

*Building a
Dual Turntable*

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A FLEXIBLE SYSTEM

THE dual turntable system of providing sound and musical effects for home movies has given the amateur a new medium, to augment his bag of entertainment tricks. This system makes it possible to provide a full and uninterrupted musical score, by means of a few phonograph records and the instruments commonly used to play them electrically. Of course, special arrangements of the phonographs are necessary, but the work involved is simple, and the proper parts may be procured easily.

The ideal dual turntable outfit is complete in itself. It consists of two phonograph turntables, with pickups and an amplifying system, including a speaker. It is used independently of the projector, and, therefore, it is suited to both 8mm. and 16mm. projection work. Although usually a dual turntable is a complete unit, if you build your own, and happen to have a sound projector, you may find it less expensive to make use of the amplifier and speaker of the sound projector. It is also possible to use a radio, either a portable set, or a large one in the room where the films are to be shown.

The addition of music increases the quality of entertainment and emotional appeal of any motion picture. Music may have the effect of increasing the tempo of a picture that is necessarily slow because of the nature of its subject matter. If the mood of a picture is fast and excited, an appropriate musical background can do much to augment the desired atmosphere. The introduction of sound effects will enhance the realism of a film, and, because of the almost unlimited supply of sound effect records, this phase of accompaniment is easily worked out.

Low cost and flexibility are other factors which make the dual turntable system interesting to amateurs. The cost of purchasing or building a satisfactory dual turntable outfit is not large, and the cost of playing the records with the picture is limited to the price of the records themselves.

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The flexibility of the disc scoring system permits the projectionist to change the film or accompaniment at any time. It is possible to arrange more than one complete scoring for a film, if the movie maker desires. He may plan one accompaniment for one type of audience and a second accompaniment for a different type. A filmer may find that his choice of records can be improved as time goes on, and it is easy to effect such improvement by changing records.

The mechanical aspects of equipment for supplying sound on disc accompaniment are not greatly complicated. If the movie maker builds his own outfit, its flexibility will depend upon his needs and his mechanical ingenuity. Some filmers will build a simple and easily used outfit, while others may want extra pickups and special features which will enable them to do more advanced work with sound effect records.

However versatile the outfit, it should be easily transportable. The outer case is usually about the size of a suitcase. This may be made to order or it may be selected from the stock of a luggage store. In any event, the case should be strong and well reinforced, to stand such handling as ordinary luggage might receive. The exact size of the case will be determined by the equipment that is to be mounted inside it.

Within the case, a plywood panel is mounted, so that it will be nearly flush with the top of the case when the latter is opened. On this panel are mounted two phonograph motors with turntables. They are placed side by side and so spaced that twelve inch records may be placed on both tables without the danger that one might interfere with the other. A pickup for each turntable is so placed that it can easily be reached.

For each pickup, there should be a volume control which incorporates a switch for the turntable motors. These controls are so wired that the pickups may be used together or independently. In one end of the case, there is placed a phone jack that is so wired to the pickups and controls that a connection to the external amplifier is made by inserting the plug. A recessed, two prong receptacle for connection to the alternating current power supply is also fitted into the end of the case, where it may be reached easily.

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Some outfits are equipped with a pilot lamp, to illuminate the working area. This lamp may be placed in the cover of the case



A complete dual turntable outfit
based on design described here

or on the panel, as one prefers. The cover generally is provided with catches or straps which allow it to lean backward, to rest at a

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slight angle, so that, when the turntable is used, the records to be played can be stacked on edge within the cover. On one side of the cover, one can stack records in the order that they are to be played; after they have been used, they can be placed on the opposite side.

This whole turntable layout can be varied by providing a somewhat larger case, in which there is room for the amplifier as well as for the parts mentioned previously. In that event, the cover would be detachable and would contain the speaker, so that the entire outfit would be in one large case. In that event, however, the interior of the cover cannot be used during a show as a rack for records.

Amplification units that are commonly sold for public address systems are well suited for use in dual turntables. They usually are sold in a carrying case which forms the speaker housing when the amplifier has been removed. In operation, it is best to place the amplifier on a table beside the turntables, so that the amplifier controls are close to the operator at all times.

A cord runs from the amplifier to the speaker, which is placed near the screen, so that the music will sound as if it emanated from the picture itself. Most amplifiers suited to this use will have connections for both phonograph pickups and a microphone. Nearly all of them will allow simultaneous operation of record players and microphone. Thus, it is possible to play a sound effect record on one player, background music on the second player and to speak into the microphone—all at the same time, if this combination is desired.

Nearly any radio can be altered so that it will serve as an amplifier and speaker in connection with a dual turntable set. Sound on film projectors are generally fitted with a phonograph input jack, and the turntable outfit can be plugged into that jack. The use of the radio or sound projector will eliminate the necessity of having a special amplifying system, if the outfit is restricted to home use.

CONSTRUCTING THE OUTFIT

ALTHOUGH complete turntable outfits of excellent design may be purchased, you may want to have the fun of building your own. Then you can incorporate special devices of your own design. However, in order to assemble a turntable outfit, it is necessary to have a knowledge of simple woodworking and electrical wiring. On the other hand, no special radio wiring ability is needed.

The following materials will be required.

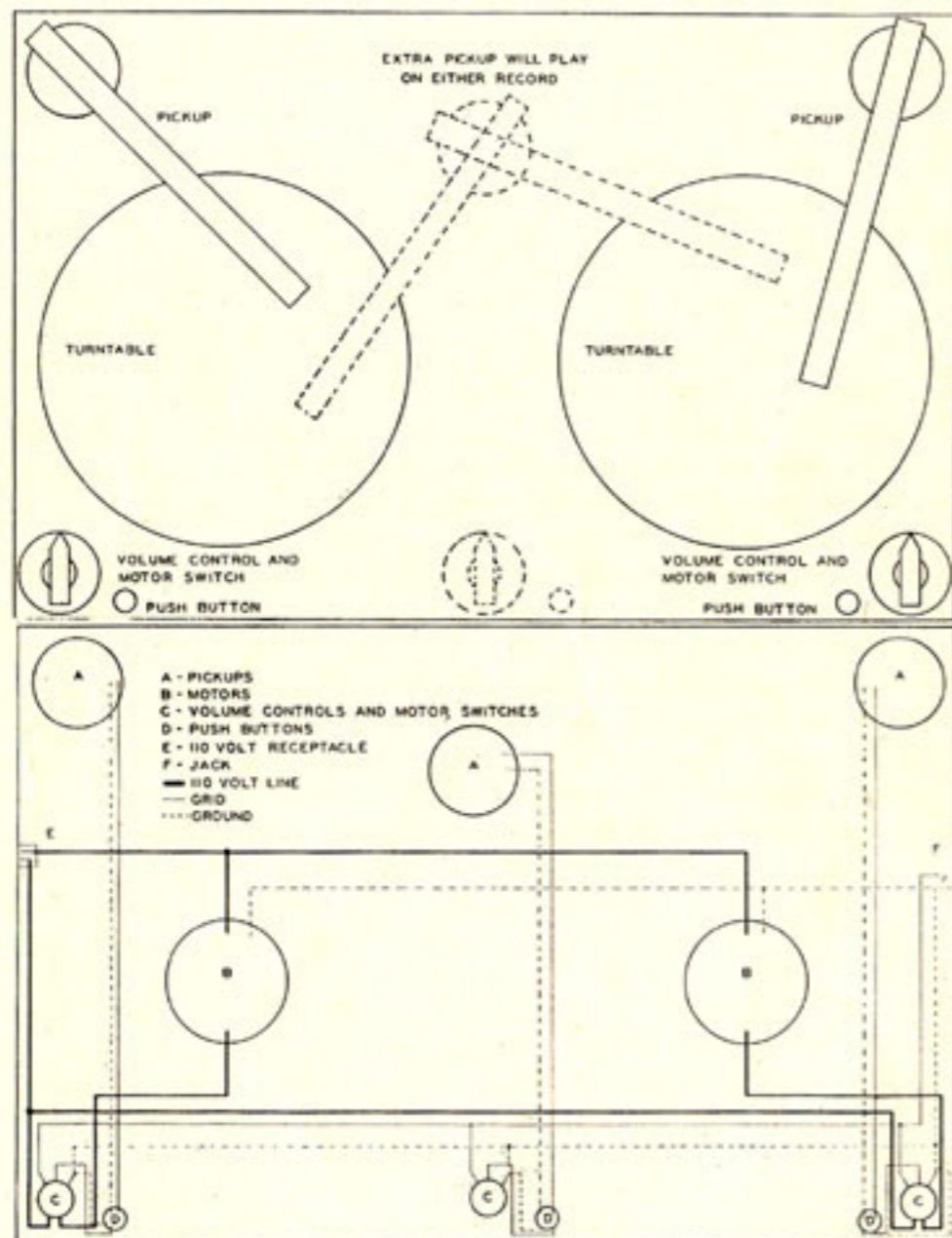
- 1 case
- 1 plywood panel to fit into the case horizontally
- 2 electric phonograph motors with turntables
- 3 crystal pickups
- 2 500,000 ohm volume controls with 110 volt alternating current switches
- 1 500,000 ohm volume control
- 3 push buttons (break circuit type)
- 1 flush male receptacle for 110 volts
- 1 phone jack
- single conductor shielded wire
- rubber covered wire for 110 volt current

Optional additions

- 1 hooded pilot light
- 2 duplex outlets for 110 volts

The construction of the outfit will not be difficult for anybody who can follow the simple wiring diagram shown on page 8. This diagram is purely schematic, and the lines follow approximately the position that the wires will occupy in the completed outfit.

The very first step in the construction program is to decide on the size and type of case that is to be used. A minimum size can be arrived at, by placing the turntables and pickups in position on a large sheet of paper. The machines should be laid out with regard to the need of clearance for the records and the need to allow for



Above, layout of turntable and pickups; below, diagram for wiring

unhampered movement of the pickups. After a trial and error practice, it will be easy for you to see just how much room will be needed on the panel board. Clearance for the cover of the case is important.

The next step is the choice of the case itself. If the minimum dimensions required for the top of the case will fit into the limits of a particular suitcase that can be bought, the next step is to measure the depth of that suitcase, so that you will be sure that the motors will have clearance. The motors should not touch the bottom of the case when they are installed, and the cover must not strike the pickups when the case is closed.

As a rule, you will find that a special case is desirable, and, in that event, you may either make it yourself or give your requirements to a good case maker or luggage manufacturer. The case should be made of light, strong lumber, reinforced at the corners and fitted with good hardware. Since the case must take considerable punishment in handling, it cannot be too strongly made nor too durably covered.

After the case has been completed, it should be fitted with cleats on which to rest the plywood support panel which is to hold the turntable motors. These cleats should be made of half inch by half inch stock, fastened to the side of the case from the inside by screws. It is good practice to run a piece of the cleat straight across the middle of the case, from front to back, in order to give support for the panel in the middle as well as at the sides, to prevent it from sagging.

At this point, it may be well to install the various outlets and connections. First comes the flush male receptacle for the 110 volt supply. This receptacle can be fitted into a hole that is cut in one end of the case. (Put all connections of any type in the ends of the case, for, if they are placed in the front, the wire will be in the way of the operator; if they are in the back, they are subject to damage when the case is set down on edge during transit.)

If you wish, the two duplex outlets for 110 volts can also be installed now, one in each end of the case. The phone jack for the amplifier connection can also be put in at this point in the construction.

Cutting and fitting the supporting panel should now be com-

pleted. One quarter inch plywood serves very well, and it should be cut to fit snugly into the case and to rest firmly on the cleats. Next, the holes for the motors should be bored. The manufacturers of phonograph motors supply directions for mounting them. After the holes have been bored, the motors and turntable should be fastened in place temporarily. Then the pickups are located and the positions are marked. The proper positions for the volume controls and the push buttons should be found while a twelve inch record is on the turntable. This method will prevent the possibility of placing the controls too close to the tables, with the result that the records might interfere with the proper operation of the knobs.

Since there are many types and shapes of pickups, it is impractical to give definite rules for locating their positions on the turntable. But, here again, the manufacturers of turntables come to our rescue with explicit instructions. Follow them carefully.

After the pickups have been put into position, mark the points where holes must be drilled in the board for the wires. Remove all parts from the panel and proceed to drill and to cut out all holes required. Next, sand the board carefully, to give a perfectly smooth surface. The panel can then be varnished or enameled in any color desired. Experience has shown that a light gray is an ideal color, for it reflects some light and thus makes handling the records and pickups easier.

When the panel is dry and ready to be handled again, the various pieces of equipment should all be put in place. Special arms, to hold the pickups when they are not in use, are nearly always supplied by manufacturers, and, at this point, these arms may be screwed into place. After everything has been fastened in place, the outfit is ready to be wired.

Look at the diagram shown on page 8 before you begin to wire the pickups by using the shielded wire. Remember that the outside braid of the wire is the shield; it is shown in the diagram as a broken thin line. The center wire, which is used for the grid, is shown as an unbroken thin line. Note that all the shields are connected to one side of the jack. The connections from the shield to the motors are used as a ground, to eliminate any alternating current hum that might be present when the amplifier is hooked into

the line. The center wire follows conventional wiring practice for a parallel hookup. If only two pickups are used, the third set of connections is completely eliminated.

Notice that the push buttons are hooked up to cut out both shield and ground when they are depressed. If double contact push buttons are not easily obtained, the single type may be used, but, in that case, only the grid line will be broken.

The 110 volt wiring on the turntable is very simple, as it merely involves hooking up the two motors and two switches. If the duplex outlets are used in each end of the case, they are also wired to the male receptacle. In case a pilot light is part of the equipment, it may be wired into the 110 volt line at any convenient point, if it is not thereby made subject to control by the motor switches. The pilot light should have its own switch which may be mounted on the panel or in the light fixture itself.

The best location for the pilot light is in the cover of the case. Placed in the top of the cover, it will serve to illuminate not only the turntable but also the records standing in the cover and a cue sheet which may be hung in the cover. A rubber covered cord is run from the 110 volt line under the panel, up through a hole, and is then fastened to the cover. The cord runs to the top center of the cover, where the light socket is placed.

Use a good grade of rubber cord, so that it will stand up under the wear that it will receive when the cover is raised and lowered. This type of pilot light installation will be found to be very practical, because it gives plenty of illumination for the operation of the turntable but does not permit the light to shine into the eyes of a member of the audience who may be sitting near the outfit. An ideal pilot light is the lamp which is regularly sold for use with electric sewing machines.

Directly under the pilot light, you can fasten a spring clip, which can be used to hold cue sheets in position between the piles of records stacked in the cover.

Now, for the completion of the dual turntable outfit, obtain an adequate length of rubber covered cord with which to connect the 110 volt receptacle to an ordinary outlet. A second connector cable, to run from the phone jack to the amplifier, should be made from

shielded wire. These wires can be coiled and laid on the turntables when the outfit is closed.

Care should be taken, to make sure that the turntables will not fall off their shafts and that the pickups will not come loose from their stands in handling. If the turntables are of the type which come off the shafts easily, it is a good plan to cut, for each one, a small wooden block, which will fit over the shaft and which will touch the top of the case when it is closed. These blocks will prevent the tables from sliding off the shafts when the outfit is transported and from damaging the panel or its equipment.

HOW TO SCORE A FILM

THE popularity of the use of the single or double turntable in providing musical accompaniment for silent movies has developed various methods of preparing cue sheets.

Even though one may become so familiar with the musical arrangement for a film that it is not necessary to have a written guide to aid him in picking out the right record at the right time, a cue sheet is still valuable. It enables one to plan the accompaniment more intelligently and to handle the records more easily. It makes it possible for somebody other than yourself to screen your films with a musical accompaniment.

The first step in scoring a picture is to screen it several times, to ascertain if it is divided into sections, each having a distinct mood. Usually, a well planned film may be divided readily into different sections, for each of which a particular type of music would be appropriate. With this in mind, one can select records which match the mood and tempo of the divisions of the film. However, it is impractical to make musical changes concur with minor changes in the picture's mood within the general section.

In a section of the production that is fairly quiet and pastoral—for example, a scenic sequence—there might be a shot or two that ideally would call for a light and rapid musical sequence. Such exact synchronizing of musical theme with the picture is impractical, as a rule, unless a special score has been written for the film.

After a selection of records has been assembled, the next step is to refine the choice and to fit the records into locations in the scheme where they would be especially suitable. The final selection would include a satisfactory introduction, general music that fits the picture's mood, special sound effects and records carrying narrative, if these are to be used. At this point, to synchronize one's efforts, it is well to start a cue sheet.

As an example, let us follow each step in scoring an imaginary cruise picture.

In projecting the picture, we find that it opens with the ACL leader. Following this are the main and credit titles and then some gay scenes of a ship sailing, the shots being made on the pier and on board the ship.

The next definite section of the film deals with the first morning at sea. It is a peaceful day, and the passengers loll about on the deck. Next we see the arrival at a West Indian port and feel the excitement of going ashore in a strange land. Then, handsome scenic shots bring a restful mood again. Off on a new tack, the picture now presents gay and colorful native life. Final sequences show embarkation and include beautiful sunset shots as the ship leaves the harbor.

From our library of records, let us pick out several appropriate fanfares which might accompany the leader on the screen. For the main title assembly, we shall need a heavier, more definite introduction, with a rather happy note; then we can shift to a good march as the sailing is depicted.

A title introduces the next section, and we need rather restful and happy music as a background. Excitement is felt as the ship reaches the harbor, and we must increase the pace of the music to a fast tempo. For the scenic shots, we shall want something a bit heavier. Here, the music will be a valuable supplement to the film's beauty. The sequences of native life may be enhanced by typical dances and lively music, while the departure should again have a more serious quality.

The cue sheet for this reel might run as follows: (Notations in parentheses are for explanation only.)

Score for SOUTHLAND WANDERINGS			
Start	No. 1	LIGHT CAVALRY OVERTURE	(During leader showing.)
Main title	No. 2	MEISTERSINGER: PRELUDE	
Fade in on ship's name	No. 3	ANCHORS AWEIGH	(During sailing sequence.)

Title. <i>First morn- ing at sea</i> . . .	No. 4	OVER THE WAVES: WALTZ	(Shipboard scenes.)
Shot of gulls	No. 5	SPEECH "A"	(Music sub- dued.)
Title. <i>The colorful harbor of</i> . . .	No. 6	BARTERED BRIDE: POLKA	(Arriving and debarking.)
		<i>Repeat last half.</i>	
Title. <i>Charming</i>	No. 7	LA CUCARACHA	(Natives danc- ing and street life.)
<i>costumes and</i>	No. 8	EL CABANERO	
. . . .			
Title. <i>The Great Mount</i>	No. 9	SIEGFRIED: IDYLL	(Scenic shots of mountains, etc.)
Title. <i>Farewell to happy days and happy peoples</i>	No. 10	KOWANTCHINA: INTRODUCTION <i>Last half Part 2</i>	

In this example of a cue sheet, all records are numbered in order, and it is easy to stack them in the same sequence. It is convenient to letter the proper number on each record; then it may be discovered at a glance. If you are using both sides of one record, give each side its proper number according to your cue sheet. In such cases, note on the cue sheet the fact that the record is to be used again. It can be done thus:

Title. <i>The setting sun</i>	No. 12
BLUE DANUBE	(Save to use reverse side for No. 15.)

The smoothest transitions are obtained by changing the music on a title. One record should fade out as the new title appears, and the new selection should fade in as the title establishes the mood for the following scene.

The practice of using recorded narrative is becoming widespread, and an example of the manner in which it may be handled in a cue sheet is given in No. 5. Since, often, there is more than one speech on one record, it is well to designate the speeches by a letter, as shown in the specimen.

Sound effects require more detailed cues. It is necessary to describe, on the cue sheet, the action immediately preceding the spot where the sound effect is to be introduced. Smooth handling of sound effects, such as boat or train whistles, sound of running water, etc., necessitates considerable practice on the part of the operator, and, usually, he memorizes the cues so that the sheet is not needed after the first few showings.

The preparation of a cue sheet which will enable a stranger to present your film with sound is a more difficult task than to make one for personal use. More elaborate descriptions are needed, and it is important to indicate the action which occurs just before the change in the music, as well as that taking place during the change. It is almost impossible to prepare a sheet which will enable a stranger to screen the film without a chance to have a rehearsal.

Keep the number of records as small as possible, to avoid abrupt changes in the sound accompaniment. Some proponents of phonograph record accompaniments for movies feel that well known works of music should be avoided unless they are particularly well suited to the scene. The theory behind this belief is that prominent works of music, especially operatic music, have grown to have a definite meaning for listeners and that this meaning might not fit in with the picture. Less well known selections might be just as effective and would not distract the audience because of an association based on knowledge of the music.

Movie makers who are building libraries of records for the purpose of scoring films should try to assemble a number of records which might be termed "general" musical selections. These should not have a marked national quality or a commanding theme. It is easy to pick out something of a definite nature, such as an Oriental dance, a military march or a popular rhumba, but it takes time to find a selection which might be used with almost any general scene in which there is no need for especially descriptive music or strong mood.

Avoid using music that has very soft and very loud passages in succession. The extraneous noise of the projector may spoil the effect of very soft passages, and the loud ones will blast forth unpleasantly if the volume level is raised to compensate for the softer moments.

Vocal records or instrumental selections with vocal passages are not well suited to picture accompaniment as a general rule.

There is a surprisingly wide latitude in choosing selections of music for your films. Often with a given scene, you may use whichever record you would prefer from two or three of quite different character. It is impossible to get music which will please each member of the audience, but, if the mood created is in keeping with the film, the effect on the audience as a whole will be far better than if the picture were silent.

The problem of starting a record at a predetermined point somewhere after the beginning of the piece is one that will come up from time to time. You will want to use only a certain passage in the record, and therefore you will want to be able to set the pickup on the record in a particular groove. One of the easiest ways to find a special spot in a disc is to use the indicator illustrated on this page. This indicator is cut from cardboard, and its length is determined by the point on the record where the music, that is to be used, happens to begin. When the indicator is used, the curved end of the strip is placed against the center spindle of the turntable, after a record has been put in place, and the needle of the pickup is then placed against the other end. The indicator can

BLUE DANUBE — NO. 25

Indicator which may be cut out of cardboard
for use in finding a given spot on record

now be removed; when the turntable is started, the record begins playing at the desired point. Of course, an indicator strip must be made for each special starting point on each record, but the strips can be numbered, as shown in the illustration, to correspond to the records, so that no difficulty will be encountered in keeping them in proper order.

Another method of accomplishing the same thing is to apply a small piece of adhesive tape on the record at the desired point.

Studios which use records for special sound recording and broadcasting have machines which drop the needle in a predetermined spot, but this equipment is too expensive for amateur use.

If the turntable is not revolving, it is easier to find the desired groove on the record, in which to place the needle. When this technique is used, it is necessary to place the needle ahead of the exact groove, to allow two or three seconds in which the turntable can reach normal speed before one turns up the volume control. If one turns on the turntable motor, with the needle on the record, while the volume is at normal reproduction level, the audience will hear a wail because of the rising pitch as the record gains speed.

If one is to use sound effect records perfectly, it is important to have some method of checking the speed of both turntable and projector. Nearly all present day turntables have constant speed motors. While some of them have speed controls, these are on the under side of the motor and are not readily accessible. If the motor is of the single speed variety, you can be certain that the number of revolutions a second of the turntable will not vary. If the motor is adjustable, you may find it necessary to regulate its speed before finally installing it in the case. For this purpose, it is best to use a standard stroboscopic disc which can be obtained from record manufacturers and the makers of turntables and motors. Use the disc according to the instructions printed on it. Once the motor is brought to the proper speed of 78 R.P.M., there will be no need to change it in the future.

Checking projector speed may also be done by using the stroboscopic method. On page 19 will be found two discs marked "16" and "24." These discs are made for use with projectors having sprockets which pass eight frames of film a revolution. The disc marked "16" is for use in setting the projector exactly at a speed of sixteen frames a second; the one marked "24" is for use in setting the projector at twenty four frames a second, the correct speed for sound on film. This latter disc will be helpful when one is rehearsing, on a silent projector, a film accompanied with a musical or narrative score which is to be recorded later on film.

To use one of the discs, cut it out and attach it to the projector sprocket. On some machines, the disc may be cemented di-



Discs which may be cut out and used as a guide in setting your projector to operate at exactly 16 or 24 frames

rectly to the smooth face of the wheel; on others, it may be necessary to cut out the center of the disc, so that it will fit over a nut which holds the sprocket on the shaft. If the surface of the sprocket hub is smooth, it is a good plan first to stick a disc of adhesive tape or Scotch tape in place and then to cement the paper disc to that surface by means of ordinary household glue. Ordinary adhesives do not adhere well to the plated metal surface of the sprocket.

When one wants to check the projector speed, this disc, attached to the sprocket, is viewed by the light of a small neon glow lamp, which is burning on a sixty cycle alternating current. Adjust the speed of the projector until the sectors of the disc appear to stand still when they are viewed by the light of the neon glow lamp. Then one can be certain that the projector is running at exactly sixteen or twenty four frames a second, as the case may be. This method cannot be used with direct current. For an alternating current, other than sixty cycles, a special disc must be made. Information about specific cases can be obtained from the League's Technical Department.

Neon lamps for use with these discs can be purchased in the one quarter watt size with a candelabra base. A small extension cord with a key socket or push button socket should be made up; this cord can be plugged into one of the duplex outlets in the turntable outfit.

If a positive speed check, such as that which has been described, is worked out, it will be possible to achieve sound effects that will appear to be perfectly synchronized with the picture. One handy method of cutting film to fit records that have been timed previously is to use marks on the editing board which correspond to the beginning and end of a sixteen frame length of film. Since the correct speed of silent pictures is sixteen frames a second, by using this aid, one can conveniently cut scenes according to the number

of seconds that a given portion of a musical or sound effect selection is to be played. For example, one might have a sound effect which lasts just three seconds on the screen. In that event, he would cut the scene to three seconds, to match the sound. He could quickly find the right footage, by using the sixteen frame guide, or measure, marked on his editing board. Then, when sound effect and film are presented together, if the projector and turntable are running at the correct speeds, the sound effect will last exactly the same length of time as will the scene on the screen. By using this method, you will find it not at all difficult to work out some rather highly complicated combinations of picture and sound effect.

RECORDS FOR MOVIE USE

HERE are a few suggestions of musical selections to fit picture moods and atmosphere. Personal taste varies, and one man's judgment of the mood of a piece of music may not be the same as another's. Therefore, it is important to hear a given record before you buy it for the purpose of using it with a film. Salesmen in phonograph record shops are usually very cooperative in aiding a movie maker to find suitable records to accompany a particular picture.

I. Peaceful—pastoral

<i>Afternoon of a Faun</i>	- - - - -	Debussy
<i>At Rest</i>	- - - - -	Nevin
<i>Enchanted Lake</i>	- - - - -	Liadow
<i>Herd Girl's Sunday</i>	- - - - -	Bull
<i>In Springtime—Overture</i>	- - - - -	Goldmark
<i>Japanese Sunset</i>	- - - - -	Deppen
<i>Kammenoi-Ostrow</i>	- - - - -	Rubinstein
<i>Liebestraum</i>	- - - - -	Liszt
<i>Kashmiri Song</i>	- - - - -	Hope-Woodforde-Finden
<i>Temple Bells</i>	- - - - -	Hope-Woodforde-Finden
<i>Khowantchina—Introduction</i>	- - - - -	Moussorgsky
<i>Moonlight Sonata—1st movement</i>	- - - - -	Beethoven
<i>Narcissus</i>	- - - - -	Nevin
<i>Spring Song</i>	- - - - -	Mendelssohn
<i>O Vermeland Thou Lovely</i>	- - - - -	Norwegian air
<i>Peer Gynt Suite No. 1 (Morning)</i>	- - - - -	Grieg
<i>Siegfried - Idyll</i>	- - - - -	Wagner
<i>Siegfried - Forest Murmurs</i>	- - - - -	Wagner
<i>Song of the Basket Weaver</i>	- - - - -	Russell
<i>Clouds</i>	- - - - -	Debussy
<i>Andante Cantabile</i>	- - - - -	Tschaikowsky
<i>Air for G String</i>	- - - - -	Bach
<i>At Sundown</i>	- - - - -	Donaldson
<i>Beautiful Dreamer</i>	- - - - -	Foster

<i>Berceuse</i>	Dickenson
<i>Calm Sea and Prosperous Voyage</i>	Mendelssohn
<i>Clair de Lune</i>	Debussy
<i>Grand Canyon Suite</i>	Grofé
<i>Fingal's Cave</i>	Mendelssohn
<i>To a Water Lily</i>	MacDowell
<i>To a Wild Rose</i>	MacDowell
<i>Midsummer Night's Dream—Nocturne</i>	Mendelssohn
<i>The Old Refrain</i>	Mattulath
<i>Serenade</i>	Moszkowski
<i>Serenade—"Eine kleine Nachtmusik"</i>	Mendelssohn
<i>Abendlied</i>	Schumann
<i>Adagio Pathétique</i>	Godard
<i>Berceuse</i>	Godard
<i>Dream Pantomime</i>	Humperdinck
<i>End of a Perfect Day</i>	Jacobs-Bond
<i>May Night—Overture</i>	Rimsky-Korsakow
<i>Rustle of Spring</i>	Sinding
<i>Sous Bois</i>	Staub

2. Gay—light

<i>Amaryllis</i>	Ghys-Seredy
<i>Caprice Viennois</i>	Kreisler
<i>The Flatterer</i>	Chaminade
<i>Meistersinger—Dance of the Apprentices</i>	Wagner
<i>Entrance of the Little Fauns</i>	Pierné
<i>Love for Three Oranges—Waltz Scherzo</i>	Prokofieff
<i>Shepherds Hey</i>	Grainger
<i>Day in Venice</i>	Nevin
<i>The Secret of Suzanne—Overture</i>	Wolf-Ferrari
<i>Minuet</i>	Boccherini
<i>Country Gardens</i>	Grainger
<i>Jeux d'Eau</i>	Ravel
<i>Jolly Coppersmith</i>	
<i>Molly on the Shore</i>	Grainger
<i>Reminiscences of Vienna</i>	Strauss

<i>Flight of the Bumble Bee</i>	Rimsky-Korsakow
<i>Etude in G Flat Major</i>	Chopin
<i>Canadian Capers</i>	
<i>Dance of the Hours</i>	Ponchielli
<i>Gossips</i>	Dubensky
<i>Hark, Hark the Lark</i>	Shubert
<i>Badinage</i>	Herbert
<i>Parade of the Wooden Soldiers</i>	Jessel
<i>Peer Gynt Suite No. 1 (Anitra's Dance)</i>	Grieg
<i>Humoresque</i>	Tschaikowsky
<i>Turkish March</i>	Beethoven
<i>Danse des Mirlitons (Nutcracker Suite)</i>	Tschaikowsky
<i>Anacreon—Overture</i>	Cherubini
<i>Midsummer Night's Dream—Scherzo</i>	Mendelssohn

3. Fast—exciting

<i>Aufschwung</i>	Schumann
<i>Bartered Bride—Dance of the Comedians</i>	Smetana
<i>Devil's Trill</i>	Tartini
<i>Divertissement (Part 4)</i>	Ibert
<i>Festivals</i>	Debussy
<i>Flight of the Bumble Bee</i>	Rimsky-Korsakow
<i>Hungarian Dances Nos. 5 and 6</i>	Brahms
<i>Bartered Bride—Furiant</i>	Smetana
<i>Perpetuum Mobile</i>	Strauss
<i>Pique Dame—Overture</i>	Suppé
<i>Light Cavalry—Overture</i>	Suppé
<i>Snow Maiden—Dance of the Tumblers</i>	Rimsky-Korsakow
<i>Thunder and Lightning—Polka</i>	Strauss
<i>Jewels of the Madonna—Intermezzo Act 3</i>	Wolf-Ferrari
<i>Scherzo</i>	Mendelssohn
<i>Prince Igor—Dances of the Polovetzki Maidens</i>	Borodin
<i>Capriccio Italien</i>	Tschaikowsky
<i>Eugen Onégin—Polonaise</i>	Tschaikowsky
<i>Fair at Sorotchbinsk—Gopak</i>	Moussorgsky
<i>Irish Washerwoman</i>	Sowerby

<i>Perpetual Motion</i>	- - - - -	Paganini
<i>La Playera</i>	- - - - -	Granados
<i>Hora Staccato</i>	- - - - -	Dinicu-Heifetz
<i>Slavonic Dance in C Major</i>	- - - - -	Dvorak
<i>Jesters—Overture</i>	- - - - -	Ganne
<i>William Tell—Overture</i>	- - - - -	Rossini
<i>London Suite</i>	- - - - -	Coates

4. Slow—solemn Religious

<i>The Angelus</i>	- - - - -	Massenet
<i>Ave Maria</i>	- - - - -	Bach-Gounod
<i>Oh Rest in the Lord</i>	- - - - -	Mendelssohn
<i>Mighty Fortress</i>	- - - - -	Bach
<i>Finlandia</i>	- - - - -	Sibelius
<i>Grande Pâque Russe—Overture</i>	- - - - -	Rimski-Korsakow
<i>Xerxes—Largo</i>	- - - - -	Handel
<i>Cavalleria Rusticana—Intermezzo</i>	- - - - -	Mascagni
<i>Festival Te Deum</i>	- - - - -	Buck
<i>Adeste Fidelis</i>		
<i>Deep River</i>	- - - - -	Burleigh
<i>Funeral March</i>	- - - - -	Chopin
<i>Stabat Mater</i>	- - - - -	Rossini
<i>Parsifal—Prelude and Good Friday Spell</i>	- - - - -	Wagner
<i>Rosary</i>	- - - - -	Nevin
<i>Messiah—Hallelujah Chorus</i>	- - - - -	Handel
<i>Masses</i>	- - - - -	Palestrina
<i>Ein Heldenleben</i>	- - - - -	Strauss
<i>Kamarinskaya</i>	- - - - -	Glinka
<i>Kammenoi-Ostrow</i>	- - - - -	Rubinstein
<i>Monastery Bells</i>	- - - - -	Wely
<i>Prayer of Thanksgiving</i>		
<i>Shepherds' Christmas Music</i>	- - - - -	Bach
<i>Sleepers Awake, a Voice Is Calling</i>	- - - - -	Reger
<i>Solitude</i>	- - - - -	Tschaikowsky

5. Majestic—grand marches

<i>Finlandia</i>	- - - - -	Sibelius
<i>Meistersinger—Overture</i>	- - - - -	Wagner
<i>Prophète—Coronation March</i>	- - - - -	Meyerbeer
<i>March Lorraine</i>	- - - - -	Ganne
<i>Marche Militaire</i>	- - - - -	Shubert
<i>Sigurd Jorsalfar</i>	- - - - -	Grieg
<i>Aïda—Grand March</i>	- - - - -	Verdi
<i>Pomp and Circumstance No. 1</i>	- - - - -	Elgar
<i>All Glory Laud and Honour</i>	- - - - -	Bach
<i>Siegfried's Funeral March</i>	- - - - -	Wagner
<i>Marche Slave</i>	- - - - -	Tschaikowsky
<i>Polonaise Militaire in A Major</i>	- - - - -	Chopin
<i>War March of the Priests</i>	- - - - -	Mendelssohn

6. Wild—tempestuous

<i>Overture 1812</i>	- - - - -	Tschaikowsky
<i>Ivan the Terrible—Storm Music</i>	- - - - -	Rimsky-Korsakow
<i>William Tell—Overture</i>	- - - - -	Rossini
<i>Die Walkuere—Ride of the Valkyries</i>	- - - - -	Wagner
<i>Anacreon—Overture (Part 2)</i>	- - - - -	Cherubini
<i>Pique Dame—Overture (Part 2)</i>	- - - - -	Suppé
<i>Sorcerer's Apprentice</i>	- - - - -	Dukas
<i>Rienzi—Overture</i>	- - - - -	Wagner
<i>Flying Dutchman—Overture</i>	- - - - -	Wagner
<i>Ritual Fire Dance</i>	- - - - -	De Falla
<i>Torchlight Dance No. 1</i>	- - - - -	Meyerbeer
<i>Hopak</i>	- - - - -	Moussorgsky
<i>Hungarian Rhapsody No. 2</i>	- - - - -	Liszt
<i>Les Préludes</i>	- - - - -	Liszt

7. Weird—mysterious

<i>Isle of the Dead</i>	- - - - -	Rachmaninoff
<i>Sorcerer's Apprentice</i>	- - - - -	Dukas
<i>Nutcracker Suite—Danse Chinoise</i>	- - - - -	Tschaikowsky

<i>Nutcracker Suite—Danse Arabe</i>	- - - - -	Tschaikowsky
<i>Die Walkuere—Fire Music</i>	- - - - -	Wagner
<i>Peer Gynt Suite No. 1 (In the Hall of the Mountain King)</i>	- - - - -	Grieg
<i>Night on Bare Mountain</i>	- - - - -	Moussorgsky
<i>Funeral March of a Marionette</i>	- - - - -	Gounod
<i>Flying Dutchman—Overture</i>	- - - - -	Wagner
<i>Danse Macabre</i>	- - - - -	Saint-Saëns
<i>Ritual Dance of Fire</i>	- - - - -	De Falla
<i>Swan of Tuonela</i>	- - - - -	Sibelius
<i>Afternoon of a Faun</i>	- - - - -	Debussy
<i>La Cathédrale Engloutie</i>	- - - - -	Debussy
<i>Sadko—Song of India</i>	- - - - -	Rimsky-Korsakow
<i>Coq d'Or—Hymn to the Sun</i>	- - - - -	Rimsky-Korsakow
<i>In the Steppes of Central Asia</i>	- - - - -	Borodin
<i>Lyric Suite—March of the Dwarfs</i>	- - - - -	Grieg
<i>Danse Orientale</i>	- - - - -	Glazounow
<i>La Mer</i>	- - - - -	Debussy
<i>Night-Ride and Sunrise</i>	- - - - -	Sibelius

8. Sad

<i>Funeral March</i>	- - - - -	Chopin
<i>Pavan for a Dead Princess</i>	- - - - -	Ravel
<i>Swan of Tuonela</i>	- - - - -	Sibelius
<i>Aloha Oe</i>	- - - - -	Lilioukalani
<i>None But the Lonely Heart</i>	- - - - -	Tschaikowsky
<i>Song of the Volga Boatmen</i>	- - - - -	Koenemann
<i>Andante Cantabile</i>	- - - - -	Tschaikowsky
<i>Kol Nidre</i>	- - - - -	
<i>La Golondrina</i>	- - - - -	Serradell
<i>Humoresque</i>	- - - - -	Dvorak
<i>Martha—Last Rose of Summer</i>	- - - - -	Flotow
<i>Last Spring</i>	- - - - -	Grieg
<i>Peer Gynt Suit No. 1 (Ase's Death)</i>	- - - - -	Grieg
<i>Valse Triste</i>	- - - - -	Sibelius
<i>1812 Overture (Part 1)</i>	- - - - -	Tschaikowsky
<i>Khowantchina</i>	- - - - -	Moussorgsky

9. Miscellaneous background

<i>Blue Danube Waltz</i>	- - - - -	Strauss
<i>An American in Paris</i>	- - - - -	Gershwin
<i>Grand Canyon Suite</i>	- - - - -	Grofé
<i>Forge in Forest</i>	- - - - -	Michaelis
<i>Arlésienne—Intermezzo Suite No. 2</i>	- - - - -	Bizet
<i>Fountains of Rome</i>	- - - - -	Respighi
<i>Soviet Iron Foundry</i>	- - - - -	Mossolow
<i>Pictures at an Exhibition</i>	- - - - -	Moussorgsky-Ravel
<i>Rapsodie Espagnole</i>	- - - - -	Ravel
<i>Aloha Hawaii Kuu Aina</i>	- - - - -	
<i>Nights in the Gardens of Spain</i>	- - - - -	De Falla
<i>A Hunt in the Black Forest</i>	- - - - -	Voelker
<i>Bolero</i>	- - - - -	Ravel
<i>Carmen Suite</i>	- - - - -	Bizet
<i>Bali</i>	- - - - -	Eicheim
<i>Japanese Nocturne</i>	- - - - -	Eicheim
<i>Caliph of Bagdad—Overture</i>	- - - - -	Boieldieu
<i>Danse Slave</i>	- - - - -	Chabrier
<i>Fledermaus—Overture</i>	- - - - -	Strauss
<i>Glow Worm</i>	- - - - -	Lincke
<i>In a Chinese Temple Garden</i>	- - - - -	Ketelby
<i>In a Persian Market</i>	- - - - -	Ketelby
<i>In a Monastery Garden</i>	- - - - -	Ketelby
<i>Caucasian Sketches</i>	- - - - -	Ippolitow-Iwanow
<i>Lady of the Lake</i>	- - - - -	Folk dance
<i>Lyric Suite</i>	- - - - -	Grieg
<i>Minuet</i>	- - - - -	Boccherini
<i>Neapolitan Nights</i>	- - - - -	Zamecnik
<i>Nutcracker Suite (Valse des Fleurs)</i>	- - - - -	Tschaikowsky
<i>Day in Venice—Suite</i>	- - - - -	Nevin
<i>Citronen—Waltz</i>	- - - - -	Strauss
<i>Emperor—Waltz</i>	- - - - -	Strauss
<i>Roses from the South—Waltz</i>	- - - - -	Strauss
<i>Sleeping Beauty—Waltz</i>	- - - - -	Tschaikowsky
<i>Loin du Bal</i>	- - - - -	Gillett

<i>Espana Rapsodie</i> - - - - -	-	Chabrier
<i>In a Clock Store</i> - - - - -	-	Orth
<i>Impromptu for Harp</i> - - - - -	-	Fauré
<i>Chinese Street Serenade</i> - - - - -	-	Siede
<i>The Moldau</i> - - - - -	-	Smetana
<i>The Planets—Suite</i> - - - - -	-	Holst
<i>Carnival of the Animals</i> - - - - -	-	Saint-Saëns
<i>London Suite</i> - - - - -	-	Coates
<i>London Again</i> - - - - -	-	Coates
<i>Mignon—Gavotte</i> - - - - -	-	Thomas
<i>Skyscrapers</i> - - - - -	-	Carpenter
<i>New Year's Eve in New York</i>		
<i>Improvisation</i> - - - - -	-	Friml

10. Military marches

<i>Entry of the Gladiators</i>
<i>Blaze Away</i>
<i>Hiawatha</i>
<i>Thunderer</i>
<i>Stars and Stripes Forever</i>
<i>Under the Double Eagle</i>
<i>Lights Out</i>
<i>Madelon</i>
<i>Anchors Aweigh</i>
<i>American Patrol</i>
<i>El Capitan</i>
<i>King Cotton</i>
<i>On the Mall</i>
<i>Sabre and Spurs</i>
<i>Sambre et Meuse</i>
<i>U. S. Field Artillery</i>
<i>Semper Fidelis</i>
<i>Washington Post</i>
<i>Second Connecticut</i>
<i>American Army</i>

<i>Barnum and Bailey's</i>
<i>Clayton's Grand March</i>
<i>Fairest of the Fair</i>
<i>Gentry's Triumphal</i>
<i>Hands Across the Sea</i>
<i>High School Cadets</i>
<i>Officer of the Day</i>
<i>Sagamore</i>
<i>Sharpshooters</i>
<i>Sesqui-Centennial Exposition</i>
<i>Royal Welsh Fusiliers</i>
<i>Solid Men to the Front</i>
<i>Tenth Regiment</i>
<i>Entrance and March of the Peers</i>

11. Humorous

<i>Geese in the Bog</i>	
<i>Dream of a Naughty Boy</i> - - - - -	Ravel-Branga
<i>Mosquito Dance</i> - - - - -	White
<i>Funeral March of a Marionette</i> - - - - -	Gounod
<i>Parade of the Wooden Soldiers</i> - - - - -	Jessel

12. Romantic

<i>Estrellita</i> - - - - -	Ponce
<i>Drowsy Waters</i> - - - - -	Wailana
<i>Hawaiian Waltz</i>	
<i>From the Land of Sky-Blue Water</i> - - - - -	Cadman
<i>Beautiful Dreamer</i> - - - - -	Foster
<i>I Dream of Jeanie with the Light Brown Hair</i> - - - - -	Foster
<i>Kiss Me Again</i> - - - - -	Herbert
<i>Last Rose of Summer</i> - - - - -	Moore
<i>Träumerei</i> - - - - -	Schumann
<i>Liebestraum</i> - - - - -	Liszt
<i>Londonderry Air</i> - - - - -	Grainger
<i>Love Everlasting</i> - - - - -	Friml

<i>Moonlight and Roses</i>	- - - - -	Black-Morét
<i>Sadko—Berceuse</i>	- - - - -	Rimsky-Korsakow
<i>Romance</i>	- - - - -	Rubinstein
<i>Melody in F</i>	- - - - -	Rubinstein
<i>Salut d'amour</i>	- - - - -	Elgar
<i>Souvenir</i>	- - - - -	Drdla
<i>Sweetest Story Ever Told</i>	- - - - -	Stults
<i>La Golondrina</i>	- - - - -	Serradell