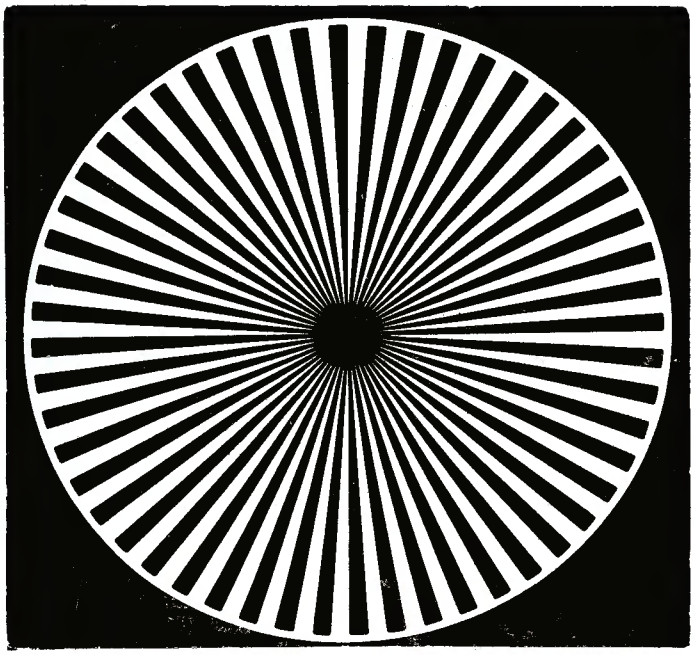

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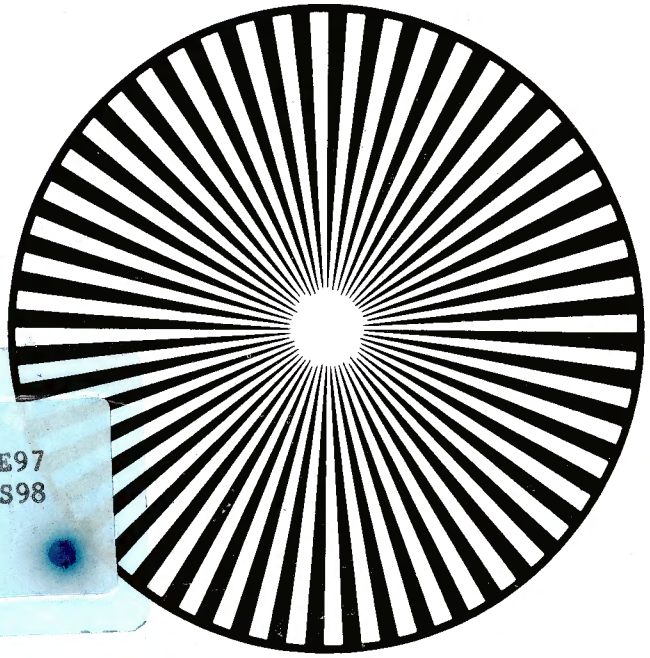

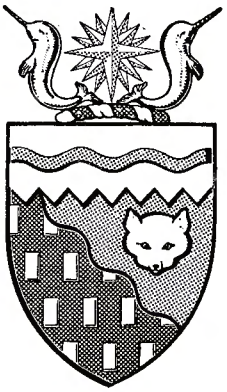

AUDIO - VISUAL SERVICES
HANDBOOK

Curriculum Section
EDUCATION DIVISION
Department of Northern Affairs
and National Resources

OTTAWA
1966

FOREWORD

The Audio-Visual Materials Service is one of the most widely extended curricular services in the schools operated by the Education Division of the Northern Administration Branch. The organization and functioning of this service is explained in this Handbook for northern teachers.

This Handbook has been prepared at the request of a number of experienced teachers. It should prove helpful to all teachers in our schools but especially to new teachers joining the northern school service. It is the first in a series of like publications on Audio-Visual instruction.

This Handbook was prepared by Miss Maxine E. Sutherland of the Curriculum Section. Miss Sutherland invites comments and suggestions for its improvement.

D.W. Simpson,
Chief, Education Division

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Audio-Visual Services From The Curriculum Section

CHAPTER I

Audio-visual instructional materials include films, filmstrips, film loops, recordings, models, picture sets, slides, dioramas, friezes, charts, tapes, flannel boards, magnetic boards, radio, puppets, realia and such like, used as part of the learning experience. Audio-visual instructional materials are previewed in the Curriculum Section, evaluated, correlated with school and community programs, teacher training programs, and recommended to the Education offices of the Arctic District and the Mackenzie District for purchase or for rental. The Curriculum Section normally does not circulate audio-visual materials to the schools. Nevertheless, where it is proposed that new instructional aids undergo an experimental tryout in the schools, the Curriculum Section then works directly with committees of teachers and supplies the materials.

The Curriculum Section keeps in close contact with the National Film Board, the Queen's Printer and with companies which manufacture and sell audio-visual materials and equipment. In this way the Section is not only kept well informed about materials currently available but also about materials in production or even at times in the planning stage. Membership is held in the Canadian Film Institute, the Canadian Audio-Visual Association, the Education Film Library Association and the Department of Audio-Visual Instruction of the National Education Association. The Curriculum Section subscribes to the publications of these associations and the member of the Curriculum Section responsible for the development and extension of all audio-visual materials and services usually attends the Annual Conferences of these professional bodies.

Titles of new films, filmstrips or other new audio-visual materials likely to be of use in northern schools, as well as short descriptions about these, are brought to the attention of the Curriculum Section by representatives of film companies, the National Film Board, by district and regional school superintendents, by principals, teachers, administrators and other interested persons. New productions in the audio-visual field are also described in the literature of the professional associations. When a new title is released for unrestricted use (there is often a theatrical restriction up to six months or more on new films) the Curriculum Section obtains a copy for preview purposes. Most film companies grant the Curriculum Section free preview privileges.

New titles (or revised copies of older ones) are previewed by the audio-visual specialist and by at least one other appropriate subject area specialist in the Curriculum Section. Teachers from northern schools visiting Ottawa are always asked to sit in on preview sessions. Very frequently too, new titles are sent to selected schools for evaluation by individual teachers or by local or district curriculum committees. Teachers attending curriculum workshops spend a great amount of time previewing and evaluating all kinds of Audio-Visual Aids.

When a new title has been selected and evaluated for its correlation with and usefulness in northern education programs it is then listed on an Authorized-for-Purchase List which is the buying guide for the district Education Office. Audio-visual instructional materials are recommended for purchase either for inclusion in the permanent deposits maintained in all schools or for circulation within the Education District.

Copies of films on various aspects of teacher education are usually retained in the Curriculum Section for use at teachers' orientation courses, mid-winter regional conferences for teachers, and other forms of in-service training.

As a means of involving as many as possible in the selection, evaluation and better use of all audio-visual materials in the schools, local or regional committees of teachers and other interested persons are organized in northern settlements. The community teacher responsible for services in the Curriculum Section is ex-officio a member of all such committees. Members of audio-visual committees and the audio-visual specialist in the Curriculum Section are encouraged to correspond with one another directly. Copies of such correspondence for information purposes are always sent to the appropriate district Education Office.

CHAPTER II

Audio-Visual Services From The Education Offices Of The Mackenzie District And The Arctic District

Audio-visual instructional materials purchased by the district Education Offices are selected from the Authorized-for-Purchase list compiled by the Curriculum Section. Filmstrips and picture sets for permanent deposit in schools usually have priority when purchases are made.

The district offices assume responsibility for the circulation of films, filmstrips, tapes and the like to the schools. Schools in the Mackenzie Education District are serviced from Fort Smith; schools in the Arctic District receive their materials from the Arctic Education Office at Ottawa. At each education office there is a community teacher in charge of this work. The district office accepts responsibility for cleaning and repair of films. ★

★ Films purchased from the National Film Board of Canada by Departments of Government cost about $12.50 for ten minutes of black and white and $37.50 for ten minutes of colour. Filmstrips from the National Film Board cost about $1.50 for black and white and $2.50 for colour. Films purchased from commercial companies cost from $50.00 to $60.00 or more for ten minutes of black and white and from $80.00 to $120.00 or more for ten minutes of colour.

The district Education Offices purchase audio-visual equipment for the schools with the approval of the Education Division. The following items of equipment have been approved:

1. Basic audio-visual equipment for each school as of April 1, 1966

   one 16 mm movie projector
   one projection screen
   one tape recorder
   one record player
   one radio
   two individual filmstrip viewers
   one two hundred capacity filmstrip cabinet
   one mobile projection table and power unit
   one 35 mm filmstrip projector with slide attachment

2. Additional audio-visual equipment for schools

   (a) one 16 mm movie projector for each additional 15 classrooms or fraction thereof.

   (b) one projection screen for every six classrooms over eight.

(c) one tape recorder for each additional 15 classrooms or fraction thereof over 15 classrooms.

(d) one record player for every six classrooms over eight.

(e) two individual filmstrip viewers for each classroom.

(f) one two hundred capacity filmstrip cabinet for each additional 15 classrooms or fraction thereof.

(g) one mobile projection table and power unit for each additional 15 classrooms or fraction thereof.

(h) one filmstrip projector, minus slide attachment for every six classrooms over eight.

(i) one overhead projector (opaque) for each:

(i) secondary school
(ii) pre-vocational school
(iii) elementary school of 15 classrooms

This list is not an exhaustive one. It will be amended when the need arises.

CHAPTER III

The Teacher and the Use of Audio-Visual Instructional Materials

The use of audio-visual materials in instruction is one of the most dramatic means of editing or transforming the learning environment of the pupil. These aids, with their intensive single or multiple sense appeal, are among the most potent activators of the learning process. Used properly these instructional materials provide wider and clearer understanding and enrichment in almost every learning experience. Learning experiences involving the use of audio-visual materials of instruction may take place in various situations; the school auditorium, the classroom, the group which is part of a class, the teacher-pupil remedial and enrichment meeting, the one (pupil) teach one situation, and the individual pupil working by himself.

The teacher needs to be very flexible in planning viewing arrangements and the use of equipment and materials if these are to be as effective as they could well be in the learning experience.

The auditorium situation lends itself to the use of the large screen or the multiple screen used for showing films, filmstrips, slides and overhead projectuals. The content of materials used should be of general interest to viewers. Topics such as safety, health and hygiene, school regulations, sports, travel and recreation - to mention only a few - are often included in auditorium work. The auditorium situation probably reaches its maximum use when classes are organized for team teaching.

The classroom situation involves the whole class and is similar to the auditorium situation in that the materials presented should be of interest to the class as a whole, not just to part of it, thus robbing many of the pupils of time which could be better spent.

The small group situation is most conducive to effective teaching when part of a class or larger group is involved. Chairs and desks can be arranged in half circles so that pupils may listen to tapes, recordings or stories or watch a flannel or magnetic board demonstration, a puppet show, or take part in the making of an experience chart. An easel should be available to display pictures, to support the experience chart pad, the flannel board or the magnetic board. A small chalkboard is a most useful piece of equipment for the chairman of the group and for the teacher.

The small group seated at a table or at desks pushed together can with the use of a small daylite screen or a shadow box, view slides, filmstrips, 16 mm and 8 mm films. The group at the table may be engaged in such activities as making a frieze, a model, a time-line or a diorama or doing map work or arranging models and realia. Classroom corners may be used as places where the group or individual pupil may go to listen to tapes, records, the radio or to arrange models, dioramas and puppet shows.

The teacher-pupil situation relates to periods of individualized instruction. Slower pupils need help and brighter pupils need encouragement to make full use of their special abilities. In the early grades a slower pupil may need further explanation on how to make his puppet, how to do paper folding, make cut-outs or models, or he may just want to show off what he has made. Brighter pupils can help the teacher and the group in the planning and making of dioramas, models, puppets, charts, flannel board materials and such like.

The one (pupil) teach one situation could be part of the class routine when the pupils have completed the work in hand. Partners turn desks to face each other and engage in drill practice using flash cards, word games, number counters and the individual flannel board.

In the individual pupil situation, the pupil can use the preview filmstrip viewer, the slide projector, the picture file, the tape recorder, the flannel board or the magnetic board. He may visit classroom displays or go to the activity table.

In using audio-visual materials in teaching the various subject areas of curriculum the resourceful teacher will immediately think of how to make the most of the equipment available and of needed equipment easily made.

A picture file is an on-going activity in which pupils and teachers join to collect, mount, classify and file pictures ready for reference. A cardboard box will do for a makeshift file and brown paper will do for mounting the pictures. This type of picture file is expendable. When pictures become torn, dirty or otherwise unusable they should be thrown out and replaced.

A bulletin board is necessary for current events, announcements and display.

Frieze or brown paper can be stretched out on the floor, wall, chalkboard or table and pictures can be painted on this to illustrate units of work, stories or a local happening.

Ordinary cardboard boxes with the sides cut down a little and the inside painted black make good shadow boxes for use at a table for daylight viewing of filmstrips, films and slides.

Small size flannel boards can be made for individual pupil use.

Pupils should be encouraged to collect all kinds of counters for number work. Pebbles, bottle caps, nails, buttons, beads, spools, etc.

A field trip can be planned when it is a desirable part of the learning experience.

The mobile projection table can be used to transport materials and equipment from place to place or as a storage place.

New teachers will wish to acquaint themselves with the permanent deposits of filmstrips and picture sets in the schools. Lists of what should be on hand are available from either the district Education Offices or the Curriculum Section. Borrowed filmstrips should be returned to the district office for replacement.

A good teacher will make use of as many kinds of appropriate audio-visual materials in as many different learning situations as would be necessary. The use of Friday afternoon periods as film time for all groups and ages will be avoided as it is a misuse of audio-visual equipment and materials.

In the subject areas in the school curriculum audio-visual instructional materials can be used to introduce new learnings or to review or reinforce what has already been learned.

The introduction to a unit of work in Social Studies is perhaps best accomplished through the use of a set of pictures, a series of slides, a set of maps, a set of filmstrips, realia or a film. Any of these materials can serve as a preview to the unit, a source of information during the development of a unit and as a review of the end of the unit.

During the development of the unit the making of a time-line, a picture frieze, a series of charts, maps, or a diorama, provide on-going activities. The use of the globe or globes, the most accurate form of map work, will be an on-going activity in the development of almost any Social Studies unit.

A field trip can upon occasion and with the proper organization be a very important learning experience during a Social Studies unit.

Tapes, recordings and radio programs may also be found to correlate with Social Studies themes.

When pupils are presenting reports to their class or group, films, filmstrips, slides or picture sets can be used to illustrate the report.

Units of work in the Science and Health areas are worked out in a similar way to those in Social Studies. Science projects lend themselves to the use of models, realia, and the 8 mm film loop especially. Field trips, when these can be arranged, have an importance all their own in good science teaching.

In Language Arts, the experience chart made by the teacher and pupils is a must for pre-reading and for promoting oral expression. The flannel board and puppets are excellent for story telling and for oral language work.

Flash cards provide phonetic drills and games at odd moments in the pupil to pupil situation.

A tape recorder is a requirement for listening exercises, speech correction and speech development.

In beginning arithmetic the magnetic board, because of the facility with which the objects on it can be moved about, is one of the best teaching devices for number lessons and activities. Models, number-lines and boxes of counters all help to form clear cut concepts.

The Teacher and the Care of Audio-Visual Equipment

General

The useful life of a 16 mm film is of prime importance to every projectionist. It is inseparably associated with efficient film showing. If the film is in poor condition the showing will be poor. The circumstances that determine film condition may involve handling, storage and projection.

A PRINT IN SERVICE IS NO BETTER THAN THE WORST TREATMENT IT HAS RECEIVED. There is no single beneficial act, such as adjustment of equipment, humidifying, cleaning or surface treatment before handling that alone will cure all film ills. Longer print life can be achieved ONLY BY PROPER TREATMENT OF THE FILM BY ALL WHO HANDLE IT.

It is important to note that to a large extent the ability of projectionists may be judged by the condition of the film they have been projecting. Scratched film indicates improper cleaning of the projector or film; torn or stretched film perforations indicate improper use of the projector, etc.

Kinds of Film

a) Green Film

In motion picture processing laboratories film has to pass through a variety of solutions. A small part of the moisture involved clings to the emulsion for perhaps a month, depending on conditions, after the film is said to be "dry". While this residual moisture is present, the film is referred to as being "green".

"Green" film is soft and its surface is easily scratched. During projection tiny bits of the emulsion separate off, accumulate at the aperture and pressure plate and harden in the heat of the lamp. This accumulation seriously impedes film travel and may cause deep scratches which appear as "rain" at subsequent showings. Generally the projector becomes noisy and "chatters"; it may even stall.

This accumulation from green film is the most frequent cause of pictures bouncing up and down on the screen, as though trying to get in and out of frame.

Great care must be exercised in handling and projecting green film. It may be necessary to stop and clean off the projector gate every 300 or 400 feet, or even oftener.

As time passes, generally within a month if the air is normally dry, the film gives up its residual moisture and ceases to be green. The emulsion becomes harder. Emulsion particles will be less likely to separate from the film. In the properly hardened state the film passes freely through the projector, providing optimum showing. A properly hardened film is NOT brittle; it is pliable. Over dryness destroys this pliability and can be a greater menace than greenness.

b) Brittle Film

Through improper storage or repeated projection a print will lose too much moisture and become brittle. This makes it susceptable to breakage or damage to the perforations. Overdry film has a tendency to curl because of the contraction of the emulsion. This may cause uneven focussing.

c) Normal Film

With time, green film becomes conditioned, gives up its excess moisture, hardeness, etc. In order to achieve this, green prints are usually stored for a short time before being issued.

d) Revision of Film

Revision of film means the inspection of the film by rewinding it slowly by hand on a rewind machine to insure that the film is clean and free from bad splices and torn sprocket holes. During revision, the reviser wears a pair of cotton gloves and keeps his fingers in contact with the edges of the film. Bad splices and torn sprocket holes are easily detected in this way. On completion, the film must be correctly wound ready for showing.

Storage

Prints must be stored in a room where the air is not excessively dry. High temperatures must also be avoided. Dry, hot air leads to dry, brittle film which is liable to buckle, wear and curl.

Conditions approaching perfection are when the temperature lies between 70 and 75 degrees Fahrenheit and relative humidity is between 40 and 50 per cent. Storage at lower temperatures does no harm to the film provided it is allowed to warm to this temperature before handling.

Prints should be kept in the cans in which they are issued. A pliable film which shows no disposition to crack or curl is in good condition; keep it that way. Excessive dampness leads to stains, mildewing of the emulsion, layers of the reel sticking and a variety of warping and buckling.

Packing and Shipping

When shipping film, pack it with great care. Never ship a reel without having it in its can. Always see that the can is in a special film shipping case or is protected by a corrugated cardboard carton. Label the package "FRAGILE - HANDLE WITH CARE" and make sure it is properly addressed. See that films do not get wet; a drop of water will ruin many feet. See that films for shipment are not too loosely wound.

Factors Causing Short Print Life

a) Dirty Projector

If the film track of the projector is not kept free of dirt it will scratch the film. If dirt is allowed to collect and harden on the sprocket teeth, they will stretch the sprocket holes of the film. Dirty idler rollers will stop revolving and scratch the film. To prevent damage of this nature, the film tract, especially the gate (the section containing the aperture plate and the pressure plate) must be cleaned prior to each showing.

b) Burrs or Scratches on Projector Gate

Never attempt to remove emulsion deposits from the gate by scraping with a metal instrument as this will burr or scratch the smooth metal surface. Once this happens, accumulations of emulsion and dirt collect and harden in the groove made by the burr or scratch. These cause further scratching of the film. When scraping the gate becomes necessary, always use a piece of bone or wood - NEVER METAL.

c) Emulsion Deposits

When emulsion forms deposits on the gate, it decreases the pressure on the film over the aperture. This causes the projector to make a "chattering" sound and the picture may become jumpy on the screen. When this occurs, the machine must be stopped and the gate cleaned. This is common with green film. If these deposits are not removed they will harden from the heat of the projection beam and scratch all the rest of the film that is run through the projector.

d) Improper Threading

Improper threading and loops which are too large or too small is one of the largest sources of film damage. If the loops are too large the film will touch places it is not intended to touch and the film will be scratched. If the loops are too small to take up the jerk of the intermittent action of the shuttle they will be lost entirely and the consequent pulling of the film through the gate and across the shuttle teeth will cause nicking and tearing of the sprocket holes, breaking of the film and possibly complete destruction of the print. If proper engagement of the sprocket holes of the film with the sprocket teeth is not made, the sprocket teeth will cut out new holes in the film and make it useless for further projection. In order to avoid unnecessary damage of this nature, the projectionist MUST make sure that the film is properly threaded before beginning to show the picture. On the Bell and Howell projection, the hand wheel drive may be given a few turns and the film watched as it passes slowly through the feed mechanism. On the RCA projector, the only way to check threading is to turn the motor switch on for a few seconds while the leader of the film is still in the feed mechanism. If a bit of leader is damaged, it can be easily replaced, but the film with the picture cannot be replaced without considerable expense.

e) Excessive Tension on the Feed Reel

Too much tension here will cause the teeth of the feed sprocket to stretch and eventually tear the sprocket holes. If there is a braking mechanism on the feed reel, it will not be touched by projectionists, but by a qualified service man only. If the feed reel is belt driven, care must be taken to see that the driving belt is placed so as to drive the reel in the proper direction. On both the Bell and Howell and RCA projectors, both the drive belts are put on the reel spindles without any twist. If the belt to the feed reel is twisted, it places a progressively increasing tension on the reel as the film comes off the reel, causing stretched or torn sprocket holes at the feed sprocket.

f) Bent Reels

When a bent reel is used as a feed reel, it may cause the film to weave out of the feed sprocket, resulting in torn sprocket holes or in new holes being punched in the film by the sprocket teeth. If it is used as a takeup reel the film may run over the edge of the flange, resulting in torn or creased film. Bent reels must be straightened or replaced.

g) Operating the Projector Unattended

Even though the projector has been perfectly threaded and is in perfect condition, TROUBLE MAY OCCUR AT ANY TIME. Therefore a projector must not be left unattended while it is operating. If an unusual sound develops or the image on the screen begins to jump, the operator must be ready to stop the machine immediately. Check the loops. If these are the proper size, check the threading.

h) Loosely Wound Reels

It is very bad to ship films in this condition. Vibration and rough handling will cause the layers to rub against each other causing scratches in the emulsion which appear as horizontal lines in the picture.

i) Cinching

Holding the reel in one hand and pulling on the loose end of the film with the other hand to tighten up a reel that has been loosely wound is known as "cinching". This causes friction between the various layers of film and the resulting scratching of the emulsion produces the effect of "rain" on the screen. If the film is loose, it must be rewound to make it proper.

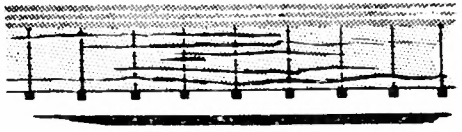
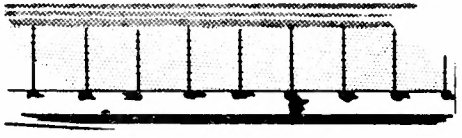
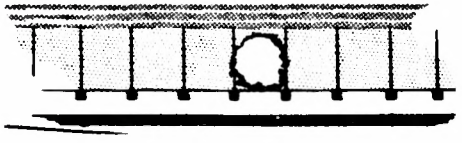
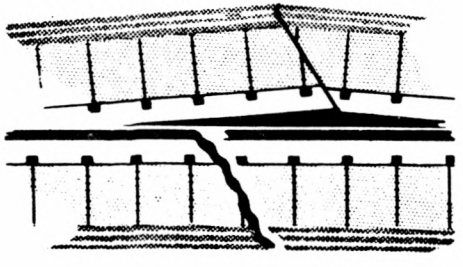
j) Improper Rewinding

If the reels are not properly aligned when rewinding, the edges of the film will ride against the reel flange, resulting in cuts or nicks on the film. A bent reel or one with sharp edges will cause the same type of damage.

k) Improper Film Storage

Films that are improperly stored will become too dry or too moist. To store film so that it will remain in normal condition, the temperature of the room should be constant between 40 and 75 degrees. The relative humidity should be about 50 per cent. If a film is beginning to get too dry, a moist blotter may be placed in the film can occasionally. Care must be taken that the moist blotter does not make an actual contact with the film. Films must be stored in their cans at all times.

FILM DAMAGES & HOW TO PREVENT THEM

DAMAGES	CAUSES	PREVENTION
SCRATCHES 	1. Dirt particles on rollers, film gate, or film channel. 2. Letting loose film fall on floor. 3. Rewinding film improperly. 4. Tightening film after it is wound. 5. Damaged reels. 6. Cleaning film improperly. 7. Improper threading.	Your projector should be cleaned and properly lubricated. Film should be treated with care using rewinds and gloves to insure longer use. An important rule is <u>not</u> to tighten film on reel.
DIRT 	1. Dirty projector. 2. Careless handling of film surface. 3. Continued use without cleaning. 4. Improper or careless storage.	Clean your film often and keep it stored away on a good reel, and always in a can.
TORN SPROCKETS 	1. Dry film. 2. Loss of film loop. 3. Jerky movement of take-up reel. 4. Worn sprockets. 5. Too much tension on gate or take-up reel. 6. Shuttle worn or out of adjustment. 7. Improper threading.	Synchronization while projecting will usually prevent most of your torn sprockets, although proper threading and readjusting shutter is essential in film care.
BURNS 	1. Faulty or sticky fire shutter. 2. Stopping projector for single frame showing. 3. Projector running too slowly.	A very important procedure in preventing "buring holes" is to shut the lamp before stopping your projector. And be sure to examine your fire shutter and adjust speed of projector.
CREASES AND BREAKS 	1. Stepping on film. 2. Loose film on floor. 3. Careless rewinding of film. 4. Pinching film while closing film can. 5. Sudden jerk on take-up 6. Loss of loop. 7. Film carelessly placed in film channel. 8. Poor film splice.	This is usually caused by permitting your film to fall on the floor. Always splice your film carefully, tie the film down by placing a piece of tape on it.

Setting Up The Equipment

Preliminary Considerations

Before your project, check over the equipment you will be using. This will enable you to determine if anything is missing, the state of cleanliness of the equipment, and it will enable you to plan ahead. Do this as far ahead of the time for the actual showing as you can.

Setting Up The Screen

The screen should be placed in a position which takes into consideration the positions of the audience and the projector. The screen should not be in the path of stray light or where gusts of wind or circulating air can strike it. When open it acts as a sail and only a slight breeze is required to topple it. If it is used outdoors, always use stays to steady it. Never move the screen once you have opened it. If you must move it, close it up first.

Most screens are similar in construction and the following sequence to follow in setting up the screen is recommended:

(a) Select the location of the screen.

(b) Release the tripod base and allow the legs to lock into place. Many screens are so designed that the weight of the screen holds the legs out in the proper position. Make sure that the rolled screen faces the audience and the projector.

(c) Release the sliding vertical screen support from the case of the rolled screen and pivot the case until it is parallel with the floor.

(d) Lower the sliding vertical screen support to its lowest position and gently draw out the screen from its roller. Hook the screen to the vertical support.

(e) Raise the vertical support in short easy stages until the desired screen size is obtained. Never force a screen if there seems to be something jammed. It is easily damaged.

The screen should be placed so that the bottom is slightly above the heads of the audience. A good rule of thumb is to have the front row of the audience at least two screen widths from the screen and to have the back row not more than six screen widths from the screen.

Setting up the Projector

The projector should be placed on a sturdy stand. One of the factors which determines the size of the projected picture is the distance of the projector from the screen. To enlarge the size of the picture, move the projector away from the screen; to reduce it, move the projector towards the screen.

The location of the power outlet will determine to some extent the location of the projector. Spare extension cords can be useful in extending the position range. If you are forced to use a light outlet, make sure that you do not cut off the power to the projector when you turn out the house lights. This may be done by unscrewing the light bulbs until they go out. In such a situation, the projectionist should have a flashlight handy.

In setting up the projector, make sure that the line of projection is at right angles to the screen. Remove and attach the reel arms and connect the spring belts. On the Bell and Howell and RCA projectors the belts are NOT crossed. On some other projectors one or both of the belts are crossed.

Setting up the Speaker

Remove all spare cords, reels, etc., from the speaker case before setting it up. Make sure that the speaker cord is properly plugged into the speaker. Close the back of the speaker securely to avoid unnecessary vibration. Place the speaker on a sturdy stand. Do not place the speaker on a piano; there will be sound interference from the strings and sounding board of the piano vibrating in sympathy with the sound from the speaker. Make sure the cords are properly tied back at both ends.

The best location for the speaker is:

(a) Near the screen, and
(b) Above the heads of the audience and tilted downwards.

On some portable model machines, the speaker may be left on the projector for showing in small rooms or for previewing purposes. Two speakers are better than one, especially in a large auditorium where sound distribution is necessary to avoid "dead" spots.

When plugging the speaker cord into the projector, take care that the prongs of the plug are properly aligned with the holes in the socket. There is usually only one position in which the plug will go in. Forcing the plug into the socket will only damage the plug and perhaps the socket as well.

If a power speaker is used, plug it into the projector in the same way as the ordinary speaker is connected. The power speaker is plugged into an electric outlet as it contains a separate small "booster" amplifier. Turn on the switch and turn the volume control to its fullest extent. Then the volume is controlled from the normal controls on the projector.

Placement of Cords

Cords should either be completely out of the way or they should be obvious to the audience. They should be secured to the legs of the stands on which the projector and speaker are placed or to some other convenient solid article. They should NOT run under or near the screen or the lens of the screen. Cords should be kept away from radiators as excessive heat damages the insulation.

When securing a cord, double it and tie an ordinary overhand knot around the leg of the table, etc., being used as an anchor. Tighten the knot so that the cord does not slip down or come undone.

Placement of Audience

The audience should sit within the area mentioned in the Section "Setting Up the Screen". Provide adequate aisles for people to come and go. If possible, avoid aisles in the line of projection so that late comers and early goers do not block part of the picture when they move.

Make sure that the room or auditorium is adequately ventilated both before and during the showing. Reserve a definite block of seating for late comers, if possible. This will ensure a minimum of disruption when they arrive.

Threading

Preparation for Threading

After you have set up your machine and screen and run all your cords where you want them and have connected the cords, you are ready to prepare for threading the machine. There are four easily remembered steps to follow then. If you follow these steps in the order given here, you will see that they follow a natural sequence, and it will improve the showing you make after you have threaded the film. The four steps are:

a) Fill the Screen

Turn on the motor switch of the projector, and then turn on the lamp switch. You should have a large blob of light in the vicinity of the screen. Using the handle or crank on the machine you are using, raise the front end of the machine until the light is on the screen. You may have to twist the projector to one side to properly align it. Then adjust the focus until the edges of the blob of light are fairly sharp. If your projector and screen are the correct distance apart, the edges of the light area on the screen will fall just beyond the reflecting surface on the black edges of the screen. If this is not the case, move either the projector or the screen forward or back until you have the screen just filled with no light spilling past on the wall behind. Overshooting the screen with part of the picture on the wall behind is annoying to the audience and it is the mark of an inexperienced projectionist.

b) Focus

Focus the objective lens until the edges of the light are sharp and clear. You may have to slightly lower the projector to do this to bring the upper edge of the light on the reflecting portion of the screen. When you do this you will frequently see accumulations of hair and dirt on the edge of the aperture. This will remind you that the next step is to clean the projector.

c) Clean

Open the gate of the projector, after switching off first the lamp and then the motor. With the camel hair brush, clean the gate, remembering to brush the dust from both the aperture plate and the pressure plate. On the Bell and Howell projector, remove the pressure plate to clean it.

d) Sound

The amplifier "ON-OFF" switch should have been turned on as soon as the power cord was plugged in to allow the amplifier time to warm up. When the amplifier is warmed up, the exciter lamp will light up to let you know. Then the sound system can be checked before the machine is threaded. Turn the volume control up until you can hear a "rushing" sound from the speaker. As a further check, with the volume control turned up, slip a piece of paper or film between the exciter lamp and the sound drum so that it breaks the light beam there. If the sound system is working properly, you will hear a slight "thump" when the paper is slid in and out quickly.

e) General Considerations

Before beginning the threading, refer to the threading diagram for your own particular projector. These diagrams are usually found on the machine somewhere for ready reference. They will also be found in the operator's manual for the machine, if this is available.

Make sure that the feed reel is properly seated on the feed arm. If you are facing the machine about to be threaded, the film should come off the reel from the top, leading to the right (toward the screen). The sprocket holes should be on the side nearest you and the start end of the film should come off the reel first. On many films there is what is known as the theatrical leader, containing a series of numbers. If this theatrical leader is complete, it will have numbers from 1 to 3, then a space of opaque leader and then the title of the film. If you are unable to find numbers, unwind the film until you can see the title. This title should be the same as the title on the film can.

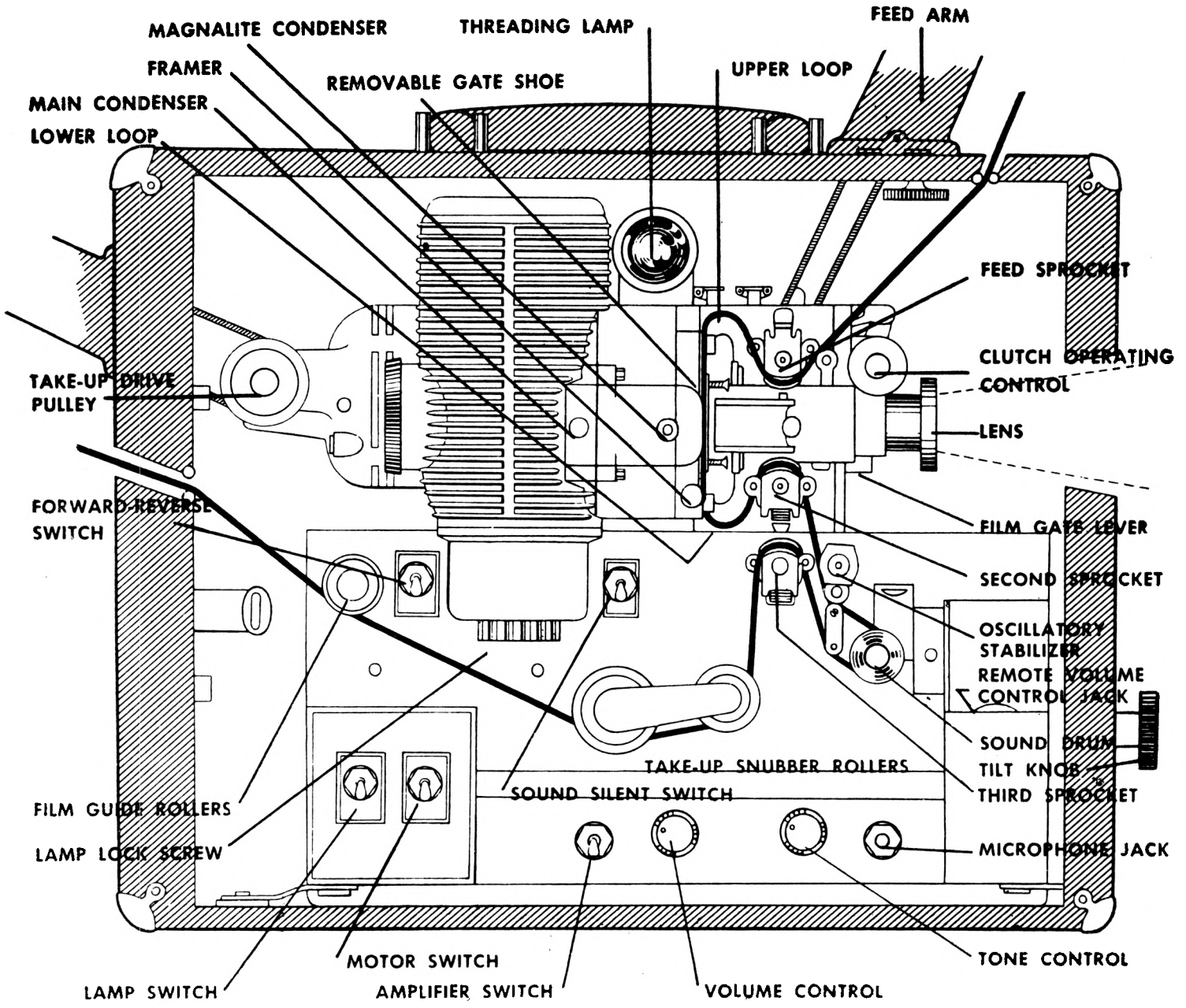
Before starting to thread, allow yourself about four feet of leader. Make sure that none of this leader touches the floor, as it will pick up dust which will be transferred to the projector and then to the rest of the film. Follow the threading diagram of the machine in question and engage the film in the feed sprocket. Open the film channel. Make the top loop the size indicated on the machine. Close the channel. Make the bottom loop exact size indicated. This is important because the synchronization of the sound with the picture is affected by the size of this loop.

Proceed to thread the sound drum. Make sure that the proper tension is maintained here, or the sound will be garbled. Complete the threading as indicated on the appropriate diagram.

On the Bell and Howell projector, you can test the threading by operating the manual feed knob. On other projectors that do not have this you can check your threading by turning the motor switch on for a few seconds and off again. If the film is progressing through the machine smoothly without any unusual noise, then your threading is good.

Run the motor until the leader has gone past the gate with the figure 3. Do not turn on the lamp until this figure 3 has passed the aperture. This avoids unnecessary flashing on the screen. Then turn on the lamp and turn the sound up slowly. After the figure 3 there is nothing but opaque film until the title appears. Failure to do this is an imposition on the audience and is the mark of the inexperienced projectionist.

Diagrams on the pages following illustrate how three types of projectors in use in northern schools are threaded.



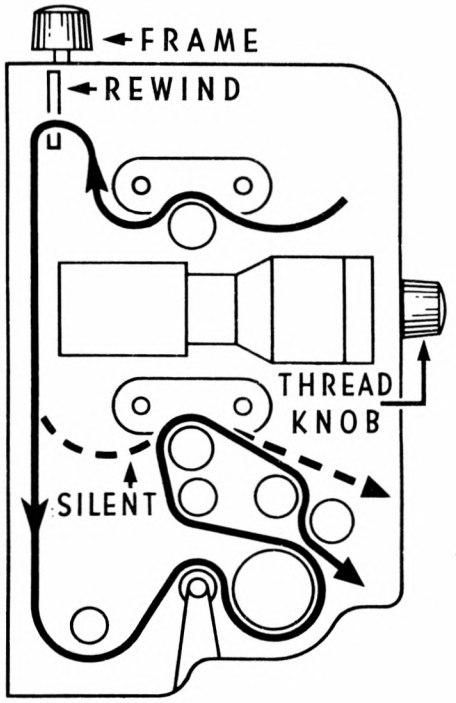
BELL & HOWELL THREADING

1. Place full reel on feed arm.
2. Thread feed sprocket
3. Form upper loop.
4. Thread film channel. (Close gate)
5. Form lower loop.
6. Thread second sprocket.
7. Thread sound drum.
8. Thread third sprocket. (Applying proper tension on oscillatory stabilizer rollers)
9. Place film under take-up snubber rollers.
10. Attach loose end of film to take-up reel.
11. Check threading by turning hand setting knob clockwise.

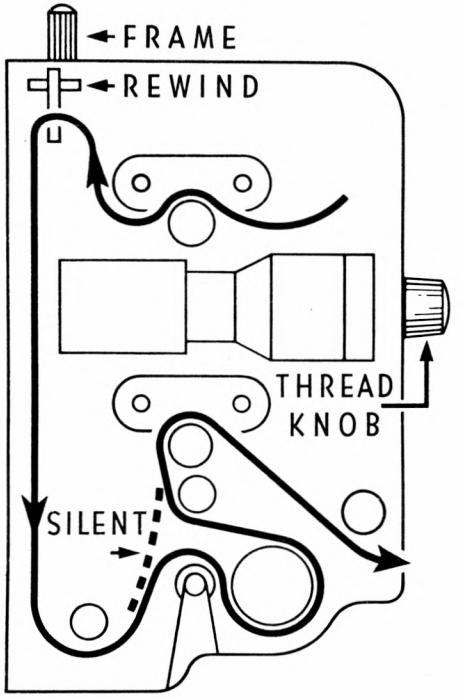
REWINDING

1. Remove full reel from take-up arm and place it on feed arm.
2. Attach loose end of film to empty reel on take-up arm.
3. Raise up take-up arm spindle to engage rewind gears.
4. Turn on motor switch.
5. Use hand as brake as film rewinds.

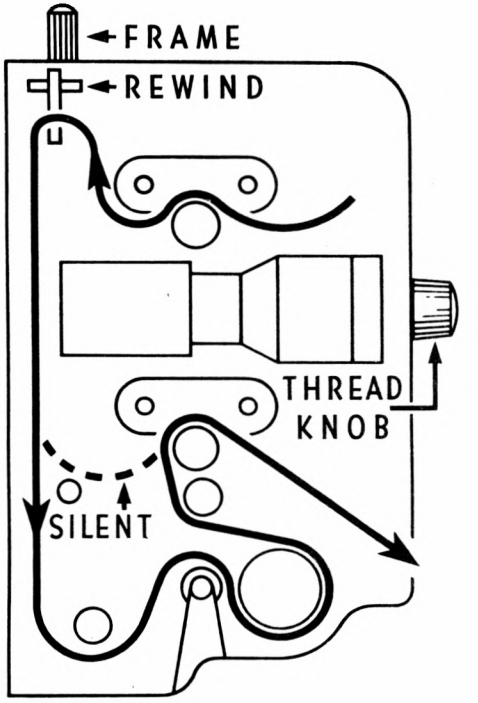
KODASCOPE *Pageant* SOUND PROJECTOR



Models 1, AV-071, AV-151, AV-151-E, AV-151-S, AV-151-SE

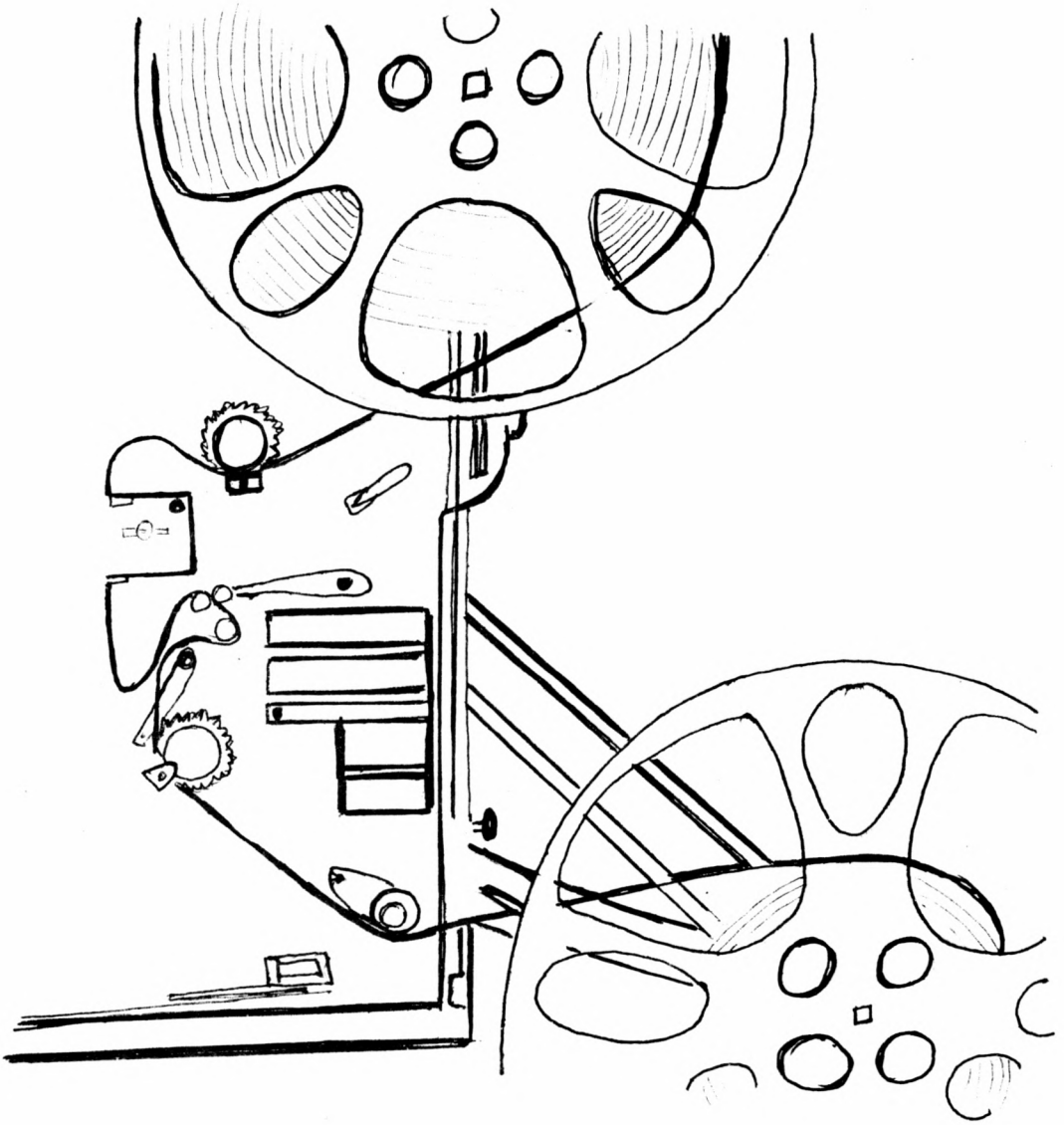


Models 7K2, AV-072, AV-152, AV-152-E, AV-152-S, AV-152-SE, AV-073, AV-153, AV-153-S



Models 7K4, AV-074, AV-154, AV-154-S, MK4, AV-104-M

RCA 400



Running the Show

Before the Show Starts

Do NOT bring cold film into a warm, humid room and attempt to project it immediately. If you do, the film will "sweat" on exposure to the air and the resultant moisture will cause it to stick in the projector. Warm cold films gradually up to room temperature before the show.

Always allow the projector itself to warm up to room temperature when it is brought into a room from outdoors in cold weather. If the projector is very cold and the lamp is turned on, the strain of sudden heat on the cold glass may cause the projection lamp to break. Also, the metal parts of the projector will "sweat" in the warm humid air. Any parts of the projector that come into contact with the film should be dried with a soft clean cloth before the film is threaded to avoid getting moisture on the film.

A few minutes before you expect to start the show, the amplifier should be switched on and allowed to warm up. This takes about one minute.

During the Showing

To start the show, turn on the motor switch and then the lamp switch. The lamp switch should never be left on so that the motor and lamp are switched on together. The current drain on the power line during the first few seconds of the motor starting is very heavy, and if the drain of the projection lamp is added to it, you may burn out a fuse in the power line, causing a very annoying delay. The lamp switch should be turned on AFTER the motor switch. As soon as the lamp is on, adjust the focus while the titling is on the screen. It is much easier to focus on the stationary sharp edges of the letters than on the scenery that may be moving. If you have previously focussed on the edge of the aperture, then only a slight adjustment to the focus will be necessary to bring the film into sharp focus. The volume control should be turned up to a comfortable level as soon after the title appears as possible, so as not to miss any of the sound. After the focus has been adjusted, you can adjust the volume and tone controls for the best sound. Check the volume and quality of the sound from different parts of the room, if possible. The best way is to have an assistant to check the sound and signal adjustments to you if required, so that you do not have to leave the projector running without being near it.

At all times, while the projector is operating, the operator MUST be with it. There is absolutely NO excuse for leaving a running projector unattended. The operator should keep an eye on the loops, note whether the picture on the screen is properly framed, and listen for any change in the sound of the machine. Framing can be adjusted while the machine is running by means of the framing control near the gate. If the loops are lost, stop the machine and rethread it. The same applies if the film starts running off the sprockets. If there is any change in the sound of the projector, switch it off and check. When in doubt, STOP. Remember that a noisy projector is probably ruining film at the rate of about six feet every ten seconds it continues to run.

If the film breaks, or is broken, turn off the lamp and the volume. Draw enough film through to rethread the projector and secure the loose end of the film to the take up reel by placing it under a layer of the film already on it. DO NOT FASTEN THE ENDS TOGETHER WITH TAPE of any sort - especially a transparent plastic tape. Mark the spot where the break is with a piece of paper if you can, and put a note in the can when you pack up the film so that the film librarian will know there is a break and can find it easily. When adhesive tape is applied to the film it may lift the emulsion when it is removed. In any case, the whole section of film that has had the tape on it must be removed as the tape leaves a sticky deposit on the film which will collect dust and may jam in the projector gate, causing another break.

At the end of the film, switch the lamp off as the word "END" begins to fade out. At the same time fade out the volume, but make sure that you hold the level so that the last note of music background is audible (when there is background music).

Let the machine run the films through and if there is a clutch, turn it off. Check the gate for dirt and particles of emulsion. Let the fan cool the lamp for a short time before turning off the line switch. Secure the loose end of the film on the take up reel with a piece of tape so that the film will not loosen on the reel, place the reel in its can, and you are ready to put on another reel or pack up the machine. If another film is being shown, merely repeat the threading sequency and continue.

Packing up After the Show

Before moving the projector make sure that the projection lamp is cool. This can be checked by turning on the motor and holding your hand over the lamp housing. If the blast of air there feels hot, let the motor run for a few minutes so that the fan can cool the lamp. When the blast of air does not feel hot to the hand, the lamp is cool enough to be moved.

Turn off the amplifier after the last film has been shown. It can be cooling down then, while the lamp cools.

Unplug all the cords and store them NEATLY in their proper places.

Turn all switches off and all controls to zero. Close any open parts. Close and secure the speaker covers and projector doors.

Put the equipment away in its protective case.

Pack up the screen carefully.

Trouble Shooting

If any trouble occurs as a result of a breakdown of the mechanism of the projector nothing can be done at the moment and the machine must be serviced by a qualified repairman. However, some of the more common troubles that will occur may be remedied. Common sense is the main guide. The remedies should be done in the following order:

I Trouble: NOTHING WORKS.

Remedy:
1. Check the line cord and extension connections.
2. Check condition of line and extension cords.
3. Check building fuses.

II Trouble: LAMP FAILS TO LIGHT BUT PROJECTOR RUNS.

Remedy:
1. Check that lamp switch is on.
2. Check that lamp is in place.
3. If lamp is in place but will not light, replace with spare lamp.

Other possible faults: If the above fails to remedy the trouble, the fault may be:

1. Switch broken
2. Internal fault in machine

In this case, the repair is beyond the scope of the projectionist.

III Trouble: NO SOUND BUT EVERYTHING ELSE OK.

Remedy:
1. Check that amplifier is switched on.
2. Allow time for amplifier to warm up.
3. Check that exciter lamp is lit. If not, replace with a spare.
4. Check that exciter lamp is in place.
5. Check connections of speaker cord.
6. Check that a microphone is not plugged in.
7. Check that film is threaded properly.
8. Check that "SOUND-SILENT" switch is on "SOUND".

Other possible faults:

1. Low line voltage.
2. Internal fault in amplifier.

IV Trouble: SOUND IS LOUD BUT DISTORTED.

Remedy:
1 Check that "SOUND-SILENT" switch is on "SOUND".
2 Check that film is snug on sound drum.
3 Adjust volume and tone controls.
4 Check location of speaker.
5 Check connections of speaker cord.
6 Check for dirt in sound system.

Other possible faults:

1 Poor film.

V Trouble: SOUND IS WEAK OR NIL YET ORIGINAL TEST SHOWED NOTHING WRONG.

Remedy:
1 Adjust volume and tone controls.
2 Check threading.
3 Check for dirt in sound system.
4 Change exciter lamp.

Other possible faults

1 Low line voltage.
2 Poor film.
3 Weak tube in amplifier.

VI Trouble: NO PICTURE ON SCREEN.

Remedy:
1 If Bell and Howell projector check that door is open in front of lens.
2 Check that lamp switch is "ON".
3 Check that you are not showing the opaque leader of the film.
4 Change lamp if not lit.

VII Trouble: PICTURE IS NOT AS BRIGHT AS IT SHOULD BE.

Remedy:
1 Check darkening of room.
2 Check cleanliness of optical elements.
3 Check to see if projection lamp has become blackened. Replace if necessary.

Suggested Order of Setting up Projector

1. Open case, be sure all reels, cords, belts, etc., are on hand.
2. Assemble arms and belts.
3. Plug in power line.
4. Plug in sound; position screen (if portable) and speaker in best place.
5. Turn on motor; turn on lamp.
6. Centre rectangle of light on screen.
7. Pre-focus; turn off lamp and motor.
8. Turn on amplifier; turn up volume.
9. Test for sound; reduce volume.
10. Check reel of film for (a) correct fall (b) sprocket holes (c) picture.
11. Thread ---------- run through leader to title.
12. Check threading --- check switches.

You Are Ready To Project

13. Turn on Motor.
14. Turn on lamp.
15. Focus; frame;
16. Turn up volume; adjust tone.
17. Listen away from projector.
18. Check film at take-up reel to see that it is not being damaged.
19. If loop is lost, stop the machine and reform the loop at appearance of END title
20. Turn off lamp.
21. Turn down volume so that sound fades to ailence.
22. Permit tail of film to run through projector.
23. Permit tail of film to run through projector.

24. Turn off motor.

25. Turn off amplifier.

26. Secure end of film with tape provided.

27. Replace film and teacher guide in film can.

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9 East 41st Street, New York, N.Y. 10017.

APPENDIX

Filmstrips for Teacher Training in the Use of Projectors (permanent deposit)

The 16 mm Film Projector	Pt 1 -	National Film Board of Canada
The 16 mm Film Projector	Pt 2 -	National Film Board of Canada
The 16 mm Film Projector	Pt 3 -	National Film Board of Canada
The Filmstrip Projector	-	National Film Board of Canada

Filmstrips for Teacher Training in the Use of Material (permanent deposit)

Filmstrips and the Teacher	-	National Film Board of Canada
Using Charts and Graphs	-	Basic Skills Filmstrips
The Diorama as a Teaching Aid	-	Ohio University