, the cross-coupling of the meter indication with the exposure controls (shutterspeed and aperture dials) will be out of step.

2) Train camera on the subject, making sure that the photocell is not obstructed. The meter needle (11) will immediately indicate the brightness of the subject-matter.

3) When the exposure control ring (5) is adjusted, the aperture scale (8) shifts in the opposite direction, while the exposure control pointer (10) at the top of the camera also turns. The exposure control pointer (10) can therefore be easily brought into accurate alignment with the meter needle (11). When this is accomplished, the controls are set for correct exposure of the film.

4) When alignment cannot be effected without running out of the aperture scale (8), shifting the shutterspeed control (6) to a lower or higher setting will facilitate adjustment.

COCKING ACTION Holding the camera in both hands, hook right thumb on cocking lever (1), and push it through an arc of 180° till it comes to a stop. This action advances the film one frame, cocks the shutter, and shifts the frame counter up one step. At completion of stroke, the lever will spring back to

its original position. Cushion this return action with thumb. Once the camera is cocked, the cocking lever remains locked until the shutter is released.

COUPLED RANGEFINDER Moving the focusing lever (4) back and forth will cause the lens-shutter assembly to move in and out. This movement is linked with the rangefinder system, and the coupled action can be seen in the changes that occur in the double-image focusing spot at the center of the viewfinder field. Sight subject through eyepiece (21), and adjust focusing lever (4) so that overlapping images of the subject in the focusing spot merge. At this point the subject is in proper focus, and the distance between the camera (focal plane mark (31)) and the subject is indicated on the distance scale (22). The focusing range is from infinity (∞) to 3.5 feet.

FILM REWIND To return exposed film from take-up spool (16) to safety cartridge, press sprocket release button (18) to disengage sprocket (15) from filmwind mechanism. Erect rewind crank (17) and turn clockwise in direction of arrow mark. Do not touch sprocket release button (18) or rewind crank (17) while there still remains unexposed film in the camera. During rewind action, the red mark on the rewind indication (19) will turn to show film is being played out of the take-up spool (16) through the freed sprocket (15). The depressed sprocket release button (18) will spring out automatically

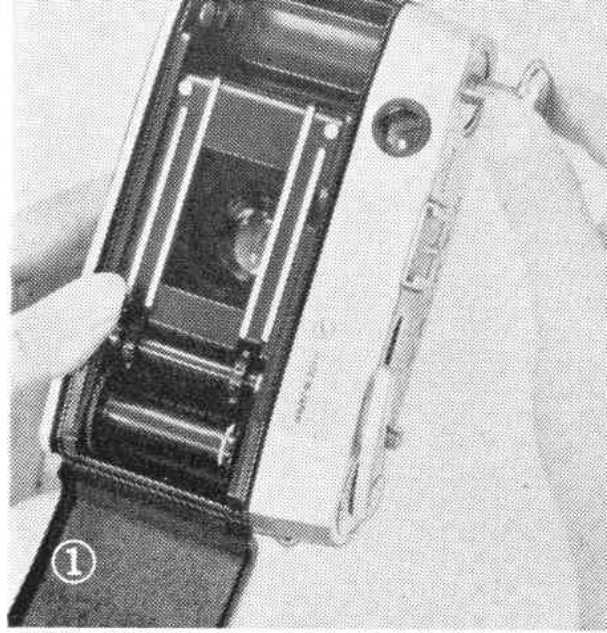
upon operation of the cocking lever (1).

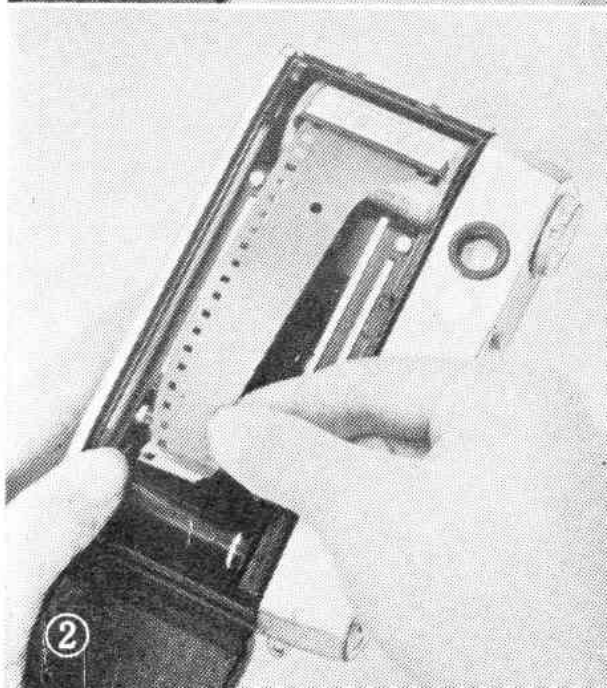
FILM LOADING

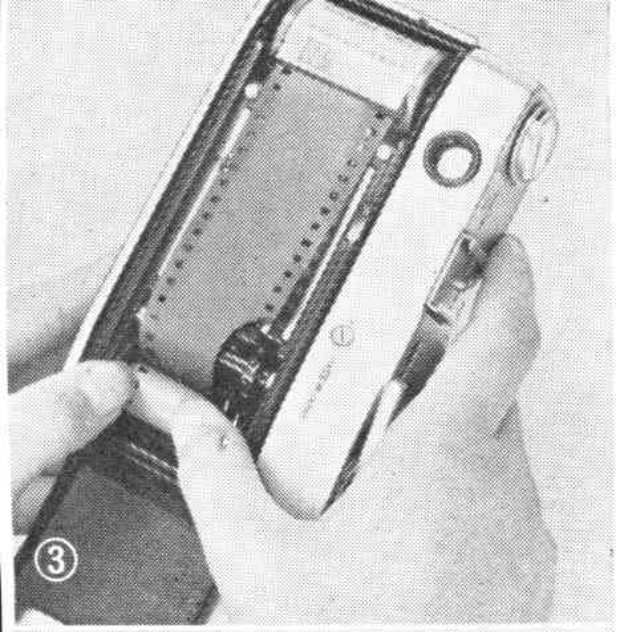
The 35-millimeter film used in the TOWER 18B is standard monochrome or color film (20 or 36 exposures), preloaded in safety cartridge. Always avoid direct sunlight when loading or unloading camera. Work in the shade, using own body if necessary.

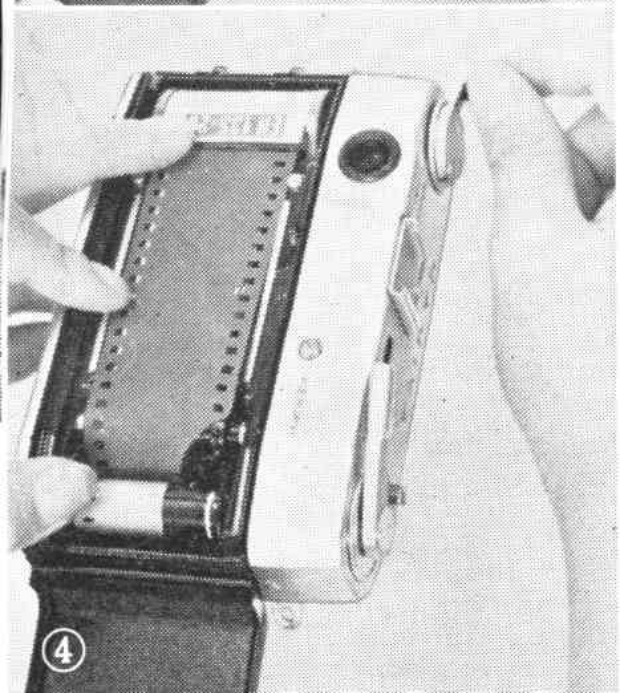
1. Pull upward backlid catch (13) to release backlid which will swing open. Pull out rewind crank (17) so that its spindle does not protrude into cartridge chamber (14) (Fig. 1).

2. Place safety cartridge containing unexposed film in the cartridge chamber, seeing that it is positioned correctly. Push in rewind crank fully so that it is back in original position. If crank will not seat properly, turn in either direction; it should fall into position with a distinct click. Pull out about four inches









of film and fold back about a quarter inch of the end toward the glossy film base side (Fig. 2).

3. Applying thumb to lower flange of the take-up spool (16) turn toward filmgate as indicated by arrow, and when slit of take-up spool is in convenient position hook folded end of film onto the slit and wind at least one turn with assistance of fingertip. Keep bottom edge of film up against the lower flange of the take-up spool, and see that film perforations engage teeth of the sprocket (Fig. 3).

4. Holding film taut and in position, check safety cartridge, then turn rewind crank (17) clockwise, as indicated, to take up all slack (Fig. 4).

5. With slack gone, turn take-up spool (16) slightly with thumb to see that film and sprocket (15) are properly engaged, and that the rewind crank (17) turns counterclockwise with the film feeding smoothly out of the safety cartridge. Close backlid, which will catch when pressed down. If, when closing backlid, the

perforations on both sides of the film are caught on the sprocket, the full number of exposures may not be available because too much film has been wound onto the take-up spool.

6. Turning the milled flange under the cocking lever (1) counterclockwise. set the exposure counter (3) so that it indicates "S" (start).

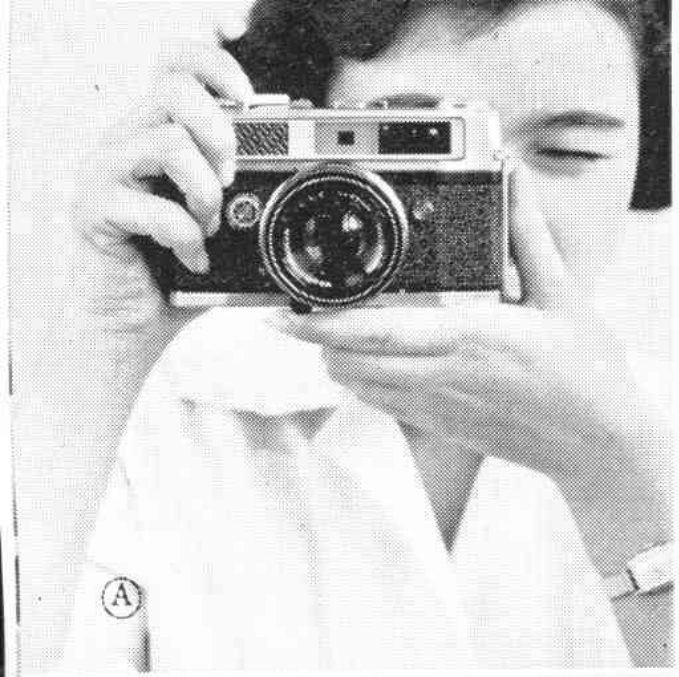
7. Preferably keeping the lens covered, operate cocking lever (1) and shutter button (2) three times until numeral 1 is indicated by the exposure counter (3). The camera is now ready for the first picture.

8. When, during cocking action, the film is being taken up properly, the rewind crank (17) will turn counterclockwise (against the arrow indication). If there is no motion, rewind film, taking care that end is not wound into the safety cartridge; open backlid, and repeat loading procedure. Do not turn rewind crank (17) counterclockwise while picture-taking.

9. After loading, **always** turn filmspeed dial (9) to correct ASA setting.

CAMERA GRIP

Any comfortable and relaxed manner of holding the camera will do, so long as the camera can be kept perfectly steady, and the fingers do not obstruct the viewfinder and rangefinder windows.



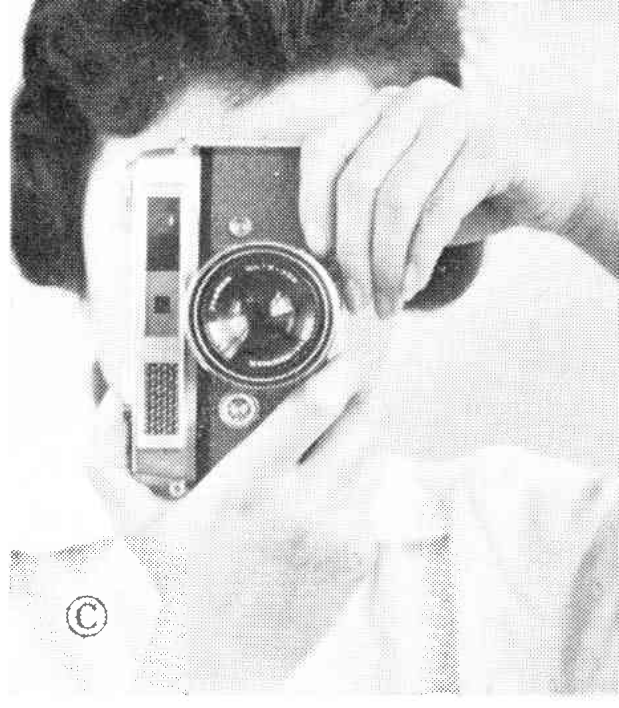
Grip camera from the sides with both hands, so that index or middle fingers of the left hand catches on the focusing lever (4), while the right thumb is hooked lightly on the cocking lever (1), and the right index finger rests lightly on the shutter button (2).

1. **For horizontal pictures,** bring camera up to eyelevel without changing grip. Close left eye, and sight with right eye through the eyepiece (21). Keep elbows close to body for maximum steadiness, and hold breath momentarily when operating shutter button (see Cut A).

2. **For vertical pictures,** there are two basic grips.

Method one: Turn camera over to the left, with left arm held close to the body for steadiness, and with left palm in firm contact with cheek. When focusing in this position, use thumb and index finger of left hand (Cut B).

Method two: Turn camera over to the right, using right thumb and fingers to operate shutter button and



grip the right side of the camera. Keep right elbow close to the body (Cut C).

When using either of these vertical positions, fine focusing can be done more easily by first focusing in the horizontal position.

AUTOMATIC EXPOSURE CONTROL

1. Check filmspeed dial (9) to see that it is set at the ASA rating of the film in use.

2. When the camera is trained on the subject, the meter needle (11) will be deflected away from zero position. By turning the exposure control ring (5), the exposure control pointer (10) is turned so that it can be brought into alignment with the meter needle (11).

3. If, after the exposure control ring has been turned to the limits of the aperture scale, alignment of the exposure control pointer (10) with the meter needle cannot be effected, further movement of the exposure control ring (5) will cause the shutterspeed scale (7) to shift to permit matching of the exposure control pointer (10) with meter needle deflection.

4. Once the exposure control pointer (10) is brought into alignment with the meter needle (11), the camera is properly adjusted for correct exposure. Adjustment of the shutterspeed control (6) for change of shutterspeed will automatically result in a corresponding shift of the aperture setting, and exposure will always be the same.

5. Consequently, if high focusing tolerance is desired (see section on depth of field, below) with small aperture, it is simply a matter of selecting a low shutterspeed. Conversely, for objects in motion which must be "frozen" in action, fast shutterspeeds (at reduced focusing tolerance) are used. Shutterspeed settings must be at the click stops: intermediate positions cannot be used. The aperture control is continuous, so any position on the scale will give the corresponding aperture size.

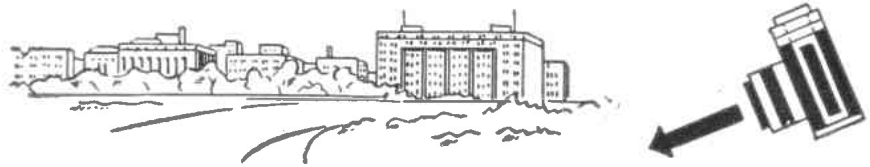
6. If, with the photocell window (12) completely covered, the meter needle (11) does not indicate zero point, remove screw plug (27) and adjust by moving lever inside the top casing.

7. The unnumbered steps on the filmspeed dial (9) divide the intervals between ASA numbers into three equal parts. The two red dots indicate ASA 32 and ASA 160 respectively.

WHEN PHOTOGRAPHING PEOPLE

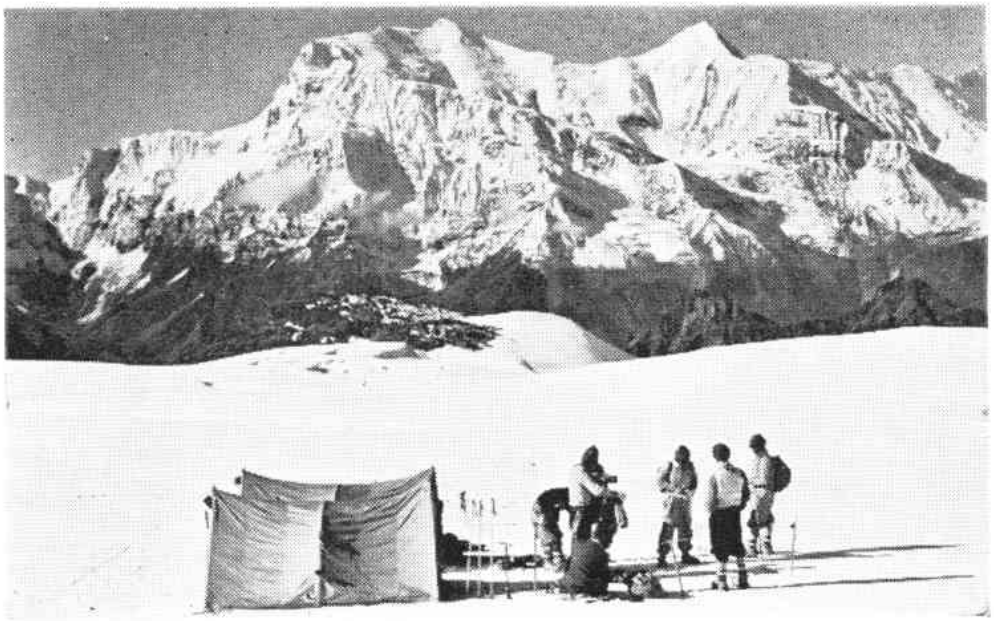
To obtain the proper light value (brightness) of the subject, the best way is to move up close enough so that only the light reflected by the subject itself excites the photocell and light meter. It is usually best to exclude the light from the background, sky, foreground and reflections.

When taking pictures of human subjects, measure reflected light from a distance of about four or five inches, using the mean, if desired, of the highlights and shadows. When measuring brightness at close range, avoid casting a shadow on the subject.



SCENERY

When, in photographing scenery or making snapshots, it is difficult to get close to the main subject-matter, point the camera toward the foreground a few feet



away from camera position in order to avoid overexcitation of the photocell by strong light from the sky (see cut). When photographing wide vistas or distant peaks, reduce aperture setting by one step, or increase shutterspeed by a step (see cut). For example, if the exposure control pointer (10) is in alignment with the meter needle (11) when aperture is f/11 and shutterspeed is at 1/250, then either increase shutterspeed to 1/500 or reduce aperture to f/16.

UNDER REVERSE LIGHTING CONDITIONS

1. **Silhouette effect** can be obtained, when light is coming from behind the subject, if when determining the exposure control settings the brightness of the background, not the subject itself, is measured.

2. **To obtain good reproduction of subject,** disregard the background and

measure the reflected light coming from the subject only by measuring at close range.

3. **To obtain good reproduction of both the subject and the background** use the mean of the settings obtained for the subject and background separately.

USE OF FILTERS

Because filters are effective by virtue of their ability to absorb some of the light they transmit, it is necessary to compensate for this loss when filters are used. The absorption factor of each filter is indicated by numerals expressing the amount by which exposure must be increased—e. g. ×2; ×4 & c. With this camera compensation is simply effected by adjustment of the filmspeed dial (9). For example, if the film in use is ASA 200, and the filter used has a factor of ×2, simply change the setting of the filmspeed dial (9) to ASA 100: if the factor is ×4, change setting to ASA 50.

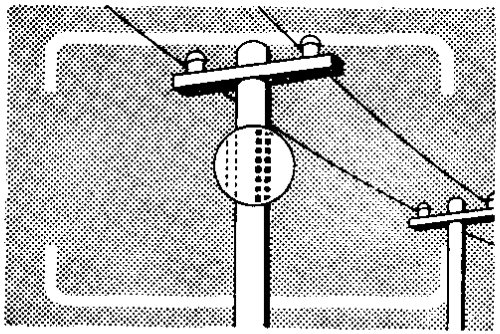
FOCUSING

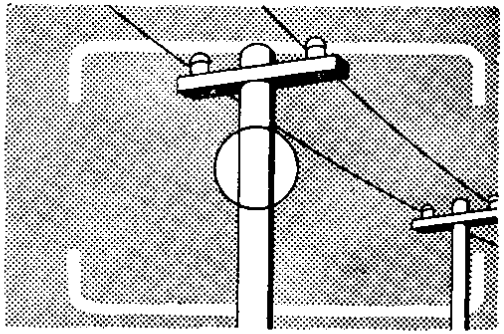
Focusing is done by sighting the subject through the eyepiece (21), and by adjusting the focusing lever (4) while watching the overlapping images in the focusing spot at the center of the viewfinder field. When the overlapping images appear as a single object, the camera is properly focused on this object. Ac-

curate focusing is necessary particularly when photographing at close range. Judgment of the merging of the double image is facilitated by aiming at vertical lines such as poles, window frames, and other uprights. In portraiture, use cheek and nose lines, or the sharp outline afforded by eyeglasses.

The bright frame outlining the optical field in the viewfinder gives the scope of the subject-matter registering on the film. Since this optical frame is accurately coupled to the rangefinder and focusing mechanism, there is no parallax even at the closest ranges.

By comparing the distance scale (22) and the depth of field scale (23) after noting the aperture used, it is possible to know at a glance the amount of focusing tolerance available.





DEPTH OF FIELD

Depth of field, or focusing tolerance, is the range along the optical axis of the camera lens within which sharp register of the subject can be obtained. This range de-

pends on distance and aperture size (f/setting).

1. The smaller the lens opening, the greater the depth of field or focusing tolerance.
2. The farther away the subject, the greater the tolerance.
3. The shorter the focal length of the lens, the greater the depth of field.
4. There is more focusing tolerance beyond the subject in focus than in front.

Depth of field depends very much on lens design, and on the degree of sharpness of register (technically, the size of the circle of confusion) required.

The focusing tolerance (depth of field) of the MAMIYA-KOMINAR F 2, f=48 mm lens of the TOWER 18B is given in the following table.

With proper awareness of depth of field, it is possible to obtain photographs with sharp register of subjects at varying distances from the camera.

For example, to obtain a picture of a subject 10 feet (approximately 3 meters) from the camera in front of a building 40 feet (approximately 12 meters) distant, both in sharp register, the aperture setting should be at f/8, and the focus (distance setting) should be at 15 feet. If, at the same aperture setting, the camera is accurately focused on the subject at 10 feet, background objects up to only 17 feet distant will register sharply.

Using this principle, it is possible to dispense with focusing for subjects more

DEPTH OF FIELD TABLE

MAMIYA-KOMINAR F 2, 48 mm (circle of confusion 1.7/1,000 inch)

Aperture	Focused Distances (in feet)							
	∞	30	15	10	7	5	4	3.5
2	87′ 5¾″ ∞	22′ 5″ 45′ 4¾″	12′ 10¼″ 18′	9′ ¼″ 11′ 2¾″	6′ 6¼″ 7′ 6¾″	4′ 9″ 5′ 3¼″	3′10″ 4′ 2″	3′ 4½″ 3′ 7½″
2.8	62′ 6¼″ ∞	20′ 4½″ 57′ 1¾″	12′ 2″ 19′ 7″	8′ 8″ 11′ 9¾″	6′ 4″ 7′ 10″	4′ 8″ 5′ 4¾″	3′ 9½″ 4′ 3″	3′ 4″ 3′ 8¼″
4	43′ 9½″ ∞	17′ 11″ 93′ 6¼″	11′ 3″ 22′ 6½″	8′ 2½″ 12′ 9¾″	6′ 1″ 8′ 3″	4′ 6¼″ 5′ 7″	3′ 8½″ 4′ 4¼″	3′ 3¼″ 3′ 9¼″
5.6	31′ 3¾″ ∞	15′ 5¼″ 624′ 5¾″	10′ 2¾″ 28′ 3″	7′ 8″ 14′ 5½″	5′ 9½″ 8′ 10½″	4′ 4¼″ 5′10¼″	3′ 7″ 4′ 6¼″	3′ 2¾″ 3′10½″
8	21′11½″ ∞	12′ 9½″ ∞	9′ ¼″ 45′ 7¾″	6′11½″ 17′10¾″	5′ 4¾″ 10′ ½″	4′ 1¾″ 6′ 4″	3′ 5¼″ 4′ 9½″	3′ ¾″ 4′ 1″
11	16′ ∞	10′ 6½″ ∞	7′ 10¾″ 200′ 6¼″	6′ 3″ 25′ 6″	4′ 11½″ 12′ ¼″	3′10¾″ 7′ ½″	3′ 3¼″ 5′ 2″	2′11¼″ 4′ 4¼″
16	11′ ¾″ ∞	8′ 1¾″ ∞	6′ 5½″ ∞	5′ 4¼″ 88′ 8¾″	4′ 4¾″ 17′ 11″	3′ 6½″ 8′ 8¼″	3′ ¼″ 5′11¾″	2′ 8¾″ 4′10¾″

than 13 feet (about 4 meters) distant from the camera by pre-setting the focus at 30 feet on the distance scale (22) and using aperture settings of f/8 or less (8, 11, and 16).

UNLOADING FILM

When the specified number of exposures per roll of film (20 or 36) have been made, stop picture-taking. Do not attempt to squeeze in one more frame. Return exposed film into safety cartridge for removal from camera.

1. Push sprocket release button (18), it should remain depressed. Erect rewind crank (17) and turn clockwise, as indicated, to wind film into safety cartridge.

2. When all of the exposed film is rewound into the cartridge, and the end is detached from the take-up spool (16), this can be felt by a stiffening and easing of tension. However, if it is desired not to wind the end into the cartridge, watch the rewind indication (19), and stop rewinding when the sprocket release button ceases to turn. Open backlid, pull out the rewind crank, and remove safety cartridge from the camera. The depressed sprocket release button (18) will automatically return to original position when the cocking lever (1) is next operated.

Caution 1. When more than the specified number of exposures is attempted,

and in some cases before the full number of frames have been exposed, the film may come to an end to cause the cocking lever (1) to jam part way through its stroke. In such cases never force the lever. Press the sprocket release button (18) and operate cocking lever while keeping the button depressed. Cocking lever will complete its stroke and return to original position.

Caution 2. If force is applied to the cocking lever (1) when it is held by the film coming to an end, the film may become detached from the spool in the safety cartridge, making it impossible to rewind the exposed film into the cartridge. In such case, if film is to be saved, open camera in a photographic darkroom, remove film and replace in safety cartridge or some other lightproof container.

SHUTTER OPERATION

1. All shutter controls — shutterspeed control (6), aperture adjustment (5) synchroflash M-X adjustment (24), and selftimer lever (26) — may be adjusted either before or after the cocking lever (1) is operated. It makes no difference whether or not the shutter mechanism is cocked.

2. The selftimer can be used only when the synchroflash M-X adjustment (24) is in position "X". After selftimer lever (26) has been moved, the synchroflash

M-X adjustment remains locked.

3. The cocking lever (1) should never be operated while the shutterspeed scale (7) indicates the space between B and 1. Always set shutterspeed control (6) at click stops in order to avoid damaging the mechanism.

4. The intermediate spaces between the graduations of the shutterspeed dial cannot be used. Only the click-stop positions are valid.

5. The threaded hole at the center of the shutter button (2) is for fitting a cable release.

6. It is generally considered bad practice to keep the shutter cocked for any length of time. However, no harm can result from having the mechanism under tension for a week or two. When the camera is put away for months, it is better to release the shutter.

7. The synchroflash M-X adjustment (24) gives a choice of two positions: "X" and "M", to permit accurate synchronization of the shutter when it is linked to a flashgun through synchroflash terminal (25). In normal use, when not using synchroflash, the synchroflash adjustment should be kept at position X (no delayed action of the shutter).

8. When releasing shutter for blank shots, use shutterspeed settings faster than 1/30 second.

SYNCHROFLASH PHOTOGRAPHY

Position "M" The synchroflash adjustment (24) is set at position "M" when class M flashbulbs (time to peak intensity about 20 milliseconds) are in use. Full synchronization is possible at all shutterspeeds including 1/500. Self-timer cannot be used with adjustment at position "M".

Position "X" This position is used for full synchronization at all shutterspeeds in conjunction with a strobo (electronic) flash, or for shutterspeeds of 1/30 and under with class F flashbulbs (time to peak, about 10 milliseconds). At this position the selftimer can be used.

In synchroflash photography, the shutterspeed depends upon the permissible range of synchronization for the type of flash in use, while the aperture is determined by the light-reflecting characteristics of the subject, the intensity of the flash, and the distance from the flash to subject. Select suitable settings of the shutterspeed and aperture dials on the basis of the instruction coming with the flashbulb or strobo. Do not attempt to use the built-in exposure meter.

FILTERS FOR TOWER 18B

For special effects and color correction, filters are essential. Landscape photo-

graphy with blne sky and cloud effects, seasides shots, and picture of plant life, all call for filters.

This camera uses Ednalite No. 601 filter adapters (Sears No. 8132) and Series 6 filters.

FILTERS FOR BLACK AND WHITE FILM

"Y2" (yellow) brings out clouds.

"R2" (red) darkens sky, markes clouds extremely white for dramatic effects.

FILTERS FOR COLOR FILM

Type "F" for indoor film to outdoor.

Type "80B" for outdoor film to indoor with photofloods.

Haze (skylight) reduces haze.

WHEN CAMERA IS NOT IN USE

When putting away your camera, clean out, with a soft-hair brush the interior, particularly the film cartridge chamber. Remove camera from leather carrying case, wrap in cellophane or polyethylene film, together with some suitable dessicant (silica gel), and store in moisture-proof box or can in cool dry place. Check from time to time, and give camera an airing.