

LIGHTING · THE · AMATEUR · STAGE  
BY · FRANCIS · REID



# THE PLANNING SO FAR...

See Part 1,  
Tabs Vol 40 No 1  
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## AFTER

READING THE SCRIPT and absorbing any music and DISCUSSING THE STAGING with director, designer(s) & choreographer (if any) to DECIDE A STYLE for the look and role of the lighting then ESTABLISHING PRIORITIES to bring ideals within the scope of resources

## WE HAVE

DIVIDED THE STAGE by areas and by colours and DETERMINED ANY ESSENTIAL 'SPECIALS'

## TO ENABLE

CHOICE OF LIGHTING POSITIONS for ALLOCATING LIGHTING INSTRUMENTS with SELECTED COLOURS

## NOW,

before moving on to the stage, we must COMPLETE THE PAPERWORK

# THE PLAN

THE PLAN is the kernel of any lighting design. It shows, at minimum:

- The POSITION of each light.
- The TYPE of light in each position.
- Any ACCESSORIES, such as barndoors or gobo, required by any particular light.
- The DIMMER which will control each light.

The plan should be drawn to scale (1/2" to 1' or 1:25). This helps accurate indication of light positions. And if scale symbols are used for these lights, there is a check on space problems: if it can be drawn on the plan, there will be room for it on the stage. Any shapes may be used to indicate lights, but plans are more easily read if the symbol resembles the outline shape of the light. Either way, the plan should certainly include a key showing the type of lighting instrument represented by each symbol.

Colour and dimmer are indicated by number: the usual convention is to write the colour number inside the symbol and the dimmer number alongside the symbol.

Lights fixed to horizontal bars are easy to show in plan: the bar can be drawn in the position that it will occupy over the stage and its height indicated by a note (such as +14') written at the end of the bar. Lights fixed to vertical bars, or stacked on a series of brackets, are more difficult to draw - they must be indicated diagrammatically. Foh lights in the auditorium are usually drawn much closer to the stage than their scaled real distance which would make the plan inconveniently large. The easiest method is to work on tracing paper over a ground plan of the scenery and stage.

A good procedure is:

- (1) Establish all lighting positions with Xs
- (2) Convert these Xs to symbols of available (and/or acquirable) lighting instrument types, drawing them pointing in the approximate direction of proposed light travel.
- (3) Write colour numbers inside symbols.
- (4) Add dimmer numbers alongside symbols.
- (5) Trace through key features of the set and stage - it is usually possible to trace through (in spaces clear of lighting drawing) enough to relate the positions of lights to the geography of the setting and stage.

This will bring the plan to a point where it can be used to prepare and rig the equipment. The lighting designer's own copy will grow many extra markings to indicate precisely where the lights are to be pointed - markings so detailed that they would only confuse if included on all copies of the plan.

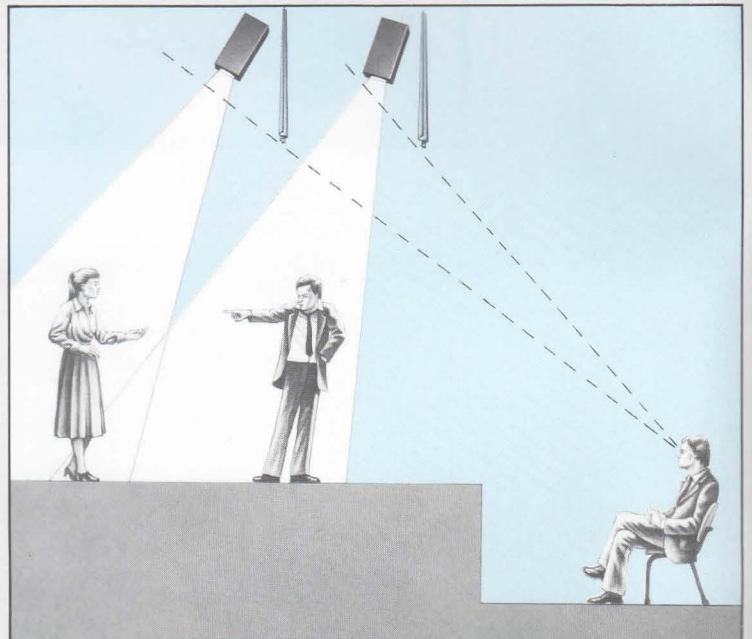
## LISTS

From the plan, lists are prepared of the required number of:

- TYPES OF LIGHT
- LENGTHS OF CABLE
- ACCESSORIES
- COLOUR FILTERS

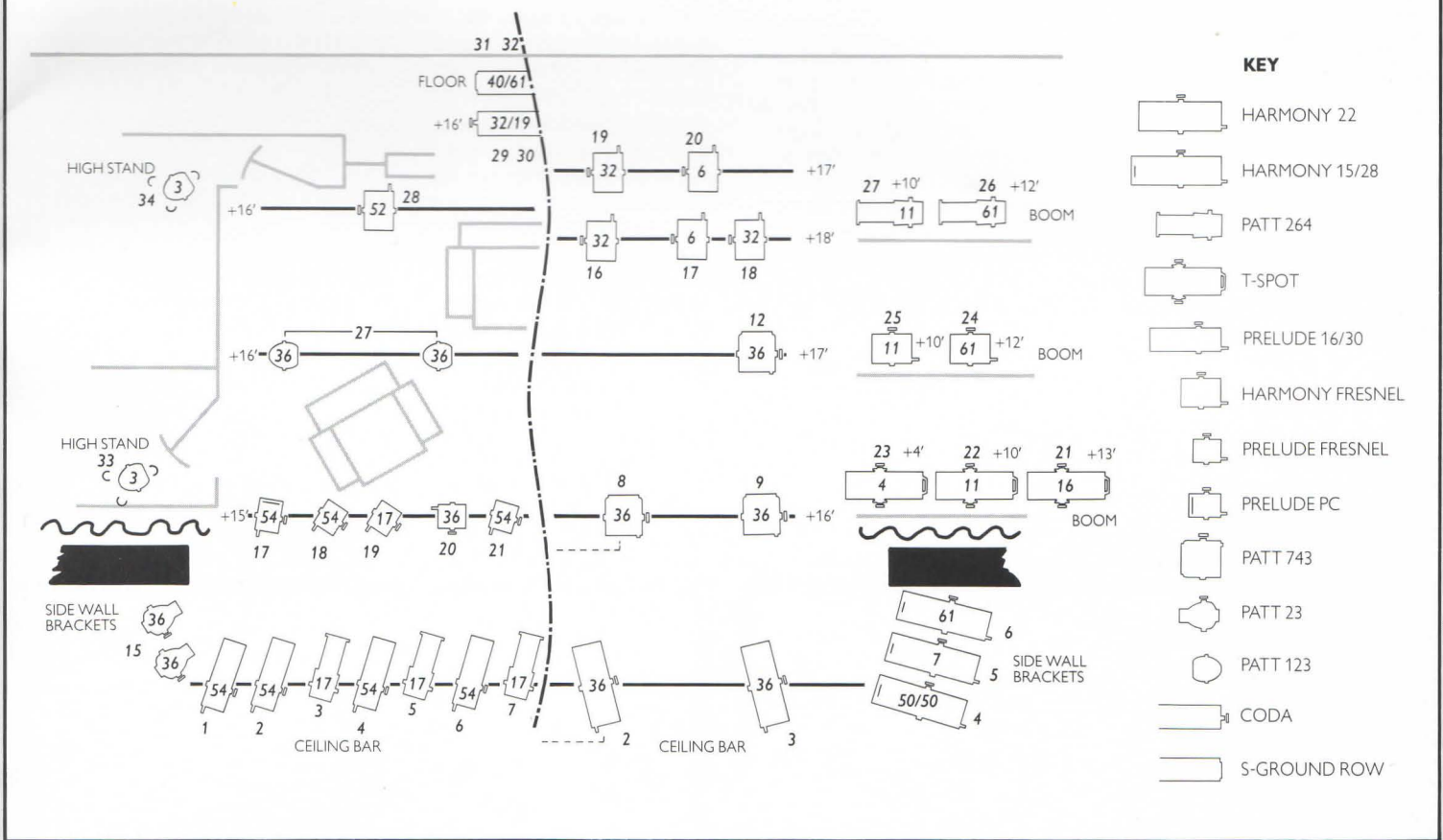
# SECTIONS

Will there be borders to mask the lights (and other things) hanging above the stage? If so, draw a section to check that all the light beams will be able to reach all desired parts of the actors and the scenery. Usually (but not always) the heights of the borders and lighting bars can be adjusted. Only a section will determine what these relative heights should be, and only a section will determine how effective the masking arrangements will be for an audience eye in the front row.





# RIG PLAN



## CUE SYNOPSIS

What lighting changes will there be? And when? There is rarely (no, not rarely, **never**) enough stage time to let such decisions await inspiration and experiment at rehearsal. The cues need to be discussed and listed in advance – even if a proportion of them are changed at rehearsal.

The discussion should involve director (+ choreographer if a musical), designer(s) and the stage manager who is going to 'call the cues'. (Coming shortly: why I don't think it is practical for lighting operators to take their own cues.) Chairman of this committee is the lighting designer. Best time to meet is when rehearsals are sufficiently advanced for the production moves to be relatively finalised – yet with a couple of rehearsal room run-throughs still ahead for checking the cue synopsis and familiarising the actors' moves in relation to it.

The production team often say they are too busy to meet. If so, the lighting designer must prepare his own synopsis and circulate it. People who hesitate to commit themselves on a blank sheet usually love to edit, so the list will come back with alterations and annotations which can be averaged out and recirculated. But it is easier to sit down and discuss! The Cue Synopsis should be very flexible – but it is easier to alter 20% of a plan than to have no plan at all.



## COMMUNICATING INTENTIONS...

Drawing plans and making lists is a major part of the work process of lighting design. When completed, this paperwork – through copies – becomes a major part of the lighting designer's communication with the rest of the production team. Stage managers and scene designers need copies of the plan so that they know where the lights will be hanging. Electrics crew need several copies since plans are rather prone to destruction by beverage spills, fingerprints – and even footprints. Cue synopsis copies should go to the director and stage manager; and for the operator there should be a rather special copy: one marked with that essential extra bit of information – the time **between** cues (ie the time available for presetting the next cue).

## ... AND CHECKING THESE INTENTIONS

Armed with lighting plan and cue synopsis, the lighting designer should watch the final run-through(s) in the rehearsal room to observe the action in each proposed cue state – particularly the actor positions. When making notes, it is often easier to record where light is **not** required!



# PREPARING THE EQUIPMENT

The planning phase is over, the paperwork complete. In our mind's eye we can see the 'lighting look' that we want for the show. We hope that we have devised a layout using the right lights in the right places, pointing at the right parts of the stage in the right colours. Will it all work? Well, we cannot be sure until all the equipment is rigged and focused so that we can begin to paint the stage with light by balancing the contributions from the various sources. However, at least we have firm plans that will allow us to make the maximum experimental use of the time available.

... **BUT** ...

## WHAT IS THE FACTOR MOST LIKELY TO WRECK ALL OUR CAREFUL PLANNING?

In my experience and observation, the major source of frustration in lighting is ...

### **BADLY MAINTAINED EQUIPMENT.**

There are quite enough problems in lighting without having to cope with equipment that is dirty, mechanically doubtful (jamming or wobbling) and electrically intermittent.


And lack of mechanical and electrical maintenance is not just frustrating, it is **VERY DANGEROUS.**

**OWNED EQUIPMENT** is the easiest to maintain because ownership normally allows access to it. If regularly used by sympathetic hands, lights are virtually everlasting. However, rough handling can devastate the mechanics. Unfortunately it takes quite a bit of experience to discover just the right amount of pressure necessary to make the required focusing adjustments. Whether the equipment is left hanging or kept in store will depend on frequency of usage. Either way it is essential that a maintenance check be carried out sufficiently in advance of each production so that any defects may be remedied.


**HIRED EQUIPMENT** from whatever source should be clean and safe. The principal adjustments – lens, shutters and tilt-lock – should be in working order (ie move when required and only when required). The best hire equipment is electrically, optically and mechanically as new – the only indication of long service being the quality of the paint finish. Some hire equipment has been known to fall short of this standard: you tend to get what you pay for, although the mushrooming of small hire companies in recent years has made lighting hire into quite a competitive business. Always report any problems to the hire boss.

**INSTALLED EQUIPMENT** on a rented stage can be the most difficult maintenance situation. Can we get access prior to the get-in? Alas, the realistic, if depressing, solution may be to build into our planning the contingency assumption that some lights may not be as bright as they should be, and that it may just not be possible to get full benefit from shutter and lens movements. A supply of thin strong flexible wire (such as heavy duty fusewire) is a useful standby for counteracting the sagging tendency of spots with slipping tilt-locks.


## OPTICAL CHECK

- Reflectors clean?
  - Lenses clean?
  - Lens properly positioned with retaining clips, rings, etc?
  - Lamp not too black?
  - Lamp properly seated in its holder?
- 


## ELECTRICAL CHECK

- Each light with the correct plug?
  - Plug correctly attached?
  - Cable tail in good condition?
  - Does it light?
  - All cables with correct plugs and sockets?
  - All cables visually inspected for breaks or cracks in outer sheath?
  - Is the cable sheath grip taking the strain in all plugs and sockets?
- 

## MECHANICAL CHECK

- Lens tube or focus knob moving freely?
  - Shutters moving freely yet remaining where positioned?
  - Tilt locking device free from slip?
  - Hanging bolt complete with wing nut? (or spigot if to be used on a stand?)
  - Safety chain for each light?
- 

## ACCESSORIES CHECK

- Enough barndoors with leaves that will stay where put?
  - Enough irises, masks, gobos?
  - All colour filters cut to size, labelled with their Cinemoid number, and in their frames?
  - Enough clamps & boom arms?
- 

## LIGHTING AN AMATEUR SHOW IN A PROFESSIONAL THEATRE

Many amateur musical societies mount their annual production in a professional theatre. Usually this is as part of a touring theatre's programme or at the beginning or end of a rep theatre's season; but it may be in a cinema restored to live theatre once or twice a year. The involvement of the amateur company in the process of lighting will vary.

But it will certainly involve all the decision processes to establish a lighting concept and a detailed cue synopsis. How far the involvement proceeds beyond this will depend on the relationship between the society and the theatre – and particularly upon the availability of an enthusiast within the society who is eager to design lighting, and has developed a good working relationship with the theatre's electrics staff. With such a person, the full lighting design can be completed by the society's own lighting designer.

Whatever the degree of involvement, the key to success is **COMMUNICATION** – in particular discussing practicalities with the resident theatre staff who know how long the various processes take in their theatre, and just how effective is a particular light from a particular position. And to discuss the financial implications of any ideas: particularly the labour costs involved in restoring, during the get-out, any equipment which has been moved from its normal position.



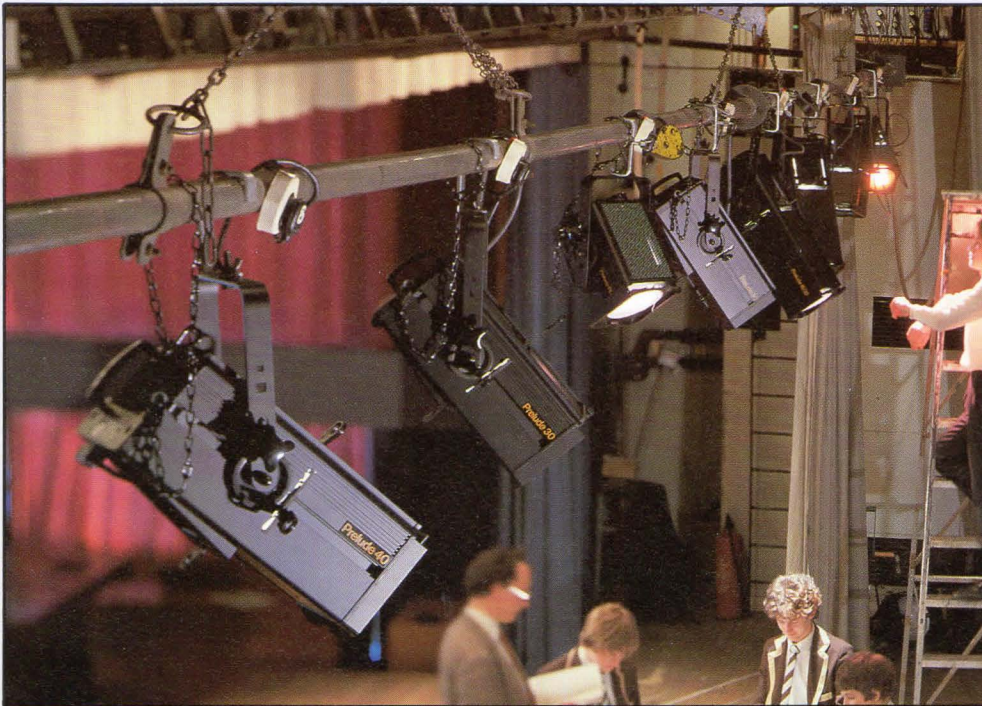
# RIGGING

The great moment has arrived. We move from the **planning** phase to the **action**. At last we are in the theatre. First action is to rig all the lighting equipment in the positions shown on the plan. It is quite likely that the scenery crew will be working at the same time – only careful cooperation will prevent getting in each other's way; such as electrics rigging at the front of the stage while scenery is assembled at the rear. And there will be a time when the stage will be free while lights are rigged in the auditorium. However it is wise to try to rig any overstage spot bars while the area below is still clear enough to allow proper access. Whenever possible, lights should be rigged on alloy tubes of scaffolding diameter. These should be either horizontal (**bars**) or vertical (**booms**). This ensures that the light, hanging via its standard wing nut, operates on the correct axis required by the design of both its lamp and of its convection ventilation system. A **Safety Chain** must always, but always, be used to limit the fall of the light if its clamp becomes loosened and detached from the bar.

## RIGGING SUSPENDED BARS

The easiest bars to rig are those which can be lowered to a working height of 3 or 4 feet above the stage floor. The procedure is:

- (1) Hang all the lights loosely on the bar by their hanging clamps.
- (2) Slide them along the bar until their spacing is correct.



- (3) Tighten all hook clamps.
- (4) Fix all safety chains.
- (5) Plug up each light, ensuring that there is enough slack cable to adjust each light freely.
- (6) If the bar is not internally wired, run the feed cables along it, securing liberally with insulating tape.
- (7) Pull out all shutters on profile spots.
- (8) Fit any gobos into profile spots (remember they go into the **gate** slot beside the shutters).
- (9) Fit all barndoors.
- (10) Fit all colours.
- (11) Point each light in its approximate direction.
- (12) Flash out to ensure that each light is lighting.

**Then, and only then, hoist away to operational height.**

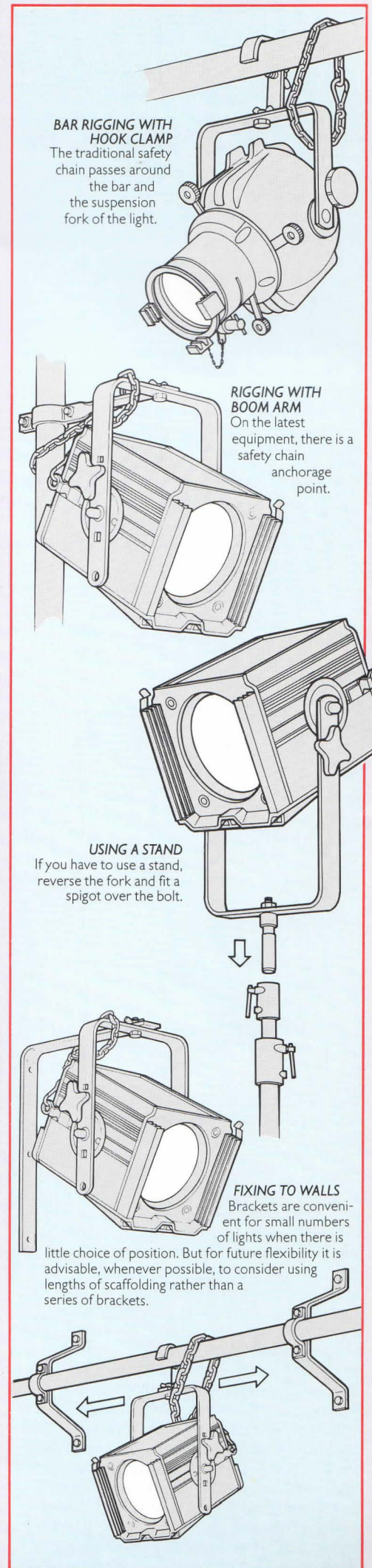
Bars on **fixed** suspensions are no fun to rig – as anyone who has tried to fit a barndoor from the top of a ladder will testify. So it helps a lot to ensure that matters like fitting barndoors and pulling out profile shutters have been attended to before taking the light up the ladder. And the same applies to fixing lights to vertical scaffolding booms. I try as much as possible to avoid using stands – especially in positions where actors can get at them. (Leaning on them is quite normal – and I have known actors move them aside to make a cleaner entrance, or use them as a convenient coathanger for a quick costume change.)

## PLUGGING

When all the lights have been rigged, they should be plugged into the appropriate dimmers. When this plugging is complete, try raising each dimmer lever in sequence (starting with number 1) and checking that each light works and its dimmer number corresponds with the plan. Once the dimmers agree with the plan (but not before) we are ready to start focusing. If our planning was perfect, the rigging operation will have been accomplished without the use of a screwdriver. I hope to achieve this someday!

## SAFETY

Safety in rigging cannot be over-emphasised – both mechanical and electrical safety. Time is always short and since 'the show must go on' there is always a risk of cutting corners. And when one is tired (mentally and physically) there is always the possibility of omitting to tighten one of the many nuts – or overlooking the plug whose cable is not firmly anchored. The only way is to check, check and check again.





# FOCUSING

FOCUSING is probably the most important part of the whole lighting operation. Not even

the most sophisticated marvel of a microprocessor control desk can fill in that dark spot where the lights have not been properly overlapped. Nor can a hard edge be softened or a disturbing spill on to a border be shuttered off.

Focusing involves tricky ladder work so that there is every incentive to get it right first time – although, inevitably, it will be necessary to get at the odd spotlight between rehearsals for a little fine adjustment.

## FOCUSING PROCEDURE

Focusing nearly always, no not nearly always but **always**, takes longer than hoped. Like most tricky operations, it benefits from planning – so let us look at the **ideal** method which requires four people:

- (1) The **lighting designer** who takes up the various actor positions, giving instructions on the adjustment of the spotlight so that it lights the intended area.
- (2) The **electrician** up the ladder who carries out the necessary adjustments as instructed by the lighting designer.
- (3) The **operator** who brings up dimmers as requested by the lighting designer.
- (4) The **ladder holder** who does just that.

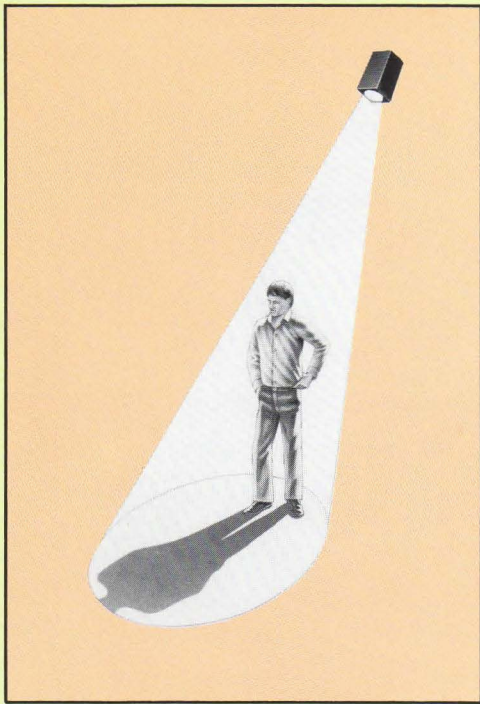
If four people seems excessive, remember that only (1) & (2) need to have some specialist knowledge of what they are doing. At this point, anybody can be shown in a couple of minutes how to bring up or take out numbered circuits one at a time. (If the control board is not labelled well enough for this, then there is sure going to be trouble later when plotting time arrives.) If the control board is transportable – and many small desks can now be placed in the middle of the stage for convenience in rigging and focusing – then that person can be saved. However there is just not time to keep leaving the stage, just to push one lever up and take down another. The more the person up the ladder is experienced, the faster will be progress.

However a relatively inexperienced person will learn quite quickly how to adjust a spot **provided** that the lighting designer knows what he is asking for . . . and everyone has faith in the person holding the ladder. Something that just does not work is the lighting designer climbing the ladder to adjust the spotlights. I know that some readers will disagree with me on this, probably quite passionately, BUT I am sticking to my guns. And I am also prepared to state quite categorically that, unless you have lots of time and lots of hush, it does not work to give directions from the auditorium while the lights are focused on a body who moves around to instructions. (However that moving body is an essential part of the **plotting** process which comes later.)

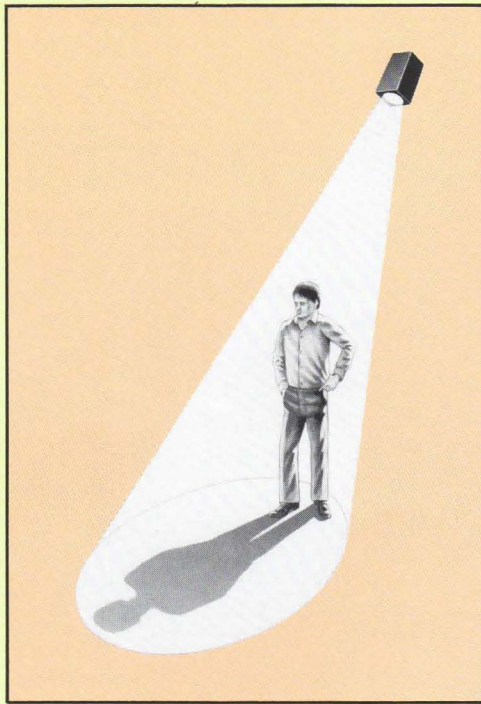
## FOCUSING IN COMFORT

If you stand with your back to the light that you are focusing,

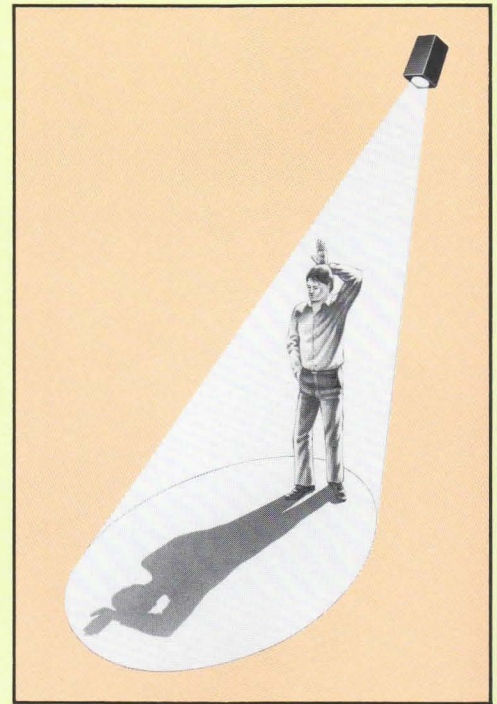
- (1) You will avoid being blinded
- (2) You will be able to see what the actor's light is doing to the scenery.



No clear shadow of head, therefore head is **not lit**.



Clear shadow of head, therefore head **is lit**.



If the lighting designer is shorter than the actor, make an allowance – check by raising hand.

## DIRECTIONAL DIFFUSERS

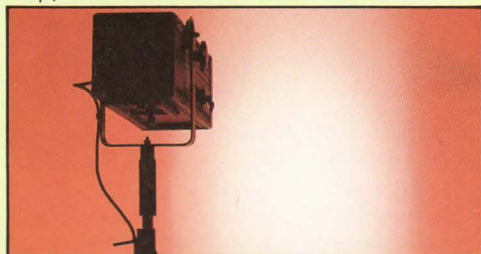
The milky-white filters included in 'gel' ranges are not colours but **diffusers**. The traditional frost (31) has long been used to soften a light beam, and in earlier days helped smooth out some of the roughness in the light emitted by the more primitive equipment. The latest (84) is a rather useful new tool for anyone trying to light with minimum equipment. In addition to softening the edges of the light, it stretches the beam out along one axis. Our photograph shows the light softened and extended horizontally. But, according to the way we cut the filter and place it in the frame, the extension can be vertical or any angle that we choose. This directional diffuser filter is particularly effective in profile spots which have (contrary to usual practice) been hard focused. The usefulness of being able to stretch light this way will be obvious!



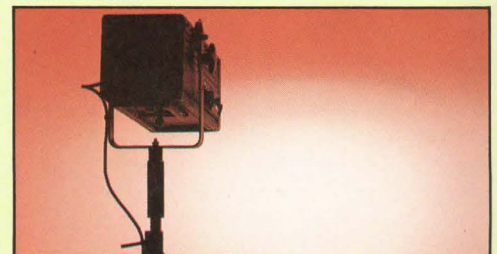
Sharp focused beam.



With Cinemoid 31.



With Chromoid 84.



With Chromoid 84 turned through 90°.



# WHAT CAN WE ADJUST?

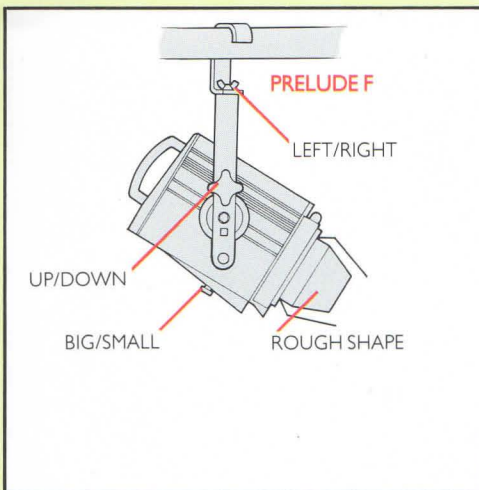
## ON ALL LIGHTS

Left/Right & Up/Down

## ON SOFT SPOTS

Bigger/Smaller

+ with optional Barndoor  
Rough Shaping (& control of spill)



## ON PROFILE SPOTS

Round size by optional Iris

Shaped size by Shutters

Texture by optional Gobo

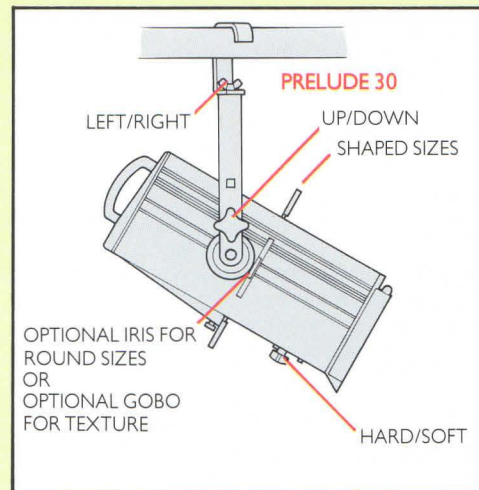
Beam edge quality by Lens

+ on Variable Beam Profile Spots

Size and edge quality by differential movement of two Lenses

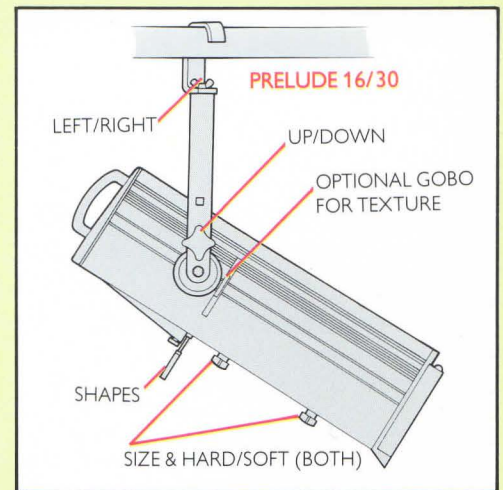
Shape by Shutters

The most difficult types of light are the basic Profile Spots since there is an interaction between shutters (or iris) and lens movement. Although adjusting the lens is principally a means of making the edge of the beam harder or softer, it will also change the size. Therefore it is usually necessary to adjust shutters and lens



alternately to get the desired combination of size and edge quality.

Some equipment, particularly the Harmony Profiles, has an adjustment whereby the light can be adjusted so that it is either smooth across the whole spread of the beam, or 'peaked' to be brighter in the middle with the amount of light falling off towards the edge. For most purposes it is easier to light with an even brightness across the beam and so it is recommended that anyone beginning to work with light should use an even beam until through experience they discover a need for a 'peaky' beam. (In nearly thirty years of working with light, I have hardly ever wanted anything other than a smooth even light across the beam.)



## FOCUSING AIMS

### ACCURATE FOCUSING

We must ensure that each light will hit an actor everywhere within the intended area. The only way to be sure that it does so is to move around the area checking that you are lit throughout. If the area is one that will be selected on its own (with adjacent ones blacked out or very dim) then the light will have to be focused with particular accuracy. However if the area is one that is always used with reasonably bright surrounds, time may be saved by a little less finicky precision in setting – particularly of the shutters.

In any case, each light has to be considered in relation to the adjacent ones. In discussing planning we have already noted the necessity for individual lights to overlap – both to the side and to upstage/downstage. Having planned to do this, we must ensure that we actually get a good overlap when focusing. These overlap joints are much smoother (particularly where they show most: on the face – and that is where the audience are mostly looking) **if the edges of the light beam are soft.**

### CLEAN FOCUSING

Soft edges are also a major part of the craft of clean focusing. And cleanly focused light is more likely to enhance the look of a production. The times when we need a hard edge to a light beam are very occasional. A hard edge falling on scenery immediately takes the eye. This fact establishes our criteria for a hard edge – only when we wish to make a positive visual statement. There has to be a logic for any hard

edge. Such as the shadow cast by a window or door. Otherwise the light should hit with a degree of softness. That degree of softness will vary with circumstances. A light on a bare wall will need to be softer than one where the edge can be tied in with, say, the bottom of a picture frame on the wall. On a naturalistic interior set, the edges of spots can often be lost in this way – by superimposing the edge lines of the lights upon natural lines on the set or on its dressings. Lights into doorways should be fuzzed off just under the tops of door frames – when focusing always check the effect with door both closed and open.

Most sets benefit from a slight fall off in the light towards the top, bottom and sides of the picture. To some extent this can be achieved by balancing on the dimmers. But, particularly when working with a small number of lights, focusing also has a part to play in this. I personally like to try to avoid lighting the stage floor evenly to the very front so that there is a sharp cut-off along the front edge of the stage – the division between stage and auditorium is made less obtrusive by fuzzing off the light over the last foot or so.

And, of course, one has to be particularly careful about keeping light off the proscenium, off the front of the stage (or out of the orchestra pit) and off the borders. A certain amount of soft spill on the borders is inevitable, but try to control it. If the direct beam from a spotlight clips the border, not only do we get a nasty hot spot on the border, but a hard-edged shadow of that border will be cast upstage.

So, the **Essence of Good Focusing** is:

- (1) Ensure that actor is lit everywhere in the area that has been allocated to that light.
- (2) Try to make the beam edges unobtrusive where they hit the scenery.
- (3) Normally use a soft edge which will be unobtrusive on both the actor's face and the scenery.

## ... AND A FEW OTHER POINTERS TO SMOOTH FOCUSING PROCEDURE:

- Don't light the light until you are absolutely sure where it goes (it gets hot quickly).
- Do adopt a clear code for talking to the dimmerboard operator. When you shout a number it means you want that dimmer up and everything else out – unless you add the words 'as well'.
- Do speak loudly and clearly, keeping the end of sentences up.
- Do talk in terms of the actual adjustments that are available on the particular light that is being focused.

## FOCUSING SAFETY CHECK

- Do make sure that the ladder is stable – and has someone holding it.
- Don't leave tools at the top of the ladder.
- Do make sure that everything is left tight.
- Don't place any strain on cables when adjusting spotlight positions.
- Do make sure that no light is left in a position where it will foul on anything – such as a curtain track.
- Do fade in each new light before dimming out the old, so that the stage never goes totally black – and it saves time.





# THE CONTROL BOARD

By means of the 'board', the lighting designer can control:

- the COMPOSITION of the stage picture – by selecting the appropriate combinations of individual lights.

- the BALANCE of this picture – by selecting the level of brightness of each of these lights.
- the FLUIDITY by which one picture is replaced by another.

What was once called a switchboard, or more properly a dimmerboard, is now formally called a Lighting Control. Which is fine so long as we take care to remember that our 'Lighting

Control' only controls which lights we use and how bright they are. 'Lighting Controls' do not control where we put the lights, which lights we put there and where we point them. Most of us however still talk about our lighting control as 'the board' whether we use our knees, our fingers or a microprocessor to work it.

## DIMMING AND DISTRIBUTION

Modern boards are two-part:

- the **desks** whose controls we push, slide or turn to produce the desired changes in the intensity of the lights **and**
- the **dimmers** which interpret the instructions from the controls so that the appropriate amount of electricity is passed to each light.

Fortunately the connection between desk and dimmers is slender cabling; from a maximum of one 8-core cable for each group of six dimmers in portable manual systems to a minimum of the single twin-core screened cable that can transmit all the required data between a memory system and its dimmers. This allows the desk to be positioned wherever it is convenient for the operator to have a good view of the stage. The dimmers can then be placed in their most convenient position to distribute 'controlled' electricity from the mains supply to the individual lights. This is normally a backstage position which

is within the manufacturer's recommended extremes of temperature and:

- adjacent to a suitable mains supply switch-fuse.
- clear of actor and scenery movements.
- accessible for fuse changes.

For permanent installations of any size, the dimmers are normally mounted in racks with permanent wiring to numbered sockets suitably located around the stage and auditorium. For temporary installations (and some of the smaller fixed ones) portable dimmer packs are used, each pack having six dimmers with a pair of output sockets to each dimmer. Temporary cables can then be run from those socket outlets to the lights. It is essential that such an arrangement is kept tidy, with plugs clearly labelled and tape used to harness together cables which are proceeding in the same direction. Even the smallest stage lighting installation uses what is, by domestic standards, a lot of electricity. The function of the dimmers (secondary to their artistic function) as a power distribution system must not be underestimated. Safety and efficiency go hand-in-hand.



Tempus Dimmer Rack



Permus Dimmer Rack

## YESTERDAY'S BOARDS

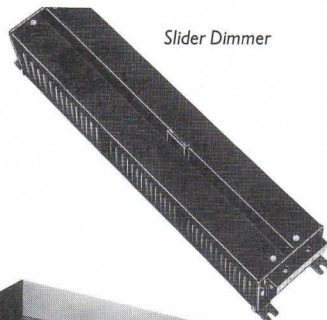
Many lighting boards which have long been absent from the catalogues are still in use. The simplicity of the older equipment is such that, given careful maintenance, its life is practically indefinite. Its obsolescence is due to its inefficiency (partly in its waste of power, but principally in its waste of time) and to its inability to respond to the demands of the developments in the art of lighting design.

For many decades the basis of all dimming was the variable resistance. This could only be remotely operated with considerable (and therefore expensive) difficulty: therefore most installations were located backstage and involved operators in actions that would have taxed a gymnastically sophisticated octopus.

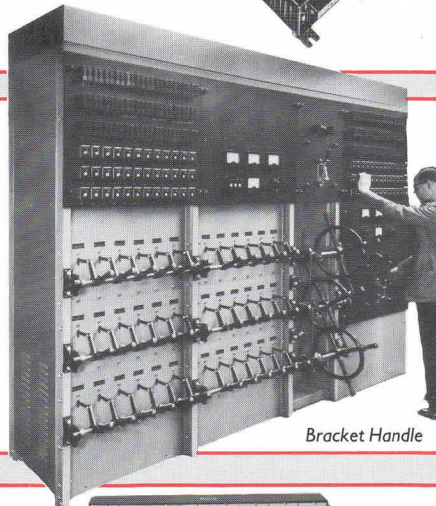
For smaller installations, the long running hit was four slider dimmers combined into the **Junior 8**, although I must confess that I personally never felt comfortable when utilising its switching arrangements for dimmer sharing.

More sophisticated systems put the dimmers behind a panel and operated them through handles that could be screwed down on to a common shaft for simultaneous operation. This was fine if all the selected dimmers were required to move up or down by a similar amount. But fine balancing of levels required a combination of manual dexterity and an ability to memorise plots.

The breakthrough came in the mid 1960s with the arrival of the thyristor dimmer which allowed as normal practice not only the board to be put 'out front' but for it to have facilities for presetting intensity levels in advance of the cue. In the 1970s, miniaturisation produced the **Mini 2** which made fluid lighting control available to the smallest installation. With the Mini 2 and the memory systems, lighting design was freed from the burden of compromising its cues to accommodate the capability of the board.



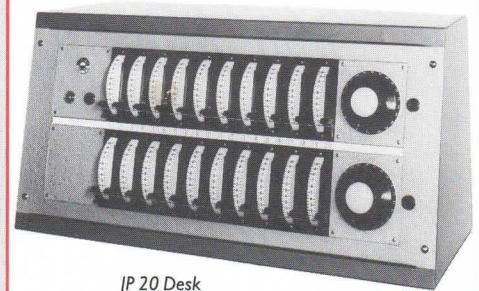
Slider Dimmer



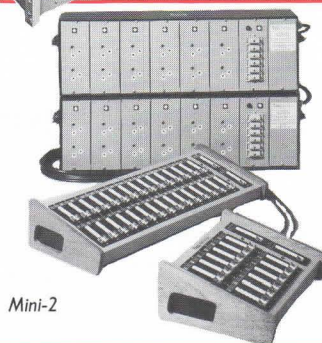
Bracket Handle



Junior 8



JP 20 Desk



Mini-2

## SAFETY

- Do not load any individual dimmer beyond its rated capacity – most dimmers are 2kW maximum (but check).
- Do not overload dimmer racks or packs beyond the capacity of their mains supply.
- Use only the manufacturer's recommended fuses.
- Always assume that all sockets, including dimmer pack sockets, are alive – keep fingers away from pins when plugging-in, and always disconnect any light before changing its lamp.



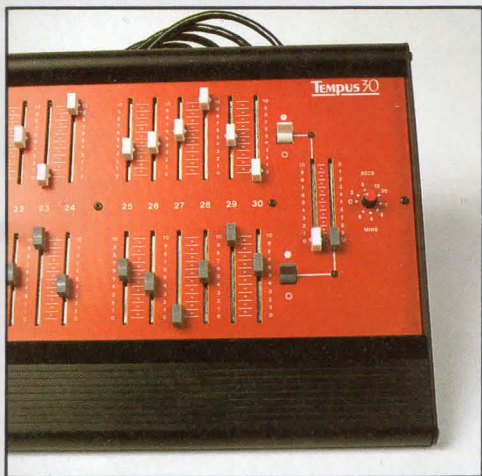
# PRESETTING

The operation of today's boards is based on presetting. The intensity levels of the lights which compose the next picture are preset in

preparation for the change. On manual systems the levels are filed as written numbers on a paper plot from which the individual dimmer levers can be set by hand at each performance. On memory systems, the data is filed in an electronic store from which it can be recalled

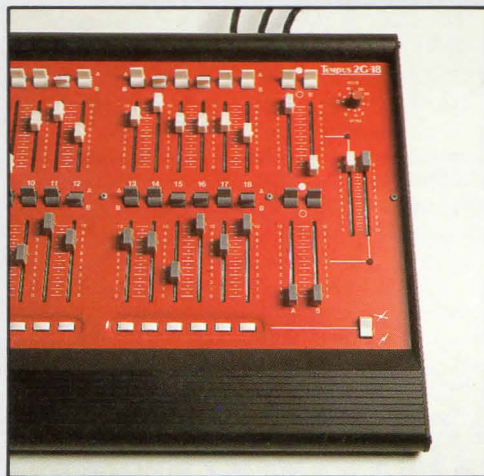
instantly by fingering a simple control. On Cue, the change is effected by operating masters which replace the existing lighting state with the new one. Operation of these masters is so simple that the board operator can devote total attention to the timing of the change.

## MANUAL PRESETTING



### TEMPUS

The simplest desks have two presets – one actively holding the on-stage lighting picture while the other stands by with the next picture. If a cue involves moving the level of only one or two dimmers, their faders can be adjusted on the live preset. For more complex cues, the presets are used alternately. In the earlier (Mini 2) systems, each preset has a master fader and care has to be taken to ensure that the light is not given an unwanted dip in overall level when crossfading. This generally means leading with the incoming lighting state. In the latest (Tempus) systems, the two masters are paired side-by-side. When worked together they provide a dipless cross-fade – but they can also be moved independently to provide any required degree of leading and lagging between the old and new lighting. Tempus systems also have a timer which can be set to give an optional automatic crossfade over a time selected from between five seconds and five minutes.



### TEMPUS 2G

More complex boards allow each preset to be subdivided into groups. A switch above each fader lever selects it to alternative masters, enabling separately controlled groups to be formed within each preset. On the Tempus 2G desk, two such groups (A & B) are formed within each preset. Each of the two presets has two group masters and these group-mastered presets are subject to a timeable crossfader. On this board, each channel also has a sprung button which enables it to be flashed to full irrespective of any presetting and mastering. The combination of presetting, grouping and flashing makes 2G a very versatile control for dealing with the varying basic requirements of drama (balanced levels and area groups) musicals (balanced levels and colour groups) and light entertainment (colour groups and rhythmic flashing). With both presets alive and the stage grouped into four areas (as in many plays) or four colours (as in many musicals), this board is also particularly adaptable for instant lighting at performance when there has been no opportunity for a conventional plotting rehearsal.



### AMC

The most advanced of the manual controls is the AMC desk where both the number of presets and the number of groups within each preset is increased to three. Each fader in each preset has an associated three-position switch allowing a total of nine groups (three per preset) to be formed. Nine group masters are associated with each end of the crossfader. So it is possible to crossfade from any group or combination of groups to another group or combination of groups. An optional timed crossfader can be supplied if required. Extra versatility is provided by a further set of three-position switches (one per channel) allowing channels to be routed for overall mastering independent of the positions of the groups masters. AMC desks are constructed from modules allowing any multiple of ten dimmers from a minimum of 20 to a maximum of 120. An optional effects module is available for situations requiring all the fashionable sophisticated flashes, flickers and chasers which rock music finds indispensable.

## MEMORY PRESETTING

While manual presetting boards offer facilities undreamed of in the not-so-far-distant days of simple directly-operated resistance dimmers, their operation still requires a lot of work that is both time-consuming and error-prone.

Although presetting allows cues to be performed smoothly and with accurate sensitive timing, the individual dimmer levels for each cue must still be written down at rehearsal – and re-set from the written plot for each cue at each performance. However, the rapid development of micro-processing techniques is bringing instant electronic memorising of plots within the financial resources of smaller and smaller installations. In particular, the M24 extension of the Tempus range means that memory is no longer just a dream for many of those who light the amateur stage. This is not the place to go into the details of operation. Suffice it to say that once a cue state has been established by a rapid selection and balancing of lights via a keyboard of familiar pocket calculator format (or by standard preset levers if you prefer), the levels



can be instantly filed ... and just as instantly recalled ... and just as instantly adjusted if necessary. The time-wasting drudgery is

removed but that essence of any live performance, the timing of a cue's progress, is completely under the operator's control.

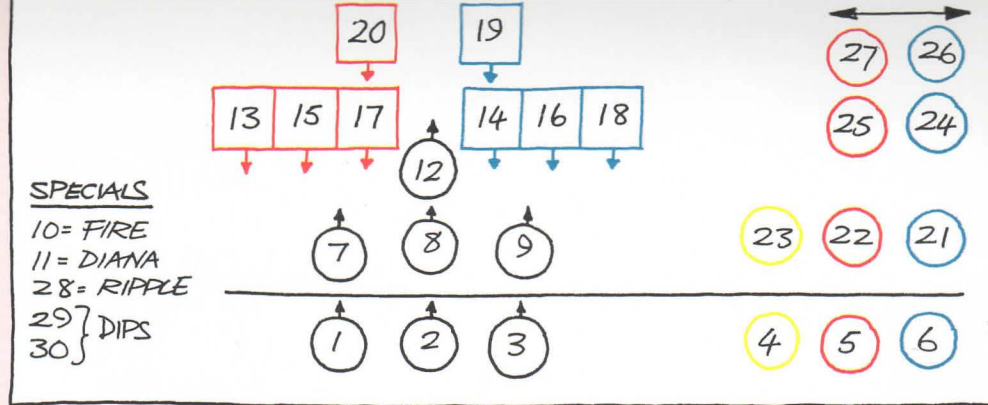


## LIGHTING REHEARSAL

With focusing completed, it is possible to proceed to the lighting rehearsal where the various lighting pictures (cue states) are composed in accordance with the planned Cue Synopsis.

This process should be carried out from an auditorium position which corresponds to an average seat. This will normally be the position, usually slightly less than halfway from the stage, from which the members of the production team will watch the subsequent technical and dress rehearsals – although they, like the lighting designer, will of course check the view from other seating positions from time to time. With portable boards like the Tempus series and its Mini 2 predecessor, only a slender extension cable is required to position the lighting desk temporarily at this or any other point in the auditorium. This is particularly essential if the lighting designer is also going to be the lighting operator. If the board is in a fixed position on the stage or at the back of the auditorium, then a communication system to its operator will be required. (If a standard intercom with 'can' headsets is not available, it should not be difficult in this amplified age for any dramatic society to contrive some sort of temporary microphone/loudspeaker link.)

When the lighting designer has composed the



first picture, comment is invited from the director (and from the choreographer and set/costume designers if they exist and are present – and they should be present now or be prepared to have no right of complaint later). Sufficiency of actor light is checked by having a 'body' (preferably one who knows the moves) walking the various acting positions for that cue state. When agreed, the dimmer levels have to be plotted before proceeding to composition of the next state.

There is never enough time. The first few cues always take longer to agree, but the procedures tend to speed up as everyone gets accustomed to the production's 'lighting look' that is developing, to the contribution being made by

the various lights, and to the reality of what is possible and what is not. With modern easily preset equipment, it is possible to leave some of the finer balancing until later rehearsals with the actors – but with older equipment the operational difficulties are such that it is better to keep any adjustments at dress rehearsals to the very minimum.

For lighting and dress rehearsals, I find it much simpler and quicker to work from a condensed version of the plan – written on an index card or postcard using coloured pens and shortening some of the information into a coded form, since only I need to be able to understand this special version.

## COMPOSING

The stage is in blackout. Our planned palette of focused light is ready. Where do we start? Any stage lighting picture has two components:

- **Key lighting** making the obvious visual statement.
- **Fill lighting** complementing the key lights by adding the more discreet light required to project actor and environment to the audience.

Our aim is that the audience should consciously 'read' the stage picture only in terms of the key light – they should not be consciously aware of the fill.

Therefore it is logical to start composing a cue state with the key light.

In a naturalistic play (such as the box-set example that we have been using to illustrate the planning process) the key lights will be those originating from sun and moon outside the window and/or practical light fittings on the set. In a normal room these key lights are the only sources of light; the fill is reflected light from the

walls, floor, ceiling, furniture, etc. In a room on a stage, this reflected light is not enough for the audience beyond the room's non-existent fourth wall – hence the complexity of a stage lighting rig. So when composing the lighting picture for a naturalistic room, it is logical to start with the light outside the window and/or practical fittings, according to the season of the year, time of day, state of the weather, etc. In a naturalistic style (and only in a naturalistic style) lighting needs to make logical sense in such terms.

Then work downstage, adding light from the spot bars, always starting with those lights which maintain the directional idea of the light through the window. Then add from the other side, probably at a slightly lower brightness to maintain the idea of direction. Finally adding the foh – better to add this last since any foh, especially that from the centre of the auditorium rather than the sides, tends to have a flattening effect on the stage picture.

It is always better to bring lights to less than full intensity at first so that there is a possibility of increasing them when balancing. I often take

'point seven' as my initial maximum so that I have later room for manoeuvre. When the picture looks about right, our 'body' goes walkabout around the actor positions. This usually results in a rebalance, ending in a compromise between the total picture and the need to see the individual actors clearly.

The golden rule of stage lighting is  
*'When in doubt, up half a point'*

In less naturalistic productions, the principle is the same – establish the key in terms of the style planned: perhaps a backlight selecting an area, or a positive gash across a scenic element. Then fill with the minimum light necessary to help the actor project, while trying to maintain the quality that the initial picture had prior to the addition of fill.

In most cases, the fewer lights used for a particular cue state, the cleaner will be the lighting statement. If you seem to be moving towards a muddy look, try taking some lights out rather than adding even more.

## PLOTTING

Memory boards allow lighting to be totally fluid. If appropriate to the stage action, the light can be continuously changing throughout the time span of the performance. Presetting boards (given good planning, agile fingers and not too many dimmers) can be very nearly as fluid. But **possible** must not be confused with **desirable**: lighting changes must serve the production. Usually there will be changes in area selection and/or atmosphere. Some will be fast and so obvious that the audience are consciously aware of the lighting change. Others will be slow and so imperceptible that audience response is at a sub-conscious level.

The lighting progress through a production comprises

the **pictures** called **Cue States**.

and the **changes** from one picture to the next called **Cues**.

The board operator's plot records all actions required to prepare and execute the lighting cues. There are many ways of writing a board plot, but the following information is essential:

**Cue number**

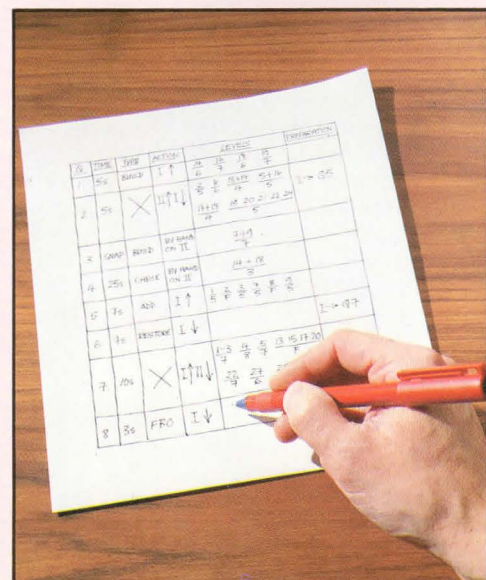
**Type** eg fade, build, crossfade, etc.

**Action** ie the masters to be operated to activate the change

**Levels** of the individual dimmer circuits contributing to the cue state (ie to the next stage lighting picture). **These levels are not normally written down on the plot for a memory board since they are electronically filed for instant recall.**

**Preparations** Usually the last column and not, as might logically be expected, the first – because the moment for re-setting presets etc is immediately **after** the completion of a cue.

The writer of a board plot must never be hurried (even when time is short – and time usually is).





## TECHNICAL REHEARSAL

The purpose of a technical rehearsal is to integrate the actors with their stage environment. Acting rehearsals are normally held in a rehearsal room. Even if the stage is available, it is most unlikely that rehearsals will have been possible in the set. Hopefully however, during the later run-throughs in the rehearsal room, props and sound effects will have been gradually integrated with the stage action. At a technical rehearsal, the actors concentrate on such matters as manoeuvring around furniture, coping with doors, timing entrances, etc rather than the finer nuances of characterisation. The prime function is to coordinate the actors with the technical cues. The actors (and their director) should not expect the technicians always to get it right first time – this is the technicians first rehearsal whereas the actors have been at it for weeks. Some tricky sequences will need to be repeated – and when 'going back' sufficient time must be allowed for the board to be properly re-set.

## DRESS REHEARSAL

Whereas a technical rehearsal is very much a stopping occasion, the aim at dress rehearsal is to keep going – stopping only if the continuity really falls apart. Hopefully there will have been an opportunity after the 'tech' to make any required adjustments to the lights (focusing and colouring) and to the board plot. A chance also to practise the smooth timing of cues. The general overall timing of a cue is relatively straightforward since the action will usually determine when a change has to start and when it has to finish. But the progress may not be uniform. When building from blackout, it is usually necessary to slow down for a moment at the point on the master where the filaments

## PERFORMANCES

The first public performance will always be a bit nerve-wracking. Even if the final dress-rehearsal has gone through smoothly, uninterrupted and without any need for much subsequent plot alteration. After all, rehearsals are but practices whereas a performance is for real. We are no longer doing it just for us, we are doing it for them – the audience. At this time it's useful to remember that the audience don't know the show as well as we do. They are unlikely to have read the script and they certainly have not lived it for weeks like we have – thinking it, discussing it, planning it, drinking it, rehearsing it. Which means that some small slips in lighting will not seem as devastating to them as they do to us. After all, as they have never seen the delicate beauty of cue 15 when it includes the pattern 23 gobo from the mid-stage bar, they will not know what they are missing when it has to be faded out because it has been knocked out of its

## GETTING OUT

The final performance has been given. Time to de-rig.

- All hired and borrowed equipment returned promptly, neatly and complete (including all accessories). Hire companies are only human: customers known to look after equipment get the best service and keenest discounts.
- Owned equipment put away carefully: shutters pushed in, barndoors folded, cable tails coiled around suspension arms. Any defective equipment labelled with details of repair required.
- Any equipment which has been moved – returned to its usual position.
- Re-useable colour filters filed away by size and number.

When technically rehearsing some shows, it is possible to jump from 'cue to cue' – that is to pass over sections where there are no cues. However it is essential to remember that the problems in operating boards are not associated with doing the cue but with preparing for it – when cues occur in a fast sequence, the sequence needs to be rehearsed without any stops so that the operator is working within the reality of the presetting time that will be available in performance. At this rehearsal, it will almost certainly be necessary to rebalance dimmer levels in some of the cue states. How much of this can be done during the rehearsal will depend on the extent of the modifications required and the complexity of the show. Where possible, notes should be made and the rebalancing left until after the rehearsal. Notes should also be made of any adjustments required to the focusing of lights. Technical rehearsals are always tiring and frequently depressing. The key to success lies in avoiding panic.

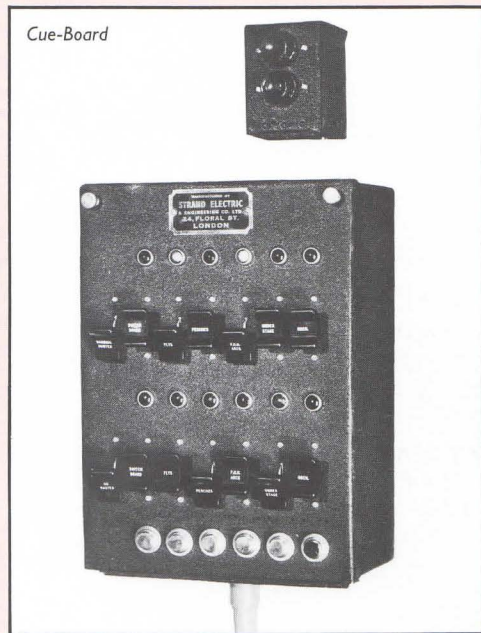
in the lamp start to warm up, otherwise the light comes in with a bump. And when crossfading on the simpler older boards (the ones without dipless crossfaders), it is usually necessary to avoid a dip in the general level. On some cues it may be necessary to *profile* the change, perhaps by starting slowly then accelerating, or vice versa. And if a slow cue is intended to be subconscious, it will need to be watched carefully in order to slow the progress if it is becoming obvious. The dress rehearsal is a chance for the operator to refine the cues in this way: any rebalancing should only be tried if and when there are long gaps between cues. The final dress rehearsal must be run as if it is a performance – experiments should not be tried if they will be consciously apparent to the actors.

focused position during the scene change. Always provided, of course, that it faded out slowly and smoothly. The obtrusive elements in lighting are jerky cues and hard edges. So, at performance, operational smoothness is the keynote aim. And quite devastating mistakes can be covered up by a *slow* (and smooth!) fade into the correct lighting. At a first performance, one is nagged by a fear that there will not be enough time between cues to prepare presets. By the third performance, familiarity makes even the tightest moments seem to have available all the time in the world. And we wonder why we were ever worried! But the amateur is spared the main performance problem of the professional – the *boredom* of a long run. In a long run of even the most complex-timed lighting plot, there comes a point when one is desperate for a new challenge.

## CUEING

A stage performance requires a lot of coordinated actions to integrate the technical departments with the performers. It is not really practical for each department to take their own cues by following the action with their own annotated script. A lighting board operator needs to concentrate on preparations for the cue; then, when that cue is imminent, to concentrate on the stage action and the timing of the cue's progress. This cannot be done with head buried in script. Moreover many cues – lighting, sound, scenery, etc – are interdependent on each other and need to be coordinated by the stage manager or by an assistant deputed to 'run' the show.

Cue-Board



For many years cues were signalled by lights: red for warning, green for go. However word cues are clearer to follow, especially in a fast moving show.

Cue twenty stand by . . .  
Cue twenty GO.

Always with the operative word 'GO' as the last word in the sentence.

The easiest way to do this is via 'cans' – headsets incorporating a microphone. These units, which leave both hands free, are a worthy investment in terms of time and temper. But alternative communications can be improvised.





# AGENDA FOR A POSTMORTEM

## HOW WELL DID THE LIGHTING SERVE THE PRODUCTION?

- ... in aims?
- ... and in the achievement of these aims?

## DID WE MAKE GOOD DECISIONS ABOUT THE STYLE OF THE LIGHTING 'LOOK'?

- ... or could it have been more atmospheric?
- ... or more selective?
- ... was it too naturalistic?
- ... or not naturalistic enough?

## DID WE GET OUR PRIORITIES RIGHT?

- ... or were there some brief lovely moments at the expense of the rest of the evening?

## HOW GOOD WAS OUR DIVISION OF THE STAGE INTO ACTING AREAS?

- ... were there enough areas?
- ... or too many?
- ... and did these areas conform to the actors' movements?

## AND THE DIVISION OF THE STAGE INTO COLOURS?

- ... did it provide the right mixing possibilities in the right places?

## HOW CLOSE DID THE PERFORMANCE LIGHTING MATCH THE IDEAS OF THE ORIGINAL DISCUSSIONS?

- ... were the differences due to changes in ideas as the production developed in rehearsal?
- ... and, if so, were we flexible enough in observing these changes and adapting our planned lighting?

## HOW MANY PROBLEMS WERE CAUSED BY THE ARCHITECTURE OF THE VENUE?

- ... could the foh lighting positions be improved?
- ... or is the ceiling just too low?
- ... despite this, could we have made better use of the available auditorium lighting positions?
- ... and did we always choose the best compromise when selecting hanging positions above the stage?

## COULD THE LIGHTS HAVE BEEN IN BETTER CONDITION?

- ... electrically (unsafe or wrong plugs?)
- ... mechanically (slipping tilt locks?)
- ... optically (dirty lenses or reflectors?)

## WHAT COULD BE DONE TO MAKE THEM BETTER NEXT TIME?

- ... arrange more maintenance sessions?
- ... complain to the landlord?
- ... change to a different hire company?

## DID THE FOCUSING PROGRESS SMOOTHLY?

- ... with each light able to do its planned job?
- ... or were there sometimes obstacles such as borders or flats in the way?

## HOW WAS THE PLOTTING?

- ... did the 'palette' of focused lights provide everything the director wanted?
- ... and were we flexible enough in developing ideas rather than sticking too rigidly to our original plan?

## HOW WERE OUR COMMUNICATIONS?

- ... did the activities of the lighting team cause many surprises?

## AND WAS IT FUN?

- ... because otherwise there is not much point in doing it!

**GOOD LUCK NEXT TIME!**

### FURTHER READING

by FRANCIS REID

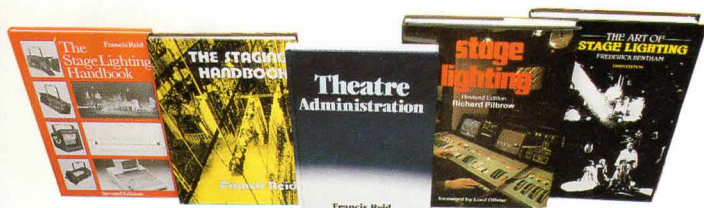
(Published by A&C Black in London and Theatre Arts Books in New York).

THE STAGE LIGHTING HANDBOOK

(also available in Swedish)

THE STAGING HANDBOOK

THEATRE ADMINISTRATION

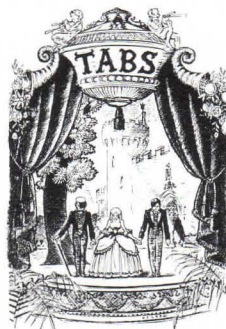


also

Richard Pilbrow: STAGE LIGHTING (Studio Vista)

Frederick Bentham: THE ART OF STAGE LIGHTING (A & C Black)

# TABS



The Informative Journal of the Rank Strand Group.



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