

Roger Weaver, Lighting Design

An Inspection of the Digital Display Theatre Lighting Control Board ('Plotlite') in the Control Room of the Mermaid Theatre, Upper Thames St., London E.C.4 on the 11th November, 1974

The points covered are:-

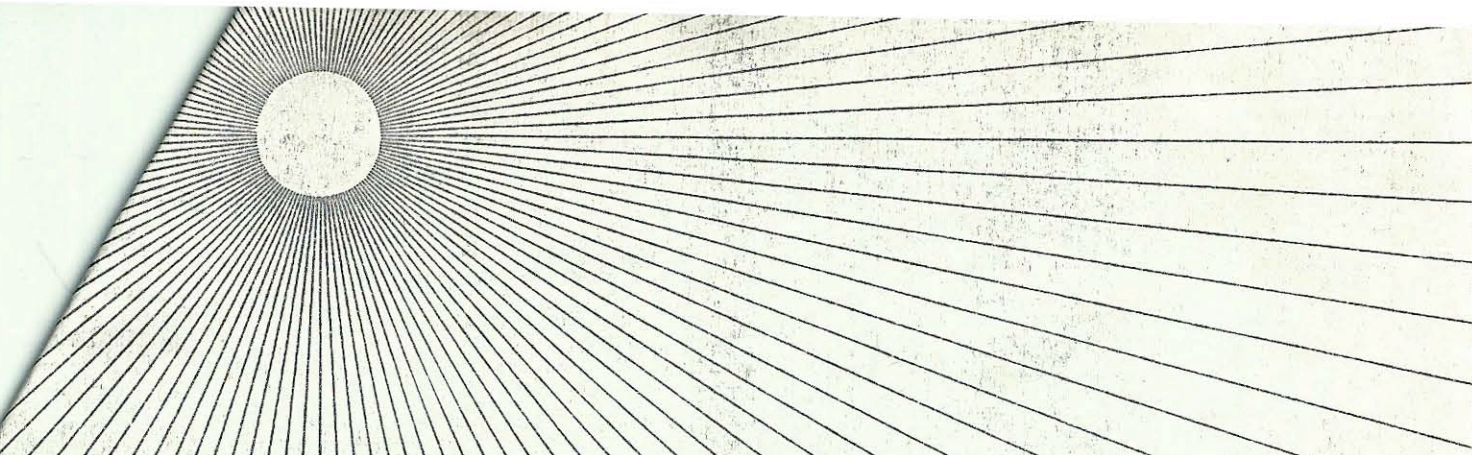
- 1 General principles of Theatre Lighting and this board.
- 2 General appearance of the board on the 11th November '74.
- 3 Dynamic memory faults.
- 4 Tape to dynamic memory faults.
- 5 Other faults.

1. For every show produced in the majority of theatres, there is more than just one light illuminating the stage. This number of lights, which I shall call lanterns, differ from show to show and from theatre to theatre, but the number needed by a big London theatre such as the Mermaid will naturally be very high - an average show using anything between 80 and 150 lanterns. Most of these lanterns will be required to fade in at different levels of luminescence and at different times.

There are numerous ways of dimming lanterns, but all of them used to demand that an operator or operators should sit down with 100 or so levers in front of them and manually operate each one, either directly controlling the lanterns or presetting cues in advance and cross-fading masters. This inevitably meant that errors occurred in the setting of dimmer levels. It also meant that one big restriction was imposed - complicated cues could not follow immediately upon one another because of the time needed to manually set the dimmers to their correct levels.

The 'Plotlite' is a computer memory board designed to solve both of these problems. It is designed to memorise a cue state with a cue number both in a dynamic memory and in a tape memory. This effectively means that once a cue state is memorised, the recall of that state should be without error. This reduces the amount of operator error tenfold. It also allows cue numbers to be recalled quickly, regardless of how complicated the state may be. The 'Plotlite' at the Mermaid theatre can either be operated manually or on the memories. It has two banks of ~~MANUAL~~

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100 levers - the top bank being for operation as a preset in the manual mode, the bottom bank also being a preset in the manual mode, but the bank for recording a cue from in the auto mode.

There are two master dimmers which control each bank of 100 faders when in the manual mode, and there are another two master dimmers onto which one can preset any cue from the dynamic memory by pressing the appropriate cue number buttons and then the button marked 'cut' under the master dimmer. Once this has been done, the master dimmers can effectively cross-fade two different cue states.

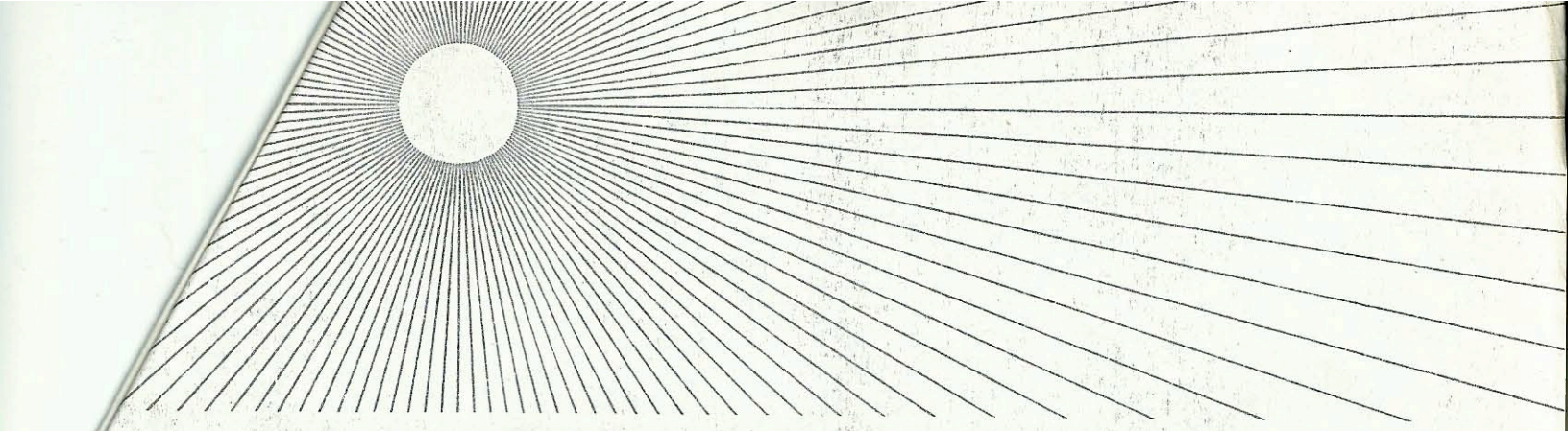
On the bottom bank of 100 dimmers there is a light above each fader called a 'coincidence light', which tells you whether that particular channel is in use in a cue state. Moving a fader until its 'coincidence light' illuminates, tells you at what level it is at, in that state.

There is, of course, an illuminated button to select manual or auto being the manual or computer modes and finally, there is a tape cassette unit for tape recording cues. The general idea is that when the board is in the auto mode one can recall any state in the dynamic memory is wiped clean, and so to save having to set up all the cues before each show and re-record them, you simply feed them back into the dynamic memory by replaying the tape.

2. The general appearance of the board was rather shoddy. Many of the scales, which tell you the level of each dimmer, had come unstuck and were hindering operation. A noisy fan was blowing inside the board, presumably to keep it cool. The noise would be quite unbearable for an operator during a quiet play.

On inspection of one of the faders, I noted that the screws holding it onto the board panel were very short - a fault which could result in the fader dropping out and shorting on the metal casing or on another dimmer. The auto/manual select button did not illuminate, so one could not tell which mode the board was in, except by experiment - something impossible to do during a show.

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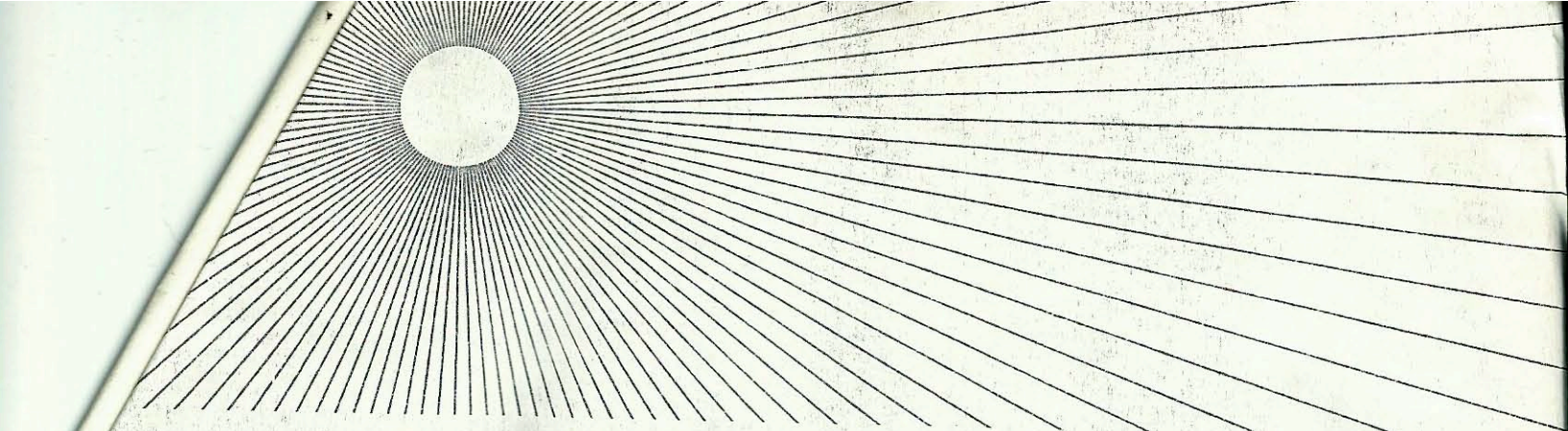
3. Several circuits were not working on the dynamic memory. To test this I programmed the board to record circuit 1 to full on memory cue 1, circuit 2 to full on memory cue 2 etc. up to circuit 50. On memories 51 and 52 I recorded two different dimmer patterns enveloping all channels and on memory 00 I recorded a Black Out state. I went no further on the memories because there were enough faults here to convince me that it would be impossible to use for a show. e.g. Circuit 96 was working on the 'coincidence light' but not on the lantern. Circuit 69 was not functioning. Circuit 1 came on to full in a black-out state, but on memory cue 1 did not function at all. Circuit 12 functioned on 'coincidence light' but not on the lantern.

4. Programming the dynamic memory with the tape showed 14% and 12% error on the 2 tests I carried out. The tests were to programme the tape in exactly the same way as the dynamic memory. The tape was then played back into the dynamic memory and the circuits tested. This was then repeated. On the first occasion the error rate was 14% based on 50 dimmers and memories. On the second occasion, the error rate was 12%. However, some of the errors were different from the first occasion. If a manual operator is considered not to be concentrating if he should mistake one dimmer level out of one hundred dimmers in one hundred cue states, then this computer error is completely intolerable.

5. Some other faults of the board that I noticed during my tests were that if I switched between manual and auto, a fairly common show occurrence, the circuits that were up would drop in level. If I then switched between auto and manual they would drop even further, until eventually they reached black-out state. The only way to regain those circuits is to re-programme the board.

If the dimmer racks of which the 'Plotlite' is the controller are trimmed to the manual mode, then when in auto, one cannot get a black-out. If, however, the racks are trimmed to the auto mode, so that one can achieve a black-out in auto, the manual dimmer curve becomes unsubtle, i.e. nothing happens on the dimmer lever for the first 3 or 4 points and then the light shoots up and carries on fading in normally.

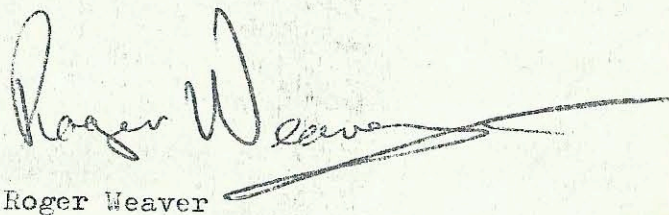
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In conclusion, the board appears to function correctly in the manual mode, provided the racks are trimmed to that mode, but all other functions of the board have faults. As a Lighting Designer and a Board Operator, I would certainly find the auto mode unworkable.


Roger Weaver