within the by then strengthened Rank Strand E.R. & D. Department of a full-scale system capable of controlling up to 360 channels. The original Rank Strand team was reinforced by Dick Gascoigne (from International Computers Limited), Tony Payne and Mike Day. It was decided that Dick would undertake the development of software (programming) and Tony, with his combined engineering and operational experience, would liaise with Frederick Bentham in order to establish just what the control was to do and to up-date this as development proceeded. Mike Day took charge of mechanical design.

In September 1970 the operational specification was prepared, and during that month and early October a system study was carried out. This proved to be the most crucial part of the development programme. We had decided to use a proprietary computer and it had to be of a realistic price, adequately proven, backed by world-wide servicing facilities, and of course functionally suitable.

However, by far the most difficult problem was to determine how the computer would handle simultaneous crossfades on up to 360 channels, bearing in mind that there were also two playbacks and separate up and down crossfade speeds. The computation techniques which had been used for the 16-channel prototype were unsuitable and an entirely new approach had to be found.

After much "head-bashing" the problem was resolved with one of those simple but elegant solutions which come to a designer but once in a lifetime. It is Rank Strand's unique answer to this problem that has given DDM its tremendous versatility and dynamic capability.

Detailed technical and management planning, carried out during September/October last year, has enabled the project team to pursue the development in what must be an all-time record. As the result of using a computer to control the operational functions of the system, it was possible safely to complete the hardware design before the operational specification was finalised. The system was designed, made to full manufacturing standards and tested by early February 1971! There followed a period of system testing and program "de-bugging". It is much to the credit of the whole team that programming and full-system tests were completed by May this year, following which numerous demonstrations have been given, including one to the Press at the end of July. At the time of writing the team is engaged upon the design and programming of a Stalls Control, together with the completion of more mundane production engineering tasks.

Many computers in the £2,000–£6,000 price range have been available now for over ten years. However the last two or three years have witnessed the introduction of a new generation of machines in which considerable ingenuity on the part of the manufacturers has resulted in a twenty- or thirty-fold increase in effective performance for only marginally higher cost. It is this development which has made DDM both technically and commercially feasible, the computer used being Digital Equipment Corporation's PDP11 of which over 1,400 have been sold in the 18 months following its introduction in January last year.

So much for history. Let us now examine in some detail the role of the computer in DDM. Earlier in this article we have seen how in the case of a conventional system, a switch or push-button on a control panel is directly connected to the electronic logic and/or timing circuits which cause the appropriate operations to take place. However in DDM, operational switches and buttons are connected to a computer as is shown in Fig. 2. The best analogy which can be given is to imagine the computer as being at the hub of a high-speed electronic (telephone-like) exchange with each control, mimic light, dimmer output and so on having an individual telephone number (or "address" in computer parlance). When a push-button on a control desk is depressed, it has to wait its turn until the computer calls up its identification code on the address line whereupon information is relayed back along the data lines to advise the computer whether the