AMATEUR STAGE MANAGEMENT AND PRODUCTION

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WITH A
FOREWORD
BY
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FOREWORD

DEAR PARSONS,

I HAVE great pleasure in acceding to your request to me to write a foreword to your book on AMATEUR STAGE MANAGEMENT AND PRODUCTION, although in my amateur days I was merely an actor. However, I always hankered to produce as well, and only after twenty years' experience do I find myself called upon to do so, and I have done most of the calling myself.

Amateur theatricals are, in my opinion, the greatest fun in the world. Oh, how funny I was in those dear dead days when I gave my services to the Drama! I must have been a frightful nuisance to the stage manager and producer, for I was irrepressible both on and off, and could not understand the meaning of the word discipline. But I think I made up for it "on the night," as instinctively one got down to business and aimed for the sweet and exalting reward, "Success."

What am I to say to budding aspirants to Amateur Production? Nothing but to offer my sympathy and consolation for the thought that by the time the curtain rises they will have done their best to set and light the scenes, bring the unruly and too light hearted actors and actresses into line, and "let her go." The technical details of production I will leave to you to expound in the pages of this book.

One little incident of amateur days I shall never forget. My good friend Louis Rihll was producing "Veronique" for Lloyd's, and a new amateur actress arrived with warnings from the committee that she was the daughter of one of the most influential underwriters, and would he treat her very gently and tolerantly—"she might be a bit raw, old man—but—etc., etc.—you understand—What?" "Of course," said Rihll, "we'll give her that little bit in the first act. Someone's got to bring in those carnations." They were rehearsing in a large room. "Now

Miss Under-Wright," said Rihll, "when Mr. Goode (playing the Geo. Graves part) says: 'Where are those anaemic carnations,' you come on left through this door."

Miss Under-Wright: "What door."

Producer: "Well, there isn't a door here now, but there will be on the night. Now we'll start the scene, please."

Scene proceeds to cue "Where are the anaemic carnations?" A dead pause.

Producer: "Miss Under-Wright, please."

Miss Under-Wright: "Oh my, I'm so sorry."

Producer: "Not at all. We'll go back, please."

Scene starts again to cue. Miss Under-Wright strolls on from right.

Producer: "Oh, Miss Under-Wright, I told you to come on here left. Back again, please."

All over again to cue.

Miss Under-Wright shyly comes down centre.

Producer: "Oh, for Heaven's sake. Oh, I beg your pardon, I mean—my dear little lady, did I not ask you particularly to come on from here, left."

Miss Under-Wright (tapping him coyly on the cheek): "Oh you silly old thing, you're so fussy."

Poor Producers, it's a dog's life, but it's great fun all the same.

Good luck to you all. Here's to your tolerance, patience, enthusiasm, and sense of humour.

Yours still an amateur at heart,

LESLIE HENSON.

INTRODUCTION

It is a lamentable fact that one of the most frequently encountered criticisms of amateur dramatic and operatic productions is of the stage management, for, owing to the comparatively limited stage experience of amateur actors, faults in stage management are often revealed, which would not be apparent in a professional production, because the experience of professionals would in some manner or another enable them to hide faults. Amateurs are apt to be put out and rendered at a loss should something go wrong with the stage management, for example, the light fail to go up, or a noise fail to be made at the right moment, whereas a professional would almost invariably be able to carry on without being in the least disconcerted.

Apart from actual hitches in the performance, amateur performances are usually marked by very long waits between the scenes, which are generally regarded as being due to slow scene changing. This, however, is not always the case, for sometimes the waits are merely due to slackness on the part of the cast in not hurrying with their changes of costume, and to sheer disregard, by every one concerned in the production, of the feelings of the audience. It should never be forgotten that amateurs, although entitled to obtain the maximum of enjoyment out of their shows, nevertheless have a responsibility to their friends who have purchased tickets and have thus rendered the production possible. Not less than professionals should amateurs place the welfare of their audience as their first consideration.

" Between act " waits due to scene changing are often quite unavoidable in amateur performances, however willing the stage staff may be, due to sheer lack of space for storing the scenery used. In criticizing amateur productions from this point of view, professionals are apt to

overlook the difficulties under which amateurs usually labour as regards scene changing. In a proper theatre the shifting and storage of scenery is a comparatively simple matter, which hardly obtrudes itself on the professional actor's notice, because there is ample space to fly scenery above the stage and to dock it in the wings, whereas most amateur societies have to make the best they can of the limited accommodation usually available in a village or church hall.

Nevertheless, by skilful management and frequent practice it is certain that the time taken for setting scenery in amateur productions could be considerably reduced.

There is no doubt that insufficient attention is paid by amateur societies to stage management, which in many cases is absolutely non-existent. Many societies work entirely without a stage manager, the players being left to provide their own properties, and a few helpers being relied on to shift scenery as they may be inclined and think fit, without any real co-ordination. In some societies a nominal stage manager is appointed, frequently a day or two before the first performance, who, having never seen the play, can do little more, however willing, than operate, or control the rise and fall of, the curtain. Frequently the person appointed as stage manager has never held such a position before, and has not the least idea what his duties are, and in many cases the producer or committee that appoints him has no better idea.

Professionally speaking, the stage manager or director is a very important person, and his duties are fairly well standardized in the theatrical profession, although his freedom of action varies under different managements; and the plea is now made that all societies will recognize the importance of the stage manager and his duties, and give him so far as possible a free hand to follow the professional methods which are advocated in this book.

It is believed that this book will be of widespread interest, dealing as it does with a subject which is becoming

daily of greater interest to the occupants of every town and village throughout the kingdom.

Its particular aim is to appeal to every amateur dramatic and operatic society to which ways and means are a consideration, and the greater number of societies are of this kind. It is probable that every small town and most small villages possess one or more amateur societies, and in the larger towns there are many such societies, very often connected with churches and chapels. It is usually the ambition of all such societies to put up the best production they can with the means at their disposal, and in many cases the available means are very limited.

Several books have already been written on amateur theatrical subjects, but these have been in the nature of works of reference, whereas the object of the present volume is to become a *vade-mecum* or pocket-book for amateur stage managers and producers. The sections relating to Curtain Scenery, Stage Noises, and Stage Lighting are based on two series of articles written by me and published some years ago in *The Amateur Stage*.

My thanks are due to several professional stage directors and managements who have kindly given me assistance and opportunities to study professional methods of stage management, and, in particular, I wish to thank Mr. Carol Reed, Mr. Dainton, Mr. Pat. Hilliard, and Mr. Bert Bright for their encouragement and help.

My special thanks are due to Mr. Pierpoint Miles for valuable assistance rendered in proof correction and revision.

C. S. P.

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CHAPTER I

THE PRODUCER

THE first thing to be done by the producer is carefully to read through the play several times until he has a thorough grasp of the plot and general atmosphere. This task will, of course, be simplified if he has already seen the play performed, and if an opportunity presents itself of seeing the play performed professionally, this should be taken. On such on occasion the producer should take a notebook with him for the purpose of jotting down brief notes on points which particularly strike his notice, as to costumes, scenery, properties, lighting, and the actions, gestures, and deliveries of the various characters.

Production

The salient points in the action should then be picked out and the characters grouped to form suitable pictures, the positions being recorded on a sketch plan of the scene. In this way a series of grouping pictures should be made throughout the play, which should, so far as possible, be designed to harmonize with the prevailing actions and emotions. The problem is really analogous to the composition of artists' pictures, and it should be treated in much the same manner, remembering, however, that composition is in this case in three dimensions instead of in two, as in the case of an artist's picture.

For example, hard lines parallel to the frame of the picture, viz. the proscenium, should be avoided; and the

masses should be properly balanced, to the extent that crowding to one side should not be greater than the crowding to the other side of the stage. Similarly as regards crowding to the front and back of the stage. So far as possible, any lines of players should all point to the principal character or characters upon whom attention is, for the time being, concentrated. Masses of players should be arranged in more or less triangular blocks, the apexes of which point to the centre of attention.

No hard and fast rules of stage grouping can be laid down, any more than for picture composition, but, subject to the general indications given above, the underlying idea should be naturalness.

Having decided on his set of groupings the producer must work backwardly, and determine the exact movements of each player, since his or her last entry, noting them down in his book, which will become the " prompt " copy. Players should alter their positions or make some movement in order to bring themselves into prominence, and become the centre of attention at the moment of starting their speeches. Movements should not be carried out between speeches, so as not to distract the attention of the audience from the dialogue, although it is permissible for a character to move while he is speaking himself.

Having decided on all the movements of his characters throughout the play, the producer should then plan out his rehearsals, and in this connection two methods are possible. Some producers are content to spread their rehearsals over as long a period of time as they can, and start them long before the show date. Others, however, believe in short and intensive periods of rehearsal. The method adopted by a producer in this respect must be left to his own choice and convenience. The first method has the advantage of giving the players plenty of time to study their parts, and permits thorough rehearsals without any feeling of hurriedness. At the same time it has the disadvantage of inducing slackness on the part of the

players in arriving promptly to time, and in missing rehearsals, safe in the knowledge that there will be plenty more rehearsals. There is, however, nothing more discouraging to those who do attend rehearsals regularly than to find others absent, or to the producer who, if he cannot find volunteers to read the missing parts, must cut considerable portions of the play. On the other hand, short intense periods of rehearsal result in more solid hard work on the part of every one, and do not suffer from the disadvantage of producing staleness on the part of the players, such as is produced by plays rehearsed over very long periods. Further, this method does not give the players sufficient time to forget what they are told during rehearsals. Practically, the only disadvantage of short and intensive periods of rehearsals is the risk of under rehearsal, resulting in lack of confidence and continual prompting during the show.

The first rehearsal should be devoted firstly to a brief explanation by the producer, of the story of the play, and, as far as possible, his ideas as to interpretation, followed by a simple reading of the play, each player reading his own part. At this rehearsal little more need be done than to correct errors of pronunciation and inflection, with insistence on cues being taken up immediately without any intervening pause.

The second rehearsal should also consist of a reading, but on this occasion the players should walk through their parts, every one being told or shown exactly what his movements are to be throughout the play. All the movements should be planned as far as possible to definite cues in the dialogue, and the players should note their " parts " accordingly. Thus every time a player sits down or rises it should be at a definite word in his or someone else's speeches. Similarly even such simple, but sometimes very important, pieces of business as sneezing, should be carried out strictly according to plan.

If not in the book, " business " should be invented to fill in pauses in the dialogue, always bearing in mind that

business should be natural and performed unhurriedly. In many plays certain pieces of " business " are of vital importance, and great attention must then be paid to their proper rehearsal.

No attempt should be made to do without the script for at least ten rehearsals, and players should not be encouraged to memorize anything which has not been rehearsed by the producer. Otherwise mistakes are learnt which are very difficult to unlearn. It is not so much the danger of learning wrong lines that is to be feared, but that lines will be learnt with the players' own ideas of intonation and expression, which may be quite at variance with those of the producer.

After thorough rehearsal of expressions and intonations with their " parts " in hand, the players can memorize their lines, and more complete rehearsals can then be undertaken, without the aid of books, which have a restrictive effect on freedom of action and movement.

An important thing for a producer to guard against is any tendency of the dialogue to drag, but at the same time there must be no tendency to hurry unduly, which only results in bad elocution. More often than not dragging is due to slowness in the taking up of cues, the players obviously stopping to think before starting their lines and speeches. This should be stopped at once, and every effort made towards natural and spontaneous dialogue.

Two very common faults are dropping the voice at the ends of words, and particularly also at the ends of lines. Every word should be spoken clearly and completely, and the final consonants, if anything, rather accentuated. Some players endeavour to make up for lack of clearness in their diction with loudness of delivery, in the belief that this is speaking up, but this is quite wrong. In a full size theatre words can be spoken almost in a whisper, and yet be plainly heard in all parts of the house provided that they are properly enunciated.

The inexperienced actor is nearly always revealed,

apart from gaucheness in his movements, by awkwardness with his hands. Most amateurs are as beginners extremely conscious of their hands and never know what to do with them, and it is only stage experience which will destroy self-consciousness to an extent sufficient to enable them to forget their hands entirely. As soon as the hands are forgotten, they become natural in their movements and then no longer become noticeable to the audience.

So far as the producer is concerned, arm movements are of considerable importance in helping the dialogue, but it is very easy to overdo them. Nothing is more worrying to an audience than seeing players who act like human windmills, and fling their arms about without the least rhyme or reason. All arm movements and gestures should be restrained, and none should be meaningless. In modern plays such movements as are made should be more in the nature of suggestions, or very slight movements emphasizing or illustrating the words which are actually being spoken. Such considerable movements of the arms as may be necessary should be performed with a smooth sweeping action, and not in a quick jerky manner, particularly with female characters, the idea being to make the movements graceful, unless, of course, out of keeping with the character. Generally speaking, unless a foreign character, men should use their arms less than women, and their movements may permissibly be quicker and less graceful.

In " costume " plays, however, it is professionally considered correct to magnify all arm movements into broad sweeping gestures; in fact, to exaggerate all movements somewhat.

While insisting on clear enunciation, the producer must check any tendency towards monotony of tone, taking every care to cultivate light and shade in the dialogue. Nothing is more boring to an audience than long speeches delivered in a monotonous manner like a school child's recitation. No speech should ever sound as if it were being merely

recited from memory. To a large extent monotony can be relieved by moving the character about, letting him sit down and stand up, and making suitable use of his hands and arms.

The producer's aim should be, so far as possible, to make the characters live, and, if the players are sufficiently imaginative to enable them to live the characters of their parts, not only will their lines come easily and naturally to them, but the producer's task will be considerably lightened. An important thing to guard against is players "going to sleep," or becoming so interested in the dialogue or actions of another character as to forget to take up their cues, or becoming so amused at the drolleries of the comedian as to lose control of themselves and indulge in laughter not in the "book." Equally important is it for characters living their parts not to do so to such an extent as to lose control of themselves. It has been known, for example, for amateurs engaged in a stage fight to be so far carried away as to start fighting in real earnest, with disastrous results to the continuance of the play in the orthodox manner.

In producing a musical play in which dancing generally occurs, all the dance steps must be properly worked out, rehearsed, and learnt. The dances may be arranged by the producer, but more generally they are arranged by a dancing or ballet mistress.

Dancing by the chorus as a whole should generally be avoided, in the case of amateurs, although simple steps can sometimes be effectively carried out by a chorus. If anything in the nature of chorus dancing is really necessary, it is best for the producer to pick out the best dancers to form a dancing troupe. This troupe will require extra rehearsals for the dancing alone. It cannot be expected, however, that even such a picked troupe can compete in any way with professional dancers. Elaborate and complicated dancing requires many years of experience, and everyday practice to maintain the necessary degree of suppleness and flexibility.

Although the general chorus cannot usually be used for dancing, yet to avoid woodenness and to brighten the show, concerted chorus movements are invaluable. It is essential, however, that all such movements be carried out with clockwork precision and regularity, every member of the chorus moving in synchronism. To obtain this, hard work and training will be necessary in addition to a very considerable amount of patience. The only satisfactory way, and certainly the quickest way, of obtaining properly concerted chorus movements is to rehearse them more or less in the manner of physical drill, working initially to numbers. For this reason and because the producers cannot generally spare the time for drilling the chorus, professional companies usually employ a chorus master whose duty it is to drill all their steps and movements into the chorus.

A very common criticism of amateur operatic societies is that the chorus is not properly trained, and, unfortunately, this is in many cases only too true. It is very few producers indeed who realize that it is worth while expending a good deal of time and patience in training their choruses. Most of them devote the bulk of their time to the principals, who probably do not need it so much as the usually less experienced chorus.

The result of insufficient attention to chorus work is that the chorus do not know what to do with themselves, and stand about the stage like wooden blocks or stuffed dummies. The immediate result of this is to take all the life and sparkle out of the production. The chorus should always be regarded by the producer as the equivalent of the gas in his champagne or the froth on his beer, as the case may be. Just as nothing can be so uninteresting as flat champagne or beer, so can a musical comedy be dull if its chorus lacks life and vitality.

Quite apart from concerted movements the chorus should be trained in individual movements, so that when not engaged in planned concerted action they do not stand like dummies or follow each other aimlessly about

like a flock of sheep. So far as possible every member of the chorus should be given definite movements and actions throughout the play, so that at all times they have some definite movement or action in mind, which to a large extent destroys self-consciousness, and thus avoids stage fright and woodenness.

In carrying out concerted chorus movements, great care should be taken to check any tendency of the players to watch the others to obtain a lead as to their movements. Movements should be made as nearly as possible simultaneously and on individual responsibility, the necessary cues being obtained by ear or a sense of rhythm obtained by adequate rehearsal. Watching others is the result either of laziness on the part of the offenders or of insufficient rehearsal. Another point to guard against in both principals and chorus is looking down at the feet in carrying out dances or steps of any description.

Finally, but certainly not the least important, great attention should be paid by the producer to facial expression. It is a common criticism of amateur shows that the chorus expressions are either wooden, or self-conscious. The only possible way, and a very easy way, of avoiding both these criticisms is to train the cast to forget themselves as actors, and to enter into the spirit of the play, to the extent of feeling the emotions expressed by the words, music, and action, and reflecting them naturally in their faces. It is frequently of very little use to tell the chorus to " look fierce," or to " smile and look happy," for in the endeavour to do this to order they will look wooden and self-conscious. Try to get them into the right frame of mind by personal example and suitable talk. If you want them to be fierce, gradually work up their feelings to the desired pitch by scowling at them and making " fierce " noises and exclamations, or if you want them to look happy make some amusing remarks or set an example, with a smiling countenance, till the desired expressions are obtained.

It was recently said of an amateur society which was

the first to perform the "Vagabond King," that the expressions on the faces of the crowd in the mob scenes were truly terrifying, and throughout the performance were perfectly natural and appropriate. This was sure evidence of the thoroughness and skill of the producer, and was probably one of the highest compliments he received on a remarkably good production.

Rehearsal Discipline

One of the greatest difficulties of amateur societies is the prompt conduct of rehearsals, at which, generally speaking, an abominable amount of time is wasted. The circumstances are, of course, very different from professional life, since every lady member feels that the time which she is devoting to rehearsals is her own time, and, therefore, it is only her affair if she likes to use it in talking dress or scandal.

It is a common experience that a rehearsal called for 6.30 p.m. cannot start for lack of members until 7 p.m., and then stragglers roll in at intervals throughout the evening. Then, when a chorus entry is called, half the members are missing from the room, and are eventually dragged out from a conveniently handy "coffee" room. And so things go on, to the distraction of the producer, until members realize that the show comes off next week and feel that they are woefully under-rehearsed, for which they no doubt blame the producer. It has even been known for amateurs to miss "dress rehearsals," which is almost invariably regarded as a sacred event, even by the most hardened rehearsal offenders.

There need be only three rules of rehearsal discipline—

1. Prompt and regular attendance at all rehearsals.

2. Absolute silence in the rehearsal room; at least, no talking above a whisper.

3. Implicit obedience to the producer or his deputy (generally the stage manager), without dispute or argument.

A certain degree of latitude must naturally be given to

amateurs in comparison with professionals, but, nevertheless, something like military discipline should be enforced while work is in progress. Definite intervals should be fixed for relaxation, chatter, or refreshments, and the producer should then unbend and lend a sympathetic ear to any complaints or suggestions which members care to put before him, and, in fact, unpleasantness and dissensions, such as often rend amateur societies, will frequently be avoided if members are invited to make suggestions and air their grievances to the producer during the appointed intervals, but not *during* rehearsals.

NOTES FOR PRODUCERS

Never lose your temper.

Do not allow players to speak with their backs to the audience, except when necessary to the action of the play.

Gestures should be smooth rather than jerky At the same time they should be definite. They should be carried out without any appearance of haste, and should be correctly timed in relation to the dialogue.

Foreign words and names should be pronounced correctly, if possible, but in any case every character should pronounce them in the same manner.

Always [illegible] show the way in which you wish things to be done or said, [illegible].

Demonstration saves great waste of breath in repeated explanations, and is not likely to be misunderstood.

Walk your characters through their movements, and then let them carry them out in their own time.

If any movement or speech has to be corrected at rehearsals show how you want it done or said, but do not embarrass the player by making him immediately repeat the movement or speech correctly, but expect it to be done correctly at next rehearsal.

Although perfection in detail should be aimed at, do not weary your cast with excessive fussiness, provided the right general effect is obtained.

Do not allow one character to mask another, or to cross another who is speaking.

Strive for clear enunciation. Take care of the consonants and the vowels will take care of themselves.

Carefully plan all entries and exits so as to avoid solecisms, such as players entering from wrong doors. A player should generally enter the stage from the same side as that on which he made his last exit.

Do not allow changes of dress during the show which are inconsistent

with the action. For example, a lady cannot enter a wood in one costume and come out of it again in another costume.

Do not attempt too much at each rehearsal. Go slowly, but thoroughly. Remember that there are limits to the amount that can be remembered, and some players will be slower than others in picking things up.

Impose strict discipline and enforce silence on players not actually "on stage," or they will not only miss their own cues, but also drown the "cues" for others.

Exercise tact and humour. Do not needlessly offend players by rudeness. Always temper a rebuke with humour or subsequent apology.

Teach "cues" for chorus entries and exits at an early stage, and insist on entries, etc., being made to the proper cues, avoiding interruption of the action to collect chorus together.

Insist, so far as possible, on semi-military discipline at rehearsals, every one answering smartly to their names and moving briskly. Bar slouching and slovenly movements.

Watch that facial expressions are suitable.

In musical plays, arrange for frequent refresher musical rehearsals, and do not allow music to take second place to the dialogue and action. Insist on the musical director's beat being watched.

All movements should be started with up stage foot first, unless stepping backwards.

Players should only in exceptional circumstances be allowed to turn their backs fully to the audience, and then not, as a rule, abruptly. Generally a half-turn to left or right will be sufficient.

Except for arranged "numbers" or "groupings," do not allow chorus to stand about in straight lines, or crowd all up or down stage. Insist on irregular lines and distribution in depth.

When servants have to enter in reply to bells, or other signals, do not allow them to enter too promptly, as this is unnatural, unless the servant is to be presumed as listening outside the door!

During speeches by principals encourage crowd to adopt proper facial expressions, but do not allow them any movement, as this will distract attention from the principal.

Stage kisses require careful rehearsal if they are to avoid raising a laugh, which is easy in the case of a friendly amateur audience. They should not be given diffidently or hastily, nor in most cases should they be over lingering. It should be remembered that some races, such as Hindus and Eskimos, do not kiss. The kiss on the hand must be executed gracefully, with slow and sweeping gesture.

Commence dress rehearsals early rather than finish late. Unexpected delays always arise, and if there is any time to spare it can be well spent in repeating shaky portions. Avoid making big alterations, but generally polish up the production.

Kneeling should be done on the down stage knee, keeping the up

stage foot on the ground. Gestures should, in most cases, be made with up stage hand, or if with down stage hand, to the accompaniment of a half-turn left or right, as the case may be.

At rehearsals indicate the stage area with chairs, forms or screens, or mark it out with chalk on the floor. All stage furniture, or substitutes therefor, should be used.

Foreign characters should carefully study intonation as well as correct speech. Every nation and dialect has its own intonation which distinguishes it from all others. Similarly every nation has its own characteristic movements, which should be carefully imitated. Remember, for instance, the Hindu girl's slow and stately walk, the Victorian girl's mincing walk, and the modern girl's brisk walk.

All movements and gestures should also be suited to the age of the characters. Old people do not move quickly, whilst young people move briskly and vigorously.

Do not allow players to relax and lose their characters when not speaking lines or moving about. They must keep on acting even when doing and saying nothing.

In stage meals attention should be drawn to the handing out of food, but business should be arranged to direct the attention away from its disposal, for the eating of real meals is almost an impossible feat under the circumstances, and in the short time available before the audience begins to become bored.

In musical plays all movements should be carried out in time and character with the music, and should generally be planned out to fit the music exactly, i.e. certain movements or actions timed for certain notes or beats.

In musical comedies and operas the general *tempo* should be fast, in order to preserve lightness and brightness and make the show full of life. This does not, of course, apply when the music and situation demand otherwise.

CHAPTER II

THE STAGE MANAGER

The Stage Manager's Duties

THE stage manager's duties can be divided into two main heads, namely, pre-production and production duties. The first comprehends rehearsals, supervision of the preparation of properties and scenery, and hire of furniture, and the second comprises controlling and directing the work of the stage staff and the actual running of the performance.

In all such duties the stage manager is the representative of the producer, and constitutes the link between the producer and the working mechanism of the stage, and of the production as a whole. Whilst the general function of the producer is to determine the whole scheme of the production, both broadly and in detail, and to rehearse the cast in accordance with his ideas, the stage manager should acquaint himself with the producer's intentions and make every effort to assist in carrying them out.

He will generally take part in conferences between the producer and scenic artists, costumiers, musical director, and electrician, and will also be present at rehearsals so that in the absence of the producer he can conduct rehearsals in the manner intended by the producer, and during the run of the show can see that the producer's plans are observed, and no business allowed to drop due to slackness on the part of the cast. Professionally, stage managers call frequent full rehearsals, particularly of plays having long runs, especially for the purpose of keeping the cast up to the mark and preventing slackness, and their power to do this has a most salutory effect on the work of the unambitious small fry of the theatrical world, who would otherwise carry out their work in a careless manner.

Since in amateur societies rehearsals during the show period are generally impossible, the stage manager does not possess this weapon of control, nor does he possess the other strong weapon of professional stage managers, viz. the power of dismissal; but for the good of any society he should be instructed to report to the committee on the work of all members of the cast, and this fact should be known to every one in the society.

All such reports should, of course, be taken into account in selecting the cast for new productions, and the continuance of membership should be made dependent to a large extent on the stage manager's reports.

During the run of a show the stage manager should watch the performance carefully from the prompt corner, and, if he has an assistant who can temporarily occupy his post there, also from the front of the house, with a view to improving the production by instructing that this or that business is to be put in or left out, etc., in the next performance. This, of course, depends upon whether the committee or producer will allow the stage manager a sufficiently free hand, but in any case it will enable him to give friendly and helpful criticism to the principals.

Among the production duties are certain duties which need preparation before the production, although they are not actually pre-production duties. Principal among these are the preparation of the call book and property plot, and action charts if required. Among the production duties are stage discipline, prompting, calling, and the supervision of the scene setting and striking. Some of these duties will be dealt with more fully later, but, in addition, the stage manager also has to control the raising and lowering of the curtain at the beginning and end of the scenes, and the curtain calls. In fact in the smaller societies, no doubt, the stage manager will frequently be expected not only to set the scenery, and act as property master and electrician, but also to work the curtain up or down, or to and fro, as the case may be. Usually,

however, he will be able to find a few assistants for this work, and it is very rarely that he is expected also to act as prompter, which task is generally carried out by a volunteer, and very often by the producer himself.

One very important duty of the stage manager, in addition to seeing that the scenery is properly set, is to inspect the stage before ringing up the curtain to see that all the stage furniture and props are in their correct positions, which may be marked on the floor cloth. He should also inspect the cast as to costumes and make-up, the latter being particularly important if the make-up is not done by a professional perruquier, but by the cast themselves, or by amateurs at the art of make-up.

An important point in regard to scene setting and striking is for the stage manager to plan out carefully where the scenery is to be docked and stored when not set, so that confusion is avoided, and as little time is lost as possible in striking and setting scenes.

Finally, a very important duty is that of either giving cues or signals to the stage staff for working stage noises and effects, or working them himself. Cues or signals can be given by semaphore movements of the arms, with the aid of intermediate signallers if direct vision is not obtainable. Or it may be possible to use lamps, controlled by switches in the prompt corner, to give such signals, the usual professional custom being to switch the signal lamp on for "stand by," and off for "go," whereupon the noise or effect is to be instantly worked.

Property Plots

Every stage manager should draw up a property plot of the play which is being produced. By this is meant a list of all properties used for each scene, with indications of where they are to be placed and by whom they are to be used. In the case of plays having a large number of properties, these lists may conveniently be divided into two headings, viz. "Properties set on stage," and

"Properties off stage." The following illustrates a typical property plot—

Act 1. *Scene* 1.

Properties set on stage—

One oak bookcase L.C. back.
One plant on pedestal front of window R.C.
4 ft. square oak table R.C.
One small table down stage L.
Three small chairs at table R.C.
Armchair near fire L.
Etc.

Properties off stage—

One book for Hilary L.U.E.
Walking stick, hat, and gloves for James, door R.U.E.
One rose for Juliet centre back entry.
Etc.

For performance purposes it is advisable for lists to be written out for the persons responsible for the various properties. For example, the property man and the stage manager should each have a list of the stage properties, so that these can be checked before the curtain rises upon any new scene. Also the property man should have a list of the off-stage or hand props, preferably divided up into sub-headings for each of the various entries to the scene set. Duplicates of these lists can be given to assistants who may be available to take duty at the various entries.

In dealing with properties generally it is important for it to be impressed upon every performer that, unless a hand property can be regarded as part of their costume it should never be taken to their dressing-room. In other words, any property which is only temporarily handled by a player whilst on the stage should be returned to a property man when brought off the stage by any person.

If a large number of properties have to be used and there is room in the wings to do so, the most convenient plan is for the various properties to be arranged on tables adjacent to the various entries. It is the duty of the property man to see that these tables are properly loaded

before the scene starts, and to take charge of all " dead " properties, i.e. those which have become finished with for the evening. A further duty of the property man is to see that all " working " properties are in good working order, i.e. that teapots are filled and eatables provided as and when required. All broken or damaged properties must also be repaired or replaced in time for the next performance.

A further duty which falls to the lot of the property man is making stage noises, and working other non-electrical effects, generally under the supervision of the stage manager, who gives the necessary cues. He should accordingly see to the provision of suitable apparatus, and also see that it is in good working order before each performance. He must also see that noise props are situated so as to be available when required for use. On small stages, noise properties should be operated close to the spot from which the noise is supposed to emanate; but on large stages having a large auditorium, it is usually best to operate noises from just behind the proscenium on either the O.P. side or the prompt side of the stage.

There are certain effects and properties which in a professional theatre come under the care of the electrician. These are known as " electrics," and include all properties and effects which make use of electricity, whether from the ordinary lighting circuit or from special batteries or accumulators. Such properties are electric table lamps, electric bells, telephones, electrical decorative lamps and lanterns, chandeliers and sconces, as well as electric torches, flambeaux, or other properties carried by the performers in their hands and energized generally by dry batteries. Snowstorms are often produced by an electrical effect.

Most amateur societies will not boast an electrician as well as a " props," the two jobs being generally combined together, and discharged by one very valuable handy man, who, in fact, in many cases will also be the stage manager and stage carpenter.

There are some effects which professionally are handled by the stage carpenter as being " scenic " effects, such as moving sections of scenery, traps, flying apparatus, etc., but the amateur " props," handy man, or stage manager, whichever he may be, will generally deal with such scenic effects. Among such effects are paper snowstorms, which are produced by means of a long trough-like bag of perforated canvas or fine netting which is stretched across above the stage, between the battens, and filled with paper cut approximately to snowflake size. Strings are tied to the edges of the bag at intervals along the length and jerked by stage hands in the flies, or, after passing over pulleys, from the wings of the stage, so as gradually to shake the paper snow through the holes of the bag, whence it falls gently to the stage.

Lighting Plots

Even more important than the property plot is the lighting plot, which should always be definitely arranged by the producer with the stage manager, and by the stage manager with the electrician.

In many productions, of course, the lighting plot is very simple, there being perhaps no change of lighting throughout the show. In the majority of plays, however, there is a change of lighting between the acts, and many plays have frequent changes of lighting and lighting effects. Every decrease of lighting is professionally known as a " check," and every change of light or check must be properly " cued " to the action and dialogue. It is the duty of the stage manager to draw up a list of light changes and checks, with cues, and this constitutes the lighting plot.

An illustrative example of an amateur stage lighting plot for the main switchboard is given below—

Act 1.

To open. Floats, amber and pink full up. Nos. 1, 3, 4 battens full up white. Spot and flood lamps for back cloth plugged in, with switch on, and resistance in.

At cue. After "Beggars' Song," as male chorus exit, check white battens and floats amber and pink down to ½.
As full chorus enter, up to full, bring in reds on battens 1 and 3 to ½.
After "Cavalier's Song" check out reds on battens.

At cue. For song "The Absence of a Friend" by Josephine, bring in all blues slowly and check out all whites to ½. On line "There's nought else can save him but love" at end of second verse slowly bring in Nos. 1 and 2 batten reds, to be full in by end of song.

Plots on similar lines should be drawn up for all electrics not operated from the main switchboard, for example, for right and left perch spotlights, front of the house arcs or spotlights, and for all electrical effects operated from local positions on the stage. Professionally, these subsidiary plots are prepared by the electrician.

Lighting plots should always be well rehearsed, preferably before the dress rehearsal.

As dialogue cues may easily be missed by the electrical stage staff it is best to cue to the action, or, better still, for the electricians to work to signal cues given by the stage manager or his assistant, whoever is acting as prompter, the prompt copy being marked with the lighting cues.

Most professional touring companies, which do not need acting rehearsals, frequently have no rehearsal other than a lighting rehearsal prior to their first night at each new theatre, sometimes with, but very often without even a scenery rehearsal.

Action Charts

It is helpful for the smooth running of amateur productions, particularly operatic or musical productions, for a chart to be got out showing the progress of the action and plot throughout the play. A number of copies of this should be made and pinned up in dressing-rooms, and the green room, if any. Performers can then consult this and see at a glance how long a wait they may have before they are next required on the stage. After a few

performances the need for a chart will be found to disappear, but for the first few performances its assistance will be found invaluable. In making out a chart for, say, a musical comedy production, the chart is built up from a skeleton formed by the musical numbers, there being given a brief indication between numbers of the length of the intervening dialogue, and the characters between which it takes place. An example of the manner of drawing up an action chart is given below—

Act 1.

1. Opening Chorus—all chorus girls.
   Entry of 6 dancing girls.
   Short dialogue Billy and Miggs.
   Entry of chorus men. *Cue,* "Give me some of that embrocation."
2. Solo "Love Dreams" by Phyllis.
   Long dialogue, Phyllis, Duke, and O'Brien.
3. Quartet "Racing," Phyllis, Duke, O'Brien, and Mary.

. . . . . .

8. Finale. All chorus enter on *cue,* "I'll see you hanged first" by Duke.

Act 2.

. . . . . .

Call-boy and Call-book

Many of the smaller societies dispense with the services of a call-boy altogether, but for anything in the nature of a large production, such as an operatic production, having a large number of characters, a call-boy is practically imperative. When the cast is a large one, it is undesirable to have the wing space thronged with performers not required on the stage within a short space of time. Apart from the noise which is inevitably made by crowds, the entries and exits from the scene become undesirably blocked. It is, therefore, desirable that performers should remain in the green room, if any, or in their dressing-rooms, until the need for their presence on the stage is made known by the call-boy.

On the professional stage a call-boy is a very important person, since his duties are of a very responsible

nature. Until he knows the calls and cues by heart he works with the aid of a call-book, which contains lists of the players required on the stage at intervals throughout the performance, together with the cues from the dialogue or action of the play at which the various groups of performers are to be called. It is the duty of the call-boy to follow the action of the play and, as the various cues are given, to call the players on his list against that particular cue. In some call-books, instead of entering the cues, the various calls are allotted numbers, which are entered on to the prompt copy of the libretto or book, the call-boy, after making a call, always returning to a position close to the prompter, and the prompter giving him the numbers of the calls as he comes to them in following the progress of the play in the prompt book.

The call-book should be made out by the stage manager or his assistant, and requires very careful compilation. The various calls must be arranged at a sufficient time before players are required to make their entries, to enable them to reach the stage in good time from the furthest point behind the stage at which they are likely to be found, and due allowance must be made for the speed at which the intervening dialogue is taken. If the calls are not numbered, a point of importance is to select, as cues for the various calls, lines or incidents which strike one's notice as forcibly as possible.

The following are typical examples from call-books, the first being that from a cue call-book, and the second being that from a numbered call-book—

EXAMPLE 1.

Act 1. *Scene* 1.

Opening Call. Butler, Lady Mary, and Jane.
At cue, "This is a very dreadful business" (Lady Mary), call Lord Belder and Sir John.
After fight, call Mr. Jenkins, wife, and daughter.
Etc.

EXAMPLE 2.

Act 1. *Scene* 1.

Call 1. Butler, Lady Mary, and Jane.
Call 2. Lord Belder and Sir John.
Call 3. Mr. Jenkins, wife, and daughter.

It is usual for call-boys to make general calls before the rise of the curtain on the first act, firstly, half an hour before the curtain rises, secondly, a quarter of an hour before the curtain rises, and, thirdly, a final call to the stage for "first act beginners." Between scenes or acts, the call-boy will again make calls indicating the amount of time available before the commencement of the next act or scene, terminating with a call for the beginners.

Prompting

Professionally, prompting is the care of the stage manager, who usually himself acts as the prompter for the commencment of the run, but later delegates the duty to his assistant. It is the usual custom amongst amateurs, however, to have a special person detailed as prompter. In order to be at all proficient in their duties, all prompters should attend and carefully follow rehearsals, and should, so far as suits the convenience of the producer, actually carry out prompting during rehearsals.

During performances, the usual station for the prompter is in the prompt corner, which is just inside the proscenium on the left-hand side of the stage facing the audience. This position is generally one which permits the prompter to obtain a clear view of the whole of the stage, and if by any chance a clear view from the prompt corner is obstructed, another position on the prompt, or even on the O.P. side of the stage should be chosen, from which a clear view can be obtained.

It is sometimes convenient, when a character is somewhat unsure of his words and has to make long speeches, for the prompter to take up a position close to the performer, but, of course, concealed behind the scenery, so

that when occasion requires prompts can be quickly given.

A word may be said as to when and how prompters should give prompts. It is a very common experience in amateur performances for prompters to be much too eager to prompt, with the result that good stage business is frequently spoilt by the sound of the prompter's voice, which is often heard time and time again, due to the performer whom the prompter imagines to have dried up, refusing to take the prompt. Undoubtedly, good prompting is a gift, for the prompter must know instinctively when a prompt is necessary and when it is not. To a great extent good prompting depends upon a careful watch being kept upon the action of the performance by the prompter. Obviously, this is difficult to do, because the prompter must certainly not lose his place in the libretto or book, but must, nevertheless, have his eye upon the stage. For this reason it is recommended that in amateur performances where the prompter is not the stage manager or his assistant, he should work in co-operation with the stage manager, or his assistant, or with an assistant prompter. In the case of working under the direction of the stage manager, or his assistant, the latter will watch the performance, and will in most cases be able to judge infallibly when a prompt is necessary, and all he needs then to do is to mutter the word "prompt," upon which the prompter will immediately respond with the necessary cue. Thus there will never be any need for the prompter to take his eyes from his book of words. An assistant prompter would work in much the same way, acting, in fact, as a pair of extra eyes for the prompter; but he must necessarily be a person of some experience, or one who has a good knowledge of the play from rehearsals, so that he knows when, during intervals in the dialogue, the players are doing proper business, or when they are merely waiting for a prompt.

It is naturally essential that the prompter should have a voice which carries well, and he should possess good

enunciation. At the same time prompting should be done as quietly as is consistent with the prompted person hearing what is said without repetition. It goes without saying, of course, that the prompter faces up-stage and not towards the audience.

There is one other somewhat important point in prompting, and that is not to prompt with unimportant words like "the," "an," or "he," but to seize upon some striking word which is almost sure to strike a cord of memory in the mind of the person who is being prompted.

Finally, it will be found in practice that most amateur performers are very apt to paraphase portions of their dialogue, particularly the long speeches, and prompters should be very careful indeed not to break in on these speeches with corrections, or to make any attempt to prompt a player who misses a line or more of a dialogue. Provided the dialogue continues, no prompting should be given, as it only tends to confuse the players and may easily lead to the play coming to a complete standstill. In short, prompts should only be given to bridge over a complete hiatus in the dialogue.

Stage Discipline

On the professional stage it is perfectly easy for the stage manager to maintain discipline on the stage, for he is in the position of an employer who can discharge insubordinates, whereas in amateur societies the stage manager has no such power over the performers. The first rule on the stage during performances should, undoubtedly, be "No Smoking," for, quite apart from the danger of fire, there is the likelihood of smoke drifting on to the stage and being noticed by the audience, as well as perhaps starting the players on the stage coughing during their speeches. The second most important rule to enforce is "Silence," and this is perhaps the most difficult one to enforce. It is, unfortunately, an extremely common occurrence in amateur societies for the audience

clearly to hear noise from the wings, which has been known on occasions sometimes to drown the voices of the players on the stage. The only way in which this can be effectively checked is for the stage manager to make frequent calls for silence when the noise in the wings become in any way excessive. Still better, if he knows his performers, he will make a personal request to those performers whom he knows always act as a stimulus for talking, to remain off the stage as long as possible.

Under the heading of stage discipline must also come the rule that no player is to take into the dressing-rooms any properties which are not parts of his or her "costume." Ladies are particularly troublesome in this respect. Finally, comes obedience to stage calls made by the call-boy or any other person acting in a similar capacity. It is, unfortunately, a very prevalent practice among amateur societies for very little notice to be paid to calls, or, at any rate, for them to be obeyed in a very dilatory manner. The stage manager should, as often as opportunity presents itself, insist upon calls being obeyed instantly, just as soldiers are expected to obey commands instantly. To a certain extent, this dilatory response to calls is sometimes due to timing the calls for too long a period before entries on the stage are really necessary. The cry of the call-boy is then apt to be regarded in a similar manner to the cry of "Wolf" in the fable.

It is, perhaps, needless to mention that "Stage discipline" equally well applies to "on stage" as in the wings, with perhaps the additional caution that there must be no smiling or facial contortions not provided for in the script.

Stage discipline, of course, applies to stage hands as well as players, with certain additional rules, such as unfailing and prompt attendance at their appointed points of duty during the show, to hand out or receive properties, work noise and other effects, and stand by for scene changing.

NOTES FOR STAGE MANAGERS

"Fit-up" stages should be set up as long as possible before use and thoroughly tested with the whole cast, particularly with any dancing. It has been known for a fit-up stage to collapse when the company started country dancing in "The Sorcerer."

For dramatic performances, particularly, "fit-up" stages should be tested for squeaks, which, although often unheard by the audience, have a demoralizing effect on the players, who are extremely conscious of them, especially during tense scenes.

All lighting effects should be rehearsed, preferably with scenery and costumes, as colours change in a remarkable manner under differently coloured lights.

Keep all scenery clear of electric lamps, and screen those lamps which might come in contact with draperies.

Flex should not be allowed on the stage floor unless of the "armoured" type.

Give adequate warning before ringing up the curtain, and never leave the audience in complete darkness. Switch on front of curtain lights before switching out "house lights," and ring up curtain after short pause.

Test working of the curtain before starting the show, examine all ropes, and oil all pulleys to eliminate any unpleasant squeaking noise.

Watch the travels of all hand props, and collect them immediately they become "dead," i.e. are finished with on the stage. Arrange for someone to hand props to players immediately before entry, and take them from them immediately after exit.

If any quick changes are necessary in the wings, arrange for adequate space to be left clear, and for helpers to stand by. Provide screens if necessary. Do not allow any one except official helpers to have any finger in the pie.

If any scene renders one side of the stage inaccessible during an act, make certain that all properties required on that side of the stage are placed there before the act opens.

When hiring furniture note the condition carefully, or you may be mulcted heavily for damages after the show. In particular, test springs of upholstered furniture, especially if there are any heavyweights in the cast.

So far as possible avoid any incongruity in furniture. Do not mix the periods or styles. For example, Louis period French furniture will not mix with Victorian English furniture.

See that all furniture is dusted before use, as otherwise costumes may be ruined. Do not polish furniture except for special reasons, as otherwise troublesome reflections may result.

After the producer has approved the "make-up" of the cast at dress rehearsal, inspect players before each performance and have "make-up" corrected when necessary. Particularly see that hands match the face.

Be careful in selecting highly coloured curtains and cushions, as they may be found to clash with some of the ladies' dresses.

Pictures should have no glass in them, as otherwise distracting reflections will be produced.

Take special care that stage lighting goes up simultaneously with operation of any switch on the stage. This can be ensured by arranging for direct vision of the stage switch from the switchboard, or by using intermediate signallers. The player should be instructed to take his hand from the switch instantly the stage lights go up. Similarly as regards telephone bells. The off stage operator must stop ringing the instant the receiver is taken from the hook of the stage telephone.

Instruct players as to playing through applause, especially after the first night, when the lines evoking the heartiest laughs are known. All important dialogue should be held back to the ends of the laughs, but the waiting interval should be filled in with "business."

Endeavour to arrange "encores" before the show with the musical director, not forgetting to warn the cast, but be prepared to drop any pre-arranged encores should the applause not justify them. Be guided by the general applause and do not be misled by hearty local applause, which is generally only due to the player's personal friends. Nothing bores an audience more than to be forced to listen to encores which it has not asked for.

Similarly, arrange "curtains" and curtain "calls" before show, and put up a list of these in the prompt corner. Warn the players what calls they are to take, and when, and also instruct chorus how many curtains there will be before they "clear" stage.

If the presentation of flowers and other gifts over the footlights cannot be cut altogether, limit these to one night and to lady principals only. Any gifts for the other members of the cast should only be allowed *via* the stage door direct to the recipients.

Avoid mixing real with imitation foliage in garden or woodland scenes. Keep either to painted scenery or to real foliage and shrubs.

Carefully plan out the docking of scenery not in use. Every piece should have its allotted places in the wings or back of stage. One place for each piece whilst waiting use, and an adjacent place when "dead." If space is limited pieces can be stacked one on top of the other in the order required. Large pieces of scenery and props should be docked as close as possible to the part of the stage where they are to be used.

Always rehearse lighting, with scenery, at dress rehearsal, or before. Do not experiment with the lighting "on the night." See the effect from the back as well as from the front of the auditorium. Screen any lights showing through thin scenery.

Similarly always rehearse stage noises before the show, with the same props as will be used on the night.

Choose furniture and scenery in keeping with the play and period of the action. Modern furniture will not suit "Coriolanus," or a Greek play.

Supervise arrangements for quick changes and advise players as to wearing one costume underneath another, either wholly or in part. Skirts and dresses for quick changes should be split down the back and fastened with press fasteners, so that dressers in the wings can tear them off instantly.

Stage meals must be carefully thought out, and special food provided for eating. White of egg puffs make useful cakes for rapid eating in large quantities. Slices of banana make good imitation slices of meat or poultry.

Stage wine can be made with cold tea without milk, and with a little cochineal. Many coloured drinks can be made with icing sugar colours. Cold coffee will do for beer. Stage whisky usually consists of water coloured with burnt sugar. Good sandwiches can be cut from thin white felt painted red on the "meat" side.

Test all electrical props and effects in time to enable defects to be remedied before the curtain rises, and test them again immediately before the curtain rises so that if the effect or prop has to be cut the performers can be warned and the dialogue altered if necessary.

CHAPTER III

SCENERY

MANY amateur societies decide, either for aesthetic or financial reasons, to rest content with curtains for their stage, and with the aid of skilful stage management and lighting it is surprising what effects can be obtained with such simple scenery.

Curtains and Curtain Scenery

Curtains as used theatrically are of two kinds, namely, those which are fixed, and those which are movable during the production. Most important of the latter are the front curtains, and it is generally advisable to adopt the Elizabethan stage principle of employing intermediate movable curtains located at about two-thirds of the stage depth.

Movable curtains themselves may be of two kinds, viz. drop and draw curtains. The former, being quick, are most suitable for productions of a light nature, such as farces, comedies, or melodramas, whilst the latter, being slow, are most suited to the more stately performances, such as operas and tragedies.

The usual construction and arrangement of drop curtains is illustrated by Fig. 1, the curtains being raised by means of ropes or cords passing through rings sewn on the backs of the curtains. These rings are disposed in a curved line, and terminate at a height of 3 or 4 ft. above the stage. The curtains are raised from one side of the stage only, the rope *b* from the far corner of the proscenium running back across the stage through eyes or over pulleys above the proscenium opening, and being joined to the end of the rope *c* of the other curtain. The two ropes are pulled together, and when the curtains are raised are passed round a conveniently disposed wall cleat *d*. When it is desired to drop the

curtains the ropes are merely cast off from the cleat *d*, when the curtains should fall by their own weight. There are two points to be noted in regard to drop

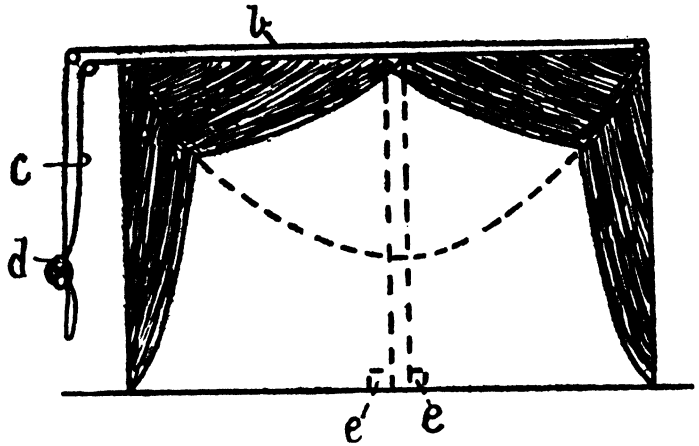


FIG. 1

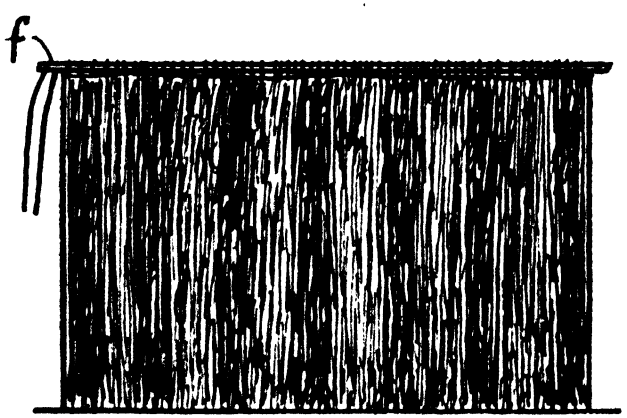


FIG. 2

curtains, one is that if the weight of the curtains themselves is not sufficient to cause a quick drop, pockets *e* should be sewn on to the backs of the two middle corners of the curtains and filled with lead shot or other weighty material. The other is that in order to ensure proper and complete closure of the curtains when

dropped, the two curtains should be hung so as to overlap by at least a foot at their meeting edges.

Draw curtains are merely adapted to be drawn to the two sides of the stage, and for this reason may be hung by rings from a rod *f* (Fig. 2). However, as rings are apt to be rather noisy, if funds will permit it is better to employ roller runners on a rail of flat or round section, as shown in Fig. 3. If perfect absence of noise is required,

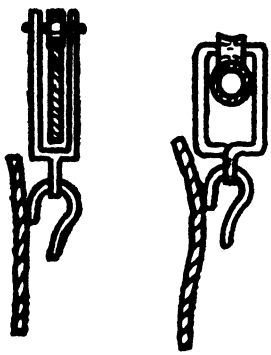


FIG. 3

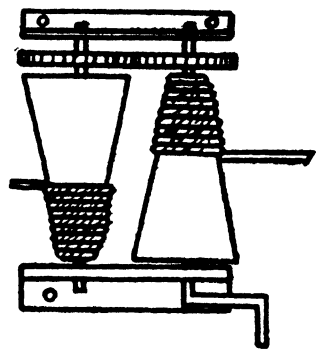


FIG. 5

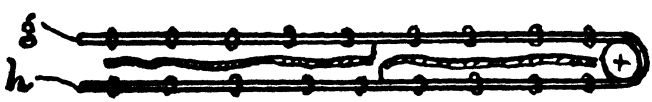


FIG. 4

tubular hems may be made at the tops of the curtains, and the curtains then threaded on to a steel wire stretched tightly across the stage above the proscenium opening and supported centrally by passing through a screw eye. Draw curtains are usually operated from one side of the stage only, the left-hand side, by ropes or cords running through guide pulleys or eyes, as shown in plan view in Fig. 4. In this case there are two operating cords, one of which (*g*) is pulled to open the curtains and one (*h*) to close them. If the curtains are very heavy it may be advisable to make use of a winding gear, which consists of a roller rotated by a handle to wind up one rope and unwind the other.

It is sometimes desired, with draw curtains, to open the curtains quickly at first and more slowly afterwards, and this can be done by using a winding gear having two cone drums, as shown in Fig. 5.

It is not proposed to deal with roller drop curtains, as these come rather within the scope of scenery.

To deal now with fixed or on stage curtains, these should not literally be fixed, but should be hung on rings or rollers running on rods, so as to be capable of being drawn when desired. For general use probably the curtain plan of Fig. 6 will be most useful, the curtains being

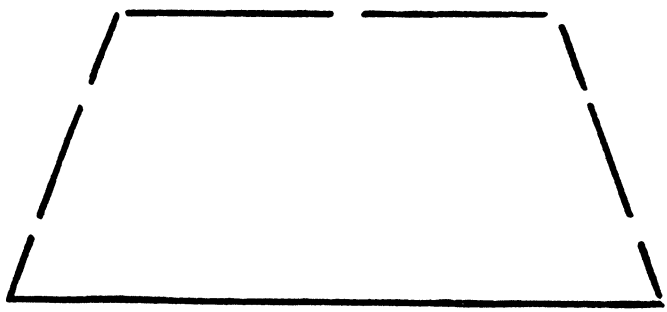


FIG. 6

arranged to form a box scene. On each side of the stage there are two narrow curtains on either side of a wide curtain, thus rendering two exits available on each side of the stage, one down and one up stage. The back curtains may be made up of two wide curtains having a single central exit. Additional exits can be afforded, if desired, between the proscenium and side curtains, and between the back and side curtains, so that there is a possibility of arranging nine different exits.

The curtains should be hung from the rings by hooks permanently sewn to their upper ends, so that they can be quickly changed for others of a different colour when desired.

For those desiring additional facilities, certain useful modifications can be made at extra expense. For example, if it is desired on occasions to put on a wing

setting, instead of a box setting, it will be useful to have the central side curtains divided and hung on separate rods which are mounted on pivots at their front ends, so that they can be swung in stage when desired to form wing curtains, as shown in Fig. 7. Hooks or brackets should be provided in the superstructure of the stage to support the ends of the rods when swung inwardly.

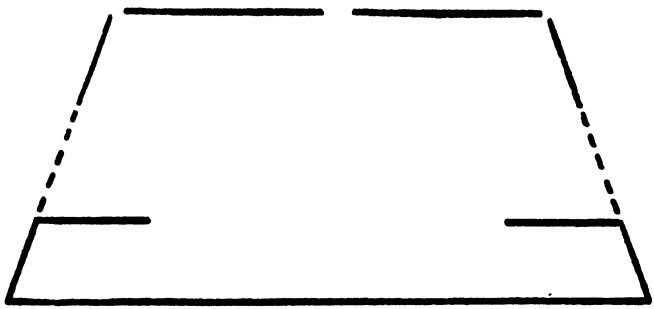


FIG. 7

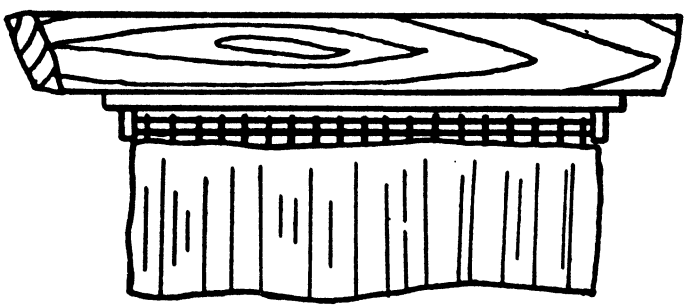


FIG. 8

Another refinement, which enables a quick change of curtains to be made, is to support the curtain rods by brackets on wooden strips fastened centrally to the stage roof beams by pivot screws, as in Figs. 8 and 9, and to hang two sets of curtains on the rings back to back. By rotating the wooden strips on the pivot screws, either set of curtains can be brought on stage in a very short space of time. By this means several possible stagings are obtainable, for not only can the stage be dressed with

either set of curtains, but it can also be dressed with many different combinations of the two sets, as will be readily appreciated.

Now a few words as to general and special uses of curtains for stage scenery. Their value is considerably enhanced for open-air scenes by having a plain sky blue back cloth which can be exposed through the back curtains by drawing them to greater or lesser extents. Also

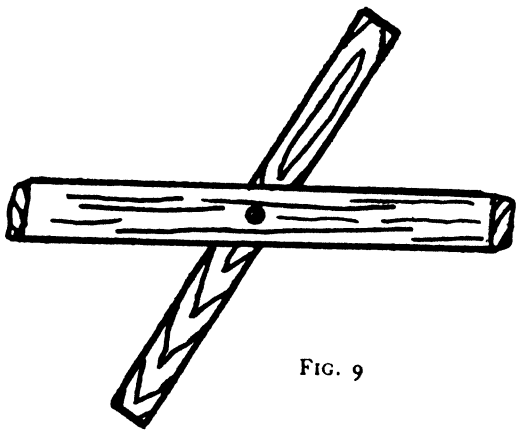


FIG. 9

a few odd pieces of scenery can be very effectively employed in combination with curtains for indoor scenes. For example, a French window panel, a bay window panel, and an ordinary door panel are exceedingly useful in the form of flats which can be set up between curtains, being held up either by forks on the stage beams, or by stays and stage screws.

Trees can be effectively simulated by hanging single narrow curtains from stage roof beams, and then throwing loosely over the beam another curtain which hangs down over the top of the vertical curtain, and is draped to form a mass roughly like the lower foliage of a tree. The effect is still further improved by throwing another curtain in a heap upon the ground beneath the vertical curtain, so as to appear like a spreading root merging into the trunk. A pillared hall can again be simulated by

hanging single narrow curtains at suitable points from the stage roof beams.

Simple Scenery

The construction and painting of proper scenery is a special art which does not come within the scope of this book, but simple and effective scenic settings can be made with curtains as already described, either alone or in conjunction with a few simple pieces of scenery.

If a plain sky-blue back cloth is used in conjunction with dark coloured curtains, with the aid of brown paper

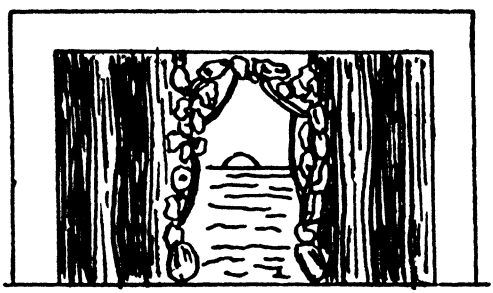


FIG. 10

cut-outs stuck upon this back cloth, suggestions can be given in silhouette which are quite effective. For example, the edges and gables of houses, distant hills, and other objects will readily present themselves as suitable subjects for this method of suggestion. Dark curtains can be used to cover the side portions of the back cloth, leaving just as much of the centre exposed as is required to give a cameo effect to any paper suggestions mounted on the back cloth.

With such an arrangement, a tropical scene will be suggested by bordering the opening with paper coloured and cut out in the shape of large and brightly coloured flowers of a more or less imaginary nature, together with a few trailing tendrils and leaves (Fig. 10). Again, to suggest a cavern or mountainous scene, the bordering would be coloured and cut out to represent a few rugged

rocks. A window in a room can be suggested with the aid of two short curtains arranged across the opening below and above the window opening (Fig. 11).

Considerably more may be done in the way of suggestion with the aid of a few scenery flats, preferably painted on both sides, for the sake of economy. For example, two

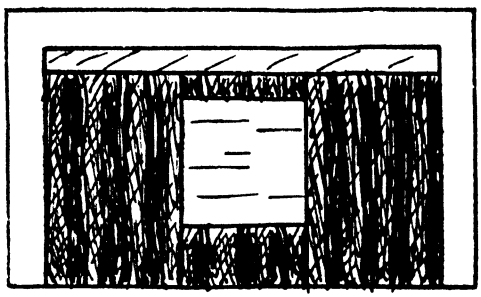


FIG. 11

flats may be painted on one side and shaped along one edge to represent a pair of stone gate pillars (Fig. 12), and on the other side, say, as tree trunks, with the lower foliage of trees.

One or two flats might be covered with "oak panel," or other wall-paper, and used in scenes to form with curtains the walls of an interior scene, the paper-covered flats being surprisingly effective in conveying the suggestion that the curtain parts of the walls are also "papered" in a similar manner. Any electric bell pushes or electric light switches should be fastened on these scenery flats.

FIG. 12

For shipboard scenes a very effective between deck scene can be made with dark curtains, a sky-blue back cloth, and a single flat fixed horizontally across an opening left between the curtains in front of the back cloth, and painted with a handrail or railings and a background of sea (Fig. 13). The rolling of the vessel with such a scene can very effectively be conveyed by hanging

a green cloth or curtain over a wooden rod placed across the opening to represent the sea horizon line, the ends of the rod being held by two stage hands, who alternately raise and lower the ends of the rod to tilt the horizon line in the

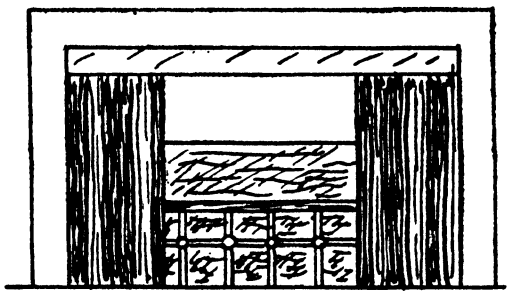


FIG. 13

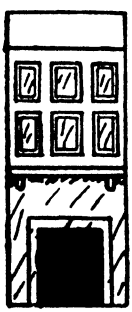


FIG. 14

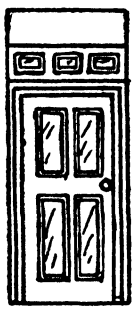


FIG. 15

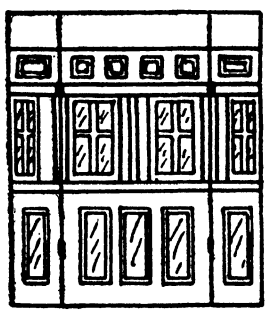


FIG. 16

alarming manner noticeable on board ship, in rough weather, through the port-holes. Such a simple expedient has been actually known to make susceptible numbers of an audience really feel sea-sick. Needless to say, a little practice on the part of the stage hands in manipulating the horizon line is desirable.

If funds and stage space permit three special pieces of scenery should be kept for use with curtains, namely, a fireplace flat (Fig. 14) having a mantleshelf and

fireplace opening, the flat above the mantlepiece being covered with "oak panelling," or other wall-paper, a door piece (Fig. 15) consisting of a flat provided with a properly painted hinged door, surrounded by a painted door frame, and a bay window piece (Fig. 16). The latter may consist, for example, of a 4 ft. flat provided with a pair of window frames hinged to open and shut, the rest of the flat being painted to indicate the window

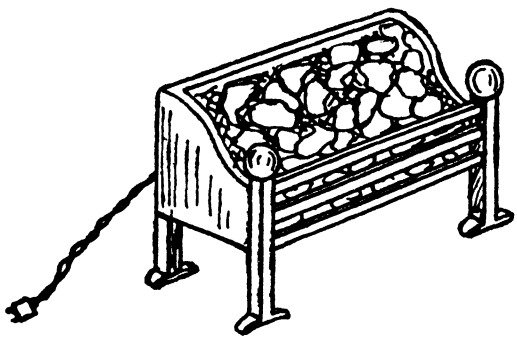


FIG. 17

frame and papered beneath and above the window. Hinged to the edges of this flat are two half flats (2 ft. wide), each provided with a hinged window and painted and papered to conform with the main flat. This piece may then be set as a flat window piece 8 ft. wide, or as a bay window piece by setting the side flats inwardly. The bay can be made square, i.e. 4 ft. wide, or the side pieces may be inclined so as to make the more usual and larger looking type of bay window. The window frames are not, of course, glazed, but to give the appearance of glass they may be covered with neutral coloured gauze, which may be bought quite cheaply at any theatrical outfitters.

A useful scenery property for interior scenes is a fire-grate (Fig. 17), which can be very easily made out of a wooden box by any one having an aptitude for carpentry. The front of this box should be provided with a few crossbars, and a more elaborate effect will be achieved by

providing uprights at each end of the front provided at the top with ornamental brass knobs or rosettes. The outside of the box should be painted black and the interior of the back fitted with a lamp socket to take a red coloured electric lamp, to which access is had through the open bottom of the "fire." The lamp space should be covered over with a shield of fine wire netting upon which is placed lumps of rough glass, some of which are daubed with black paint to imitate coal.

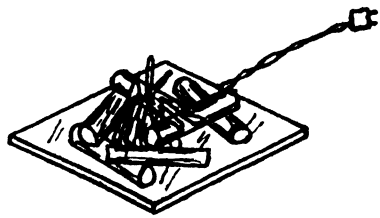


FIG. 18

For exterior scenes a camp fire is a useful adjunct (Fig. 18). This should be built up on a flat baseboard of plywood on the centre of which is mounted a socket for a red lamp. This is surrounded by a piece of wire netting bent to conical shape, but having an opening at the back to permit access to the lamp socket. Upon the baseboard are nailed a few rough logs, and fine sticks are wired or fastened to the wire netting in a more or less indiscriminate fashion until

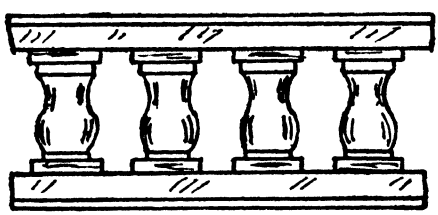


FIG. 19

the lamp is concealed from view. A little whitewash is daubed over some of the sticks to represent parts burned to ash.

For garden scenes a couple of lengths of imitation stone balustrading are useful (Fig. 19), the pillars being cut out from plywood and fastened to top and bottom rails, the bottom rail being fastened to a flat board by which the

balustrade is nailed or secured to the stage. An impressionist garden scene may be completed by a few trees or shrubs of conventional shape (Fig. 20), either upstanding from baseboards fastened to the stage or suspended by threads from above the stage, or both. The stems or trunks of such trees or bushes may be made of cardboard

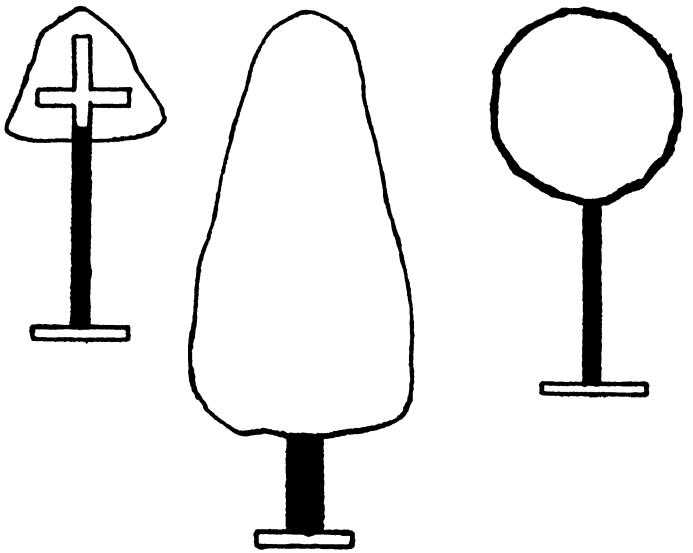


FIG. 20

tubes coloured dark brown, and the foliage from green crepe paper cut to shape, stiffened at the back with cardboard, and fastened to the tops of the stems or trunks.

A star effect may be obtained by pasting spangles of silver paper to the blue back cloth, but a better effect is obtained by actually cutting holes in the back cloth, covering them with gauze or transparent paper coloured on the front to match the colouring of the back cloth, and providing a bright light behind the back cloth which shines through the " star " holes.

A useful method of representing a motor-car, motor-bus, or train crossing the back of the stage is to make use of a painted curtain provided with rings to run along

a wire stretched across the back of the stage. This curtain is bunched up in the wings until required for use, when it is rapidly drawn across the stage by a wire attached to its leading edge, and wound up by a high-speed winding gear. To ensure complete transit of the curtain the traction wire may be attached to the rear end of the curtain and pass through a friction grip to which wires at the front edge of the curtain are attached. Before use the friction grip is set at a distance along the traction

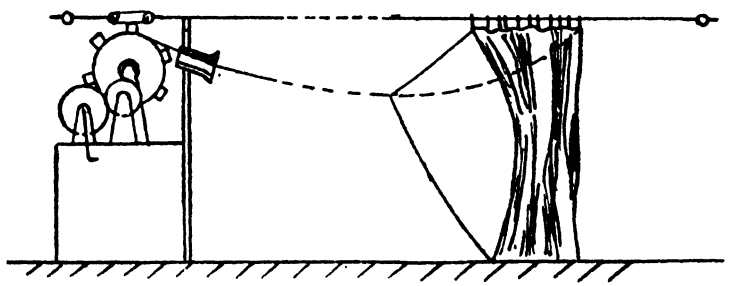


FIG. 21

wire, such that the rear end of the curtain is not pulled until it is fully extended.

Scene Painting

It is not proposed to deal exhaustively with this subject, as the actual designing and drawing of scenery cannot be learnt in a few minutes, and must be left to the execution of an artist.

However, it is advisable for the amateur society's handy-man to know how to make scenery for painting by himself if he also happens to be sufficiently of an artist, or by a volunteer artist. And, further, he should know the general technique of scene painting.

Scenery broadly consists of two kinds, drops and flats. Drops may be divided into back cloths and borders or sky strips. For small stages flats should be about 3 ft. 6 in. or 4 ft. wide, and somewhat higher than the proscenium opening, probably about 15 ft. They are made

of fine canvas or hessian stretched upon a rectangular frame made of wood 2 in. by ⅞ in. This frame should have a central cross-piece midway between its ends, and at least two opposite corners (preferably all four corners) should be braced by short diagonal pieces.

The hessian is stretched slightly in both directions when being tacked in position on the frame. It is useful to cover both sides of the flats so that they are reversible, in which case the hessian must be tacked along the edges of the frames.

Sky cloths and borders must also be stretched in both directions on frames or on the wall before painting—any seams necessary in both back cloths and flats should be horizontal.

The first step in painting back cloths, borders, and flats is to whiten the hessian. This may be done with white distemper, or "ceilingite" prepared as directed by the makers. Or one can make one's own distemper from whitening, which is broken up into small pieces and soaked overnight in cold water. The clear water is drained off from the pulpy mass and liquefied size added to reduce it to the consistency of rather thick milk, which just separates into drops after falling off the brush for a short distance as a thin stream. Care should be taken that the whitening is not too thick, or otherwise when it becomes dry it will rub and peel off in flakes. When dry the scenery thus whitened is ready for drawing and colouring.

The required outlines are first drawn in in charcoal, which can be purchased in sticks from any artist's colourman. This can easily be rubbed off with a soft cloth as mistakes are made or alterations have to be made.

For back cloths plenty of room is necessary, and it may be necessary to paint them in position. In any case, it should be possible for the artist to stand well away from the canvas in order to be able to judge of the perspective. For the same reason it is best when drawing to tie the charcoal sticks to the end of a long stick, say,

3 ft. or 4 ft. long. This simple expedient helps considerably in obtaining the breadth of treatment necessary in scene painting.

After completion of the drawing the necessary colours can be mixed, either using any of the well-known and reliable brands of distemper colours, or using whitening coloured as required with powder colours, obtainable from most oil and colour stores, and mixed with size as already described. The colours should be applied as washes to the broad areas first, using a broad distemper brush wielded in the proper "whitewashing" manner, and, when dry, the details can be worked in where required with smaller brushes.

When the colouring is completed the outlines of sky borders, foliage, etc., can be cut as required, and any pieces requiring support can be tacked to special strips of wood screwed to the wooden framework of flats, or sewn to fine netting such as is used to cover over strawberry beds in the garden.

Scenery for interiors can frequently be made with very little, if any, scene painting by making use of ordinary wall-papers. It is first, however, necessary to whiten the canvas as already described for painting or the wall-paper cannot be pasted to the canvas. Ordinary cold water paper-hanger's paste will be found the least troublesome for working with, and, as for distempering or whitewashing, a broad brush is practically essential. A very serviceable set of scenery is provided by using imitation oak-panelled wall-paper, and it will be useful to paper both sides of the flats differently to give two different room sets. For instance, one side might do for a library or dining-room interior, and the other for a kitchen interior.

In making such wall-papered scenery, the effect is generally improved by providing a white paper freize above a paper or painted picture rail.

A word may perhaps be needful as to the finishing off of flats. These should be provided on their backs

adjacent to one edge with a pair of cleats a foot or two from each end, and along the other edge with a pair of cords, for use in fastening adjacent flats together. Also, it is useful to provide a couple of screw-eyes on the back surfaces of the flats at about 4 ft. above the ground, for engagement by stay rods, if the flats are not sufficiently tall to be engaged between forks provided on the front-to-back side rafters above the stage. In place of cleats on the flats good sized screw-eyes can be used.

In order to enable a box set of flats to stand up on the stage without the aid of roof forks or stage stays, the flats for use at the two rear corners of the set may be hinged together along their edges. Similarly, fireplaces and bay-window pieces built up from wide flats having half flats hinged to their edges, as described previously in this chapter, are useful stock scenery to possess, since they will stand up of their own accord and help to give stability to a box set.

CHAPTER IV

STAGE NOISES

FOR those responsible for the production of "effects" in amateur theatricals it will, no doubt, be useful to know how the sound of falling rain pattering on the roof can be imitated by means of a simple apparatus which may be made at an extremely small cost.

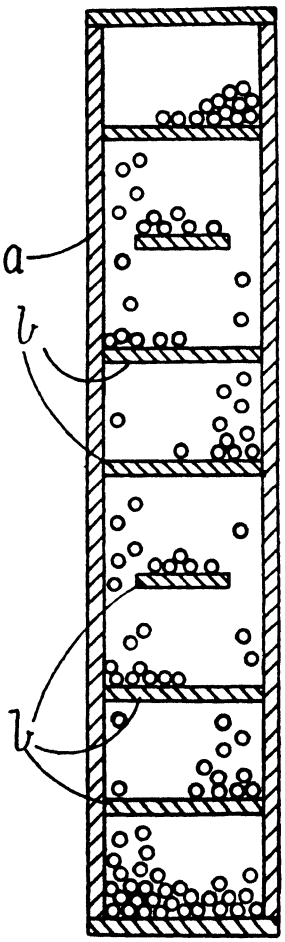
Rain

As is no doubt well known to those interested in these matters, such a piece of apparatus is known as a "rain box," and in principle consists of a box containing lead shot or dried peas and provided with a number of baffle surfaces, so that by tilting up one end of the box the shot or peas can be made to travel from end to end of the box, striking the baffle surfaces during their passage and thus causing a pattering noise.

A "rain box" as described below, may be made in about half an hour at an expenditure of about one shilling, and has been found perfectly effective in use.

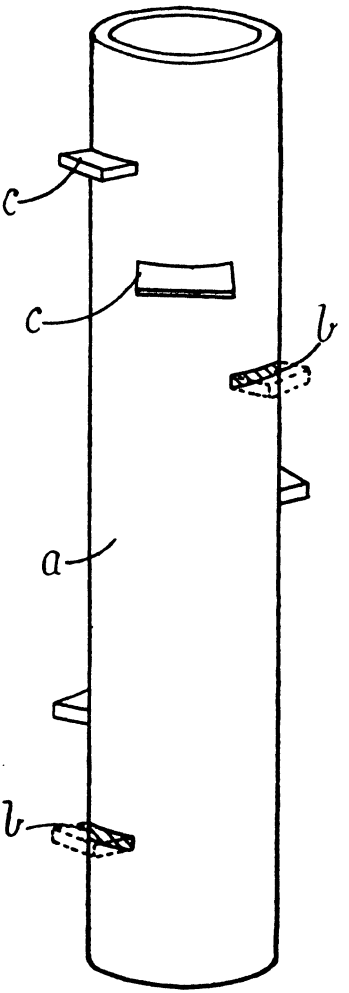
First of all purchase, or otherwise procure, a large cardboard roll or tube *a* (Fig. 22), of about 5 in. or 6 in. diameter and at least 3 ft. long. If this has no covers for its ends, they can be made by cutting out discs of cardboard of the right size and fastening them in position with paste and brown paper strips. They must not, however, both be fastened in position until the shot or peas have been placed in the tube.

Along the tube at intervals of about 6 in., preferably spaced spirally round it, are cut narrow slots *b* of a width rather less than the diameter of the tube. In these slots are fitted cardboard strips *c*, cut from cardboard of a thickness equal to the width of the slots *b*. Since these strips *c* are of less width than the diameter of the tube *a*, when they are pushed home in the tube, spaces are left round



Section

FIG. 22



Partially Constructed

FIG. 23

their edges. After insertion into position, as shown in Figs. 23 and 24, the projecting ends of the strips *c* are cut off flush with the outside of the tube, and the slots then covered over with brown paper pasted in position to prevent the strips from coming out of position.

After the strips *c* have been fitted in position, the cap or cover is fastened on one end of the tube and the apparatus "loaded" with, for example, a sixpenny packet of dried green peas, although, obviously, ordinary yellow peas or lead shot can be used instead. The second cap or cover is then fastened on the open end of the tube, and to give a neat finish the whole of the outside of the tube is covered with brown paper pasted in position, the final result being as shown in Fig. 25.

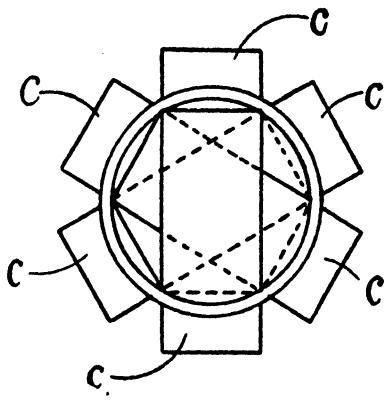


FIG. 24

As will be seen from Fig. 22, when the tube is tilted or stood upright the peas travel downwardly, bouncing from one strip *c* to another, bounding against the walls of the tube, and thus making a rapid pattering noise. Owing to the strips *c* not being one under the other the peas cannot fall freely from top to bottom of the tube, which would make comparatively little noise, but are repeatedly and noisily arrested by successively striking the baffle strips *c*.

The severity of the "rainfall" can be regulated by inclining the apparatus to a suitable extent so that the peas move more or less rapidly, whilst the apparatus can be made to work continuously by merely inverting it as soon as the peas have passed from one end of the box to the other.

Wind Effects

In many amateur plays the accompaniment of wind is frequently required to give the necessary atmosphere. This may be easily simulated visually by means of black threads fastened to window curtains and pulled from the wings, or more naturally by means of a suitably placed electric fan, if this is available, which is switched on and off as desired. However, such visual evidences of wind

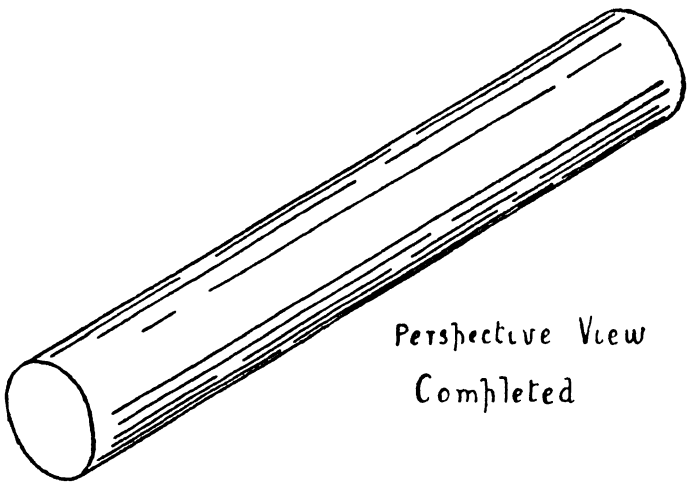


FIG. 25

are apt to give a bright and breezy atmosphere, rather than, as is often required, a gloomy and eerie atmosphere. To produce such an atmosphere the whistling and hissing sound of wind is required.

The sound of wind can to a certain extent be imitated by brushing a piece of silk vigorously with a clothes brush, the silk either hanging loosely, when a soft swishing noise is made, or being stretched tightly, when a harsher sound is obtained. However, these methods require the expenditure of a considerable amount of energy, and a good deal of room in the wings which is often restricted on amateur stages. For use in a confined space and requiring the minimum of exertion, a "wind

machine" is invaluable, this being a drum having a surface consisting of a number of slats, which is rotated in contact with an apron of silk. Such a machine may be constructed simply and cheaply in the following manner, which is illustrated in the diagrams—

At the ends of a wooden baseboard *a* (Figs. 26 and 27), about 18 in. long, 2 in. wide, and ¼ in. thick, fix two

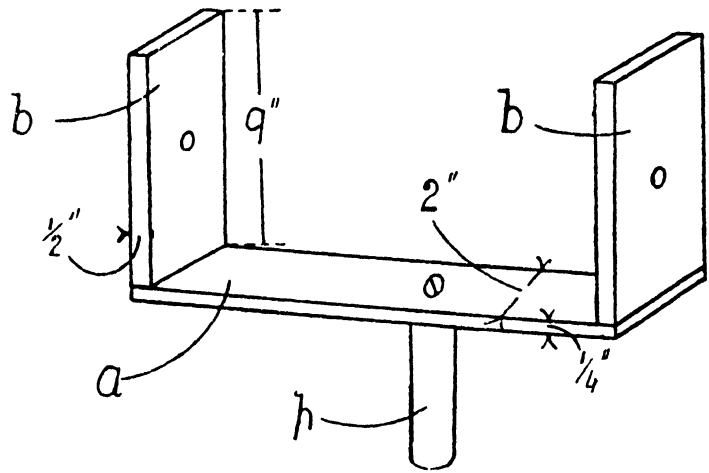


FIG. 26

uprights *b* of about 2 in. in width, ½ in. in thickness, and 9 in. high, after having first bored holes for the spindle of the drum 4½ in. from the bottom ends of the uprights *b*. Centrally to the bottom of the baseboard *a* fasten by a screw a short length of stout rod *p*, such as a piece of broomstick, to serve as a handle. Then cut out from ½ in. wood two pieces *c*, 8 in. square, for the ends of the drum. Find the centre of one of these pieces, draw a circle just touching its sides, divide the circle into twelve equal parts, and join adjacent points by chords of the circle, as in Fig. 28. Then lay one piece on top of the other, and saw off the corners until regular twelve-sided end pieces for the drum are formed. Next bore a suitable sized hole centrally in these end pieces for the drum

spindle, and then out of thin wood, say $\frac{1}{8}$ in. in thickness, cut out six narrow strips *d* equal in width *x* to the flats on the end pieces *c*, and 16½ in. long. Nail or screw these to alternate flats on the end pieces *c*, leaving spaces between adjacent strips, as shown in Fig. 29.

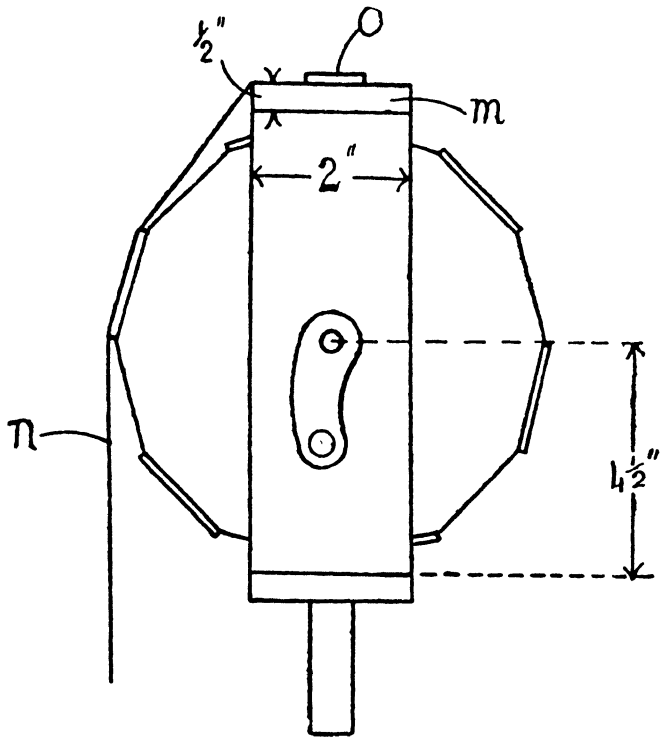


FIG. 27

The drum spindle *e* (Fig. 30) can consist of a length of round wooden rod, say, $\frac{3}{8}$ in. or ½ in. in diameter and 20 in. long, and this is passed through the uprights *b* and drum end pieces *c*, the holes in the former being slightly larger than the spindle *e*, and those in the end pieces *c* being a tight fit on the spindle. If the end pieces *c* are not a tight fit on the spindle *e*, they can be made so by driving nails into the holes longitudinally of the spindle

e. Between the end pieces *c* and the uprights *b*, washers *f* are preferably fitted on the spindle *e*, to prevent endways movement of the drum between the uprights *b*.

On one projecting end of the spindle *e* is fastened a wooden crank arm *g*, on the opposite end of which is fastened a handle spindle *h*, which may consist of a screwed rod fastened in position by nuts, and over the spindle *h* is passed a short length of brass tube *l*, held in position by another nut on the outer end of the spindle *h*.

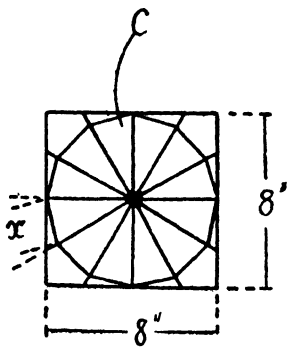


FIG. 28

Across the uprights *b*, immediately over the spindle *e*, is fastened a strip of wood *m*, ½ in. in thickness and 2 in. wide, to which is fastened the silk apron *n* (Fig. 31). This consists of a half-yard length of watered silk, or any other

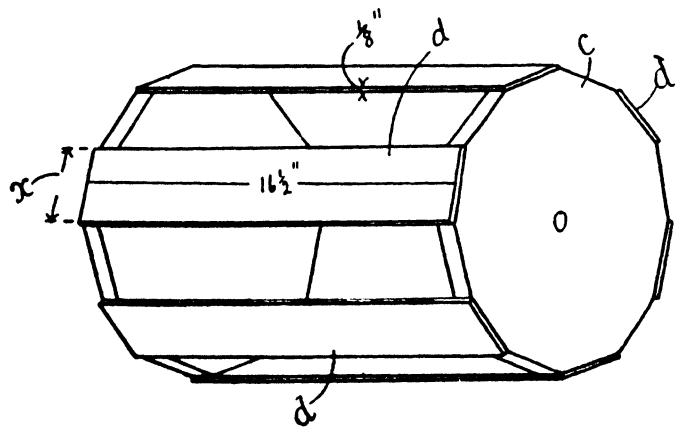


FIG. 29

silk having a corduroy or ribbed surface, and 16½ in. wide. This is fastened along one edge to the strip *m* by means of a thin lath of wood *o*, with the ribs of its surface

extending longitudinally of the drum. This completes the construction of the machine.

In using the above construction of "wind machine," the handle *p* is held in the left hand, with the silk apron *n* hanging loosely down in contact with the surface of the drum. The latter is then rotated by means of the handle

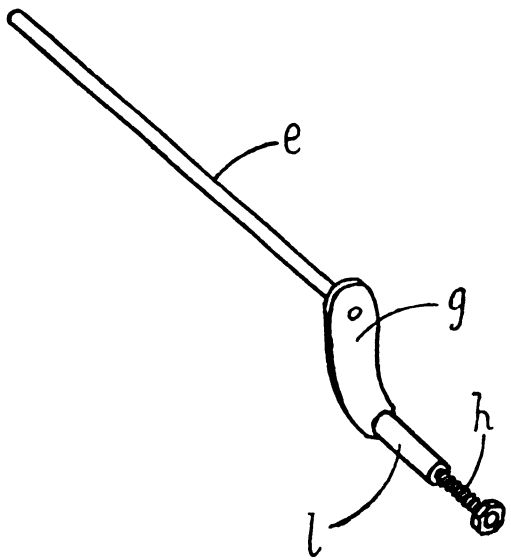


FIG. 30

h, and the strips *d* striking the surface of the silk and rubbing against its ribbed surface make the characteristic shrieking noise of the wind. By rotating the drum fast the pitch of the sound is raised, so that a rising shriek of wind can be imitated by gradually increasing the speed of the drum and *vice-versa*. In order to make the sound louder a pull can be exerted on the free end of the silk apron *n*, or a weight can be hung upon it, so that it is drawn more tightly into contact with the surface of the drum.

If desired, a greater volume of noise can be obtained by fastening two silk aprons to the cross-piece *m*, so that one hangs down on each side of the drum.

There is one point to be noted in working the machine, and that is that the drum should not be rotated at a uniform speed. A strong wind very rarely blows at a uniform speed, and if it does it is apt not to be noticeable. Consequently, to imitate the natural gusts and periodic shrieks of the wind, the machine should be

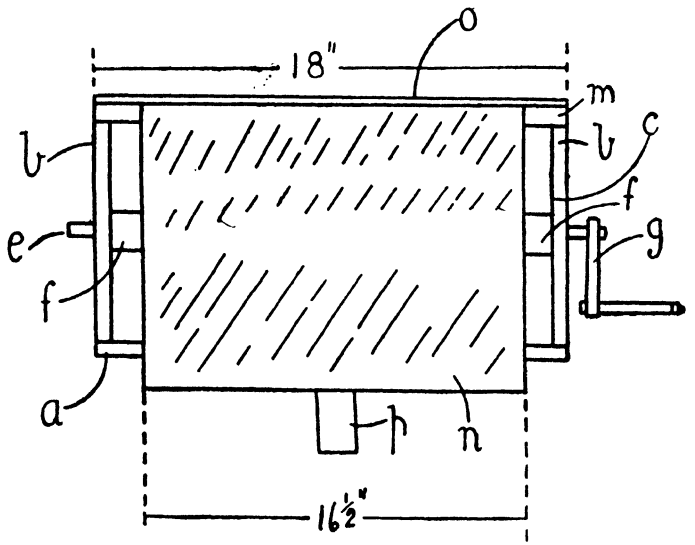


FIG. 31

operated spasmodically at varying speeds, and with varying degrees of pull upon the silk apron or aprons.

Thunder

Of all stage noises thunder is one of those most frequently required, and yet it is the most difficult to produce in a realistic manner. In criticisms of amateur performances, if there is thunder in the production it almost invariably comes in for adverse criticism, generally, fortunately, of a kindly and magnanimous variety. More often than not, amusement is frequently aroused in the course of the production by the noises offered to the audience as an imitation of thunder.

The insuperable difficulty arises from the impossibility of making a sufficient volume of noise to compare with that wrought by the forces of nature. It is true, of course, that we never hear a thunder-storm except at a distance of something like a mile at the nearest, and, therefore, one is only called upon on the stage to imitate the noise heard at such a distance. It is perhaps, however, fortunate that it is impossible to imitate the volume of noise sufficiently, for many people in the audience are no doubt terrified of real thunder-storms and would, therefore, be similarly affected by an imitation approaching closely to the real thing.

Apart from the impossibility of adequately imitating the volume of sound produced by real thunder, one has to preserve a sense of proportion to the extent that the smaller the stage and hall, the smaller should be the volume of sound produced, and to a certain extent, of course, one has to be guided also by the nature of the play and the importance of the thunder to the action. In some plays the thunder is merely a comparatively unimportant accessory to a storm of which the most important part to the action of the play may be the rain, or even lightning. One sometimes has even lightning storms without the accompaniment of thunder, and it is always well to consider whether one cannot do without thunder altogether.

On the other hand, thunder may be important to the play, to create a feeling of tension, to work up the excitement, or even to take a more active part such as to conceal a revolver shot, breaking window, or other noise.

Having decided that stage thunder is necessary, there are various methods of producing it, according to the volume of sound required and the means available for producing it. If there is plenty of room in the wings and at the back of the stage, it can be produced very successfully by wheeling an ordinary railway porter's hand-barrow having iron wheels along the floor, and then down one, two, or three sharp steps according to the

length of "clap" desired. The best effect will be produced if the steps are of different material to the floor. For example, cement or stone steps following a wooden floor will be best, or, if the floor and steps are both of the same material, a layer of sheet iron may be loosely laid on each step. If no real steps are conveniently available,

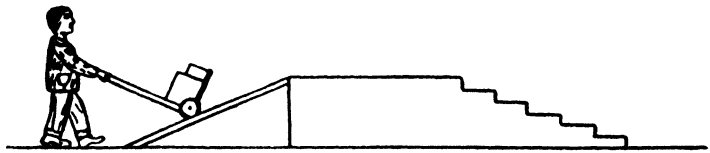


FIG. 32

property steps can be made use of, the barrow being wheeled up planks to the top of the steps as in Fig. 32. Movement of the barrow should be stopped immediately after the "clap," but after a suitable interval wheeling can be resumed, and the barrow again brought round to the other side of the steps and wheeled up to the top of them again.

A somewhat similar and very old method is to use, in place of the barrow, a small heavily loaded truck or trolley running on four irregularly shaped wheels, as in Fig. 33.

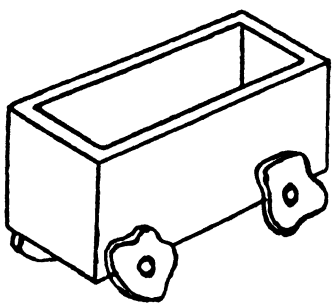


FIG. 33

A very well known and probably the most effective method, which can be made use of on most amateur stages however limited the wing space, is to use a thunder sheet, as in Fig. 34. This consists of a length of about 26 gauge sheet iron, say 3 ft. by 6 ft., suspended at its upper end from a beam in the wings and provided at its lower end with a handle. The roll of thunder is imitated by shaking the sheet backwards and forwards at its lower end by means of the handle, and the "clap"

can be made by suddenly shaking the sheet very violently at the end of the roll, or the roll and clap can be imitated with a drumstick or a wooden mallet. The secret of success with this device is to suspend the sheet by ropes or cords so that the whole of it is free to vibrate, and it must be free from any cracks or splits. If it is inconvenient to hang the sheet in the wings, its two ends can be fastened to wooden bars as in Fig. 35, the ends of which are held by two stage hands, who shake the sheet between them just as one would shake a tablecloth or blanket, finishing up with one of them giving a final kick with his boot at the sheet.

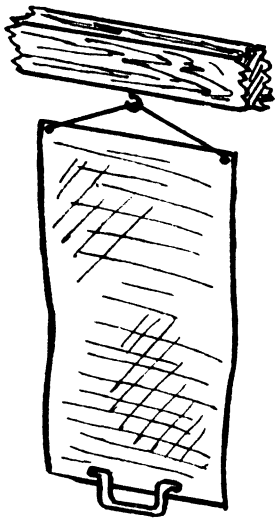


FIG. 34

Effective thunder for a small stage can be produced without any expense at all by borrowing a large tin tray, about 3 ft. by 2 ft., and this is held at one end by the thunder maker, in front of his

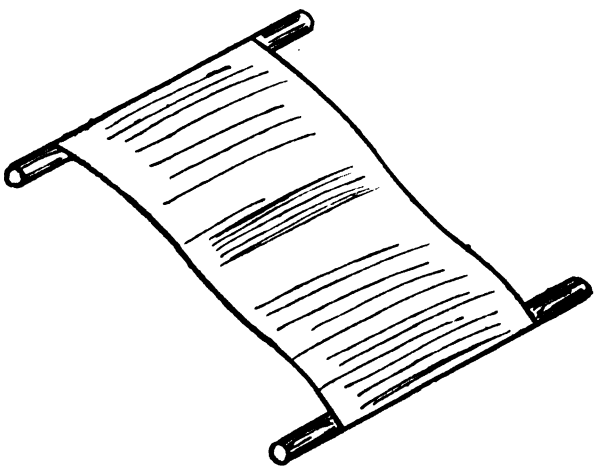


FIG. 35

knees. He then rapidly rattles his knees alternately on the tray, to produce the characteristic rolling sound, for a sufficient period of time, and ends his performance by kicking the tray hard with his foot. Of course, the condition of the tray is not improved by the latter treatment, for which reason it may be policy to purchase a cheap tray rather than to borrow one.

As a variation of the foregoing method, if the tray can be treated as a stage prop, it is best mounted in a

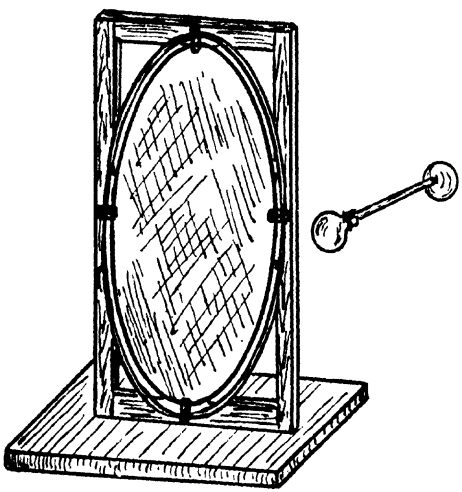


FIG. 36

wooden frame mounted on a firm base as in Fig. 36. With this is used a striker, such as a gong striker provided with a head at both ends. One head is covered with cloth, leather, or other soft material, but the other is left uncovered. The covered head is used on the tray to make the rolling noise, and the uncovered head finally to make the clap.

A very good way of making thunder is to make use of a bass drum and a pair of cymbals. If the play is accompanied by an orchestra the duty of making thunder can be entrusted to the orchestral big drummer, but if

not it can be made in the wings. It is only necessary to make a sufficiently long roll on the drum in the usual manner, and then to terminate it with a violent blow on the drum and a simultaneous clash of the cymbals.

With reference to all of the foregoing expedients, it is well to remember in making the thunder "roll" to

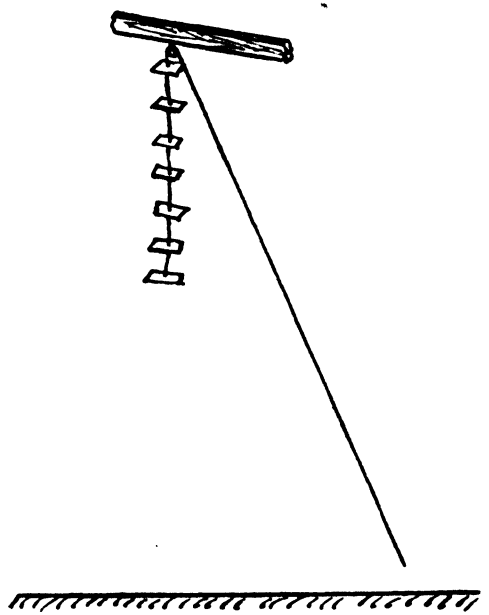


FIG. 37

commence softly, and then to work up gradually louder and louder until the final "clap" is delivered.

If exceptionally noisy "claps" are required a special apparatus may easily be made for this purpose, as illustrated by Fig. 37. This consists of a long cord on which are threaded and tied between knots a series of plates made alternately of hard wood, such as teak or oak, and metal plates such as sheet iron. Spaces of about a foot are left between the plates. The end of the cord is passed over a pulley or through a screw-eye in the roof of the stage, and the plates pulled as high up as

they will go. The end of the cord is then cleated or tied down until the "clap" is to be produced. At the right moment, after freeing the end of the cord, it is suddenly released, so that the metal and wood plates fall successively upon the stage and produce a sudden and exceedingly noisy crash.

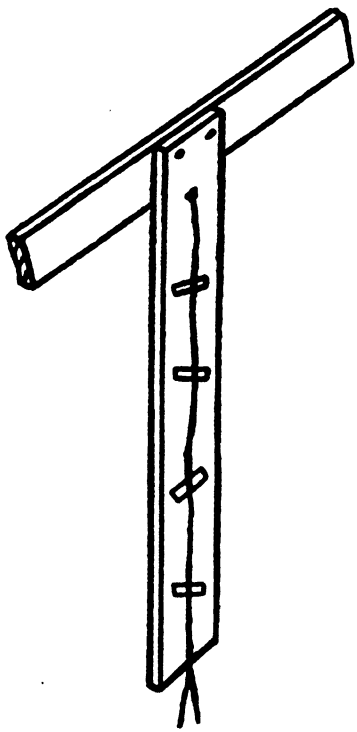


FIG. 38

Sea Noises

The sea is responsible for a variety of noises required on the stage from time to time. Briefly, they may be divided into noises produced by the elements, and noises produced by living agency. Principal among the former are the "whishing" noise of breaking waves or surf, and in the case of a storm the rushing noise of the wind, the rattling of the rigging and shrieking of the wind in the rigging, and the noise of rain.

The production of wind and rain noises has already been dealt with, and the present purpose is to deal with the principal remaining noises.

Firstly as to the rattling of rigging. This can be imitated as in Fig. 38 with the aid of a long plank fastened in a vertical position with a rope fastened at its upper end, and several small pieces of wood fastened at intervals along the rope. The lower end of the rope projects beyond the plank, so that it can be grasped to rattle the rope sharply against the plank at suitable moments.

The noise of the waves and water may be of three

kinds: firstly, there may merely be the noise produced by the breaking of the wave crests in the open sea, then there may be the noise of the waves breaking on a sandy shore, and, finally, there may be the noise of the waves breaking on a rocky or shingly shore.

For the first two the device shown in Fig. 39 can be used. This consists of an ordinary garden sieve, which may be very cheaply bought, from which the wire mesh is removed. In place of it is fixed a bottom (1) of linen or fine canvas, which is drawn taut and tightly bound

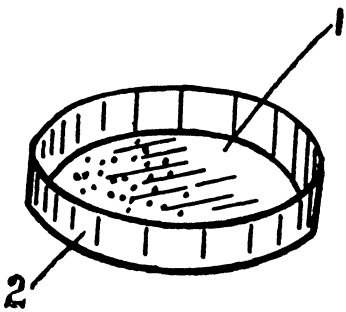


FIG. 39

in position round the edge of the frame (2) by string, or glued thereto. This linen bottom is then freely rubbed with rosin, and a quantity of very fine lead shot, such as can be obtained out of a gas chandelier counter-weight, placed in the device.

Some little practice and skill is necessary in manipulating this device to obtain a realistic effect, but, generally speaking, the procedure is to tilt the device until all the shot runs down towards one's body. Then with a broad circular sweep the shot is swirled round the interior of the device until it comes to rest, when it is again treated in a similar manner. This produces the sound of breaking wave crests or the noise of surf, and to complete the illusion of a wave breaking on a sandy shore the noise of the back wash must be imitated after each circular swirl of the device by tilting it when the shot

comes to rest, so that the shot travels across instead of round the canvas bottom (2).

The heavier noise of waves breaking on a rocky or shingly shore can be made by a device similar to the above, but with a tightly stretched parchment instead of linen or canvas and with larger lead shot. Such a device is, however, somewhat difficult to make and expensive to buy, but an efficient substitute is afforded by the head of a bass drum, if this can be swung about in the desired manner. However, the lead shot will blacken the drumhead, for which reason small steel balls should be employed. These, of course, are more expensive than lead shot, but the extra expense is worth while in preserving the drum from damage.

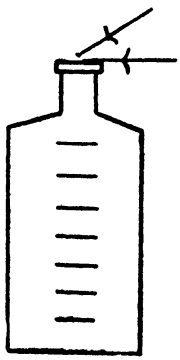


FIG. 40

Among noises made by living agency are noises for which gulls or other sea birds are responsible, and those due to human agency such as buoy bells, sirens, and fog-horns. The noise of buoy bells can be imitated by a real bell or tube struck at suitable intervals with a striker, and small sirens to be blown with the mouth can be bought for a few pence at most toy shops.

FIG. 41

There remains the noise of fog-horns which are sometimes on buoys, but more often on ships. These are very easily and cheaply imitated with the aid of an ordinary medicine bottle, if the mouth is used to blow into and across its neck as indicated in Fig. 40. Many readers will, no doubt, be able to "blow" a medicine bottle without further explanation, but for the benefit of the others it may be explained that the neck of the bottle is pressed against the lower lip, so that the upper lip projects slightly over the mouth of the bottle. (See Fig. 41.) The upper lip is then stiffened and air puffed hard against the opposite top edge of the bottle, the upper lip being used to direct the current

of breath more or less into the neck until the best result is obtained.

It is as well to try a number of bottles of different sizes until one emitting a suitable note is obtained. The larger the bottle and smaller the neck the lower will be the note.

A triple note fog-horn such as is commonly used by tug boats can easily be made as illustrated by Figs. 42 to 45. Three different sized bottles, 1, 2, and 3, giving

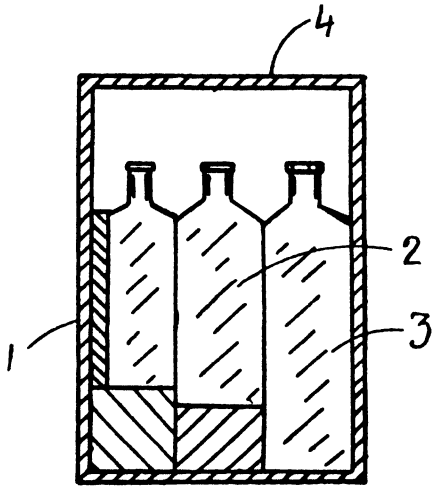


FIG. 42

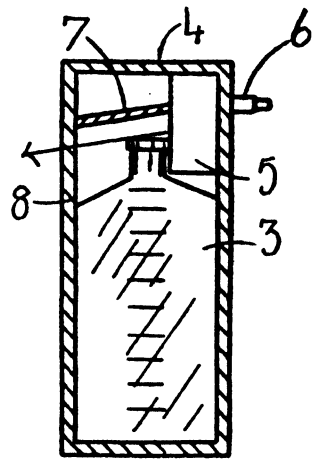


FIG. 43

suitable notes in harmony when blown, are fastened side by side in a wooden box (4), suitable packing pieces being used to hold the bottles firmly in position and to bring their mouths all to the same level. Above the necks of the bottles is fixed in the box (4) a wind chest (5), which can be made up of cardboard, great care being taken that it is perfectly airtight. In one wall of this chest are cut three slots corresponding in position to the necks of the three bottles, and another wall is fitted with a short tube carrying a mouthpiece (6). This mouthpiece is arranged to project through one of the walls of the box (4), and openings (8) are cut in the wall of the box (4) opposite

to, but somewhat below, the wind chest (5) Fig. 45. In order to concentrate the jets of air issuing from the wind chest (5) into and across the necks of the bottles, an inclined deflector (7) of cardboard or wood is fastened between the

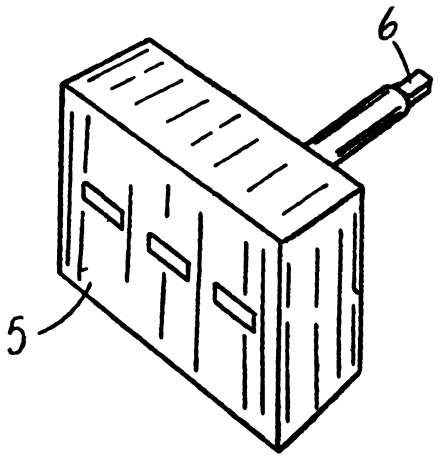


FIG. 44

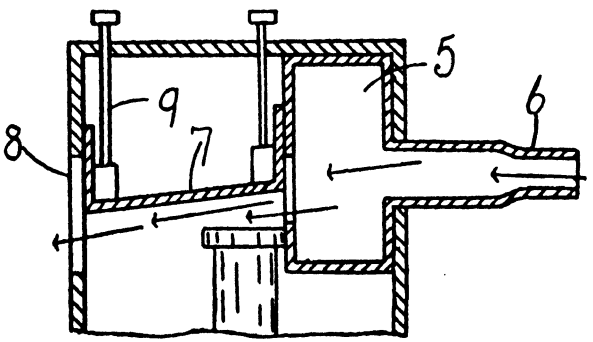


FIG. 45

wind chest (5) and the wall of the box (4) just above the openings (8).

As a refinement separate deflectors (7) may be used for the three bottles, each one being movable separately from the others towards or away from the bottle neck, and the ends bearing on the wind chest (5) being bent

at an angle, so that as the inner end of the deflector is moved, it more or less obstructs the wind chest opening, as in Fig. 45. Both ends of the deflectors (7) may be adjusted separately by means of sliding rods (9).

If it is required to imitate the noise of sea-gulls or fowls, this may be done by means of a cardboard cylinder about the size of a tea-cup having a parchment bottom through which is passed a string knotted within the cylinder. The string is liberally treated with rosin, and when the fingers are drawn along it a shrieking noise is produced. By providing a telescopic extension for the cylinder as in Fig. 46, the quality of the sound emitted can be varied.

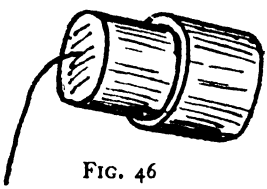


FIG. 46

The noise of birds in wood and countryside can be imitated very well with " birdwarblers," such as can be bought in toy shops for a few pence.

Miscellaneous Noises

The stage manager will, no doubt, be called upon at intervals to make many miscellaneous kinds of noises, the means for doing which can often be devised with a little ingenuity. Generally speaking, however, if it is possible to make a " real " noise this should be done. In other words, the genuine article should be used if possible. Such noises are those, for instance, of motor horns, police whistles, bells, dog barking, etc. In the latter case, of course, a well-trained dog should be used which rarely barks, but can be made to bark by some such expedient as the offer of a biscuit, or the word " cats." Generally speaking, the assistance of the dog's owner should be obtained to ensure obtaining a reliable result. A good imitation of a small dog's bark can, however, be obtained from a rubber bulb " barking dog," sold by Woolworth's Stores for 3d.

To imitate a train whistle an ordinary tin whistle may be employed, which is blown violently on any suitable

note so as to give a high-pitched shriek. However, a better effect can be produced by means of an old bicycle pump, in the end of which a hole is cut to receive the mouthpiece cut off a whistle (Fig. 47). Actually, a train whistle sounds of higher pitch when approaching than when receding, so that the illusion of movement is given if the pump plunger is previously pushed in and then gradually pulled out as the whistle is blown, giving a gradually falling note to the sound. The force of blowing must be varied with the sound, so that the sound starts faintly, gradually increases in loudness until the imaginary train arrives, and then gradually dies away as the pitch of the note falls still further.

Church or clock chimes are best imitated by bars of steel, of different lengths or thicknesses, or by metal

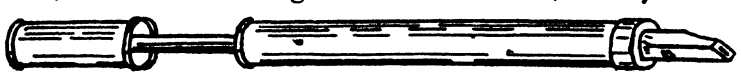


FIG. 47

tubes of different lengths or diameters hung freely from a fixed support, and struck by means of a bare or muffled striker. If chimes are to be rung, the bars or tubes should be allotted numbers from left to right, and the chime to be rung written down by means of the numbers in proper succession on a card fixed near the operator.

In making a set of bell peal tubes, metal tubes are best and they should be of hard metal. "Harringtons" alloy tubes are best for clock chimes of high quality, but any German silver alloy will give good results. However, for stage purposes, steel tubes such as cycle tubing will probably give good enough results.

Ordinary open-ended tubes can be used, but they are best made with a partition across near one end, the partition having a small central hole. They should be hung by string or catgut loops passing through the closed ends of the tubes, and passing over pairs of nails spaced wider apart than the ends of the tubes. (See Fig. 48.)

If open-ended tubes are used their tone can sometimes

be improved by notching them close to the suspended ends. The tubes should be struck by a small wooden mallet *upon their suspended ends*, and not across their lengths.

For a scale of eight notes, suitable lengths of tubes 1¼ in. external diameter and $\frac{1}{16}$ in. gauge are as follows—

No. 1. 4 ft. 9 in.	No. 5. 4 ft.
„ 2. 4 ft. 7 in.	„ 6. 3 ft. 9 in.
„ 3. 4 ft. 3 in.	„ 7. 3 ft. 8 in.
„ 4. 4 ft. 1¾ in.	„ 8. 3 ft. 7 in.

If a chiming or striking tube is required, in addition, a suitable tube of 1½ in. external diameter would be 6 ft. 6 in. long.

Clock winding can be imitated either with a child's rattle, similar to the old police rattle or bird-scaring

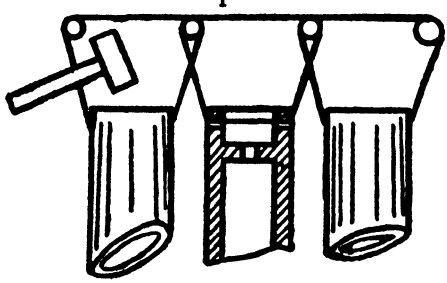


FIG. 48

rattle, but operated, so to speak, from the wrong end of the stick. If swung in the usual manner by the handle a jerky sound is produced, for which reason the handle should be held tightly in one hand, and the rattle part moved smoothly round in a circle with a finger of the other hand, for the required length of time.

A useful piece of apparatus for imitating clock winding and for other purposes consists, as shown in Fig. 49, of a toothed wheel (1) mounted between two side pieces of wood (2), a strip of thin hard wood (3) being fastened at one end by a screw (6) so that its free end rests upon the teeth of the wheel (1). The spindle of the wheel is provided with a handle (4) by which it can be turned. On the other side of the wheel a small, but heavy, iron pawl

(5) is pivoted between the side pieces (2). The spring strip of wood (3) can be swung about its screw (6) into or out of position, and, similarly, the pawl (5) can be tilted backwardly out of contact with the toothed wheel (1), so that either of these two clicking devices can be

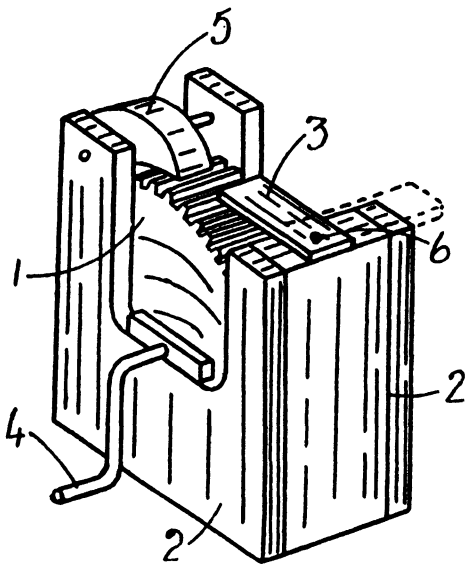


FIG. 49

brought into use as desired, the one to give a light clicking noise, and the other to give a heavy metallic clicking noise.

The noise of sleigh bells or the jingling of harness on horses is best imitated by fastening one end of a strap or cord to the wall or other convenient fixed support, connecting it to the wall lower down by a weak coil spring and fastening to the strap or cord between its fixed end and the spring a number of bells, or a number of short strings to which are tied odd pieces of brass or other metal. In using this device the free end of the strap or cord is pulled backwards and forwards against the action of the spring, each reversal of movement being accompanied by a

jingling of the bells or pieces of metals. By this means the rhythmic sound of bells and harness produced by horses can be easily produced. However, the sound can be imitated almost as well by holding a strap or cord carrying bells or odd pieces of metal in the hand and shaking it at regular intervals. Or, again, the strap or

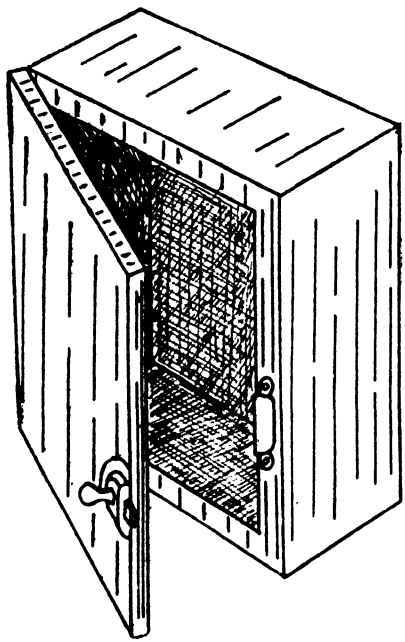


FIG. 50

cord may be hung freely by its upper end, and its lower end shaken at regular intervals as required.

The opening and closing of doors is best imitated by means of a real door in the wings if there is one, but, if not, a box of stout timber should be made and fitted with a heavy door provided with a lock and handle just the same as an ordinary door, as in Fig. 50.

For imitating the noise of "smacks on the face or blows of a similar kind given on the stage, the well-known "slap stick" illustrated by Fig. 51 can be employed. This can be easily made of two thin strips of wood about

2 ft. 6 in. long and 2 in. wide, one provided with a handle (9) at one end, and the other (10) being fastened to the first piece just in front of the handle, by means of a couple of screws, a small thickness of cardboard or wood being first placed beneath the end of the piece of wood (10), so that the strips are spaced apart for the

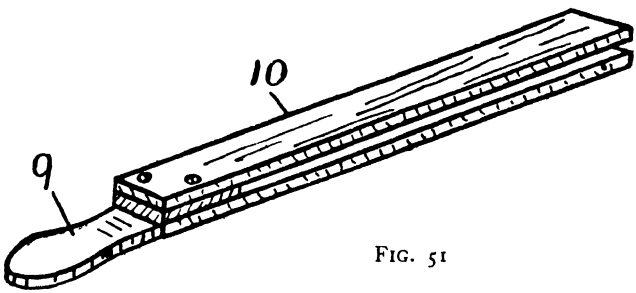


FIG. 51

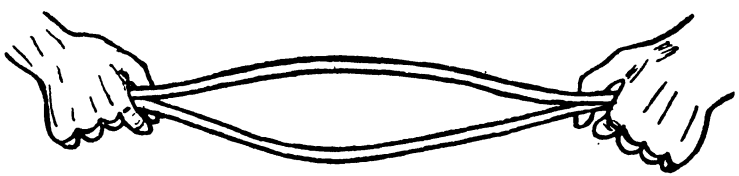


FIG. 52

greater portions of their lengths. By striking any object sharply with the split stick thus produced, the two strips of wood will strike together and make a sharp cracking sound.

A less wooden and somewhat softer smacking sound can be made with the device illustrated by Fig. 52. This consists of a couple of straps fastened with their smooth sides together, or held together at their two ends by the two hands. Prior to the noise being required, the hands are approached together so that the two straps are bowed outwardly, as shown in the figure, and on the noise being required, the two hands are jerked suddenly apart so that the straps suddenly straighten, and in doing so strike sharply together and emit a " smacking " noise.

The imitation of the noise of a train is sometimes required, and it is a somewhat complicated matter to produce a really detailed imitation such as is given in the "Ghost Train." In most cases the train noise required is a distant one, and can be sufficiently well indicated either by a whistle as already described, or by the characteristic puffing sound, or both. The puffing sound can

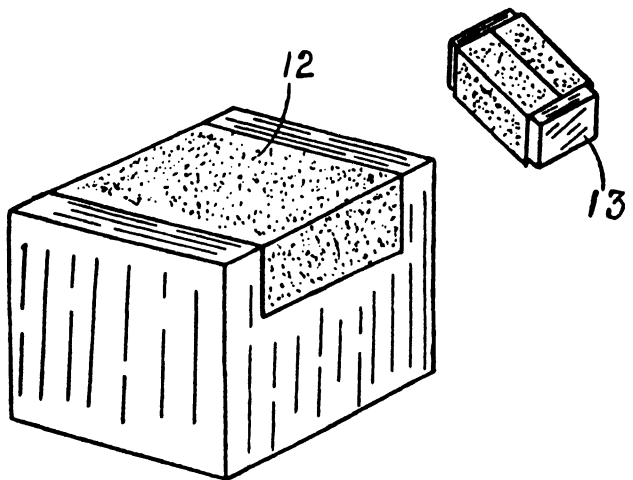


FIG. 53

readily be obtained (see Fig. 53) with the aid of an upturned wooden sounding box, upon the bottom of which is laid or fastened a sheet (12) of medium sand-paper. This is rubbed as required by a cork block (13) wrapped round with the same grade of sand-paper. For a softer or more distant effect, instead of the cork, a stiff-haired brush may be used in place of the cork block, while for a still more distant effect, instead of employing the sounding box, two corks wrapped in sand-paper, or a sand-paper covered cork and a stiff-haired brush may be rubbed together.

The production of train noises at close quarters is somewhat too ambitious for most amateur stages, and should generally be avoided. However, if a sufficient staff of stage hands is available, a realistic effect may be

obtained by one person blowing a suitable whistle, another making a puffing sound as described above with sand-paper, a third rubbing a perforated metal box (Fig. 54) with a wire whisk, and a fourth beating a drum with wire brushes (Fig. 55). At the same time the noise of escaping steam can be made by a fifth person provided with a compressed air cylinder or a hard blown motor

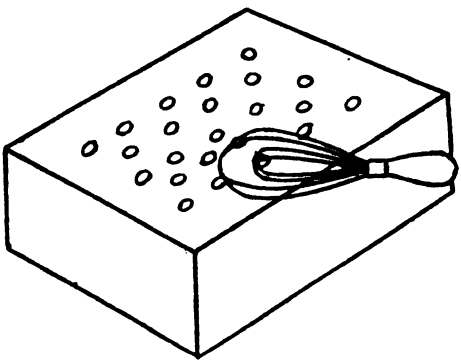


FIG. 54

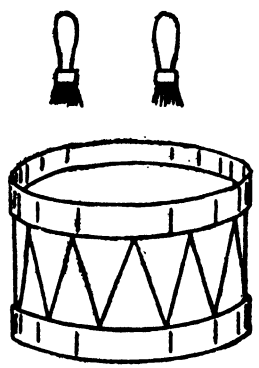


FIG. 55

car inner tube, from which he allows the air to escape with a hissing noise by depressing the valve. Careful rehearsal with these props is, however, required, so that they are manipulated in a suitable co-ordinate manner with a regular rhythm.

There is one train noise which is fairly frequently required on the amateur stage, and that is the noise heard whilst travelling in a train. This is a combination of the noise of wheels running on the rails and clanking over rail joints and points, and of the noise of escaping engine steam. The general effect can be rendered fairly well by the machine illustrated in Fig. 56. This consists of a wooden drum *a* mounted on a spindle *b* turned by a handle *c*, and mounted in a framework forming a stand *d*. On the drum is fixed at one side an old roller skate *e* with the wheels outwards, and at the other side one-quarter of the circumference of the drum is covered with rough sand-paper. Fixed to the stand *d* is

a plate *g* of sheet iron, which is curved round the drum in such a position as to be struck by the wheels of the roller skate once during every turn of the drum. On the opposite side of the drum to the plate *g* is fixed to the stand *d* a stiff brush *h*, such as a household scrubbing brush, with its bristles just rubbing the surface of the drum. As the drum is rotated, the skate makes a regular

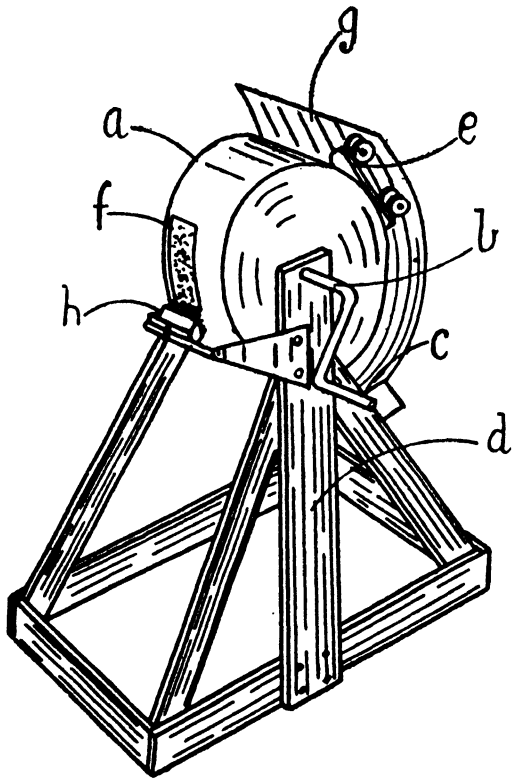


FIG. 56

clanking noise as it strikes the sheet iron plate *g*, whilst there is a continual rushing noise caused by the brush bristles rubbing on the drum, with a regular puffing sound caused by the sand-paper *f* in the intervals between the clanking noises.

The noise of moving aeroplanes and motor cars can

be effectively simulated, if there is a supply of electricity, by means of an ordinary electric vacuum cleaner. This should be placed in a wooden box having a lid that can be gradually opened and closed to give gradual increase of or diminution of the sound, representing approach and departure of the aeroplane or motor car. The rising note of starting and the falling one of slowing down may be sufficiently given on starting up or stopping the cleaner, but if this is too rapid, a variable slide wire resistance should be used in series with the motor of the cleaner, so that the speed can be varied as slowly or quickly as is desired. To a certain extent, also, the sound can be varied by applying the suction nozzle against the floor or wall, the speed of the motor, and, therefore, the pitch of the note, dropping the more the mouth of the nozzle is closed.

A vacuum cleaner of the rotary brush type enables the best effect to be obtained, for the machine can be stood on a sheet of sand-paper, so that the brush continually rubs against the sand-paper and produces a rushing noise as an accompaniment to the buzz of the motor representing the engine.

A good aeroplane effect is obtainable with a massage "vibrater" and a drum head.

If no electricity or vacuum cleaner is available, the noise of a motor car can be fairly closely imitated by means of an apparatus such as illustrated in Fig. 57. This consists of a box *l* provided with a lid *m* which can be opened and closed, and having mounted therein a number of small gear wheels *n* driven by a large central gear wheel *p* fixed on a spindle projecting through the bottom of the box, and provided with a handle by which it can be turned. The speed should be gradually increased to give an impression of gradually increasing speed, then a short period of silence should occur for change of gear, and the turning started afresh at gradually increasing speed. Normally, two changes of gear should be allowed after starting, and the lid *m* gradually

closed as, in imagination, the vehicle recedes. The gear wheel *p* should be from 9 in. to 12 in. in diameter, and the smaller wheels *n* some 2½ in. to 3 in. in diameter. Four or more of the latter should be employed.

The sound of horses' hoofs on the ground is fairly frequently required, and the simplest means of imitating this is, perhaps, the oldest (Fig. 58), namely, to use a pair of half-coconut shells held in the hands and

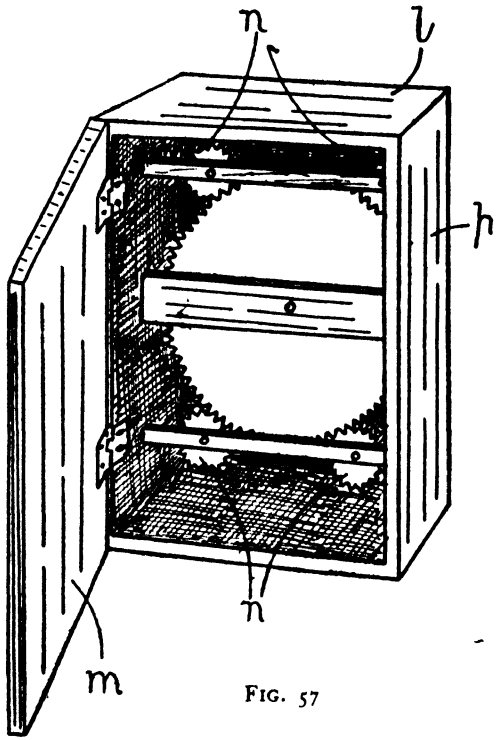


FIG. 57

struck against a suitable surface in such a manner as to simulate walking, trotting, or galloping as desired. If the shells are struck on a stone or slate surface, the noise on a hard cobbled road is given, whilst on a rubber or cork mat, the noise on grass is sufficiently closely imitated. A soft wooden surface will give a sound approximating to a macadam road. A word is, perhaps,

necessary as to how the shells should be struck for the different gait of the horse. If several horses are to be represented, the blows can be of any irregularity or speed, but if one horse only is represented, care must be taken in manipulating the shells. For example, to imitate walking, the times of striking are indicated by the x's in the following succession of equal time intervals: oxoxoxox. In the case of trotting, the times of striking are as

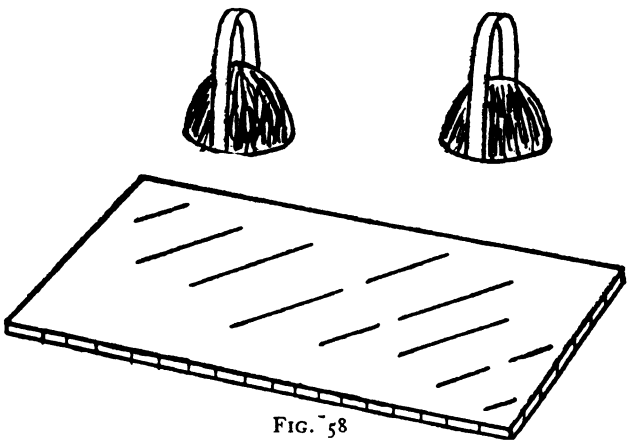


FIG. 58

follows: xxooxxoo. Cantering, xxxoxooo, and galloping, xxoxoxoo. The time intervals are, of course, shorter as the gait increases in speed, from walking when the beats may be as slow as desired, up to galloping when the beats can be as fast as they can be made.

"Crashes" of various kinds are often required, and may be effected in many ways. One common way is to drop a number of iron plates on to the stage floor from the top of a pair of steps. The smashing of glass is usually done by pouring a bucket full of broken pieces of glass into another bucket or enamel bowl. For china crashes, broken china is used in place of glass.

The impact of rifle shots or arrows is well represented by striking a leather suitcase sharp blows with a cane. The "whine," if desired, may be produced by softly blowing a siren whistle.

CHAPTER V

THE GENERAL PRINCIPLES OF MAKE-UP

THE purpose of this chapter is not to deal with the practical side of making up, concerning which many excellent little books have been published, but to deal with general principles, i.e. to deal with the theory of the subject, for the guidance of those who know how to use grease paints.

General Remarks

The application of grease paints is a fairly simple matter, and the accomplishment of straight " make-ups " does not present much difficulty; but it is not by any means an easy matter, without considerable experience, to obtain any specified result to order, given a particular face to deal with. For example, it fell to the writer's lot once to make up as an old lady of seventy, a young lady in the early twenties with a plump round face, whilst a young man also in the early twenties had to be made up as a retired Indian colonel. It is to place amateurs in a position to deal with problems such as these that this chapter is written.

The whole theory of " make-up " is based on knowledge of two subjects—

1. Physiognomy (as it is affected by race, environment, character, and age), and
2. Art (so far as concerns colour, light, and shade).

Physiognomy

Firstly, as regards physiognomy, racial characteristics are fairly generally known, and need not be discussed here in detail beyond remarking that the race should be as far as possible reflected in the make-up. For example, Jews must always have a suspicion or more of a hooked nose and thick lips, Chinese and Japanese must have almond-shaped eyes on the slant, whilst Germans and Dutchmen, Swedes, Norwegians, and Danes are generally round and

full faced. Race is also to a certain extent reflected in the general complexion; the characteristic colour, therefore, is used as the ground for the make-up. For example, Eastern Jews, Turks, Persians, and Italians, Spaniards and Portuguese to a lesser extent, are all of a somewhat sallow or yellowish colour, the Japanese being somewhat browner than the Chinese. North American Indians are, of course, bronze or copper red in colour, North African niggers practically black, South African niggers very dark brown, approaching black, whilst Hindoos, Egyptians, and Arabs are lighter shades of brown.

Environment is reflected in much the same manner as race affects the colour, to the extent that residents in the East or tropical countries have a general tendency to sallowness of complexion. Persons who lead an out-of-door life develop a general ruddiness of complexion which is superposed on the sallow ground in the case of tropical residents, whilst persons living an indoor life develop a general paleness of complexion. Exposure of the face to wind has much the same effect on the complexion as the sun, viz. the production of ruddiness, but the colour is more local on the prominent features, and there is an entire absence of sallowness.

The effect of character on the face can only be learnt properly by observation, although much general knowledge on the point can be picked up by reading. A few remarks on fairly general lines will, however, not be out of place here. It is, for example, a convention or custom that good characters are generally fair, whilst bad characters are usually dark. The worse the character, the darker he is painted, both metaphorically and literally speaking. Sensuality is indicated by thick lips, a large mouth, and baggy eyes; intellectuality by deep-set piercing eyes. The pre-eminence of social qualities, talkativeness, etc., are generally marked by large and rather prominent eyes. Craftiness and greed are indicated by closely-set eyes, whilst meanness is usually indicated by thinness of the nose and lips.

The general effects of age are well known, and a little thought will readily show that age produces somewhat similar effects to residence in the tropics so far as complexion goes, i.e. in a general sallowness, indicating loss of virility in the blood. This is exhibited most strongly in the case of indoor characters, for which reason old ladies generally have a very parchment-like complexion. Age produces a progressive change in the complexion from the pink and white of extreme youth, through the ruddiness of the prime, to the sallowness of old age. Apart from the general complexion, the main characteristic of old age is change in the shape of the face, and wrinkles. The skin remains the same size, but the flesh beneath it shrinks, making creases in the skin and hollows in the countenance. The loss of the teeth probably produces the most marked effect—that of sunken cheeks—but in the present day of advanced dental treatment this characteristic is not so pronounced as it was, being practically only found in the very old and very old-fashioned folk. The effect of age cannot, however, be avoided, in so far as the bones become more prominent and hollows develop between the bones. The cheek bones become more prominent, the temples sink in, and the eyes appear to be deeper inset. Also, the flesh in the cheeks and neck shrinks, increasing the wrinkles from nose to mouth, producing wrinkles round the jaw and beneath the chin, and prominence of the muscles and other organs of the neck. A little has already been said as to wrinkles produced by age, but, in addition, a network of fine wrinkles appears round the eyes, with deep wrinkles at the outer corners of the eyes, if the character is of a kindly nature. The forehead also develops wrinkles, the positions of which are marked at a very early age by faint lines in the skin.

Art

To turn now to the art side of the subject, there are two fundamental laws to bear in mind. Firstly, that colours appear more saturated (i.e. are stronger) at low

intensities of illumination than at high intensities. That this is so is evident from the fact that the stronger the stage lighting the paler and more colourless does an ordinary person appear. Consequently, the stronger the stage lighting the heavier should be the make-up. The second law is that of irradiation, namely, that the apparent size of objects increases as they increase in brightness. A simple instance of this is the apparent increase in thickness of the filament of an electric lamp the greater the current passing through it, and, therefore, the greater its brightness. Therefore, in making up, the greater the desired apparent size of any feature, the brighter must it be coloured. As an example, the size of the nose of a red-nosed comedian can be made apparently larger by painting it vermilion than by painting it terra-cotta.

Then, again, one has to consider the effect of placing one colour adjacent to another, for the visibility of the make-up will depend upon such considerations. A character made up in one particular manner may appear correct to the stalls, but the effect of the make-up is lost to those in the rear seats. For example, a black line upon a yellow ground possesses much greater visibility than upon a white ground, but even that is somewhat more visible than a yellow line on a black ground. Accordingly, a table of the relative visibilities of a number of colours one upon the other is given below for the readers' guidance in this respect—

1. Black on yellow.
2. Green on white.
3. Red on white.
4. Blue on white.
5. White on blue.
6. Black on white.
7. Yellow on black.
8. White on red.
9. White on green.
10. White on black.
11. Red on yellow.
12. Green on red.
13. Red on green.

For purposes of make-up, Nos. 5, 9 and 13 of this table may be disregarded as unlikely to crop up in practice, the usual make-up ground being in effect combinations of red and yellow, either lightened with white or darkened

with black. As might be expected, therefore, the visibility of lines is obviously greater the lighter the make-up.

Every endeavour should be made in a character make-up to indicate wrinkles and hollows by using colours which show up with the right degree of strength at a distance. It must be remembered that a person at some distance from the stage will not expect to see all the facial details that a person near the stage will expect to see. Consequently, only those details should be represented in strongly visible colours which would be visible at a long distance with the same character in real life at the same distance in daylight.

A few words now on light and shade. Here we are on rather difficult ground because stage lighting differs from natural lighting if footlights are used, since these throw an upward light which is never present in real life. Such upward light will case shadows which are entirely unfamiliar to the audience, and will often destroy the effect of a clever character make-up. Endeavours should, therefore, be made to counteract undesired shadows above projecting features by painting them lighter, and to tone down high lights beneath such features by painting them darker. A knowledge of light and shade is particularly desirable to enable one to alter a face considerably from its natural appearance. In fact, if desired, one can practically remodel a face with the aid of light and dark colours, for if a hollow appears where a projection is desired it should be coloured light and *vice versa*. This possibility permits young people to be made up as elderly, for hollows and high lights may be painted in where necessary to destroy the plumpness of youth and impart the cadaverousness of old age. It should be remembered, however, that every hollow is accompanied by a high light, and one should never be painted without the other, or a natural effect is lost and the make-up becomes an obvious mass of colour. The sharper the change of contour, the lighter or darker should be the colour employed to indicate the high light or the hollow

respectively. As an example of the foregoing remarks, one may instance the painting of wrinkles. If the character is young, these will be shallow, and should be made in red, light brown, grey or light blue or light green. If old, dark brown, dark blue, or dark green should be employed. At the same time, on each side of the wrinkle the ground colour should be lightened somewhat with yellow or white, and, if there is room between the upper high light and the wrinkle line, an intermediate line of dark colour lighter than the wrinkle should be painted in to represent the shadow produced below the fold of skin represented by the high light.

The application of wrinkles to a face presents a certain amount of difficulty, for one is apt to wrinkle all faces of the same age quite irrespective of character. For this reason, it is a good practice to make a study of the faces one sees about the streets, and record in a notebook the various combinations of wrinkles one comes across, treating them as maps and labelling them according to one's judgment of the occupation or character of the person whose face is recorded. For example, one may make records entitled " clerk," " solicitor," " judge," " business man," " newsboy," " artist," etc. Such a notebook will be found invaluable for one's assistance in making up realistic character parts.

CHAPTER VI

THE PSYCHOLOGICAL EFFECTS OF COLOURS IN RELATION TO STAGE MANAGEMENT AND PRODUCTION

A KNOWLEDGE of the psychological effects of colours is essential to the stage manager and producer, and it contributes more than is generally realized to the success or otherwise of a play. A play seen with one lighting and dressed in one particular colour scheme may be a failure, whereas with another colour scheme of lighting or dressing it may prove a success.

It is generally realized by most persons that stage lighting is extremely artificial in comparison with natural lighting, and this is more or less inevitable when one realizes that a play is make believe, and would most likely be always regarded as such if viewed in the cold light of day. The artificial light of the stage has the effect and purpose of lifting the audience up on to a plane of imagination removed from their ordinary life, from which the play may be viewed with a sense of reality. Having lifted the audience up on to a plane of imagination by means of the general artificiality of the stage lighting, the function of the stage manager and producer should be to assist their imaginations by schemes of lighting in sympathy with the action of the play.

To consider first the general stage lighting for any particular play which we may regard as the standard light for the play, it may be taken as a safe view that the more incredible and unreal the story of the play is, the more different from ordinary daylight should the lighting be, so as to raise the audience on to a plane of imagination from which the plot does not seem absurdly far fetched.

Of course, a great deal in the way of influencing the emotions of the audience can be done by music, in which case the action of colour need not receive so much

attention in the production of the general atmosphere. For the moment we will concern ourselves rather with non-musical plays.

The effect of colour is really very simple when it is remembered that there are only three primary colours, red, yellow, and blue, and the effect of these on the emotions is fairly well known. Red is regarded as the colour of "Life," strong activity and excitement, and thus may indicate strong emotion in love or hate, which cause great mental excitement. Blue, the antithesis of red, denotes mental depression or quiescence, and thus indicates calmness or deadened emotion, such as grief or pain. Purple, a mixture of red and blue, indicates "Power" and royalty. Yellow, the intermediate colour, is regarded as the colour of cunning, or mental evil, generally appealing to the baser side of the emotions, and thus may indicate meanness, envy, and bitterness.

As regards yellow, however, in stage lighting we are up against the difficulty that ordinary white electric light has an unavoidable strength of red colour, and thus, for stage purposes, yellow is more or less unobtainable, the nearest approach being "amber," as distinct from white. This produces a reddish or warm yellow light, and one has to use green to which an approximation may be obtained with blue, white, and amber, in place of a cold yellow light.

The main strength of stage lighting comes, of course, from the white lights, and this is diluted or mixed with red, blue, or amber to produce lighting effects.

To deal now more particularly with lighting schemes, in all plays the action decides the general lighting to a certain extent by the time of day supposed to be prevalent, and by the locus of the scene. The time may be dawn, full day, evening or night, whereas the locus may be indoors or out-of-doors. If out-of-doors the country, whether tropical, arctic, or otherwise, has to be considered, and also whether there is supposed to be sunlight or not.

Generally speaking, midday scenes out of doors should be played with as cold and strong a light as possible, which may necessitate adding some blue light to the white light with perhaps a little red, if there is supposed to be sunlight. Full daylight indoors should be of the same quality but not quite so bright, and, of course, no sunlight red. Artificially lit interior scenes should be played with a little red light, and the white subdued in comparison with daylight. Dawn, evening, and night lights are obtained by the dimming down of all lights, with the bringing in of blue for dawn and moonlight effects.

So much for the general lighting in relation to facts, i.e. without taking psychology into account. If now we wish to elevate the audience into a state fit to appreciate a farce, light opera, or any play intended to appeal to the humorous senses, the general lighting scheme should be modified by adding some red, with the idea of creating a feeling of exhilaration, excitement, and expectation. At the same time plenty of white light must be retained or an eerie and mysterious atmosphere will be realized, instead of excitement and expectation being in excess.

For the proper digestion of a grand opera or a serious problem play a different general atmosphere is required, namely, a more stately and solid one. This will call for a little blue lighting, with or without some red, according to the probability or otherwise of the plot provided for the consumption of the audience. In the case of a tragedy still more blue and less red will be required, with probably a general reduction of lighting intensity to produce the required atmosphere of depression.

Many plays, such as melodramas, contain both comedy and tragedy, and with these the general lighting may be imperceptibly varied accordingly as the play progresses.

Now a word as to variation of lighting during the action of a play. A certain amount of variation may be naturally necessary owing to the imaginary passage of time, for example, from full daylight to dark, or to the

sudden passage of a storm, but the action of a play can be much helped by imperceptibly varying the lighting by means of dimmers in sympathy with the action. For example, supposing a scene gradually develops from ordinary events into comedy or into excitement of some sort, then it is suitable gradually to dim red or amber into the lighting. This will not only have the advantage of gradually working the feelings of the audience up, but will also have a similar effect on the players, which will be all to the advantage of the production. Such an expedient is particularly suitable for the working up of the " finales " of comic operas and musical comedies.

If the play develops in mystery and eeriness, red may again be gradually brought in, but at the same time the white should be somewhat dimmed out. For example, in a torture scene in which the tension is relaxed before the end, the white can be dimmed considerably, and then gradually or suddenly undimmed at the critical point. On the other hand, if the scene develops tragically, blue may be slowly brought in and white dimmed out, with the additional gradual bringing in of red if horror and excitement are also to be worked up. For example, again, in a torture scene which is carried to fulfilment, blue and red may be brought in slowly as white is gradually dimmed out.

The general principle to be born in mind for the variation of lighting during the action of a play, apart from that which may be termed " naturally " necessary, is that it should vary in sympathy with the action of the play, but not to such an extent as to be out of proportion to, or anticipate the action. In other words, sympathetic changes of lighting should not be really noticed by the audience, and, in fact, any lighting change noticeable to the audience and liable to distract their attention from the play itself may generally be reckoned as wrong. So far as possible, therefore, all sympathetic lighting changes should be gradual rather than sudden, so that it is impossible for the audience to say afterwards whether the lighting has varied or not.

What has been said as to the stage lighting applies also to a less extent to the lighting of the auditorium, if any control over this is possible. At least one London West-end theatre has suffered from too cold a lighting and colour scheme in the auditorium during the intervals, whilst another theatre successfully producing a most improbable farce has had all its auditorium lights dipped amber.

Little more remains to be said about the colour schemes for stage scenery and dressing, for the same general principles apply. It is, however, important to remember that the colours of scenery and dresses depend very largely upon the lighting prevalent at the time, so that a blue lighting will tend to make blue colours paler and red colours darker, and *vice-versa* with red lighting.

The principles of general stage lighting can, however, be applied fairly closely to the general colour scheme of a scene. For example, if no scenery is available, but only plain curtains of various colours, those of warm tones should be selected for scenes in which red lighting is made use of, such as comedies and artificially lit interiors; whereas those of cold tones, such as blue and light grey, should be used for exterior scenes, and those of sombre tones, such as black or dark blue or grey, should be used for tragical scenes.

Briefly, therefore, to sum up, the object of stage lighting and dressing should be to reflect and complement the action of a play, with a view to raising the emotions of the audience on to the most suitable psychological plane for proper appreciation of the production.

CHAPTER VII

STAGE LIGHTING

STAGE lighting is a problem which has been much simplified by the widespread use of electricity, a supply of which is now generally available in any town and in most villages, except those of the very smallest size.

General Arrangements

As possible alternatives to electricity there are acetylene, coal-gas, and petrol air gas. It is not intended, however to deal with these in the present book, for the purpose of which a supply of electricity has been assumed as available, either from a supply company's mains or from a private generating set.

In the first place, however, as regards electricity, it should be clearly understood that an ample supply is necessary. For example, it is useless to expect an ordinary motor car lighting accumulator or generator to stand up to the work. The maximum output of such a battery for only a comparatively short time will probably rarely exceed 100 watts, representing some 200 candle-power if gasfilled lamps are used, whereas for an ordinary domestic living room three 60 watt lamps or one 100 watt lamp is, or are, generally found necessary. For stage purposes, however, much stronger illumination than this is required.

Having decided that sufficient electric power is available, one may proceed to consider how it is to be employed.

The most usual plan for amateur stages, based on standard theatrical practice, is to make use on the stage of a series of parallel light battens distributed from front to rear over the stage, and screened from the direct view of the audience by the proscenium front and sky borders. The exact number of battens employed will depend upon the depth of stage available, but a spacing of 4 ft. to 6 ft.

will probably suit most amateur stages, and, generally speaking, at least three battens should be employed, the first immediately behind the proscenium front, the second at a distance from the first equal to one-third the depth of the stage to the back drop, and the third at the two-thirds depth line.

In the simplest system all the lamps on each batten would be included in the same circuit, and each batten of lights controlled by a separate switch. However, in order to permit variation of the lighting to produce "effects," it is better to arrange for the lamps on each batten to be alternately white, red (or amber) and blue (or green), these lamps of the different colours being connected into three different circuits all controlled from separate switches, so that we then have nine switches controlling the stage lighting, i.e. one for red, one for blue, and one for red on each batten.

Additional lighting devices, such as strips, floods, spots, dimmers, and plugs, will be dealt with later, as being more or less luxuries, and we will now consider the front of curtain lighting during the performance.

The usual theatre custom is to employ footlights or "floats," but there are two possible alternatives to this—headlights and floods. The writer is strongly against footlights for the reason that the lighting of nature is all from above, and, therefore, an upward lighting must cast unnatural shadows on the features. Moreover, in many halls available to amateurs, either a fit-up stage is used, or there is a danger of footlights becoming damaged when the hall is used for "Sunday School" or other purposes. In such cases headlights should almost certainly be employed. By headlights is, of course, meant raised footlights, or a row of lights fixed level with the top of the proscenium opening, and arranged to cast light down on to the stage from the front.

In halls possessing a gallery, headlights must be carefully placed so as not to prevent a clear view of the stage. They need to be placed at least 6 ft. from the proscenium

opening, and, accordingly, if there is a gallery they must be placed above the level of the proscenium opening.

As the next alternative to headlights, the best effect is produced by powerful floodlights arranged on the walls of the hall on each side of the stage, some 10–20 ft. away from the curtain, and directed across the centre of the curtain opening. Each floodlight should illuminate the opposite half of the stage, and should be screened so as not to throw any light towards the audience.

Whatever arrangement of lighting is adopted in front of the curtain, the lamps should be divided into red, white, and blue sections, corresponding to the stage battens if these are so divided. Three extra switches will then be required, making twelve in all to control the stage lighting.

The only other " front of curtain " lighting which may be required is orchestra lights. These will generally be attached to music stands, and provided with plugs so that they can be plugged into sockets mounted on a distributing strip, either permanently fastened to the floor, or on to the stage front at floor level, or placed loosely on the floor when required. The distributing strip can be fed by an armoured flexible cable from a plug on the stage controlled by a special switch.

An important item to provide for in stage lighting is a master switch controlling every stage light both behind and in front of the curtain, so that when required a complete " black-out " on the stage can be obtained. This " black out " should generally include the orchestra lights, which would otherwise throw a certain amount of light on the stage and destroy the effectiveness of the " black out."

As to the general lighting of the hall, it is necessary to have this under control from the stage, so that the " house " lights can be switched off or on when the performance is about to commence or has ceased. The best method to adopt is " double switching," i.e. having the main switch in the hall duplicated by another switch on the stage, so that the lights can be switched either on or off

from both the house and the stage. An alternative is to have the house lights controlled by a master switch on the stage, so that they can always be switched off when desired, but this has the disadvantage that in cases of emergency the house lights cannot be switched on except by communication with the stage.

An alternative to the above methods, which will not necessitate any re-wiring of an existing lighting system in a hall, is to arrange a small red signal lamp near the house light switches which can be illuminated when desired by operating a special switch on the stage. Signals are pre-arranged with an attendant in the house to serve as cues for switching the house lights on and off. Another arrangement which can be adopted, and which has the advantage of necessitating no special wiring whatever, is to instruct an attendant in the house to switch off the house lights as soon as the front of curtain stage lights, i.e. headlights, footlights, or floodlights are switched on, and to switch the house lights on again when the footlights are switched off or after an agreed delay following the fall of the curtain. A particularly alert and trustworthy attendant is required for this duty as otherwise awkward delays are liable to occur.

Special Apparatus

In addition to the ordinary footlights (floats) or the equivalent overhead lights, and the overhead stage battens, it is frequently necessary or advisable to make use of supplementary banks or strips of lamps, which can be easily shifted about from place to place as, where, and when required. They consist of wooden strips having a series of lamp sockets along them, and hooks or eyes at one, or preferably both ends, so that they can be hung up behind pieces of scenery, generally wing pieces, or behind the uprights to right and left of the proscenium opening, as in Fig. 59. These lamp strips are fed by armoured flexes provided with plug fittings, so that they can be run off the nearest plug sockets on the stage.

The colour of the light given by such lamp strips can be altered as required by merely changing the lamps for others having bulbs of the required colour, but this will not permit rapid changes of colour in the light. If this is desired, either the strips must be wired up into separate circuits pertaining to the different colours desired, the lamps in each section being of the desired colour, or separate strips must be employed for each colour. In either case a corresponding number of separately controlled plug circuits is necessary, so that lamps of one colour may be switched on and those of another colour switched off. Sometimes a convenient arrangement is to remove correspondingly coloured lamps in the stage battens and plug the strips into the empty sockets, so that both strips and battens are controlled simultaneously by the same switches. This arrangement is particularly advantageous as it prevents the risk of contradictions in lighting occurring through a change in the batten light being made, and a corresponding change in the strip light overlooked. It also has the advantage, if the batten light circuits include "dimmers," of bringing the strip lights also under "dimmer" control. Otherwise, if gradual changes of strip lighting are required, special "dimmers" must be provided in their circuits.

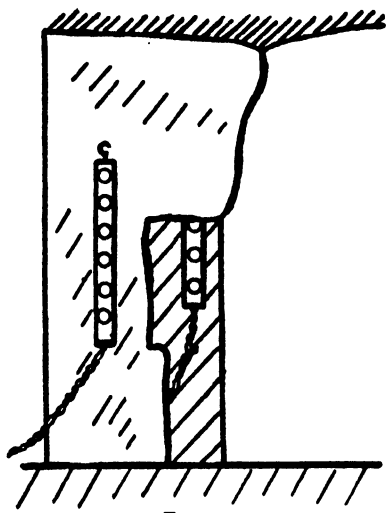


FIG. 59

"Spotlights" are equivalent to the now old-fashioned limelights, and are used for throwing a specially concentrated beam of light on any selected part of the stage, generally that for the time being occupied by the principal or principals. They are usually arranged behind the

right and left proscenium pillars in an elevated position, on "perches," so as to throw their beams downwardly, but frequently they are arranged in the auditorium in such positions that their beams do not cross the line of sight between any section of the audience and the stage. Thus there are three possible positions for the spotlights, namely, close to the stage in advance of the first row of seats, in the front row of the gallery, and above the level of the back row of the gallery, or of the ground floor, if there is no gallery, as shown in Fig. 60. Occasionally

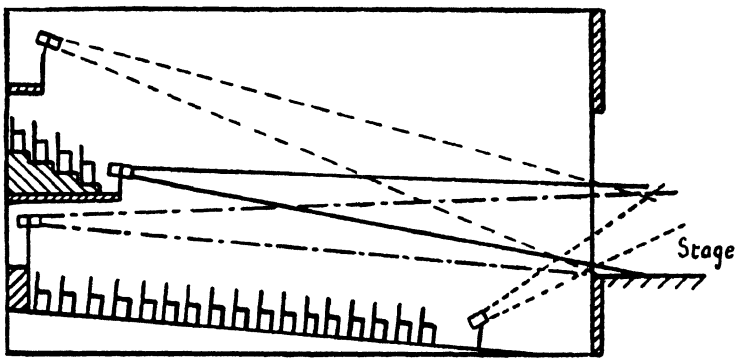


FIG. 60

it is necessary to use spotlights located in the wings, i.e. towards the back of the stage, but every precaution must be taken to prevent any possibility of the beam from ever passing out of the proscenium opening into the eyes of the audience.

To provide a concentrated beam of light a spotlight must necessarily comprise a condensing lens or a concave reflector; and the best and strongest effects are obtained by means of an electric arc lamp. However, for amateur purposes, a high-powered gasfilled incandescent lamp will generally serve the purpose, and besides being easy to manipulate, is much safer to use. The best effect is obtained by using a "point" light construction of lamp, such as is specially made for use in spotlights and projection lanterns. The lamp should have a metal shutter

to eclipse the beam when desired, without putting out the light when an arc lamp is used, but preferably it is fitted with an iris diaphragm, so that the size of the beam can be gradually reduced to nothing or opened out as circumstances require. The lamp should also be provided with a number of coloured screens, which can be placed

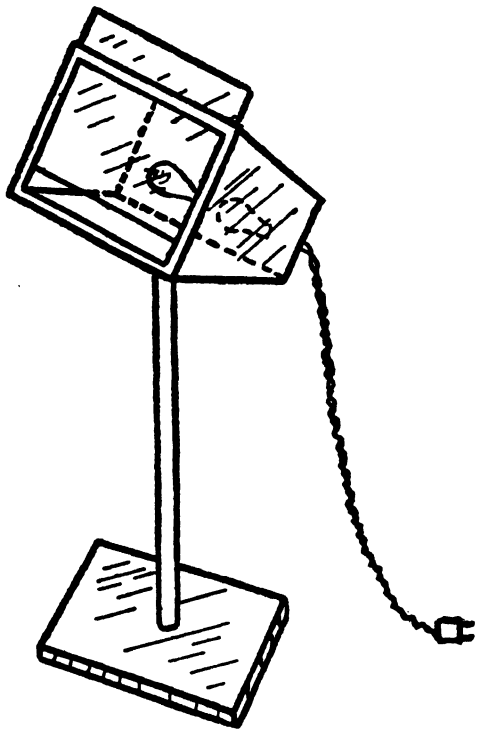


FIG. 61

as desired in front of the lamp to produce a suitably-coloured beam. These must, of course, be proof against fire or melting from the heat of the lamp employed. Owing to the heavy current taken, spotlights should be run off special electric circuits independent of the rest of the stage lights.

"Floods" (Fig. 61) are very similar in effect to "strips," inasmuch as they provide a movable means of

producing stronger lighting at selected parts of the stage, but they give a more concentrated effect. Generally they consist of a metal box arranged on a stand at a height of about 4 ft., and containing one or more powerful electric incandescent lamps. Preferably the box is swivel-jointed to the stand, so that the flood of light can be directed in the required direction. The stand is stood in the wings or behind a suitable piece of scenery, and the flood connected up by an armoured flex and plug to the nearest stage socket. However, as in the case of strips, floods can be connected up into one or other of the batten circuits so as to be under simultaneous control therewith. The front of the metal box is generally fitted to take a removable coloured screen, so that the colour of the floodlight can be quickly changed as desired without changing the lamps, as is necessary in the case of floats. A gradual change of colour can be effected by gradually sliding the new colour screen in place, without removing the old colour screen, and then gradually sliding the old colour screen out. Or if the colour screens slide into position from side to side of the box, the old colour screen can be gradually pushed out by means of the new colour screen as the latter is slid into position.

Floods are most frequently employed for illuminating the lower part of the back cloth, which is so far removed from the footlights, whilst well illuminated at the top by the stage battens, as to be otherwise very unevenly lit. For this purpose, instead of mounting them on stands, they are more conveniently carried in low trucks or trolleys.

Little need be said about "plugs," beyond the fact that as many plug sockets as possible should be distributed symmetrically in the wings. If possible, also, it is useful to have one or two sockets sunk in the stage floor. On the smallest of stages there should, however, be at least one socket near the front and one near the back of the stage in each wing. Preferably, each socket should have a separate switch on the main switchboard, but to

economize in switches they can be grouped in sets spaced from front to rear of the stage. It is not strictly necessary to have more than one circuit and control switch for all the plugs, as each can be separately disconnected when desired by someone stationed in the wings, but there should always be a master control switch on the main switchboard, for use in cases of emergency, and the plug circuit must pass through the master control switch on the switchboard so that a complete stage "black out" can be obtained when desired.

It is almost essential for a stage lighting equipment to include one or more "dimmers," by which is meant a variable resistance by manual operation of which the lamps included in the same circuit as the dimmer can be gradually shut down to extinction. Although much can be done in the way of lighting effects with the aid of a single dimmer in the white lamp circuit, yet more ambitious schemes should provide for a dimmer in each coloured lamp circuit. If "floods" and "strips" are included in any lighting scheme, forethought must be exercised as to whether they ought to be brought into their corresponding dimmer circuits, in planning out any schemes for variation of lighting. In some cases it may be correct to leave "floods" and "strips" unaltered, whilst the corresponding coloured batten and footlights are being dimmed, but in other cases it may be necessary for them to be correspondingly dimmed.

In addition to being useful for darkening and lighting effects, a pair of dimmers can be used for gradual changes of the stage lighting from one colour to another, without any change in the brightness of the light other than that due to the change of colour. This is effected by starting with one dimmer out and one in, and then gradually bringing the first one in, and simultaneously taking the latter one out, by equal amounts, the two dimmers being operated simultaneously at such speeds as not to produce variation in the strength of the general light. This requires care, as dimmers being brought in at first act

slowly and then more rapidly on the light, and *vice-versa*, so that to preserve the general strength of the light constant, the dimmer being taken out must be operated more slowly than the one being brought in, until a critical point is reached, after which the relative speeds are reversed.

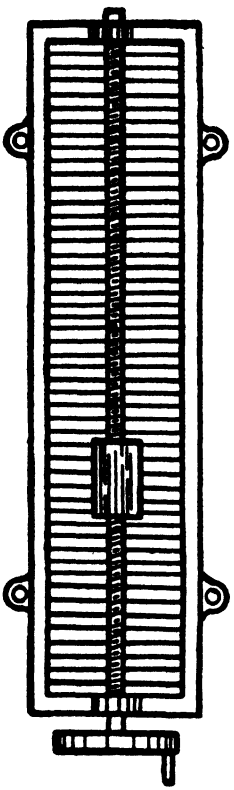


FIG. 62

An excellent effect can be produced for "finales" by gradually bringing in the red lights by means of a dimmer, the light increasing in richness and warmth as the action works up to its climax, thus assisting in arousing the enthusiasm and excitement of both the players and the audience. In point of fact, dimmers can frequently be used to help along the action of the play by gradually altering the lighting in sympathy, for the senses of an audience are extremely susceptible to the effect of light.

Various types of dimmer are in use—the old-fashioned liquid type in which metal plates are lowered into a tank of resistance liquid, the graphite block resistance type (Fig. 62), and the wire resistance type, the latter being only suitable for quite small stages and being liable to produce a great deal of undesirable heat.

The Installation of a Lighting System

It is an extremely bad policy for a stage manager wishing to install a lighting system on his stage, to send for an electrician and say, "Look here, I want a lighting system put in on this stage, please. Send me in an estimate," or "please get on with it." The ordinary electrician knows nothing whatever about stage requirements, and will probably install some fanciful system of

his own composition which will either be deplorably inefficient, or will turn out to be gloriously complicated and expensive, and possibly inefficient into the bargain.

Although having no knowledge as an electrician, yet a stage manager generally knows, or should know, what he wants or may want in the way of lighting and lighting effects, and it is the present purpose to assist him to translate his desires into practical requirements, which can be carried into effect by the ordinary electrician, and will prevent him from having a feeling of *carte blanche* to do what he likes.

In the first place, the electrician should be instructed that all the stage lights must be brought under the control of a master switch on the stage switchboard. Also, if the existing wiring arrangements of the hall permit it, a control switch for the hall lights should be provided on the switchboard. This may provide for absolute control of the hall lights, or they may be arranged to have double switching from both the stage and hall. Main fuses must be provided between the main and the master switch, and the separate stage circuits should each have their separate fuses.

It will be assumed for the present purpose that only a small stage is to be fitted up, with footlights (or equivalent front top lights), three battens on stage, all provided with red, blue, and white lights, floods and strips, electric fires and table lamps to be used occasionally, orchestra lights to be provided, no spotlights required, and sunset and dawn effects possible. The general lay-out of this scheme is illustrated by the diagram (Fig. 63), and it is recommended that a similar kind of diagram be got out by stage managers, modified to suit their special requirements, to assist them in giving instructions to their electricians.

Firstly, then, the electrician must be instructed to wire up three separate circuits on footlights and battens, one for each colour, the lamp sockets to be at intervals of, say, 6 in. or 1 ft., according to the power of lamp

to be used. The closer they are together the more lamps will be required, but the more even will be the illumination. The lamps must be alternately in the three circuits, and the sockets should preferably be mounted at an angle so that the light is directed upwardly in the case of footlights, and downwardly at an angle on to the stage in the case of top lights. In the case of a high stage,

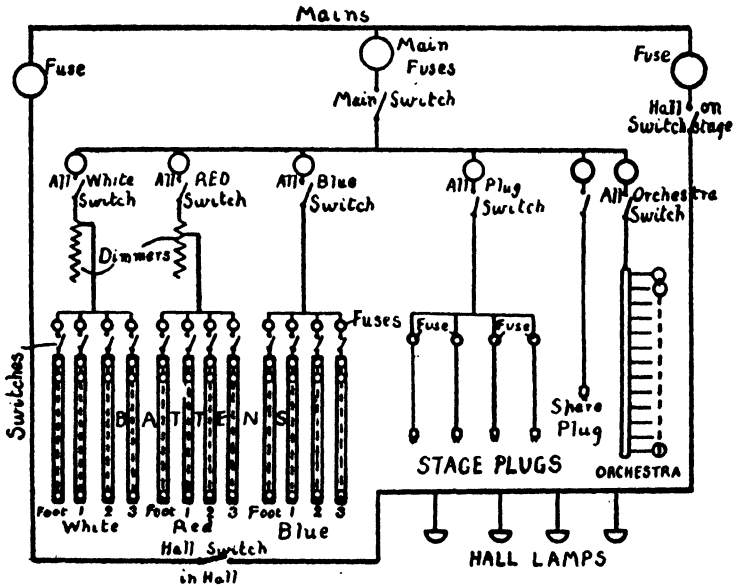


FIG. 63

however, the lamps on the stage battens can hang straight downwardly, with the exception of those on the batten immediately behind the proscenium. These should be tilted so that none of their light is directed outside the curtain line.

These three circuits are to be connected in parallel, and to have separate fuses and switches following the stage master switch. Moreover, the various sections of the circuits in footlights, first, second, and third battens, are also to have separate fuses and switches. In addition, the white and red circuits are to have dimmers fitted

immediately following the main switches, so as to control all lights of that circuit simultaneously, as will be seen from the diagram.

Then, again, in parallel with the three lighting circuits, a stage plug circuit is to be wired through a main fuse and main switch, the required number of plugs being wired in parallel through individual fuses, so that an accidental short circuit in any individual plug circuit will not " put out " the other plug circuits. These plug circuits will be used for stage properties, such as table lamps, fires, fans, etc., and will also be available for use in connection with lighting accessories, such as spotlights, floods, and strips when required. Again, in parallel through its own switch and fuse, is provided a plug circuit for the orchestra lights, and it will also be desirable to add still another plug circuit in parallel, as shown in the diagram, to act as a spare for emergencies.

As regards the dimmers, it will be necessary to instruct the electrician what type to install, and the selection of the type to install will depend upon circumstances and funds. Probably the cheapest type will be the resistance liquid type, in which the current passes through a vessel containing acidulated or alkaline water, the current passing to the liquid through the metal of the vessel, or, if the vessel is not metal, through a fixed metal plate immersed in the liquid. The current leaves the liquid through a metal plate or rod which can be lowered into or drawn out of the liquid by hand, either directly or by means of a hand wheel and mechanical lowering gear, the resistance gradually increasing or decreasing according to the area of the movable plate or rod in the liquid. Although simple and cheap to construct, such dimmers produce unpleasant fumes and occupy a good deal of space, and are somewhat awkward to manipulate.

For very small stages using a comparatively small amount of current, an ordinary slider wire resistance is probably the cheapest and best to use, but as it will get

somewhat hot it should be mounted over a ventilator or in some sort of draught.

For medium sized stages it will probably be best to employ a carbon block variable resistance. Of these, two kinds are obtainable; one in which a number of carbon plates are clamped together under pressure varied by means of a screw and hand-wheel, and the other in which the carbon plates are clamped together under constant pressure and a travelling slider makes contact along the edges of the blocks, being mounted on a screw-threaded rod rotated by a hand-wheel. This type of variable carbon resistance is preferable, as the first type is liable to be jumpy and uncertain in its action, so as not to give smooth variation of the light.

A word should be said about fuses, namely, that they should progressively pass more current the nearer they approach to the main. Parallel circuits are, of course, independent of one another. For example, in the case of the diagram, there would be three fuses for each batten, one for each coloured light, so that each light circuit would have four separate fuses covering each of its four parts, and they would join together and be supplied through a main fuse able to convey four times the current of the first fuses.

Similarly, each stage plug circuit would have its individual fuse and, collectively, they would be supplied through a larger fuse, but the size of these fuses would be independent of the sizes of the batten fuses. However, the main fuse between the master switch and the main would have to be large enough to convey the total of all the currents taken by the various stage circuits.

No definite figures can be given as to the size of fuse wire to employ, as this will vary according to the supply voltage. The amperage or current-carrying capacity required of the fuse for any particular lighting circuit can, however, be calculated by finding out the total watts of the lamps employed and dividing by the supply voltage. Thus, with 25 lamps of 60 watts each, the total wattage

will be 1,500, so that with a supply voltage of 250, the current taken will be 6 amperes, so that 10 ampere fuses would allow a safe margin. Due allowance must, of course, be made for current required by plug circuits, as if some of these are used for supplementary lighting accessories such as spotlights or floods, they may take a considerable extra amount of current. For example, it would not be uncommon, even on small stages, to use two flood lamps of 100 watts each, which at 250 volts would take very nearly an ampere of current in themselves.

It is sometimes a practice of small societies and concert parties to use a portable electric lighting system complete with switchboard, which is connected by a plug and flexible cable into the circuit of any hall in which they may desire to give a performance. In such cases it is particularly important to look into the fuse questions. The maximum current taken by the portable system (which should not generally exceed 10 amperes), must be worked out, and the fuses of the hall circuit examined to see whether they will carry such current. If not, heavier current fuses must be fitted, or the performance will become extinguished when too many stage lamps are switched on. In this connection, it should be remembered that if there is a possibility of the hall lights being on at the same time as the stage lights, due allowance must be made, in calculating the size of fuse necessary in the hall circuit, for the hall lighting current, in addition to the stage lighting current. Of course, the portable system must not draw its current through ordinary lamp flex, for which reason it should not be plugged into an ordinary lamp socket.

Wiring a Simple System

The preceding section of this chapter explained how a stage manager should give the necessary instructions to an electrician for installing a stage lighting system, but it is not by any means a difficult matter for any person having a little mechanical aptitude to wire up his own

system In these days of wireless enthusiasts it would be somewhat strange if any amateur society could not find several of its members to possess sufficient knowledge of electricity to deal with the wiring of a simple system.

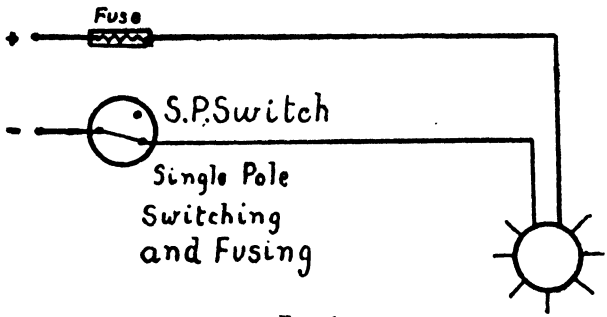


FIG. 64

First of all it is necessary to decide whether double- or single-pole wiring is to be used for the fuses and switches. To appreciate the difference between the two, it is necessary to remember that any lamp requires to

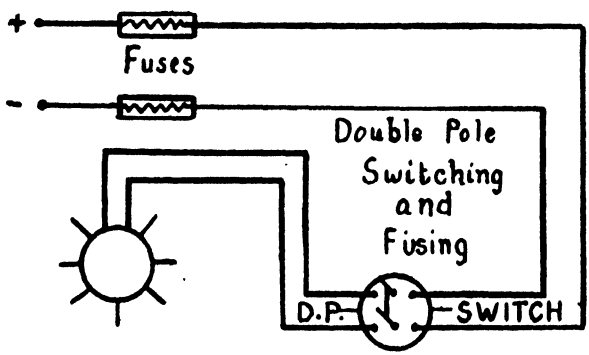


FIG. 65

have two current leads, a flow and a return wire, and the lamp can be switched off by breaking the circuit through either of these leads. This constitutes single-pole switching as illustrated by Fig. 64. In double-pole switching, however, the switch breaks both the flow and return leads, as illustrated by Fig. 65. Similarly in regard to

fuses, it is sufficient to place a fuse in only one of the circuit wires, flow or return, but fuses may be placed in both leads.

The advantages and disadvantages of the two systems require consideration before a decision is made as to which system to adopt. Undoubtedly, single-pole wiring is the simplest and cheapest, as only half the number of fuses is required, and single-pole switches are cheaper than double-pole switches.

However, double-pole wiring has the advantage of being much safer against risks of short circuits and the possibility of fire, for whereas single-pole switching always leaves one live lead up to every lamp, double-pole switching renders both lamp leads dead when the switch is off. Similarly with single- and double-pole fusing, provided that in the case of double-pole fusing both fuse wires are of equal value. Unfortunately, it is only too common to find a pair of double-pole fuses wired with different fuse wires, with the result that only the smaller current fuse blows when a short circuit occurs, so that the arrangement may only be equivalent to single-pole fusing, except that should the short circuit persist after the small fuse blows, the larger current fuse will ultimately blow; it is to be hoped before any serious results have occurred.

Having decided whether single- or double-pole wiring is going to be employed, the necessary number of fuses and switches can be reckoned up and purchased. A certain degree of economy can be effected by using partly single-pole and partly double-pole wiring. For example, the batten light circuits may be collectively controlled by a double-pole switch and fuse, whilst the individual batten sections may be controlled by single-pole fuses and switches.

It may be desired to have double switching for the house lights, in which case two three-way switches will be required for wiring up, as illustrated by Fig. 66.

Before commencing actual wiring, it is essential to draw out a proper wiring diagram based on a diagram of the general lighting scheme, such as described in

the preceding section. This diagram should show all switches, fuses, lamps, and plugs in detail, but, of course, diagrammatically, and it will be helpful to draw it in two colours, red for the positive wires, and blue or black for the negative wires. Then as each wire is connected up in the actual work, it can be accurately checked and marked off on the wiring diagram, so that the possibility of error is considerably reduced.

A simple wiring diagram is illustrated in Fig. 67, the positive leads being shown in full lines and the negative in dotted.

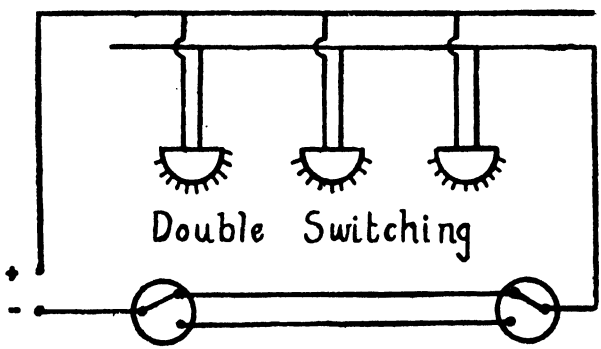


FIG. 66

The main fuses and master switch, if the installation is to be of any size, should be enclosed in cast-iron casings provided with screw clamped doors to permit access thereto when desired. The rest of the fuses and switches are best located together on a common switchboard, although it is a common practice to group the switches together on a switchboard pure and simple, and to collect all the fuses together in a cast-iron fuse box having a door which is normally kept closed, but can be opened to obtain access to the fuses for renewal purposes. In either case, it is advisable to fix labels adjacent to the various fuses and switches to avoid delay in renewing fuses, and to enable the switches to be operated accurately by a person unused to the switchboard, as is sometimes necessary.

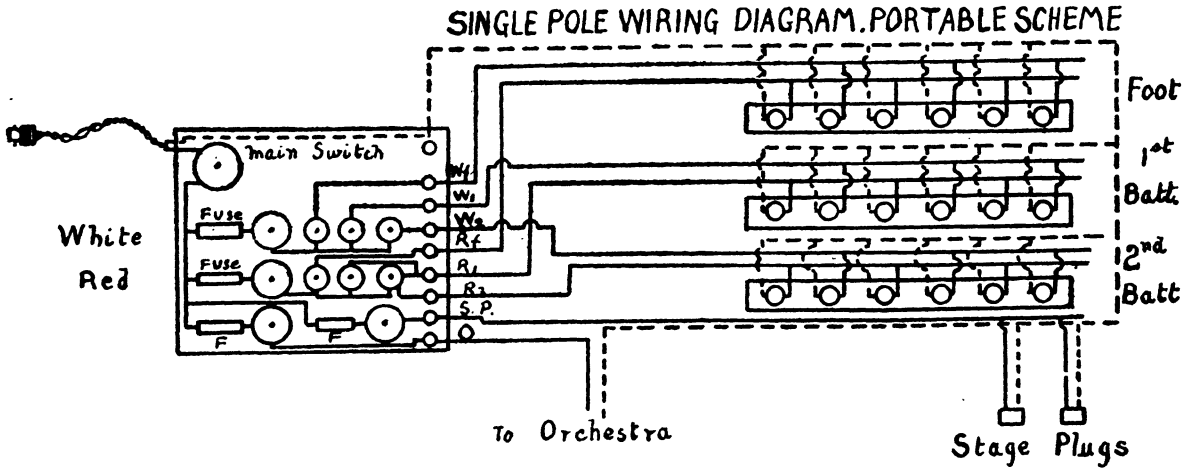

SINGLE POLE WIRING DIAGRAM. PORTABLE SCHEME
Foot
1st Batt.
2nd Batt.
main Switch
White
Red
Fuse
Fuse
F
F
W1
W1
W2
R1
R1
R2
S.P.
To Orchestra
Stage Plugs

FIG. 67

The actual wiring should be carried out in a suitably sized covered cable, a suitable size being selected with the aid of the following table showing the current-carrying capacities of different sizes of cable—

TABLE OF CABLE SIZES AND CURRENT CAPACITY

Size of Cable	Maximum Safe Current
14/36	2.4 amp
23/36	4.0 ,,
40/36	7.0 ,,
70/36	13 ,,
110/36	19 ,,

If desired, the various parts of the circuit can have different sizes of cable according to the maximum current to be carried thereby, but it is generally quite as convenient and cheap to carry out the whole of the work beyond the switchboard in cable of uniform size, sufficient to carry the maximum current of any of the sub-circuits. For example, 7 ampere cable consisting of 40 strands of 36 S.W.G. (standard wire gauge) wire may be found suitable for all wiring past the switchboard. A stouter cable would thus only be required between the mains and switchboard, for example, 70/36 S.W.G. carrying 13 amperes.

The required lengths of cable should be carefully measured up on the stage, not forgetting that two leads are required up to every lamp, and half the total quantity is purchased with a red covering for positive leads, and half with black covering for negative leads. In the case of portable lighting systems the bare cable is used, the corresponding positive and negative leads being tied or clipped together wherever possible, but in the case of fixed lighting systems the cables should be enclosed in

either double-channelled wood casing fastened to the walls, etc., or in iron tubing, as may be permitted or required by the local authorities. If iron tubing is employed, the cables are pulled into the tubes by means of a wire or cord first threaded through the tubes.

In preparing the wiring diagram, it should not be forgotten that the batten lamps and plugs are connected in parallel to their respective circuits, i.e. from each lamp or plug there must be a straight run through along both

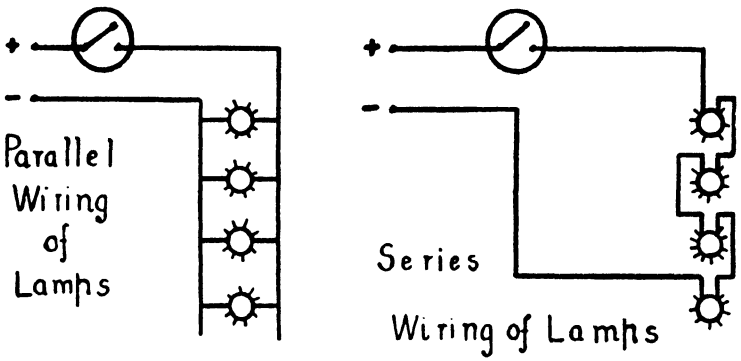


FIG. 68

leads to its controlling switch, and no current must reach a lamp or plug through another lamp or plug as is the case with a series connection. (See Fig. 68.)

As soon as each section of the circuit is wired up, it must be tested for continuity, and this is best done by means of an ordinary flashlamp battery applied across the supply end of the circuit, and a flashlamp bulb applied across the lamp or plug contacts to be tested. After all the sections of the circuit have been completed and tested in this manner, all the sub-circuits should be switched off, the switchboard connected up to the main with very light main fuses in circuit, and the various sub-circuits switched on separately without any lamps or plugs in their sockets. If the main fuses survive this test, the system may be regarded as safe for a full lighting test with all lamps and plugs in their sockets. Each

section of the circuit is thus tested separately, and, finally, all sections tested together.

As regards fusing, sufficient has previously been said to make the principles quite clear, and the proper sizes and kinds of wire to be employed for various currents can be selected from the following table—

TABLE OF FUSE WIRE GAUGES
(S.W.G.)

Current	Copper	Lead	Tin
5	39	23	24
7½	35	21	22
10	33	19	20
15	29	17	18
20	27	16	17

A suitable form of socket for the batten- or float-lights, as well as for the plug sockets, is illustrated by Fig. 69, the socket having a base adapted to be fastened by screws to a baseboard fastened to the wall or floor in the case of a plug circuit, or to be fastened to a wooden bar in the case of a light batten or float. In the case of the stage battens the lamp sockets are fastened to a long bar at the required distance apart, the wiring being on the reverse side of the bar, and tappings being taken therefrom at intervals to the lamp sockets through holes in the bar. Preferably, the bar is hung at its ends from ropes or wires passing over pulleys, so that the height of

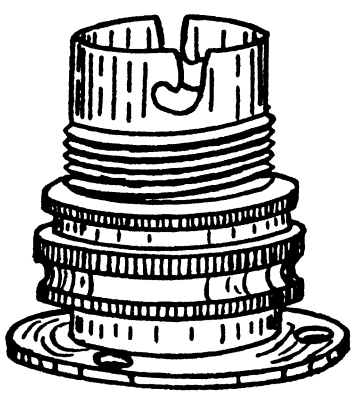


FIG. 69

the batten can be adjusted to suit the scenery and other requirements.

Special Arrangements

There are various ways of arranging and using an electrical stage lighting system of a simple nature so as to obtain effects which are generally obtained only by more elaborate systems, and, also, there are a few expedients which it is useful to know in order to use a lighting system in such manner as to give the greatest efficiency in production.

For example, it has already been explained how dimmers should be used to change the colour of the stage light without appreciably altering its brightness, by working one dimmer in as the other is worked out, particular stress being laid on the fact that the speed of working must be less the nearer the lamps are to extinction. In other words, the dimmer being brought in should at first be worked quickly and then slowly, whilst that being cut out should first be worked slowly and then quickly.

This principle must always be borne in mind in using dimmers, and is also desirable to know the shortest time and the number of handle turns it takes to bring a dimmer fully into action, so that it can be manipulated at the proper time and speed in relation to the action of the play.

A useful fitting to provide in connection with dimmers is a cut-out switch by which the dimmer can be cut out when desired. The circuit diagram of such an arrangement is shown in Fig. 70. This switch enables the lights to be suddenly brought full on from a dimmed down condition. Ordinarily, after dimming down the lights, it is necessary to work the dimmer to "undim," which may be a lengthy process. This switch can be operated at any dimmed adjustment of the lights, and by using it in the reverse manner the lights can be *suddenly* dimmed down. This is done by first moving the switch to cut out the dimmer, operating the dimmer until it has been adjusted to bring in the right amount of resistance, and

then operating the switch to bring in the dimmer at the desired moment.

Where there are several light circuits all of which may require dimming from time to time, considerable economy can be effected by making one dimmer serve for all three circuits. Ordinarily, one dimmer is provided in each circuit, but by means of three cut-out switches connected as shown in Fig. 71, it will be seen that the single dimmer

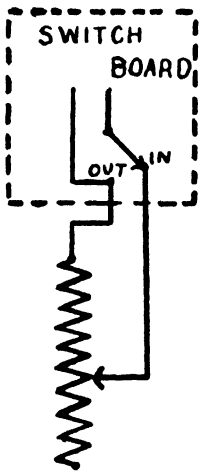


FIG. 70

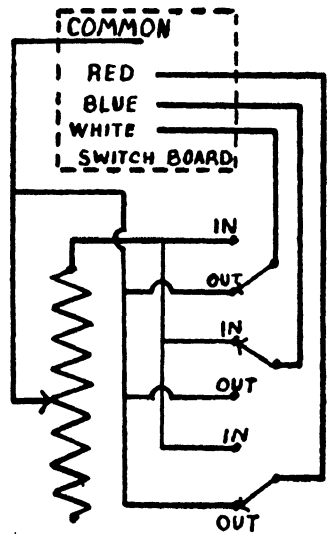


FIG. 71

can be connected into any one of the three circuits by closing one switch and opening the two others. Moreover, if desired, the lights for the two circuits or even of the three can be dimmed simultaneously, but care should be taken that the dimmer is capable of safely taking the double or treble current without overheating.

It must be remembered, however, that as soon as a switch is thrown over to cut a dimmer out of a circuit the lights will come full on again, unless the dimmer has cut out the light completely, and the main switch of the circuit has been opened. For these reasons it may be policy to make the switches three-way switches, as in

Fig. 72, the position *a* being lights full on, dimmer switched out; position *b* dimmer switched in; and position *c* dimmer switched out and lights switched off.

Another useful fitting to provide on the stage switchboard is a small lamp fitted into a socket on the board, the socket being connected in circuit on the mains side of the master switch and its fuses, and having its own special fuse (Fig. 73). This enables the stage manager or switch-

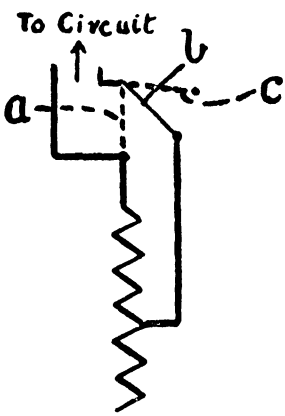


FIG. 72

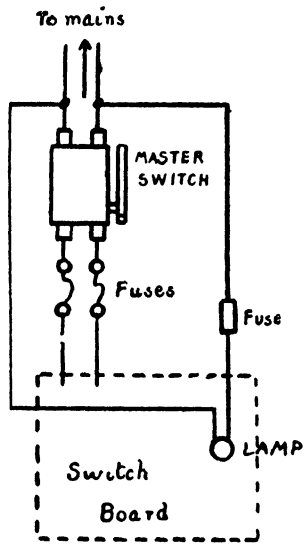


FIG. 73

board operator to see what he is doing in the case of a stage black-out, and enables him with ease to switch any desired combination of lighting on again, otherwise he must hang on to the master switch at all costs, and can then only resume lighting in the same condition as before the black-out. By connecting the switchboard lamp on the mains side of the main fuses, light is always available for the renewal of circuit fuses, however many of them may blow, and without switching on some other circuit to see by, which would probably be unsuitable to enable the action of the play to continue without

absurdity. The switchboard lamp may conveniently be a lamp of much higher voltage than that of the circuit, so that it is underrun and only gives a feeble but sufficient light.

A word may be said here as to dealing with failures of stage lighting. Firstly, it is generally a mistake to endeavour to continue the play with a false lighting, it being better for complete blackness to follow the failure, and the resumption after cure of the fault continued from complete blackness again. However, it is liable to alarm the audience if they are kept in complete darkness for any length of time, and, therefore, should the stage light fail the first action should be to lower the curtain, and the next to switch on the hall lights. The producer or stage manager can then tender before the curtain the usual regrets and apologies with an assurance that the play will be continued as soon as the fault is cured. If there is to be a prolonged wait the orchestra can be instructed to strike up, or if there is no orchestra someone amongst the performers can, no doubt, be found who can recite or entertain the audience for a few minutes. When the fault has been cured, the hall lights can be lowered and the curtain raised with the stage in darkness, whereafter the proper stage lighting can be immediately switched on and the play continued.

There is one common fault in amateur stage management which never fails to provoke amusement and, therefore, should be avoided. This is the failure of the stage lighting to go up or down when someone on the stage switches on a stage electric lighting switch or lamp, or someone enters a room with a lighted lamp. Such faults can only be avoided by careful forethought. In the first place, the stage switch may be wired up so as actually to control the circuit of a lamp or chandelier visible to the audience. If this is done, the general stage light can gradually be strengthened without notice by the audience with the aid of a dimmer. Failing this, the switchboard operator must either be able to view the stage so as to

see the exact moment when the performer touches the switch, the performer being previously instructed to continue operating the switch until the light does actually come on or go down, or the player and switchboard operator must both take their cues from a definite word in the dialogue. Another alternative (Fig. 74) is actually to wire up the stage switch through a small battery to a flashlamp bulb near the switchboard, so that the switchboard operator by watching this can tell the exact

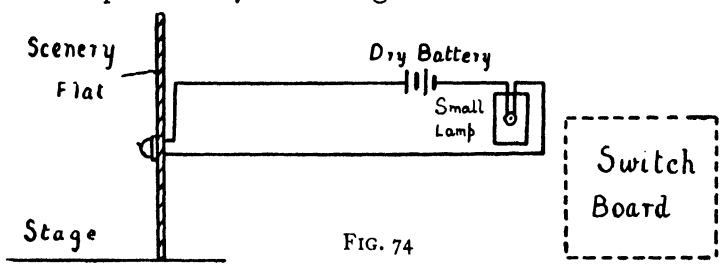


FIG. 74

moment for altering the stage lighting, either up or down as may be required.

Although not strictly stage lighting fittings, it is desirable to have a red lamp, buzzer, or bell in the refreshment bar, lobby, or cloak-room, which is wired up to a switch or bell push on the stage, so that the audience can be warned to take their seats in time for the raising of the curtain after intervals, whilst in the case of a musical production it is desirable to have a signal lamp visible to the conductor, which is switched on from the stage as soon as the stage is absolutely ready for the rise of the curtain, and only awaits the overture from the orchestra.

Finally, it is useful to have one or more "cue" lights in the wings, at least one on each side of the stage, controlled by switches on the switchboard and operated by the stage manager or his assistant to indicate to the stage hands when to operate stage noises or special lighting effects. The usual procedure is for cue lamps to be switched on to indicate "stand by," or get ready, and then switched off to indicate "go."

CHAPTER VIII

HOW TO MAKE LIGHTING APPARATUS

How to Make Stage Lighting Apparatus

THE purpose of this chapter is to show how a few useful stage lighting appliances can be easily made by any one possessing a small degree of mechanical skill, at a comparatively slight expense. It should be understood, however, that circumstances alter cases, and, therefore, it must not be assumed that the appliances described below

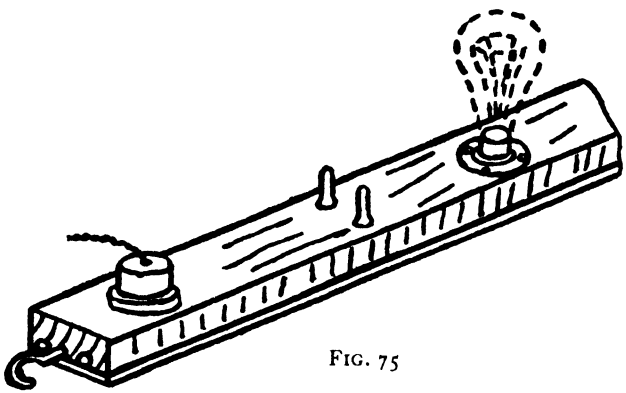


FIG. 75

will necessarily meet all requirements, for, in details, variations will, no doubt, be generally necessary. The following description should, therefore, be regarded mainly as showing the general principles of construction of the appliances.

To start with a very simple appliance, banks or strips of lamps may be very easily made from 3 ft. or 4 ft. lengths of wiring casing. Any desired number of lamps are spaced at intervals of some 6 in. apart along this, the lamps being fitted into flanged lamp sockets screwed to the *back* of the casing. (See Fig. 75.) Before fastening the lamp sockets in position, holes are bored through from the wiring grooves, through which bared lengths of the

conductor can be looped into the lamp sockets (Fig. 76). After the wiring has been fixed, the casing cover is screwed in position in the usual manner.

A hook is screwed into the end of the casing, by which the float can be hung up, and the ends of the wires in the grooves are connected either to a ceiling rose fastened to the casing, or to another flanged lamp socket. In the

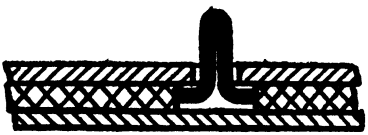


FIG. 76

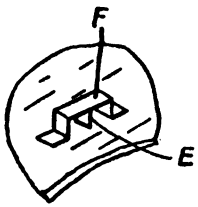


FIG. 78

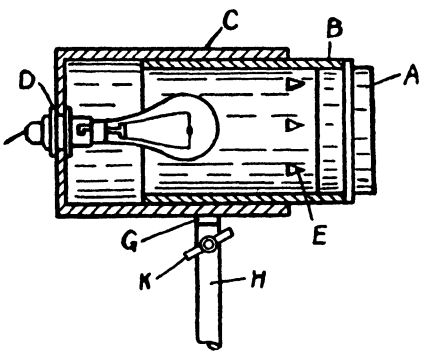


FIG. 77

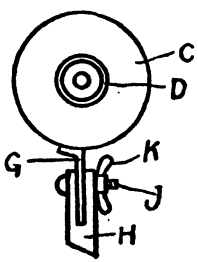


FIG. 79

former case, an armoured flexible cable, having a pin plug or bayonet-cap adaptor at its free end, is wired into the rose, and in the latter case any convenient bayonet-cap adaptor on the end of an armoured cable can be fitted into the lamp socket, when desired, to energize the lamps.

A focusing spotlight can be made, as illustrated by Figs. 77, 78, and 79, at a comparatively small expense from a couple of tins such as are found in most households. Such tins are frequently used to contain foodstuffs, and two which fit closely one within the other should be chosen. They should be without rims at their mouths, i.e. should have "push on" lids, as distinct from "push in" or lever type lids.

The chief expense will be the double condenser lens, which, if of 5½ in. to 6 in. diameter, will cost some ten to fifteen shillings, complete with mount. In addition, a lamp socket, gasfilled lamp of 500 watts, an iron rod, and a butterfly nut and bolt will be required. The size of the smaller tin must be such that it just fits upon the condenser mount.

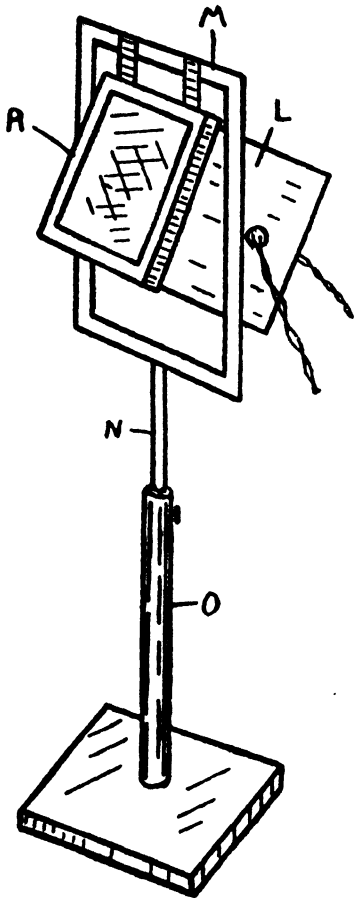


FIG. 80

The bottom of one of the tins *B* is completely removed by cutting it round close to the bottom, or by unsoldering the bottom joint, and a hole is cut in the bottom of the other tin *C* to take the lamp socket *D*, which is held in position by the usual shade clamping ring. The condenser *A* is fitted in one end of the tin *B*, and just in rear of the condenser a series of V-shaped tongues *E* is punched out by means of a cold chisel, the points of the tongues being towards the condenser. Four or five of these tongues are formed round the tin *B* and bent inwardly, so as to ventilate the back of the condenser without allowing the direct escape of light. If desired, small bent tin bridge pieces *F* (Fig. 78) can be soldered over the V-shaped openings.

To the side of tin *C* is soldered or fastened a metal tongue *G*, which is fitted into a saw cut made in the end of the rod *H*. The rod and tongue are then bored through

and the bolt *J* passed through them. The nut *K* can then be used to clamp the tongue *H* to the rod with any desired inclination of the spotlight. The rod *H* is adjustably slidable in the tubular stem of music or similar stand, so that the height of the spotlight can be adjusted.

It will be readily understood that to obtain a concentrated beam of light, the two tins *B* and *C* are telescoped in or out until the light is focused in the required manner, whilst the device can be used as a floodlight, if

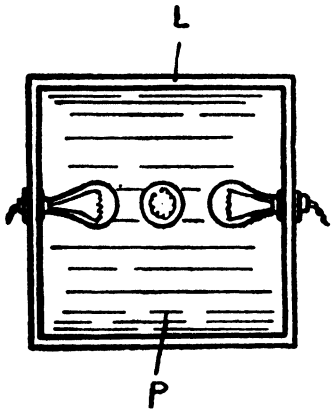


FIG. 81

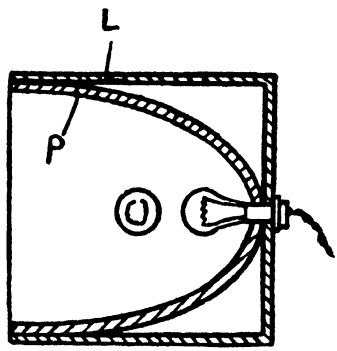


FIG. 82

desired, by moving the tin *C* and lens *A* so that the light is not focused.

A cheap way of making a floodlight is illustrated by Figs. 80, 81, and 82. The box *L* consists of an ordinary 7 lb. biscuit tin hung by its front edge in a metal frame *M*, carried by a rod *N* slidably adjustable in the lower part of a music or like stand *O*. To the lower front edge of the tin may be fastened a cord which can be tied to the rod *N*, so as to hold the mouth of the tin pointing at the desired upward angle. Holes are bored in the sides and back of the tin to allow lampholders to be fastened therein to carry lamps inside the tin. For example, these lamps could be of colours red, white, and blue, for inclusion in the corresponding batten circuits, or more generally they would all be wired into the white circuit.

The power of the lamps will depend upon the size of the stage, but probably lamps of 100 watts each will generally be satisfactory. To increase the brilliancy of the flood, it will be advantageous to fix into the tin behind the lamps a sheet of cardboard *P* curved substantially as

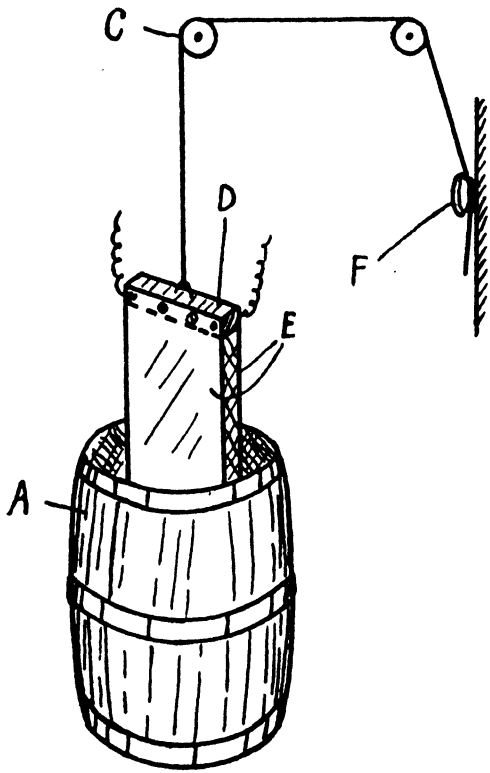


FIG. 83

shown, this being painted on the reflecting side with aluminium paint.

The lid of the tin will come in useful for fastening tinters over the mouth of the flood, if its centre part is cut out to leave an open frame *R*. A tinting gelatine (which must be fire- and heat-proof) is dropped into the lid, and the lid then applied to the mouth of the box.

For those content to put up with the disadvantages of a liquid dimmer, this type of dimmer can be the most easily made and at a very small expense, as illustrated by Fig. 83. For the liquid receptacle a 10 gal. cask *A* can be employed, which is three parts filled with a solution of ordinary washing soda in water. Above the cask is fixed a pulley *C*, over which passes a rope having at one end a wooden bar *D*, 2 in. thick and 10 in. long, to the sides of which are fastened two sheets *E* of 18 gauge sheet iron, each 8 in. wide and 3 ft. long. The other end of the rope can be twisted round a cleat *F* attached to the wall close to the cask *A*. Two terminals are fastened to the iron sheets for connecting them into circuit, and, before the iron sheets *E* are attached to the wooden bar *D*, the bar is soaked in hot paraffin wax, or painted with some anti-corrosive enamel or paint.

The more the plates *E* are lowered into the liquid the less will the resistance be, and, as the liquid becomes hotter the greater the current it passes, it would boil if kept in circuit with the lights full on. Accordingly, it is advisable to provide a short circuiting switch (not shown) on the bar *D*, which can be thrown over as soon as the plates *E* are fully lowered into the liquid. In order to obtain a graduated change of resistance the plates can be spread apart at their lower ends, or tapered, or, if a converse effect is desired, their upper ends may be spread wider apart than their lower ends, or their width may be greater at the lower end than at the upper end.

The making of a wire resistance dimmer is a somewhat more difficult operation. In the first place, a stud type of variable resistance is not recommended owing to the jerky effect produced, the best type for theatrical purposes being the slider type, well known to wireless amateurs. Assuming it is desired to dim, say, a circuit containing twelve 60 watt lamps working in parallel on a voltage of 100 volts, the total energy taken $= 12 \times 60 = 720$ watts. The current taken will be $\frac{720}{100} = 7.2$ amperes, and the lamp

resistance will be $\frac{100}{7.2} = 14$ ohms (approx.). Consequently, a dimming resistance of 14 ohms will be required to reduce the current to half, which will be suitable for dimming purposes. A suitable resistance wire to use is bare nickel

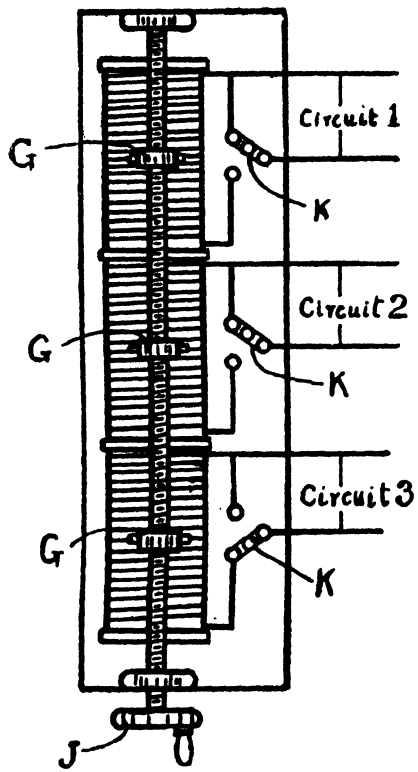


FIG 84

chrome wire of No. 16 S.W.G., and this has a resistance of about ½ ohm per yard. Accordingly, in the case of the present example, about 28 yd. will be required.

This resistance wire should be wound on a porcelain or similar insulating tube of 2½ in. diameter and some 12 in. long, the insulator being grooved to receive each turn of the wire separately.

In Fig. 84 is illustrated a triple dimmer having three resistance tubes, each controlling, say, the white lights on three separate stage battens. The three sliders *G* are all mounted on the same long lead screw *H* adapted to be rotated by a handwheel *J*. Such a screw may be obtained cheaply from a scrap-iron dealer out of an old screw-cutting lathe, and the sliders are mounted on nuts fitting the screw. Each section of the dimmer is provided with a short-circuiting switch *K*, so that the dimmers can be switched in or suddenly out, as and when desired.

CHAPTER IX

DRAMATIC COPYRIGHT

COPYRIGHT Law is of as much importance to writers, composers, and playwrights as the Patent Law is to inventors, and the Trade Mark Law to traders. All of them are designed to enable a person to secure to himself a fair reward for the work by which he aims to secure his livelihood.

A person's success at his business, trade, or profession may be said to depend upon his honesty, industry, and acumen, but for the present purpose his honesty will be taken as unimpeachable. Sheer industry is the output of a mere labourer or routine worker, and the use of the brain is necessary to supply the acumen to secure a greater measure of financial success, or, as is the ambition of most of us, to achieve adequate financial success with a minimum of labour.

The successful inventor uses his brain to evolve a desirable article or process of manufacture which will give him advantage over his competitors in business, whilst a successful trader makes use of trade-marks to protect the goodwill of his business, which has been established by his industry and the business methods evolved by his brain. Persons earning their living in ways other than trade and manufacture generally have to rely upon the Copyright Law to protect their interests, and among this large class of people come writers, composers, and playwrights.

Firstly, as regards the meaning of "Copyright." As its name implies, it is the right to copy any particular work. This privilege, of course, does not amount to much unless it is a monopoly, i.e. granted exclusively to one particular person or firm, and this is what the Copyright Law confers. In effect, the Law says that no one

may copy certain kinds of brain work, but makes an exception in the case of the author of the work.

The question often arises as to who is the "author" of a work, and the legal view is that the person responsible for the conception or design of the work is the author. Thus a person who employs another person to write a play with a particular plot which he outlines is the author, and not the person who does the actual "donkey work." The actual writer of the play is probably entitled to the copyright of the dialogue, but by accepting the contract he sells his copyright in advance to his employer, who thus becomes vested with full copyright in the work. On the other hand, a person employed generally for the purpose of writing plays is probably entitled as author to the copyright of the plays he writes, notwithstanding the receipt of a salary, in the absence of any agreement or contract to assign his copyrights with or without further payment. If a work is done in an employee's spare time, the copyright will be his employer's or his own, according, and in so far, as the ideas made use of are his employer's or his own. Thus, if his employer suggests only a plot, the work will become one of joint authorship—the employer contributing the plot, and the employee the dialogue. However, a person setting a play to music is not a joint author of the work with the author of the book, since the contributions of the two parties to the work are separate and distinct, inasmuch as each can exist without the other. In other words, there is no real combination between the two, as the words could be set to different music, and the music could be provided with different words.

There are four branches of copyright which are of interest to those engaged in the art of the theatre, namely, literary, musical, dramatic, and artistic. The last mentioned concerns the scenic artist, and is not intended to come within the scope of this book; musical copyright resides entirely in the music of songs and plays, and, again, is outside the scope of this book, but it is proposed

to deal with literary and dramatic copyright more fully, so far as they concern persons resident in Great Britain and any foreign countries adhering to the Berne International Copyright Convention.

In the first place, it should be noted that no formalities have to be complied with to claim the benefits of the Copyright Law, such as have to be attended to in the case of patents, designs, and trade-marks. Under the present Copyright Law no registration of copyright is necessary, and literary and dramatic copyright commences from the date of authorship, and lasts for a period of fifty years after the death of the writer, or after the date of publication of the work if this does not take place until after the death of the author. Thus authors and playwrights are legally secure in sending manuscripts to publishers and theatrical managers as soon as completed, without taking any special steps to secure the copyright which they already possess.

In order to establish that copyright in a work exists, it is therefore only necessary to establish the date of authorship. In instituting an infringement action, however, it is necessary, as well, to prove title from the original author if the plaintiff is not himself the author.

Literary copyright exists in all original works which can be copied by printing or like methods of duplication, such as typewriting, whilst dramatic copyright exists in all original works which can be performed. It is probable that all dramatic works possess literary as well as dramatic copyright, but literary works do not necessarily possess dramatic copyright. Novels possess both kinds of copyright, but technical and similar works possess no dramatic copyright. Publication is require for infringement of a literary copyright, and performance for infringement of dramatic copyright.

Literary copyright can be infringed by the performance of a dramatized or cinema version of a literary work, and dramatic copyright can be infringed either by the

publication of a literary work, or by a cinema performance employing the same dramatic plot. Thus it is not allowable for a person to take down the dialogue of a play in shorthand, and then either to publish a printed transcript, or to use it as the frame for a literary work subsequently published, although the person is quite at liberty to take down the dialogue if he wishes to do so for his own private use or reference. The publication or performance constitutes the infringement, and not the taking down or transcription. Again, apart from the dialogue, a play includes a " plot " and an " action," neither of which would completely appear from a transcript of the dialogue. It would, nevertheless, be an infringement of the copyright to reduce either of these to words, and either to publish them in printed form, or to show a cinema film based upon the same plot or action.

In regard to the cinema there is this important difference between literary and dramatic copyright, namely, that the former is infringed by merely making the film, this being regarded as a duplicating process, whilst the latter is only infringed by showing the film.

From the foregoing it should be apparent that the author of a book or play can claim rights under three headings, namely, book rights, dramatic rights, and cinema rights, all of which can be sold separately. Accordingly, although it has been held that the copyright of a book does not include the performing rights unless specially stated, care should be exercised, in parting with the copyright in a work, to avoid any ambiguity as to the exact rights which are being sold. Naturally, a sale of all three of the above rights should command a much higher price than the sale of any one of them singly.

Questions of infringement of copyright are quite easy in cases of exact copying or performance of works, but they become complicated when the alleged infringement is only a colourable imitation of the original work, or when a question of infringement of, or by, only a part of a work has to be considered.

In considering such questions of infringement of copyright, there is one simple basic principle to bear in mind, and that is, that no one may use the product of the brain of the author within the period of copyright protection without the permission of, with or without payment of royalties to the author, his heirs, or any person to whom he has assigned his copyright.

Having accepted this principle, several points over which there is apt to be doubt become quite clear. For example, if a person takes an old story and re-writes it in his own words, he does not thereby obtain copyright in the old story, but only in his own particular version of it. Any one else is free to use the same story as a basis for another version of their own composition. Writing a new version of an old play may involve alteration of the plot, or dialogue, or both, but the part retained out of the old play can never be the subject of a new copyright, and must be entirely ignored in comparing one new version with another new version to determine whether the later version infringes the copyright of the earlier version. Copyright only subsists in the earlier new version in respect of those parts which are the product of the brain of the author of such new version, i.e. in the variations from the original version, and it is these variations which cannot be made use of by others than the author.

Thus, any one who likes may try and improve on a Shakespeare play in respect of the plot, action, or dialogue without infringement of any one's copyright as far as Shakespeare's ideas are concerned, but the "improvements" may be infringements of the copyright of another person's version of the same play.

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Gums and Resins
Incandescent Lighting
Ink
Iron and Steel
Ironfounding
Jute
Knitted Fabrics
Lead
Leather
Linen
Locks and Lockmaking
Match Industry
Meat
Motor Industry, The
Nickel
Oil Power
Oils
Paints and Varnishes
Paper
Patent Fuels
Perfumery
Photography
Platinum Metals
Player Piano, The
Pottery
Rice
Rubber
Salt
Shipbuilding
Silk
Silver
Soap
Sponges
Starch
Stones and Quarries
Straw Hats
Sugar
Sulphur
Talking Machines
Tea
Telegraphy, Telephony, and Wireless
Textile Bleaching
Timber
Tin and the Tin Industry
Tobacco
Velvet and Corduroy
Wall-paper
Weaving
Wheat
Wine and the Wine Trade
Wool
Worsted
Zinc

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