MEET YOUR NEW FAIRCHILD SOUND Z-O-O-M CAMERA

GET READY FOR THE THRILL OF A LIFETIME

HOW TO MAKE AMAZING 8mm SOUND MOVIES

WITH THE FAIRCHILD 8mm SOUND Z-O-O-M CAMERA

Additional copies may be obtained for 50¢ each.

YOU

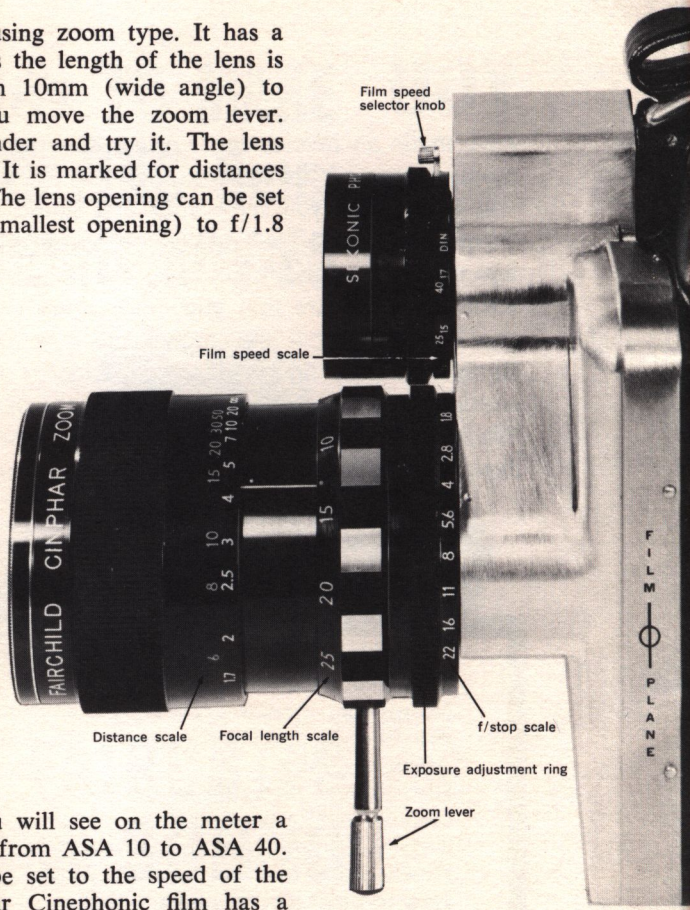
have made an investment in years of enjoyment. At this moment, you cannot imagine the pleasure you and your friends will have, when you show your first sound movie production. People who started making home sound movies just a few years ago will tell you that each scene is a treasure that grows in value each year. Be sure that you make every shot count. Be sure you know all about the camera and how to use it.

In this book are the combined experiences of thousands of sound-movie makers, and the explicit directions of the manufacturer. We sincerely advise that you read them thoroughly, so that your first roll of film may become one of the treasures.

KNOW YOUR CAMERA...

THE PICTURE SIDE

LENS: Your lens is a focusing zoom type. It has a 1 to 3 ratio, which means the length of the lens is continuously variable from 10mm (wide angle) to 30mm (telephoto) as you move the zoom lever. Look through the viewfinder and try it. The lens should always be focused. It is marked for distances from five feet to infinity. The lens opening can be set for stops of from f/22 (smallest opening) to f/1.8 (largest opening.)

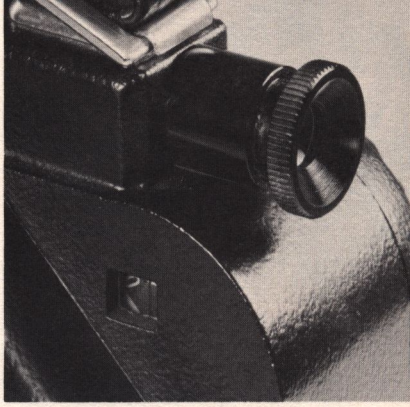


FILM SPEED SETTING: You will see on the meter a small lever and markings from ASA 10 to ASA 40. The meter must always be set to the speed of the film you are using. Your Cinephonic film has a speed of ASA 10, therefore, you must set the number 10 next to the black dot on the meter housing. Set other film's speeds accordingly, or the meter cannot give you a true reading. (For film with speeds greater than ASA 40 see table in rear of book).

EXPOSURE CONTROL: The Fairchild has a highly accurate exposure control. This adjusts the amount of light which reaches the film. Properly used, it will give you perfect pictures every time. The coupled meter is geared directly to the lens diaphragm. As you look through the viewfinder, you will see a moving needle, and a pointer which does not move. When the needle and pointer are lined up, you have the right setting. To bring the two together, simply rotate the f/stop ring on the lens.

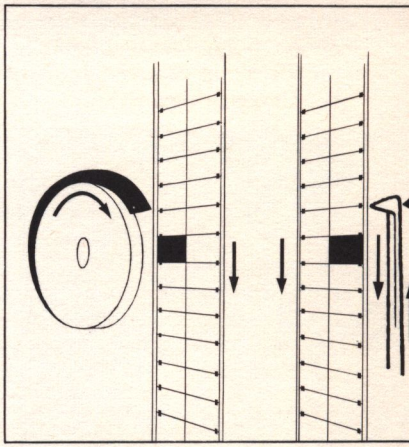
VIEWFINDER

Your camera is fitted for through-the-lens viewing. As you look through the finder, you see exactly the same picture that your lens sees. For your eye comfort, the viewfinder can be adjusted or focused. Now is a good time to set it. Set lens at 30mm. Look at subject through finder. Rotate finder until subject and aperture mask both appear sharp. You should not have to readjust the finder. Remember that this adjustment is simply a convenience to your eye, it has no connection with lens focusing.



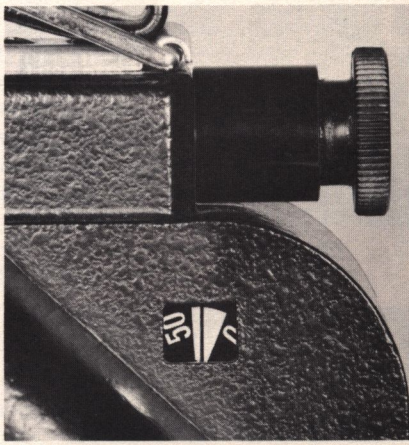
SHUTTER AND PULLDOWN

These mechanisms are built into the camera behind the lens. A movie is made up of thousands of individual pictures, and although the film appears to move continuously, it is stopping and advancing behind the lens twenty four times per second. Your taking rate is referred to as "24 frames per second." While the "pulldown" moves film intermittently, the shutter moves constantly. Its blade alternately opens and closes between the lens and the film. As the film is stopped, the shutter opens to expose the picture. As the film advances, the shutter is closed. The shutter has an effective open period of 1/48th second. Unlike still cameras, this cannot be varied.



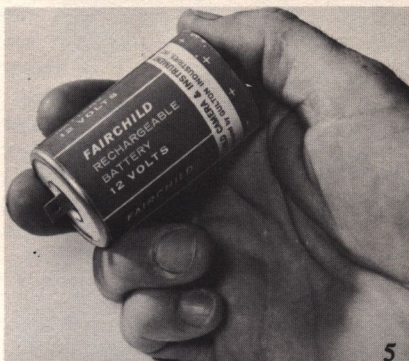
FOOTAGE INDICATOR

This indicator is extremely accurate. It is geared directly to the drive sprocket. Before you load your film, run the camera until the indicator reads "50." The window always shows remaining footage. Each 10′ reading on the indicator means about 35 seconds of shooting. When you have shot fifty feet, you will see a white area appear. Before reloading, be sure to reset the indicator at 50′. If you have set your footage properly, your camera will stop at the end of 50′, since it will activate the end-of-film switch. Remove the camera cover, release the film from the gate and run the camera till the film runs through the sprocket.



POWER SUPPLY

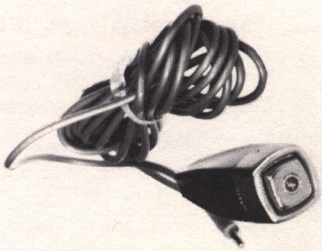
Your camera has a long life nickel cadmium, 12V battery. It powers the camera drive as well as the sound recording system. A fully charged battery will run the camera for 50 minutes, or the equivalent of eight rolls of film. A full charge takes about 13 hours to complete. Since the camera battery cannot be overcharged, it is advisable to charge it overnight before a day of shooting. Many users leave the camera on charge continuously. It is advisable to charge your camera for a short time at least once a month to assure long battery life.



THE SOUND SIDE

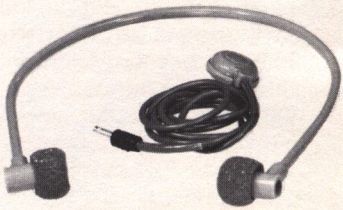
MICROPHONE

The mike is extremely sensitive. It is omni-directional, dynamic type with very low impedance. This means that the mike will pick up very slight sounds, from relatively long distances and from many directions. It has a 50 ohm impedance and is fitted with a mini-phono plug. The microphone selected for use with the Fairchild camera is suitable to the greatest number of situations.



HEADSET

It consists of a double earpiece, cord and mini-phone plug. The headset is a monitoring device, and does not reflect the sound which is being recorded. It does however show that the microphone and amplifier are receiving sound properly, and indicates just how much noise interference is being encountered. The headset should be worn with the loop below the chin, or in back of the neck.

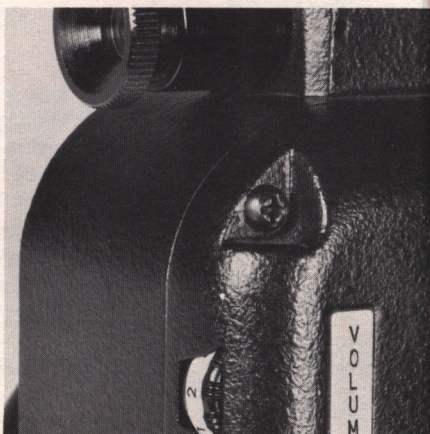


ON-OFF-LISTEN SWITCH

Slide the switch back and forth smoothly. As it goes forward it activates the motor to drive the camera, and at the same time powers the amplifier to record sound. As you do this, of course, you are using film. To hear the sound before running the camera, press straight in on the switch. Since the switch performs several functions, you may find it not quite as easy to move as a silent camera button which does just one job. Practice starting and stopping the camera until you have the "feel" of the switch. Note that the switch locks in "on" position permitting you to get into the picture.

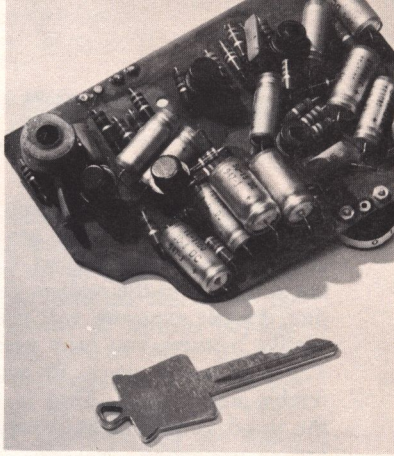
VOLUME CONTROL

This is a loudness control. If not properly understood it can ruin the sound of an otherwise perfectly good movie. The control increases or decreases the amount of power which goes through the sound recording head. Loudness does not improve sound quality, most often it will destroy or decrease quality. On the other hand, the lower volumes will produce the most pleasing sound rendition. The numbers indicate relative degrees of loudness, they are simply for your guidance. There are many ways to control sound quality—and the volume control should be used along with, and not in place of good recording techniques.



AMPLIFIER

This is truly a fine piece of electronic design. It is all transistorized and is built for extreme durability. The amplifier is built into the lower right-hand rear of your camera. Because of its extremely tight construction, servicing should not be attempted on the amplifier.



SOUND HEAD ASSEMBLY

This consists of the sound recording head, with its supporting chassis and pressure shoe, the capstan which is attached to a flywheel in the camera body, and a compliance roller assembly. This assembly is very much like that on home tape recorders. The pressure shoe holds the film, and particularly its magnetic stripe in firm contact with the sound recording head. The spinning capstan and flywheel insure a smooth film flow over the sound head. Any unevenness in film flow would result in a disturbing fluttering or wow sound in the recording. The compliance roller insures a constant tension on the film as it is pulled through the camera by the drive sprocket. All of these parts are factory adjusted and no adjustments should be attempted by the user.

RECHARGING CORD

The charger is a miniature transformer. It reduces normal house current, 115 V a.c. to 12 V a.c. To charge your camera, remove the disc from the camera base, insert the plug, then plug the other end into a wall outlet. Be sure the camera switch is "off", and lay the camera on its cover side. Use only the charger cord supplied. Use of any other appliance cord will cause serious damage to the electrical parts of the camera. Tips on travel: always take your charger cord along with you on a trip. It tucks easily into your traveling bag. If you travel overseas, you will frequently find 220V. Transformers may be available, but you will be wise to take along a "step-down" adapter kit which can be purchased from most electric shaver departments for between $7 and $10 dollars.

HOT WEATHER — COLD WEATHER

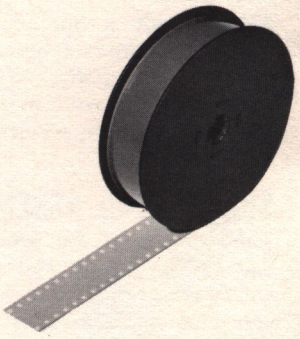
While the structure of the battery will not be affected by heat or cold, extremes of temperature will shorten its storage ability, or cause it to discharge at a too rapid rate. At normal room temperature, the battery will hold a charge for several weeks, while if the camera is stored in an auto glove compartment or left outside in freezing temperatures, it will discharge in just two or three days. You will find that normal care in this respect will provide you with continuous and dependable power.

NOTE: Do not allow your battery to discharge fully. Even if you do not plan to use your camera, be certain to recharge it at least once each month, otherwise it may lose its capacity to "hold" a charge.

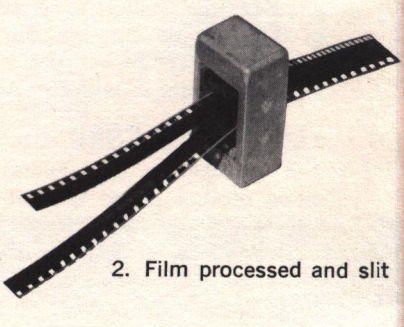
THE FILM

You should become relatively expert in your knowledge of film. People who are used to overly brilliant coloring and too-blue and too-red in their movies, are surprised at the realism they get with Cinephonic film. Proper exposure will reward you with the most lifelike pictures you have ever seen.

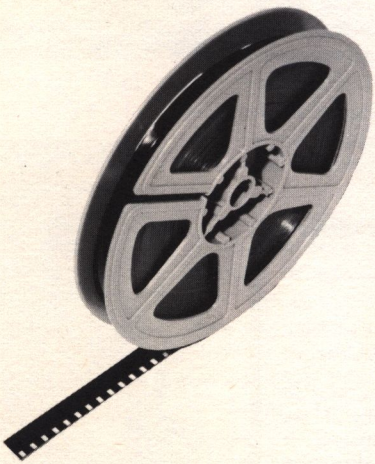
The film comes in a 50 foot spool of pre-striped double 8mm width. That is twice as much film, as the usual home movie camera spool. Running at 24 frames per second, you have 2¾ minutes of shooting time per side or a total of five and one half minutes per spool. Wisely used, that can cover a lot of good movie making Film should always be loaded in your camera in very low light. You have four more feet of film to use as a loading leader. Careful loading will increase the amount of useable film. Cinephonic film is designed for use with artificial lighting; however, by using the 85B filter provided with the camera, it serves equally well out-of-doors. In natural light, simply remember to use the filter, and be certain of your exposure. Indoors, you must be doubly certain that you have enough light, and that it is the right kind of light. Cinephonic film is rated at ASA 12 with artificial light and ASA 10 with natural light. The film is balanced for 3200K light temperature; therefore, for best results, your floodlights should use 3200K lamps, or the 3400K lights with an 81A or UV15 filter.



1. Unexposed film roll



2. Film processed and slit



3. Finished 100' reel of film

GUIDE FOR USING METER WITH FILMS HAVING SPEEDS OF MORE THAN ASA 40

Film Rating (ASA)	Meter Setting	f/stop adjustment
80	40	1 stop less than readings on f/stop scale.
160	40	2 stops less. (smaller opening)
200	25	3 stops less. (smaller opening)

NOTE: The film speed scale has click-stops. Set scales only on "clicks", not between.

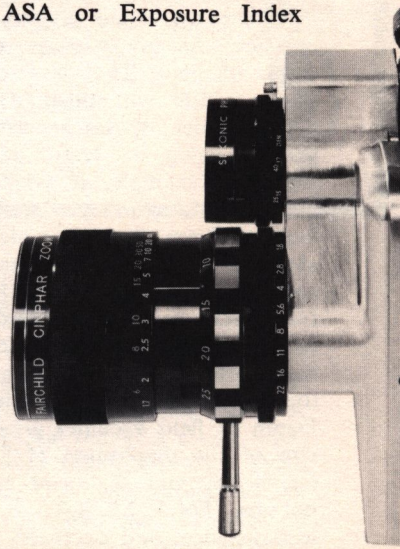
HOW TO MAKE A PERFECT EXPOSURE

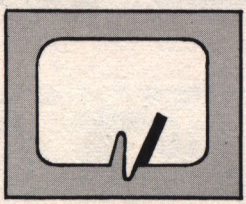
The built-in meter of your camera is often acclaimed as one of the most accurate systems ever developed. However, its successful use is up to you. It is called a "matching needle" type. When the diaphragm (f/stop scale) is set for the proper exposure, the moving needle will be lined up perfectly with the post in your viewfinder. Conversely, when the needle and pointer match up, your diaphragm is correct. It the needle appears to the right of the pointer, your picture will be underexposed, and you will get a result such as example #1. When the needles match, your result will be as you want it, (example #2) and if the needle is set too far to the left, your picture will be overexposed as in example #3. It's up to you to keep the needles aligned. Be sure to set in your film speed. The ASA numbers on the meter indicate the speeds of various popular films. Set the proper ASA number adjacent to the small black dot on the meter mount by moving the small lever. If, for example, you are using the Cinephonic pre-striped film, set the ASA number at #10 on the scale. If using unstriped or silent film such as Kodachrome II type A, set the scale at #25 for outdoor shooting and at #40 for indoor shooting. Every roll of film contains a data sheet which gives its ASA or Exposure Index number.

IMPORTANT TIPS

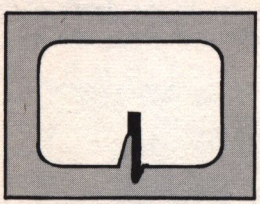
OUTDOORS – If you swing your camera from light to shade, or vice versa, do it slowly, and observe if any significant change occurs in your exposure meter. If the needle moves noticeably, reset the exposure. A slight movement will not affect the exposure.

INDOORS – When shooting indoors, it is important to remember that the amount of light on the subject decreases the farther it is from the light source. Therefore, the exposure must be taken at the subject, not at the light source. Hot spots often result when you use a single light source, so take several readings and use an average. For best results at low light levels, use the simple indoor exposure guide on the back of the "How To Take Wonderful Sound Movies" instruction card.

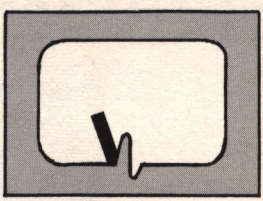




UNDEREXPOSED

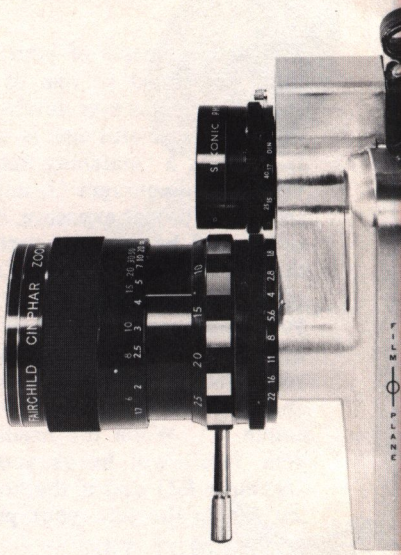


CORRECT EXPOSURE



OVEREXPOSED

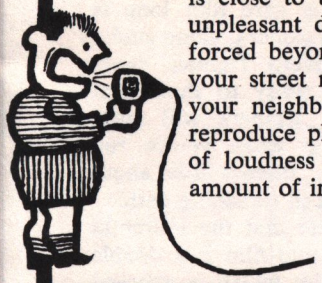
PERFECT FOCUS EVERY TIME



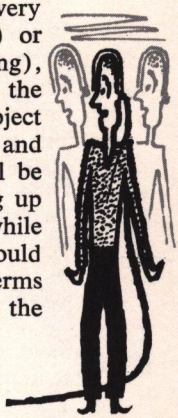
Your lens is called a "variable focal length lens," or simply a zoom. At the turn of a handle, you zoom in or zoom out of the picture. A focusing lens is the most accurate type, however, in most cases, each time you select a new subject to shoot, you should re-set the "distance" scale on your lens. Don't let that frighten you. It is much easier than you might think. By observing several common distances, you can estimate quite accurately. For example, telephone poles are usually about 50 ft. apart. Your car is about 10 to 12 ft. long. Your arm spread is about 5½ to 6 ft. The squares in a sidewalk are about 3 ft. long. For very fine focus at shorter distances, we would suggest you use a rule or tape measure. At any distance, each lens setting has a depth of field. That is a distance which, plus or minus a little, will still hold your picture sharp. The depth of field varies according to the focal length you are using, the f/stop and your distance to subject. For example, if your distance to subject is about ten feet, and you're shooting at f/4 with the lens at 20mm, then your picture will be sharp from about seven feet to sixteen feet; that's plenty of room for movement. At 30mm, it would be sharp from eight to twelve feet, and at 10mm, it would be sharp from four feet to infinity. You can see that the shorter the lens, the greater depth of field, and the longer the lens, the shallower depth of field. Depth of field becomes greater as you decrease the size of the diaphragm (f/5.6, 8, 11, and so on.) Or, it becomes shallower as you increase the diaphragm (f/4.5, 2.8, 1.8.) It also increases with subject distance, and decreases as you focus in closer. You will soon have a thorough knowledge of your lens, but for a while at least, refer to the depth of field tables in this book. Better pictures are worth it.

You forgot to set the distance scale!

VOLUME CONTROL USE IT WISELY!

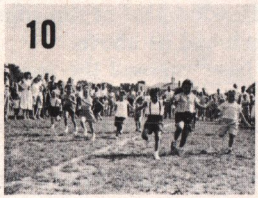


Some users with long experience have simply set their volume control on the number which seems to cover their greatest number of occasions. They set it and tape it over with black masking tape. Control of the sound is done simply through arranging of the microphone near or farther away from the subject. Ordinarily they will set the level at #2, 2½, or 3. They know that the nearer the mike to subject, the less noise will interfere. Also, the lower the usable volume setting, the truer the sound reproduction. In the lower settings, usually 2 or 3, the pickup and the amplifier has a lot of voice latitude. If the sound you are picking up is very soft, either because the subject is soft (rippling of a stream) or because it is very far away, (light plane coming in for a landing), and if there is no significant noise interference, you can turn the volume up to 4 or 5 to force the sound. However, if your subject is close to the mike, a higher level setting will cause severe and unpleasant distortion. The amplifier will be overloaded. It will be forced beyond its capacity to reproduce. A brass band coming up your street might overload the amplifier at a setting of 2½, while your neighbor practicing his piccolo a hundred feet away would reproduce pleasantly at #4. Always analyze the situation in terms of loudness and nearness to the microphone. Always observe the amount of interference between the subject and mike.



ZOOM & PAN S-L-O-W

You pan to follow the action, to make sure you get everybody into the picture, or simply to get the effect of traveling across a scene. Zooming will bring the subject to you, or take it away from you. It will even let you spread out your picture to cover more ground, or it can pick an individual out of a group. Panning and zooming are invariably overdone. Maybe you've watched movies which leap in and out, jump up and down and dash madly from one subject to the next. They're fun to take, but they can make a viewer seasick. Keep camera and lens motion to a minimum and you'll have more professional looking pictures. Save your zooms for special, dramatic effects, or to take care of a situation where you need a longer or shorter lens. When panning, move the camera imperceptibly, so that your viewer will hardly be aware that you've changed the view. A pro tip? Professionals usually zoom, if at all, from a very narrow field. They might go from a medium closeup, slowly to a closeup, or from a medium to wide angle, but never from wide angle to closeup, except for high drama. Many pros use the zoom as a series of lenses. They take each shot at the right length, according to the composition of the picture.



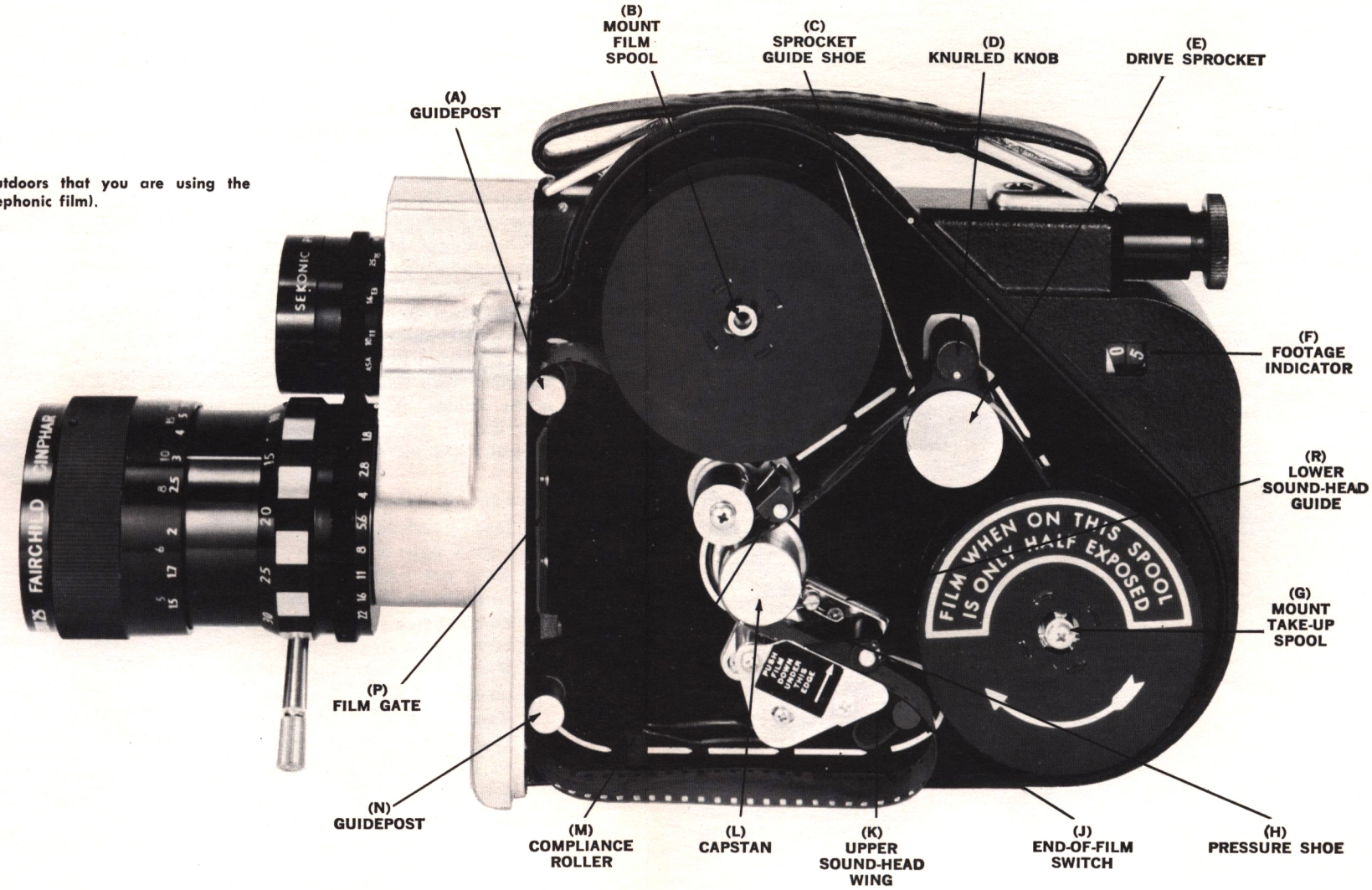
HOW TO LOAD YOUR FAIRCHILD CINEPHONIC CAMERA

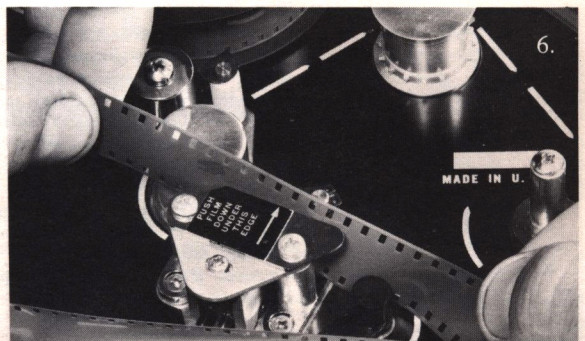
1. Before loading film, run camera till footage indicator (F) is at 50′, as shown in sketch at right. Indicator moves forward when "Run" switch is on, always shows number of feet left.
2. Always open camera in subdued light. Place camera with loading side up; unscrew knob to remove cover. For ease, remove head set and mike plugs from camera before laying camera on its side.
3. Place film spool on spindle marked "Supply" (B) (side with 4 notches should be up); unwind about 1½ ft. of threading film. (Each roll actually carries 54′ of film, providing 2′ at either end for threading.) Save the light-tight film can for sending exposed film to processor.
4. Threading path: see diagram, follow carefully. Open film gate (P) and slide film into film channel behind guide posts (A) and (N); close gate, being careful not to twist it out of alignment.
5. Following directional arrows, thread film loosely around end-of-film switch (J).
6. Thread film into sound head, force lower edge of film into wedge shaped gap between upper sound head wing (K) and pressure shoe (H) (see sketch). With a slight sawing motion, push film down to lower guide (R). The spring loaded action of pressure shoe (H) will cause film to snap into position *under* the sound head wing (K).
7. Thread film around capstan (L) and under compliance roller (M).
8. Next, raise sprocket guide shoe (C) by turning knurled knob (D) a half turn, placing white dot at top. Thread film around drive sprocket (E). Lower sprocket guide shoe by turning knob (white dot down). Make sure film perforations are engaged by sprocket teeth.
9. Thread film onto take-up spool (G) by slipping film into slot in spool (side with 3 notches must be up). Rotate spool CLOCKWISE until film is taut between spool and sprocket. Note: Never Tape film onto spool.
10. Set camera upright and run a short burst to check smooth passage of film. (If film doesn't run, make sure end-of-film switch is in operating position). Replace cover, making sure film loop is tucked inside camera, along guideplate on cover. Tighten knob. You're now ready to shoot first half of roll. Camera will automatically stop when you've run out of film . . . there will be about 1′ of film left in threading path.

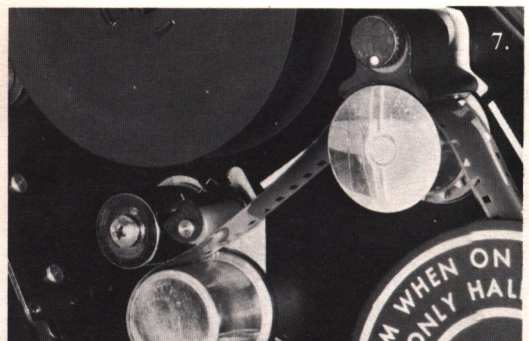
TO RELOAD: (Note that the Fairchild Cinephonic sound film is a double width 8mm film which is exposed only one-half at a time; must be run through camera again to expose the other half of the spool).

1. Remove camera cover, as before, and release film end from shutter gate. This will cause the end-of-film switch to return to operating position.
2. Now run camera until film passes through drive sprocket and onto take-up spool. Stop; do not permit camera to idle or film may loosen and become light damaged.
3. Remove spools. Do not permit film to unravel.
4. Reset footage indicator to 50′ by running camera before film is reloaded.
5. Put empty spool on take-up spindle, full spool on supply spindle. (Spools are notched to prevent reverse loading). Unwind 1½′ of threading film and rethread as above.
6. After you have exposed the second half, the film is ready for processing. Remove take-up spool. Keep film snug on spool with tape or rubber band and return film to can.

Be certain when shooting outdoors that you are using the 85B filter (if you're using Cinephonic film).







DEPTH OF FIELD CHARTS

10MM

F		Feet ∞	50	30	20	15	10	8	6	5
1.8	From	14.7	11.0	9.6	8.3	7.2	5.9	5.3	4.2	3.7
	To	∞	∞	∞	∞	∞	30.3	18.8	10.2	7.5
2.8	From	9.4	7.7	7.0	6.2	5.6	4.9	4.4	3.6	3.3
	To	∞	∞	∞	∞	∞	∞	64.2	17.1	10.4
4	From	6.6	5.6	5.2	4.8	4.5	4.0	3.7	3.1	2.8
	To	∞	∞	∞	∞	∞	∞	∞	85.5	19.4
5.6	From	4.7	4.2	3.9	3.7	3.5	3.2	3.0	2.6	2.4
	To	∞	∞	∞	∞	∞	∞	∞	∞	∞
8	From	3.3	3.0	2.9	2.7	2.6	2.5	2.4	2.1	2.0
	To	∞	∞	∞	∞	∞	∞	∞	∞	∞
11	From	2.4	2.2	2.1	2.1	2.0	1.9	1.9	1.7	1.6
	To	∞	∞	∞	∞	∞	∞	∞	∞	∞
16	From	1.7	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3
	To	∞	∞	∞	∞	∞	∞	∞	∞	∞
22	From	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
	To	∞	∞	∞	∞	∞	∞	∞	∞	∞

20MM

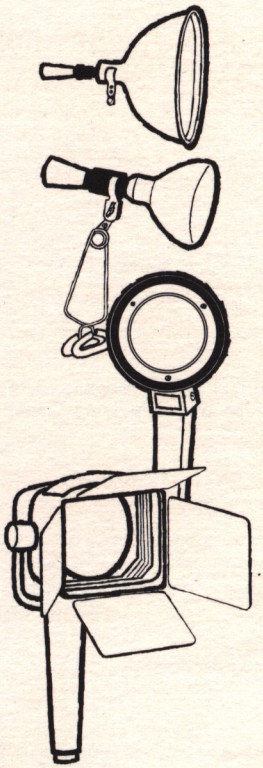
F		Feet ∞	50	30	20	15	10	8	6	5
1.8	From	58.7	26.4	19.5	14.7	11.8	8.5	7.2	5.6	4.6
	To	∞	∞	62.6	30.5	20.2	11.9	9.6	6.6	5.4
2.8	From	37.7	21.0	16.3	12.8	10.6	7.9	7.0	5.1	4.4
	To	∞	∞	162.5	43.4	25.1	13.4	10.5	7.1	5.7
4	From	26.4	16.8	13.7	11.2	9.4	7.2	6.3	4.8	4.2
	To	∞	∞	∞	88.9	35.6	15.8	12.0	7.7	6.1
5.6	From	18.8	13.3	11.3	9.5	8.2	6.5	5.7	4.5	3.9
	To	∞	∞	∞	∞	81.4	20.7	14.6	8.8	6.7
8	From	13.2	10.1	8.9	7.8	6.9	5.7	5.1	4.1	3.6
	To	∞	∞	∞	∞	∞	38.7	21.7	11.1	7.9
11	From	9.6	7.8	7.1	6.3	5.7	4.9	4.5	3.6	3.3
	To	∞	∞	∞	∞	∞	∞	55.9	16.3	10.1
16	From	6.6	5.6	5.2	4.8	4.5	4.0	3.4	3.1	2.8
	To	∞	∞	∞	∞	∞	∞	∞	79.8	19.0
22	From	4.6	4.2	4.0	3.8	3.5	3.2	3.0	2.6	2.4
	To	∞	∞	∞	∞	∞	∞	∞	∞	∞

30MM

F		Feet ∞	50	30	20	15	10	8	6	5
1.8	From	132.00	35.6	24.1	15.2	13.3	9.1	7.8	5.7	4.8
	To	∞	81.0	38.7	23.4	16.8	10.7	8.8	6.2	5.2
2.8	From	84.8	30.8	21.8	15.9	12.6	8.9	7.5	5.5	4.7
	To	∞	125.5	46.6	26.1	18.1	11.2	9.1	6.4	5.3
4	From	59.4	26.5	19.5	14.7	11.8	8.5	7.3	5.3	4.6
	To	∞	∞	61.6	30.2	20.0	11.9	9.6	6.7	5.4
5.6	From	42.4	22.4	17.2	13.4	10.9	8.1	6.9	5.1	4.5
	To	∞	∞	108.8	38.3	23.3	12.9	10.2	7.0	5.6
8	From	29.7	18.1	14.6	11.7	9.8	7.8	6.5	4.9	4.3
	To	∞	∞	∞	63.9	27.4	18.8	11.4	7.6	5.9
11	From	21.6	14.7	12.2	10.2	8.7	6.8	6.0	4.6	4.0
	To	∞	∞	∞	∞	57.2	18.2	13.2	8.4	6.4
16	From	14.9	11.1	9.7	8.3	7.3	5.9	5.3	4.2	3.9
	To	∞	∞	∞	∞	∞	29.3	18.2	10.5	7.4
22	From	10.4	8.6	7.7	6.8	6.1	5.1	4.8	3.7	3.4
	To	∞	∞	∞	∞	∞	176.2	38.3	14.7	9.3

A BRIEFING ON

LAMPS & LIGHTING



Your motion pictures are simply the total effect of the lights which reach your film. Next to your tripod, a set of lights will be your most valuable tool. The four lamp bar and the quartz iodine lamps are still the mainstay of the home movie maker, but techniques are changing rapidly. Use your lightbar as a main source, high and outside, rather than fixed to the camera. A second lamp low and to the other side will soften shadows. A third light will brighten your background. Your aim in lighting, at least in the beginning, should be for broad, flat illumination, foreground and background as well. Backlighting will be surprisingly helpful to your pictures.

Lights range from a simple fixture in a clamp for two or three dollars, to powerful quartz lamps which may run from twenty to eighty dollars. Lightstands, complete with fixture and reflector cost as little as seven dollars. Your photo equipment dealer can describe the various types available, and there are several inexpensive booklets, on lighting techniques.

Here are the salient points of lighting.

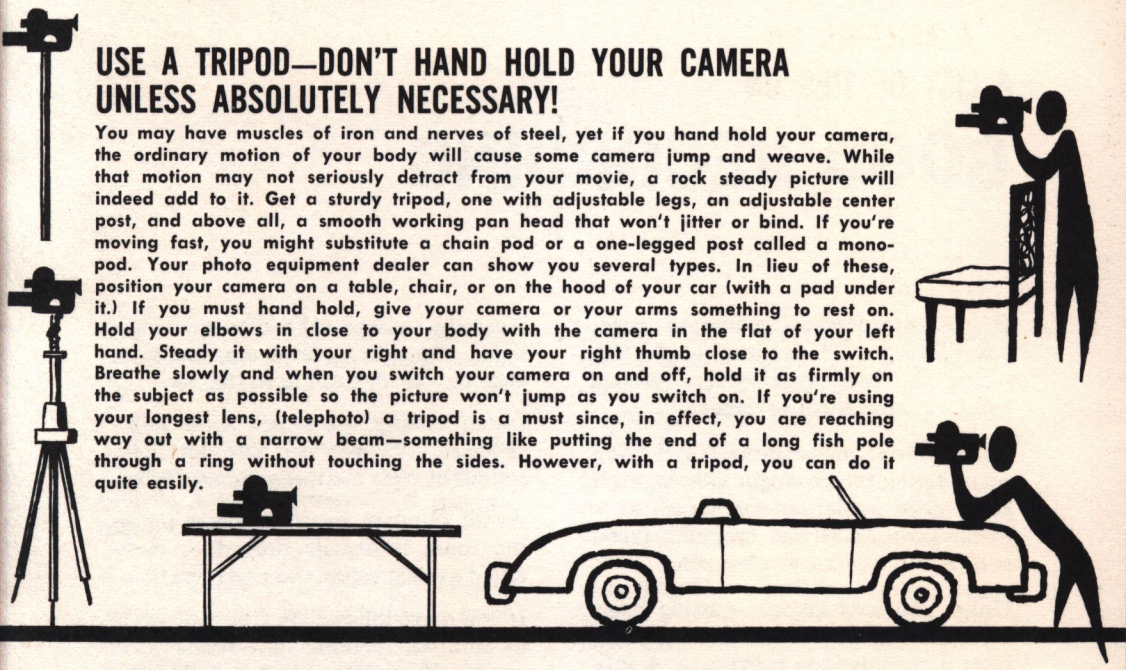
1. Don't overload your household line —1500 watts is tops.
2. Keep hot lights away (far away) from drapes, curtains, furniture.
3. Don't stretch your light cords to the outlets. Use an extension.
4. Keep your main lights high and outside for best coverage.
5. Keep your lights fixed, once set. Don't move them around
6. In the beginning, concentrate on getting broad, flat coverage.
7. Be sure to light your background, or back light your subject.
8. Keep lights out of eye level if possible. They cause squint.
9. Be sure your lamps are 3200K for use with Cinephonic film.
10. Shooting indoors, be sure you've taken the filter out of comera.
11. Cut down on daylight influence as much as possible. Too much daylight can turn your pictures blue.
12. Double check your exposure, see that the needles match up.
13. Turn off lights between scenes. Give your subjects a break.
14. Don't touch hot lamps—give them five minutes, at least, to cool.

NEW HIGH POWERED LIGHTS

Great, but watch color balance. A variety of new lamps, for hand held use feature a powerful output from a very small source. Among these are the Sylvania Sun Gun for amateur use, and a model for advanced cameramen, the professional Sun Gun. The General Electric DXK lamp is another powerful source, which is available in the "guns" of many manufacturers. The DXK lamps have a 3400K output which can be corrected with an 81A filter. For slightly cooler pictures you might use an 81B or UV15 filter. The light reaching your film will be approximately 3200K depending on the amount of influence from outside light, or the amount of voltage fluctuation in your area. The Sylvania Sun Gun can be filtered to 3200K in the same way, however the amateur gun can be obtained already balanced for 3200K. Speak to your dealer about it. The professional Sun Gun has a 3200K filter attachment which goes right on the gun, in which case, you would require no filter in your camera. All of these lamps have a very "directional" output, which might be classed as 'almost a medium beam'. They are excellent as a single source, but should, as we mentioned be used in conjunction with a broad or flood beam source.

USE A TRIPOD—DON'T HAND HOLD YOUR CAMERA UNLESS ABSOLUTELY NECESSARY!

You may have muscles of iron and nerves of steel, yet if you hand hold your camera, the ordinary motion of your body will cause some camera jump and weave. While that motion may not seriously detract from your movie, a rock steady picture will indeed add to it. Get a sturdy tripod, one with adjustable legs, an adjustable center post, and above all, a smooth working pan head that won't jitter or bind. If you're moving fast, you might substitute a chain pod or a one-legged post called a monopod. Your photo equipment dealer can show you several types. In lieu of these, position your camera on a table, chair, or on the hood of your car (with a pad under it.) If you must hand hold, give your camera or your arms something to rest on. Hold your elbows in close to your body with the camera in the flat of your left hand. Steady it with your right and have your right thumb close to the switch. Breathe slowly and when you switch your camera on and off, hold it as firmly on the subject as possible so the picture won't jump as you switch on. If you're using your longest lens, (telephoto) a tripod is a must since, in effect, you are reaching way out with a narrow beam—something like putting the end of a long fish pole through a ring without touching the sides. However, with a tripod, you can do it quite easily.



A STUDIO SET-UP!

Yes, the sound movie bug can "get you." As you start into "Hollywood productions" you will think about adding more equipment or apparatus. First in order should be light stands, a good sturdy set, plus a selection of reflectors and lamps. Next you might improvise a mike boom, which can be a simple bamboo pole taped to the head of a tripod. Your lightstand can be fitted with a conterweighted boom fixture which can support overhead lights, and serve as a mike boom too. Some enterprising folks have installed recessed flood fixtures in a ceiling for broad overhead light. Fluorescent lamps are not recommended since they introduce an imbalance of color temperature. You might decide to drape one room in your home to serve as a combination "sound room" and projection room. Sooner or later, you will set up a record player, or even a professional double turntable to provide mood background music or special effects as you do your shooting. But for right now, get the best your camera will deliver. The first step is good camera and recording technique.

A LIST OF TIPS ON

GOOD RECORDING

If you're using an extension cord, (available in 15′ sections at $3.50) secure the two cords with a pretzel bend, or tape them together.

Be sure your microphone is not lying on materials which might vibrate, such as a glass table top or taped to a metal lamp or as one user did, taped securely to a wooden play pen.

Unless the microphone is being hand held, or suspended from its own cord, have it cushioned in some way. A sofa pillow will do.

Be sure the volume is turned on sufficiently high to record the sounds you want. . . . and sufficiently low to avoid picking up unwanted sound. There are plenty of good tips on this in the illustrated examples on the next few pages.

Unless you want a jumble of voices, have your subjects speak one at a time.

If you're shooting an indoor party, take the phone off the hook while you're shooting. Avoid opening or closing doors.

Don't try to record background music from a record player at the same time you're recording conversation. They'll conflict with each other.

Always run your camera for about two seconds at beginning of each new scene if you plan to cut scenes apart. This allows sound free room for editing.

Shoot scenes of at least ten seconds in length. Shorter scenes appear and sound chopped up. Give your speaker a chance to complete what he is saying.

Keep the sound level constant during a scene. Changes in level are unnatural and may be disturbing to the ear.

Listen closely for small noise interferences. The ear can cut out these sounds at will, the microphone cannot.

Avoid shooting in small rooms unless the room is heavily draped or cushioned against echos and reverberations.

If you move the camera from one angle to another, recheck your sound level setting. It could be shifted accidently. You might tape it.

Make notes of the sound level setting you used on each shooting. They will be helpful reminders for the future.

Unless you want the effect, don't shoot in a wind. If you must, cover the mike with a cotton sock.

If you want to hear an individual while in the middle of a crowd, get the mike within a few inches of his lips.

If you want to hear two or three people in a crowd, get them together if possible, shoulder to shoulder. Mike equidistant from them, not more than two feet away.

Have a set of hand signals. Signal subjects when to start, when to cut, slow down, speed up, raise voice, lower voice.

Alert all participants to two seconds of "silent" running time, so they do not start in too soon.

Cameraman should not try to speak over back of microphone. Voice will be out of balance with subjects voice.

Don't expect children to be spontaneously clever. They may need coaching or coaxing – or simple patience.

Children like to hold mike against chin –invariably yell into it. Show child how to hold mike at distance. Or suspend mike out of way for best results.

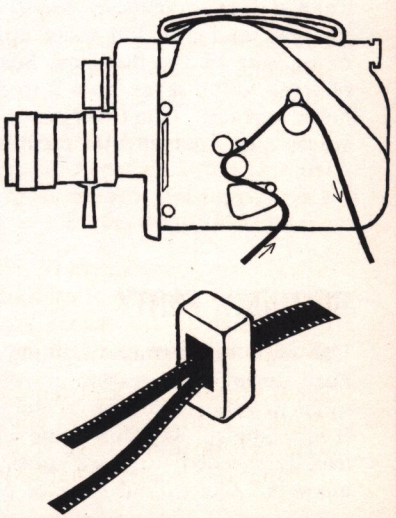
Young teenagers either "go serious" or "ham it up". Best solution is to let them in on technology of what you're doing, how it works, etc. Very often results in surprising cooperation.

If your subjects are speaking from prepared material or telling a story, have them speak more slowly than they might normally. Everyone speeds up before the camera.

If you're shooting outdoors, look and listen for oncoming interference like cars coming up the street, neighbors radio, your own radio, lawnmowers, slamming doors, creaking swings. Tune your ear to sounds. Best way to do that is to close your eyes and listen for a few seconds. For some reason, you'll hear more clearly.

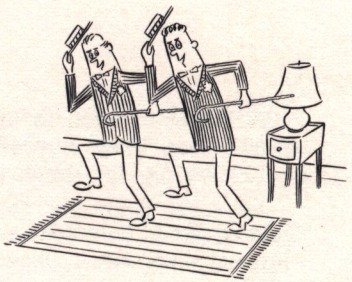
HOW TO MAKE A SOUND TEST STRIP

You can record most situations faithfully and without undue problems. However, if you are looking for the very best that your camera and subjects can deliver, such as for a church or business film, or a school production or teaching aid, then take a few extra moments to make a sound test strip. Simply set up your camera, mike and props exactly as they would be during shooting. You won't need lights on. Break off about four feet of film from your spool. Put the film through the sound head, stripe DOWN (not necessary to load film in gate), then over sprocket. Don't attach film to take up spool, let it run loose. Now make a sound run exactly as you would normally and be sure to note the level setting and the distance of the speaker from mike. Now run the second track at a different setting and distance. Now, using a Baia film slitter, which can be obtained from most industrial photo equipment dealers, slit the film into 8mm size. Next, run the sound test through your projector and judge which setting is best or what adjustments to distance or level should be made. Make a note of best location and setting, then stick to it, without disturbing mike position. Fix the sound level position with paper tape so that it cannot be shifted accidently.



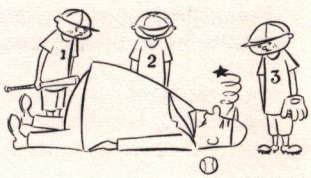
HOW TO HANDLE THE EIGHT MOST

HOME COMICS



Home grown skits are the greatest. Use loads of color. Minimize props. Be sure to backlight the subjects and have at least 1500 watts of broad front lighting. Put mike on microphone stand or suspend overhead. Sound level at 2 or 2½. Take time to make a test strip. Minimize advisory staff.

LITTLE SPORTS

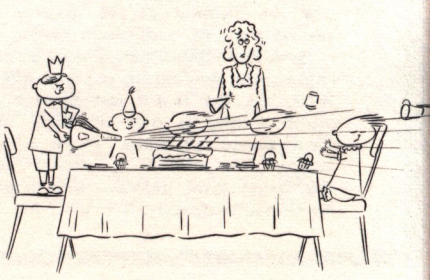


Lots of noise in these scenes. Hard to get individual voices. Shoot this with sun at your back, if possible to allow fast change of angle. Use mike extension cord. Get it into middle of scene. Sound level at 3 or 3½. Let umpire or coach carry mike in breast pocket. Get aftergame interviews.

BACKYARD BARBEQUE

Take a few seconds of broad situation, then close in tight on faces. Put mike upright on picnic table or on side of the fireplace. Suspend it from branch of tree. Sound level from 2 to 3. Don't put mike on hard surface. Don't try too hard for individual voices. Get yourself into picture.

BIRTHDAY PARTY



Use high or overhead lighting sources. Mike overhead during song session at volume 3. Adult carries mike to each child. Set at volume 2. Hold mike 8" from subject. Try for some candid sound. Adults usually needed to "ask questions and draw out answers." Get candid shots of games.

TYPICAL SOUND MOVIE SITUATIONS...

GRANDMA READS A STORY

Use a single low lighting source for warm effect. Soft light bounced off wall or reflector gives nice effect. Close in tight on faces. Mike can be in subject's lap. Volume at 2. Shoot several camera angles but don't change mike position or sound level. Have reader ask occasional question to evoke response from child. Let child read to adult.

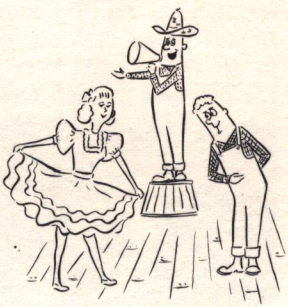
THE BIG PARADE

Get plenty of closeups. Watch for change in sunlight if parade is long. Try a complete story of the great day. Get crowd noises at sound level 3. Record band music at 2 or less. Cover mike with cotton sock or use baffle to cut reverberations. Don't record when band is very close, or cut level to 1½. Try unusual camera angles.

THE LADIES' CLUB DINNER

Use single light source like Sun Gun with second flood in reflector. Have helper hold lights. Have subjects speak into mike, 8" from lips. Sound setting at 2. Don't try to record featured speakers from distance. Get mike on lecturn. Dance music difficult in crowded room. Better to dub in from record player later. Try for some candid conversation.

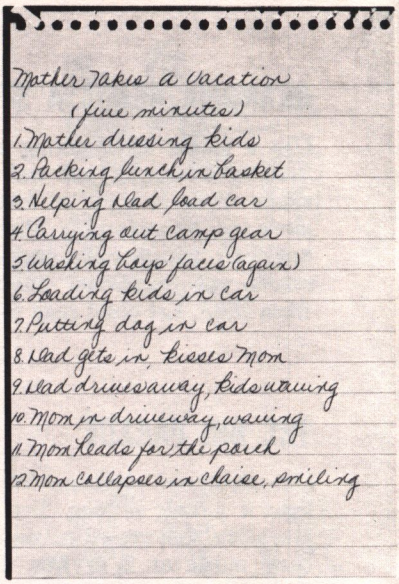
THE BARN DANCE



Get individuals, crowds and noise at setting 3. If possible, put photofloods in ceiling fixtures or get big battery of lights. Get mike close to band. Setting at 2, use baffle box. If possible, make a few feet of test recording first, at different distances and settings. Portable light guns on long extension cord a must. Don't work alone; get a helper.

PLAN-REHEARSE . . . ABOVE ALL, SHOOT A STORY

Many times you'll do what is called hipshooting. A situation will come up that you can't afford to miss. Let's hope your camera is loaded. Plug in your mike, check your exposure, set your level on #3, and shoot. Good luck. Most often you'll have plenty of time for planning. Think out a good opening, build-up, climax and close for your story. Stories without beginning or end might please the participants but to someone who wasn't actually there, they fall flat. Make a set of notes telling yourself what you want in each scene, then shoot for it. Take a moment to "dry run" each scene so that your actors know what you expect of them. Every trip has a #1 get ready, #2 go, #3 arrive, #4 things you saw and did, #5 the trip home, #6 glad to be back. You can get little playlet ideas from children's story books, comic strips, or write your own one-reelers. Party at home? Get pictures of arrival and departures – they can be quite contrasting. Don't forget to get yourself into the pictures. Your camera can be set to run unattended while you get into the scene. Don't be the traditional left-out photographer.



SHOOTING THE 8mm FRAME

Experienced 8mm photographers have developed two main ground rules for good movie making:

1. Planning – (as natural as picking up the camera.)
2. "Shoot simple and tight."

That means make the best use of the film size. Close up on your subject as much as possible. Then, when your film is projected on the screen, it will be full of life, color and details, instead of a lot of flat, miniature figures. If you are shooting two people as they converse, don't have them at opposite sides of the sofa, bring them in until their elbows touch. If you're shooting a picnic, get some footage of the forest but close in on the hot dog munching. Get a few feet of the team running out on the field but be sure to closeup on the batter as he argues with the umpire. Get the whole boat dock, but be sure to get a few feet of dad's hands as he tries to get the motor started. A crowd in the bleachers is far less interesting than two or three intent players on the bench. If you go to the zoo, get the scene setting footage and the animals, but close in on the people. Very intriguing. Shooting indoors will virtually force you to use dramatic closeup techniques, so don't fight it–your movies will be better for it.

MUSIC RECORDING ON FILM

Your Fairchild camera is designed primarily for voice recording. However, it can record music of certain kinds, such as that which has no sustained notes or very high frequencies. It would be difficult, therefore, to record the usual organ music, guitar or violin. However, if these instruments are played at a fast tempo, they can be recorded with some satisfaction. It is possible to record the music of military bands, of hillbilly groups, polka groups, bongo bands and similar combinations. Percussion instruments record very well, as do instruments where the notes are sharp, of relatively low frequency, and where a tone is not sustained. The best rule of music recording, if music is a necessary part of the scene, it to make a test recording in the camera with the volume set at various low levels and distances. The mike should be placed at several points from the instruments, and to cut down on reverberations or echo, a foam padded box should enclose the mike. At home parties where people dance to record music, put the mike 6″ to 10″ from the center of the record player speaker, play the record volume very low, and have the camera volume at #2 or less. Quite often you will find it preferable to record from record or tape on the film after it is processed and edited.

Simply remember the particular music that was played during the event and play it back again through the Fairchild recording projector. You'll find it quite simple to synchronize the record with the subjects since most music does have a somewhat constant beat.

The same is true of recorded band music which can be dubbed in over pictures of a marching group. Using the overlay mode of the projector, it is easy to simulate crowd noises over the band music, and a very natural effect can be achieved.

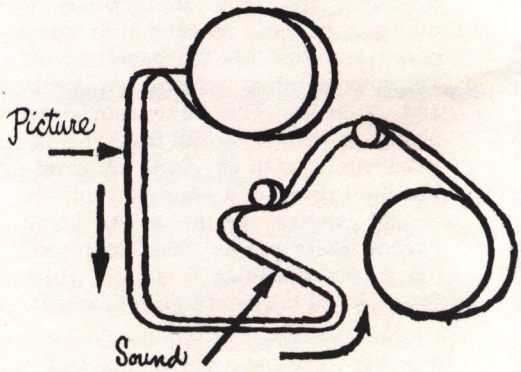
EDITING YOUR FILM

EASY OR COMPLEX, YOUR CHOICE;
PLUS SOME TIPS ON SHOOTING FOR EASY EDITING . . .

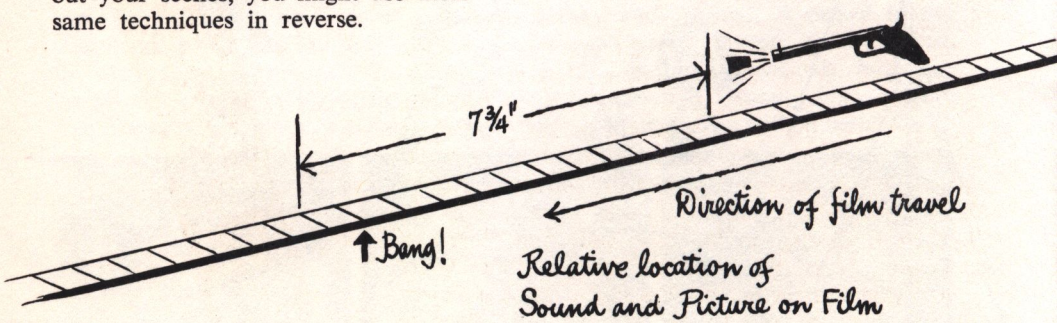
Your camera is a "single system" type, meaning that sound and picture are recorded on the same medium, simultaneously. The sound, is not recorded next to its corresponding picture, but approximately 7¾" ahead of it. Look at the "pop gun" example. You can see that if you cut your film at the sound of the "pop", you will have cut off the picture of the gun. If you cut your picture at the gun, then you will have cut into a portion of the sound track of the next scene. There is a simple solution to this foreboding problem. Start each scene with the camera running for at least two seconds before your subject starts to speak. That consumes the "overlap". If you want to be doubly sure that you have enough cutting room, you might close your scenes out with another two seconds.

If you're doing running family scenes, it is doubtful that you will have any real reason for such tight editing. You will probably be concerned mainly with cutting out poor shots, or removing exposed leader or trailer of your film. That is quite simple to do using your projector as an editor. However, if you foresee tight intercutting of scenes, or changing of angles, then you should always consider the two seconds of overlap area. Here are some suggestions as to how to consume the overlap area, without actually shooting blank film. Naturally, to close out your scenes, you might use these same techniques in reverse.

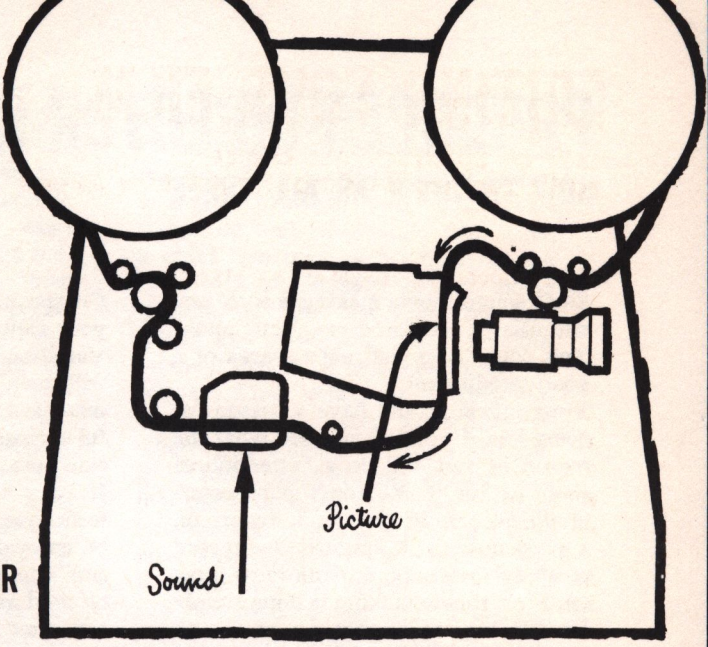
1. Have your subject turn slowly toward the camera on opening scene.
2. Have subject hold object he is discussing, look at it for few seconds.
3. Have subject looking at notes, or chart on wall, or is reading book.
4. Have subject walk slowly toward the camera to a marked point.
5. Have subject walk into scene from left or right.
6. Raise sound volume slowly from 0 to proper setting.
7. Have subject wave or nod a greeting to camera.
8. Have subject seated, he rises to speak. Or standing, he sits to speak.



Relative location of Sound and Picture in Camera



Relative location of Sound and Picture on Film



Relative location of Sound and Picture in Projector

YOUR SOUND PROJECTOR AS AN EDITOR

Run all of your film through your projector, and make specific pencil notes of which points in sound or picture your wish to cut, replace or transpose. Pick out exact words at which you wish to cut. Do this several times until you're absolutely certain. Then run your film through the projector at its slower speed. Remember that the "sound" is at the sound head while its corresponding picture is in the gate. When you hear the "word" at which you want to cut, hit the stop switch on your projector. Remember the overlap area because now the choice must be yours, to cut at the sound head, or below the gate. If, after putting your film together, you find pieces of unwanted sound or dangling sentences, you can erase them right on your projector. We urge that before you do this on your finished film, you practice using a continuous loop of film in your projector. Record a sentence or two. Practice finding a specific phase, then removing all or part of it. You will soon become proficient in this technique.

SPLICING YOUR FILM

From long experience, sound camera users find the mylar, pressure sensitive splice to be simplest to apply and most durable. When cutting your film, use a splicing device which has a curved or "S" cut. This type of cut permits the film to maintain its loop over the gate, without bending. There are several types of tape splices available. The most satisfactory is one made specifically for sound striped films. While the splice covers the entire face of the film, it is shorter on the base side, and therefore, does not cover the magnetic stripe. Your dealer can advice you further on this splice. Take sufficient care in making your splices flat and firm. Be sure sprocket perforations are not covered up, or that the splice does not have protruding edges.

PRODUCER-DIRECTOR-CAMERAMAN

HOW TO THINK AS ALL THREE

Since sound movie making is such fun, enthusiasm could carry you away. You could miss the real rewards of a good production.

Your movie should have a reason for being and if you tell yourself what the reason is, you will do a better job of shooting for it. Reasons: pure entertainment, family history, a report on a good time, a milestone, the record of an achievement, a memory to grow on. Most movie making is done simply for the fun of it with no particular story line in mind. Any interesting subject, situation or sentiment is reason enough. But as producer-director-cameraman, you take on a responsibility to yourself, and to everyone who will see your production. You promise to capture this moment unforgettably. If your story is a tour of your backyard, then tour it in a way that your viewers will never forget. Shooting for the best won't take the fun out of it – it will triple the fun of seeing it. You might even win the highest honor, "Let's see it again."

Making your camera go is an exact operation. Making an interesting movie is something else. It is a combination of plan, judgment and technique. Planning you must do if you want a well told story that will keep your viewers alert; judgment is the sum total of study and experience, while technique is often a matter of imagination and experimentation.

There are fundamentals, of course. Your story should have the vital ingredients of a beginning, a build-up, a high point, reprieve, a climax and close. Don't discard the idea as too complex; even the kiddies bed-time stories hit those points. Best of all, a story pattern will give your production continuity–and that's a special vitamin.

Composition of your picture will keep your viewers tuned in if it's well done. Variation in the length of your shots will help keep the movie moving – unusual camera angles might be helpful – closeups are dramatic. No, you can't use all of these points at once. If you did, you'd have a study in technique and that probably wouldn't be enjoyable at all. However, we suggest you keep those points in mind to be used as the opportunity arises They can draw the line between a film that is good and one that is excellent.

There are three basic kinds of movie situations and if you think of your own productions in terms of these three, you will develop a natural modus operandi for each.

PLANNED AND CONTROLLABLE: From one point of view, this is the easiest movie to make; it is also the most difficult. In this situation you are the absolute boss. You call the shots, the angles, the actions and words. You have plenty of time, facilities, a plan, cue cards, scripts, rehearsals, sound tests, retakes. Also, you have no excuses if things don't come out just right. We're referring to situations put on for the specific purpose of movie making – a home grown drama, comedy skit, your favorite story, the neighborhood variety, a tour of specific places in specific order, a scene where you guide your subjects through their performances. This is Hollywood method, transplanted. Such a production would be your work of art. Rarely will you have the opportunity to work under such favorable conditions, and probably you should be thankful.

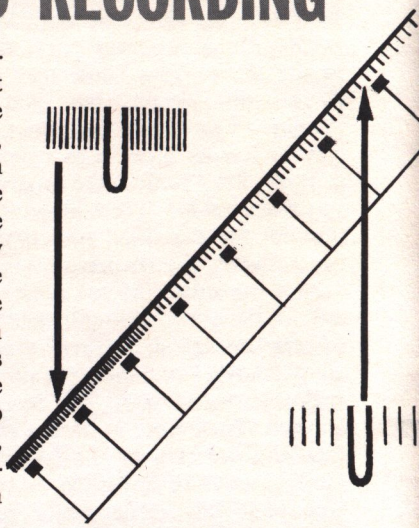
ANTICIPATED BUT UNCONTROLLABLE: Here is the most common kind of shooting. You have a fair idea of what

will happen, and in what order because you've been there before. We refer to parades, picnics, sporting events, the amusement park, the trip to the shore. You know that certain things will occur, but you can't imagine in just what way. So, the best way to handle them is to write down a story line, noting the high points you want to hit. Then keep an eagle eye out for the little events, the unusual angle, the surprises. Important —don't try to capture too much or too little of the event. Get complete scenes —fewer complete, rather than too many movie snapshots. Take wide angles to set a stage, or describe a location. Then close in for the exciting details. Take care to change focus as subjects move in or recede. Above all, take your time. The major part of this book deals with just this type of situation.

UNEXPECTED AND UNCONTROLLABLE: This is the true test of the sound movie reporter. You may be off on a trip or simply taking it easy around the house. Then it happens – who knows what, but it's the opportunity of the year. A surprise visit from long lost friends; a sudden summer storm; a raging blizzard; your littlest one stands up and takes those first steps; a child flies solo on his bike for the first time. A moment before, movie making was the last thing on your mind, and now you see a precious moment that must be captured, or lost forever. First, relax. As a tried-and-true camerman, you know exactly where your camera is. You know that it is fully charged and loaded, and that the filter is in. You know that the film speed is properly set. Your sound level is probably at #3 and taped there. It takes only an instant to plug in your microphone, set your focus and exposure—and shoot. Here's the point of the above drama—know your equipment thoroughly. Have it ready to go when you need it. Have a mental check list that you know inside out and take your time—far better to miss some of it than to lose all of it.

PRINCIPLES OF SOUND RECORDING

Sound, as it affects the ear, is a succession of vibrations coming through the air. If the waves have great force, the sound is loud; with lesser force, they are soft. If the succession of vibrations is very fast, the sound (as of a whistle) is considered to be high frequency, or high pitched. If the vibrations are relatively slow, (as a bass drum being struck) the sound is considered to be low frequency or low pitched. The camera can record a frequency range of between 100 and 5,000 cycles per second. The force and frequency of waves against the diaphragm of the microphone are converted into varying degrees of electrical energy on the magnetic stripe of the film. The quality of the sound is always relative to the speed of the magnetic stripe over the sound head, the smoothness of its travel and the effect of unwanted influences. Finally, sound quality depends on whether or not it pleases the listener.

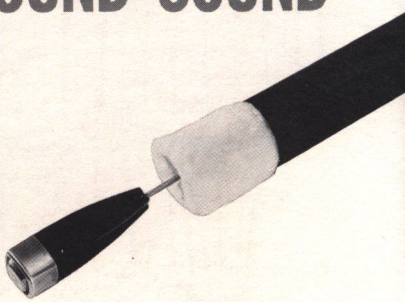


NOISE (UNWANTED SOUND) THE ENEMY OF RECORDING

Noise that is part of a scene is desirable. The sound of race cars can be aggravating if you are trying to record a pit interview with a driver, yet that same noise is a necessary part of the picture if you are shooting the race. Learn to think in terms of wanted and unwanted sound. Although you can often select voice out of a group, the microphone cannot. You have to select for it. The ear is accustomed to, or easily tunes itself to, a high noise level. It is often difficult to notice interference until it shows up in the movie. A classic example is the cameraman who complained of a terrible chattering in the sound track of a backyard barbeque. Closer observation, showed that a neighbor was cutting his grass with a power mower. Learn to distinguish between *wanted* and *unwanted* noise.

HOW TO MASK OUT BACKGROUND SOUND

Your microphone is designed for use under most common conditions. It accepts sound from many directions. If you want to cut down on background sound, simply wrap the mike as shown, with ordinary sponge rubber, fasten it with tape. Be sure the head of the mike is about ½" to 1" inside of its tube. You can make a neater job of it by using an 8" section of a 3" dia. mailing tube. In a limited sense, devices such as this will make your mike more directional. At the same time, they will reduce or eliminate "atmosphere" noise.

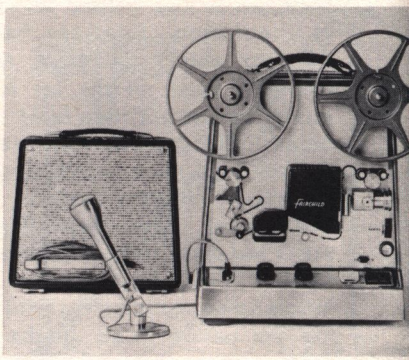


Take a tip from the Hollywood professionals. They spend millions of dollars on sound stages and acoustical materials just to hold the reverberations, echos and outside interferences to a minimum. Everyone has heard the gags about "Quiet, on the set." Actually, quiet on the set is costly, serious business. You're lucky, though, because chances are you have more control over your surroundings than the pros. The great outdoors is your best sound stage, providing there aren't too many noise influences in the vicinity. You'll find that you get excellent voice reproduction while shooting the family picnic in the woods. Trees, grass and shrubbery absorb sound beautifully. On the other hand, you might have difficulties in the city streets. The noise level is usually so high that you don't even notice it till you hear it in your movies. Also, there is constant echoing from the store windows and buildings. Unnoticeable sounds are bouncing in all directions. You'll find obvious differences in quality between shooting in a small, panelled den, and shooting in a well draped, larger living room. If you have a choice of locations, always shoot where there is least chance of disturbing echos or reverberations. Of course, you won't always be able to pick a quiet spot, and in most cases you won't want to because, after all, noise of one kind or another is part of everyday life. Some sound men, after recording a singer under absolutely "clean" conditions, will record a second track of just the noise level in the room. He adds the two together in a tightly controlled third recording just so the singer will not sound entirely false. It is doubtful that you will ever have to go to those extremes.

As we mentioned in a prior section, there are several ways to control sound quality. You read these under tips on good recording. It is important to get your microphone as close to your subject as possible. This is always relative to the situation. In a well draped room, at midnight, with only two people in the room, you can probably do a good recording of conversational tone at eight or ten feet from the microphone. Add two people to the group and you may have to cut the distance in half. Add four people, whispering or chuckling, or just breathing and moving about, and two feet away may not be close enough. Everything depends on interference. Don't forget, though, if you succeed in eliminating outside sound entirely, your subject may sound false. If you simply want to record the sound of a good time had by all, then there are no holds barred. Just hang the mike from the nearest chandelier and let the sound fall where it may. Very often, you'll be trying to record conversation against a high noise level, or crowd noises. Observe this "rule of thumb." Have your subject place his thumb against his chin, with small finger extended. That's about as far away as the mike should be.

ABOUT THE FAIRCHILD RECORDING PROJECTOR

The films you take with your sound camera can be shown on most types of 8mm recording projectors. The Fairchild Projector will show your productions to their best advantage. It will flood most home-size screens with a clear, brilliant image at a distance of about 15 feet. The projector provides for record, playback and sound overlay which means you can add sound to existing sound. It has a separate speaker, and is equipped with a high impedance ceramic microphone. Its lens is ¾" f/1.6. A 150 watt prefocussed lamp gives excellent illumination. Capacity is 400' and the total weight is 24 lbs. The Fairchild Projector is also available with swing out gate, and zoom projection lens.



RECORDING WITH THE PROJECTOR

In recording with any 8mm sound projector you must again observe noise interference, especially the sound of the projector itself. To reduce this to a minimum, it is recommended that the person recording be four or five feet from the projector, that outside noise be reduced, or that recording be done in late evening when outside noise is at a minimum. Music recording should be tested on a continuous loop of film. Music can be recorded through the padded mike, by positioning it a foot or so from the phono speaker, or by a direct line from the output jack of the recorder, or FM tuner. Be sure that in recording directly from a phono or tape machine that the input to the projector does not exceed 1-megohm. A competent radio technician can help you in making up a suitable connection. If you are adding music or voice to an existing track, it may be well to have someone assist you in changing modes on the projector. A set of detailed notes and prearranged hand signals should always be used. Use of the projector as an editor has already been discussed.

TECHNICAL SPECIFICATIONS

Input voltage	min. .05mV, max. 10mV
Frequency response	100 to 6000 cps
Microphone	dynamic type, 40 ohm
Alternate microphone	30 to 200 ohms
Headphones	1000 ohms
Charger cord	50-60 cycle line, 100-150V
Charging rate	20 ma.
Discharge rate	280 ma.
Film rate	24 f.p.s.
Film speed	3.61" per sec
Exposure time	1/48th sec.
Film capacity	50 ft. double 8mm
Lens	f/1.8 – 10 to 30 mm (focusing)
Meter	Sekonic, coupled to diaphragm
Viewer	through-the-lens reflex
Running time per film side	2¾ minutes
Total running time per spool	5½ minutes
Integral leader	4 ft.
Power supply	battery 12V nickel cadmium
Battery capacity	8-50 ft. rolls from full charge
Acceleration time	0.5 sec.

TAKE GOOD CARE OF YOUR CAMERA

Your camera is a precision instrument. Although it withstands normal everyday use, it is subject to damage by shock, water, excessive heat and other mishandling. Treat your camera with the same care you would give a good portable radio or portable tape recorder. Observe these few pointers and your camera will give you a lifetime of pleasurable movie making.

1. When storing your camera for a long period (a month or so) keep it in a carrying case or wrap it in a towel. This will keep it out of the way of little fingers and will also prevent any household dust accumulation in its lens or electronic parts.
2. Before storing your camera, put the lens cap on. Be sure there is no film in it. Be sure the operating switch is "off." Move zoom lens to 10mm position.
3. Be sure to keep your lens clean, especially of fingerprints. Use lens cleaning tissue and prescribed lens cleaning fluids. Do not wash your lens, or use cloth to clean it.
4. Avoid exposing your camera to water or excessive moisture under any conditions.
5. Keep inside of camera free of dust accumulation. Wipe inside periodically with soft, lint-free cloth.
6. Do not blow film chips out of camera. You might blow them into the aperture. Remove them with soft artist's brush.
7. When storing camera, do not put in extremely hot or cold or damp places such as attic, cellar, glove compartment, car trunk as this might damage camera drives and could cause battery to fail.
8. Be sure to charge your camera at least once each month, even if you do not plan to use it. A complete discharge of the battery can frequently reduce the battery's capacity to recharge.

AUXILIARY EQUIPMENT FOR SOUND RECORDING

Directional microphones—your Fairchild mike is low impedance, omnidirectional. You might want a mike with less "cone of reception." A more directional mike may also have a higher impedance. This can reduce interference, but may also require that the mike be closer to the subject. Any mike of 30 to 200 ohms can be used.

Microphone stand—a simple post on round base or tripod legs to support mike directly in front of speaker. Should be adjustable.

Microphone boom—to hold mike over subject's head, close in to voice. Long arm, weighted on one end. Adjustable. Light boom can double as mike boom.

Baffle box—do-it-yourself project. Simple box 8" x 8" x 8" lined with 1" foam rubber to cut down echo and reverberation.

Alligator clamp—can be fitted to hold mike to post or tripod leg. Pad mike with rubber or cloth to prevent vibration effect.

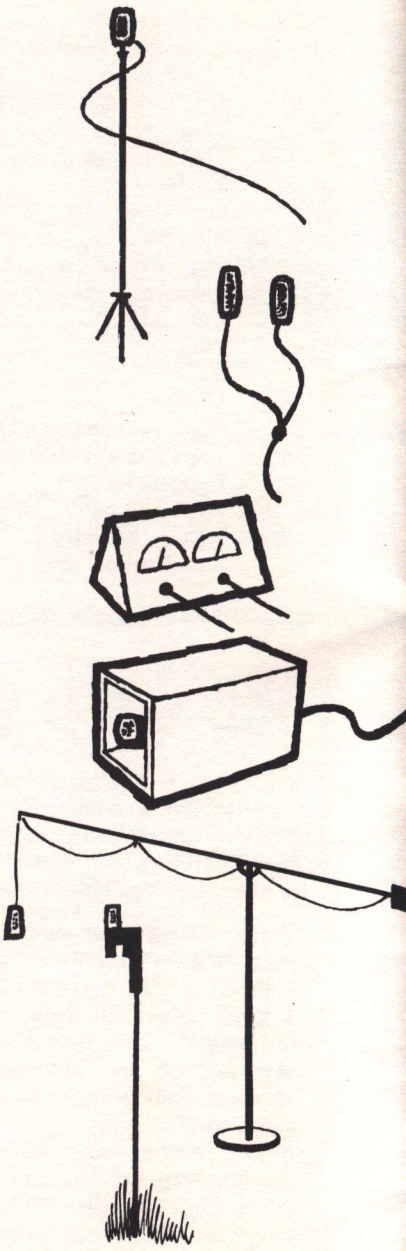
Mike extension cord—available directly from Fairchild—10 ft. lengths.

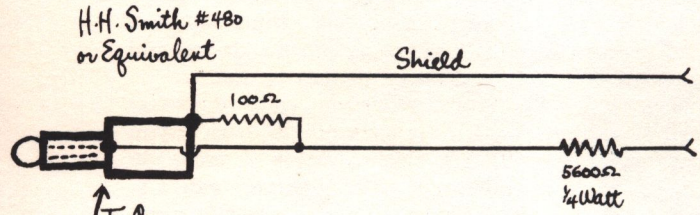
Two mike "Y" coupler—lets you record from two sources. From your radio shop. Inputs are not balanced. Make sound test strip first. Only control is mike placement.

Two mike mixer—takes two mikes into camera. Has controls and meters to balance sound levels. From radio shop. Must be from 30 to 200 ohms.

Sound effects records—good for dubbing in special effects. Usually 33⅓ r.p.m. Useful when shooting parlor playlets, etc.

Record player to camera hook-up—radio shop can make up cable (10') according to this diagram. Same hookup can be used between tape recorder output, FM tuner, and projector.





From Tuner, Tape Recorder
or Record Player.