push-button is open or closed. In this manner the computer is able to interrogate each control at least twenty-five times per second. Similarly, if a mimic light is to be illuminated then its corresponding address will be set up by the computer and the outgoing data line will be energised. Obviously this is a completely different concept from the conventional system.

Having seen how the central brain (computer) communicates with each part of the system, it is possible to examine how the lighting control functions are performed. A much simplified schematic of the system appears in Fig. 3. This shows that the address and data lines described above are used to interconnect the computer to every part of the system. The computer itself comprises three main assemblies, viz:

1. Central processor.
2. Programme store.
3. Local store(s).

It is the central processor which performs the computing operations, the most important required for the DDM system being:

(*a*) To act as the nerve centre of the electronic exchange, connecting each part of the system to the computer.

(*b*) To retrieve, modify and sort files of recorded cues (the Main and Local stores are used as the files).

(*c*) To perform arithmetical operations such as addition, subtraction, multiplication, etc.

The first two of these functions are self-explanatory. Arithmetical operations are required for instance when one cue is added to another (ADD NEXT function) and also during the crossfades when a pseudo-multiplication is performed.

The Local store configuration basically comprises the following:

1. Next store.
2. Destination store.
3. Output store.

The memories which go to make up the next scene are placed in the Next store. Where the ADD NEXT function is used, the "greatest takes precedence" principle is applied. Destination defines the end-of-fade conditions. This can only be determined after the type of fade required has been selected (i.e., CROSSFADE, MOVE or DIM). Using this information the computer can up-date the levels fed into the Output store as the fade proceeds. From this description it is apparent that the operation is completely different from the IDM/Memo-Q principle of two local playback stores with simple mastering.

To add to the complexity it is required of DDM that if channel levels are modified by a rocker then the previously unmodified levels still have to be retained in case the operator should wish to return to the original state. Furthermore, a cut facility is incorporated and stores have to be duplicated in order to provide two independent playback and recording controls. It is this high degree of sophistication that characterises DDM but it necessitates no less than eleven Local stores!

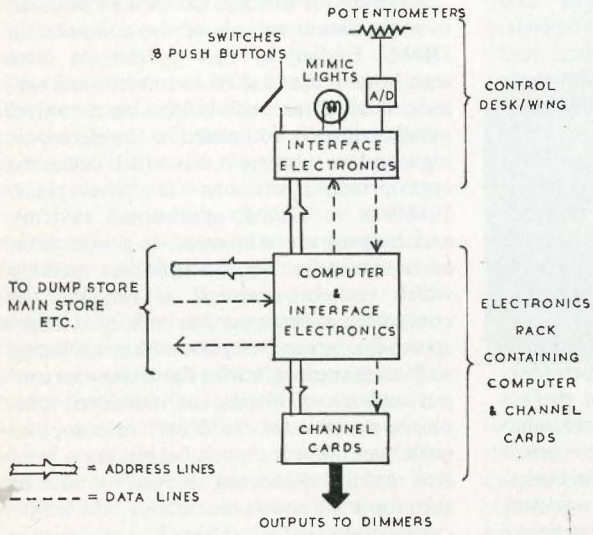


FIG. 2. CONNECTION OF CONTROLS & OUTPUTS IN A COMPUTER-CONTROLLED SYSTEM.