

MAKING  
MOVIES THE  
EASY WAY with  
your new  
**Bell & Howell**

**Model 240**  
**16 mm**  
**MOVIE CAMERA**



240-A



240-T



240-TA



Use the addressed registration card attached to the cover of this booklet to register your camera with Bell & Howell. The serial number of your camera will be found on the trim plate inside the camera, as shown.

## Welcome to

# Bell & Howell ownership...

Your Bell & Howell 240 camera is an entirely new design, planned and introduced with two important factors in mind: (1) simplicity of operation, and (2) economy for you. Versatility hasn't been overlooked in this new camera, either. You'll find in the 240 features never previously built into a 16mm movie camera as standard equipment. Your own movie-making ability can grow with your 240.

To be certain you get the best possible performance from your B&H 240, study the following pages carefully, with the camera before you.

And please feel free to call upon your Bell & Howell dealer—or write to us direct—for any further information you may wish.

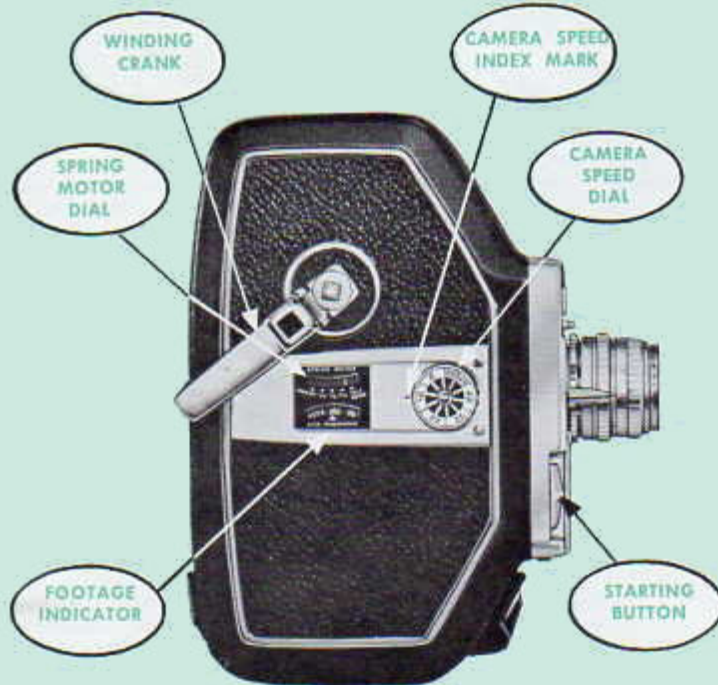
**Bell & Howell** Chicago 45, Illinois

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**YOUR 240 CAMERA IS DESIGNED FOR EASE OF OPERATION. FOLLOW THESE 5 SIMPLE STEPS AND YOU'RE READY TO TAKE LIFE-LIKE MOVIES:**

- 1** Wind motor
- 2** Load camera
- 3** Set camera speed
- 4** Set viewfinder and lens
- 5** Take aim—and shoot!



## **WINDING THE CAMERA**

Always keep your camera wound between shots. This will save you from having the motor run down in the middle of a scene. A dial marked **SPRING MOTOR** tells you how fully wound the camera is at all times. It is located just above the **FOOTAGE INDICATOR** dial (which shows number of feet remaining) on the right-hand side of the camera, and is marked Unwound  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and Fully Wound.





Always load your camera in subdued light or shade, never in bright sunshine.

Wind camera as described on page 3.

Lay camera on its side with door upward and lens pointing away from you, as shown. Remove door by turning **DOOR-LOCK KNOBS** counterclockwise until they are disengaged. Lift door off of camera by means of viewfinder housing. Remove empty spool from **EMPTY SPOOL SPINDLE**. Pull **FOOTAGE COUNTER FEELER** toward you until it clicks into "open" position.

Place full spool of film on **FULL SPOOL SPINDLE**. Close **FOOTAGE COUNTER FEELER**—this will automatically set the **FOOTAGE INDICATOR DIAL** approximately at the 100-foot mark.

As originally packed, film will have pointed end. Extend end of film along outer frame of camera and through film cutter as illustrated. Keep the film flat against the bottom trim plate and clip off pointed end.



Avoid cutting through perforations. (If this is not done, film end will not pass properly through the 240's self-threading mechanism.) Discard clipped-off end of film, making sure that it does not remain inside camera.

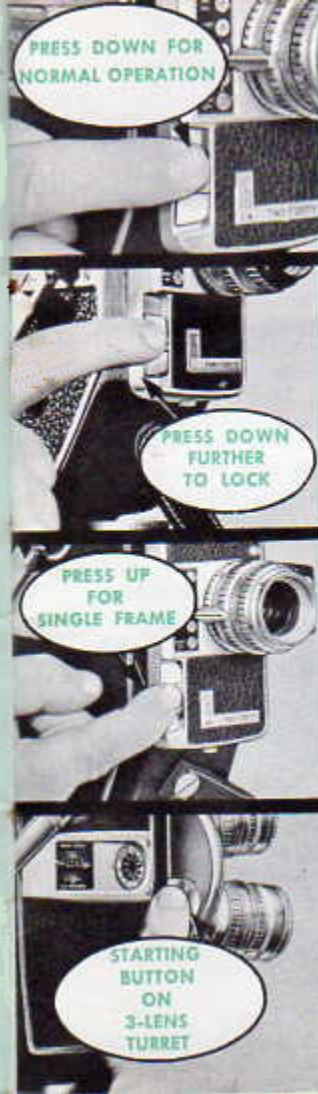
Feed end of film into threading mechanism, just inside **UPPER SPROCKET GUARD**, as illustrated. Then press **STARTING BUTTON** to operate camera motor. Run motor until about 10 inches of film have progressed through **LOOP-FORMERS** and around and out past **LOWER SPROCKET GUARD**. (Once they have served their purpose, loop-formers are automatically raised up out of film path when door is put back in place. Thus they come in contact only with leader portion of film.)



Crimp end of film and slip into slot of empty (take up) spool. Revolve spool clockwise in fingers until one or two turns of film are wrapped around it. Place takeup spool on EMPTY SPOOL SPINDLE. Revolve spool with finger to take up any slack in the film.

Replace camera door and lock in position by turning door-lock knobs as far as they can be turned by hand. Door edge is light-trapped to prevent any possibility of film becoming light-struck in camera after door is secured.

Press STARTING BUTTON gently downward and run camera motor, until the footage indicator registers "100", to run off the leader film. This section of the film is not usable for picture taking. It and the trailer section at the end of the roll are not counted in the 100 actual feet of usable film you get — they are provided at either end of the roll to protect the rest of the footage from becoming fogged during loading and unloading the camera.



## STARTING BUTTON

The three-position STARTING BUTTON on your 240 camera works as follows:

1. Slight downward pressure on the button operates camera motor until you release pressure or motor runs down.
2. Additional downward pressure locks the button in continuous-run position, so that the camera will operate, without further attention, until the motor runs down. This enables you to get into the picture, when the camera is placed on a tripod.
3. Press upward on the button to expose a single frame of film. Single-frame exposure is used for animation and other special effects. (Single exposures also can be made by using a cable release, as described on page 12.) The single-frame exposure of the 240 camera is 1/30 second. This requires that you close the lens  $\frac{1}{2}$  stop more than for 16-frame operation (1/43 second).

On the 240-TA three-lens turret model, the starting button is located on the back of the turret plate instead of on the front of the camera. Operation is exactly the same as described above.



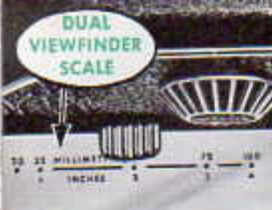
## CAMERA SPEEDS

Operation of the CAMERA SPEED DIAL was described on page 4. In addition to 16 frames per second (normal speed) and 24 frames per second (sound speed), your 240 will run also at 8, 32 and 48 frames. Use 8 frames per second for speeding up

greater exposure through the slower shutter speeds when the light will not permit full exposure at your fastest lens opening at normal (16) speed. The 32-speed is recommended for use when filming from a moving auto, train, or plane. It slows down the action and minimizes camera motion caused by bumpy roads, rough air, or the swaying of a conveyance at high speed. It is useful also for "panning" (turning the camera slowly from left to right or vice versa) in those very rare instances where panning is necessary. And it frequently will give a more realistic effect in shots of waving flags and waterfalls.

The 48-speed is used for slowing down action. Use this speed to film fast moving subjects and for analyzing golf, tennis and other sports in action.

In using different camera speeds you must remember two things. One is that film consumption is in direct proportion to camera speed. The second, and perhaps more important, is that as you speed up the camera motor each frame of film receives relatively less exposure, since it is passing the aperture at higher velocity. To compensate for this you must open the lens accordingly. A conversion table to assist you in this will be found on page 33. (If you are using a Sunomatic lens, it is a simple matter to set the Lens Pointer Ring for the camera speed being used. (See page 13.)



## THE VIEWFINDER

Your 240 A and T will be equipped with a variable, or "zoom-type," viewfinder. As illustrated, the scale on top of the viewfinder housing is graduated to match lenses of various focal lengths. Since some lenses are marked in the metric system (millimeters) and others are marked in the English system (inches) to designate focal length, a dual scale has been provided on the 240 viewfinder. One row of figures is graduated in millimeters, from 20 to 100, inclusive. The other goes from 1 inch through 4 inches. When using a telephoto attachment lens (40mm) this field is shown by a yellow dot on the graduated scale.

A metal pointer slides along the length of the viewfinder scale for setting the finder as required. Always be sure that the finder is set for the lens you are using at any given time. When this is done, as you look through the viewfinder you will see the exact picture area being included by the lens.

Where the focal length of a lens falls somewhere between the markings on the scale, you can set the pointer accordingly with considerable accuracy.

Parallax—the condition existing when viewfinder and lens include slightly different fields at very close subject distances—offers little or no difficulty to users of the 240 camera. This is because under all conditions the viewfinder is located right beside the lens mount and at exactly the same height on the camera body.



## CABLE RELEASE

In making single-frame exposures the use of a cable release is recommended, for minimizing any camera motion. Most standard cable releases can be used for this—a fairly long one is preferred.

In the center of the bottom edge of the camera face-plate is a small screw with a round knurled head. Removing this screw exposes the socket into which the cable is screwed. Pressing and releasing the cable-release plunger results in making single-frame exposures. This method is particularly desirable in time-lapse work and animation, and in making "trick" titles. The camera must be mounted on a tripod, of course, and should be carefully aimed and locked into position.

## FILM-PLANE REFERENCE

For various reasons you may want sometimes to measure film-to-subject distance accurately to within an inch or so. The actual film plane inside your 240 camera is at the point where the metal front plate joins the camera body casting, as illustrated.

The focusing-mount 20mm lens can be scale-set for close-up work down to 18 inches. But if you are using the 20mm Universal-focus lens, be sure to consult the Near-Distance Focusing Table on page 29.



## THE SUNOMATIC LENS

The exclusive Bell & Howell Sunomatic lens frees you from time-consuming exposure calculation in your outdoor movie-making. Simply setting the pointer at the appropriate "sun image" on the camera face-plate (on single-lens and two-lens turret models) automatically sets the lens aperture correctly.

The Sunomatic lens has been devised for convenient exposure setting with any popular type of color movie film available. Such films fall into one of two emulsion speed—or index—ratings: ASA 10 or ASA 32. Your dealer will tell you the index of the film you select, or you will find it listed on a sheet packed with the film. You then set the lens to that index number as described below, and the Sunomatic principle is in operation.

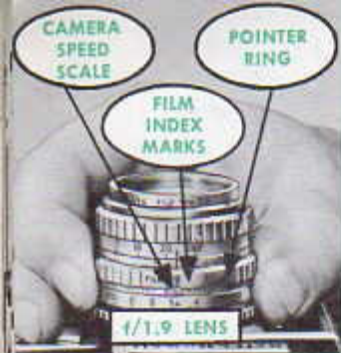


## SUNOMATIC 20mm f/2.5 UNIVERSAL-FOCUS LENS

To set the Sunomatic f/2.5 lens for the film being used, hold the camera with the lens pointing upward. Lift the fluted ring with the pointer on it (POINTER RING), and set the FILM INDEX MARK opposite the CAMERA SPEED (number of frames per second at which you have set the camera to operate) on the barrel above it. Example: You are using film having a daylight ASA index of 32. You have set the camera to run at 16 frames per second. Lift the Pointer Ring and set the 32 marker to align with the 16 mark on the barrel above it. Release the Pointer Ring—it will snap back into place. Now your Sunomatic lens is set for daylight shooting with the film you've chosen. By moving the pointer to the appropriate "sun image" (outdoor light rating) on the camera face-plate, you automatically set the lens aperture for the proper exposure.

Naturally, any time you reset the dial to change camera speeds (from 16 to 24 or any other number of frames per second) you must remember to change the Pointer Ring setting accordingly.





lens, and is due to basic optical principles.

## SUNOMATIC f/1.9 FOCUSING-MOUNT LENS

The Sunomatic f/1.9 lens works exactly like the f/2.5 except that it has an additional fluted ring for focusing. Also, it will be seen that the camera speed—or "frames per second"—markings are *below* instead of above the fluted Pointer Ring. In this case the notches on the Pointer Ring are centered above the camera speed marks.

The fluted FOCUSING RING on the f/1.9 lens is graduated in distances from 18 to 30 inches and thence from 3 feet out to infinity. To focus at one of the distances marked on the ring, turn

the ring until that mark is exactly opposite the long index mark on the barrel immediately below.

NOTE: You will notice a red mark between the 20-foot and infinity settings. When this mark is brought opposite the long index mark, the lens is set for universal focus. Careful focusing is recommended for most work. But where considerable fast action must be followed and it is impractical to change focus frequently, you can use universal focus to good effect.



NOTE: The universal-focus f/2.5 lens should not be used at subject distances shorter than approximately 6 feet *unless* light conditions call for a setting of f/11 or f/16. At wider apertures—such as f/8, f/5.6, and on up to f/2.5—image sharpness will decrease within the 6-foot range. This is a characteristic of any fine universal-focus



## REMOVAL OF SUNOMATIC LENS

Both the f/1.9 and the f/2.5 Sunomatic lenses are put on and removed the same way. To remove the lens, turn the fluted LOCK RING (nearest to the camera) *counterclockwise* until the lens is disengaged from the socket and can be freely lifted off. To install the lens, insert it in the socket so that the slot in the edge of the mount engages the PIN at the left-hand side of the socket. Then lock the lens onto the camera by turning the Lock Ring clockwise as far as it will turn by hand.

## C-MOUNT LENSES

The standard mount for 16mm camera lenses is known as the C-mount. The socket which takes your Sunomatic lens is threaded externally for that lens. The internal threads accept any C-mount lens you may wish to use.

## SETTING LENS APERTURE BY f/NUMBER

On the left-hand side of the camera front plate and just above the Sunomatic lens is a small pin (APERTURE INDEX PIN) with a red dot on the end of it. This is your index when using the f/numbers on the lens barrel instead of the Sunomatic pointer. For example, to set the lens at f/11, set the figure 11 directly opposite the APERTURE INDEX PIN, as shown.

## ARTIFICIAL LIGHT

The f/numbers mentioned above are particularly useful when the Sunomatic Pointer cannot be used because you are filming indoors by artificial light. Your dealer can supply you with an exposure guide for making indoor movies with the film of your choice. Such guides (including the exposure guides on the back plates of most movie light bars) recommend certain lens settings for various indoor lighting setups. Use the f/numbers on the barrel of your Sunomatic lens for setting the aperture as required.



## DEPTH OF SHARPNESS WITH YOUR SUNOMATIC 20MM LENS

The 20mm  $f/2.5$  universal-focus and  $f/1.9$  focusing-mount Sunomatic lenses supplied for the 240-A and 240-T cameras have unusual depth of sharpness (known technically as *depth of field*). While the 1-inch (or 25mm) focal length is considered standard or "normal" for 16mm cameras, Bell & Howell has introduced these 20mm (approximately  $\frac{4}{5}$ -inch) lenses for two good reasons. One is that the slightly shorter focal length affords a proportionately wider angle of view, so that from a given camera position you can include a little more area in your picture without having to employ a true wide-angle lens. The other reason is that as the focal length of a lens is shortened its depth of sharpness (depth of field) increases.

To get the utmost out of the additional depth of sharpness inherent in your 20mm Sunomatic lens—whether it be universal-focus or focusing-mount type—familiarize yourself with the following:

### 20mm $f/2.5$ Universal-focus Sunomatic Lens

This type of lens requires no adjustment for photographing subjects at various distances from the camera. It is pre-set at the point of critical focus at its widest opening ( $f/2.5$ ). But the point of critical focus changes as you change lens openings. See the near-distances for 20mm lenses on page 29, and use it as a reference guide to insure getting the sharpest possible movies.

### 20mm $f/1.9$ Focusing-mount Sunomatic Lens

This type of lens is capable of photographing subjects sharply at short distances even at the widest lens opening. To take full advantage of the inherent depth of field of this lens, first set the correct lens opening ( $f$ /stop). Then turn the focusing ring so the lens is focused for the distance between film and subject. Now consult the depth-of-field table on page 30 to find the nearest and most distant points of sharp focus for different combinations of lens openings and subject distances with the 20mm lens.

The focusing-mount lens, as already mentioned on page 14, can be employed as a universal-focus lens by means of using the red-mark setting on the lens barrel. In addition, it can be used in conjunction with the near-distance table on page 29, just as in the case of the  $f/2.5$  Sunomatic lens.

## USING THE CAMERA

With camera speed and viewfinder set, motor wound, and lens properly adjusted, you are ready to take movies. Holding the camera steady and level is important, and the most advantageous position is illustrated here, in which the handstrap is employed to steady the left hand as the fingers grasp the viewfinder housing. An alternative method also is shown, in which the handstrap is not employed. Most users find the handstrap to be a decidedly steadying factor, however.

Some people are right-eyed, others left-eyed. View with which-ever eye seems most natural for you. Keep your arms close to your body, forming a firm yet resilient support for the camera.

When using telephoto lenses always employ a tripod, since any slight movement of the camera is greatly exaggerated in projection of the film. Actually, it is best to use a tripod wherever possible, but its absence will be less evident when using lenses of 1-inch and shorter focal lengths. Once you have compared a professionally-produced film (in the shooting of which a tripod was used throughout) with an amateur film shot without the use of a tripod, you will be convinced on this point.

A tripod socket is located in the bottom of the camera housing.

Allow plenty of footage for each scene. The beginner tends to shoot his scenes too short, with the result that when projected the film gives the impression of a series of brief sequences. The average scene should run for at least seven seconds. (Thus with a single winding of your 240 camera you can film a dozen or so average scenes or several long sequences). You can count this out very easily by saying to yourself "one thousand, two thousand," and so on. Each thousand count will be very close to one second in duration. "Quiet" subjects, such as landscapes, scenery, and other pictorial matter, usually require more footage than scenes in which fast action is taking place.







## UNLOADING THE CAMERA

When the film footage indicator dial shows "0" you have exposed 100 feet of film and the camera must be reloaded for further movie making. Before removing the door, run the camera motor until the indicator passes from "0" to the word TRAILER on the dial. This will run the remaining five feet or so of trailer

off the feed spool and onto the takeup spool. Now remove the camera door. Lift out the full (in this case the lower) takeup spool, pressing lightly on the trailer end of the film to prevent any possibility of the film unwinding or loosening and thereby becoming light-struck. Place the full spool immediately in the safety can, and have it processed as soon as possible.

In unloading, just as in loading, it is wise to work in subdued light, and never in direct sunlight.

## KEEP YOUR CAMERA CLEAN

Regular cleaning will help to keep your camera and lenses in top condition, and thus will improve the quality of your pictures.

**Lenses.** Every camera (and projector) lens should be kept clean at all times. *Never attempt to take a lens apart.* Clean the exposed front and rear glass surfaces with B&H Opti-Kleen lens-cleaning fluid and lens tissue. (Cleansing tissue can be used if lens tissue is not on hand.)

The front and rear glass surfaces of the viewfinder, lens attachments, and filters should be cleaned in the same way.

Fingerprints are particularly to be avoided on high-grade optical glass surfaces. They contain body secretions which will etch the glass itself if allowed to remain on it.



**Camera.** Keep the camera interior free of dust, tiny emulsion particles, and other foreign matter. Such material can become lodged in the film aperture and have adverse effects on your films, both physically and pictorially. A rubber ear-syringe is useful for blowing loose matter out of the camera interior. A camel-hair brush can be used also. *Keep metal tools away from your camera!*

Cleaning of the camera is facilitated by swinging the SPROCKET GUARDS around into open position. This affords access to the sprocket and the area immediately surrounding it. To open a sprocket guard, lift up the retaining pin as shown. This permits the sprocket guard to be swung around until it points toward the back of the camera. With both guards swung open you can get at the sprocket and surrounding area with syringe and brush. To close sprocket guard, lift up on pin, swing guard back into original position, and seat pin in hole. If guard is not returned to correct position, camera door cannot be closed.

Lift out the PRESSURE PLATE, as illustrated, and clean it regularly. It can be lifted out by the notched tab on the back. The satin-finished metal surface should be kept clean at all times. Should any emulsion particles become stuck to the plate, use a toothpick to dislodge them. Here, too, Opti-Kleen can be used to soften foreign matter and for cleaning metal surfaces. When replaced properly the plate should lie flat against the film when in position.





## TURRET MODELS OF THE 240

A two-lens or three-lens turret renders the camera more versatile. Your single-lens 240-A camera can be fitted with either turret at the Bell & Howell factory. Ask your dealer about the cost of such adaptations.

**Two-Lens Turret.** The B&H Swiftturn two-lens turret (original equipment on the 240-T model) provides for the use of any two lenses of your choice. These may be a 20mm Sunomatic and a telephoto, or some combination of two standard C-mount lenses. Notice that the Swiftturn turret for the 240 permits use of the Sunomatic lens in conjunction with the "sun images" on the front plate of the camera.

Always use care in screwing a lens onto the turret. Be sure that the threads are properly seated before starting to screw the lens into the mount. Careless handling during this operation can damage the threading of lens or mount, or both.

To put either of two lenses in taking position at the film aperture requires only a second, literally. Pull outward on the post between the lenses. This unlocks the turret so it can be swiftly revolved through 180 degrees. Then when the post is released, the turret springs back and automatically locks in the new position. Remember to adjust the viewfinder to match the lens in use.

**Three-Lens Turret.** The three-lens turret on the 240-TA camera provides for the mounting of any three standard C-mount lenses of your choice. The B&H Angenieux 10mm f/1.8 and the B&H Angenieux, 1-inch f/0.95, and 3-inch f/2.5 lenses make an extremely versatile combination.

Because the lens mounts on the 240-TA turret have divergent axes, the lenses when mounted all point slightly outward from the center of the turret. This prevents any possibility of a long-

focus lens barrel cutting into the included field of a short-focus lens on the same turret. Because the B&H Angenieux 10mm f/1.8 wide-angle lens covers an extremely large field it should not be mounted on the turret at the same time as the 6" lens. The turret is easily revolved to bring any of its three lenses into taking position. Click stops assure the accurate indexing or positioning of each lens at the film aperture. As a safety feature, the starting button of the camera will



not work unless a lens is in actual taking position.

The three-lens turret is not designed for use with the Sunomatic lenses, since there is no way of positioning the "sun image" panel for use with the Sunomatic pointer. Any standard C-mount lens can be used, however.

The usual precautions regarding proper seating of lenses and adjustment of viewfinder hold true in the case of the three-lens turret.

## WIDE-ANGLE and TELEPHOTO ATTACHMENTS

The f/2.5 Comat universal-focus and f/1.9 Super Comat focusing-mount 20mm lenses both were designed to take the Bell & Howell lens attachments. These screw into the internal threading at the front of the lens barrel, and thus cannot be jarred loose or drop off when mounted.

# **YOUR 240TA CAMERA**

comes equipped with a viewfinder of the positive type, which accomodates three viewing objectives. Put your eye to the viewfinder eyepiece. You see exactly as much of your subject as will appear on the screen, in the same proportion as the lens "sees" it. The positive viewfinder of your 240TA makes this possible. It also eliminates shifting of the image even though your eye may accidently shift at the eyepiece. In positioning objectives on the viewfinder turret, be sure each viewfinder is placed so as to be in viewing position when its matching lens is in taking position.





The Wide Angle and Telephoto lens attachments are designed and made expressly for use in conjunction with Bell & Howell 20mm camera lenses. These attachment lenses give you a matched optical system rather than a makeshift arrangement of some sort. In effect they vary the focal length of your 20mm lens—and it does this without requiring any increase in exposure.

The Wide Angle attachment lens reduces the effective field of the 20mm lens to approximately  $\frac{1}{2}$ " while the Telephoto attachment lens gives an effective field of about 40mm.

When you are not using the attachments, be sure to keep the front and rear lens caps on them to prevent dust, fingerprints, or other foreign matter from accumulating on the exposed glass surfaces. And make it a habit to remove the front cap before using the attachment on the camera lens—forgetting this will result in your shooting blank film.

The Wide Angle and Telephoto attachments have no focusing rings. Thus, when using them with the f/2.5 universal-focus lens, you simply put an attachment on and shoot.

When using them with the 20mm f/1.9 focusing-mount lens, however, you focus with the camera lens itself. In doing so, be sure to remember that the distance shown on the focusing scale is only a fraction of the actual distance focused on. Instructions for converting the actual scale reading are furnished with the attachment.

## THE 240 CASE



To protect your 240 camera and lenses when not in use, and to afford utmost convenience in carrying the equipment, a sturdy black cowhide case is available from your B&H dealer. Designed especially to match the camera in appearance and to hold camera, film, and accessories in place during transportation, the case is made to highest quality standards in the Bell & Howell factory. If you did not order the case when you purchased your camera, ask your B&H dealer about this handsome piece of luggage.



## **Bell & Howell** **DIPLOMAT** **16mm Silent** **Projector**

The finest 16mm silent projector made. Full 400-foot capacity lets you enjoy a quarter-hour show of your movies at their best. Smooth, dependable all-gear drive. Reverse and still picture projection.



## **Bell & Howell** **STATESMAN** **16mm Silent** **Projector**

An economical projector that offers you flicker-free movies, brighter and bigger than life. Easy to thread and operate, the Statesman fully protects your valuable film, brings you many advanced features. Reverse and still picture projection.

## **MAKE YOUR OWN SOUND MOVIES!**

Add sound to your *own* 16mm movies, with Filmosound 302—the projector that records sound on your films as you project them, then plays back your sound immediately.

You'll find countless uses for your soundfilms—family movies with family voices on the soundtrack, business, church, club, PTA, and other applications.

And 16mm films you may have made in years gone by will become far more interesting with sound added to them.

The 302 runs silent and optical sound films, too. It's versatile, easy to use, and really rugged. See it at your Bell & Howell dealer's. He'll help you make a test recording.



## **FILMOSOUND 302** **magnetic recording** **projector**

- 2000-foot capacity—full hour show
- reverse and still-picture projection
- projects silent, optical sound, or magnetic sound films
- 1000-watt concentrated-filament lamp gives unsurpassed picture brilliance



## LENSES

All standard C-mount lenses are easily interchangeable. Telephoto lenses are available for taking close-ups of distant subjects; wide-angle lenses for covering large

areas, and speed lenses for filming under poor lighting conditions. All Bell & Howell, Angenieux, and Taylor Hobson Cooke lenses are fully color-corrected and Filmocoted for maximum light transmission and protection of exposed glass surfaces.

### A 10mm WIDE-ANGLE LENS

will film a greater area of the subject than your standard camera lens from the same distance. This type of lens is especially useful in cramped quarters where you have to film at close range. Choose the B&H Angenieux 10mm f/1.8 lens for this job.

### A TELEPHOTO LENS

brings the subject closer by magnifying the image you are filming. Particularly useful for "candid" subjects. Choose from among these B&H Angenieux, and Taylor Hobson Cooke telephoto lenses:

2" f/1.4 TTH Ivolet  
(2x magnification)

2" f/2 TTH  
(2x magnification)

3" f/2.5 Angenieux  
(3x magnification)

4" F4 Cooke  
(4x magnification)

6" f/4.5 TTH  
(6x magnification)

### SPEED LENSES

are used for photographing subjects under poor lighting conditions. These "fast" lenses help you to capture pictures which otherwise would be badly underexposed or lost entirely.

10mm f/1.8 Angenieux

1" f/0.95 Angenieux

1" f/1.4 TTH Ivolet

1" f/1.9 B&H TTH

2" f/1.4 TTH Ivolet (Speed-  
telephoto, 2x magnification)

3" f/2.5 Angenieux (Speed-  
telephoto, 3x magnification)



## TAKE MOVIES INDOORS

It's easy to take indoor movies with indoor film and a light bar. The latter is fitted to hold the camera securely, provides for two or four floodlamps, and has a long cord for plugging into any convenient outlet. Most light bars have simple exposure instructions printed on them.

## SHUTTER SPEED COMPARISON CHART

The following table gives the corresponding shutter speed for each of the camera speeds of the Bell & Howell 240-A, 240-T, and 240-TA cameras.

### CAMERA SPEEDS

8 f.p.s.  
16 f.p.s.  
24 f.p.s.  
32 f.p.s.  
48 f.p.s.  
Single-frame

### SHUTTER SPEEDS

1/22 second  
1/43 second  
1/65 second  
1/86 second  
1/129 second  
1/30 second

## NEAR-DISTANCE FOCUSING TABLE

for 20mm f/1.9 Focusing-mount and f/2.5 Universal-focus Lenses

The 20mm f/2.5 universal-focus lens will be in good focus at the following near-distance limits, at the f/stops given:

f/2.5	f/2.8	f/4	f/5.6	f/8	f/11	f/16
13'4"	12'8"	10'3"	8'2"	6'4"	4'11"	3'4"

The 20mm f/1.9 focusing-mount lens — when set at universal-focus — will be in good focus at the following near-distance limits, at the f/stops given:

f/1.9	f/2.8	f/4	f/5.6	f/8	f/11	f/16
17'7"	14'2"	11'4"	8'11"	6'9"	5'2"	3'9"



Object Area Height		Best Focus	F = far limit of sharpness; D = depth of sharpness; N = near limit of sharpness									
			f/1.9	f/2.8	f/4	f/5.6	f/8	f/11	f/16			
20"	27"	Infinity	N	34'2"	23'2"	16'3"	11'8"	Inf.	Inf.	Inf.	Inf.	Inf.
	9'6"	20"	F	48"	145"	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
7'1"	9'6"	20"	D	35'4"	134"	9'	7'5"	5'10"	4'8"	3'6"	3'6"	3'6"
	9'6"	20"	N	12'8"	10'9"	9'	7'5"	5'10"	4'8"	3'6"	3'6"	3'6"
3'6"	4'9"	10"	F	14'1"	17'9"	25'8"	68'10"	Inf.	Inf.	Inf.	Inf.	Inf.
	4'9"	10"	D	6'4"	10'5"	19'5"	63'5"	47'7"	3'10"	3'	3'	3'
2'5"	3'3"	7"	F	8'9"	9'11"	12'1"	17'2"	47'11"	Inf.	Inf.	Inf.	Inf.
	3'3"	7"	D	2'11"	4'6"	7'2"	12'9"	44'1"	3'10"	2'8"	2'8"	2'8"
1'9"	2'4"	5'	F	5'10"	6'3"	7'2"	8'7"	12'7"	29'1"	26'4"	24"	24"
	2'4"	5'	D	1'5"	2'1"	3'4"	5'5"	3'2"	2'9"	2'9"	2'9"	2'9"
1'5"	1'10"	4'	F	4'6"	4'10"	5'3"	6'	7'9"	11'8"	9'11"	9'11"	9'11"
	1'10"	4'	D	1'1"	1'5"	2'3"	3'3"	3'	2'5"	2'1"	2'1"	2'1"
1'	1'4"	3'	F	3'4"	3'5"	3'7"	3'11"	4'8"	5'10"	10'4"	10'4"	10'4"
	1'4"	3'	D	7"	9"	1'1"	1'6"	2'3"	2'1"	1'10"	1'10"	1'10"
10"	1'2"	30"	F	2'8"	2'10"	3'	3'2"	3'6"	4'2"	4'5"	4'5"	4'5"
	1'2"	30"	D	4"	7"	1'10"	1'1"	1'7"	1'10"	1'7"	1'7"	1'7"
9"	1'	27"	F	2'4"	2'5"	2'7"	2'10"	3'1"	3'6"	4'9"	4'9"	4'9"
	1'	27"	D	2'2"	2'1"	2'	2'5"	2'7"	1'8"	1'3"	1'3"	1'3"
8"	11"	24"	F	2'1"	2'2"	2'3"	2'5"	2'7"	2'11"	3'8"	3'8"	3'8"
	11"	24"	D	2"	2"	2"	2"	2"	1'5"	1'5"	1'5"	1'5"
7 1/4"	9 1/4"	22"	F	1'11"	2'	2'1"	2'2"	2'4"	2'7"	3'2"	3'2"	3'2"
	9 1/4"	22"	D	1'9"	1'9"	1'9"	1'9"	1'9"	1'6"	1'5"	1'5"	1'5"
6 1/2"	8 1/2"	20"	F	1'8"	1'9"	1'10"	1'11"	2'1"	2'3"	2'8"	2'8"	2'8"
	8 1/2"	20"	D	1'7"	1'7"	1'6"	1'6"	1'5"	1'4"	1'3"	1'3"	1'3"

### HYPERFOCAL DISTANCE TABLE for 16mm motion picture camera lenses

The Hyperfocal Distance is the minimum distance at which critical sharpness is obtained with a given diaphragm opening when the lens is focused at infinity. When a focusing lens is set at the hyperfocal distance, *all objects at half the hyperfocal distance and beyond will be in focus.* The table below shows the hyperfocal distances for lenses of various focal lengths available for 16mm cameras. When used with universal-focus lenses, the table gives the distance of best focus corresponding to the full aperture of the lens; objects more than half this distance away will be in focus for all *f*/settings.

Hyperfocal Distance in Feet for Various <i>f</i> /stops												
Lens Focal Length	f/1.4	f/1.5	f/1.9	f/2	f/2.5	f/2.7	f/3.5	f/4	f/5.6	f/8	f/11	f/16
1"	59.5	55.6	43.9	41.7	33.3	30.9	23.8	20.8	14.9	10.4	7.6	5.2
1.5"	133.9	125.0	98.7	93.8	75.0	69.4	53.6	46.9	33.5	23.4	17.0	11.7
2"	238.1	222.2	175.4	166.7	133.3	123.5	95.2	83.3	59.5	41.7	30.3	20.8
3"	535.7	500.0	394.7	375.0	300.0	277.8	214.3	187.5	133.9	93.8	68.2	46.9
4"	952.4	888.9	701.8	666.7	533.3	493.8	381.0	333.3	238.1	166.7	121.2	83.3
5"	2142.9	2000.0	1579.0	1500.0	1200.0	1111.1	857.1	750.0	535.7	375.0	272.7	187.5

Object Area Height	Object Area Width	Best Focus	F = far limit of sharpness; D = depth of sharpness; N = near limit of sharpness										
			1/14	1/2	1/2.8	1/4	1/5.6	1/8	1/11	1/15			
(16")	(21")	Infinity	N	60"	42"	30"	21"	15"	10.5"	7.5"	Inf.	Inf.	5/2"
57"	7.5"	20"	F	30"	38"	60"	420"	Inf.	Inf.	Inf.	Inf.	Inf.	4.2"
29"	3.8"	10"	F	12"	15"	18"	10.3"	8.7"	6.11"	5.6"	Inf.	Inf.	4.2"
1'11"	2.7"	7"	F	12"	15"	18"	10.3"	8.7"	6.11"	5.6"	Inf.	Inf.	4.2"
1'4"	1'10"	5"	F	5.6"	5.8"	6"	6.7"	7.6"	8.7"	10"	11"	13"	17"
1'1"	1'5"	4"	F	4.4"	4.5"	4.7"	4.8"	5.0"	5.2"	5.4"	5.6"	5.8"	6.0"
11"	1'3"	3'6"	F	3.9"	3.8"	3.7"	3.6"	3.5"	3.4"	3.3"	3.2"	3.1"	3.0"
10"	1'1"	3'	F	3.4"	3.3"	3.2"	3.1"	3.0"	2.9"	2.8"	2.7"	2.6"	2.5"
8"	11"	2'8"	F	2.9"	2.8"	2.7"	2.6"	2.5"	2.4"	2.3"	2.2"	2.1"	2.0"
7"	10"	2'4"	F	2.5"	2.4"	2.3"	2.2"	2.1"	2.0"	1.9"	1.8"	1.7"	1.6"
6"	8"	2'	F	2.1"	2.0"	1.9"	1.8"	1.7"	1.6"	1.5"	1.4"	1.3"	1.2"
5"	7"	1'9"	F	1.8"	1.7"	1.6"	1.5"	1.4"	1.3"	1.2"	1.1"	1.0"	0.9"

## CAMERA SPEED CONVERSION TABLE

FOR SETTING LENS APERTURE

AT VARIOUS CAMERA SPEEDS

Frames  
per  
Second

Lens Aperture

8	2.5	3.5	4	5.6	8	11	16	22
16	1.9	2.5	2.8	4	5.6	8	11	16
24	1.5	1.9	2.5	3.2	4.5	6.3	9	12.5
32	—	1.5	1.9	2.8	4	5.6	8	11
48	—	—	1.5	2.5	3.2	4.5	6.3	9
64	—	—	—	1.9	2.8	4	5.6	8



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This new Bell & Howell product is guaranteed to be free from imperfections in both material and workmanship for one year from date of original purchase. Should any part of this equipment be defective, it will be replaced or repaired free of charge (except for transportation), provided the equipment has been operated according to the instructions accompanying it.

No liability is assumed for film which is damaged or is unsatisfactory for any reason and no liability is assumed for interruptions in operation of equipment. This guarantee is void:

- a) If equipment has not been registered with Bell & Howell (please use card supplied);
- b) If equipment has been damaged by accident or mishandling;
- c) If equipment has been serviced by other than Bell & Howell approved service stations; \*
- d) If adaptations or accessories other than Bell & Howell have been made or attached.

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*\*Location of nearest approved service station will be furnished on request.*

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