keyboard to play a melody or group of chords. In the mid-1980s, the whole performance style of a group like the Thompson Twins is influenced by the existence of the sequencer.

When digital synthesisers first appeared, their design was often modelled on their analogue predecessors. Musicians found that their sequencing skills were further developed by the new instruments, and it is in this area of digital control that most interest has been generated. This is demonstrated by the recent popularity of the Linn drum machine, one of the first units to use sampled sound — in this case provided by top American session drummer Steve Gadd. On the Linn machine, drum patterns are recorded in digital form in the same way that computer data is recorded on floppy disks. The resulting sequences of ones and noughts are then encoded onto ROM chips. By accessing a particular chip, a musician or producer can reproduce the original sound as if it were being played live. The great benefit of digitising the sound is that output may be altered at the console, diverging from the original pattern in time, rhythm, volume, etc.

By now our two original examples — the recording studio and the onstage synthesiser player — have a number of features in common. In addition to recording music, studio work reflects the video boom that has occurred in the last few years. Video has brought a new style and consciousness to image-making: producers demand that the accompanying music reflects this.

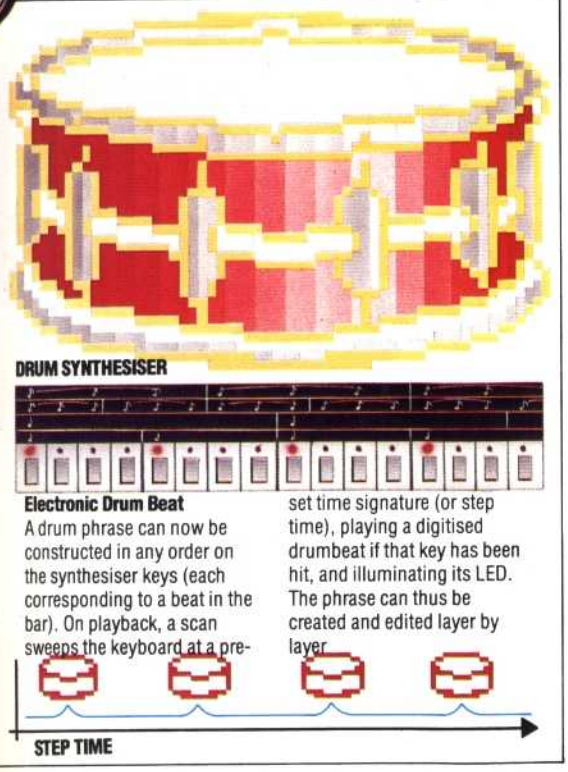
If the music accompanying a video is produced by conventional instruments, synchronisation with the on-screen image is very similar to techniques used with film. If, however, the music is made up of individual sounds and sequences produced by digital synthesisers, there is much that can go wrong. Let us imagine that on a particular video a vase of flowers is dropped to the ground, where it smashes. The musician working on the score has produced a sequence that accelerates up to the point where the vase drops, and given a percussive chord for the moment the vase hits the ground. Recording starts and the sequence begins, but it soon becomes clear that the rate of acceleration has been miscalculated and the sequence ends while the vase is still on the table. The musician then tries the percussive chord, which is recorded on a different tape track. Recording starts again, and this time the chord is recorded a split-second too late. The musicians need a way of linking up the digital instruments so that everything happens at the right time. What is needed, then, is a digital interface.

COURTESY OF RECORD MIRROR

Dynamic Duo
Donna Summer, with producer Giorgio Moroder, was one of the first pop artists to use electronically produced rhythms and synthesisers in recorded music

The synthesiser player has similar problems, this time in a live performance. His equipment includes two digital synthesisers, made by different manufacturers, and a Linn drum machine. He has sequences set up on one synthesiser and on the Linn, but as they do not keep in time together he usually ends up running the Linn automatically and playing the other manually. The result is that his second synthesiser, bought for the quality of its pre-set sounds, remains untouched. This musician needs a way of linking up his instruments so that all the sequenced material occurs in the right place. He also requires that the sequencer on his first synthesiser should play the pre-set sounds on the second. Furthermore, whatever equipment he uses should be applicable to more than just his own synthesisers — he may well find himself in the studio mentioned above that has so much trouble with video synchronisation!

In the next instalment of this series, we will look in detail at the MIDI interface and examine other examples of sequencing techniques.



Electronic Drum Beat
A drum phrase can now be constructed in any order on the synthesiser keys (each corresponding to a beat in the bar). On playback, a scan sweeps the keyboard at a pre-set time signature (or step time), playing a digitised drumbeat if that key has been hit, and illuminating its LED. The phrase can thus be created and edited layer by layer