BEGINNING PRODUCTION WORKSHOP SYLLABUS

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By Charles G. Allison
Based on Lecture Notes of Fall, 1974,
and editorial conferences with -

Professor Robert Kaufman, M.A.
on Camera,

Professor Richard Harber, M.A.
on Editing, and

Professor Daniel Wiegand, M.A., and
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on Sound.

-Special Research, Illustrations and
Photographs by
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C O N T E N T S

PART I - INTRODUCTION

Ideas. The seed. The beginning. The starting point. The need of man to express himself.

The artist, the poet, the filmmaker, the performer of any expression has this in common. He can express what others cannot, but would like to. The need of all people is to express what is in them. The gift of the artist is that he is able to succeed. He can transform what is in him into a manifestation through which others can see themselves. The need of study and expertise is only to bring in focus, sharpen, and deepen this unearned ability.

The distillation of an idea can be learned, practiced and experimented with. The idea itself cannot. No book, teacher, desire (however deep), can force it into existence. In filmmaking, the basics of camera, the subtleties of lighting, the techniques of editing, the dynamics of sound, can be taught and assimilated, but without an idea these are mere mechanics and no film will result.

A filmic idea is a specialized type of idea. The uniqueness is only that it lends itself to visual expression. This Syllabus is not a means to a filmic idea or any kind of idea. It is merely a rough sketch of an unknown subject, a road marker on an open field. The idea is everything. This Syllabus and any learned ideas are but packaging. Everything in this course outline, and the course itself, in the words and actions of all teachers, relate directly to the filmic idea or they have no substance at all. Only what is appropriate is assimilated. Thus, the daily screenings, the film conferences, the rough cut screenings, are only steps along the path the idea creates.

An early test of your idea is when you actually take a camera, go out, and shoot film. The first dailies are often a harrowing experience, a time of doubt, and a time of separation from the script. When the idea is put onto film, the script, necessarily, becomes obsolete. What you have on film is, radically, all that you have. No amount of dreaming or hoping will transform the visual images into what they are not. At this point original ideas become hybrids or die altogether. In many ways the idea films itself. The idea determines its own way, it declares its own manner of presentation. It is at this point that the help of mature filmmakers/teachers becomes invaluable. Their advice, their knowledge of the ways of film, can help supply the distance required to allow the idea to form itself. Making a film is a delicate, many faceted operation. Tests and crises continue unabated all the way to the final release print and seldom end, ultimately, even there. The release print is the final expression of the idea only because there is little more that can be done.

It often takes many years for potential ability to become totally realized. Without the beginning seeds of ideas, however, nothing can be realized except mechanical proficiency. On the other hand, without the necessary time to master subtlety and content, even the most vital thought cannot be expressed, understood, nor, least of all appreciated. The great filmmakers are great because

of what they were able to express. All fimmakers use the same tools but the successful ones use them effortlessly. They do not intrude upon their film. The audience feels that they themselves are creating the film as it proceeds. It becomes almost incidental who created the film for if it is done well it is, truly, the audience's film.

PART II - UNITS OF STUDY

SECTION A - THE WORKSHOP EXPERIENCE

UNIT 1: "WORKSHOP GOALS"

A. Major Course Emphasis

1. Ideas

2. Content

3. Creativity

B. Team Teaching

1. Camera Emphasis

2. Editing Emphasis

3. Sound Emphasis

4. Other

C. Levels of Accomplishment

1. Pre-semester

2. During the Semester

3. Post Semester

UNIT 2: "TEAMS AND TEAMING UP"

A. Team Positions

B. Job Assignments

C. Choice of Team Members

D. Schedule of Dates

WEEK	SUNDAY	MONDAY	TUESDAY	WED.	THURS.	FRIDAY	SAT.
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							

E. Problems

1. Size

2. Positions

3. Working As A Team

UNIT 3: "SCRIPT CONFERENCES, FILMING, DAILIES AND SCREENINGS"

A. Script Conferences

1. The Script

2. Purpose

B. Filming

1. Film Types And Allotments

2. Time Limits

3. Lab Considerations

C. Dailies

1. Purpose

D. Screenings

1. Purpose

2. Critiques

E. Release Prints

1. Time Limits

a. Processing Lab

b. Sound Department

2. Copyrights And Ownership

SECTION B - THE CAMERA

UNIT 1: "EQUIPMENT AND SUPPLIES"

A. Camera Considerations

1. The Camera

a. Threading

b. The Finder System

1) Reflex

2) Parallax

c. Lens Mounting

2. Shutter Angle - Exposure

3. Tripods - Camera Set-up

4. Camera Reports

CAMERA REPORT

CFI **Consolidated Film Industries** 462-3161
959 SEWARD ST., HOLLYWOOD, CA. 90038

Date_____

Company_____

Address_____

Production_____

Director_____ Cameraman_____

Magazine No._____ Roll No._____

UNLESS OTHERWISE INDICATED ALL DAILIES WILL BE PRINTED AS ONE-LIGHT COLOR.

PRINT CIRCLED TAKES PLEASE CIRCLE ONE **COLOR** **BLACK & WHITE** **FILM TYPE**

SCENE NO.	TAKES 1 5	2 6	3 7	4 8	DAY OR NIGHT	Remarks	INT. OR EXT.

No. Cans to Lab. ..... Bal. Neg. on Hand .....
Good Footage ..... Received .....
N.G. Footage ..... Exposed .....
Waste Footage ..... On Hand .....
Total Footage ..... Emul. No. .....

The Company respectfully points out that as prices are never proportionate to the value of the negative and positives entrusted to it, Customer's films are received, developed, printed and stored by the Company only at the Customer's risk, and the Company does not accept responsibility for any loss or damage to such films from any cause whatsoever. Films delivered to the Company are accepted upon the express condition that same are insured by Owner thereof for the full amount of all risk and possible damage and loss, and the Company holds a lien thereon for the general balance from time to time due to the Company by the Customer, whether in respect to processing, printing, storage charges or otherwise.

669158

FORM NO. 10 ABF

B. The Assistant Cameraman's Kit

1. Light Meters
2. Glass Filters
3. Ear Syringe
4. Chamois (For the Camera Aperture)
5. Stiff Paint Brush
6. Lens Tissue
7. Lens Cleaner
8. Q-Tips
9. Jewelers Screw Driver
10. Other Assorted Screw Drivers
11. Pliers
12. Allen Wrenches
13. Tweezers
14. Assorted Nails, Washers and Screws
15. Hammer
16. Matt Knife
17. Flashlight
18. Tape Measure
19. Marking Pencils
20. Viewing Filters
21. Grey Scale
22. Color Chart
23. White Tape
24. White Cloth Tape
25. Black Electricians Tape
26. Black Masking Tape (For Camera)
27. Gaffers Tape (Duct)
28. String
29. Bubble Level
30. Gloves
31. Scissors
32. Voltage Tester (Optional)
33. Gelatin Filters
34. Changing Bag
35. Stopwatch
36. Cores and Spools
37. Photographers Handbook (American Cinematographers Manual)
38. Other

C. Lenses

1. F-Stops/T-Stops

2. Depth of Field - (Wide Angle - Telephoto)

3. Seating - Depth of Focus

a. Back Focus

b. Flange Distance

A motion picture lens glossary for the working cinematographer

BY BERN LEVY

Optics, with all of its very scientific-sounding terms, has always been a mystery to the working cinematographer. Somehow most cameramen have been able to cope with the complexities of fixed focal length lenses and have had few problems in producing high quality images on film. Upon the introduction of zoom lenses, with their intricate internal mechanisms and extremely sophisticated glass, many new mysterious designations evolved which have caused a serious gap in communications between equipment manufacturer, dealer, and cameraman; and, especially, between repairmen, rental houses and cinematographers. Many serious film errors have been committed as a result of misconceptions. A list of those terms which have been most questionable has been compiled in order to help alleviate such errors. Please note that while these explanations may appear somewhat incomplete to the optical engineer, sufficient information is given within each definition to provide the working cinematographer with a reasonable knowledge of that term.

APERTURE: A number designating the light-passing power of a lens, refer to: "f" number and "T" stop.

BACK FOCUS: The distance from the rear-most glass surface of a lens to the focal (film) plane.

CIRCLE OF CONFUSION: Light passing through the lens to produce an image on film which never comes to a "true" point, but forms a small disc of light instead, known as the circle of confusion, for each point in the scene. This permissible degree of image unsharpness lays the basis for calculating depth of field; where circles are small enough, picture areas will look sharp. In computing the depth of field for 16mm lenses, most charts are based on a maximum circle of confusion of 1/1000 inch.

C-MOUNT: A standard mount used primarily for 16mm motion picture cameras, consisting of 1" outside diameter thread, 32 threads to the inch, where the distance from the seat or flange of the lens to the film plane is 17.52mm.

COLLIMATOR: An optical device used to measure the position of the image of a lens in relation to the film plane or lens seat. As the collimator can only observe the image at one point in the field at any one time, it cannot be relied upon to determine overall optical performance of a lens.

DEPTH OF FIELD: When a lens is focused on an object, that object will be in sharp focus. However, some objects nearer to and further away from the lens my be in acceptable focus. The distance between such a nearer and a farther object is called the depth of field and all objects within this depth of field will be in acceptable focus.

DEPTH OF FOCUS: The permissible tolerance in lens-to-film distances within which the sharpness of the image of an object point is up to a required standard.

DIOPTERS: Commonly used to designate a close-up lens attachment. Actually a unit expressing the power of a lens: A #1 Diopter will only focus at 1 meter, or 39.37". A #2 Diopter at 0.5 meter or 19.68". A #3 Diopter at 0.25 meter or 9.9".

DISTORTION: A lens suffering from *optical distortion* reproduces straight lines as curved lines. In *pin cushion distortion*, straight lines are reproduced as curved lines that are convex towards the center of the frame. In *barrel distortion*, straight lines are reproduced as concave to the center of the frame. *Perspective distortion* results when extreme focal length lenses are used; especially with an extremely wide angle lens, the working distance may be very close which results in parallel lines appearing more divergent than in a "normal" view. An extremely long focal length lens may predicate a long working distance which will result in parallel lines appearing more parallel than they normally should be. All directly related to the viewing distance.

FLANGE FOCAL DISTANCE (Also known as FLANGE FOCUS): The mechanical distance from the seat of a lens mount to the film plane. Most common is the standard "C" mount which is 17.52mm.

f/NUMBER: A number defining the light gathering power of a lens. This is obtained by dividing the focal length of the lens by the diameter of the axial beam of light which goes through the lens. The smaller the f/number the larger the opening, allowing more light to be passed by the lens.

FOCAL LENGTH: The distance from the lens to the focal plane, when that lens is focused on a point at infinity.

HYPERFOCAL DISTANCE: When a lens is focused on infinity, the depth of field extends from infinity to a point nearest the camera. The distance from the camera to this nearest point of acceptable focus is called the hyperfocal distance. When the lens is focused on the hyperfocal distance, the depth of field extends from half the hyperfocal distance to infinity.

IMAGE OR FIELD DIAGONAL: The circular area over which a lens will render an image of acceptable quality. This usually defines the area of film covered as measured by the "Diagonal" of the camera aperture.

M.T.F.: Modulation Transfer Function is a method of defining imaging quality in terms of how well a sharp black/white edge is rendered. It is an effort to combine resolution and contrast in one term that can be applied to lenses, films and other components of an imaging system.

OBJECT ANGULAR FIELD (Angle of (View): The angle formed from the lens to the opposite diagonal corners of the film, which determines the field of view, representing the widest area over which the film will form an acceptably sharp image.

RANGE EXTENDER (Also TELE-EXTENDER): A supplementary device that is attached to the rear of a lens, especially a zoom lens, to elongate or extend the focal length of that lens. The aperture as well as the focal length are multiplied when using a range extender, e.g., a 2X range extender on a 25-250mm, f/3.2 lens, changes the focal length to 50-500mm and aperture to f/6.4.

RESOLVING POWER: The ability of a lens to produce images of closely-spaced lines or points in such a fashion that the individual identities of the images may be recognized. The resolving power of a photographic lens is usually specified in line pairs/mm.

RETRO-ZOOM ATTACHMENT: A supplementary device that is attached to the front of a zoom lens to reduce the focal length. While the attachment to the front of a lens does not affect the aperture of the lens, the retro-zoom does reduce the minimum focusing distance, e.g., the retro-zoom attachment for the 17-68mm, f/2.2 minimum focusing: 5 ft., changes it to 12.5-50mm, f/2.2 minimum focusing: 28".

T STOP: While the "f number" of a lens is an indication of the light passing power of that lens, the "f number" is a result of a geometric computation, i.e. dividing the focal length of a lens by its effective aperture. As a result of the introduction of compound lenses which encounter a transmission loss due to the surface reflections of the many elements within the lens, the "T" system was devised where the image illuminance is photometrically measured in order to determine the actual transmission. The "T" system allows any lens regardless of its focal length or complexity of design, when set at a specific "T" stop, to transmit the same illuminance to the image of a subject.

VIGNETTING: The lower intensity of illumination produced by a lens at the corner of the film aperture, compared with the illumination in the center of the field, due to the obstruction of light rays by the edges of glass elements in the lens. •

Bern Levy *is responsible for all motion picture optics at Angenieux Corporation of America. He was formerly a working cinematographer in TV and industry.*

4. Sharpness And Resolution

5. Residual Abberations

6. Lens Flare

7. Distortion

D. Lighting Equipment

E. Film

1. Plus X

2. Double X

4. Color

5. Other

F. Rental Houses

G. Other

UNIT 2: "BASIC EXPOSURE AND LIGHTING"

A. Exposure Meters

1. Types

Spectra Professional

Weston Master 6

Minolta Auto-Spot 1

2. How To Use Meters

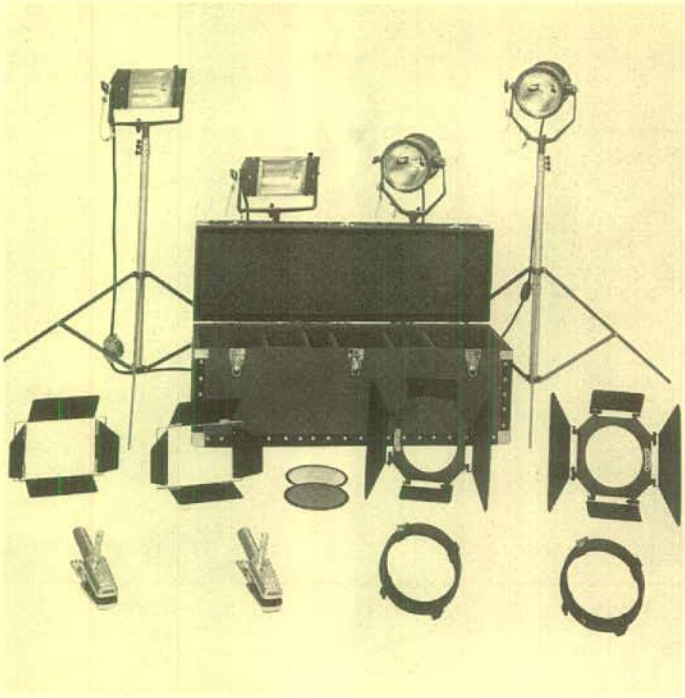
a. What They Measure

100 ASA x 100 Foot Candles at 1/50th of a second = F 2.8

b. Situations

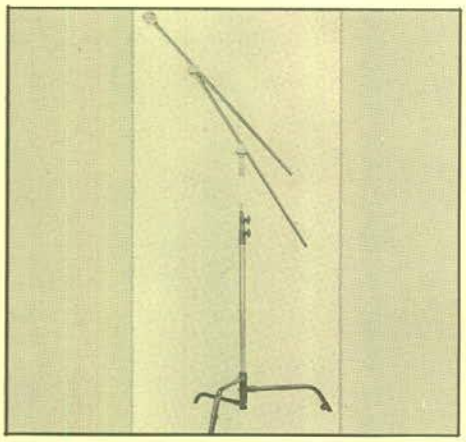
c. Applications

B. Types of Light

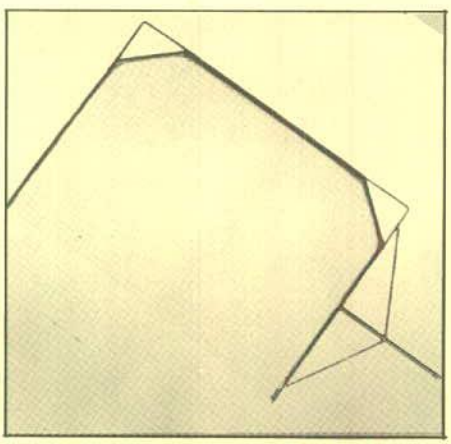


1. Portable

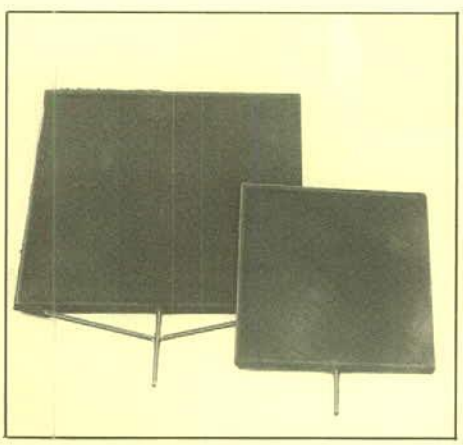
2. Studio



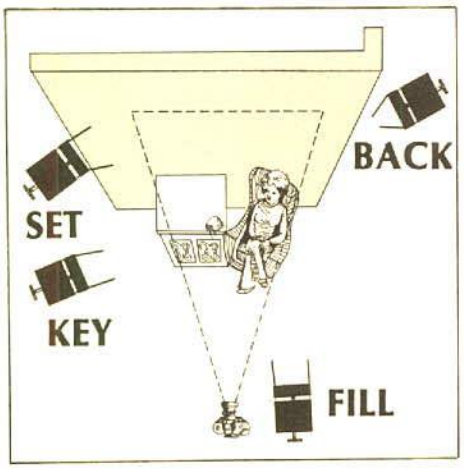
Century (Grip) Stand



Net



Two Flags



C. Basic Lighting Terminology

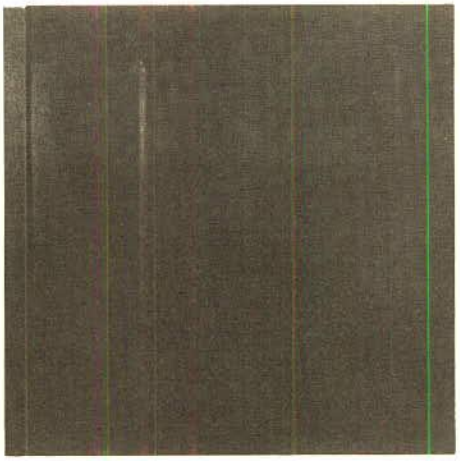
1. Key Light

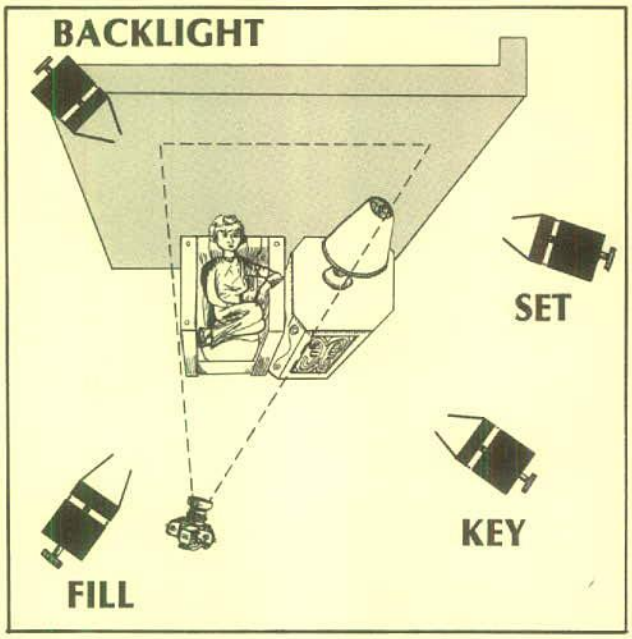
2. Fill Light

3. Back Light

4. Set Light (Or "Background Light").

5. Composite

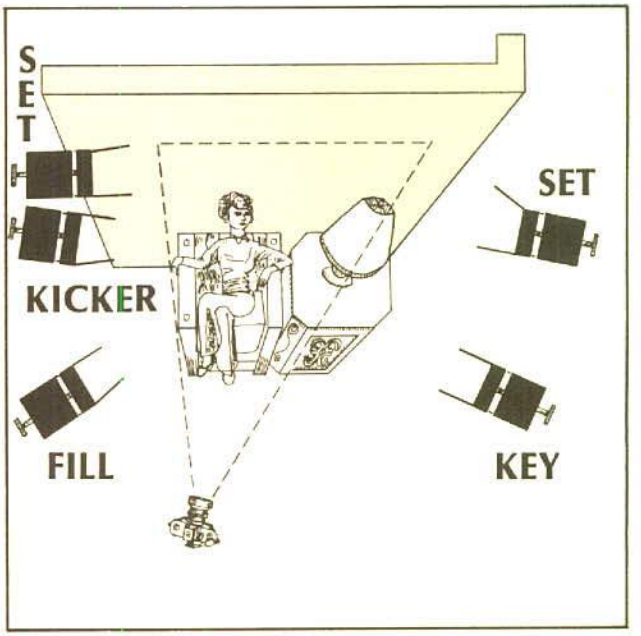




Low Key

2. Light Motivation

   a. A Place To Start: Where Light Comes From



High Key

b. Observation of Light

c. Light Quality

1) Content of Scene

D. Filters For Black & White Photography

1. Color Correction Filters (B&W)

a.

BLACK AND WHITE FILTERS — DAYLIGHT EFFECTS

NOTE: The effects listed will be obtained only when film is correctly exposed using the manufacturer's recommended Filter Factor.

WRATTEN NO.	FILTER COLOR	USE AND EFFECT IN SUNLIGHT	COLOR OF SUBJECT			
			Blue	Green	Yellow	Red
No. 8 (K2)	YELLOW	Moderate aerial haze penetration and complete color correction. Absorbs ultraviolet and some blue-violet rays. Darkens blue sky moderately. (NOTE: A-2 is no longer available.)	Slightly Darker	Very Slightly Lighter	Slightly Lighter	Very Slightly Lighter
No. 15 (G)	DEEP YELLOW	Heavy aerial haze penetration. Greater contrast and stronger effects than above filters. Useful with telephoto lenses. Useful for open landscapes and aerial cinematography.	Dark	Light	Very Light	Light
No. 23A	LIGHT RED	Stronger haze penetration and blue sky darkening. Moderate over-correction. Lightens faces moderately. Strong contrast, particularly for blue sky, clouds and water.	Very Dark	Dark	Slightly Lighter	Very Light
No. 25	RED	Vast over-correction. Very strong contrast. Renders sunsets spectacular: red and yellow parts are reproduced bright against blue sky and gray clouds. Lightens faces too much unless special make-up is used.	Black	Very Dark	Fairly Light	Very Light
No. 11 (X-1)	YELLOW-ISH GREEN	Useful for obtaining correct monochromatic rendering of multicolored subjects, such as flowers; and close-ups against the sky. Renders green foliage lighter and darkens sky.	Fairly Dark	Light	Fairly Light	Medium Dark
Nos. 23A + 56	RED + GREEN	Combination filter for Night Effects in Daylight. The 56 (Light Green) records correct flesh tones and the 23A (Light Red) darkens the sky and foliage. Underexposure produces soft Night Effect. (See "Day For Night" Filming.)	Very Dark	Very Dark	White	Light

2. Effect Filters

   a. Diffusion

   b. Fog

   c. Star

   d. Graduated

   e. Other

      1) Vaseline

      2) Nets

3. Polarizers

E. Constant F-Stop

1. Desirability

a. Continuity

b. Efficiency in Operation

2. How To Obtain It

UNIT 3: "CONCEPTS AND CONTROLS OF EXPOSURE AND LIGHTING"

A. Basic Concepts And Controls

1. Motivational Concepts (What You Want To Say)

   a. Physical

      1) Types

         a) High Key (See Also Page 33).

         b) Low Key (See Also Page 32).

      2) Script Content

      3) Individual Choice (Subjective)

2. Continuity

   a. Demands of Script

   b. Demands of Editing

      1) Ratios

      2) Light Direction

      3) Tonality

B. Lights

1. Quality of Light

a. Specular Light

b. Diffused Light

2. Set-ups

a. Equipment

1. Types of Light Units

2. Grip

3. Diffusion

b. Solutions to Some Basic Problems

1) Multiple Subjects

a) Single Apparent Source Direction

b) Crossed Keys

2) Lighting for Movement

a) Blending of Lights - Single Apparent Source

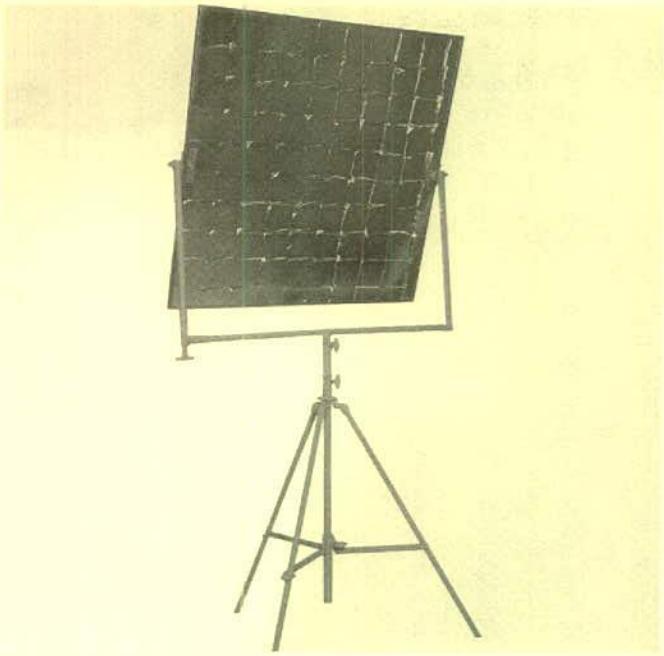
b) Crossed Keys

c) Use of Large Lights

3) Interior/Exterior Balance

3. Outdoor Lighting

a. Reflectors and Lights



1) Lighting Ratios

2) Continuity

b. Large Scrims

1) Lighting Ratios

2) Continuity

2. Power Distribution

CABLE POWER DISTRIBUTION DATA

HOW TO USE THE TABLES PRINTED BELOW

1—Know the total amount of power at your supply point.

2—Be sure your supply has ample fusing.

3—Compute the amperage load (Table 1) for the maximum units of lighting equipment you expect to use and be sure it does not exceed your total supply. (The quantity and variety of lights should be sufficient to provide flexibility in all photographic situations and since all will not be in use at one time, only the maximum number of lights to be used at one time will form the basis for computing amperage load.)

4—Relate your available power to the current carrying capacities in Table 2 and decide on adequate cables.

5—Determine whether you have a two or three-wire system and use either Fig. 3 or Fig. 4 as a guide in laying out your distributing system.

Table 1

INCANDESCENT LAMPS AT 120 VOLTS	
Globe Wattage	Globe Amperage
200	1.7
500	4.2
650	5.4
750	6.3
1,000	8.3
1,500	12.5
2,000	16.7
5,000	41.6
10,000	83.3

ARC LAMPS AT 115-120 VOLTS	
Type Number	Amperage
40	40
90	120
170	150
450, 4591, 4601, 4611	225

Table 2

COPPER CABLE		AMPERE RATINGS‡			
AWG Size of Conductors	Number of Conductors	Per Conductor		Total Load	
		Continuous	*Intermittent	Continuous	*Intermittent
8	2	45	60	45	60
6	2	65	85	65	85
4	2	85	115	85	115
4	3	85	115	170**	230**
2	2	115	155	115	155
2	3	115	155	230**	310**
4/0	1	***	***	–	–

‡Additional capacity may be secured by paralleling as many feeders as are necessary to carry the load.

*Ampere ratings usually found to be satisfactory for intermittent service normally encountered in motion picture studios.

**Maximum load amperes for balanced condition on a three-wire system.

***Ampere rating based upon ratings of Molepower See-thru Spiders, as stated on Spider name-plates, are as follows:

	Continuous	Intermittent
2 Input feeders per bar	300	325
3 Input feeders per bar	280	325
4 Input feeders per bar	270	325

FIG. 3 TYPICAL THREE-WIRE 120/240 VOLT D.C. DISTRIBUTION SYSTEM

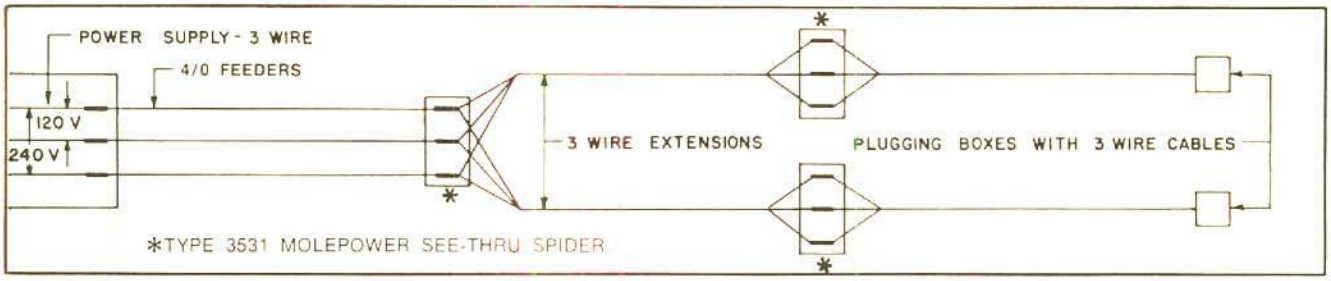
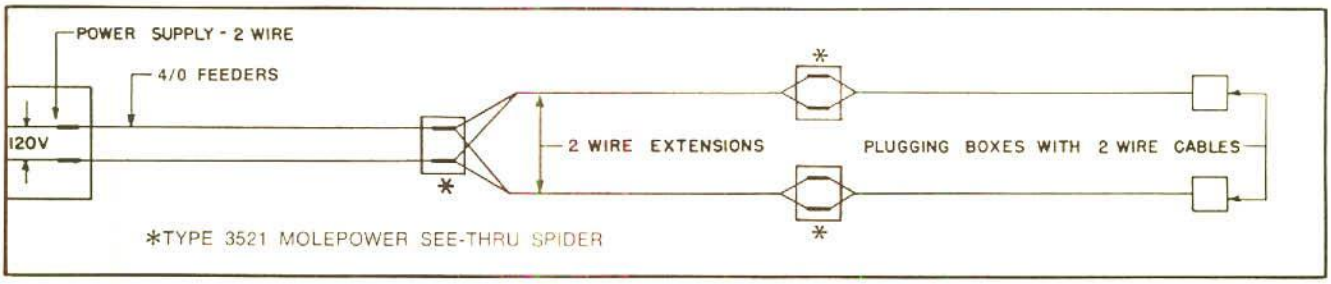


FIG. 4 TYPICAL 2-WIRE 120 VOLT D.C. DISTRIBUTION SYSTEM



a. Watts (120/240 - Phases)

b. Amps

c. Balance Load

d. Safety Factor

3. Tie-in Kits

a. Dangers

b. Legality

UNIT 4: "CAMERA SET-UPS"

A. An Approach To Coverage

1. Composition

2. Continuity

3. Movement

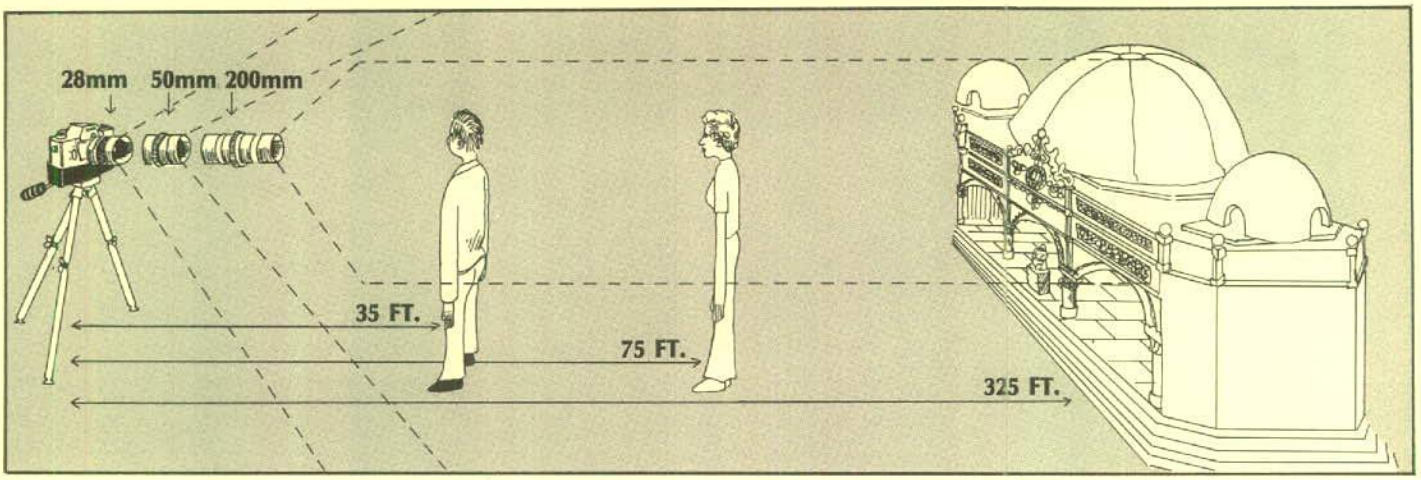
a. The Camera

b. The Subject

c. Combination

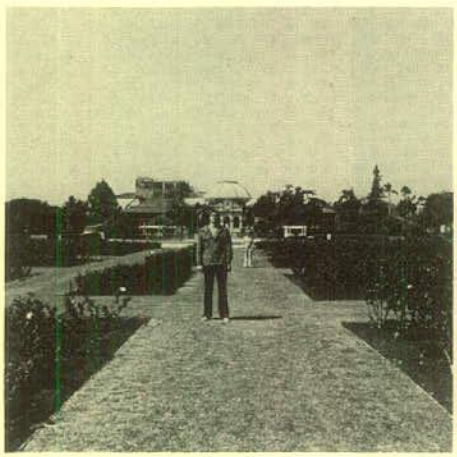
d. Follow Focus

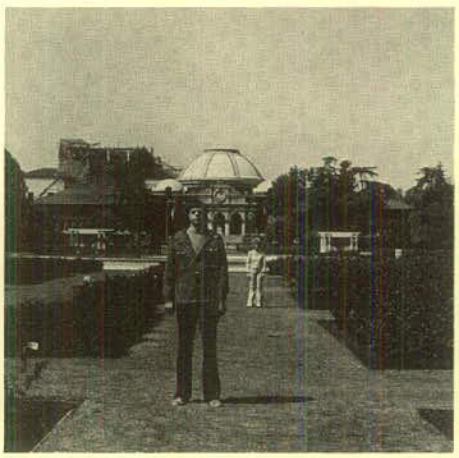
4. Depth of Field

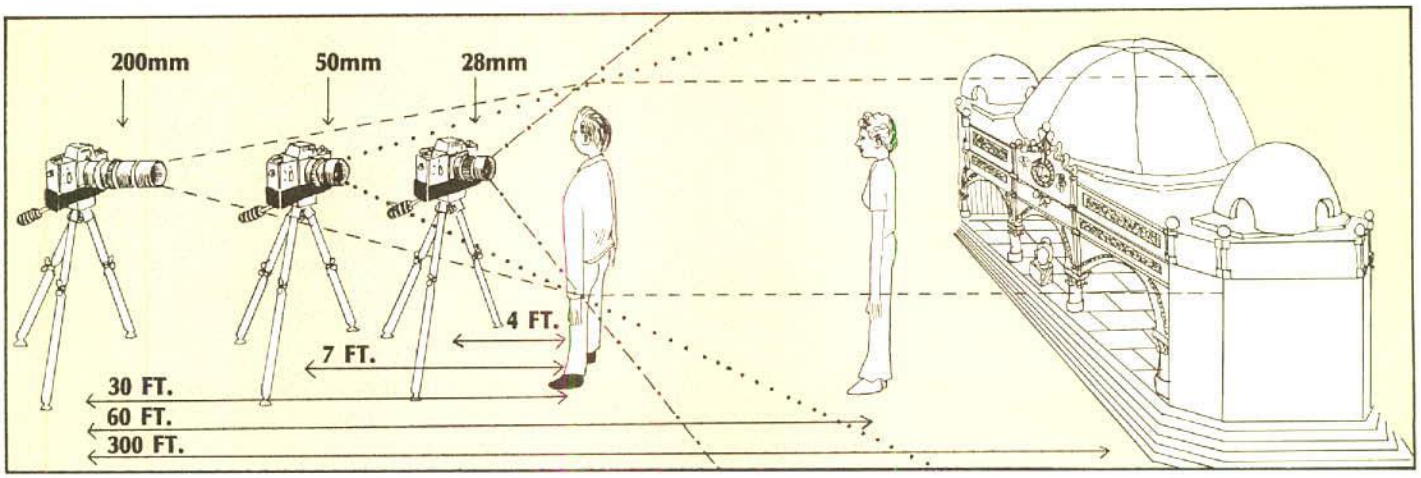


B. Perspective And Image Size Control

1. Camera to Subject Distance







2. Focal Length

UNIT 5: "SPECIAL USE LENSES"

A. Macrophotography

1. Macro Lenses

a. Camera Subject Distance

b. Magnification Factor

2. Diopters

a. Numerical Designation

b. Split Field

c. Considerations

1) Lens Quality

2) With Zoom

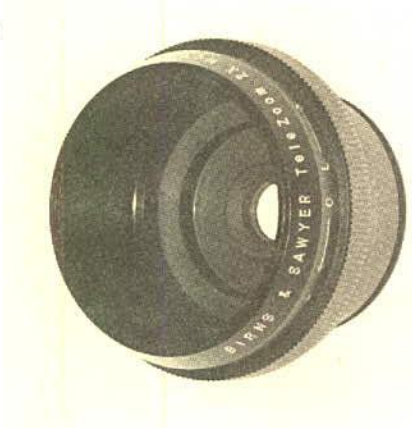
3. Extension Tubes

a. Camera Subject Distance

b. Magnification Factors

c. Considerations

1) Focusing Problems



C. Other Lenses

1. Tele-Extenders (Doublers, Etc.)

   a. F-Stop Considerations

2. Retro-Zoom Attachment

   a. Minimum Focusing Distance

3. Extreme Wide Angle

   a. Fish Eye

UNIT 6: "COLOR FILM"

A. Film Stock

1. Types

   a. Reversal

      1) ECO - (7252)

      2) EFB - (7242)

      3) EF-Day - (7241)

   b. Negative

      1) ECN (7254)

      2) ECN-Type II (7247)

2. ASA

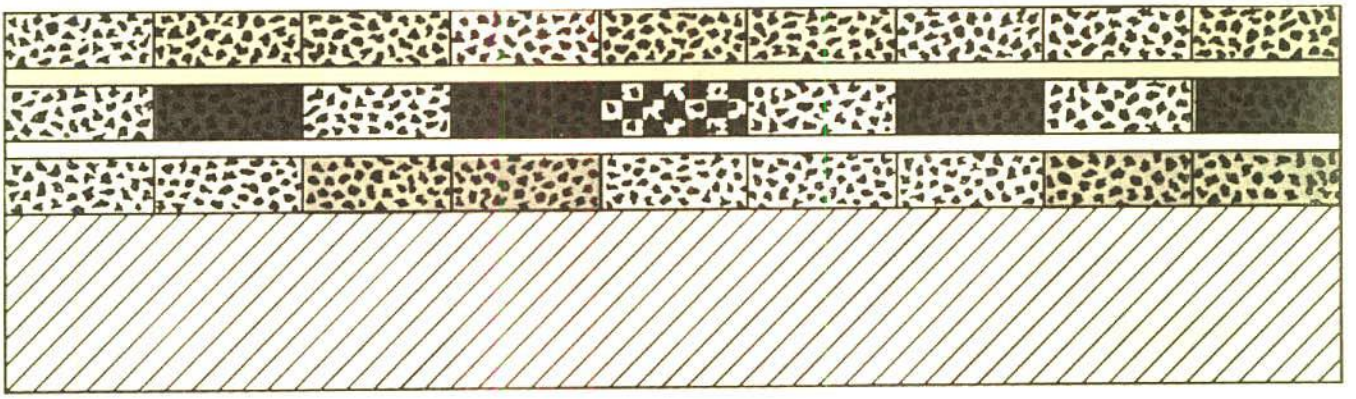
3. Color Balance (Kelvin)

B. Application of Color

1. Primary Colors of Photography

   a. Additive Primaries

   b. Subtractive Primaries



2. Structure of Color Film

3. Color Temperature

   a. Continuous Spectrum

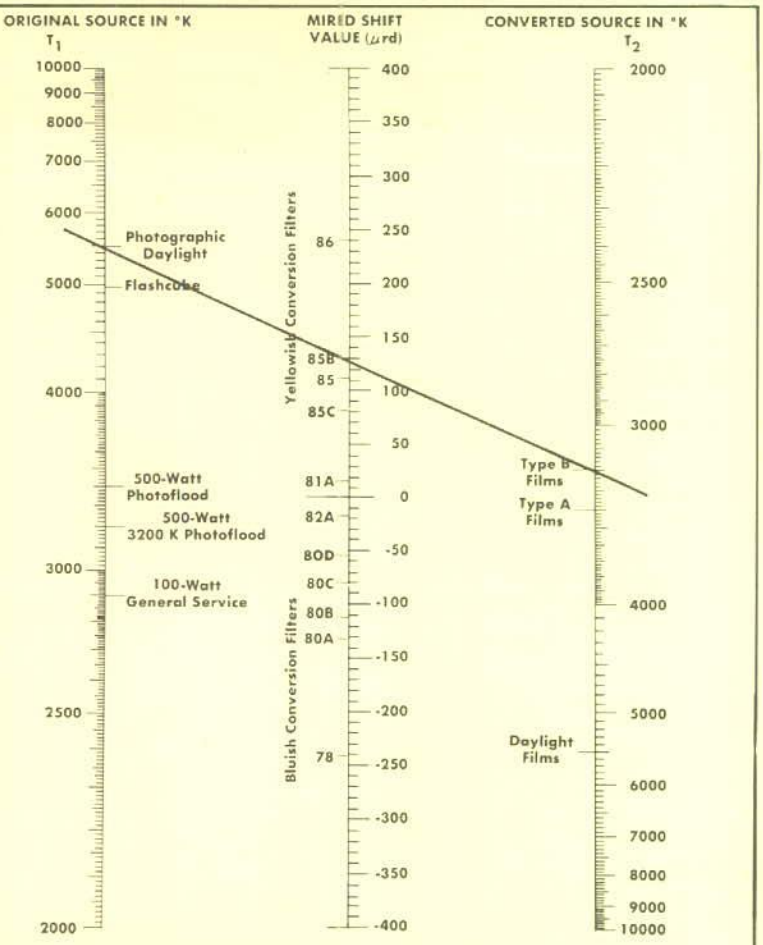
   b. Discrete Spectrum

   c. Color Balance

4. Color Meters

5. Color Filters

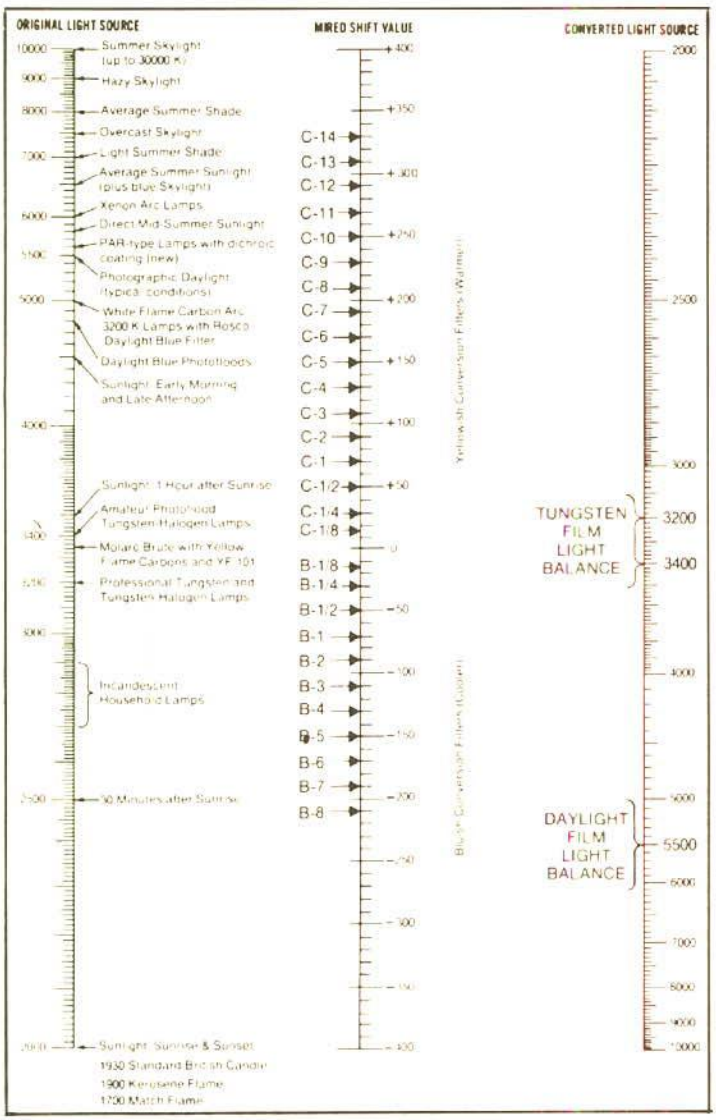
a. Light Balancing Filters



The Mired Nomograph can be used to find the filter required for a particular conversion by placing a straightedge from an original source (T_1) to a second source (T_2) as illustrated above by the diagonal line. In the illustration, daylight illumination at 5500 K requires an approximate +130 mired shift to convert to Type B illumination at 3200 K. KODAK Daylight Filter No. 85B with a mired shift value of +131 (see table on page 23) meets this requirement.

Light Balancing and Conversion Filters. To use this chart: if you're using film balanced for 3200° K and you plan to use it with a source close to 3200° K, you'll need a light balancing filter. For example, with a 2900° K source an 82B filter is recommended. Conversion filters produce greater control. For example, a film balanced for 5500° K that will be used indoors (3200° K), needs an 80A (3200° K to 5500° K). (Eastman Kodak)

	Filter Color	WRATTEN Number	Exposure Increase in Stops*	To obtain 3200 K from:	To obtain 3400 K from:
Light Balancing Filters	Bluish	82C + 82C	1 1/3	2490 K	2610 K
		82C + 82B	1 1/3	2570 K	2700 K
		82C + 82A	1	2650 K	2780 K
		82C + 82	1	2720 K	2870 K
		82C	2/3	2800 K	2950 K
		82B	2/3	2900 K	3060 K
		82A	1/3	3000 K	3180 K
		82	1/3	3100 K	3290 K
	No Filter Necessary			3200 K	3400 K
	Yellowish	81	1/3	3300 K	3510 K
		81A	1/3	3400 K	3630 K
		81B	1/3	3500 K	3740 K
		81C	1/3	3600 K	3850 K
		81D	2/3	3700 K	3970 K
		81EF	2/3	3850 K	4140 K



HARRISON LIGHT CORRECTOR SERIES

FILTER COLOR	FILTER NUMBER	CINE FACTOR	EXPOSURE INCREASE IN STOPS*	MIRED SHIFT VALUE
CORAL	C-1/8	—	—	+ 15
	C-1/4	1.25	1/3	+ 30
	C-1/2	1.25	1/3	+ 50
	C-1	1.25	1/3	+ 70
	C-2	1.25	1/3	+ 90
	C-3	1.6	2/3	+ 110
	C-4	1.6	2/3	+ 130
	C-5	1.6	2/3	+ 150
	C-6	1.6	2/3	+ 170
	C-7	2	1	+ 190
	C-8	2	1	+ 210
	C-9	2	1	+ 230
	C-10	2.5	1 1/3	+ 250
	C-11	2.5	1 1/3	+ 270
	C-12	2.5	1 1/3	+ 290
	C-13	3.2	1 2/3	+ 310
	C-14	3.2	1 2/3	+ 330
BLUE	B-1/8	—	—	− 15
	B-1/4	1.25	1/3	− 30
	B-1/2	1.25	1/3	− 50
	B-1	1.6	2/3	− 70
	B-2	2	1	− 90
	B-3	2.5	1 1/3	− 110
	B-4	3.2	1 2/3	− 130
	B-5	4	2	− 150
	B-6	5	2 1/3	− 170
	B-7	5	2 1/3	− 190
	B-8	6	2 2/3	− 210

KODAK COLOR COMPENSATING FILTERS

Kodak CC Filters can be used singly, or in combination, to introduce almost any desired correction in various phases of color photography. If several filters are used together over a lens, definition may be affected by (1) scattering of the light, (2) combined errors of several glass surfaces. It is best to use the minimum number of filters which will produce the desired correction.

Peak Density	Yellow (Absorbs Blue)	Exposure Increase In Stops*	Magenta (Absorbs Green)	Exposure Increase In Stops*	Cyan (Absorbs Red)	Exposure Increase In Stops*
.05	CC-05Y	—	CC-05M	1/3	CC-05C	1/3
.10	CC-10Y	1/3	CC-10M	1/3	CC-10C	1/3
.20	CC-20Y	1/3	CC-20M	1/3	CC-20C	1/3
.30	CC-30Y	1/3	CC-30M	2/3	CC-30C	2/3
.40	CC-40Y	1/3	CC-40M	2/3	CC-40C	2/3
.50	CC-50Y	2/3	CC-50M	2/3	CC-50C	1
Peak Density	**Red (Absorbs Blue and Green)**	**Exposure Increase In Stops***	**Green (Absorbs Blue and Red)**	**Exposure Increase In Stops***	**Blue (Absorbs Red and Green)**	**Exposure Increase In Stops***
.05	CC-05R	1/3	CC-05G	1/3	CC-05B	1/3
.10	CC-10R	1/3	CC-10G	1/3	CC-10B	1/3
.20	CC-20R	1/3	CC-20G	1/3	CC-20B	2/3
.30	CC-30R	2/3	CC-30G	2/3	CC-30B	2/3
.40	CC-40R	2/3	CC-40G	2/3	CC-40B	1
.50	CC-50R	1	CC-50G	1	CC-50B	1 1/3

*These values are approximate. For critical work, they should be checked by practical test, especially if more than one filter is used.

b. Color Compensating (C.C. Filters)

6. Effects

7. Balancing Indoor/Outdoor

C. Flashing

1. Pre

2. Post

UNIT 7: "THE SYNC SOUND 16MM CAMERA"

A. Establishing Sync

1. Motors

a. Sync

b. Sync Pulse

c. Crystal Sync

2. Sync Marks

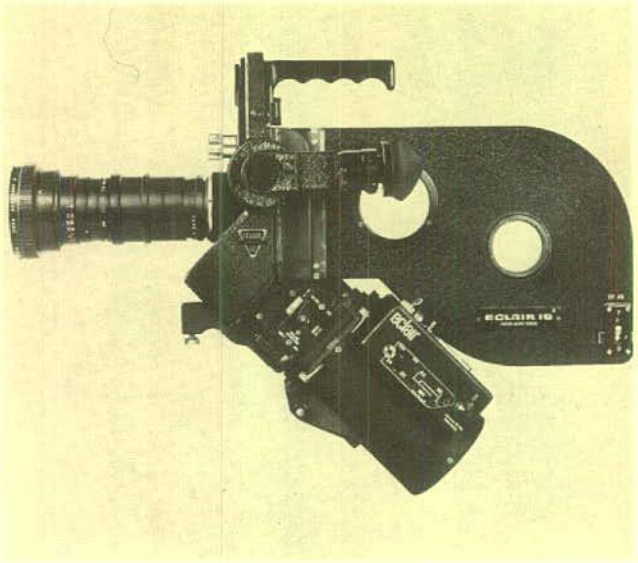
a. Bloop Light

b. Clap Stick

3. Recorder (Tape)

B. Cameras

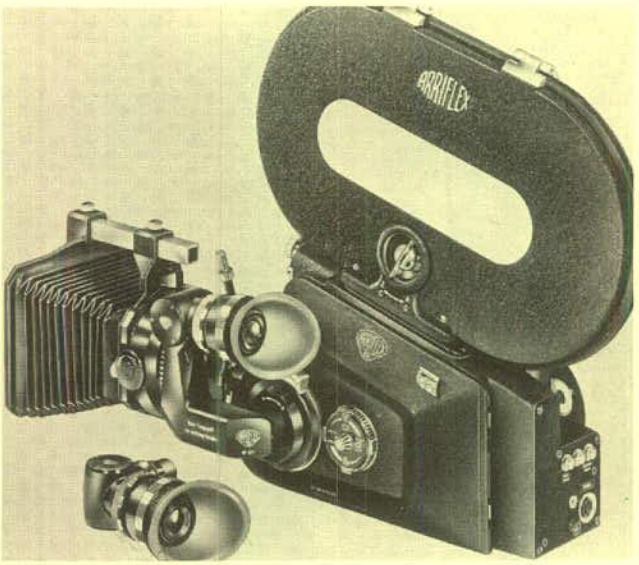
1. Eclair (NPR)



a. Advantages

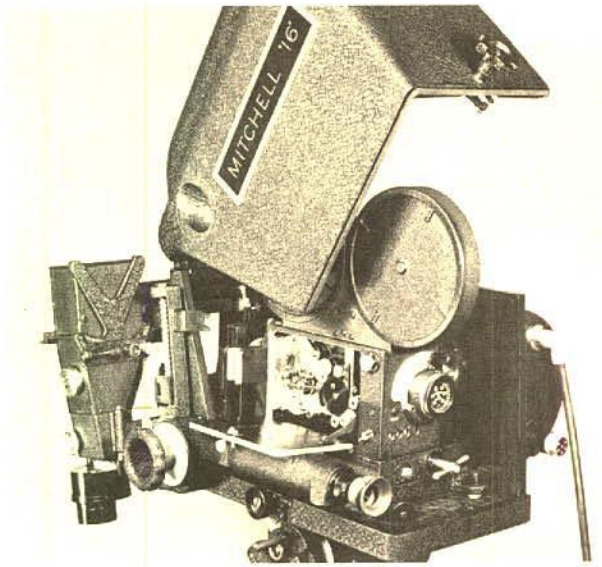
b. Disadvantages

2. Arriflex BL



a. Advantages

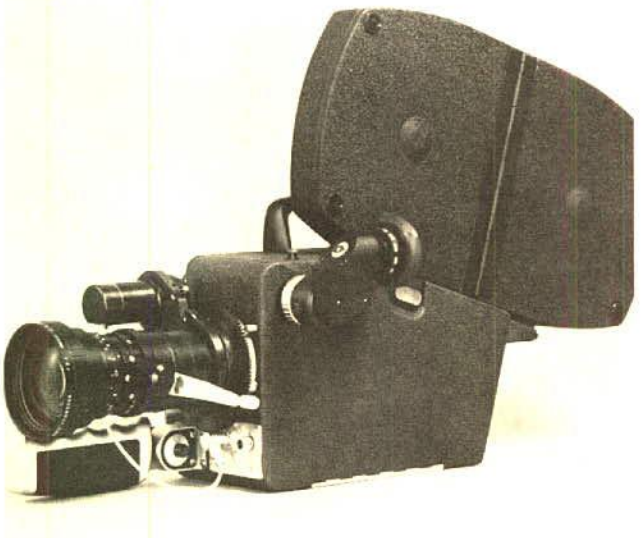
b. Disadvantages



3. Mitchell

a. Advantages

b. Disadvantages



4. CP-16

a. Advantages

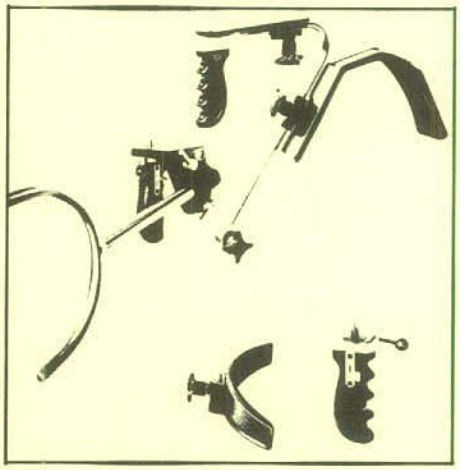
b. Disadvantages

5. Other

C. Optional Accessories

1. Blimp

2. Barney



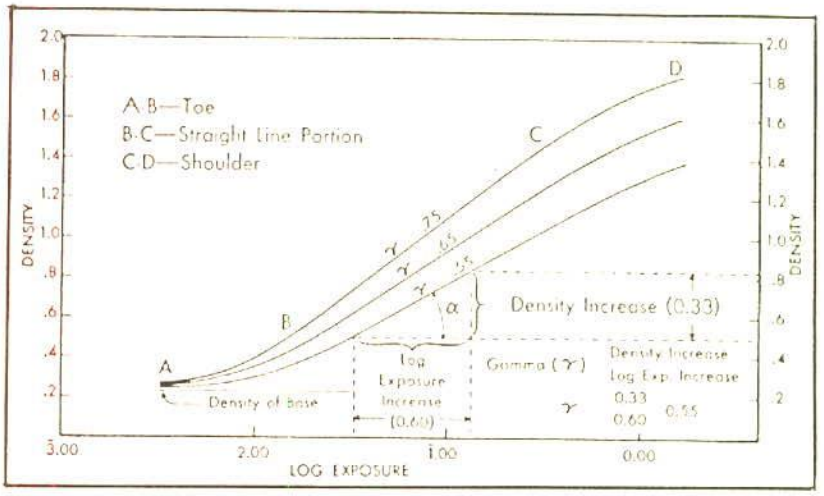
3. Shoulder Harness

4. Other

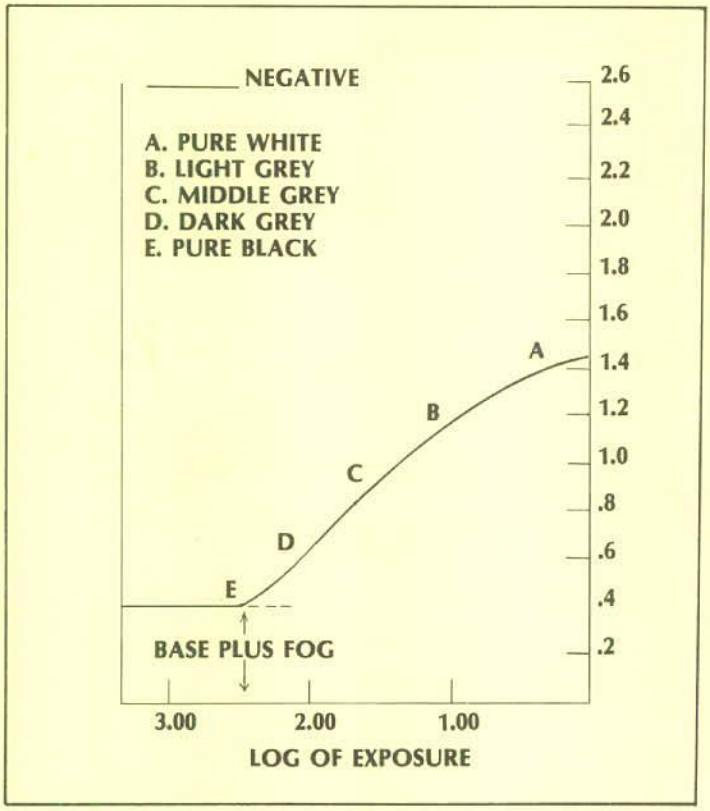
UNIT 8: "MISCELLANEOUS"

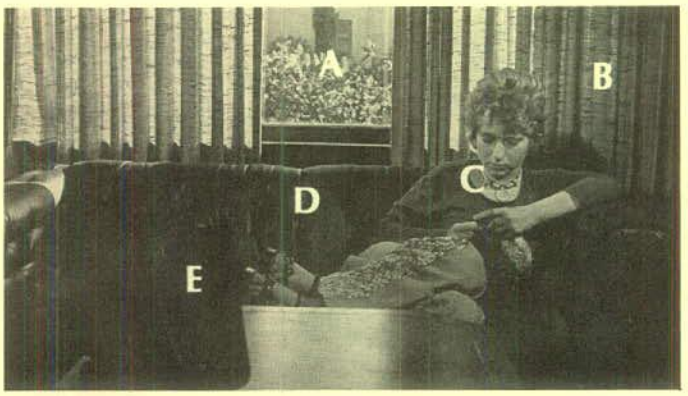
A. Sensitometry

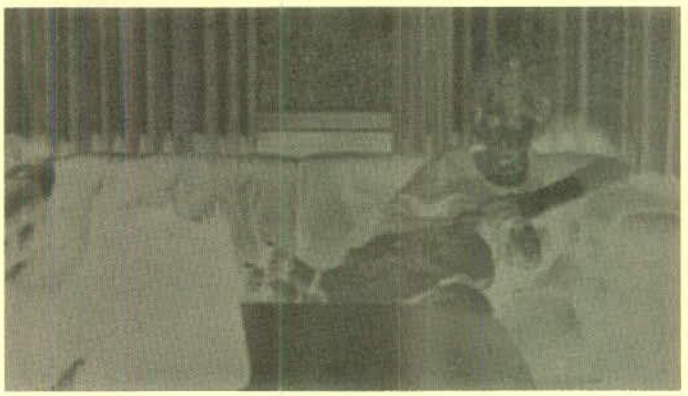
1. D Log E Curve



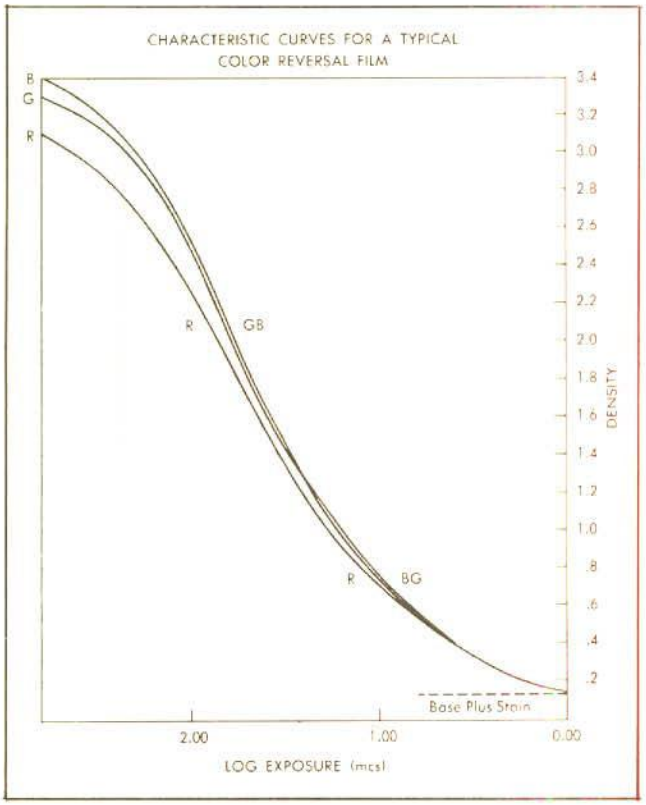
2. Negative Density



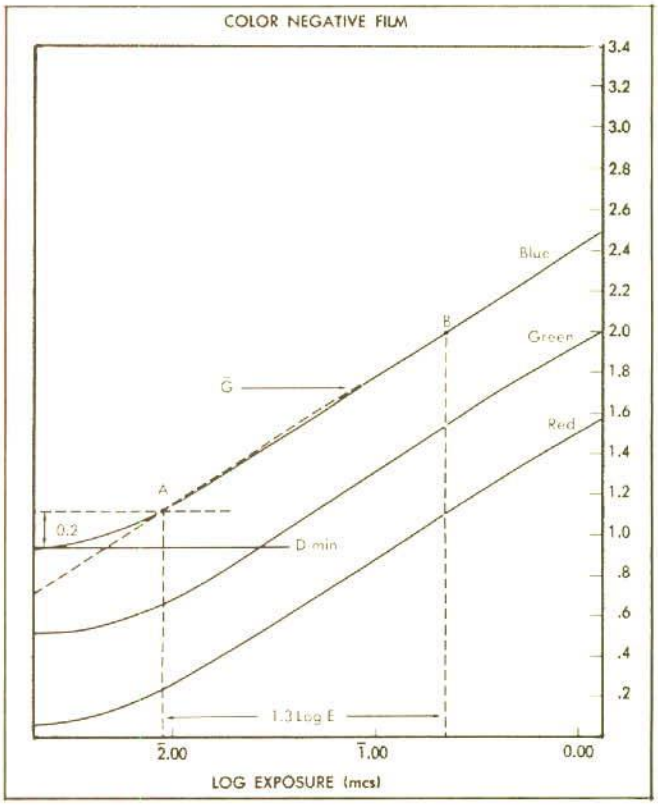




3. Curves of Color Film



a. Reversal



b. Negative

B. Labs

1. Timing

2. Flashing

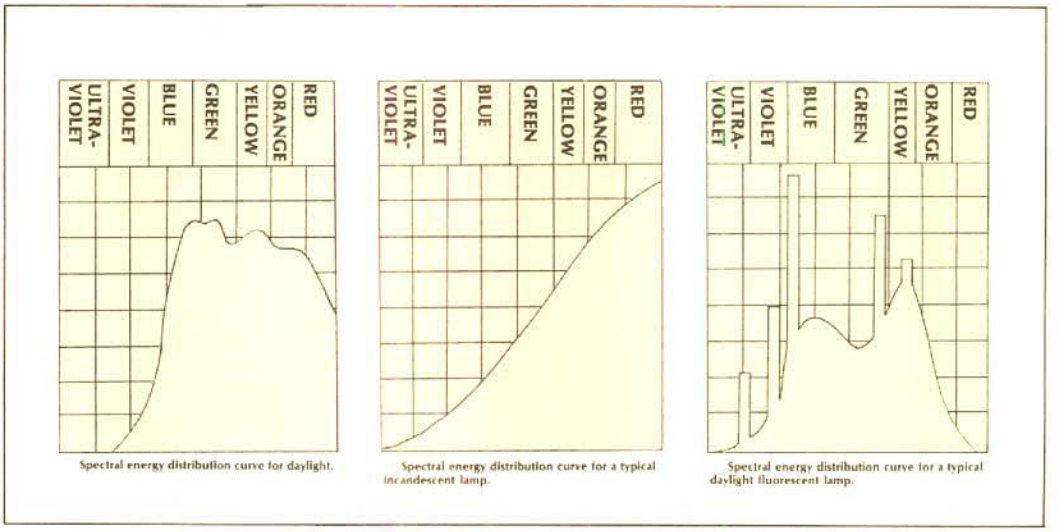
C. Special Lighting

1. Normal

2. Day For Night

3. Tent

D. Light Color Quality



Spectral energy distribution curve for daylight.

Spectral energy distribution curve for a typical incandescent lamp.

Spectral energy distribution curve for a typical daylight fluorescent lamp.

1. Daylight

2. Tungsten

3. Fluorescent

SECTION C - EDITING

UNIT 1: "EQUIPMENT AND SUPPLIES"

A. Suggested Personal Editing Equipment

1. ___ Film Reels (Preferably ___ Foot Capacity, Double Keyed).

2. Marking Pen (For Marking Sound Track And Leaders).

3. Grease Pencil (For Marking Work Print).

4. Hole Punch (For Sync Marks).

5. ___ Spring Clamps (Minimum one per team).

6. Scissors (Non-magnetized).

7. Scribe (For Marking Original).

8. Splicing Tape
   a. Clear for Picture Film.
   b. White for Sound Track.

9. Paper Tape

10. Optional
    a. Split Reels
    b. Magnifying Glass (For reading Edge Numbers).
    c. Field Chart

B. Viewers

1. The Zeiss-Ikon Moviscope 16mm Viewer

a. Threading

b. Operation

2. Advantages of a Viewer

a. Speed

b. Size

c. Film Safety

3. Disadvantages

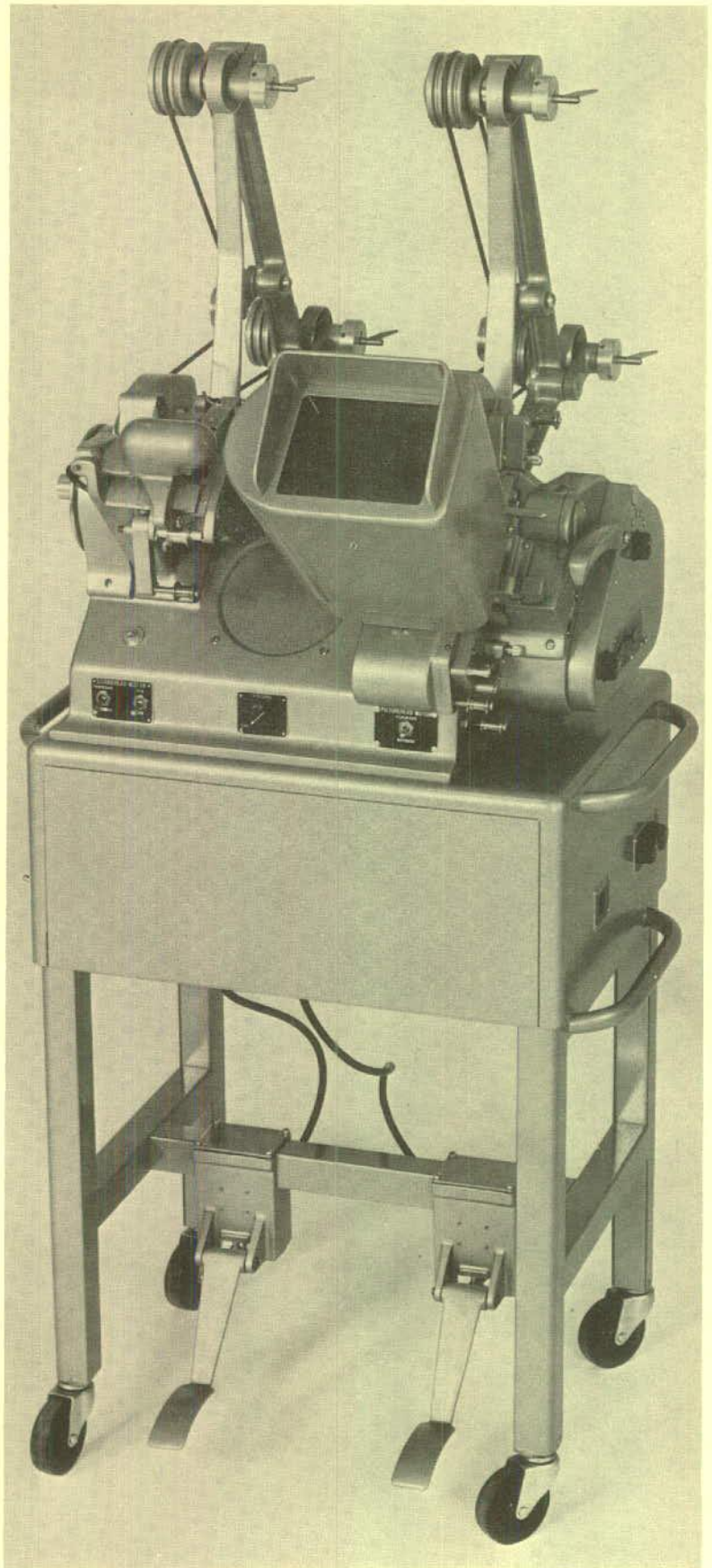
a. Image

b. Speed

C. The Moviola

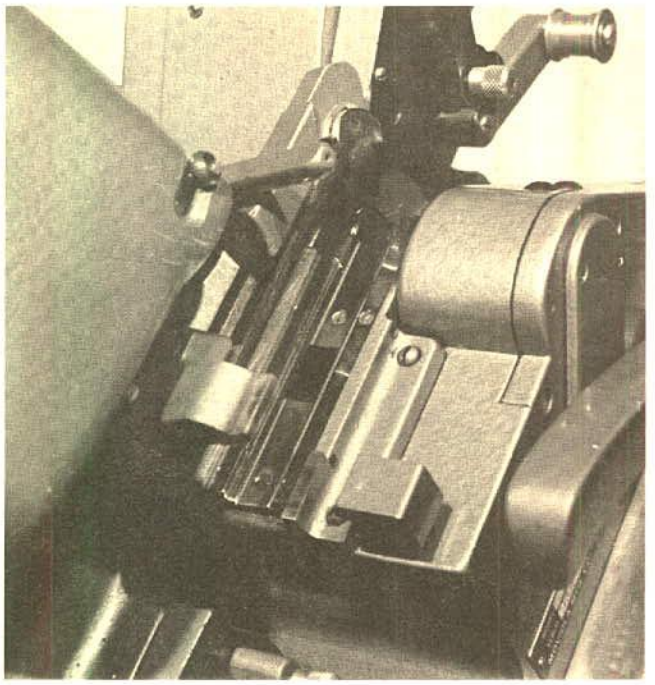
1. Standard Operation

a. Threading

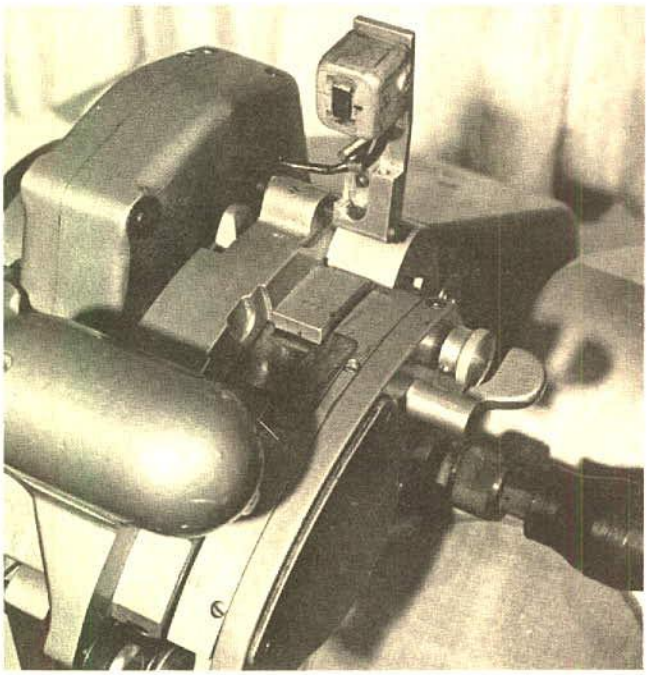


b. The Intermittent Sprocket Movement

c. Picture Head And Variable Speed Motor



d. Sound Head and the Synchronous Speed Motor



2. Advantages of a Moviola

   a. Film Handling

   b. Image

   c. Speed

   d. Synchronous Operation

3. Disadvantages of a Moviola

   a. Sound Quality

   b. Speed of Film

   c. Servicing

4. Some Basic Working Rules to Follow When Using a Moviola.

a. Use the foot-pedals to operate the moviola. Never use the motor switch.

b. Never step on both foot-pedals at the same time.

c. Use the interlock system on your moviola whenever possible.

d. Always turn off your moviola, including the bulb and sound head, when it is not in use, or when you leave it for another activity.

e. Always have available a spare moviola bulb when you are working.

f. Keep the area around your moviola free of food, drinks and ashes.

g. Use a grease pencil to mark your picture film, and a Sharpie, Pentel (or other similar marking device) to mark your magnetic sound film.

h. Feed magnetic film stock into the moviola with care. Sprockets are easily ripped.

i. Your magnetic film stock should be face up (rough side) as most moviola sound heads read down.

j. If the emulsion side of your magnetic film stock is in the correct position and you are unable to get any sound, check the alignment of the sound head.

k. Make sure that the sound head reader is on "magnetic" and not "optical" when you are using magnetic stock.

UNIT 2: EDITORIAL PROCEDURES AND ORGANIZING"

A. Filing System: How To Organize

1. Labelled Material

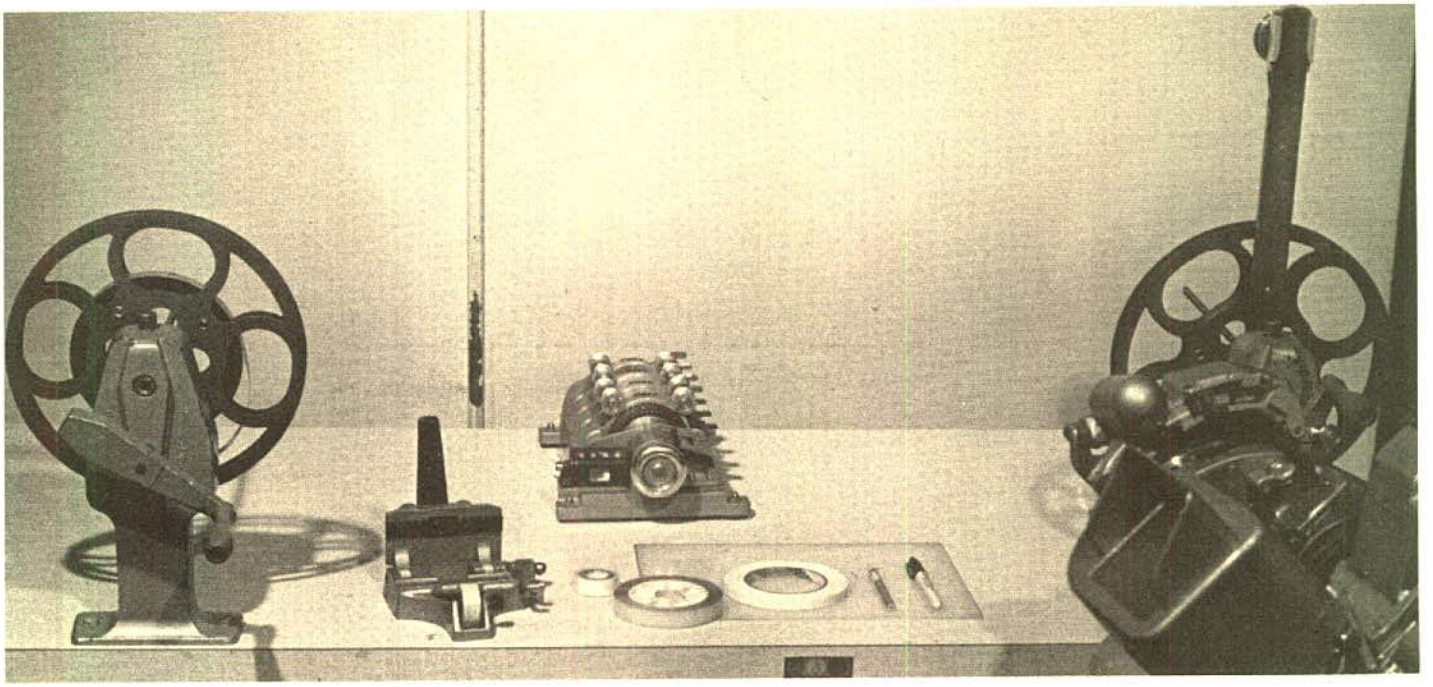
   a. Camera Reports, Shooting Script And Slating

   b. Other Methods

2. Unlabelled Material

   a. Unslated Shooting With Non-scripted Material

   b. Other



B. The Editing Bench

1. Rewinds

2. Viewer

   a. Sound Recorder

3. Moviola

4. Sync Block

5. Splicer

6. Procedure (Left to Right)

C. Viewing The Dailies And Rushes

1. Choosing The Useable Takes (What To Look For)

a. Must be Viewed on a Projector

b. Editor Becoming Familiar With All Footage

2. Checking For Problems Within The Frame.

D. Breaking The Film Workprint Into Takes

1. Good Takes - Separated And Labelled

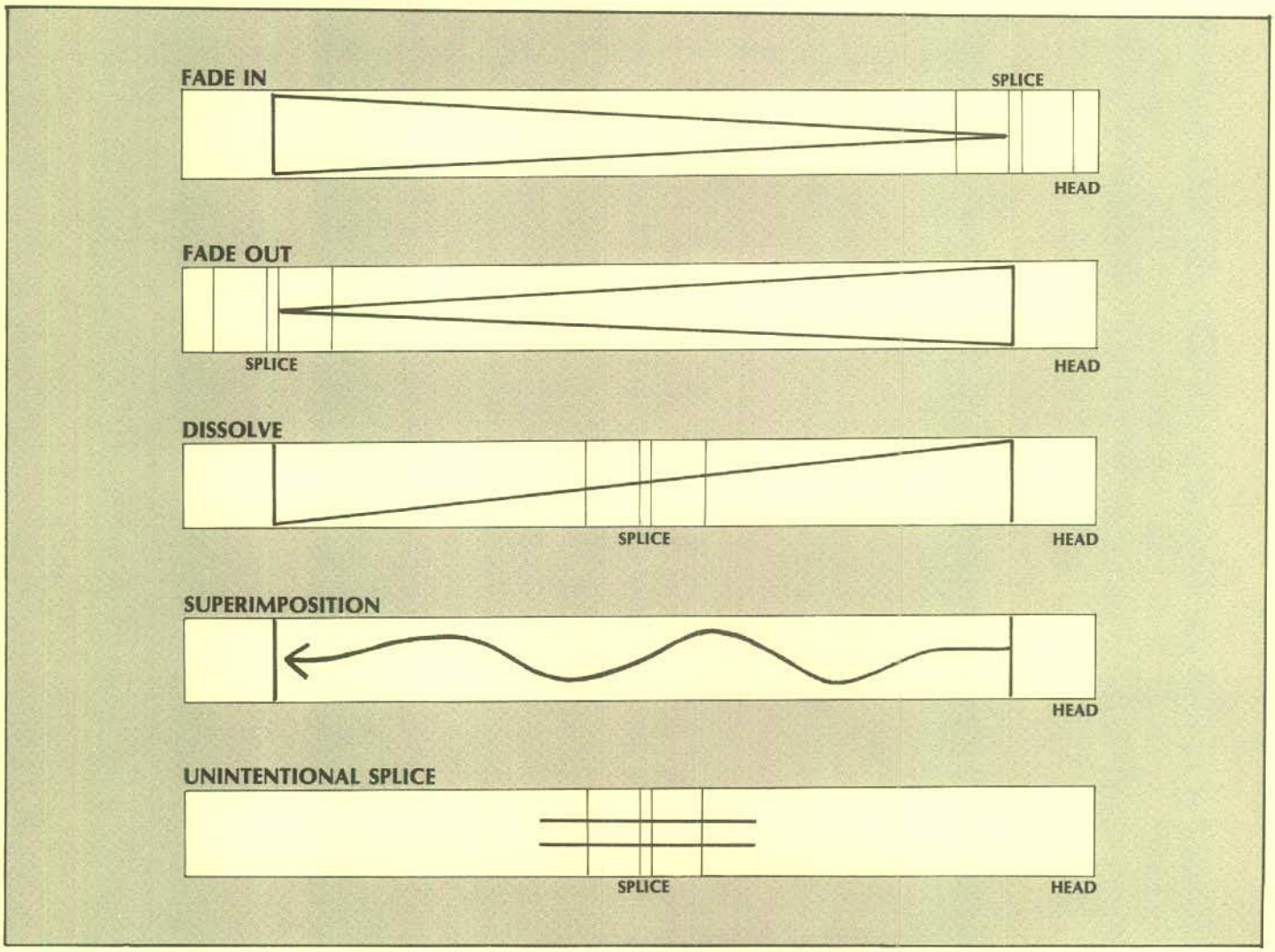
a. Develope Personal Filing System

b. Rolling And Labelling

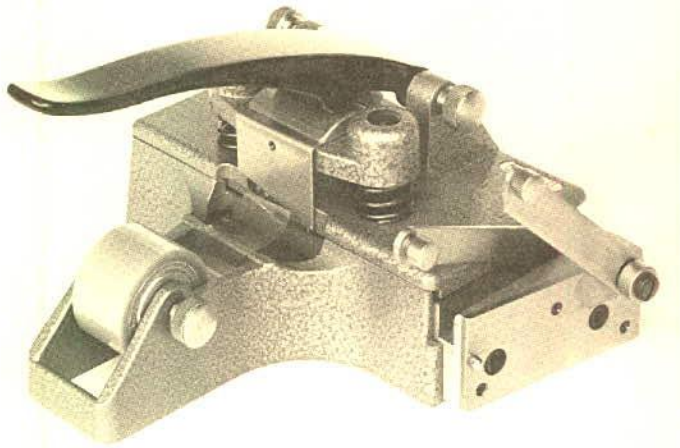
2. Filing

E. Splicing The Film

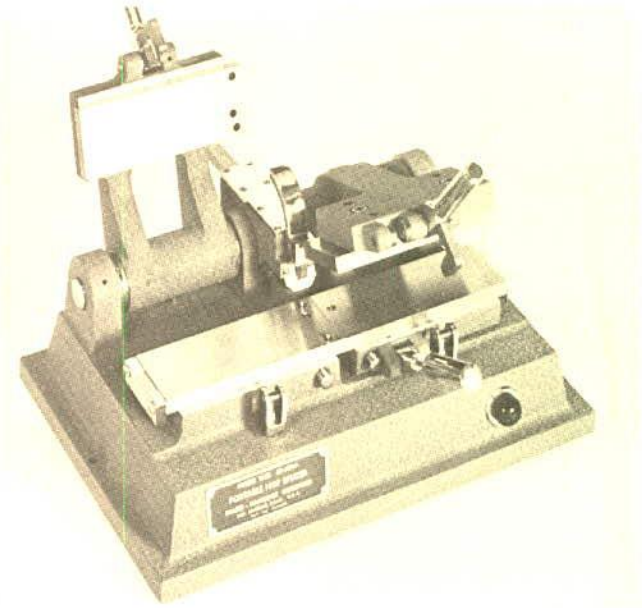
1. Marking The Film Workprint



2. Types of Splicers



a. Guillotine



b. Cement/Hot Splicer

c. Other

3. Method of Splicing

a. The Tape Splice

b. The Wet Splice

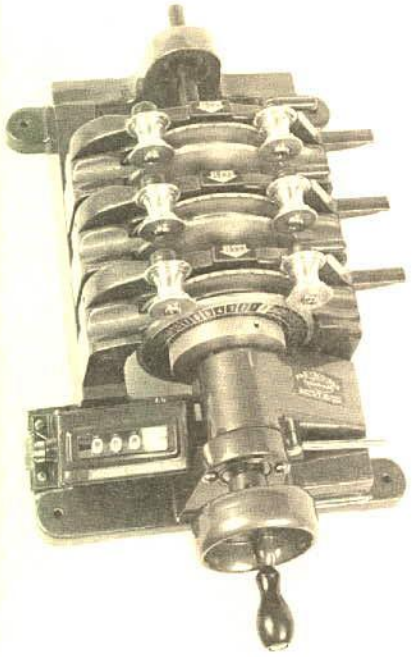
F. The Sync Block (Synchronizer, Sync Machines, Etc).

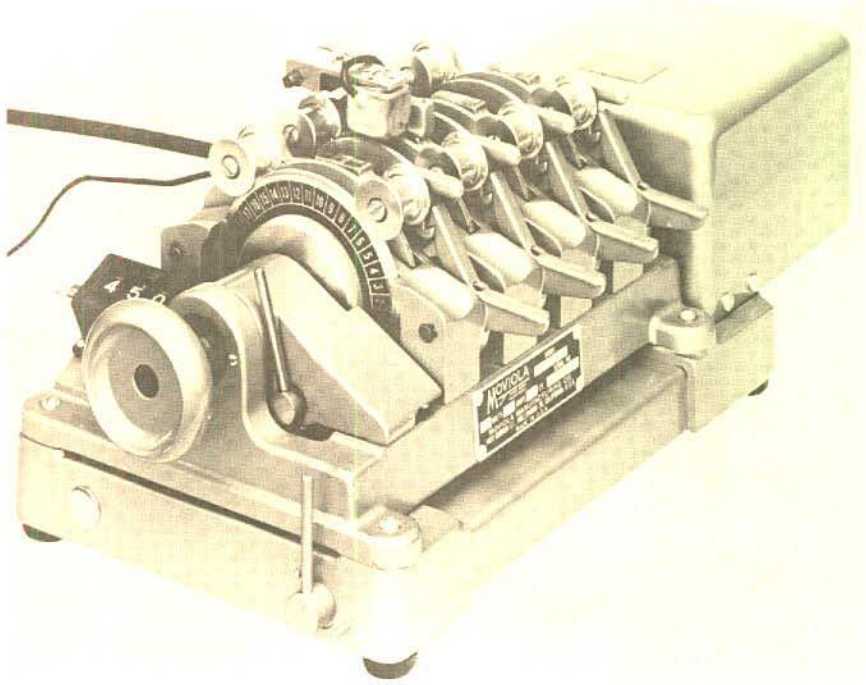
1. A Measuring Machine

a. One Complete Revolution of the Wheel Equals One Foot of Film.

b. Each Channel of the Sync Block is Referred to as a "Gang."

2. Method of Operation

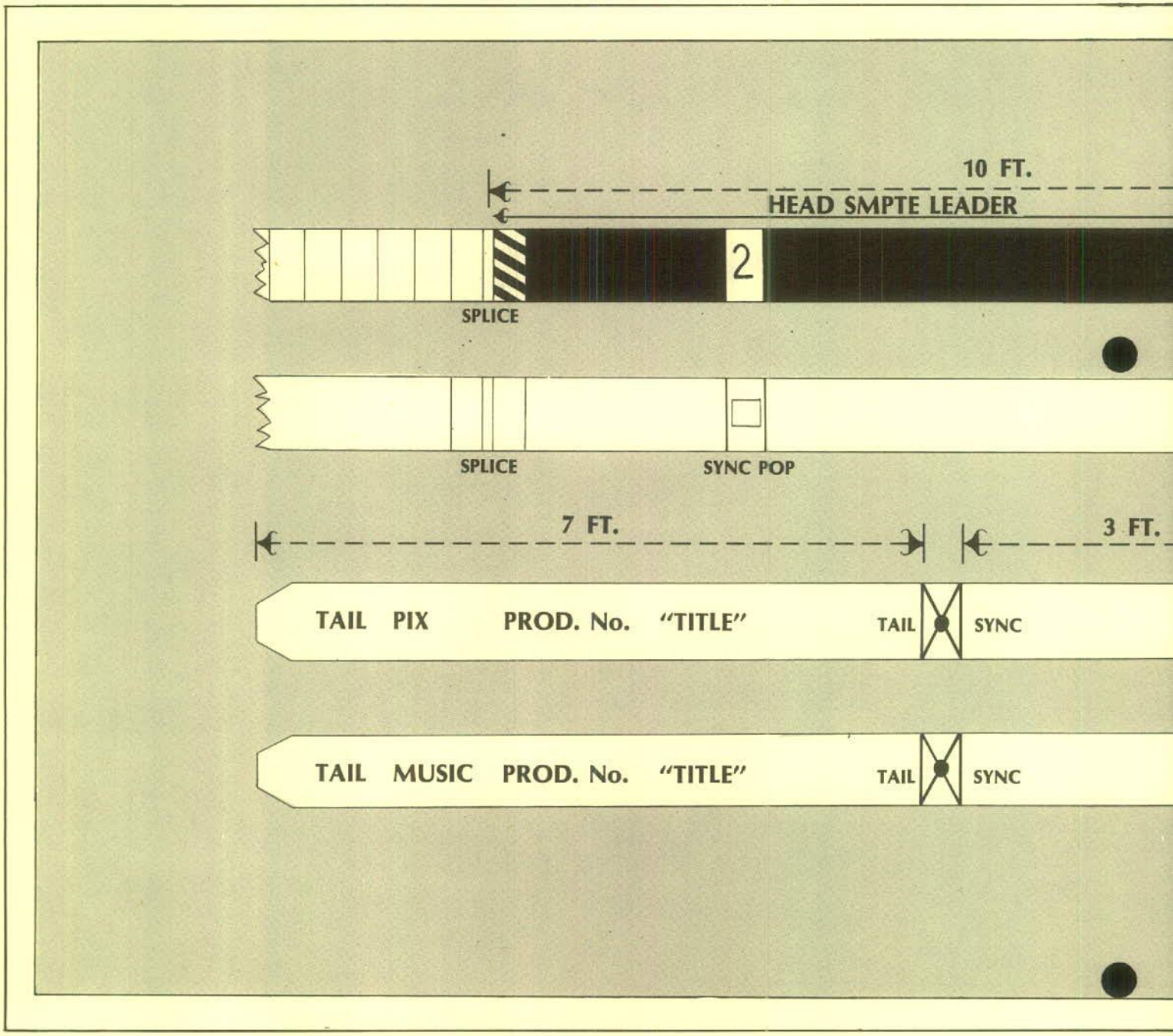




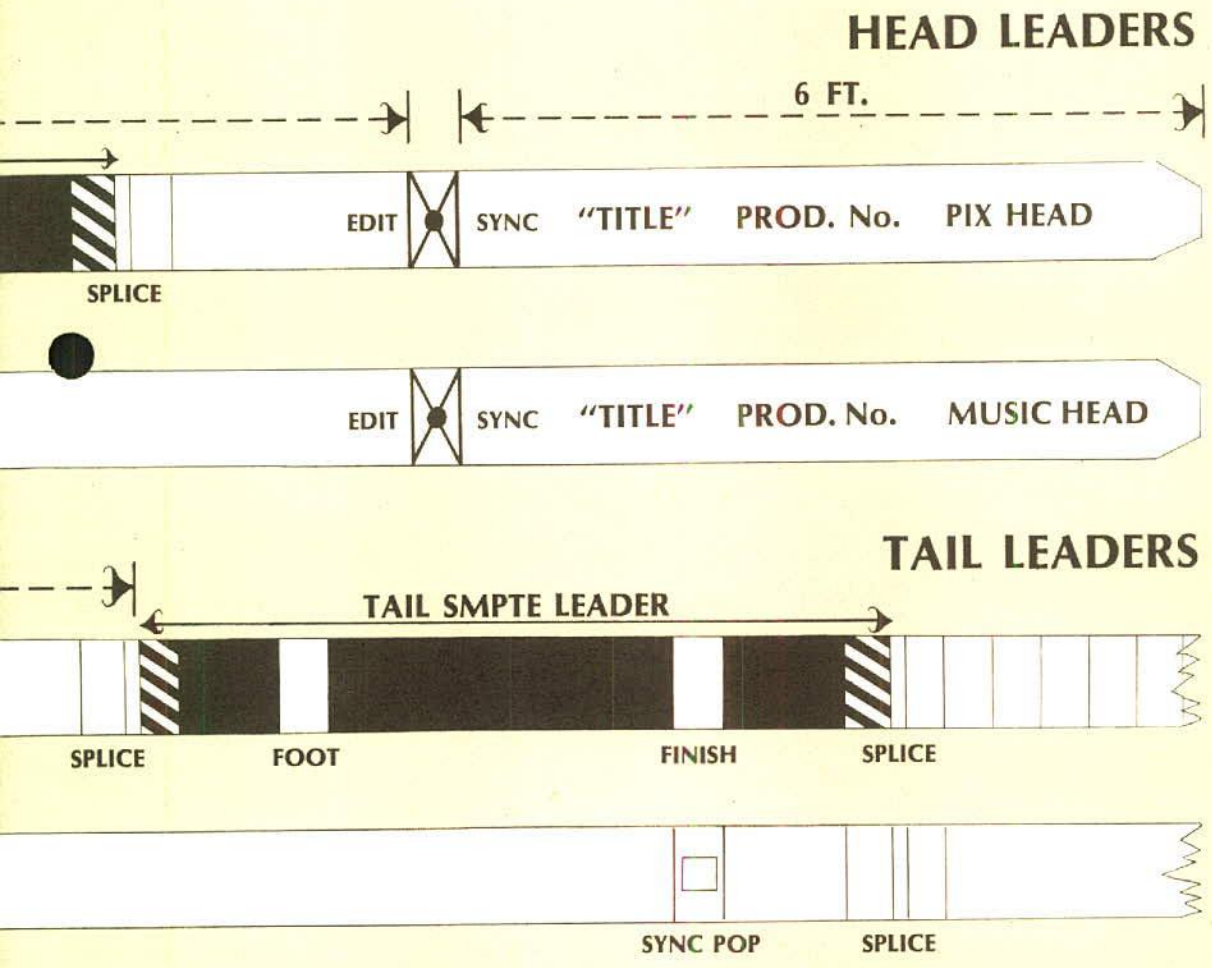
G. Use of SMPTE Universal Leader

1. Reason for Standardization

2. Labelling And Identification



3. Head And Tail Pop Marks For Sound Track



UNIT 3: "THE FIRST CUT"

A. Revising And Evaluating The First Cut

1. Projected Viewing Preferably With Sound (See Unit 4).

2. Decisions Made Relating to Amount of Work Yet to Be Done.

   a. Changes Must Be Introduced At This Point.

   b. Comments on Mood, Tone And Tempo Must be Discussed as a Team.

B. The Fine Cut

1. Possible Intermittent Stages Between First And Fine Cut.

2. Incorporation of All Changes Decided Upon in The First Cut

3. Completion of All Other Sound Tracks

UNIT 4: "EDITING OF SOUND"

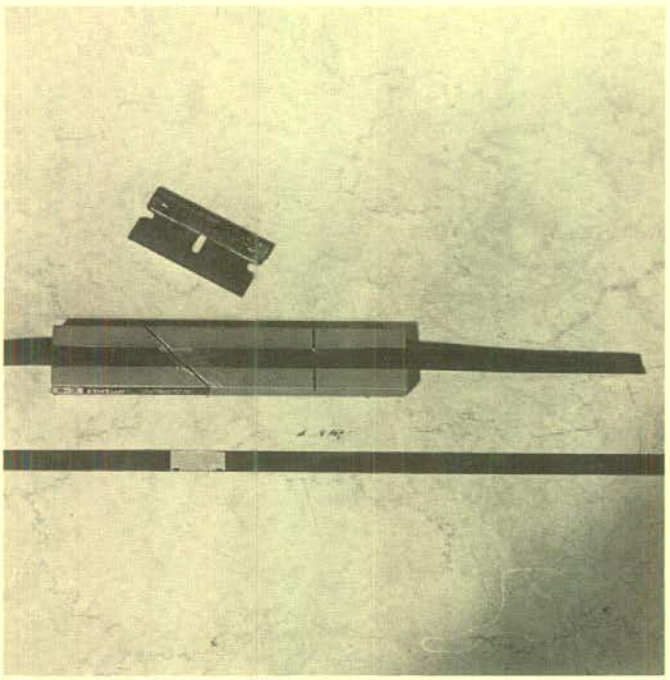
A. Finding The Sound And Marking It

1. Method of Locating a Sound

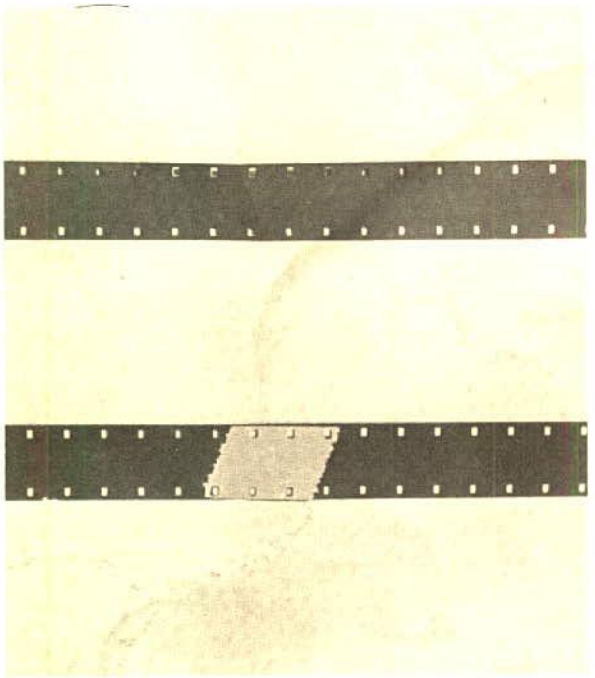
2. Marking Pen

B. The Method of Splicing Sound

1. Quarter Inch Tape



2. 16mm Magnetic Film

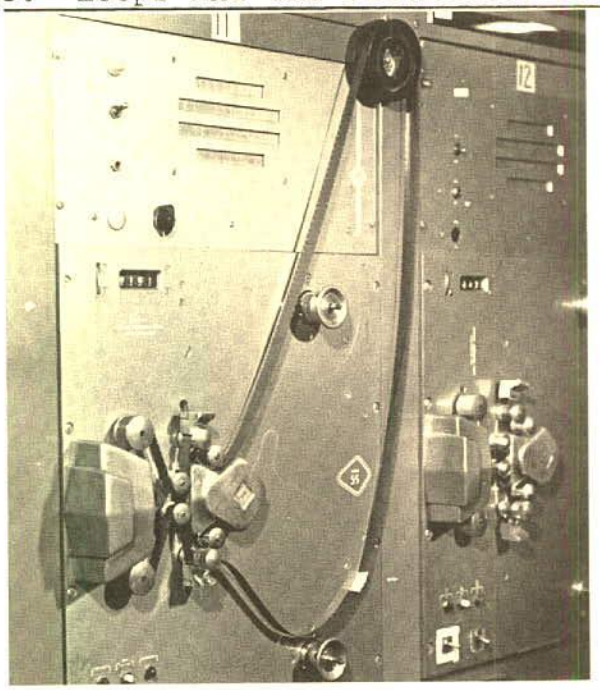


a. White Mylar Tape

b. Splicing The Base Side

3. Spacer And Its Use

C. Loops And The Continuous Sound Track



1. How To Make a Loop

2. Considerations Concerning The Use of Loops.

D. Cue Sheets

1. Preparation For The Re-recording

a. Purpose

b. Preparation

c. Samples

UNIT 5: "TITLES"

A. Some Methods Of Making Titles

1. One Step - Title Cards

2. Superimposed
   a. Over Stills
   b. Over Live Action

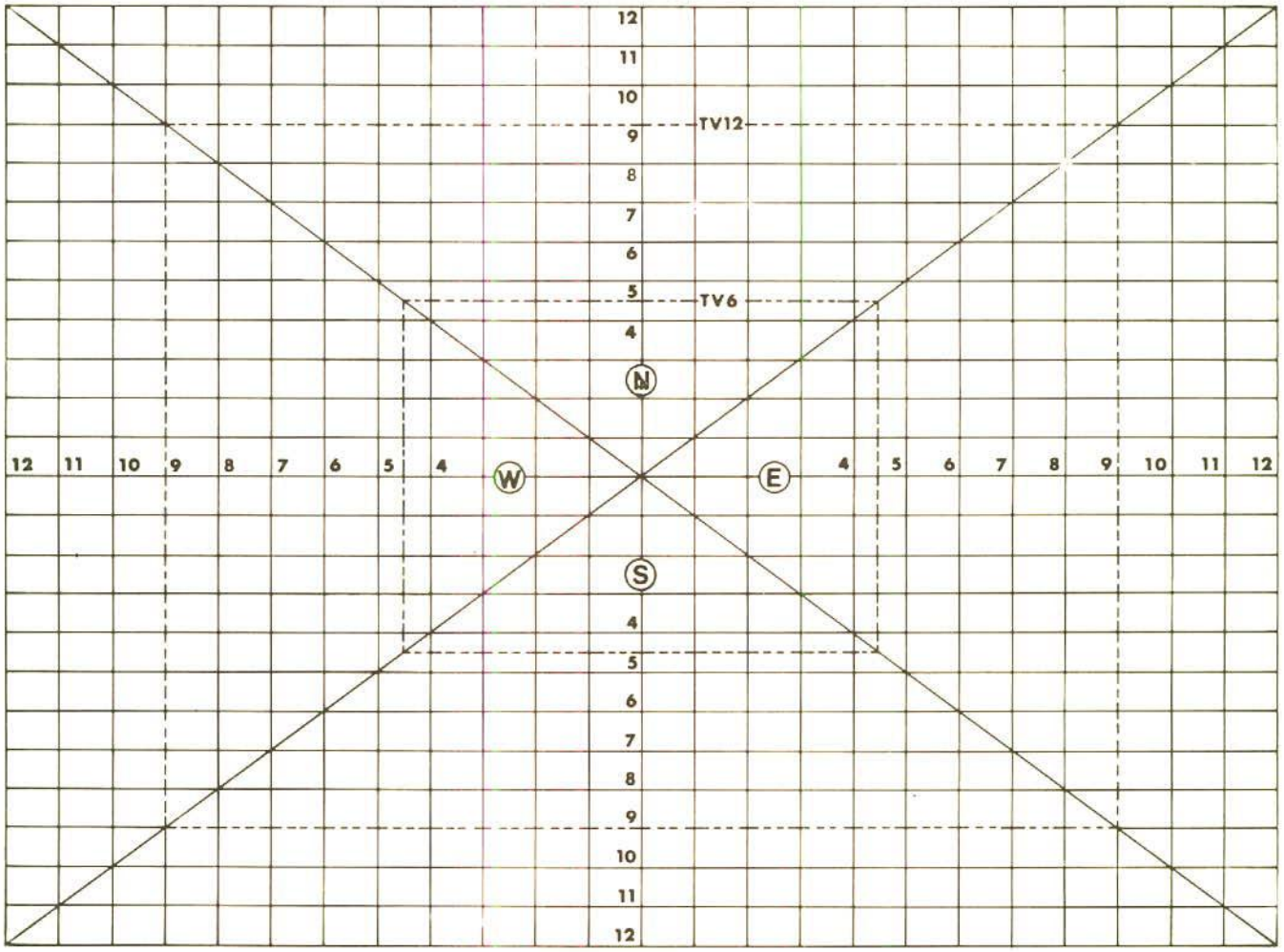
B. Some Methods of Filming Titles

1. Camera on Tripod
2. Animation Stand
3. Animation Crane
4. Optical Printer
5. Other

C. Useful Tools For Making Titles

1. Clear Animation Cells
2. Acme Punch
3. Lettering or Typewriter

4. Field Chart



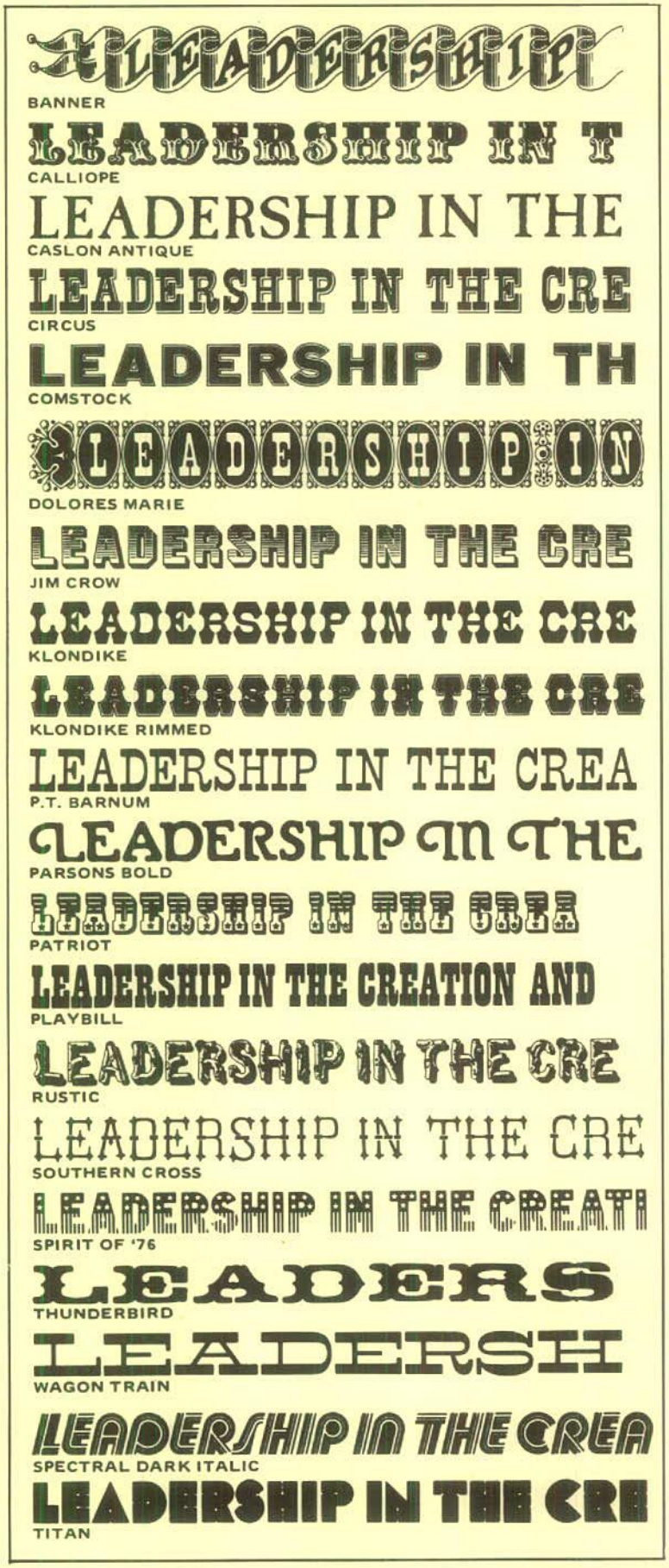
5. Art Work

   a. Original

   b. Photographs

   c. Other Source

6. Film Stock



D. Lettering

1. Type Face Styles

a. Choices

b. Availablity

c. Types

1) Hot Type

2) Hand Letter

3) Press On

4) Cold Type

d. Costs

2. Size of Type

   a. Pica

   b. Points

3. Type Characteristics

   a. Upper And Lower Case

   b. Bold Face

   c. Italics

4. Other Typesetter Uses

   a. Borders And Lines

   b. Ornaments

   c. Dot Screens And Grids

14 PT. NEW HEADLINER TYPE STYLES AVAILABLE
18 PT. NEW HEADLINER TYPE STYLES A
21 PT. NEW HEADLINER TYPE STYLES
24 PT. NEW HEADLINER TYPE S
27 PT. NEW HEADLINER TYP
30 PT. NEW HEADLINER TY
36 PT. NEW HEADLINER
42 PT NEW HEADLIN
48 PT NEW HEADL
54 PT NEW HEAD
60 PT. NEW HEA
72 PT. NEW HE

E. Tips On Making Superimposed Titles

1. Basic Considerations When Designing Your Title Sequence.

   a. Be sure there is contrast between title and background scene. Avoid white lettering over a hot sky.

   b. Use bold and simple styles of letters. Avoid skinny or fine line styles as they are hard for your audience to read. (See bottom example, page 97).

   c. Keep the arrangement of information simple, avoiding clutter. Don't try to present to much information at one time.

   d. Make sure the camera you intend to use can focus down to the size of your title cards. If your camera can only focus down to 11" x 14", don't make your title cards 8' x 10", unless you are using a Kodalith negative, which can be enlarged to any size.

   e. Titles should be on the screen about as long as it takes to read them aloud slowly once, or sometimes twice. Timing always depends on relative image size and clarity of presentation. For long lists of names, try as long as it takes to read them aloud quickly, or less.

2. Preparing the Lettering

   a. Sharp and clear superimposed titles result when letter and mounting surface are as purely black and white as possible in their layout form. The lettering and art must be photographed, with deep black and white contrasts.

   b. Pick the style of type you plan to use.

   c. If you plan to use black letters over a white background, apply the lettering on any clean, smooth, white surface, such as poster board.

   d. If you plan to use white letters on a black background, two methods are possible. They are "Exeter Paper" and the "Kodalith Negative.

   e. If you choose Exeter Paper, apply white transfer type (preferably opaque white) to a sheet of clear acetate, such as an animation cel. Do not use translucent transfer letters. Then place the cel over a piece of glossy black paper. It is not shorter to place the transfer letters directly on the glossy black paper, as you are unable to correct mistakes. When you photograph, determine the exposure by using an incident light meter or a "gray card" and a reflected light meter. It is a good idea to try several f-stops. Be alert to reflections off the animation cel when shooting.

   f. If you choose the Kodalith Negative process, prepare a title card using black letters on a white background. All the information for the various title frames may be positioned on one card. "Kodalith" is a trade name for an ultra-high contrast sheet film used in lithography. There are other brands which are quite suitable. Take your finished title card to a litho printer, usually found listed in the yellow pages under "Lithographic Negatives." Order a "Kodalith Negative." Artwork can be shot 1:1, enlarged or reduced as you

specify. An 8" x 10" sheet will cost about $3.00. The litho printer or photographer, as he is sometimes called, will supply you with a sheet of film with clear letters on an opaque background.

If there is more than one block of lettering, prepare the negative for shooting by masking off any extraneous lettering. You can cut up the negative and remount the pieces for each frame on black construction paper. When you are ready to photograph, you should:

-- Obtain a piece of white opal glass, or any white translucent surface such as high quality tracing paper or frosted acetate. Use two or more layers, if the material you choose is thin. A sheet of glass is useful for mounting any thin materials, including the negative.

-- Backlight the translucent surface evenly. Take an exposure reading, using a reflected light meter, thru the material from the camera side. Open up about 2 stops from the obtained reading. This should yield a clean white image.

-- Mount the negative in front of the white surface, and line up the camera. It is helpful to temporarily place a single sheet of tracing paper in front of the negative to help you see where the frame edges are in the viewfinder.

-- Darken the room and shoot. Try several different f-stops. This method usually produces clear supers because the only light stricking the film comes from the letters themselves. Thus, the background appears as black as the film can reproduce it.

3. Film Stock

Generally, any type of film will produce good results if the original art work was pure black and white, and if the correct exposure was used. If you suspect that your blacks might not be black enough, you can try shooting a reversal film, such as Kodachrome II, which produces very dense blacks. Although high contrast films such as 7362 can give good results, a lot of experimenting with exposure and processing is usually required until you are satisfied.

4. How To Produce Supers

a. In The Camera. Using both negative and reversal films and wishing to get white lettering over a scene, you must

- Use a camera which can rewind the film and has a frame counter.

- Plan the scene the titles will be supered over carefully. Know which parts of the scene lettering is to appear over.

- Set the frame counter to zero to start and don't reset it. Shoot the scene twice, making a note of your starting and stopping frame numbers in each case.

- Wind back to starting point of first scene. Shoot white letters on a black background using either method previously described. Fade in and out of each title, as simple starting and stopping usually produces flash frames. Allow

room at both ends of scene for cutting. Go on to reshoot the titles over the second take of the scene. If the scene is static or uncomplicated, the titles may be shot first.

SPECIAL NOTE: In-camera supers are tricky and have an element of uncertainty, because you can never be sure what you've got until the film is processed. The least risky method is to have the supers made during composite printing.

b. During Composite Printing. The following applies to negative films only, although you can make black over white, or white over black.

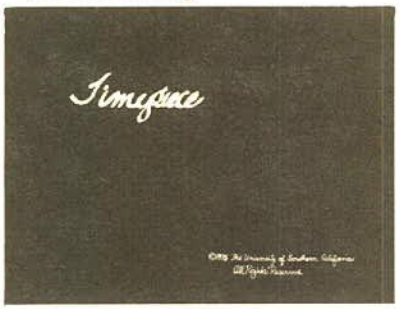
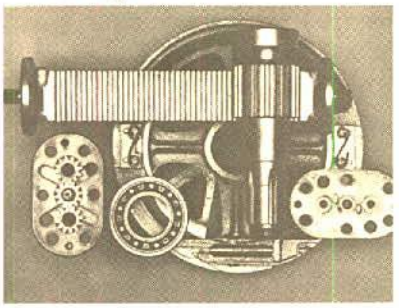
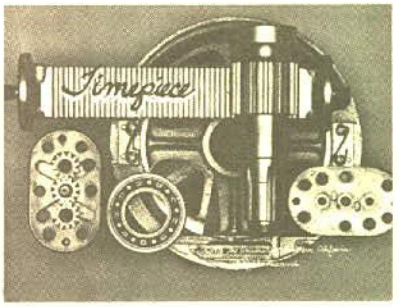
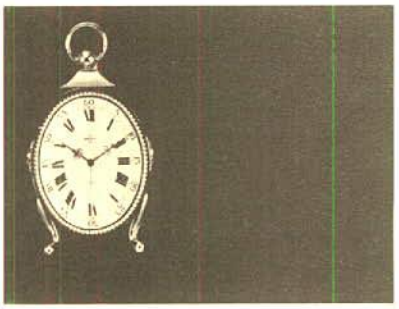
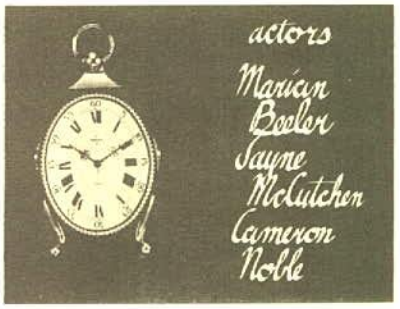
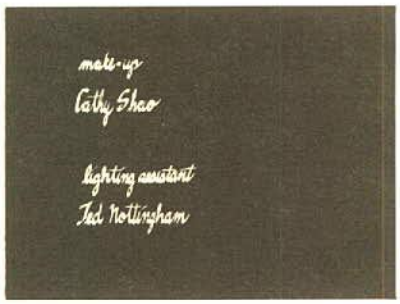
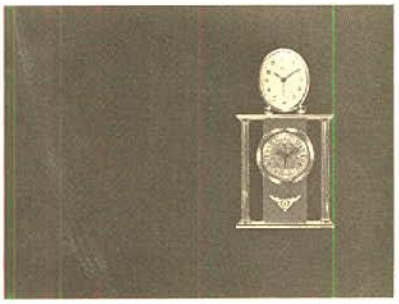
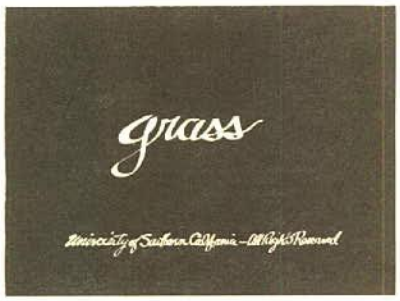
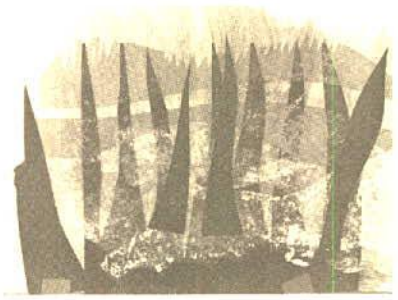
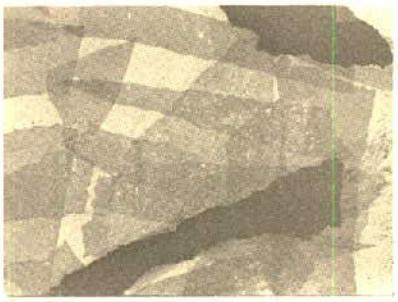
- To produce black lettering over a scene, shoot white lettering on a black background using reversal film, and cut the reversal original into the conformed A & B roll. OR, Shoot white lettering on a black background reversed using negative film and cut the positive print into the A & B roll. The lettering is shot reversed so the emulsion position of the print and the negative will coincide. OR, Shoot black letters on a white background using negative film, and cut the negative original into the A & B roll. The most commonly used method is the first one.

- To produce white lettering over a scene, an intermediate printing step is necessary, for which a minimum of two extra weeks in most labs will be required. Have a "fine grain positive" made of the scene, or scenes, over which the titles will be supered. Shoot white letters on a black background reversed and using reversal film. Cut the original into an A-B roll with the fine grain positive. Have the A-B roll printed on negative stock which results in a "dupe negative." Cut the "dupe negative" composite into the A-B roll with the rest of the negative.

5. Supers Over Stills

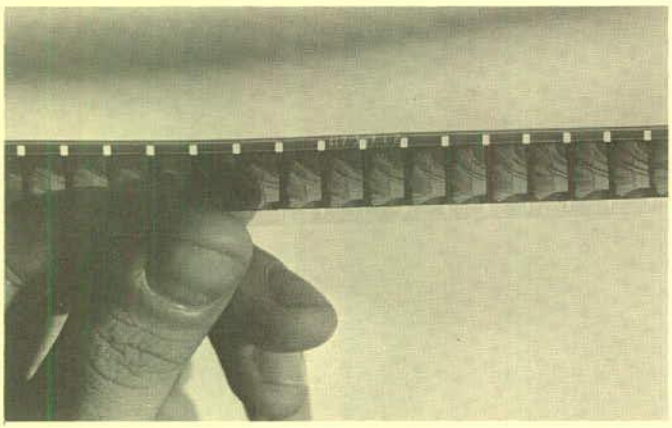
You can use any of the methods discussed, to make supers over stills, provided the stills have been previously photographed. An obvious short-cut can also be used to produce letters over stills. Put the letters, white or black, on a cel and use the stills, your photos or artwork, as the background.

6. Some Sample Titles

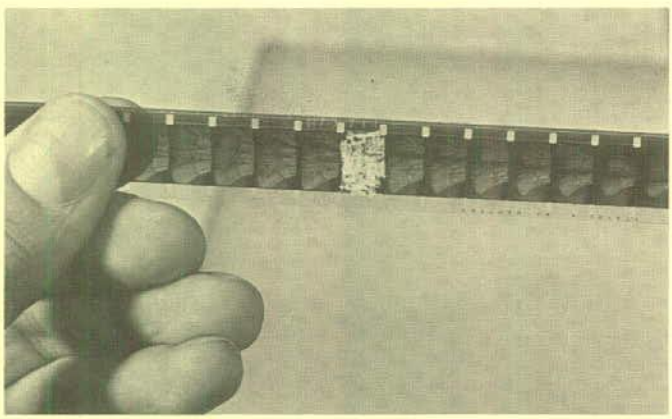
Lettering	Background	As Seen on Screen
		
		
		
		
		

UNIT 6: "NEGATIVE CUTTING - ORGANIZING AND BREAKING DOWN"

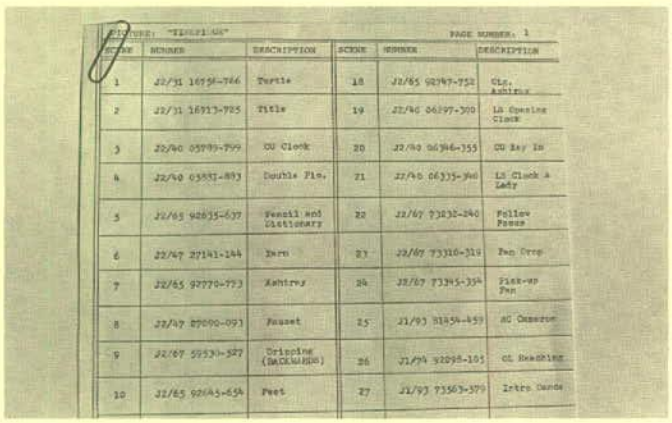
A. Preparation



The latent image edge numbers (also called key numbers) are put on the film at the time of manufacture and occur every twenty frames. Find the nearest complete edge number to each cut in the workprint and note it down on paper with a short description.



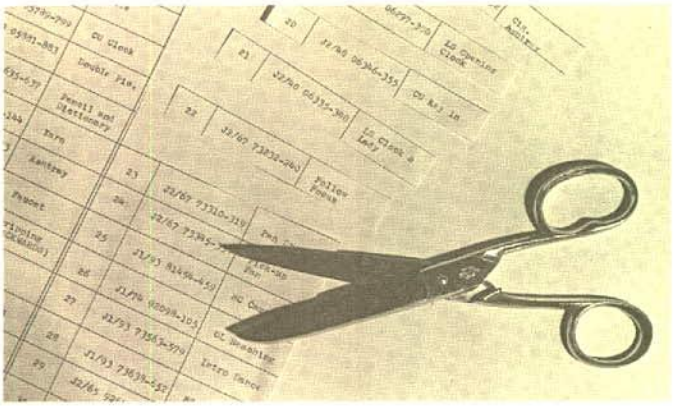
Mark the frame under the edge number you are using for easier finding later.



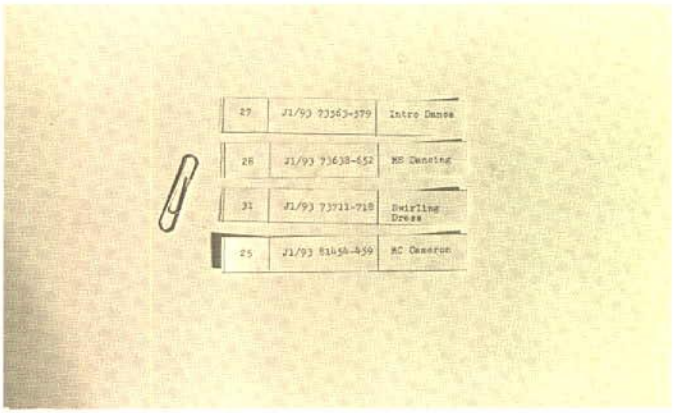
SCENE	NUMBER	DESCRIPTION	SCENE	NUMBER	DESCRIPTION
1	JJ/31 16756-766	Turtle	18	JJ/65 92747-752	Cls. Ashtray
2	JJ/31 16913-925	Title	19	JJ/46 06297-300	LS Opening Clock
3	JJ/40 05799-799	CU Clock	20	JJ/40 06346-355	CU Key In
4	JJ/40 05853-893	Double Fix.	21	JJ/40 06335-340	LS Clock & Lady
5	JJ/65 92635-637	Pencil and Dictionary	22	JJ/67 73230-240	Follow Pence
6	JJ/47 27141-144	Burn	23	JJ/67 73310-319	Pan Drop
7	JJ/65 92770-773	Ashtray	24	JJ/67 73345-354	Pick-up Pen
8	JJ/47 29090-093	Sunset	25	JJ/93 81454-459	MC Cameron
9	JJ/67 59530-527	Dripping (BACKWARDS)	26	JJ/94 92098-105	CU Heading
10	JJ/65 92645-654	Feet	27	JJ/93 73503-579	Intro Dance

Use a format similar to that shown in the picture (See Page 181) and your job will be simplified. Type up the beginning and ending edge numbers on a sheet of paper. Note that the scene numbers show the order in which the shots progress in the workprint and have no direct relationship with script numbers. Make a copy of the first sheet for your future reference.

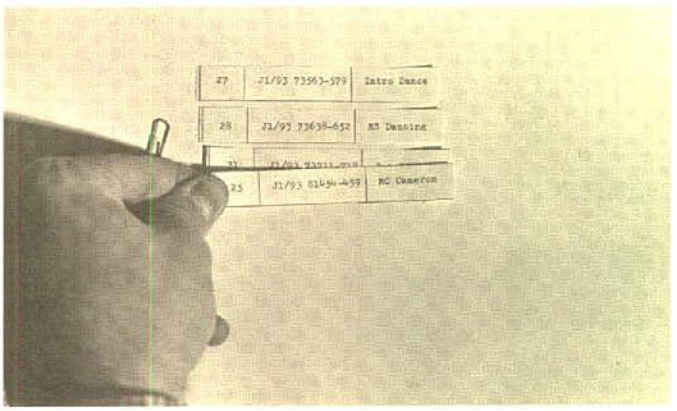
Cut the sheet into separate shots.



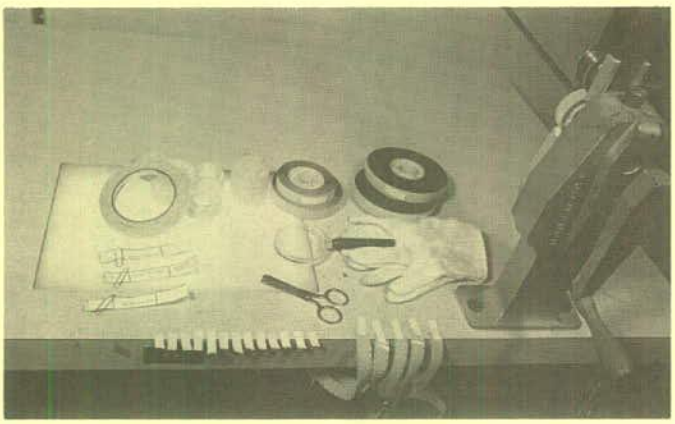
Arrange the separate shots into the original camera rolls by first grouping together all those with the same prefix. In this case, the prefix is "J1/93." Then place the shots in order from the lowest to the highest number.



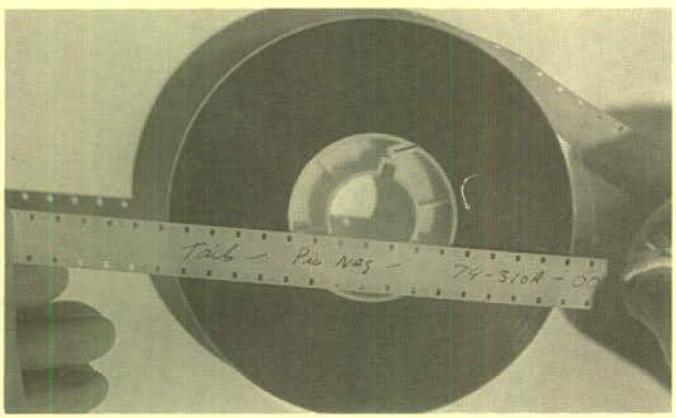
Pick the strips up, bottom to top, so you end up with an ordered pile with the highest number on the top. Paper clip them together. SPECIAL NOTE: The numbers illustrated represent scenes from two separate camera rolls, even though the prefix is the same. There will be approximately 200 numbers per 100 foot roll of film.



B. Pulling the Negative



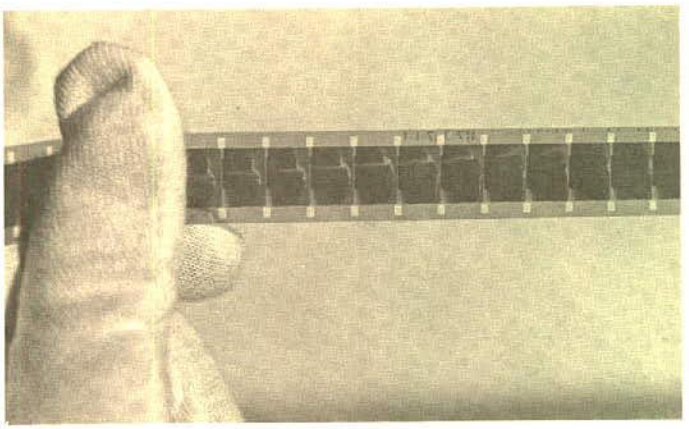
The work bench and accessories needed to begin pulling the shots out of the negative rolls. The accessories include: the stacks of labels, pressure sensitive tape, plastic cores, a pair of scissors, a magnifying glass, white leader, the negative film, white gloves and a tight wind.



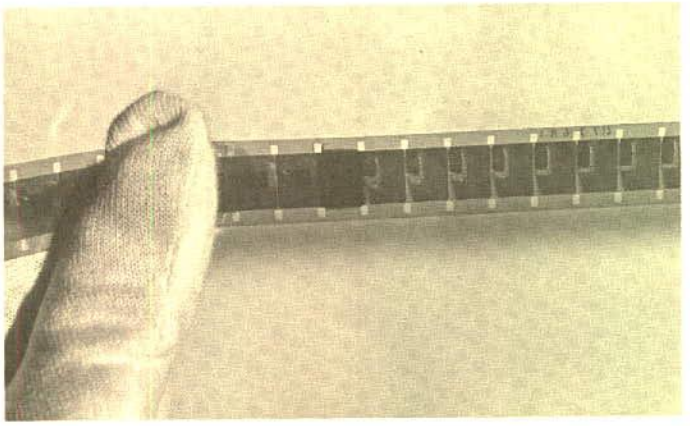
The negative film must be tails out before beginning. Work with all materials emulsion up.

Locate the first prefix number. Find the stack of labels with that prefix.

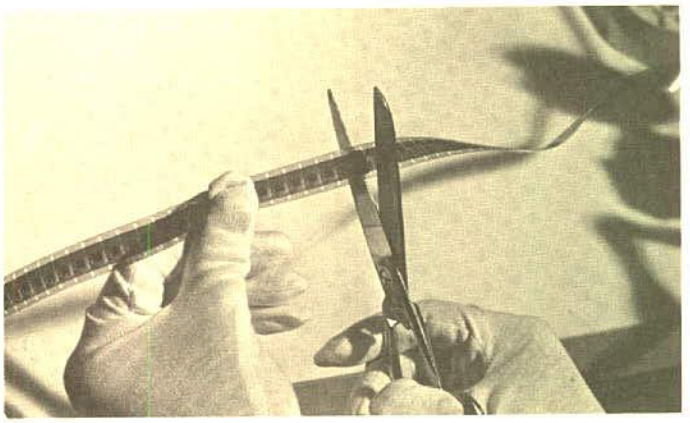
Wind the negative onto the core until you find the first desired edge number. DO NOT CUT THE NEGATIVE AT THIS TIME. Because you are working emulsion up, the edge number will read backwards to your eye.



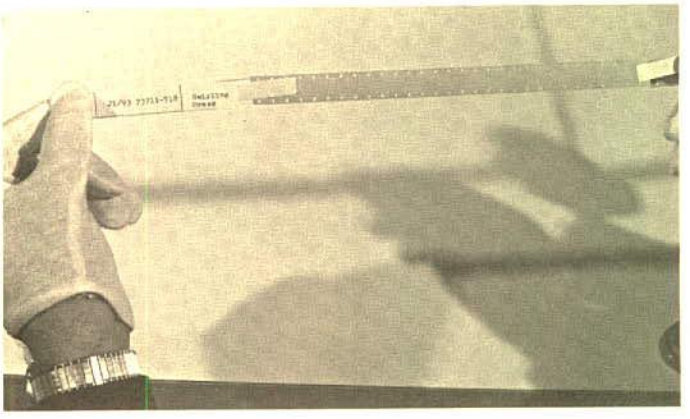
Continue winding the film onto the core until you come to the camera start frame (or frames) for that shot. SPECIAL NOTE: The camera start could be a slate, blank frames, density changes, etc.



Cut the film on the blank frame.



Attach a short piece of leader and the identifying label to the pulled shot. Finish winding and tape the final end to the roll. Repeat for each shot.



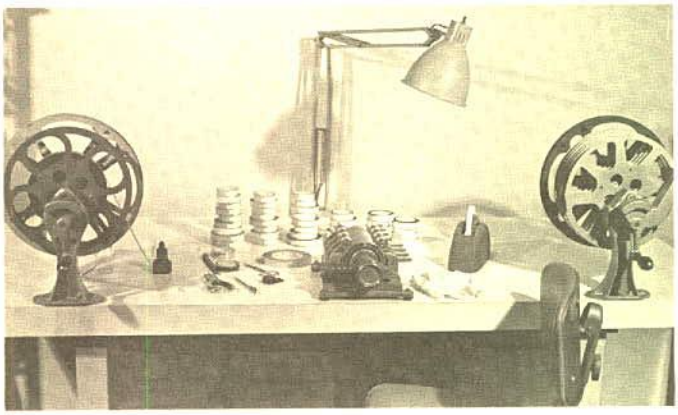
When finished, you should have a number of cores, each with at least one shot at the head of each roll. SPECIAL NOTE: If there is more than one scene cut out of a single run of the camera, the roll will have to be so labeled.

Order the cores according to the scene numbers and you are ready to begin the next step of conforming.

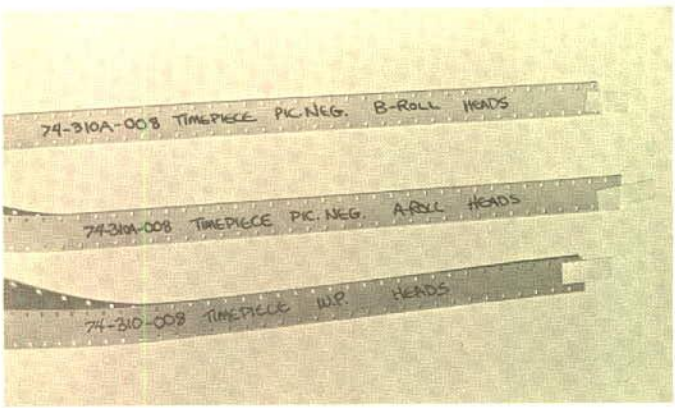
UNIT 7: "NEGATIVE CUTTING - CONFORMING AND SPLICING"

A. Conforming Up To The First Scene

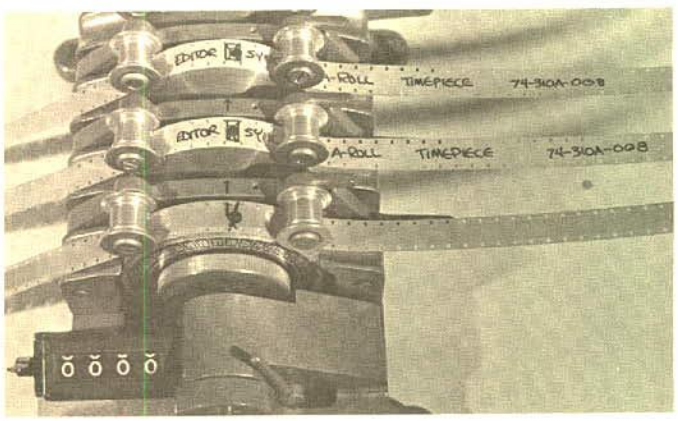
The workbench set up to start conforming. Six reels are necessary. The three equal sized reels on the right are for taking up the workprint and the assembled "A" and "B" rolls. The larger reel on the right is for taking up the negative trims and outs and should spin free of the other reels on the same shaft. The first reel on the left contains the edited workprint and the second contains black leader. Other items include: india ink, a pen, a punch, a magnifying glass, a four-gang synchronizer, white gloves, pressure sensitive tape and the negative.

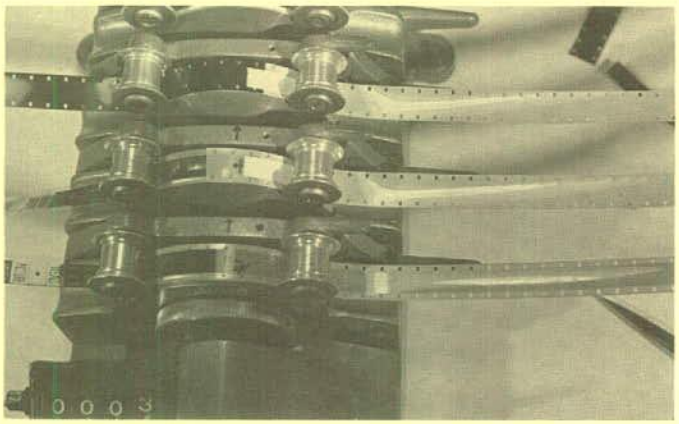


Three properly labeled leaders. All work done in negative cutting is done EMULSION SIDE UP!

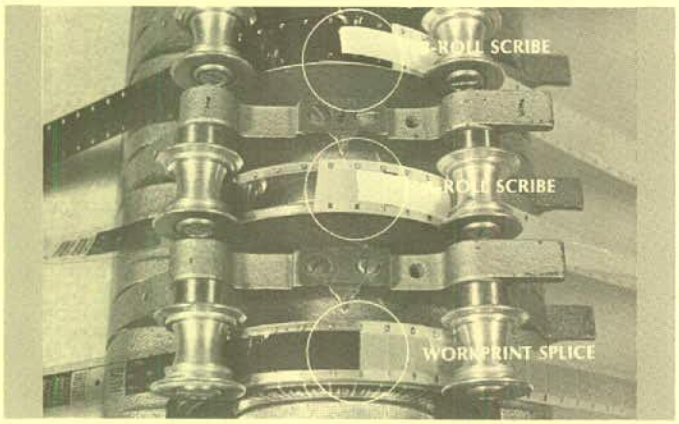


Establish the head sync of both the A-roll and the B-roll to coincide exactly with the workprint headsync. Punch and label.

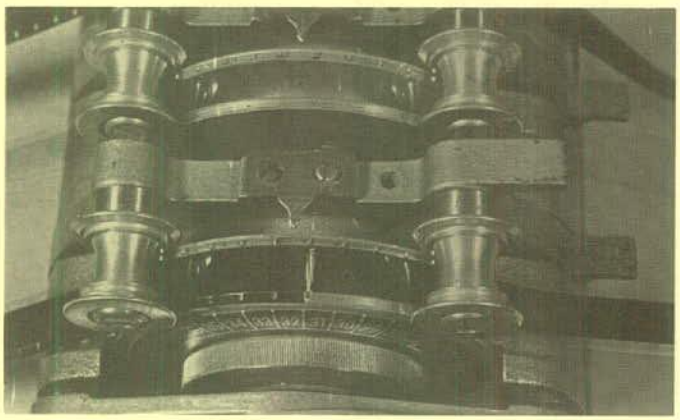




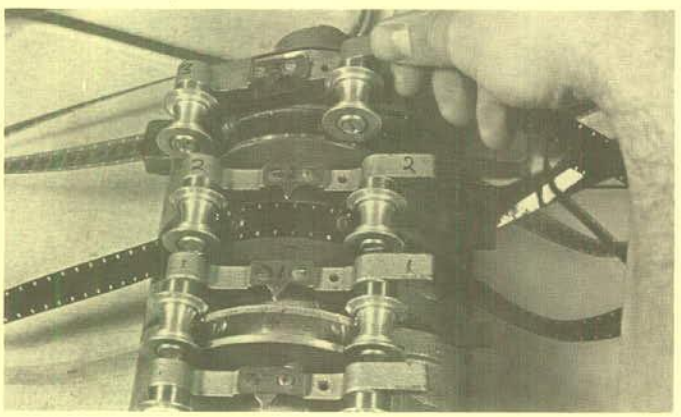
The head of the SMPTE Leader is conformed first. This is what the results will look like. In the first (bottom) gang is the workprint, the second gang contains the negative SMPTE, the third gang contains black leader.



In line with the workprint splice, scribe marks can be seen around the top sprocket hole of each piece of film. These indicate where the splice will occur.

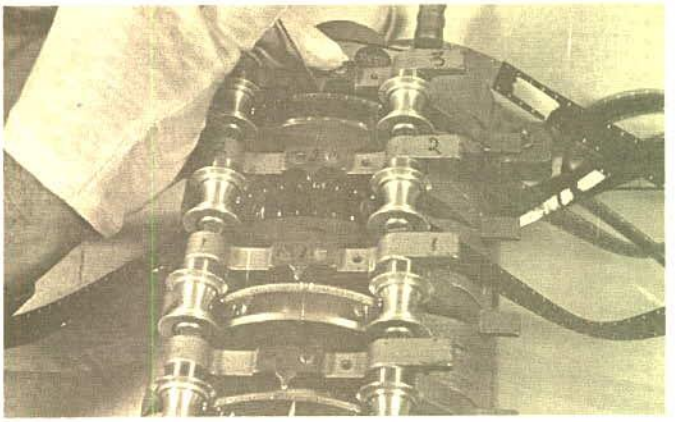


We are now at the tail of the SMPTE head leader and want to conform the first shot of the film itself.

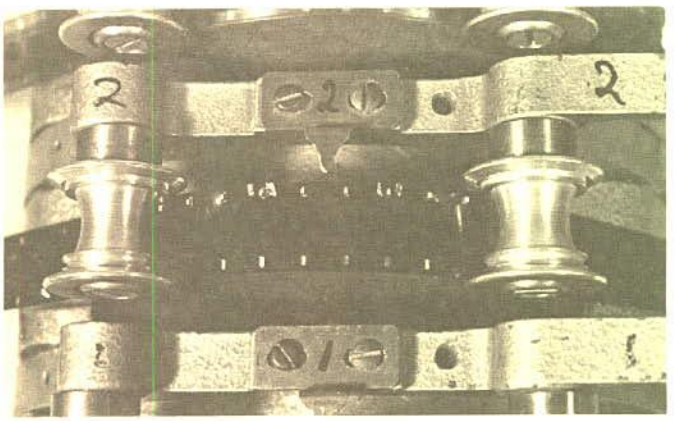


Find the negative for the first shot, align it frame for frame with the workprint of the same shot, and lock it in the fourth gang.

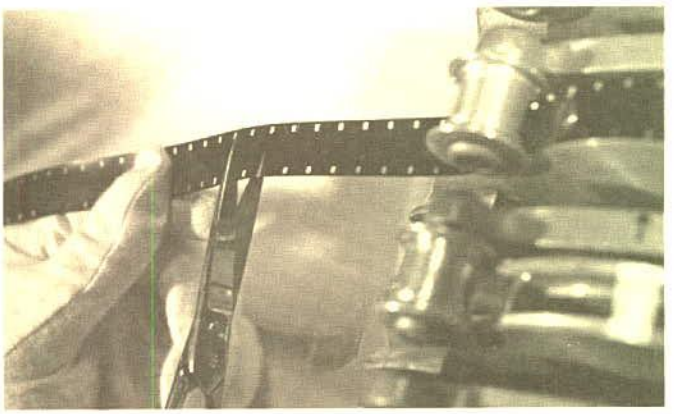
Locate the splice in the workprint and scribe the outgoing negative, the black leader, and the incoming negative at the point of the splice.



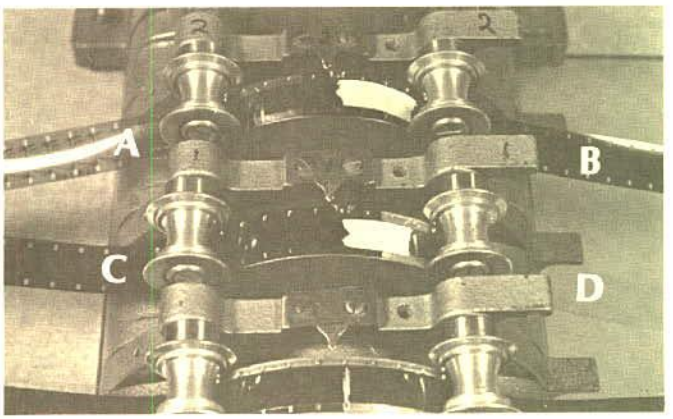
A shorthand tip for black leader scribing is to put another scribe mark three frames to the left of the first one. Thus, when you cut the black leader between these two sets of scribe marks it is ready to be used both for the incoming and outgoing negative scenes.



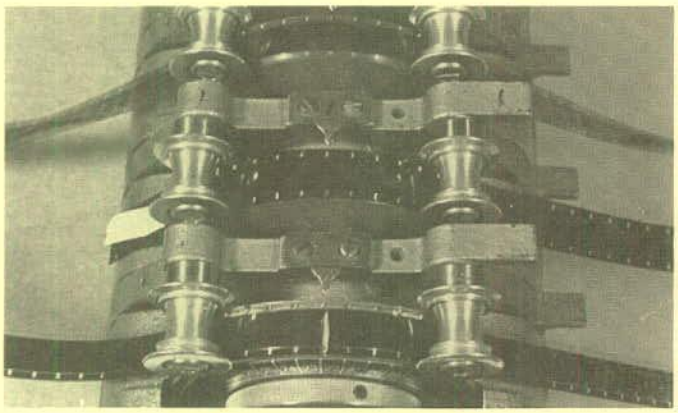
Turn the sync machine counter clockwise until all scribe marks are accessible for cutting on the left of the machine. Cut the outgoing scene 1½ frames to the left of the scribe marks. Cut the incoming scene 1½ frames to the right of the scribe marks. Cut the black leader 1½ frames to the left, or between the two sets of scribe marks, if so marked.



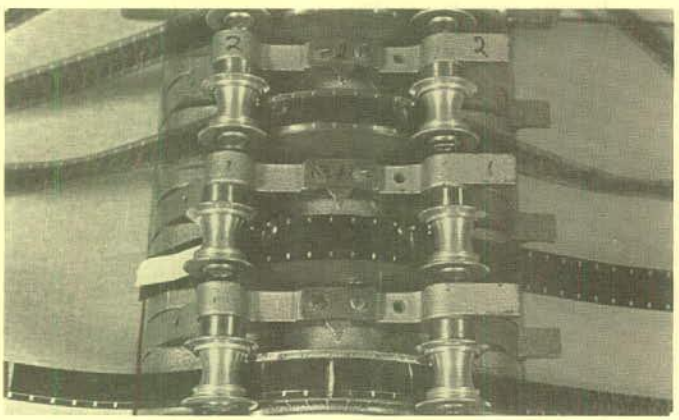
Tape the incoming scene "A" over the outgoing black leader "B". Make sure the scribe marks overlap. Tape the incoming black leader "C" over the outgoing scene "D". Again, be careful to overlap the scribe marks.



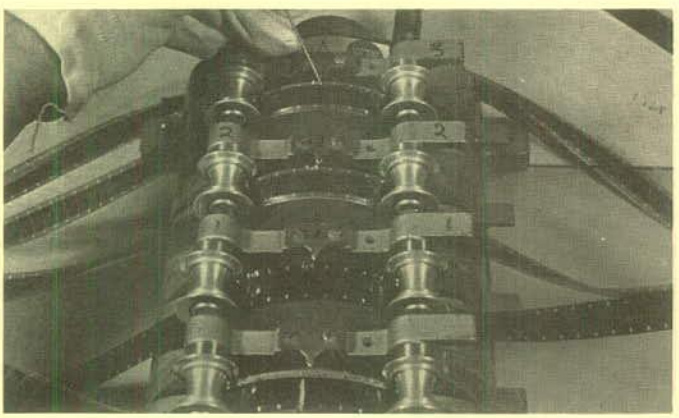
B. Conforming a Straight Cut



This is a straight cut in the workprint. In other words, the outgoing shot is in the B-roll and now we must locate and conform the incoming shot into the A-roll.

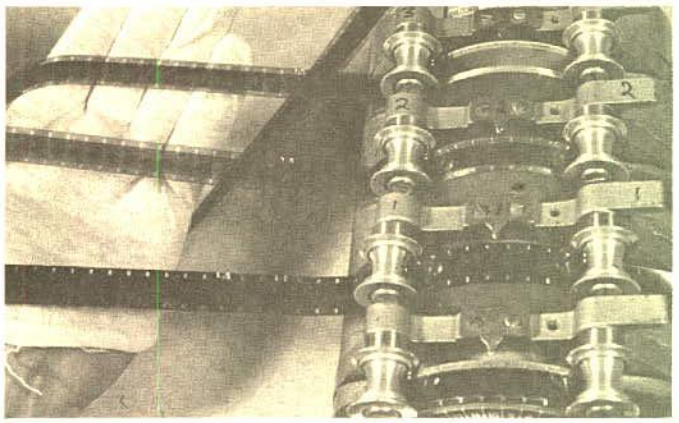


Locate the negative for the next shot and align it, frame for frame, with the workprint of the same shot. Match up the edge numbers and lock it in the fourth gang. Locate the splice in the workprint and lock the synchronizer at that point.

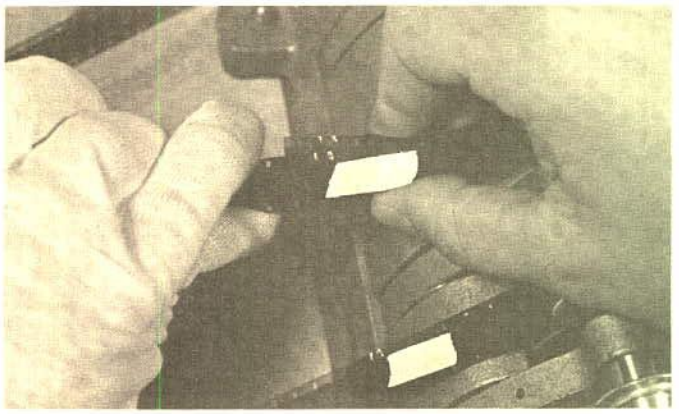


Scribe all elements at the point of the splice in the workprint.

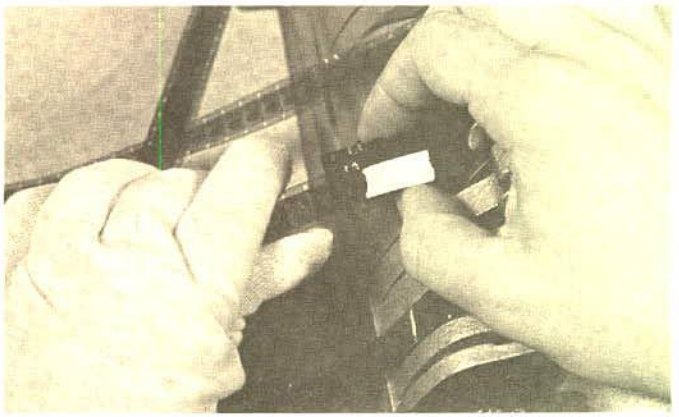
Turn the sync machine counter clockwise until all the scribes are available for cutting. The order of the cutting makes little difference, but the position of the cut does. As before, the black leader (here scribed twice) can simply be cut between the scribe marks.



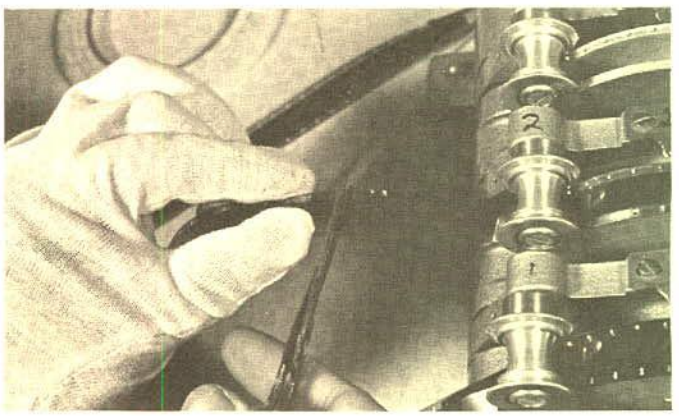
The incoming scene is cut 1½ frames to the right of the scribe marks.

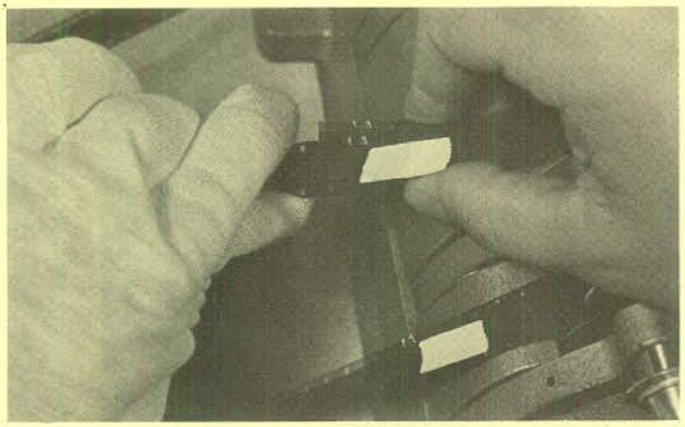


Tape the incoming scene to the tail of the outgoing black leader, again making sure that the scribe marks overlap. Always tape the two pieces of film with the left scene over the top of the outgoing scene.

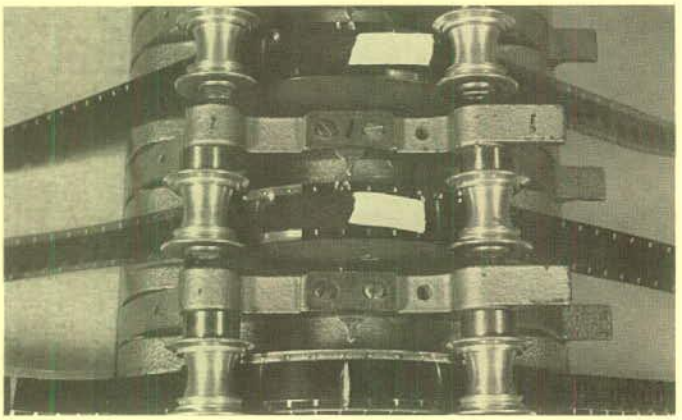


The outgoing scene is cut 1½ frames to the left of the scribe marks.

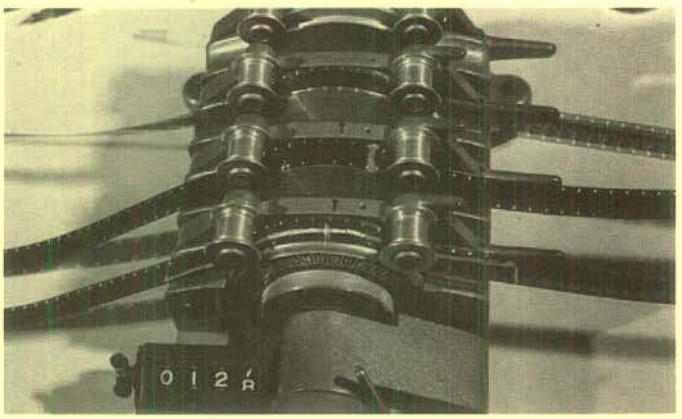




Tape the incoming black leader to the tail of the outgoing scene overlapping the acribe marks.

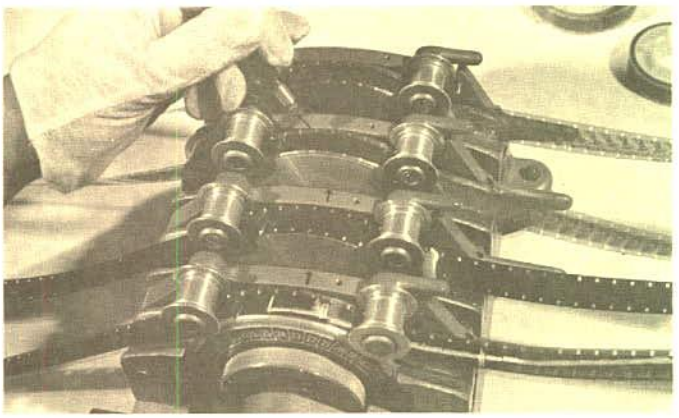


Check the cut before going on to the next scene. If all is well, the overlapped scribe marks should line up with the original splice in the workprint.

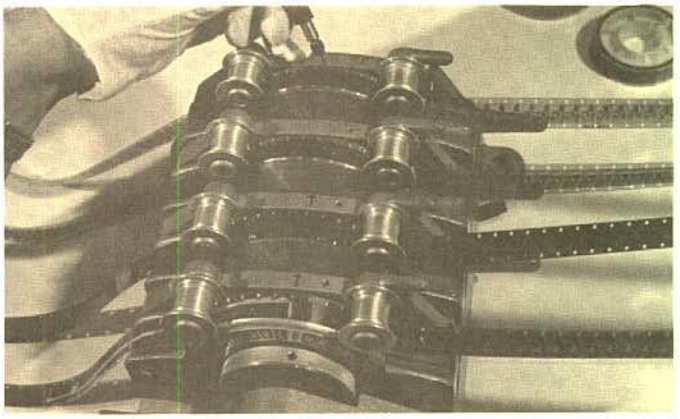


A 24 frame dissolve occurs in the workprint. In this case the outgoing shot on the B-roll will dissolve into the incoming shot on the A-roll. The marked dissolve should be checked for the accuracy of its frame count.

Place the incoming shot in the fourth gang and align it, frame for frame, with the identical shot in the workprint. Check to see that there is sufficient length in both the incoming and outgoing shots to handle the dissolve. Turn the sync machine clockwise to the end of the dissolve and scribe the outgoing scene at that point.

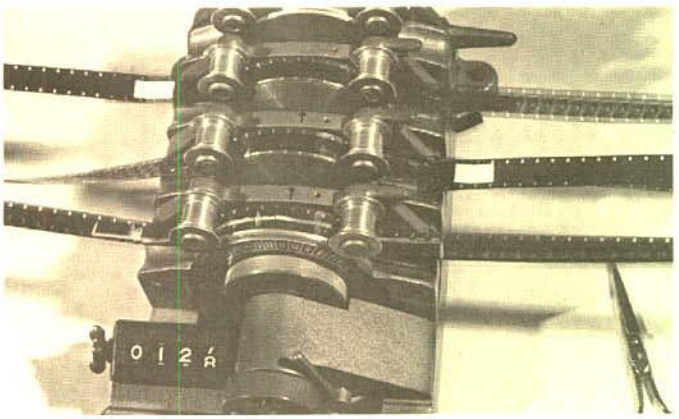


Turn the sync machine counter clockwise to the beginning of the dissolve and scribe the incoming scene and the black leader at that point. Turn the sync machine counter clockwise so you can cut the film. Cut the black leader 1½ frames to the left of the scribes. Cut the incoming shot 1½ frames to the right of the scribes and tape them together (left over outgoing).

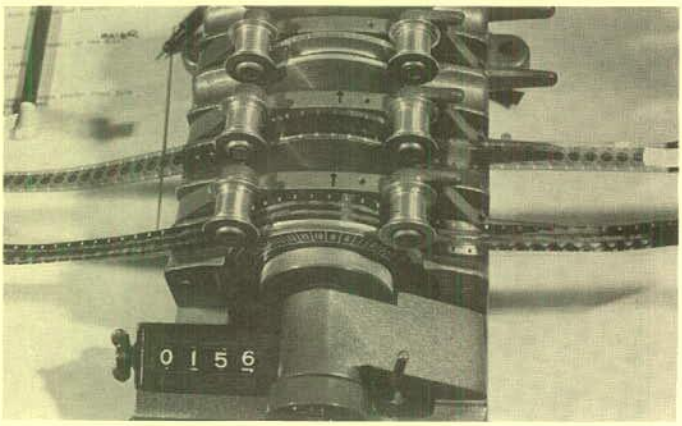


Turn the sync machine clockwise until the scribe marks at the end of the outgoing scene are accessible for cutting on the left side of the machine. Cut the outgoing scene 1½ frames to the left of the scribes and tape the black leader on it.

If done correctly, a 24 frame dissolve should look as pictured right. SPECIAL NOTE: Notice that the negatives in a dissolve <u>are not cut</u> at the workprint splice.

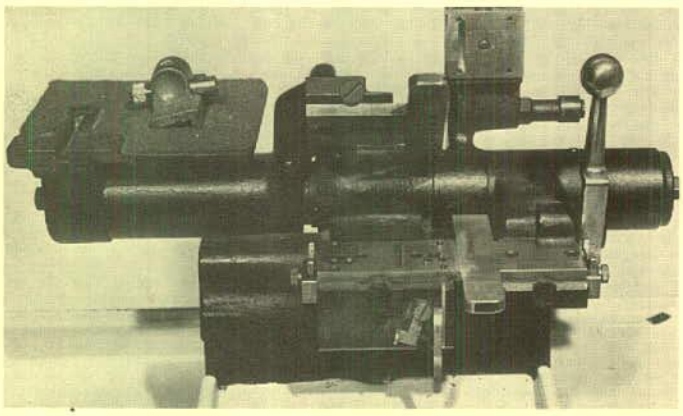


D. Conforming A Fade



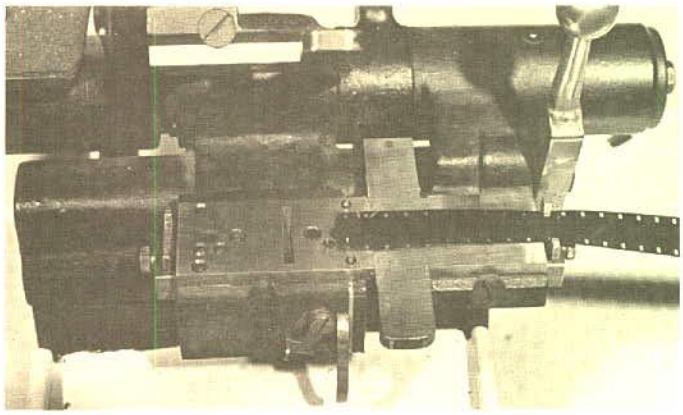
The scribing procedures for a conformed 48 frame fade-in are exactly the same, except that the roll opposite the fade contains clear leader for the length of the effect. The clear leader is scribed and cut at the start point and the end point of the fade.

E. Hot Splicing

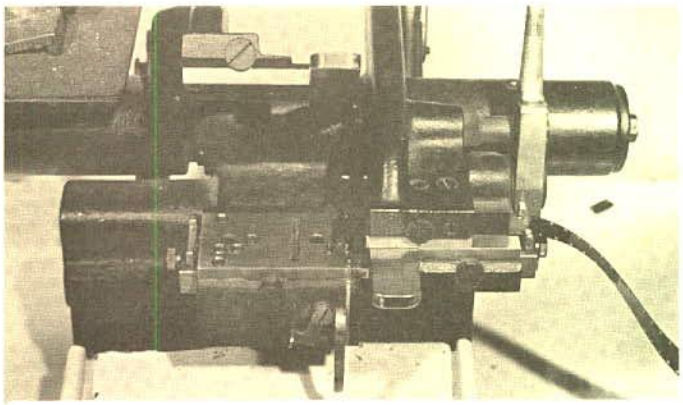


Although the Bell and Howell, foot pedal hot splicer is pictured left, the splicing procedure is the same for any hot splicer. Conformed "A" and "B" rolls are taken one at a time and worked with from left to right with the emulsion up. It is important to note that every other scene is spliced. It is also a good idea to wear white, cotton gloves.

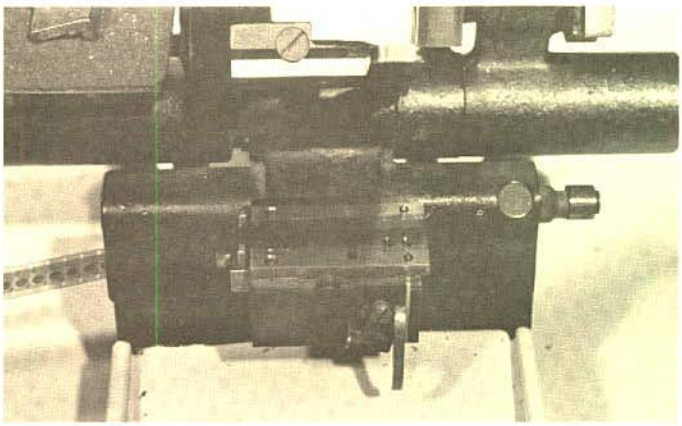
In hot splicing, the opaque leader is always placed on the right side of the splicer. This necessarily entails splicing every other scene. Note the placement of the scribe marks in relation to the splicer. This will happen automatically due to the frame and a half allowance performed during conforming.



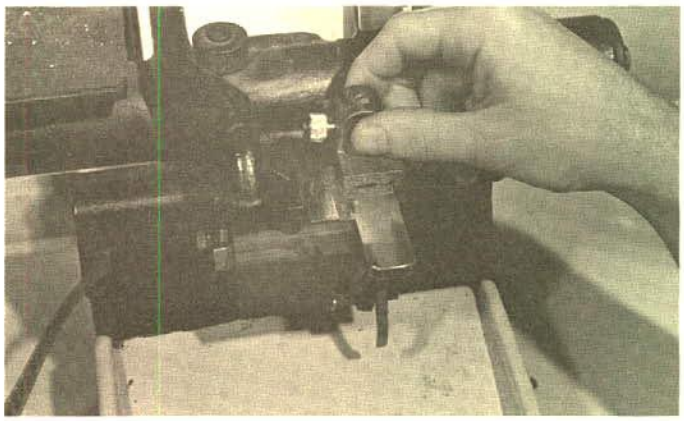
Clamp the opaque leader and lift it up out of the way.

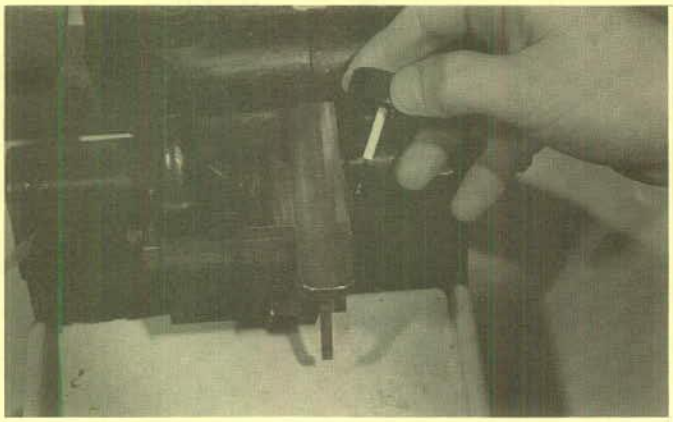


The opaque leader has already been clamped and lifted out of the way. The scene to be spliced is always placed on the left side of the splicer. Notice again the placement of the scribe marks in relation to the splicer.

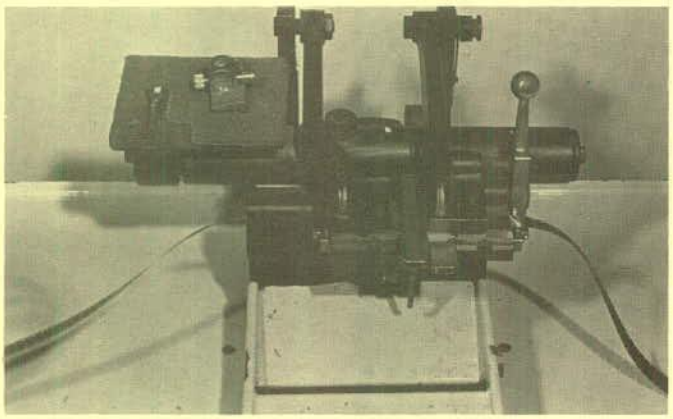


Having clamped the scene, the film is then scraped. This removes a strip of emulsion in the area to be cemented. If the scraper is sharp and the blade positioned properly, the emulsion can be removed with relative ease. Be sure to remove all film chips prior to applying the cement.

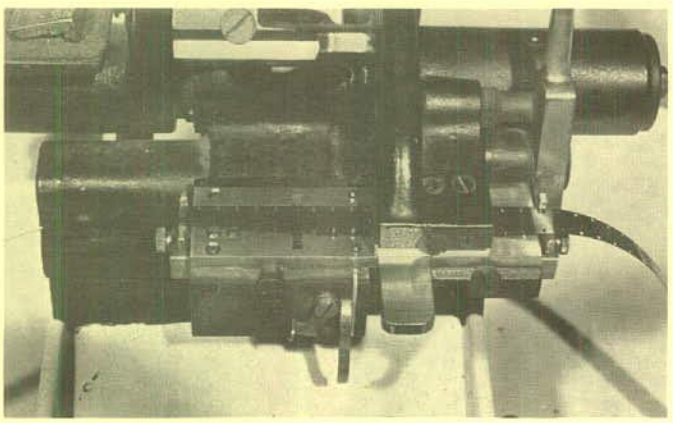




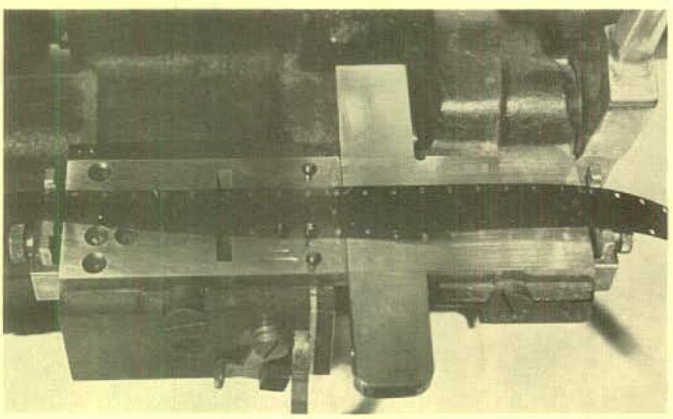
A small amount of film cement is applied to the scraped area. Since the cement dries quickly, it is necessary to lower the right side of the splicer immediately. With this splicer, as with most hot splicers, lowering the right side cuts and welds in one action.



Ten seconds is usually sufficient for a splice to dry and become secure.

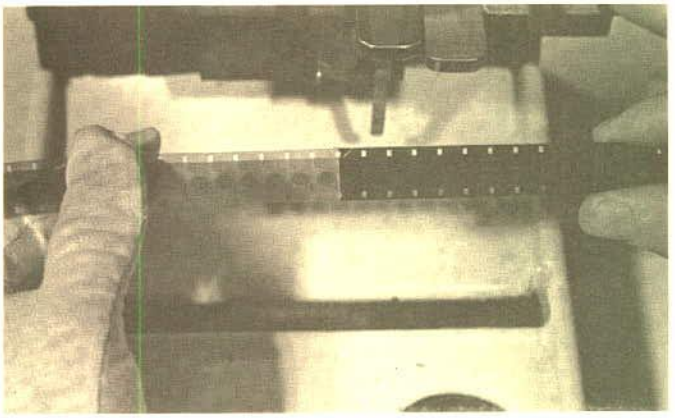


During the ten seconds, it is wise to open the left side of the splicer to allow air to aid in the drying.



After ten seconds, you can open both sides of the splicer. Note the final position of the scribe marks. This is an assurance that has been done correctly. The splicer should be cleaned periodically during splicing to avoid cement build-up.

Check the scribe marks and the splice. If all is well, go on to the next taped juncture that has opaque leader on the right. When you reach the end of the roll, take the reel (without rewinding) and place it on the feed side coming off the top with the emulsion side up. Roll through again, splicing the remaining scenes to their respective opaque leaders.



F. Checking Your Work

G. The Lab

1. Making Up A Lab Cue Sheet

2. Purpose

3. A Lab Cue Sheet Sample

____ OF ____

FEET	FRAMES	A	B	C	D	PRODUCTION INSTRUCTIONS TO PROCESSING LABORATORY				REMARKS
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	
						CUT	FR. DISS CENTER	FR. FADE IN	FR. FADE OUT	

BLACK & WHITE ____ COLOR ____	SOUND ____ SILENT ____	FX SPEED ____	A ____ C ____ B ____ ____	TOTAL FOOTAGE:

PRODUCTION: Number

SPECIAL INSTRUCTION OR REMARKS: (Day for Night-Bad splices-Repairs or others)

Name

CHECKED BY INSTRUCTOR OR T.A.

SECTION D - SOUND

UNIT 1: "EQUIPMENT, SERVICES AND PROCEDURES"

A. Reservations And Check-out

1. Reservations, Facilities

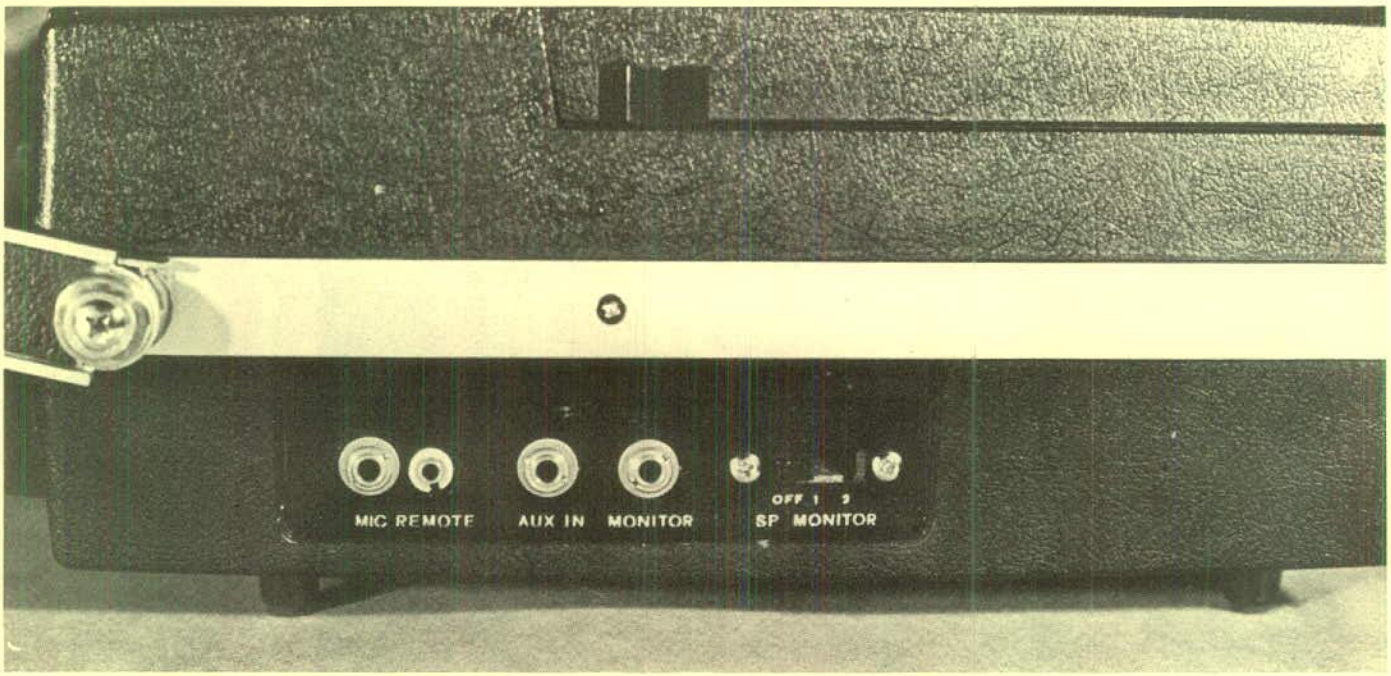
2. Check-out

3. Transfer

4. Sound Music Library

B. Sound Equipment For Beginning Production Workshop

1. Sony TC-800



2. Microphones And Auxiliary Equipment

3. Tape

4. Bulk Erasing

C. Check-out On Equipment

UNIT 2: "SUBJECTIVE ASPECTS OF RE-RECORDING"

A. Monitor System

1. Visual

2. Audible

B. Monitoring Level

1. Importance of

2. Effect On Balance

3. Audience Aspects

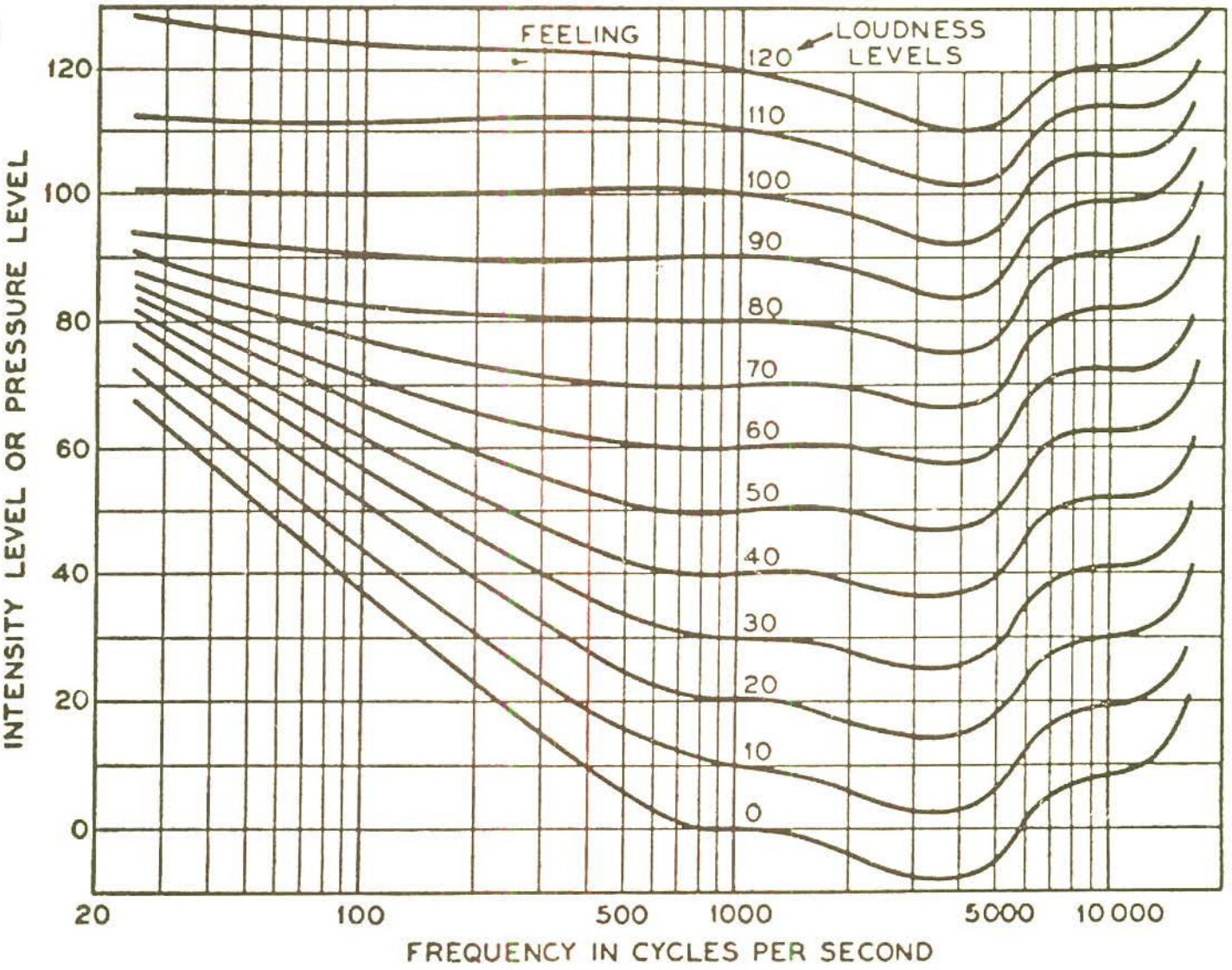
a. Listening Level

b. Environment Influence

C. Non-Linearity of Hearing

1. What Is It?

2. Effects During Re-recording


FEELING
LOUDNESS LEVELS
120
110
100
90
80
70
60
50
40
30
20
10
0
INTENSITY LEVEL OR PRESSURE LEVEL
120
100
80
60
40
20
0
20
100
500
1000
5000
10 000
FREQUENCY IN CYCLES PER SECOND

UNIT 3: "PHYSICAL ASPECTS OF RE-RECORDING"

A. The Mixing Console

1. Volume Control

2. Equalizers And Filters

3. Other Components

a. Noise Suppressors

b. Leveling Devices

c. Specialized Filters

d. Reverberation Units

e. Slating And Line-up Oscillator

B. Components Of A Re-recording Channel

1. Reproducers

a. Sprocketed

b. Non-sprocketed

1) Reel-to-Reel

2) Loop

2. Recorder

3. Projector

4. Auxiliary Components

   a. Footage Counter

b. Talkback And Signal Circuits

5. Motor Drive

a. Sync Drive

b. Interlock Drive

1) Distributor

2) Control Logic

UNIT 4: "PREPARATIONS FOR RE-RECORDING"

A. Why Re-record The Sound Track?

1. Combine Tracks

2. Smooth Out Quality Changes

3. Create A Balance

4. Create Audible Effects

B. Re-recording Cue Sheets

1. Purpose

2. Preparation

DATE

TITLE

TRACK DATE

TITLE

TRACK SHEET No.

TITLE

TRACK

DATE

TITLE

TRACK

DATE

TITLE

TRACK

C. The Interlock System

1. Visual And Audible Prespective

a. Moviola

b. Editing Table

c. Projection

2. Track Preparation

a. Leaders

b. Reel Orientation

c. Basic Principles of Layout

3. Sub-dubbing (Pre-dubbing)

UNIT 5: "RE-RECORDING DEMONSTRATION"

UNIT 6: "THE SOUND TRACK FOR A COMPOSITE PRINT"

A. Projector Sound Reproduction

1. Sound Head Components

2. Track Emulsion Position

3. Overall Projector System Sound Quality

   a. Systems

b. Environment

B. The Release Print Sound Track

1. Negative/Positive Types, Variable Area, Variable Density

2. Quality Limits

a. Dynamics

b. Frequency Range

3. Making The Optical Negative

a. Photographic Standards

b. A & B Wind

4. Special Optical Processes

   a. Electronic Printing

   b. 35/32 Process

5. Magnetic Release Tracks

PART III - GLOSSARY

A.C. — (See **ALTERNATING CURRENT**).

ACADEMY APERTURE — The academy mask ,which encloses the individual film frame area, giving screen proportions of approximately 3:4 when projected. Also referred to as 1.33 to 1.

ACETATE BASE — Sometimes called "Safety Base," it is a slow burning film made of cellulose tri-acetate.

A.E.S. — The accepted and commonly used abbreviation for the Audio Engineers Society.

ALTERNATING CURRENT — The polarity of the electrical current in an A.C. line, reverses from positive to negative sixty times a second. Alternating Current is found in most standard wall outlets.

AMPERE — (AMPERAGE) — The standard unit for measuring the strength of an electrical current; amount of current sent by one volt through a resistance of one ohm; abbreviated amp.

ANAMORPHIC LENS — A special set of adaptable lenses for the camera and the projector. The camera lens "squeezes" the picture, allowing a wider horizontal angle of acceptance. The projector lens "unsqueezes" the image when the film is shown.

ANSWER PRINT — The first complete print of a film in release form, combining picture and sound. The answer print, provided by the laboratory, is studied by the film maker to determine whether any changes are required prior to printing the release prints. Sometimes called "first trail composite print."

ANTI-HALATION BACKING — A coating applied in manufacture to the base side of film for the purpose of absorbing light that has traversed the emulsion and base, in order to reduce the amount of light reflected back into the emulsion.

APERTURE — (1) Lens: The orifice, usually an adjustable iris, which limits the amount of light passing through a lens. (2) Camera: In motion picture cameras, the mask opening that defines the area of each frame exposed. (3) Projector: In motion picture projectors, the mask opening that defines the area of each frame projected. (4) Printer: The limiting orifice through which light passes to expose the film to be reproduced.

APERTURE PLATE — That piece of metal in a camera, projector or printer that contains the aperture.

ARC LIGHT — A powerful lamp which derives its light source from the electric current flowing between two electrodes. Arcs operate on direct current.

ASA INDEX — The photosensitivity of a film, usually expressed as an index number based on the film manufacturer's recommendations for the use of the film under typical conditions of exposure and development. Numbers were standardized by the American National Standards Institute, Inc., which is formally known as the American Standards Association (ASA).

A.S.C. — The accepted and commonly used abbreviation used for the American Society of Cinematographers.

ASPECT RATIO — The ratio of height to width of a film picture frame and of the projected image.

ASSEMBLY — A term describing the first stage of editing, when all shots are arranged in script order.

B&W — Accepted abbreviation for "black and white," as in film.

BABY — A focusable studio lamp with a Fresnel lens and a 1,000 watt bulb capacity.

BABY TRIPOD — A very short tripod which is used for shooting low camera angles. Sometimes called "baby legs."

BACK LIGHT — A studio term used to refer to the light, or lights used to illuminate the top or back side or rim of a subject, usually shining toward the camera, separating the subject from the background. Sometimes called "separation light" or "kicker."

BARNDOORS — A light attachment of two or four opaque metal shields which can be hinged in front of a studio lamp. Manipulation of the shields, or doors, can limit or shape the direction or pattern of the light. An accessory item of grip equipment.

BARNEY — A fitted and padded camera cover that reduces mechanical noise and is sometimes heated with electrical heating elements to facilitate filming under cold conditions.

BI-DIRECTIONAL MICROPHONE — A bi-directional microphone picks-up sound at the front and the back equally well. It has little or no pick-up on the sides. This pick-up pattern is also referred to as a "figure 8" pattern.

BLIMP— An encasement somewhat larger than a camera, in which the camera may be mounted in order to confine the sound of the camera and prevent it from reaching the microphone during sound recordings. Many modern cameras are self-blimped, i.e., built to operate noiselessly.

BREAKING DOWN—A director's analysis in terms of action shots to be photographed, or, an editing term meaning a preliminary first step to cutting; the planning of the shots

to be used and/or the process of reorganizing scenes from random shooting sequences to the desired presentation sequence.

BRIGHTNESS — The visual and psychological sensation arising from the perception of a luminous source. Another term is "luminance" — the physically measurable number of lumens radiated by each unit area of a luminous surface.

BROAD — A soft, flood type of illumination unit which can be spread over a relatively wide area. Used as a general fill light, the unit is usually not focusable.

BRUTE — A type of arc light that operates on 225 amps (direct current).

BUSINESS — Any action introduced for the purpose of building up to, or reinforcing an idea or trend in the plot of a film or play. Reviewers will often refer to such an element as an "interesting bit of business."

BUTT SPLICE — Often called a "tape splice" it refers to the ends of two pieces of film being joined even to, or butted to each other. Tape is used on both sides of the film.

BUTTERFLY — A net of variable density and construction which is stretched over an outdoor scene to soften the sunlight. An accessory item of grip equipment.

CAMERA JAM — A malfunction which occurs when the film has been improperly loaded into a camera. The film piles up inside the camera body and is caught between the sprocket wheels and the guide rollers. Often referred to by its nickname "salad."

CAPSTAIN — The drive spindle on a tape machine. It is generally the shaft of the drive motor of the unit. On a tape machine, in conjunction with the pinch wheel, it pulls the tape across the head from the feed to the take up reel.

CARDIOID — (See **UNI-DIRECTIONAL).**

CENTURY STAND — A metal stand used for positioning many different grip equipment lighting accessories such as a "flag," "scrim," "cookie," etc. Also known as a "gobo stand" or "C" stand.

CINEMASCOPE — A wide screen filming and/or projection system which utilizes the anamorphic lens and having a 2:35 to 1 aspect ratio.

CINEX STRIP — A strip of positive film which after being printed on a "Cinex Printer," allows the cameraman to compare the original as printed at different printer lights.

CIRCLE OF CONFUSION — For every point in a scene, there is a corresponding projection of such a point on the film plane. The lens is, practically speaking, incapable of rendering this point as a perfect point on the film plane. In fact, this point will actually become a small circle. The size of the circle depends primarily on the extent to which the lens is properly focused. In 16mm photography the maximum size of the circle of confusion has been set at 1/1000 inch for purposes of developing depth of field tables. When the circle of confusion exceeds 1/1000 of an inch the images tend to be blurred or out of focus.

CLAP STICK — Designed of two pieces of wood, hinged together and decorated with a matching design, space is usually provided for writing or attaching the scene or take number being shot. The "clap stick" is an aid that simultaneously provides a visible and audible clue to the filming and sound systems. Also called "clapper" and "clapper board."

CLAW (PULL DOWN CLAW) — The claw is a key part of a camera's pull-down mechanism. Shaped like a metal tooth, it engages the film perforations and pulls the film to the next frame.

CLOSE LENSES — (See **PLUS LENSES).**

CLOSE SHOT — (See **CLOSE UP).**

CLOSE UP — One of the basic film units of shot nomenclature, a "close up" means that the subject image fills a greater part of the film area. A "close up" of an individual usually means the top of shoulders and head. In script writing the term most often used is "close shot."

CODE NUMBERS — Processed ink numbers printed at one foot intervals, printed on the picture and sound film dailies in the lab. They are an aid in the "syncing-up" process in editing. (See **KEY NUMBERS).**

COLORBLIND FILM — Black and white emulsion which is sensitive to only one color — usually blue. Sometimes referred to as non-color sensitive.

COLOR SENSITIVITY — The degree of photochemical reaction of a film emulsion to different wavelengths corresponding to colors in the visible spectrum.

COLOR TEMPERATURE — The color quality of the light source which is expressed in degrees Kelvin (K), and compared to a theoretically perfect temperature radiator called a "black body." The higher the color temperature, the bluer the light; the lower the temperature, the redder the light.

COLORTRAN SYSTEM — Trade name for an autotransformer system designed to increase the voltage delivered to standard lamps in order to increase their color temperature for the purpose of color photography. Uses PAR 38 (Pyrex) bulbs. System is no longer manufactured, however many smaller studios and rental houses still make them available.

COMPLIMENTARY COLORS — The colors obtained by removing one of the primary colors from the visible spectrum are called the "complimentary colors." They are: CYAN — which results when red is removed; YELLOW — which results with the removal of blue; and MAGENTA — which results with the removal of green.

COMPOSITE PRINT — Positive print with picture and sound in projection sync.

CONDENSER MICROPHONE — A type of microphone in which the diaphragm is one of the plates of the capacitor. This type of microphone requires a power supply unit, generally batteries, to polarize the capacitor diaphragm assembly, and to power the associated pre-amplifier electronics.

CONTACT PRINTER — A laboratory printing machine in which the printing stock and the film to be copied are printed in contact, emulsion to emulsion.

CONTRAST — 1. Lighting contrast — the ratio between the maximum and minimum intensities of incident light on the subject, or radiated and/or reflected light from the subject. 2. Photographic contrast — In terms of negative or positive film, the ratio between the optically most dense and least dense areas, expressed in terms of gamma. 3. Subject contrast — the scale of tonal values exhibited by a subject. If the subject tonal scale is reasonably long, with good gradation from black to white, it is regarded as normal. When the subject tonal range is great, and intermediate tones are relatively lacking, the subject is termed "contrasty."

COOKIE — (See **CUCALORIS).**

CORE — A plastic, wood or metal centerpiece around which film can be wound.

CROSS CUTTING — Or "parallel cutting" as it is sometimes called, is an editing style that intercuts back and forth between two or more chronologically simultaneous events.

CROSS TALK — When an unwanted signal from one part of a circuit is introduced into another circuit causing interference, it is referred to as crosstalk.

CRYSTAL CONTROLLED MOTOR — A motor whose speed is controlled by a mechanically vibrating piezo electric quartz crystal oscillator. Speed accuracies of ± .001% are readily attained, which is equivalent to ± ½ frame in 30 minutes of motion picture film.

CUCALORIS — A thin panel with regular or irregular shapes cut through it, permitting light directed through it to form a pattern on a scene background. Often made of plastic or plywood it is sometimes spelled with a "K" instead of a "C" and is familiarly known as a "cookie." An accessory grip equipment item.

CUT — An editing term which refers to the point at which two shots are spliced, creating a transition. Other meanings are a command given to stop the operating of a camera, actor action, or sound equipment; and the severing or cutting of a piece of film.

CUT AWAY — An editing term which refers to a shot inserted after a scene has been established, to show action or actions which are going on simultaneously, but which is not part of the established main line of action.

CUTTER — A shadow forming device, or type of "Flag," usually rectangular in shape, which is an accessory grip equipment item. The term "cutter" is also used to describe the person responsible for the mechanical, rather than the creative elements of editing.

D.C. — (See **DIRECT CURRENT).**

DAILIES — The first print of original footage, printed without regard to color balance, delivered from the lab "daily" during the shooting period. Viewed by the director, cameraman and all persons concerned with the film. Often called "rushes." As an economical factor, some films being shot in color, will call for black and white dailies from the lab.

DAYLIGHT LOADING SPOOL — A film spool made of metal with full flanges accurately spaced to protect the film stock from exposure during the loading and unloading of a camera or magazine.

DEAD ROOM — A room where the acoustical characteristics are such that the surfaces are predominately absorbent rather than reflective. The sound in this room would be very dull.

DECIBEL (db) — This term is used for measuring the ratio of any two amounts of electrical or acoustical power.

DEGAUSSER — (See **ERASING).**

DENSITOMETER — A device used for making quantitative measurements of photometric density.

DENSITY — A term used to express the light stopping characteristics of film in the processed photographic emulsion.

DEPTH OF FIELD — The distance at which objects will appear sharp in front of and behind the point at which the camera is focused.

DEPTH OF FOCUS — The distance the film plane can be moved forward and backward behind the lens before the image is out of focus. Ideally, for maximum image

definition the emulsion of the film should lie in the plane of minimum circle of confusion. The term is often mistakenly used when "depth of field" is meant.

DIALOGUE REPLACEMENT — (See **DUBBING & LOOPING).**

DICHROIC FILTER — A filter used on tungsten lamps to convert their color temperature to that of daylight. The filter reflects excessive red and transmits light that is bluer than originally.

DIFFUSED LIGHT — Light that is reflected or directed through a diffusing medium. Most often it refers to light that is generated from a physically large source. Sometimes refered to as "soft fill light."

DIN CONNECTOR — A connector generally used on European, or foreign, equipment. The term DIN is an abbreviation for Deutsches Industrie Normen, an European standards organization similar to the American National Standards Institute (ANSI) formerly known as the American Standards Association (ASA).

DIRECT CURRENT — The polarity of electrical current in a D.C. line flows in one direction only, from negative to positive.

DISCONTINUOUS SPECTRUM — Used to describe a light source that is lacking in one or more of the visible spectrum wavelengths (e.g. street lights, fluorescent tubes and neon to name a few).

DISSOLVE — The gradual fading of one scene and the appearance of another, while the film is being projected. Can be achieved "in-camera" while filming (if the camera is equipped for backing up the film already shot) or optically ordered from the lab during the printing process. Depending on the planned length of the dissolve, there is an apparent double exposure during the center portion of a "dissolve" where the two scenes overlap. Same as "lap dissolve."

D LOG E CURVE — A graph curve which represents a relationship between film density and the logarithm of exposure, and, the means whereby the photographic characteristics of a given film emulsion can be evaluated. Also sometimes called "H&D Curve," "Gamma Curve," or "Sensitometric Curve."

DOLLY SHOT — A moving shot achieved by mounting the camera on a wheeled vehicle. Sometimes also called a "Tracking Shot."

DOUBLE SYSTEM — This system implies that the camera photographs only the image of film while a separate unit (recorder) records the audio for the scene being photographed. The recorder is generally a magnetic tape recorder (with sync pulse capability) or a magnetic film recorder.

DUBBING — This term generally denotes recording a sound for the second time. This process is often used to re-do the original dialogue tracks which are unsatisfactory under a more controlled environment (dubbing stage). Also the substitution of one language for another in the dialogue track is termed dubbing. The term dialogue replacement is also synonymous with dubbing. The process of mixing, or re-recording of dialogue, music and effects tracks for the composite sound track is also referred to as dubbing.

DUPE NEGATIVE — A film negative which has been printed from the master positive, or a reversal negative which has been printed from the picture release negative. Often called "dupe," it is more formally called "Picture Duplicate Negative." Usually used to make black and white prints.

DYNAMIC MICROPHONE — A microphone of this type employs a small diaphragm and a voice coil moving in an intense magnetic field. A voltage is generated proportional to the sound pressure at the surface of the diaphragm. This type of microphone is also referred to as a pressure operated or moving coil microphone.

EDGE FOG — Unwanted exposure on the edge of the film caused by light leaks in a camera, film magazine or film can, or improper shielding of the film while loading or unloading the camera.

EDITING BIN — A box or barrellike container with a frame from which hang lengths of film during editing activities. Some "bins" can be lined with a cloth bag to prevent scratching.

EFFECTS TRACK (EFX, FX) — A separate sound track which carries only sound effects, as opposed to music or dialogue.

EMULSION — A light-sensitive coating over the film base. The coating is a gelatin in which "silver halides" are suspended.

ERASING — The purpose of erasing (degaussing) a magnetic medium is to remove all traces of previously recorded signals. This erasure can be achieved by use of a bulk eraser (degausser). Erasure can also be achieved by use of an erase head if the machine is so equipped.

ESTABLISHING SHOT — Any shot used to orient the audience in regard to location, time, or circumstances of action.

EXPOSURE INDEX — (See **ASA INDEX).**

EXPOSURE METER — An optical or photoelectrical device designed to measure the amount of light falling on, or reflecting from, a subject. The information is used to determine the correct exposure of the film.

EXTREME CLOSE UP — One of the basic film units of shot nomenclature, an "extreme close up" means a very close shot which results in filling all, or most of a frame with one piece of information such as the eyes of a face, a finger of a hand, etc.

F-STOPS — Representing the speed of a lens at any given diaphragm setting, F-Stop numbers are derived by dividing the focal length of a lens by its effective aperture. Sometimes called "F-Numbers."

FADE OUT, FADE IN — An optically achieved or in-camera effect consisting of a picture's gradual disappearance into a black screen (a fade out), or the gradual appearance of a picture from a blackened screen (a fade in).

FIGURE 8 — (See **BI-DIRECTIONAL).**

FILL LIGHT — Light used to fill in shadows created by the key light.

FILM GATE — The aperture and pressure-plate unit in a camera or projector.

FILM PLANE — The area in which the film is held during exposure. Most manufacturers mark this area on the camera's body to allow for accurate tape measurement to the subject for correct focusing.

FILMIC TIME AND SPACE — The condensation or stretching of actual time, and the elimination of actual space by means of filming, optical graphics and/or editing.

FILTER FACTOR — The numerical multiplication of the exposure to allow for the light absorption when an optical filter is added.

FINE CUT — The advanced stage of editing the work print.

FIRST TRAIL COMPOSITE PRINT — (See **ANSWER PRINT).**

FLAG — A shadow-casting device made of plywood or cloth, stretched over a metal frame, sometimes called a "finger." An accessory item of grip equipment.

FLANGE — A combined circular metal or plastic plate and hub on which a plastic core may be mounted for winding and handling film off-reel.

FLARE — Spots or streaks on film caused by a strong directional light reflecting off a lens component or filter. Similar spots and streaks can be caused by light leaks in the magazine or camera body.

FLASHING — (See **FOGGING).**

FLAT LIGHT — Soft, shadowless light from a solf-light source.

FLIP OVER — An editing term describing a picture that turns on its vertical or horizontal axis to reveal another picture while the film is being projected. This type of editing transition can only be accomplished optically in the lab and cannot be done "in-camera."

FLOP OVER — A scene which has been turned over when cut in to a film in order to match screen direction, maintain stage line continuity, etc.

FLUID HEAD — A type of tripod head that employs a fluid mechanism to allow for smooth pan and tilt movement.

FLUTTER — The term flutter relates to any deviation of pitch that results from an irregular motion in the recording or reproduction of a tone. Slow rates of flutter are referred to as "wow".

FOCAL LENGTH — Property of a lens which determines the size of the image of an object placed at a given distance from the lens.

FOCAL PLANE — The plane, perpendicular to the axis of a lens, in which an image is formed, with the object points represented by circles of confusion of minimum diameter.

FOGGING — Film density caused by unwanted exposure to light. The same density can be caused by chemicals or excessive exposure to air in the developing stage. Some cinematographers seek this effect by deliberately "fogging" or "flashing" a film before it is shot. The "fogging" or "flashing" can also be achieved after the film has been exposed.

FOLLOW FOCUS — The process of continually refocusing a camera lens during a shot in which the distance between the camera and subject will change enough to affect the depth of field.

FOOT CANDLE — The international unit of illumination which refers to the intensity of light falling on a sphere placed one foot away from a source of light of one candle power.

FOOT LAMBERT — An international unit of brightness which is equal to the uniform brightness of a surface emitting or reflecting light at the rate of one lumen per square foot.

FRAME — 1. One individual picture on a piece of motion picture film. 2. To bring the limits of an individual picture on a piece of motion picture film into coincidence with the limits of the projector aperature in projection. 3. To compose a shot.

FRAME LINE — The horizontal line by which a single frame is separated from an adjacent frame on a strip of film.

FREEZE FRAME — An editing optical effect of freezing the action by repeating the information of a single frame of film many times over. On the screen it gives the effect of a still picture.

FREQUENCY — The number of cycles or vibrations in a given unit of time, which is generally seconds. The unit of measurement is Hertz (HZ) (cycles per second).

FREQUENCY-AMPLITUDE RESPONSE (FREQUENCY RESPONSE) — Frequency amplitude response refers to the ability of a (sound) process to exhibit an amplitude uniformity over a specified range of frequencies.

FRESNEL LENS — A condenser lens having a system of graduated concentric prismatic ridges. This arrangement acts as an effective condenser for spotlights and the like, but with considerable economy of bulk and weight.

FRICTION HEAD — A type of tripod head which employs an adjustable friction mechanism in regulating the pan and tilt movements.

FULL TRACK — On ¼ inch magnetic tape, a full track recording utilizes a single track with a nominal width of .238 inches (238 mils).

FX — The standard and accepted abbreviation for all "effects" such as special effects or sound effects.

GAFFER — The title for the chief electrician on a film crew.

GAFFER'S TAPE — A type of adhesive tape used for securing lighting instruments, stands and cables on a set. Manufactured for strength, the wide tape has many other uses.

GAMMA — The degree of photographic contrast derived by measuring a slope of the straight-line portion of the D Log E Curve of a film emulsion.

GEARED HEAD — A type of tripod head that employs a regulated gear system and is operated by a set of hand cranks.

GOBO STAND — (See **CENTURY STAND**).

GRADING — (See **TIMING**).

GRAIN — The fine silver particles embedded in the gelatin of a film emulsion. Graininess refers to the photographic image being made up of distinguishable particles, or grains, and is the result of grouping together or "clumping" of the individual silver grains.

GRAY SCALE — A commercially prepared chart that reflects a series of graduated gray fields from white to black.

GRIP — In large production units, the general handy man available on the set for general odd jobs, such as moving or adjusting sets, or repairing props, laying camera tracks, adjusting lighting control devices.

GROUND GLASS — The finely ground glass on which an image is formed in the camera viewfinder system.

GYRO HEAD — A camera mount for use on a tripod or other support, in which camera movement both in azimuth and in elevation is stabilized by means of a connection through a gear train to a heavy flywheel, with the result that jerkiness of movement is effectively damped.

HALATION — The halolike flare surrounding bright objects, caused by light reflected from the film base. Most modern films are manufactured with an anti-halation backing eliminating the problem almost entirely. Also called "ghost images."

HALF TRACK — On ¼ inch magnetic tape, a half track recording utilizes a track with a nominal width of .082 inches (82 mils) along one edge of the tape. Sufficient room exits for a second track along the other edge.

HALOGEN — Halogen elements such as iodine, chlorine, bromine, fluorine and astimaine that are used in the manufacturing of tungsten-halogen lamps such as the quartz-iodine bulbs.

HARMONIC DISTORTION — (See **NON-LINEAR DISTORTION**).

HERTZ — (See **FREQUENCY**).

HIGH HAT — A mounting device designed to accept a tripod head for the purpose of supporting a camera on some object other than a conventional tripod.

HIGH KEY — A high level of illumination with only a few shadowed areas with brilliant highlights emphasizing various elements within the scene.

HIGHLIGHTS — Visually, the brightest, or photometrically the most luminant areas of a subject, represented as the heaviest densities on the negative and as the most transparent on the positive.

HOT SPOTS — A part of the field that is unevenly illuminated — usually a bright area in the center.

HYDRAULIC HEAD — A type of tripod head that employs a hydraulic mechanism for the pan and tilt movement.

HYPERFOCAL DISTANCE — The distance at which a lens must be focused to give the greatest "depth of field" at which all objects from infinity to half the "hyperfocal distance" will be in focus.

IMAGINARY STAGE LINE — An assumed line passing through two or more performers upon which all film direction must be based. Crossing the "imaginary stage line" with the camera will give results in the film shot that will not edit properly.

IMPEDANCE — The total opposition to the flow of alternating current (AC) in a circuit is referred to as impedance. An AC circuit contains both resistance and reactance.

INCANDESCENT LIGHT — Electric light produced by the glowing of a filament of tungsten, as in modern quartz type tungsten-halogen lamps.

INCIDENT LIGHT — The light from all external sources which falls on a subject to be filmed; as opposed to that light being reflected by the subject.

INKY-DINKY — The smallest focusable studio lights with fresnel lens. They use a 200 watt maximum bulb.

INSERT — A shot showing necessary details, inserted for the proper understanding of a sequence's overall action. A close up of a letter, a newspaper headline or calendar are examples of an insert.

INTERLOCK — The first synchronous presentation of the work print and sound track (on separate films) before the expense of a re-recording session.

INTERLOCK SYSTEM — An interlock system is one which has the capability of keeping two or more units (e.g. projector, sound reproducer, etc.) coupled together to maintain synchronism. The interlock itself may be by means of a mechanical coupling or could be achieved electrically.

INTERMITTENT MOVEMENT — The stop-and-go movement of the film-transport mechanism of a camera or a projector, making it possible for each individual frame to be held securely in place for the receiving or giving out of its information.

INTERMODULATION DISTORTION — (See **NON-LINEAR DISTORTION).**

INTERNEGATIVE — A film negative printed from a color reversal original.

INTERVALOMETER — A camera accessory which houses an auxiliary timing device which actuates a mechanism that exposes a single frame of film at a pre-established time sequence. Permits a filmic sequence of a sun rise, blooming of a flower, or other delayed activity not normally perceived by the human eye.

IRIS — The adjustable opening that controls the amount of light allowed through a lens. Calculated by "F" Stops, the "Iris" is often called a "diaphragm."

JUMP CUT — A discontinuity of action between two shots, or a singular shot, due to the removal of a portion of film, or to a poor choice of pictorial continuity.

JUNIOR — A focusable studio lamp with a Fresnel lens and a 2,000 watt bulb capacity.

KELVIN SCALE — A temperature scale (using the same intervals as the centigrade scale) used to express the color temperature of a film.

KEY LIGHT — The main source of illumination on a subject.

KEY NUMBERS — Numbers placed in the edge (sprocket hole area) of the film by the manufacturer. In 16mm film they occur every 20 frames (every 6 inches) and in 35mm film they occur every 16 frames (every foot). NOT to be confused with "code numbers."

LAP DISSOLVE — (See **DISSOLVE).**

LATENT IMAGE — An invisible image formed in the film emulsion as a result of being exposed to light. Latent images become visible after the film has been developed.

LATITUDE — The latitude is an emulsion's ability to accommodate a certain range of exposures while still producing satisfactory pictures.

LEADER — A length of protective film at head ("head leader") or tail ("tail leader") of a roll of film. Any kind of non-image film used for editing purposes.

LIGHTING RATIO — The relationship between the key light and the fill light. The standard TV ratio is known as two to one. This means that the key light is twice the brightness of the fill light.

LIVE ROOM — A room where the acoustical characteristics are such that the surfaces are predominately reflective ratner than absorbent. In a room such as this, most of the sound would be reflected by the surfaces and give the sound a bright characteristic.

LONG SHOT — One of the basic film units of shot nomenclature, a "long shot" occurs when the subject occupies a small portion of the frame in relationship to the setting.

LOOP — A loop is a continuous running sound effect recorded on a sprocketed magnetic film which is then looped and joined together. The splice is made carefully so that there is no audible change at the joint. A "loop" can also be a continuous running piece of film as might be used in a continuous running projector.

LOOPING — (See **DUBBING).**

LOW KEY — 1. Pictures in which the majority of tones lie toward the darker end of the scale. 2. In lighting, a generally low level of illumination of subject, with relatively short-scale tonal rendition. 3. A high ratio of keylight to key plus fill light is employed for this effect.

MACROCINEMATOGRAPHY — The filming of small objects but not so small as to require filming through a microscope.

MASTER POSITIVE — A special print made as an intermediate step in producing a picture duplicate negative.

MASTER SHOT — Usually a long shot in which all action in a scene takes place. Action is repeated for the MS and CU which may be cut into the scene.

MATCHING CUT — A cut that contains an element from the previous scene.

MATTE BOX — A combination of filter and/or matte holder and sun shade mounted in front of the camera lens.

MEDIUM SHOT — One of the basic film units of shot nomenclature, a "medium shot" is a scene that is photographed from a distance so that the full figure of the subject fills an entire frame. Often a "medium shot" is called an "intermediate shot."

MICROCINEMATOGRAPHY — Filming of small objects through a microscope.

MILLIMICRON — One thousandth of a micron, or, one millionth of a millimeter. A unit of length for measuring waves of light. It is the size classification accepted when referring to wave lengths.

MINI PLUG — A miniature version of the standard ¼ inch diameter phone plug. The mini-plug is 9/64 inch in diameter and is also referred to as a "Tini-Plug".

MIXING — The term mixing could be defined as combining two or more sound sources together. The term also can mean the operation of controlling sound volume levels.

MONTAGE — A series of shots arranged to convey a general impression such as the passage of time and events. Commonly used as a transitional device.

M.O.S. — A humorous abbreviation which literally means "mit out sound" or filming without sound. Derived from German immigrants in the early days of Hollywood.

MOVIOLA — "Moviola" is actually a trade brand name for a specific type of editing machine, but has become a generic term over the years, meaning any editing machine that permits viewing of one or more films and hearing the related sound synchronously.

NEO-PILOT SYSTEM — A system for recording the camera related synchronizing pulse along with the audio signal on the Nagra recorder.

NETS — (See **SCRIMS).**

NEUTRAL DENSITY — Colorless filters used to cut down the amount of light entering the lens, but that do not affect the color rendition.

NITRATE BASE — A highly inflammable film base made of cellulose nitrate and capable of self-igniting under certain conditions. A tri-acetate safety base has been used on film since 1951.

NOISE — Relative to electrical or system noise as opposed to acoustical noise, the term noise applies to the unwanted voltages of any character that appear in a sound system.

NON-DIRECTIONAL — (See **OMNI-DIRECTIONAL).**

NON-LINEAR DISTORTION — Non-linear distortion refers to the spurious or extraneous frequencies generated by an audio device or process when there is a non-linear relationship between the input and output signals. If the spurious frequencies are harmonically related to the input signal, the distortion is referred to as **harmonic distortion.** If the spurious frequencies are sum and difference frequencies of the input signals, the distortion is referred to as **intermodulation distortion.**

OMNI-DIRECTIONAL MICROPHONE — This type of microphone is also referred to as a non-directional microphone. The field of sensitivity of this type microphone is basically in all directions.

ONE SHOT — A shot featuring one subject domination of the frame area.

OPTICAL EFFECTS — Any effect created at the printing stage such as dissolves, fades, superimposition, wipes, freeze-frame, etc.

OPTICAL PRINTER — The optical printer is a complex piece of rephotography machinery, but is basically composed of a camera and a projector mounted on a lathe bed facing each other. The projector is threaded with a piece of film containing the image photographed during projection. The camera contains unexposed film. The projector (sometimes called a tailgate) and the camera head move at the same speed, the camera takes a picture of each frame of the film running through the projection head. (See **CONTACT PRINTER** for comparison.)

OPTICAL SOUND TRACK — Sound that has been recorded on a photographic film is referred to as optical sound track. This type of recording is used primarily for release print purposes.

ORIGINAL — An initial photographic image, or sound recording — whether photographic, magnetic or on disc — as opposed to some stage duplication thereof. Cumulative degradation in duplication and reduplication sets the original apart as a prime source of reference in judging fidelity of a reproduction.

ORTHOCHROMATIC FILM — Black and white film emulsion which is sensitive to blue and green only.

OUT TAKES — Familiarly called "outs," they are shots, or takes, that have been taken from the body of the film in one of the editing stages, and will not be found in the final version of the film.

OVERCRANK — The adjusting of the camera so that it will take pictures faster than the constant speed that a projector projects them. When projected the movement filmed is thus slowed down. "Slow motion" is the more popular term for "overcrank."

PANCHROMATIC FILM — A black and white film with an emulsion sensitive to all colors of the visible spectrum.

PAN SHOT — Also called "panning," refers to the horizontal movement by the camera, usually from the pivotal point of a tripod.

PARALLAX — A displacement of an image as seen by the independent view finder in relation to the image as seen through the lens. This problem, when discovered, must be corrected.

PARALLEL CUTTING — (See **CROSS CUTTING).**

PERFORATIONS — Precisely spaced holes along one or both edges of all motion picture film, used to pull the film through cameras, projectors and printers.

PERSISTENCE OF VISION — The phenomenon of the eye retaining for a short period of time the image just seen provides the best explanation of how a series of individual pictures on a strip of film being run through a projector, are seen as a continuous picture without flickering. The illusion of movement is thus created in the viewer's brain.

PHONE PLUG — An audio connector having a ¼ inch diameter shank of sleeve. Widely used as an earphone connector.

PHOTOFLOODS — A type of light bulb in which a high voltage goes through the filament boosting the light output and color temperature, but shortens the life span of the bulb itself.

PIEZO ELECTRIC MICROPHONE — A type of microphone that utilizes a piezo electric element connected to a diaphragm. A voltage is generated by the element proportional to the sound pressure level at the surface of the diaphragm.

PITCH — The distance between the leading edge of one perforation and the leading edge of the next, along the length of film. In sound, it is the subjective quality of a sound which determines its position on a musical scale.

PIXILATION — The illusion of movement of static elements achieved by manually moving the objects and then taking or exposing one single frame of film of the successive positions.

PLUS LENSES — Lenses that are made in strengths of 1, 2, 3, 4 and 5 diopters (although higher diopters are available) that are designed to fit the front of an existing lens, and allowing for the filming of very close items. Also called "close lenses."

POST FOGGING — A method of reducing contrast of some films after the film has been exposed, but not developed, by a weak and even light which causes a slight overall "fogging." It affects the shadows more than the highlights of the picture, reducing the contrast. This process can be accomplished with only some films. Also called "flashing the film." (See **FOGGING.)**

POST PRODUCTION — That period of time in the production of a film when all shooting requirements are out of the way. This period is occupied by editing, scoring, color and sound corrections, and credits.

POST-RECORDING — Refers to a sound recording made for a film after completion of principal photography.

PRE-AMPLIFIER — An amplifier used in a portion of an audio circuit where the signal voltages are very low. A pre-amplifier would "pre-amplify" the signal to a level where mixing, equalizing or further processing of the signal can be accomplished without deteriorating the signal. A common use is in a microphone circuit (e.g. microphone pre-amplifier).

PRESSURE PLATE — A part of the film gate in a camera, projector or optical printer that presses the film firmly against the aperture plate during operation.

PRE-RECORDING — Refers to a sound recording for film made prior to principal photography.

PRESENCE (auditory) —When listening to a recording, if the quality is such that one has the impression that the sound source is present in the room, there is presence in the recording. It is a series of auditory cues, such as, room

ambience (noise) and tonal quality.

PRESENCE REGION (voice) — This is the region in the human voice centered around 3000 HZ, where the absence of these frequencies would have a marked effect on the intelligibility of the voice.

PRIMARY COLORS OF LIGHT — The three primary colors, red, blue and green, can be mixed to produce all other colors.

PRINTER — (See **OPTICAL PRINTER).**

PROCESSING — All the chemical and physical activities necessary to convey a "latent image" into a satisfactory film picture.

PUSHING — Many films can be pushed one stop amounting to an increase in the effective film speed by a factor of two. In processing, the film is pushed by allowing it to remain in the developer for a longer than usual period of time.

Q AND D — A derogatory abbreviation for a type of film called "quick and dirty."

QUARTER TRACK — On ¼ inch magnetic tape, a quarter track recording utilizes a track with a nominal width of .043 inches (43 mils). Four such tracks may be equally disposed across the ¼ inch tape.

QUARTZ LIGHTS — The more popular name for tungsten-halogen lights, whose largest advantage is the output of a steady color temperature.

RAW STOCK — Film stock that has not been exposed or processed.

REFLECTOR — A light-reflecting surface used to redirect light. In a studio light unit, the reflector is mounted as a unit with the bulb and may be moved back and forth, directing the light. Mounted on a board, and depending on the surface, it can redirect sunlight. As such, it is an accessory of grip equipment.

REGISTRATION — A term referring to the positioning of the film in the aperture gate so that each frame has the exact and correct position for filming and projection.

REGISTRATION PIN — That part of the intermittent mechanism that secures the steadiness of the film by engaging the perforation during the period of exposure. Usually found in the more expensive cameras.

RELEASE PRINT — A composite print, made in projection synchronism for general distribution. The release print is made after the approval of the "answer print" or "first trail composite print" as it is sometimes called.

RE-RECORDING — (See **DUBBING).**

REVERBERATION TIME — The time required for a sound in an enclosure to decay to a value one millionth of its original intensity or decrease 60 db.

REVERSAL PRINT — A print made on a reversal material.

REWINDS — Geared device for rewinding film. Can be manual or electric.

ROUGH CUT — Roughly edited film at the "work print" stage. Finer changes can be made before the "fine cut" stage.

RUSHES — (See **DAILIES).**

SCRIM — A lighting accessory made of wire mesh, spun glass, silk or plastic translucent materials, which can be positioned in front of a light source when attenuation or diffusion of light is required.

SCRIPT — A set of written specifications for the production of a motion picture.

SENIOR — A focusable studio lamp with a Fresnel lens and a 5,000 watt capacity and a moveable reflector.

SENSITOMETER — An instrument in which a strip of film is exposed to a series of light intensities in logarithmic steps, which will produce corresponding densities when the film strip is developed.

SENSITOMETRY — The science of measuring a film's emulsion sensitivity to light, and of evaluating the related process, such as development.

SENSITOMETRIC STRIP — The film test strip used in a sensitometer, which will help to establish a proper developing time for a given emulsion.

SEQUENCE — A series of shots characterized by inherent unity of theme and purpose.

SHOT — A single run of the camera, and the piece of film resulting from such a run.

SHUTTER — The mechanical device that shields the film from light at the aperture during the film movement portion of the intermittent cycle. A similar device in a projector cuts off the light during the time the film is moving, from one frame to the next, in the aperture. Another meaning is an accessory of grip equipment that looks like a louver window, which casts a lined shadow when placed in front of an off-camera light source.

SIBILANCE — High frequency sounds produced by the voice with a hissing effect. The letters "S" and "Z" and

combinations of "SH," "ZH" and "CH" are typical sibilant sounds.

SILVER HALIDE — The light sensitive silver compound used in photographic emulsions. Some compounds used are silver bromide, silver fluoride, silver iodide and silver chloride.

SINGLE SYSTEM — This recording system implies that the recording of the audio information is made directly on to the same film base as the visual image, at the time of filming. The audio recording could be in the form of either a magnetic or optical sound track.

SLOW MOTION — (See **OVERCRANK).**

S.M.P.T.E. — The accepted abbreviation for the Society of Motion Picture and Television Engineers.

SPECTRASCOPE — A machine used for analyzing lights to determine what colors of the spectrum may be strong or weak.

SPECTROGRAM — A graphic representation of the relative color sensitivity of a photographic emulsion. As set forth by film manufacturers to describe the characteristics of their films, wedge spectograms are usually arranged in strip form, with the horizontal scale graduated, left to right, in wavelengths (millimicrons), the shorter wavelengths at the left. In the vertical scale indicates the relative sensitivity of the emulsion to light of that particular wavelength. Sometimes called "Wedge Spectogram."

SPLAYS — These are used in recording studios to control the acoustics during a recording. They may be in various configurations such as curved surfaced or flat surfaced and be acoustically absorptive or reflective.

SPLICER — Any machine or mechanism used for joining two pieces of film. A variety of types are available including tape, cement and electrical.

SPLIT REEL — A reel with a removeable side permitting the entry or removal of a film core, without the need of rewinding.

SPREADER — A triangular device, constructed of metal or wood, and used as a tripod base. The legs of the tripod are thus only allowed to spread as far as the "spreader's" size will permit. Sometimes called a "triangle."

STAGE PLUG — A type of heavy duty electrical plugging device to carry large amounts of amperage, found on most studio types of lighting units. Also referred to as "paddles."

STOCK FOOTAGE — Motion picture film of well-known locations or events containing classified types of background or atmosphere, held or offered for sale for use where appropriate.

STORY BOARD — A series of individual drawings representing the key situations of each shot in the scripted scenes.

SUPERIMPOSITION — Two scenes exposed on the same piece of raw stock. While normally done in the lab, superimposition can be done in some cameras.

SWISH PAN — A very fast pan movement of the camera, resulting in a blurred image. Sometimes used as a transition between sequences or scenes.

SYNC PULSE GENERATOR — This is a small AC generator which is mechanically coupled to the camera motor, generally a DC (battery operated) motor. When the camera motor is rotating with a frame rate of 24 FPS, the generator will produce a frequency of 60 HZ (50 HZ for European). If the camera motor deviates from 24 FPS, the resultant sync pulse frequency will change.

SYNCHRONOUS MOTOR (SYNC MOTOR) — A type of AC motor design that utilizes the power line frequency as the source of speed control.

SYNC PULSE — A timing reference relevant to camera motor speed. This sync pulse, or synchronizing signal, is recorded on ¼ inch magnetic tape on a separate track in conjunction with the audio track for use as a time reference when the audio is played back.

T-STOPS — Similar to the "F-Stop Numbers" only the "T-Stop" designations are arrived at by actual measurements of the transmitted light rather than the mathematical formula used for "F-Stops." On the lens body, or housing, the "T-Stop" designations are usually marked with a dot, adjacent or near the "F-Stop" involved.

TEN K — A focusable studio lamp with a Fresnel lens and a 10,000 watt bulb capacity.

THREADING — The placing of the film into the transport mechanism of a camera or projector. Also sometimes called "lacing."

THREE SHOT — A shot of the camera that contains three (3) subjects filling the scene area.

TILT SHOT — The pivotal movement of a camera in the vertical (up and down) manner. Sometimes incorrectly called "vertical panning."

TIMBRE — It is an instantaneous cross section of tone quality. It is the characteristic of a tone which depends on its harmonic structure.

TIMING — A preprinting lab function or process designed to select the printer light and color filters to improve the

densities and color rendition of the original footage and thus get a better print. Sometimes called "grading." The technician in charge is called a "grader" or "timer."

TRACK PLACEMENT — This refers to the physical location of a recorded sound track. The dimensions are given using the edge of the film or tape as a reference point and the use of a center line of the track relative to that reference.

TRACKING SHOT — (See **DOLLY SHOT).**

TREATMENT — A literary presentation, written in the first person, of a future film before a proper script is developed.

TRIANGLE — (See **SPREADER).**

TRIMS — Leftover pieces of film from the shots that were incorporated into the "work print." Trims should always be filed in case they are needed at a later date.

TROMBONE — A tubular device for hanging small studio lamps from the top of walls.

TUNGSTEN — A metallic chemical element used in electric lamp filaments.

TURRET — A device upon which two to four lenses can be mounted and affixed to the camera body, allowing the cameraman to make a fast choice of lens for the next shot, simply by turning the "turret."

TWO SHOT — A shot of the camera that contains two subjects filling the screen area.

ULTRAVIOLET — The range of wavelengths shorter than those in the visible spectrum, but detectable by the film's emulsion unless an ultraviolet filter is used to stop the radiation.

UNDERCRANK — The taking of pictures at a rate slower than they will be projected will result in very quick motion when the film is projected. This is known as "undercranking" or "fast motion."

UNI-DIRECTIONAL MICROPHONE — The field of sensitivity for a uni-directional microphone is in the front. As one moves off axis from the front of the microphone a reduction in level and change in quality will be encountered. This characteristic is sometimes referred to as a cardioid pattern.

VOLTAGE — Electromotive force, or difference in electrical potential, expressed in volts.

WALK THROUGH — a rehearsal on the set when the director describes the scene in detail to the actors and crew. Stand-ins are often used in place of the actors for this operation.

WATTAGE — A measure of power consumption.

WET SPLICE Often called "cement splice" and/or "lap splice." In the cement splice, the ends of the two pieces of film to be joined together, overlap slightly. The film cement is used to partly dissolve the base (the emulsion must first be scraped off the portion of film which overlaps) so that the results are literally a weld.

WILD MOTOR — A term describing any camera motor that does not run at an exact synchronous speed.

WIRELESS MICROPHONE (RADIO MIKE) — This type of microphone is generally a miniature microphone attached to a frequency modulated radio transmitter. A receiver is located at the recorder to pick-up the audio transmitted by the microphone unit. This allows the audio to be picked-up without the use of microphone cables connecting the microphone to the recorder.

WORK PRINT— A print of a film, usually comprised of the "dailies" that goes through the "assembly stage," "rough cut," and "fine cut." It is also used to guide the negative cutter when conforming the original.

ZOOM, ZOOMING — An apparent motion of a camera towards the subject as a shot progresses which is achieved through the use of a "zoom" lens. The shot appears to make the information in the frame come closer than the frame before, while excluding the rest of the frame in the process.

ZOOM LENS — A lens constructed with a continuously variable focal length over a certain range, allowing for a change of subject magnification during the shot.

PART IV - APPENDIX

APPENDIX A: OPTIONAL EXERCISES

What follows, in two parts are 14 optional exercises an individual or team of students might follow as practical exploration with the CAMERA and LIGHTING. There is value in keeping a record of the basic steps in preparing each exercise to compare with the results of the test film footage.

1. THE BASIC CAMERA

Elements: Threading
Focusing Ground Glass
Operation Instructions (Controls)
Basic Camera Movements
Hand-held Camera

2. PLUS-X FILM

Elements: Sharpness
Contrast
Grain

3. DOUBLE-X FILM

Elements: Sharpness
Contrast
Grain

4. COLOR FILM

Elements: EF
ECO

5. RACK FOCUS

6. MACROPHOTOGRAPHY

Elements: Macro Lenses
Diopters

7. LENSES AND PERSPECTIVE

8. THE BASIC LIGHTING SET-UP (LIGHTING RATIOS)

Elements: Key Light
Fill Light
Back Light
Set Light

9. SINGLE SOURCE MOTIVATION

Elements: Use of One Light
Blending Lights

10. GROUPS OF PEOPLE

Elements: Use of One Light
Front Cross Key
Back Cross Key

11. THE MOVING SUBJECT

Elements: Alternate Key
Blending

12. MOOD LIGHTING

Elements: High Key
Low Key

13. DIFFUSED AND SPECULAR LIGHTING

14. EXTERIOR LIGHTING

Element: Use of Reflectors

Appendix B: Blank Breaking Down Form

PICTURE: PAGE NUMBER:

SCENE	NUMBER	DESCRIPTION	SCENE	NUMBER	DESCRIPTION

Appendix C: Acknowledgements And Credits

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PART V - BIBLIOGRAPHY/RECOMMENDED READING LIST

By no means should this Bibliography/Recommended Reading List be considered exhaustive, thorough, or for that matter complete. What it does recommend, is a list of potentially useful books on or about film-making that have one or more worthy chapters or sections. The complete and accurate book on "filmmaking" has yet to be written. It is doubtful that it ever will.

It should be pointed out that many books on filmmaking, including almost all those listed here, disagree with one another on "a this" or "a that" point. To be sure, many of them disagree with one or two things you may be taught. Most disagreements result from technology over taking editorial deadlines, but they do exist neverthless. The film student should always approach a reading list with these thoughts in mind.

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Boulevard; Hollywood, California 90028. A year's subscription (6 issues) costs $4.00; a single issue $.75.

"AMERICAN CINEMATOGRAPHER" - A monthly journal, published by the American Cinematographers Society. For subscription, write to: The American Society of Cinematographers; 1782 North Orange Drive; Hollywood, California 90028. A year's subscription (12 issues) costs $9.00, a single issue $1.00. Non-members may subscribe.

"FILMMAKERS NEWSLETTER" - Printed 11 times a year by SunCraft International, Incorporated; 41 Union Square West; New York, New York 10003. A year's subscription costs $7.00, a single issue $.75. (The months of June and July are in one combined issue).

"JOURNAL OF THE AUDIO ENGINEERS SOCIETY" - Published monthly except January/February and July/August at which time it is printed bi-monthly, by the Audio Engineers Society; 60 East 42nd Street; New York, New York 10017. Free to members, subscription rate is $30.00 per year for non-members.

"JOURNAL OF THE SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS" - Printed monthly by the S.M.P.T.E., Incorporated. For subscription, write to: The Society of Motion Picture And Television Engineers; 862 Scarsdale; New York, New York 10583. A year's subscription is $30.00 for non-members and $27.00 for members. A special rate of $12.00 a year is available to students. Single issues are $2.50 to everyone. Special two part editions are $3.00 to everyone.

"SUPER-8 FILMMAKER" - Printed 11 times a year by SunCraft International, Incorporated; 41 Union Square West; New York, New York 10003. A year's subscription costs $7.00, a single issue $1.00. (The months of June and July are in one combined issue).