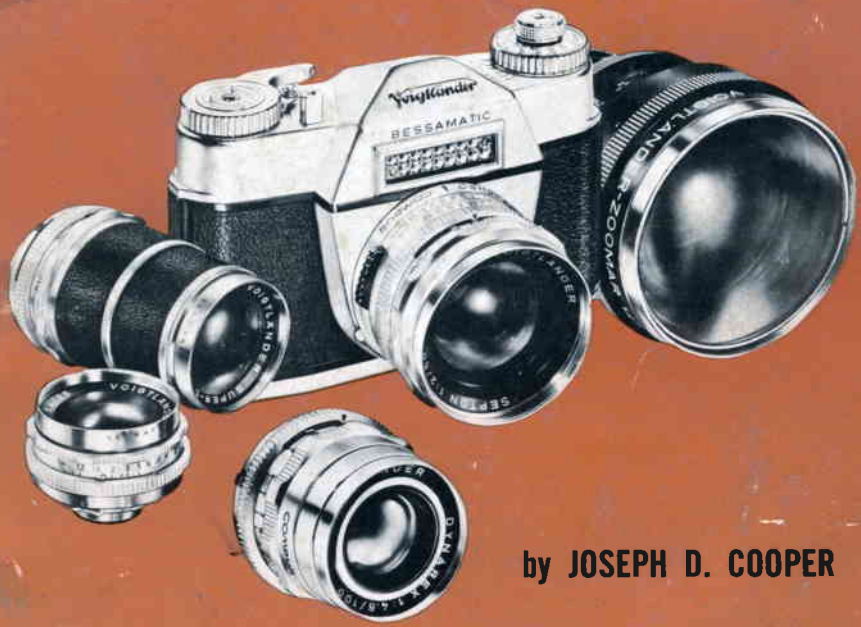
VOIGTLANDER BESSAMATIC GUIDE



by JOSEPH D. COOPER

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Introduction to The Voigtlander Bessamatic

The Voigtlander Bessamatic is a single-lens reflex camera. This means that the image captured by the camera lens can be seen through the viewfinder up to the very moment of exposure exactly as it will be recorded. The special value of a reflex camera is that you are able to focus the image visually by catching it on a mirror, which reflects it upward onto a ground glass, where it may be seen by the photographer. At the moment you click the shutter, the mirror snaps up out of the way and the image is recorded on the film. This, briefly, is the concept behind the operation of the Bessamatic. A diagrammatic sketch of this arrangement is shown in Fig. 1-1.

The Bessamatic offers the amateur as well as the professional an unusual camera of immense scope, which is, nevertheless, the last word in simple operation. The viewfinder is the camera's control center. Through it, you find the exact field of view which you want to photograph. Without taking your eye away, you focus on the exact distance of your subject from the camera. Still looking through the viewfinder, you turn a knob until the exposure control indicators visible in the finder are aligned so that you thereby automatically set the correct exposure. Thus, you never lose sight of your subject as you adjust the various controls prior to taking your picture. As any

experienced photographer who has lost many a good picture can testify, this is indeed a great advantage!

This is a brief, preliminary introduction to the Bessamatic. This first chapter will cover in a little more detail what the camera can do. It will tell you a little about the highly respected manufacturing organization which makes the Bessamatic. It will also give you a technical reference to the operating controls and features of the camera so that you can refer to them as you read in succeeding chapters.

Using the Bessamatic

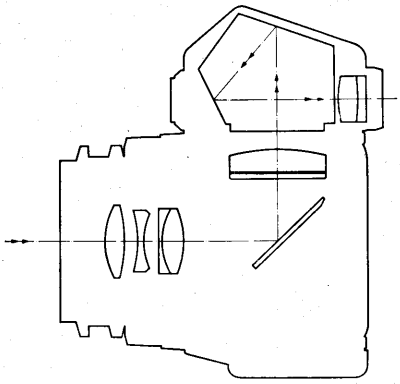
General Capabilities of the Bessamatic

The Bessamatic is an all-purpose camera. With its original lens alone, it is designed to take pictures under the widest variety of conditions without the need for special auxiliary equipment. These capabilities, great as they are, have been extended through the availability of interchangeable lenses, supplementary lenses for close-ups, filters and flash equipment. While you can take pictures without any of these extras, one presumes that their availability was an important consideration in choosing the Bessamatic as your camera.

With your Bessamatic, you can take sharp pictures in color or black-and-white of general scenes, group activities, portraits, sports and action, travel subjects, landscapes, industrial activities, still lifes, flowers and various small objects. The high-speed lenses enable you to take pictures under difficult-light conditions without the need for unusually fast films, although the latter certainly have their use in situations where otherwise you could not get any picture at all. You can take synchronized flash pictures with the Synchro Compur shutter even at the highest speeds both indoors and outdoors. This enables you to make high-speed action pictures with flash and to take outdoor fill-in flash pictures with the greatest flexibility.

Main Operating Features

One of the advantages of using the Bessamatic is that, regardless of which of the interchangeable or supplementary lenses you may use with it, you see everything that matters at a glance through the

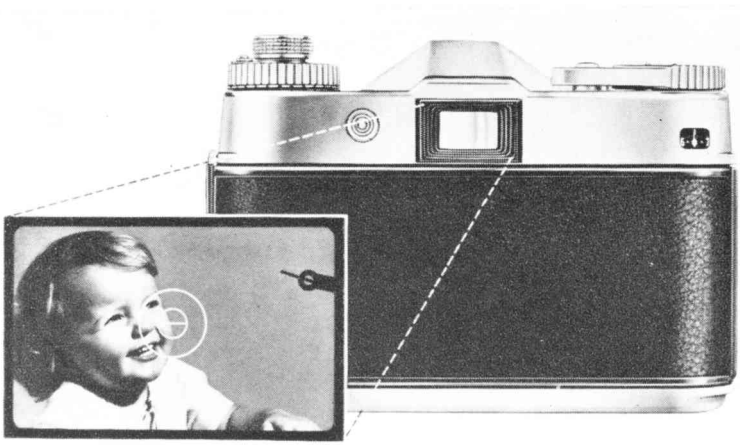


1-1. Optical system of the Bessamatic, showing the path of light (the image) as it enters the camera through the lens, is reflected by the reflex mirror to a ground glass screen and then to a pentaprism for eye-level viewing.

viewfinder. You see the precise field of view free of parallax, a sharply focused image for the exact distance of the subject from the camera and the correct exposure as it is found through the use of the built-in exposure meter and the exposure-setting controls visible in the viewfinder. While these features will be dealt with in more detail in the next and succeeding chapters, they will be summarized briefly here for the benefit of those who would like to have an overall description of the camera and its operation before they begin using it.

The *distance* setting is made automatically by turning the lens mount with one hand while you observe the image through the viewfinder. For sharp focusing, you have a choice of two methods. For subjects which have prominent outlines, you align the two halves of a split-image rangefinder. For subjects which have fine image detail or which do not have prominent outlines, the image is focused within a ground glass screen ring. When the image is sharply focused on the ground glass by either method, the distance is automatically set on the lens.

The correct *exposure* setting is made by aligning two pointers seen on the right side of the viewfinder. Having found the correct distance, you switch your left hand to the exposure control knob on top of the camera and, as you look through the viewfinder, you turn it one way or the other until one needle pointer is superimposed over the other, as shown in Fig. 1-2. As you turn this knob, it automati-



1-2. "Control center" of the Bessamatic is the viewing screen which is used for automatic setting of distance, for automatic exposure setting and for sighting exactly what you will record on the film.

cally finds the correct lens diaphragm opening to correspond with the shutter speed that you have preseletced and, if necessary, it will change the shutter speed to a more suitable one if your judgment was not correct.

While all this has been going on, you have been able to keep the *field of view* in sight. Your eye has been on the subject all the time. The image you see through the viewfinder is precisely what you will get on the film. It will be correctly framed from left to right and from top to bottom, regardless of which lens you are using and whether you are working at close distances—as close as four inches with a supplementary lens—or whether you are using the longest of the telephoto lenses.

The Battery of Lenses

Your standard lenses are a choice of two 50mm (two-inch) lenses: the Color-Skopar *f*/2.8 and the Septon *f*/2. The first is an all-purpose lens suitable for the vast majority of picture-taking situations. It is

well-known for its excellent color rendition. The latter features additional versatility through twice the lens speed while retaining the qualities of outstanding definition and color rendition.

Then you have the versatility of the interchangeable lenses ranging from the 35mm (1⅜ inch) wide-angle lens through the 90mm, 100mm and 135mm (5⅜ inch) telephoto lenses. The wide-angle lens is ideal for subjects for which you need a wide field of view at close range, while the telephoto lenses enable you to reach out toward more distant objects as though they were close at hand.

With the Voigtlander Zoomar, you open up new fields of application in all situations in which you need to be able to vary the field of view without changing your own working position. This lens has a working range of 36 to 82mm. Merely by sliding a ring on the lens mount forward or away from the camera, you can set any intermediate focal length you desire from wide-angle to telephoto. Thus, with this lens you embrace the three most popular focal lengths of 35, 50 and 80mm in one self-contained optical and mechanical unit. The changing of the field of view is smooth and continuous so that you can stop at any intermediate point in the range from 36 to 82mm. While doing this, your exposure and distance settings remain constant. You can take flash shots continuously without having to make any changes in the camera controls.

Mechanical Features

The camera has a central shutter—the Synchro Compur—with speeds ranging from one second to 1/500 sec. with provision for time exposure as well as delayed or self-timing exposures. The lens is synchronized for M and X so that you may use ordinary flash bulbs as well as electronic flash.

The central shutter is fixed to the camera. When you interchange lenses, the shutter adjustments remain undisturbed so that you can work with any lens without having to reset the exposure controls.

The film advance system has been designed for both speed and foolproof operation. As you flip the rapid-winding level, you advance the film and cock the shutter for the next picture in one single operation. It is impossible for you to make accidental double exposures.

Some of the most unusual effects are achieved when the source of light is from the side or from in front of the camera, as in this case. Depth is given to the picture as a whole by the overhanging boughs of the trees in the foreground. The texture of the ground is rendered clearly because the low angle of the sun casts acute shadows. Courtesy Voigtlander Archive.

The People Behind the Bessamatic

Voigtlander is the oldest optical and mechanical precision manufacturer in the world. This firm was founded in 1756.

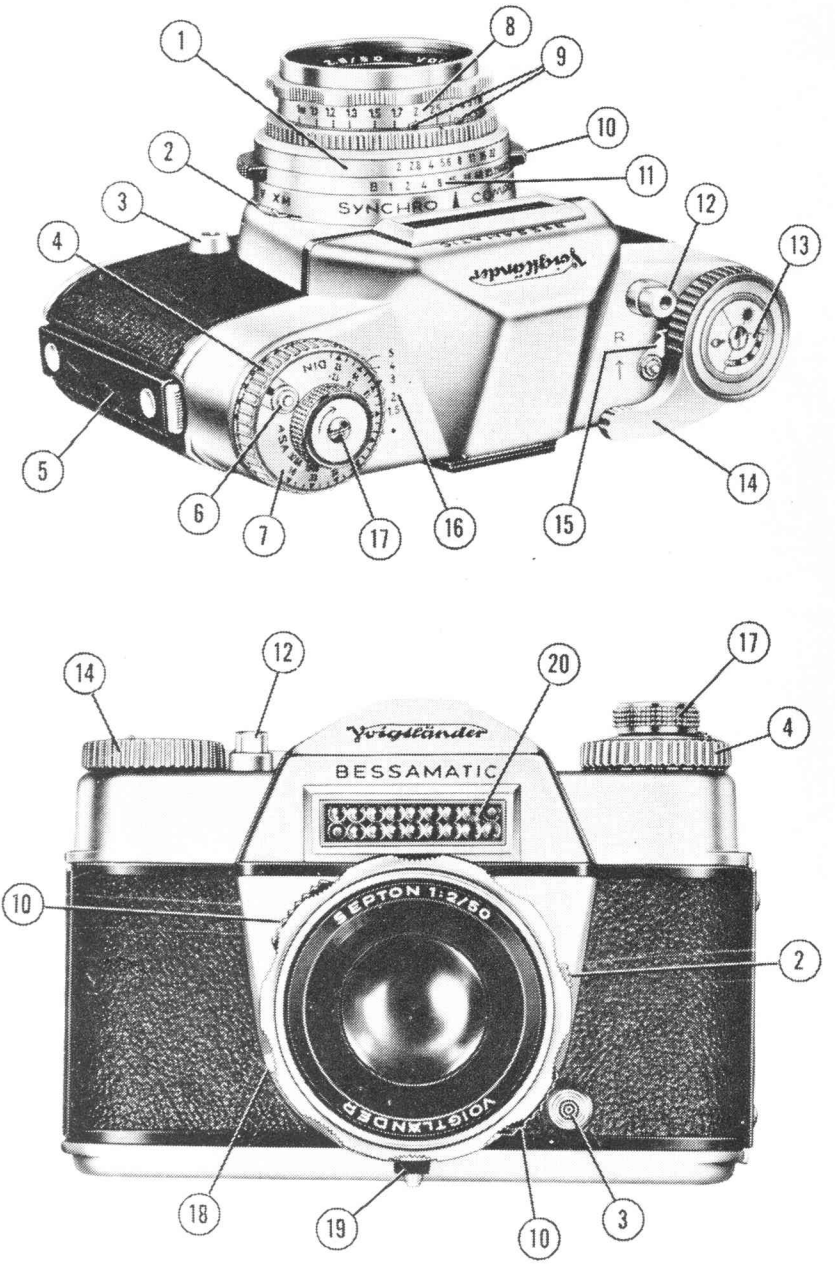
In 1840—one year after the invention of photography—the name Voigtlander found its way on the first mathematically computed photographic lens in the world. In the same year Voigtlander made the first all-metal camera.

Ever since, Voigtlander has led in the development of advanced lens designs. The Heliar professional lens, produced in 1900, is today still a favorite among pictorial photographers. The Color-Skopar appeared in 1949 as the leader in a series of highly corrected Voigtlander lenses designed for the new era of color films. In 1959, the Voigtlander-Zoomar made history as the first variable-focus lens produced for miniature cameras.

From 1840 on, Voigtlander cameras and lenses have been made in one factory with the closest cooperation of designers and craftsmen. Today, thousands of employees of this single, integrated enterprise use the most up-to-date production methods to produce Voigtlander products. Rigorous checks are made at all stages of production to ensure that every camera and lens conforms to precision quality requirements and standards. The Color-Skopar alone involves no less than 124 production stages!

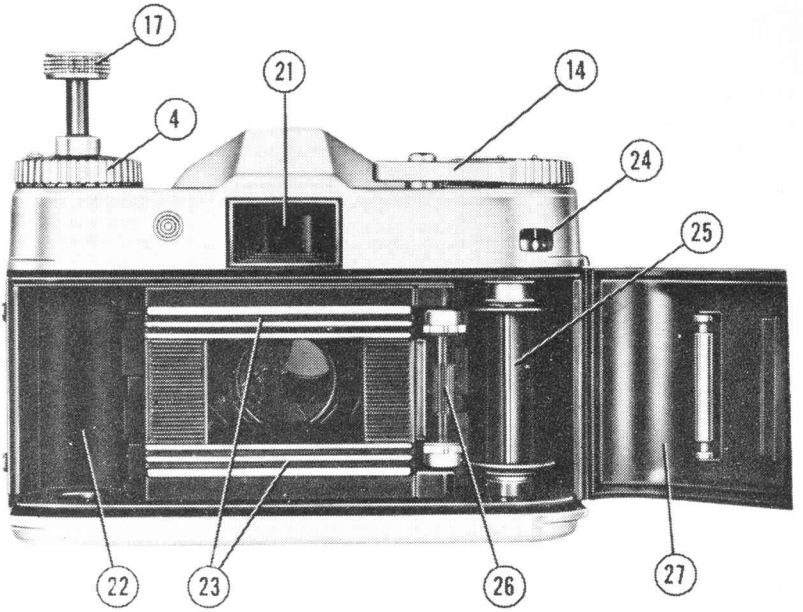
Details of the Bessamatic

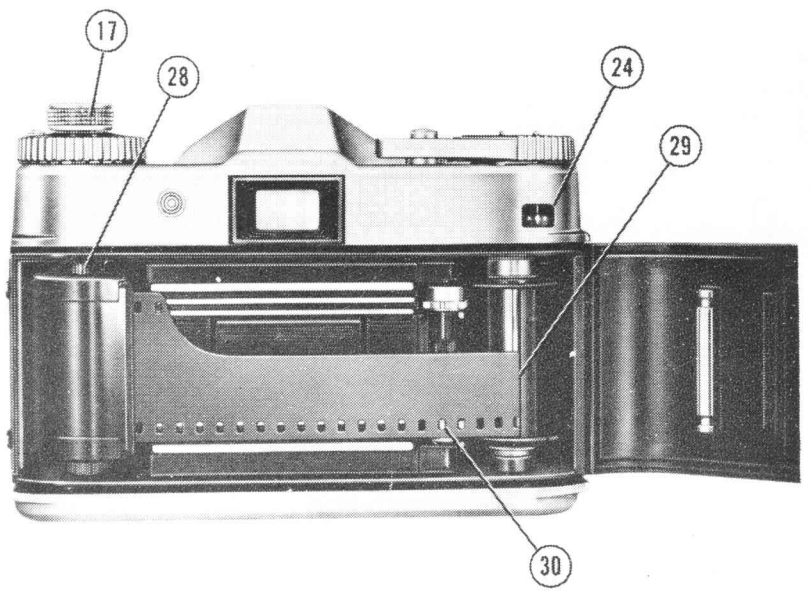
The accompanying photographs (Figs. 1-3, 4, 5 and 6) show all of the operating controls and parts of the Bessamatic with which you should be familiar. The "call-out" numbers or indexing references in the small circles are used to refer you to the appropriate descriptive titles. These same numbers are used in succeeding chapters to refer you to the illustrations and their identifications in this chapter. Thus, a first reference to the rapid-winding lever in a succeeding chapter will carry with it the number fourteen in parentheses as follows: (14). You can then refer back to this chapter for the proper identification and location of item 14.



Top, 1-3; Bottom, 1-4

1 Aperture ring
2 Synchronizing lever
3 Flash socket
4 Setting knob
5 Locking device for camera back
6 Interlocking lever
7 Setting disc
8 Distance scale
9 Depth of field indicator
10 Rotating handles for shutter ring 11
11 Shutter ring
12 Release button
13 Film type indicator
14 Rapid winding lever
15 Reversing lever
16 Divisions





Top, 1-5; Bottom, 1-6

17 Film rewind knob
18 Locking catch
19 Lens changing catch
20 Honeycomb cell window
21 Finder eyepiece
22 Cassette chamber
23 Film track
24 Film counter window
25 Take-up spool
26 Film transport shaft
27 Camera back
28 Shaft of rewind knob
29 Film leader
30 Sprocket of transport shaft

Good snow pictures are very hard to take. If you expose for the snow, so as to show detail, darker areas will tend to be underexposed. If you expose for the details, the tendency is for the snow to be overexposed, thereby "burning" out the snow texture. When the scene is photographed early or late in the day, so that you have the advantage of low sunlight, the acute angle of the sun will point up the texture of the snow. Note the effect of sidelighting in this case. Note also how the sun points up detail in the stream by catching surface highlights. Photo courtesy Voigtlander Archive.

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How to Work the Bessamatic

Now that we have a preliminary idea of how the Bessamatic works, more detailed instructions are given in this chapter for loading and advancing film, using the viewfinder controls effectively and handling the external controls of the camera. In succeeding chapters, we will go into some of the finer points of interchanging lenses, using filters, using the exposure meter effectively, taking flash pictures and making close-ups, among other topics.

Loading and Unloading Film

The Bessamatic uses standard 35mm film. Ordinarily, you have a choice of film in 20- or 36-exposure lengths, although some film manufacturers are making film available in "week end" size rolls that take a smaller number of pictures. Whatever the size, the film is loaded into the camera and is automatically advanced from frame to frame, as described below, until the last picture is taken. Then the film is rewound into its original cartridge and is ready to be developed by your own film processor or in your own home darkroom. The procedures now to be described are identical for both black-and-white and color films.

Setting the Film Speed

Your very first step, even before putting the film into the camera, should be to "dial" the film speed (or exposure rating of the film) into the camera. This is very important. The functioning of the automatic exposure control system depends on your doing this.

The film speed rating is ordinarily printed on the package of film or on the instruction slip included with the film. The film speed is ordinarily expressed as an ASA rating, although films made in Europe may be identified by a DIN rating. (ASA stands for American Standards Association and DIN stands for the German equivalent called Deutsche Industrie Norm.) Now, do as follows:

1. On the setting knob (4) you will find the film speed values according to both ASA and DIN. Latest Bessamatics supplied to the U.S.A. contain ASA markings only.
2. Pull out the rewind knob (17) completely, as far as it will go, as shown in Fig. 1-5 in the preceding chapter.
3. Pull the interlocking device (6) outwards and hold it there while you turn the setting disc (7).
4. Turn the setting disc to the left or right until the desired film speed value appears opposite the red index mark on the milled rim of the knob.
5. Intermediate film speed values may be set by approximation; ASA 10 is indicated by a special setting mark just before the number 12 on the dial while ASA 32 is indicated by a point just beyond number 25.
6. When you have set the desired film speed, release your finger pressure on the interlocking device; the film speed is now set permanently for this and succeeding film loads until you change it.

The Film Type Indicator

The film type indicator is a built-in memory device. It tells you the type of film you have in the camera. It does nothing else. It does not have any effect on the exposure.

To set the film type indicator, turn disc (13) until the appropriate film symbol appears opposite the tiny black indicator mark along the

outside of the disc. For convenience, the symbols and their designations are shown in Fig. 2-2 as well as in Fig. 2-1.

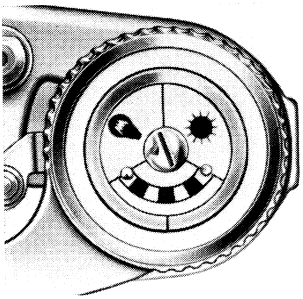
Preparing the Film

The daylight film cartridges are usually quite safe in ordinary daylight. To avoid even the slightest possibility of any light leaking into the cartridge, it is advisable not to expose it to strong light. Always open the package of film and load and unload the camera in the shade. If there is no shade, make some with your own body.

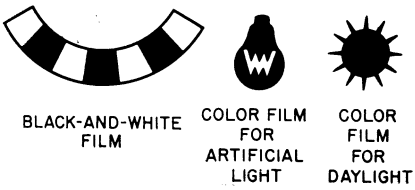
Before inserting the film into the camera, fold back about $\frac{3}{8}$ inch of the beginning of the film and make a sharp crease, as shown in Fig. 2-4. This forms a hook or anchor to hold the film securely to the take-up spool.

Opening the Camera

Whenever possible, the camera-loading operation should be carried out on a solid surface. If this is not convenient, you must do the best you can while standing or sitting. For this reason it is best to



2-1. Film type indicator is incorporated into rapid winding lever.



2-2. Symbols used for film type indicator, with their meanings.

unwrap and prepare the film as described in the preceding section.

To open the camera back, press together both spring catches (5). This will release the back, which you can now swing open.

Setting the Film Counter

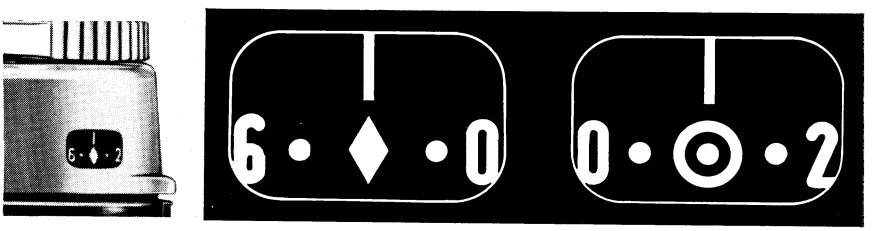
Always set the film counter before loading the camera. You will not be able to set the film counter once the film has been loaded.

The film counter automatically shows the number of exposures left in the camera. For a 36-exposure film, it runs backward from #36 (which would be the first exposure) to #1 (which would be the last exposure). For a 20-exposure roll, it would run backwards from #20 to #1. The steps in setting the film counter are as follows:

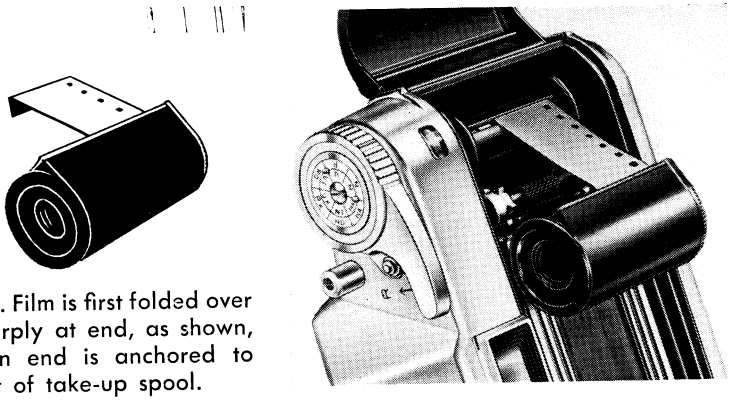
1. Move the reversing lever (15) in the direction of the arrow towards "R." (See Fig. 2-1.) The transport shaft (26) inside the camera, next to the take-up spool, will now turn freely in either direction.
2. Now turn the transport shaft to the left or to the right by its milled center until the appropriate mark appears in the little window (24) which is located just below the rapid-winding lever. (See Fig. 2-3.) A ◆ mark starts a 36-exposure cartridge. The ⊙ mark is the starting point for a 20-exposure cartridge.

Inserting the Film Cartridge

1. Pull out the rewind knob (17) as far as it will go, as shown in Fig. 1-5.



2-3. Before loading film into camera, set film counter to starting point, visible in window. Starting point for 36-exposure film is diamond mark; starting point for 20-exposure film is circle with center dot.



2-4. Film is first folded over sharply at end, as shown, then end is anchored to slot of take-up spool.

2. Turn the take-up spool (25) so that its long slit is on top.

3. Push the end of the film, which you have folded back sharply, into the slot up to the fold.

4. Push the right edge of the film end so that it lies close to the flange of the spool, as shown in Fig. 2-4.

5. With one finger pressing on the film end, draw the film cartridge across the film track (23) and insert the film cartridge into the film cartridge chamber (22).

6. Push back the rewind knob,, turning it slightly if necessary to make the shaft (28) engage the core of the film cartridge. The film should now lie flat in the film track as shown in Fig. 1-6.

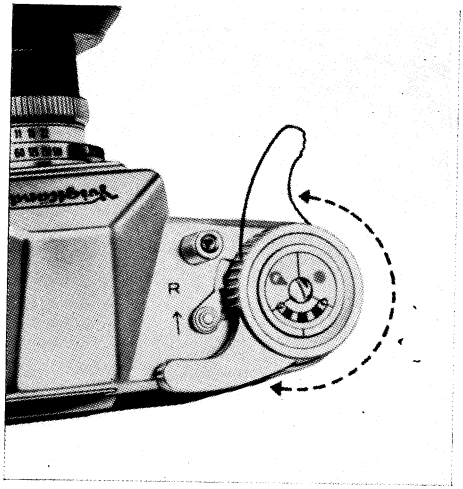
7. Make sure that the lower sprocket of the transport shaft (30) engages the perforation holes of the film.

8. Close the camera back, making sure that both catches engage firmly.

The First Exposure

1. Swing the rapid winder (14) as far as it will go, as diagrammed in Fig. 2-5. When you do this the first time, after having loaded the film, the reversing lever (15) at "R" will be pushed back to its original position.

2. Now, operate the shutter release (12) and the rapid winder,



2-5. Rapid winder must be pulled to very end or it will not return. If rapid winder does not move at all, shutter may be tensioned; release button should be pressed.

alternately, until the number 36 or the number 20 appears in the film counter window, depending upon whether your cartridge has 36 or 20 exposures, respectively.

The Rapid Winder

The rapid winder must always be pulled right through until it reaches a mechanical stop. It will then fly back automatically. This action cocks the shutter, brings the mirror down into the optical path of the finder, advances the film by one frame, and also advances the film counter. You cannot make double exposures accidentally, unless you do as suggested in the next section.

If the rapid winder is not pushed right through to the very end, it will remain extended outward in its intermediate position. It will not return to its starting and resting position. Do not try to return it there by force; you will damage the fine mechanism of the camera.

Intentional Double Exposures

If you should wish to make a trick shot, requiring a double exposure, or if you should wish to save a film frame because of the failure of a flash to go off, you can easily do so.

1. After the first exposure, move the reversing lever (15) towards "R" and operate the rapid winder once more. This re-cocks the shutter but does not transport the film.

2. You are now ready to expose the same picture frame for a second time.

3. You can repeat this as often as you like.

Unloading the Camera

When you have taken your last picture, the film counter will show a zero. When you reach this point, you should rewind the film into its original cartridge. If you continue beyond this point or if you set the film counter incorrectly, you will feel the end of the film being reached because the rapid winder then cannot be swung completely. If this happens, do not force the rapid winder completely around, for to do so will tear the film perforations or make the film come out of its cartridge so that it then cannot be rewound. If the rapid winder cannot be swung completely around, proceed as follows:

1. Push the rewind knob toward "R" even though it may now move a little stiffly.

2. Swing the rapid winder completely around and then let it return to its original position.

3. Unload the camera as described below.

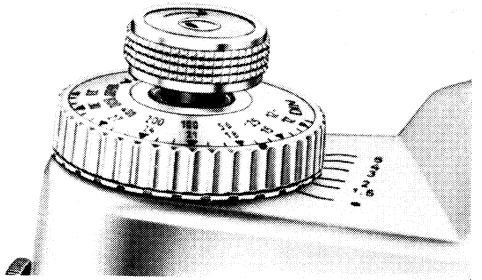
To unload the camera, proceed as follows:

1. Push the reversing lever (15) to "R".

2. Pull up the rewind knob (17) *to its first stop only*, as shown in Fig. 2-6. Do not pull it all the way out.

3. Turn the rewind knob in the direction of the arrow until the ◆ mark (with a 36-exposure film) or the ◎ mark (with a 20-exposure film) appears again in the film counter window. When this happens, the film will have been rewound completely into its cartridge. If you rewind beyond this point, you will feel the film being torn loose from the take-up spool. If you stop as instructed here, the film counter will be ready for the next film load, providing it has the same number of exposures.

4. Open the camera back, pull out the rewind knob com-



2-6. To unload camera, first pull up rewind knob to its first click-stop position, as shown. Knob is turned in direction of arrow.

pletely and remove the film cartridge with its exposed film from the film chamber.

5. Repackage the exposed film in its original cartridge, if you saved it. This will keep it away from the direct rays of bright light.

Changing Partly Exposed Film

If you wish to change from one film to another, without losing any of the exposures left on the first film, proceed as follows:

1. Make a note of the number of the last *exposed* film.
2. Rewind the partly exposed film as described above.
3. Load the next film in accordance with the regular procedure. as described above, remembering to reset the ASA disc and the film type indicator.
4. When restoring the original film to the camera, you will need to make blank exposures until you have reached the number of the last exposed frame. To make blank exposures, put the black lens cap over the front lens mount. Then, alternately work the rapid winder and press the release until the number of the frame you originally noted appears in the film counter window. Advance the film once more and you are ready to resume shooting.

Viewfinder Operations

As you look through the viewfinder, you see the precise field of view which will be recorded by the camera. The two other functions

performed by the viewfinder, now to be described, are that it enables you to control the exposure and it enables you to focus accurately for the precise distance of your subject from the camera.

To use the viewfinder, it is necessary that you operate the rapid winder so that the mirror will be repositioned to reflect the image through the eyepiece of the viewfinder. When you take the picture, the viewing screen will black out. It will remain so until you operate the rapid winder once more.

Setting the Correct Exposure

You will recall that the speed rating of your film was dialed into the camera when you loaded the film. Should you wish to change the rating at any time, you may do so as described in the section on film loading.

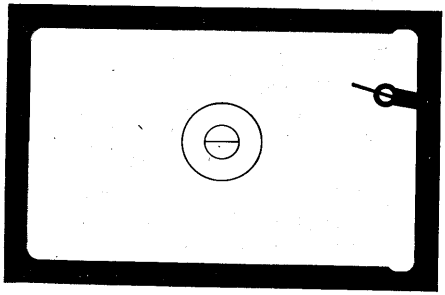
The following description covers the mechanical operation of the exposure-setting system. Tips on using the exposure meter effectively will be found in Chapter 4.

1. Preselect a shutter speed which you consider appropriate for the subject and the light conditions as you estimate them. Assume in this case a shutter setting of 1/60. The shutter is set by turning the shutter ring (11). Grasp the shutter ring by two rotating handles (10).

2. Turn the setting knob until the two pointers in the viewfinder are superimposed, as shown in Fig. 2-7. In this position the correct exposure will be set automatically. Assuming, for example, that the pointers superimposed at aperture *f*/5.6, the aperture ring (1) and the shutter ring (11) will appear, as shown in Fig. 2-8.

If the setting knob can be turned no further and the two pointers have not been superimposed, this means either that there is not enough light to take your picture or you need a different shutter speed. To overcome this, turn the setting knob beyond a little resistance until the two pointers are correctly aligned. The shutter speed will also have been altered when you do this.

If the shutter speed is altered, you should check the shutter ring to verify that you are still operating with a black figure (1/500-1/60



2-7. Correct exposure is set when two pointers are super-imposed.

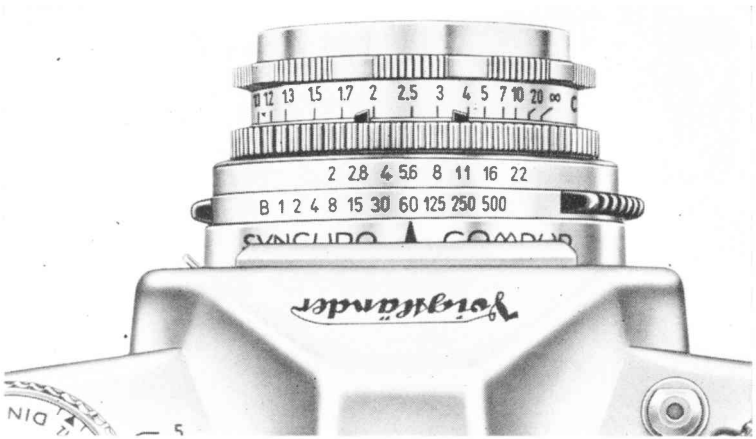
sec.). The black figures represent exposure times which you can safely use for hand-held shots. With the red figures (1/30-1 sec.) you should support the camera during the exposure by resting it on a table or other solid support, against the trunk of a tree or on a tripod.

At a setting of "B" the shutter opens on pressing of the release and remains open as long as the release button is held down. For an exposure at "B", the camera must be held rigidly on an absolutely solid support. Ordinarily this will be a tripod. The release button should be operated by screwing a cable release into it. If the camera can be held rigidly on a table, you may be able to operate the release button by hand, provided you are certain that you are not moving the camera during exposure.

If you should want to alter the depth of field (to be explained later in this chapter), you can do so quite easily without disturbing the correct exposure setting. Turn the shutter ring until the required *f*/stop appears opposite the arrow-pointed index mark. When this is done, you will have automatically set a new shutter speed for the desired *f*/stop. The combination of the two will be the light-transmitting equivalent of the original setting. (The relationship between shutter speed and *f*/stops is explained in Chapter 4.) Observe the precautions as to taking pictures with shutter speed engraved in red.

Setting the Distance

The camera can be focused correctly (or have its distance set) in two ways: aligning the two halves of the split-image rangefinder or focusing sharply on the ground glass screen.



2-8. In setting exposure, first select tentative shutter speed, rotating shutter ring until desired number appears opposite index mark. Turning the setting knob brings correct aperture into position in line with shutter speed and same index mark.

To focus the camera with the aid of the split-image rangefinder, it is desirable that you have vertical lines in the subject.

1. If the subject is out of focus, the vertical lines will be displaced to the left or right (with the camera held horizontally) or upwards and downwards (with the camera held vertically). See Fig. 2-9.

2. By turning the distance scale (8), accurate focus will be achieved when the two parts of the image are aligned in the split circle, as shown in Fig. 2-10.

If you do not have clearly defined lines or edges on objects, you should then focus with the aid of the ground glass screen.

1. The focusing area of the ground glass screen is the ring which surrounds the split circle. If the object is out of focus, you will see a fine geometric screen pattern within this ring. As you rotate the distance scale (8), the screen within this ring will clear up until the image is sharply defined. At this point it will be in focus and the distance will be set correctly.

2-9. When the image is out of focus, the two halves of the central circle will be out of alignment.

2-10. When you have focused sharply the two halves of the split-image finder will be in perfect alignment.

2. Do not use the area outside the circular ring for focusing. Objects may seem to be in focus when seen on this portion of the screen, when actually they are not.

For quick shooting, when you do not have time to focus, you can set the distance scale by hand merely by turning it until the desired distance appears opposite the arrow-pointed indicator mark. You may follow this procedure, also, when you are moving around with the camera or when the subject is moving toward you and you wish to photograph it at a predetermined distance.

Taking the Picture

Holding the Camera

The main rule about holding the camera is that it should lie comfortably in your hand. Figs. 2-11 and 2-12 show how to hold the camera for both horizontal and vertical picture formats. As a starting point, hold the camera as shown by the model. If you don't feel quite comfortable, change the hold of your hand so that you do. Above all, you must be able to grip the camera so that one finger is

2-11, 12. Correct positions for holding the camera in both horizontal and vertical formats.

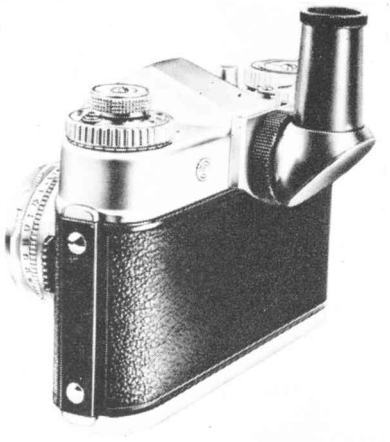
able to work quite freely and without strain in pressing the release button. Note that in Fig. 2-11, the forefinger is used, while in Fig. 2-12 the thumb is used to press the release button.

Holding the camera includes how you hold your body. When you pick the camera up and hold it to your eye, you become something of a human tripod—except that you have only two legs and hence you are liable to sway and as you do so the camera will move, however imperceptibly. Hence, you must also try to stand comfortably, usually with your legs slightly apart. Don't hesitate to lean against a tree, a wall, a fence, a chair back or other solid support if this makes you stand more steadily, especially when you are taking pictures at slow shutter speeds.

Note in the pictures also that the model is holding the camera against her cheek bones and her forehead. This helps make the camera a part of you and minimizes the risk of movement.

The Right-Angle Finder

The right-angle finder (see Fig. 2-13) reflects the viewfinder image at a 90° angle as it passes through the eyepiece of the view-



2-13. Right angle viewfinder enables you to take pictures at waist-level as well as from the side without being observed.

finder. It is easily attached: it has a shoe with slips over the frame of the eyepiece.

With the right-angle finder, you can take pictures more easily of animals, small children and toddlers, flowers and other subjects which are more conveniently photographed from waist-level. It is very helpful in close-up photography, especially when the camera is mounted on a copying stand so that the eyepiece normally would be facing up toward the ceiling: with the right-angle finder, you can view and focus by looking straight ahead into the eyepiece of this accessory finder.

Another use of the right-angle finder is in shooting around the corner. It enables you to take pictures without being observed and hence is of great use in candid photography.

How to Take Your Own Picture

The Compur shutter of your Bessamatic has a built-in self-timer which enables you to walk in front of your camera and take your pose before the camera takes your picture by itself.

Of course, this is not magic. You must activate a self-timer which gives you about 10 seconds to get into place before the shutter is released automatically.

1. Turn the film-winding lever as you would before taking any picture.
2. With one finger, push in on the locking catch (18), and with another finger push the synchronizing lever (2) to position "V."
3. When you are ready to get into the picture, press the shutter release and get going.
4. About 10 seconds later, the camera will take your picture automatically.

Note the following:

1. The click you hear when you press the shutter release is not the shutter itself. It is the reflex mirror swinging out of the way.
2. Do not use the self-timer with the shutter set to "B."
3. Once the synchronizing lever is set to "V" it cannot be pushed back by hand to the "X" or "M" position. You can return it to "X" only by pressing the shutter release button.
4. To take flash pictures with the self-timer, you can use only those shutter settings suitable for X synchronization as explained in the chapter on flash photography.

Depth of Field

Depth of field is a term used to denote the zone of sharpness. This covers a distance in front of and behind the focused distance. The zone of sharpness is usually about twice as deep behind the focused distance as in front of it.

Two things govern the depth of field for any given lens:

1. The closer the distance at which you are focusing, the narrower will be the depth of field and vice versa.
2. The larger the lens aperture at any given distance, the smaller will be the depth of field; the smaller the lens aperture at any given distance, the deeper will be the zone of sharpness.

Elaborate depth-of-field tables are not necessary. Each Bessamatic lens (with the exception of the Bessamatic-Zoomar) has its own distance scale with depth-of-field pointers. When the camera has been

focused and the lens aperture set, you can ascertain the depth of field for the given combination of distance and aperture settings by reference to the two red pointers (9) above the distance scale (8). The two distances at which these two pointers appear indicate the limits of the zone of sharpness. You can observe how they work by turning the setting knob (4). When you widen the lens aperture toward *f*/2.8 or *f*/2, you will note that the two red pointers come together very close, indicating that there is very little depth of field. When you turn the setting knob so that the lens is being set for the smallest lens aperture, toward *f*/22, you have the widest zone of sharpness. See Fig. 2-14.

SMALLER DEPTH OF FIELD

WIDER DEPTH OF FIELD

2-14. Depth of field is computed automatically for each distance setting and lens aperture. Top illustration shows depth of field at f/2.8, as bracketed by the two red pointers on the distance scale. When lens is stopped down to smaller aperture of f/16, red indicators then bracket a wider field or zone of sharpness.

3

Using the Interchangeable Lenses

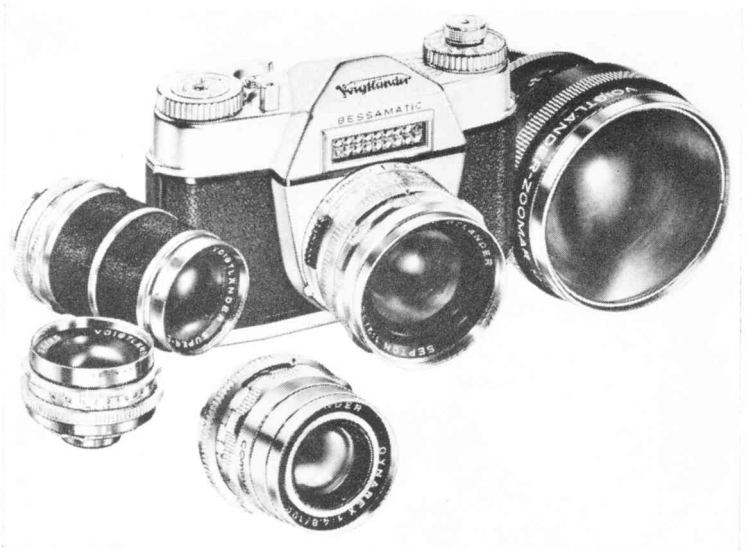
One of the important advantages of the Bessamatic is its ability to interchange lenses, thereby enabling you to take pictures under a wide variety of situations, whether you are covering sports, making portraits or close-ups, taking vacation pictures or doing architectural photography. The full range of available lenses is as follows:

- 35mm *f*/3.4 Skoparex wide-angle lens
- 50mm *f*/2.8 Color-Skopar or *f*/2 Septon standard lenses
- 100mm *f*/4.8 Dynarex tele lens
- 135mm *f*/4 Super-Dynarex tele lens
- 36 to 82mm Voigtlander-Zoomar variable-focus lens.

The Bessamatic, with its full set of lenses, is shown in Fig. 3-1.

Some General Rules on Focal Length

When you select a lens of any particular focal length for a given camera, you are really concerned with the field of view which you want to cover. If you want to bring a distant object in close, you need to select a lens having a narrow field of view so that it will concentrate on less of the field of view seen by the eye. The lenses which have the narrowest field of view are called telephoto lenses because



3-1. The Bessamatic with the battery of lenses that give it such unique versatility. On camera is the standard 50mm Septon f/2; other standard lens (not shown) is the Color-Skopar 50mm f/2.8. Also shown are the wide-angle Skoparex 35mm f/3.4, the tele lens Dynarex 100mm f/4.8, the tele lens Super-Dynarex 135mm f/4 and the Voigtlander-Zoomar variable-focus lens, 36-82mm f/2.8.

they appear to bring objects closer. As a practical matter, they record the same objects as seen from the same distance in larger dimensions on the ground glass and on the film as compared to the performance of lenses of shorter focal length and wider fields of view. Lenses having the widest field of view, wider than the so-called normal lens, are generally called *wide-angle* lenses.

In Figs. 3-2 through 3-5 you can see the different areas of image covered by each of the Bessamatic lenses, with the exception of the Zoomar. All these pictures were taken from the same distance, the only change made being in the lens used. You will note that the picture taken with the 35mm Skoparex wide-angle lens takes in much of the background, the foreground and the length of the boat. The picture taken with the 135mm Super-Dynarex takes in little more than the young lady, with just enough around her to establish her location.

One of the important things you must bear in mind when you use lenses of different focal length is that the depth of field (as shown in the accompanying tables later in this chapter) for the same distance and *f*/stop is increasingly shallower as the focal length becomes longer. Hence, when you use lenses of longer focal length, you may need to use smaller *f*/stops.

The lens of a longer focal length introduces another problem. The longer the focal length, the more important it is that you hold the camera as steady as possible during the moment of exposure. While you should avoid movement or vibration under any circumstances, the effect will be more visible when using the telephoto lens. The readily apparent reason is that you have greater magnification and hence you can see the effects of image displacement more clearly.

Use of the Different Lenses

The Normal Lens

The normal lens, that with which the camera is originally equipped, is an all-purpose lens. It is called *normal* because it is presumed to cover about the same field of view as the human eye.

The rule-of-thumb for determining the proper focal length for a normal lens is to select one which is of about the same focal length as the diagonal of the film frame. The diagonal of the film aperture of the Bessamatic is about 44mm. Anything less than this is considered to be a wide-angle lens while anything greater than that is considered to be a telephoto lens of moderate or greater proportion. For all practical purposes, however, 50mm is regarded as a normal lens.

With the normal focal length, the field of view will cover most picture-taking situations. That is, your picture will not include, as a rule, too much extraneous material, nor will it exclude essential details that you might like covered.

The Wide-Angle Lens

The 35mm Skoparex wide-angle lens is in the class of a moderate wide-angle. The extra coverage is sufficient in most cases to enable you to take pictures indoors of room scenes when you cannot back off sufficiently to cover what you want with a normal lens. Profes-

sional photographers and photo-journalists find a wide-angle lens to be indispensable for this reason. It is used extensively in architectural photography as well as in taking pictures of large groups.

Telephoto Lenses

Each of the long focal lenses, 90mm, 100mm and 135mm, fulfills a special need. In general, these lenses enable you either to work at a greater distance from your subject, if you prefer, or to bring the subject in larger, from the same distance.

Since your ultimate objective is to take a picture, you must start with the question: How much do I need to include within the picture area? Then, you must determine which lens you need to cover the desired area from the distance at which you will need to work.

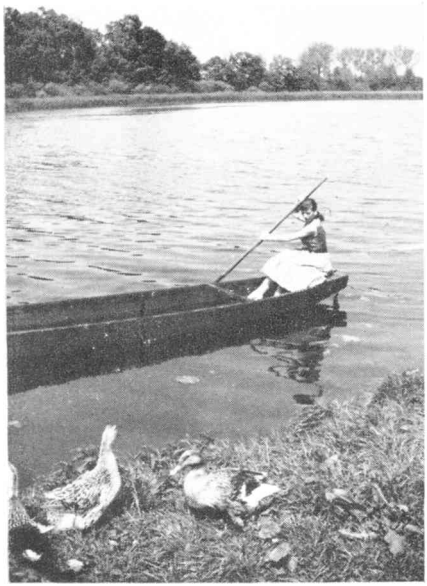
For example, if you want to take pictures of small objects, it is desirable that you work at some distance from these objects in order to maintain good perspective and to avoid the foreshortening which you would have at close distances. You run the least risk of giving undue prominence to things closest to the lens if you can back off as far as possible. Thus you might consider the 135mm lens to be ideal. On the other hand, if the camera must be set up on a support pointing downward, you might have to climb up high on a step-ladder for some subjects. Accordingly, you might find the 100mm lens to be better for some of your purposes.

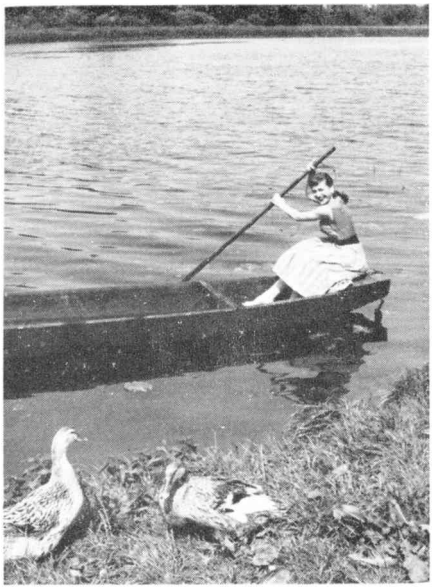
Either of these two lenses is suited for portraiture, although the 100mm lens is particularly useful in taking group portraits. A long focal length lens is important in portraiture because it avoids giving undue prominence to facial features, especially the nose.

The 100mm and 135mm lenses will be found most useful in covering outdoor events and indoor sports and stage photography. In the latter two categories, the 135mm lens will be found particularly convenient to use.

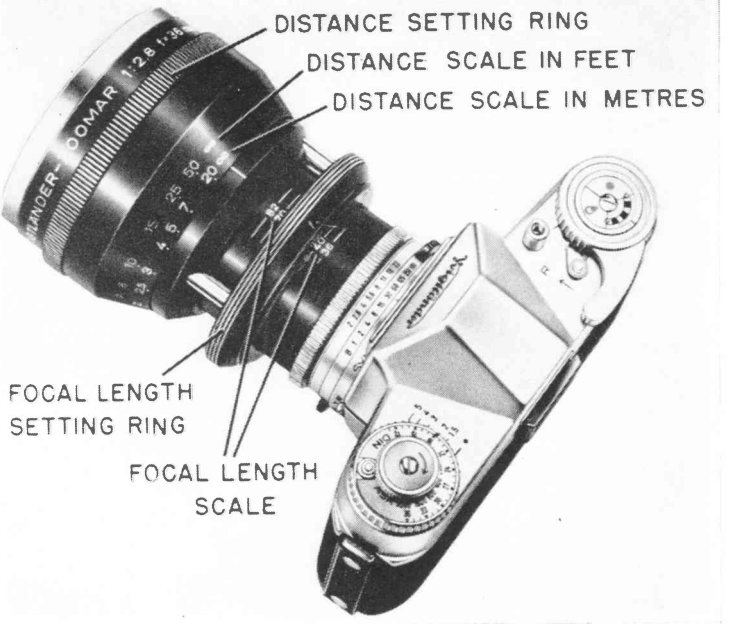
The Bessamatic-Zoomar Lens

The Bessamatic-Zoomar is shown in Figs. 3-6 and 7. The numerical references in the subsequent discussion are to the index numbers in Fig. 3-6.





3-2, 3, 4, 5. The fields of view for the 35mm, 50mm, 100mm and 135mm lenses, respectively.



3-6. Voigtlander-Zoomar lens mounted on camera.

3-7. Another view of Voigtlander-Zoomar mounted on camera.

Use of the Zoomar

The Zoomar has a working range from a moderate wide-angle lens to a moderate telephoto lens. Because you can vary its focal length from 36mm through any intermediate point up to 82mm, it provides great flexibility in framing your subject in order to take in as much as you need or to exclude the irrelevant in most picture-taking situations you are likely to encounter. The Zoomar is particularly useful in taking pictures of group situations where you may want to take wide views as well as selected individual subjects.

The range of wide-angle through telephoto effects possible with this lens is shown in Figs. 3-8 through 3-12. In this sequence, all taken from the same distance, the field of view is progressively narrowed so that the subject is made progressively larger.

Another use of the Zoomar lens is to control the pictorial effect, especially as it relates to perspective. In a subsequent chapter we will take up the manner in which foreground objects seem to be much bigger than normal due to the phenomenon of foreshortening. Thus, if you were to take a close-in picture of two people side by side with one of them closer to the camera than the other, the features and figure of the one nearer to you would be much larger. One way out of this situation is to back off from the subject. Figs. 3-13 and 3-14 show how the relative sizes of the two figures are brought much closer together as you back away. Of course, as you do so, you extend the focal length of the Zoomar lens in order to use it progressively as a tele lens.

How to Operate the Lens

The lens is mounted on the camera in the same manner as any of the other interchangeable lenses, as described below.

To focus the lens, you turn the large milled ring (1). Focusing is done with the aid of the dual rangefinder system as described in Chapter 2. Whenever possible, focus at the longest focal length setting of 82mm (3¼ inches). The larger image at that focal length and the narrower depth of field permits more accurate focusing.

In order to vary the subject matter coverage by adjusting the focal length, you move the focal length setting ring (4) back and

3-8, 9, 10, 11, 12. Intermediate fields of view covered by Voigtlander-Zoomar in range from 36mm to 82mm, all taken from same position.

forth until you see the field of view you want. This is done through the viewfinder just as with the normal camera lens. All other viewfinder operations are carried out in the same manner as described in the preceding chapter.

Accessories

Accessories which increase the versatility of the Bessamatic with the Zoomar lens are filters, supplementary Focar lenses which enable you to work at closer distances, a lenshood to exclude extraneous light, a tripod adapter and a carrying case. The use of the filters and the supplementary lenses is taken up in succeeding chapters. Fig. 3-15 shows how an attachment clamping ring is used for the mounting of filters. Focar lenses and the lenshood. The mounting of the camera wtih the Zoomar lens on it on a tripod is shown in Figs. 3-16 and -17.

If you wish to carry your Bessamatic with a Zoomar mounted on it, you will find a special carrying case shown in Fig. 3-18, to be most convenient for the protection of the camera and its lens.

Depth of Field with the Zoomar

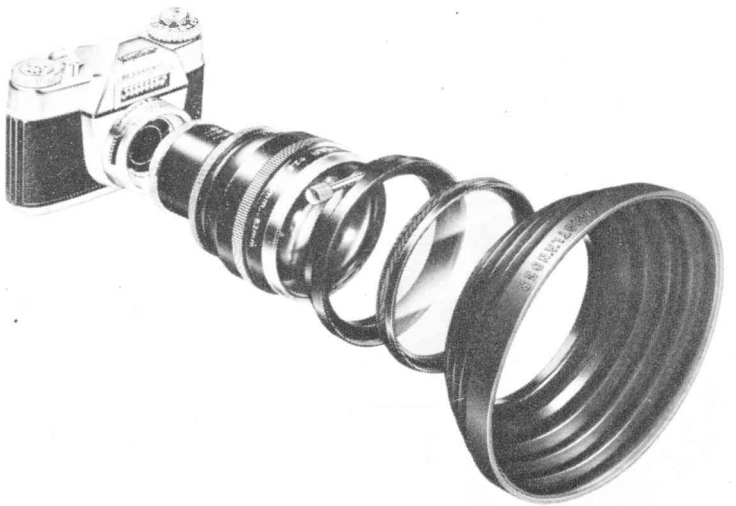
A depth-of-field computer is included with every Voigtlander Zoomar lens. It is a disc calculator, as shown in Fig. 3-19. With this calculator you can find the zone of sharp focus for all Zoomar shots in the normal range of 4¼ feet to infinity as well as for close-ups with the Focar lenses. One side of the calculator is calibrated in feet and inches while the other side is calibrated in meters and centimeters.

The depth-of-field computer is used as follows:

1. Rotate the colored top disc to bring the black triangular ▲ index mark opposite the distance setting (scale I) corresponding to the setting of the lens.

For close-ups with the Focar lenses the distances on the scales II to IV opposite the ▲ mark now also correspond to actual subject distances, measured from the front of the Focar lens to the subject.

3-13. 14. Another use of Zoomar lens is in controlling perspective effects, as in this pair of pictures, taken from different distances. Note how sizes of heads become more equal. As photographer backed off, he zoomed lens out to enlarge the image.



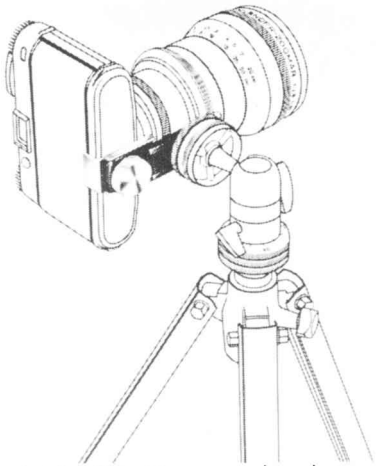
3-15. Attachment clamping ring with filters, close-up Focar lenses and lenshood for Voigtlander-Zoomar.

2. Rotate the tab (*e*) to bring the appropriate focal length group into the window (*b*), corresponding to the focal length (or intermediate value) read off the lens.

The figures 44, 55, and 65 always appear in two focal length ranges. For determining the focal length it is immaterial in which alternative range you set these figures.

3. The aperture scale (*a*) is marked below the triangular ▲ index mark. Sectors with guide lines radiate to the left and right from this aperture scale over the scales I to IV. The depth of field extends from the distance figure below the left-hand guide line of the appropriate sector to the distance figure below the right-hand guide line of the same sector.

For the lower figure of a focal length range (for instance, 36) always use the lower line of an aperture sector; for the upper limit (for instance, 45) use the upper line.



3-16, 17. Mounting bracket for Bessamatic when Zoomar lens is attached and tripod is to be used.

Examples:

a) Normal focusing range (4¼ feet or 1.3 meters to infinity)
Subject distance 2.5 meters
Focal length between 45 and 55mm.
Depth of field at f/*16* extends from 1.4 to 20 meters.

b) Close-up with Focar B lens
Subject distance 44 cm (lens set to 4 meters)
Focal length 82mm.
The depth of field at f/16 extends from 42 to 46 cm.

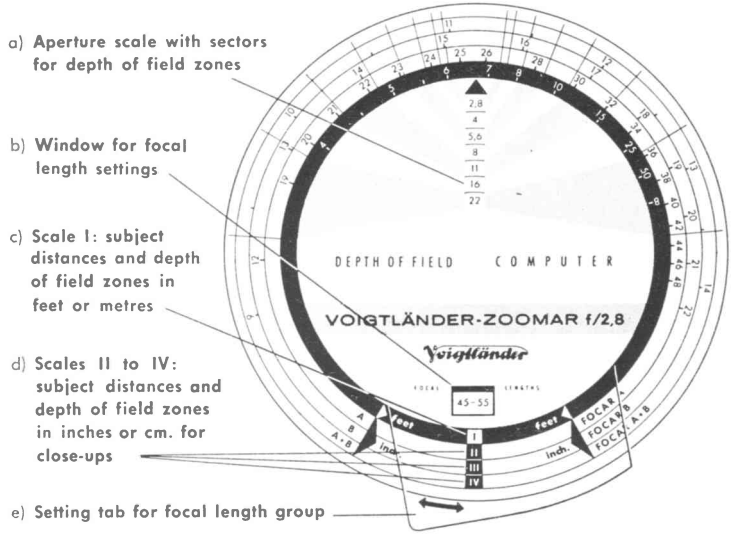
A Few Practical Points

The Voigtlander-Zoomar *f*/2.8 is effectively corrected for distortion over almost the whole focal length range. This is always one of the main difficulties in the design of variable focus lenses.

In the extreme telephoto position only, slight distortion may become noticeable at the edges of the field with certain subjects. This is, however, readily apparent in the finder, and you can easily modify the pictorial effect by choosing a more suitable focal length.

3-18. Carrying case for Bessamatic when used with Zoomar.

Another inherent feature of the design is that when you have focused the lens in the telephoto position and changed over to the shortest focal length, the two halves of the split image in the range-finder field may shift very slightly. This is immaterial from the point of view of image sharpness, for the lens is adjusted to ensure opti-



3-19. Depth-of-field computer for Voigtlander-Zoomar, furnished with each lens.

mum definition even in the wide-angle position without change in the distance setting.

How to Interchange Lenses

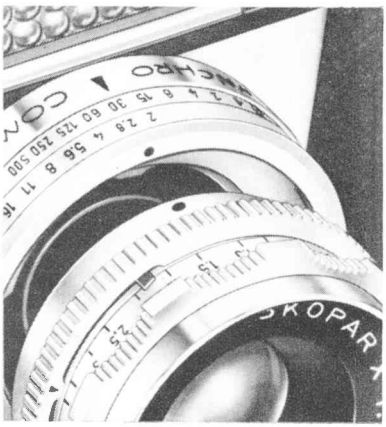
The changing of lenses is done very easily. Because the central shutter is not disturbed and is in a closed position, there is no danger of accidental exposure due to the removal of a lens.

All the interchangeable lenses, including the Voigtlander-Zoomar, are fitted with a quick-changing bayonet mount.

To remove the lens, depress the catch (19), turn the lens to the left, and lift it out of the shutter. See Fig. 3-20, which shows the catch at the base of the lens mount.

To insert any lens in the shutter opening, make sure that the red dot on the lens mount is opposite the red dot on the aperture ring, as shown in Fig. 3-21. Then, turn the lens slightly to the right until you feel it engaged. It is now firmly mounted in the camera.

3-20. To remove lens, catch at base of camera is depressed while lens is turned to left.



3-21. To insert lens, two red dots are lined up, lens is dropped into place and turned slightly to right until it clicks into place.