C-DE. COVENT GARDEN.

REMOTE LIGHTING CONTROL INSTRUCTION MANUAL

THE STRAND ELECTRIC & ENGINEERING CO. LTD., 29 KING STREET, COVENT GARDEN, LONDON, W.C.2. TEMPLE BAR 4444

Part I

Part 2

Circuitry Maintenance and Trouble Shooting (issued separately)

1. INTRODUCTION TO THE CONTROL

The simplest way of understanding System C/AE4 is to think of it as having four dimmer presets (I, II, III and IV). Presets I and II can be grouped either on to the A busbar or the B busbar or left disconnected much as if each channel had a two way and off switch for the purpose. Presets III and IV can in the same way be connected to the C busbar or the D busbar.

Assuming that each preset has a master dimmer and each busbar also has one this produces a total of eight master dimmers. These are grouped as four left (A, I, II, B) and four right (C, III, IV, D). Individual dimmer channel levers also fall into left and right grouping, there being a broad division down the middle of each wing.

It should be noted that each wing is subdivided into left and right: the fact that one wing known as the X wing (channels 1-120) is on the operator's left hand and the other known as the Y wing (channels 121-240) is on his right merely arises from the geography of the control room and should be ignored.

As the system has four dimmer presets it is obvious that it could be used in a straightforward manner to give four complete changes of light which can then be reset as necessary. This, plus some hand manipulation of individual dimmer channels will no doubt cater for some of the simpler productions.

In a complex production it becomes necessary to avoid using a whole preset and incidentally, having to reset a whole preset (240 levers) for changes which are localised. The A & B busbars and C & D busbars allow two groups to be formed within presets I and II and another two groups, different if necessary, to be formed within presets III and IV. The four groups formed in this way soon become exhausted and steps have to be taken to increase the number. The principal feature of System C/AE4 is that it allows the number of groups to be increased without increasing the amount of actual switches at the control desk. The present control allows forty groups to be preset for use in any order on either the left masters or the right masters or both simultaneously. This facility is provided by what is known as the memory action.

This memory group action is essentially a matter of switching in channels - selecting them, and connecting them to a busbar. Such switching poses the problem as to what happens to channels de-selected because on an all-electric system, such as this, to disconnect from a master is to extinguish the stage lighting.

To overcome this the memory selection is made to operate only on the A and C masters and the dimmer scales so connected show red as a warning that they are active. So that channels can be held in a passive condition, arrangement is made to park them on the B and D busbars. These busbars are not directly affected by either the memory or hand selection, therefore live channels stored there can be considered safe, and they display white (flag of truce). All or some of them can always be transferred back to red whever necessary. It is sometimes necessary to obtain a preview of a memory group before it is switched in and this can be done either by keeping the red busbar masters at 0 or if the master is in use by putting on the control 'Hold' Care must be taken in getting out of 'Hold' back to the original group, otherwise there may be an unwanted change of light.

It is important to note that because the dimmers are all-electric for every stage lighting channel that is alight there must be a dimmer lever somewhere on the X or Y wings controlling it. This lever is located by looking for a red or white illuminated scale, levers showing no light can be completely ignored.

Channel The expression "channel" is used throughout to cover a dimmer circuit or way as distinct from a patching circuit or other sub circuit. Except for one 10kW channel (the result of paralleling two 5 kW) all channels are 5kW variable load.

2. SYSTEM C/AE4 AND ITS CONTROLS

2.1. Control Desk & Wings This consists in the main of a centre master desk and two wings known as X and Y. A further complete set of dimmer levers is mounted on the stage left perch and this is known as the Z wing. Channels 1 to 120 are on the X wing and 121 to 240 on the Y wing. The X wing happens to be on the left of the operator and the Y on his right. On no account should the operator think of, or plot his wing units as other than X or Y. Each wing is subdivided into left and right by a bold centre division. These divisions on X and Y together combine to be known respectively as the Left Control Group (channels 1 to 240) and the Right Control Group (also channels 1 to 240)*. The dimmer lever units used on the X and Y wings are type C/AE.

There are eight rows of these levers to each wing. The levers in these rows share identification label strips as pairs, one above the label and one below. They are further differentiated by the colour of the lever knob, black over each label, green under. The black levers to the left of each wing form Preset I, the green one Preset II. To the right of each wing they form Presets III and IV respectively.

Controls on the centre desk are mounted as Left and Right. Controls on the centre desk always cover the complete set of channels 1 - 240.

2.2. Type C/AE Dimmer Levers These are luminous and each diplays two distinct lamp signals, red and white. These lamps illuminate internally the dimmer scale and the red condition on the left hand of each wing indicates 'On Master A' and the white condition on the left hand on each wing indicates 'On Master B'. In the case of the right hand of each wing the red indication indicates 'On Master C' and the white 'On Master D'. No light means channel not in use. Further details of the display are given under master controls item 2.3 below. Each dimmer scale is engraved 0 to 10 representing 0 to 100% with 0 at the bottom position meaning no light. Half divisions are also marked. The scale, which is white with black letters, rocks slightly against a spring to operate a micro-switch so that each channel can be selected by touching lightly either of the two scales above each other**. An overriding master lock, removed whenever 'select' is

---

* This arrangement which may seem perverse was necessary in order to avoid 240 channel plot sheets on each wing.

** Selection operates a reverser relay, consequently touch again and the channel is de-selected.

---

operated is provided to safeguard against accidental selection.

The micro-switches of adjacent presets (i.e. I & II or III & IV) are wired together so that either scale may be used for selection. Display however is interlocked with the Preset Master dimmers. If both master dimmers are at O there is no display at all and one has no means of telling what channels have been selected. The moment a preset master dimmer leaves the O position the scale lights full-up. It is therefore advisable to keep one preset master on the left group and one on the right at 10 (full) and rely on fading in the channels using A or C masters, In those instances where a preset must fade in from zero one of the left group and one of the right group should be put at O+ not at O exactly. The O+ position will not show as stage lighting. The approximate effect of a preset master on the stage is shown by pilot lamps above the left and right section of each wing. Thus at a glance a wing shows by internal illumination (red or white) of the dimmer scales which channels are active and on which master. The pilots at the top show which masters themselves are active and therefore are responsible for light on the stage.

2.3. Master Control Panel The principal controls are :-

Master A	RED scale and black knob	Left hand group
Preset I	Amber scale black knob	
Preset II	Amber scale green knob	
Master B	WHITE scale and black knob	
Master C	RED scale and black knob	Right hand group
Preset III	Amber scale and black knob	
Preset IV	Amber scale and green knob	
Master D	WHITE scale and black knob	

All above masters are the usual vertical motion fingertip type, but A, B, C and D are also operated individually by motors for slow checks. The speed regulators for A, B, C and D take the form of rotary knobs with a centre off position, turn to the right to raise and the left to lower. The greater the amount of turn the greater the speed. These motor controls are intended to relieve the operator of slow finger movements on the masters, but are not intended for precise timing of very slow checks. Such checks can be hastened or retarded either by using the speed regulator or by using the finger on the already working lever. The Motor Drive is intended to slip under these circumstances and no harm will be done in arresting it. The amber scaled (preset) masters have an automatic switch just above the O position. Appropriate pilot illumination of the particular preset takes place once the master leaves the O position and this switch automatically closes. Transfer pushes are mounted above and below the A, B, C and D masters as

follows:-

Master	Above	Below
A (Red) :	Transfer to A (De-Park) :	cancel A
B (White) :	Transfer to B (Park) :	cancel B
C (Red) :	Transfer to C (De-Park) :	cancel C
D (White) :	Transfer to D (Park) :	cancel D

Note: Transfer to and from A, B, C and D is interlocked to take place only when the receiving master dimmers are full-on. Likewise an interlock prevents the use of cancel on B & D unless the particular masters are at 0. A special switch, 'Override', allows the interlocks to be cut out when required for group switching.

2.4. Cross Faders It will have been noticed that System C/AE does not contain any cross-faders therefore cross-fades will always involve using two levers, one to fade-in the new preset, the other to fade-out the old. If the operator is not careful cross-fading can lead to humping, or dropping, as the change takes place and cross-fading should never be attempted without the operator keeps his eyes glued to the stage to see that neither things happen. A particularly vulnerable place might be the cyclorama and it would look somewhat strange if, while changes of light went on on the acting area, the sky moved up and down. In circumstances such as these it would be the sky that the operator would have to watch most carefully. It is strongly recommended that whenever possible one master should be raised to full before the other one starts to fade, in other words, use is made of a lap change rather than a strict cross-fade. This is the only method that can be guaranteed as foolproof.

2.5. Memory Controls The master control desk also houses two sets of 40 luminous single touch pushes associated with the memory action. One set operates by lighting the appropriate dimmer scales of the left master division i.e. Presets I and II; the other operates the right master division, i.e. Presets III and IV. Touching a push substitutes the new combination for whatever may be already selected unless the push ADD is held at the same time. Internal illumination of the pushes shows the memory last used. When memories are added, indication is additive also.

Memories are set by making a selection by hand (see 2.2. above) using the rocking scales of the dimmer levers then depressing the Presetter control and touching the memory push required* Displayed above the left memory pushes and above the right memory pushes respectively, are two pilot lamps. A memory push always selects for the red masters. These masters are, so to speak, active while the white ones are passive, hence the use of red

---

* Presetter can be held for a whole sequence of memory setting but must always be released last.

---

as indication. When a red master is at zero it shows a green light above the appropriate group of memory pushes, i.e. it is quite safe to play about with the memorys, there will be no result as far as the stage lighting is concerned. The moment a red master leaves zero the green light is extinguished and a red light is displayed. It may well be for some intentional effect it is desireable to switch a new lighting combination in, but the red light is a warning against doing this inadvertently.

Either of the two sets of 40 memory pushes for the left hand (A-B) panels or the right hand (C-D) panels can be used to capture the combination displayed on its panel provided the presetter is also used. To facilitate transfer of combinations from the A-B panel (Presets I and II) to presets III and IV on the C-D panel, the combination on each push is the same for both, but they can be used quite separately: for example, Memory 3 on A-B and Memory 7 on C-D. Whenever a memory push is subsequently pressed the combination lights up the levers selected in the preset in use (or rather, the preset not in the 'Off' position). Memories can be altered at any time or remain locked up without any deterioration for any length of time.

Great care should be taken when setting memories to use the push on the side on which levers for the group are selected. Thus, select on left levers set on left select on right, set on right. Although the group when set is common to both sides, very disturbing results can be obtained during the setting period if this rule is ignored. For example, one selects on the left blue battens to set on Memory 6 whilst actually using red battens which have therefore been selected on the right. Whether the Left Memory 6 push, or the Right Memory 6 push is pressed will make all the difference between capturing Blue battens or Red battens!

Associated with the left group and right group of memories are two Hold controls whose purpose is to freeze the selection on the wings but not its display. When 'Hold' is on, pressure of any memory push will change the red display in the scales but have no effect on the stage lighting. This facility may be useful to allow memories to be set up during the running of a show or to check the groups set on particular memories. Before 'Hold' is used in this way it would be advisable (unless the combination at that time displayed is the result of a memory) to set it on a memory so that the state of the switchboard can be recalled before Hold is released. It is advisable to use memory push No. 40 for this purpose as being the highest number it is least likely to be used in production work.

2.6 F.O.H. Master and Z Wing Front of House overriding master, when this is in the zero position, no matter how the board is operated, the FOH

channels will inhibited, Exactly what FOH channels this inhibition will apply to is determined by the tablet switches on the left hand corner of the desk. In this area are DBO and Filters Change Masters A & B and Z wing, etc., also there is the switch for the effect motors and the Z wing 'cut out' with warning lamp. A practice should be made of operating the main control with the Z wing cut out, the purpose of the Z wing being to facilitate setting up lighting on the stage during intervals. However, there may be certain cues when it will be useful to use the Z wing to hold circuits not required to change. This would enable the main switchboard operator, in an elaborate plot to be relieved of the necessity of setting his controls for sustained levels which do not change over a great period of time such as an act although the rest of the stage lighting is very busy indeed. This use of the Z wing is known as 'Super-Park'.

Under all other circumstances care should be taken to trip the Z wing before any scene or act restoring it immediately during intervals.

2.7 Basic Operational Drill All racks should be on (switches are back stage) relay racks display as two amber pilots X and Y, dimmer racks display numbers 1 to 8 in green on the indicator at the left end of the centre desk.

Should any number be extinguished and replaced by a red indication this fact must be reported to the stage as hot-patching whether at the patch panel or socket outlets elswhere, must be discontinued until the green can be restored. However, the channels on the affected rack will continue to be operational in other respects.

The "DBO" control should be closed by pushing it in, whereupon it shows green internally. The two 'Hold' controls on the centre desk should also be pushed in but will then show No light.

The A & C (Red) masters are normally kept at zero and B and D (White) masters at Full. In addition, on both the left (AB) and on the right (CD) there must be one of the Preset masters at full (i.e. I or II on the left, III or IV on the right).

Using either the 'Select' switch or toe push channel scales are touched and turn Red, i.e. are on a Red Master. At the same time, the channels are set to the levels required and the master dimmer raised. This set of channels should immediately be 'Parked' on the appropriate White Master by pressing the 'Transfer' control above it and the panel display will change from red to white. The Red master is now free and should normally be returned to zero. This procedure can be continued as often as required.

At any time channels can be transferred from White to Red as follows.

First using 'Select' touch scales of channels to be transferred. These will then display Red in addition to the White they already display. Provided the Red Master is at full the push above it can be pressed and the transfer take place, the white display being tripped at the same time. The Red master can be dimmed and when it reaches zero the push under it used to cancel these red channels.

Note: at the time that channels under the procedure above are displaying both white and red, they are under control of both Red and White masters. Obviously this period should be made as short as possible if operational confusion is not to arise.

The Red Masters are normally used for Raising and Dimming groups the White masters being used as a store (Park) for passive groups of channels. However it may sometimes be convenient, as in a cross-fade to use the White master for dimming. In such cases the channels can be tripped if required when the white master reaches zero by using the push under it. This push like the transfer push above the White and above the Red masters is interlocked to the travel of the master.

3. USING THE CONTROL

These operating notes are intended as introductory only. Obviously after the first weeks techniques will arise from the practical experience of the operators using the equipment which may better suit opera and ballet production.

3.1. First Lighting Rehearsal Assuming nothing has been determined in advance (at any rate as far as the operator is concerned) opportunity should be taken to use thelights in the dimmer scales as indicatication of channels in use. This will mean that when the time comes to plot, only levers which are alight need be bothered about.

To begin Master BI (i.e. B and Preset I) should be at full, all others at zero. All dimmer units dark and at zero. All memory push indication wiped off using the push 'W/O' adjacent to memory pushes.

Procedure: To select use 'Indiv. Park'. As each dimmer channel is called for the scale is pressed and will light in white. The intensity of the stage lighting can be adjusted as required but if the channel is at that time, or subsequently not used (i.e. put to zero) for that lighting cue then the scale must be extinguished. 'Indiv. Trip' being used for the purpose. Master AI should be kept at zero during rehearsal and used only when groups of channels are required as a block; all the blue battens or all the blue cyc, or all the storm clouds, or all dip pageants, etc. These groups of light can then be added to or subtracted from the stage effect without moving a lot of individual levers, To make best use of this facility the lighting designer should give early an idea of such groups so that they can be set in advance on the memory pushes. These particular memory groups are purely lighting rehearsal aids and will be changed in favour of exact combinations to suit the running of the show as the lighting plot becomes known. To avoid conflict with the group later set for the show, the rehearsal ones should be set on pushes numbered 39, 38, etc. downwards (not 40). For the show the usual order 1 upwards is of course used.

In the event of no advance information at all being issued to the lighting control, the operator will have to use a mixture of experience and intuition to set his rehearsal groups. Presumably there are some pretty 'trad' demands such as batten colours, side pageants, which are useful.

3.2. Plot cue 'n' Once the lighting has been finalised (at any rate for the time being) the levels can be plotted (using standard plot sheets, see below) and only levers whose scales are lit-up need be plotted. Any others, no matter what the position of their levers, can be ignored.

The lighting rehearsal need not beheld up while plotting goes on if the

following alternative procedures are used.

3.3. Set cue n + 1 If the lighting is to change greatly, then Master BI is put off and D III raised to full. The stage will be blacked out though plotting can still proceed, andthe new lighting effect (n + 1) can be set up in the manner already described above. Once plotting of the previous change (n) is completed the combination should not be cancelled in case it is required to go back and show the change from one cue to another (n to n + 1).

Where the change from one cue to another is slight the second preset masters (B II in this case) is raised, but BI is not taken out. As each level is increased the lever on II is advanced. Meantime the other levers are matched whether called for or not and when this is completed Master BI can be taken out. Working now takes place on BII. Selection is already left over from the previous cue and 'Indiv. Park' and 'Trip' will only be used when fresh channesl are added or subtracted.

To show the change from I to II it will only be necessary to use the two masters.

It may be that a pause for plotting will be adopted and lighting only resumed when plotting is complete. The procedure is exactly the same. Small changes alternate between I and II. Large changes alternate between B and D. This ensures that the actual change can be readily demonstrated. Very small changes involving two or three channels only will not of course require either of the above techniques as they can be performed using the fingers on the levers directly.

3.4. Plot cue n + 1 The lighting designer must indicate the nature of each cue change, its approximate time interval from the previous cue and approximate duration. It is also obvious that the more advance information the lighting designer can give the smoother and quicker the rehearsal.

The standard plot sheets should be used and reference will be by numbers throughout, if only for the reason that with 240 dimmer channels there is no room to write their full names and addresses. The 1-120 sheet belongs on the X wing and 121-240 on the Y wing.

At the end of the first lighting rehearsal a series of dimmer levels 7, 8, 4.5, and so on will been obtained. F should be used for 'Full' not 10 in order to avoid confusion with 0. It is important to differentiate between channels not-selected and channels selected but whose levers must be at 0.

This need arises in cross-fades. When a second preset is used, or indeed when manual operation is used, such dimmers will usually be required to fade to 0. Unless the cue is a switching one the channels should not be de-selected until those lights have faded out.

The series of levels having been plotted it will, unless the lighting is very simple, and or the changes are very few , be impossible to provide a satisfactory run through immediately. There must be time to add the necessary operational routine to the plot.

3.5. "Run through" and "performance" Faced with, for example, twenty cues each plotted as a series of levels together with the approximate timing of the cue and rough time separation between cues as plotted at the first lighting rehearsal, it is now necessary to consider the method of operation in order to devise a running plot. To do this it will be best to consider how to tackle some of the types of cue commonly required.

The first thing to remember is that nothing happens unless channels are first selected. Secondly that to select all the channels required for a scene is bad because it turns the switchboard into a big one whereas often a scene using 20 or 30 channels, if only those levers are lit proclaims itself a s a small switchboard. It also deprives one of the chances of using groups. The formation of such groups on one master or another is our interlocking and should always be used in preference to wasting a preset. Careful use of selection on this master or that together with the memory action can reduce the amount of dimmer lever resetting carried out furing a scene. A third aim must be to park channels wherever possible in order to free either red master for collective operation.
To begin: Masters are set: A (Red) at 0, I at F, II at 0, B (White) at F and C (Red) at 0, III at F, IV at 0, D (White) at F.

3.6. To Raise or Dim-out channels individually As already suggested during the rehearsal routine, it is better to use 'Indiv. Park' to select directly on the white busbars (B or D) in this type of case. Dimmer levers can then be used as required. To remove when out of use 'Indiv. Trip' is operated.

3.7 To Raise or Dim-out a group of Channels Use select to connect channel levers to the red (A or C) busbars and use master to raise or dim.

3.8 To Raise one group and add it to another group Use select for first group to connect levers to red (A or C) busbars and use red master to raise. Park on white busbar. Return red master to zero, select second group, raise and park. Should the white master not be, as it should, at Full then the Park push would have refused to operate because of the safety interlock.

3.9 To switch in one group of lighting and add it to another group Proceed exactly as above but do not raise red master. Use instead Park to get selection directly onto the White master which should of course be at Full.

3.10 To Dim-out a group of lighting and subtract it from a larger group in use The group in use will be parked (displaying white). Select those channels to be taken out (either by hand or using a memory push prepared for the purpose). Some levers (those selected) will then display both Red and White. Raise Red master press 'transfer' above it. Selected channels now display red only. Fade-out and cancel. (Had the Red master not been raised 'transfer' would have failed to operate due to the safety interlocks.

3.11 To switch-out a group of lighting and subtract it from a larger group in use Proceed exactly as above but do not raise red master. The transfer push is then used in conjunction with 'Interlocks Off' to provide a switching cut.

3.12.To Raise a group of lighting and Dim-out the remainder Select and fade-in group use red master and fade-out appropriate white 'Park' master at the same time.

Unless cue is to be repeated shortly after in the reverse direction cancel white master immediately and return to full. Park red master group and return red master to zero.

3.13 To Raise a group to a series of levels This cue which is so difficult on simple mechanical interlock boards is easy as all that has to be done is to set the levers at the levels required before raising the master. Cues 3.7, 3.8, 3.9 amd 3.12 assume that any variety of levels are set on the individual channel levers.

3.14 To Dim a group to a new series of levels

(a) This involves a cross-fade from one preset to another and it is recommended that whenever possible the change is made between presets mounted above each other, i.e. I and II, or III and IV. There are two reasons for this preference, firstly is avoids the need for any further use of 'Select' or 'Park'. Secondly, it allows very easy matching of levels which do not have to change at all the two levers in those cases being set to exactly the same level. Use master I and II or III and IV as appropriate as a lap cross-fade raising the incoming one to full before dimming the outgoing one.

(b) One should be on the watch for setting too many levers to zero when carrying out this kind of cue. These levels may have to be used again and involve resetting. Where a lot of zeros form part of a cue it may be better to transfer those channels from Park to Red master. The cue is then worked for example, Raise I then Dim II and A. In this way I and II are looking after the change of intensity levels and A is attending to the zeros.

3.15 To Cross-fade This type of cue can be deceptive. Strictly it involves use of two presets and is operated as 3.14 (a) above, but like (b) it could involve the dimming to a fair number of zeros as well. Often it may be found that with suitable handwork a preset can be saved and either the Red master is used to dim out the channels required to zero, or to Raise a number of new channels to levels the cross-fade element being worked by hand. Quite a number of cues only become cross-fades instead of 'Raise' or 'Dim' cues simply because 3 or 4 channels are rebels going in the opposite direction. Obviously some handwork is indicated at the same time as working the masters.

Where such rebels are making a new entry handwork or not, they will have to be selected. As the Red master would be in such a case taking out a group of channels selection of the rebels must be by Indiv. Park so that they are supplied via. the white busbar.

3.16 To Raise a series of groups in succesion (Processional cue) This is type of follow on cue, although the follow ons may in fact be cued from the SM. The assumption is that the 'follow ons' have to begin before the previous cues are completed. Such cues tend to be slow and as the motorised masters are likely to be appropriate the changes should be set up to employ the A, B, C and D masters in conjunction with the appropriate preset master on the left and right. The preset masters are set full on - all regulations being on the A, B, C and D masters.

The worst condition has been assumed, i.e. a four part cue purposely to raise the question here as to what to do, there being no park available. In a number of cases three masters perhaps supplemented by some individual handwork will be all that is needed. The fourth master can then be used as Park for stationary channels. However, when all masters are crawling up fully occupied then the Z wing on the stage can be borrowed as super park the levels for the stationary circuits being set there as soon as interval dip testing is completed. The Z wing is kept alive until such time as one of the truepark masters becomes available and it can be switched out. The Z wing can obviously be used for any lamplight which is then killed as the dawn makes its presence felt.

3.17 To Dim a series of groupsin succession This is the revers of 11 above and the same remarks apply.

3.18 General Dim Run down Masters A, B, C and D and all stage lighting must fade. Such coarse procedure is only really justified by an emergency in most cases it will be only a necessary to run down just those masters which are appropriate. Appropriate selection can cater for those cases where some channels have to lag behind to the last. Dimming down the Preset masters for

a general dim is never necessary.

3.19 Use of FOH Master The FOH master overrides all other masters in a negative sense, i.e. when at zero no light comes from the stage lighting front of house. It cannot however be used to apply a feed in lieu of other masters. It would be a pity to have to plot FOH master as a separate cue each time presumably a drill will be devised which automatically ensures that whenever the curtain is raised or lowered the FOH master is moved with it. Four amber tablet switches on the left of the centre desk allow it to take over various groups of channels when they are put down.

3.20 To set groups on all four masters This may be required at the beginning of a scene and is done either undercover of the DBO or by keeping the A, B, C, and D masters down and using the 'Interlock Override'. In either case the white groups must be set up first because they have to be selected on red and parked.

If after the red and the white groups have been set-up it is desired to make any modifications, particularly to the whites, then 'Indiv. Park' or 'Indiv. Trip' can be used.

3.21 Use of 'Indiv Park' and 'Indiv. Trip' De-Park channels and transfer them from B to A or D to C they must be selected first, i.e. the scales will display both Red and White until the transfer push is pressed whereupon the whites will be tripped. When parking the changeover from Red to White is immediate no selecting for white is required. For transfer of individual channels one by one 'Indiv. Park' and 'Indiv. Trip' is used. If 'Indiv. Trip' is used on its own the light is immediately extinguished in respect of any channels whose scale is touched. If 'Select' and 'Indiv. Trip' are used together then the same procedure immediately changes that channel from the white to the red busbar without any period of double display.

4. VISUAL APPRAISAL OF THE STATE OF THE CONTROL

An important feature of the C/AE4 control in use will be the operator's appraisal of the state of the board. Modification of lighting under instruction at rehearsal or during performance if something has gone wrong - a spot out of position for example - demands instant appraisal. This is not so difficult as might appear at first sight, for although there are 960 dimmer levers, only four can be responsible for the particular channel in question. Which of the four presets is actually holding the light?

First of all no lever whose scale is dark can be doing any work at all. Of the levers which are lit only those whose master fader is 'on' need concern us. Indication of the state of the master faders is both given by the levers themselves on the centre desk and by the pilot lights in the top frame of each wing.

Two vital principles must be adopted at all times. Firstly make sure that only channels in use have their scale lights 'on' and secondly, avoid piling masters whenever possible. Occasionally deliberate use of presets piled will be very useful, for example, if certain channels have to be raised to full from levels and return to those levels shortly after, a second preset full-on could be brought in so to speak temporarily to short circuit the levers at checks.

Generally speaking, piled presets mean that potentially the same channel can be under control from two, three or even four levers simultaneously if all presets are in use - the way to chaos! Much the same applies to selection on the red and white master busbars simultaneously. For example, when selecting channels prior to taking them off the white busbar (Park) the lever scales will be displaying Red and White. This means that those particular channels are at that time being fed from both a Red master and a White. Channels other than those displaying the two colours are not affected, there is no running between the two masters, but obviously the condition is confusing and the transfer making the scales red only should be made as soon as possible.

5. PLOTTING

Standard forms may be used and once the full plot has been devised then the 'during-the-performance-operational-information' can be underlined in red and can be typed in summary for show use.

The plot has the dimmer numbers along the top with vertical divisions at every ten which correspond to the vertical divisions at each ten on the control itself. The levels for each cue are entered against a horizontal line.

It has been found to simply plot writing it is is assumed that the following operation drill applies unless otherwise qualified. "RAISE A OR C" means Raise to full, transfer to B or D and return lever to zero.

'DIM B OR D' means Dim to zero, trip and return to full. The most usual qualification is 'AND LEAVE' which means in the case of A or C the usual transfer takes place but the lever stays at full ready to receive a selection from B or D to dim out. 'NO TRANSFER' means that the lever not only stays at full but retains its selection. When A, B, C or D is used as 'DIM ....', then the selection dimmed is cancelled at zero unless qualified as 'NO CANCEL'. Masters B and D tend to be used far less than A and C for 'RAISE' but when so used, no transfer takes place at full. The normal duty of B and D is as 'PARK' or, in other words, as store on an independent bar.

Some indication must be given where each preset is first brought in. 'RAISE AI' means that Preset I must be at full at the same time as A. The preset need not be referred to again until there is a change of preset.

Memories unqualified are assumed to be on A and are described as 'ON C', etc. when anything different is required.

It is a feature of the system that nothing is operational unless selected, therefore a (✓) is placed on each dimmer column where selection takes place. Such selection may be individual when there is plenty of time (and /or few dimmers are required) or by the memory action. Use of a memory is shown by a No. in a circle in the master column but ticks are still placed against each dimmer selected thereby. This both shows what to set on that memory and what is operational at the time. A dimmer is operational whether selected on the A or C masters or transferred to the B or D masters. This fact is displayed in the appropriate dimmer levers by a white or a red lamp. No light means no selection. In the plot 'O's in a column which is master dimmed will mean dimmers became unselected (when cancelled at the bottom) and they will have to re-selected when next required unless of course the qualification 'NO CANCEL' has been shown. Transferred dimmers are interlocked so that they can only be selected on A or C when these dimmers are deliberately tripped or when A and B or C and D are at full. Thus there is no risk of 'lights out' of transferred

dimmers are selected by a memory or by hand on to an A or C Master at zero.

Each time a preset changeover takes place the complete contents of the preset should be shown in that line of the plot since it represents a fresh start, so to speak. Likewise, at the end of a plot sheet the contents are added up and carried forward to the head of the next sheet.

Preset settings to begin a show, are shown as a separate item on the plot sheet and do not rely on their particular cue entry. This is because the selection action memory or otherwise, permits the use of a single preset for several cues. The same preset may return again and again but slightly modified and thus resetting of a preset for a late cue may only involve minor changes written under the dimmers affected.

Changes which do not affect lighting at the moment, for example, resetting an inactive preset, are boxed around in the plot.

THE STRAND ELECTRIC & ENGINEERING CO. LTD.

29 KING STREET, COVENT GARDEN

LONDON, W.C.2.

Telephone: TEMple Bar 4444

Strand Electric (Australia) Pty. Ltd.
212 Graham Street
Port Melbourne
Victoria

Strand Electric Limited
261 Davenport Road
Toronto
Ontario