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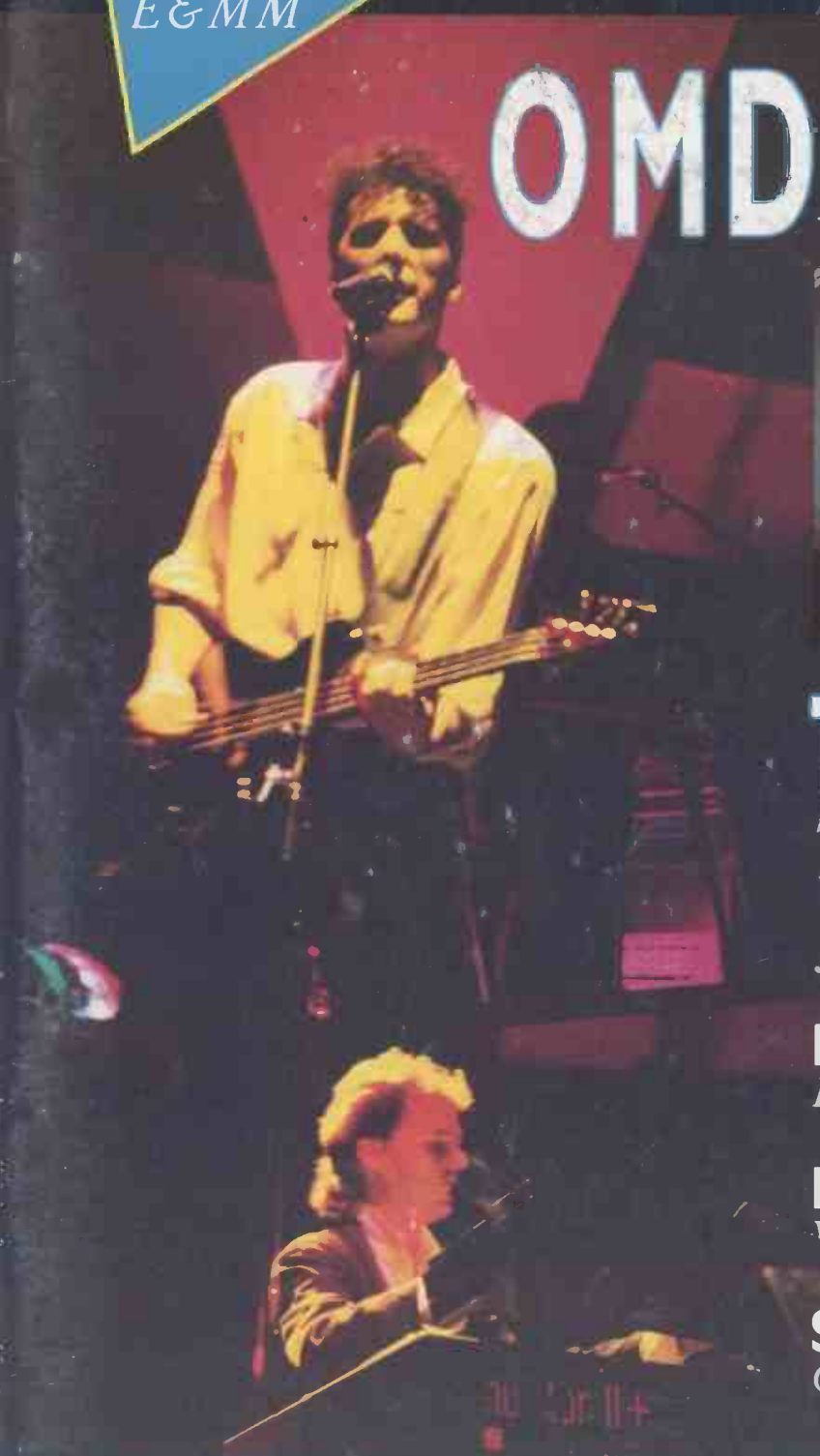

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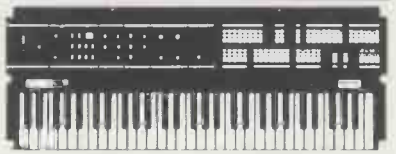

This dynamic, bitimbric stereo synthesizer with built-in sequencer is a revelation. The DK80 has 12 voices and is packed with excellent features such as double sound generation, fully dynamic touch sensitive keyboard, a 2 track polyphonic sequencer, user-definable split point and MIDI. An outstanding professional's instrument at an incredibly low price.

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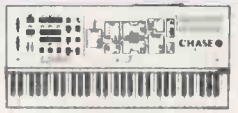

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VOLUME 1, NUMBER 2

APPRAISAL

ENTS

DECEMBER 1986

MUSIC technology

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THE OLD AND THE NEW

LAST MONTH SAW the world's recording industry gather in downtown Los Angeles for the winter AES (Audio Engineering Society) exhibition. At the show, a great deal of debate surrounded the pros and cons of direct-to-disk recording. With pioneers of this system like NED (whose Synclavier has used this method for sampling since 1984) showing complete multitrack systems, PPG exhibiting their HDU and Realizer products which are based around the hard disk, and the launch of new systems from such names as Lexicon and AMS, the time has certainly come for this technology to be given serious consideration.

Some disadvantages remain, of course, the principal one being the expense of storing your recordings in this format. And it looks as if tape is going to be with us for a while yet, whether the signals stored on it are analogue or digital, simply because it is such an economical format. By comparison, the hard disk is expensive, though the advantages in terms of speed of location, digital-domain processing (without deterioration) and editing are quite considerable.

But in any case, there will always be those who champion the cause of analogue techniques, hearing a 'warmth' and character which is lacking in the transparency of digital recording.

We here at MT are no strangers to such arguments. Good-natured disagreements as to the relative merits of the MiniMoog and DX7 are a day-to-day occurrence. And we know at least one highly successful Fairlight Series II programmer who refuses to get into the Series III because it's too good...or as he puts it, "the Series III is nothing to do with rock 'n' roll!"

In our philosophical moments, we take a more objective view. In a world full of musical differences (it's called variety – the spice of life, remember?), there has to be room for both sides of any argument. Several of this year's and last year's major albums were made using an analogue multitrack tape machine (for vocals, drums, pianos and guitars, say) synced to a digital one (for electronic keyboards and orchestral arrangements, perhaps). This hybrid method of recording seems to be becoming increasingly popular, as people discover they prefer some instrument recorded digitally, but another on analogue. The 'AAD' classification of Peter Gabriel's *So* Compact Disc conceals the fact that much of it was recorded on a Mitsubishi 32-track digital machine, yet analogue recording techniques obviously had a part to play as well.

So the message here is clear. As each new technological advance comes along, we need to moderate our reaction to it. Blank refusal to experiment with new developments is pointless, but so is the casting away of hard-won traditional techniques in favour of the Flavour Of The Month.

Continuing the tradition set by E&MM, MUSIC TECHNOLOGY is committed to the kind of objective analysis (tinted by the subjectivity that is inevitably linked to any art form, music included) that promotes a greater understanding of the pros and cons of each new technological development. We examine new technology as it arrives, evaluate the new opportunities it brings, point out its possible shortcomings, and estimate its impact on the musical techniques of tomorrow.

We also act as a forum for comment and discussion – through the interviews and letters we publish – on its impact in the musical world.

So to keep abreast of all the latest technology, and to ensure you get a clear view of how it is affecting the way we make and record music, keep your eye on our pages – and accept no substitute. ■

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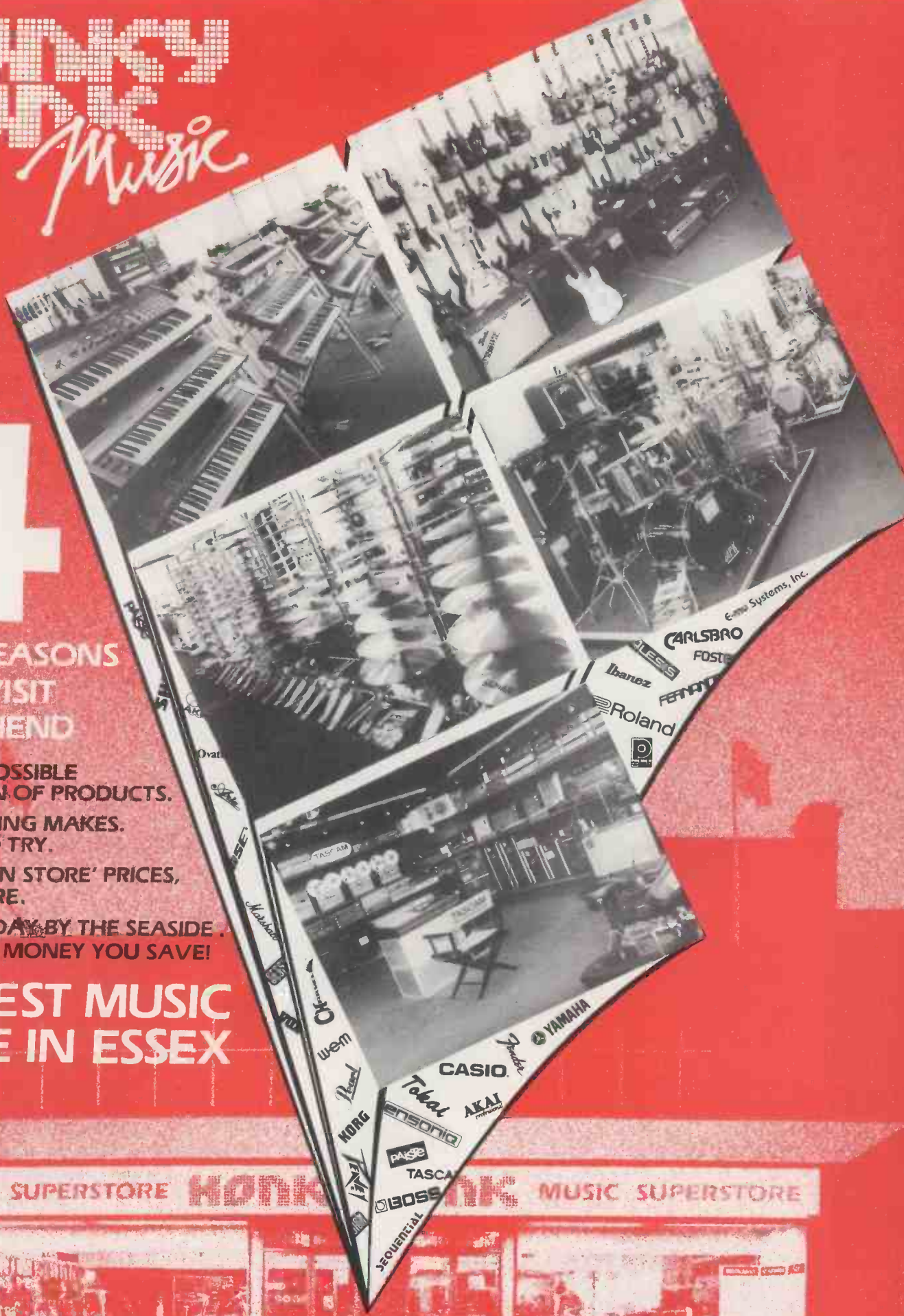

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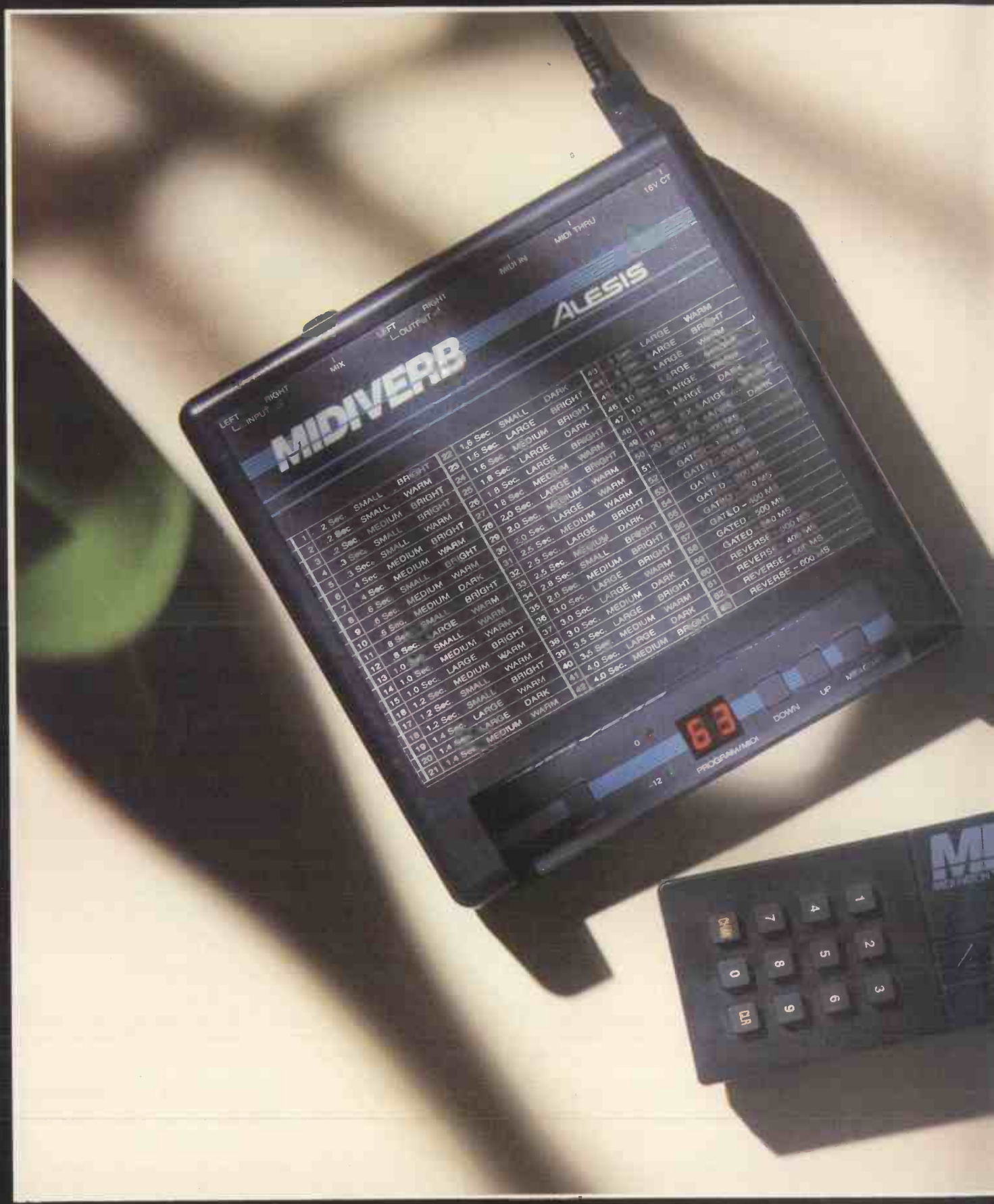

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VERBAL ART

▶ The march of the budget digital effect processor continues apace with a new digital reverb from ART (Applied Research and Technology). The 1U 19" Pro-Verb, which is programmable and MIDI-compatible, comes with 100 user presets: 50 reverb, 10 gated, 10 reverse, 10 chorus, 10 delay and 10 echo effects.

Bringing you these multifarious effects is the latest CISC (Complex Instruction Set Computer) architecture, which apparently allows the Pro-Verb to perform more powerful, more complex processes per instruction, at a rate of six million calculations per second. So now you know.

Although the Pro-Verb was shown for the very first time at the mid-November Los Angeles AES convention, it's due in British shops before Christmas, with a retail price quoted at "well under £400".

More from *Turnkey, Brent View Road, London NW9 7EL. ☎ 01-202 4366* ■ **St**

VIVIDLY MIDI

▶ Just when we were getting used to the idea of MIDI and SMPTE working together, along come Very Vivid of Toronto, Canada, with a unique video-to-MIDI controller called the Mandala.

With the Mandala, video images of a performer interact with computer-generated graphics and animation to produce MIDI messages, which can then control synthesisers, drum machines, and so forth. Thus the musician can, with the wave of an arm, trigger an orchestra strike sample, or any of a variety of sounds controllable over MIDI.

By using computer graphics the Mandala creates imaginary 'instruments' around the performer, so that when his/her image makes contact with any of these predefined areas, the Mandala responds with the desired MIDI messages. Of course, being computer-generated, the appearance of these imaginary instruments are limited only by the imagination.

In live performance a performer could, with not a single wire on stage, play as sophisticated a MIDI system as practical limitations allow (ie. a lot) merely by moving around.

Very Vivid haven't stopped there, though. Animated computer-generated objects are also subject to the artist's movements, so it's possible to make, say, a beach ball bounce off the performer's head, simultaneously triggering other MIDI events – and all this is done live! Very Vivid customise each system to the artist's requirements, and needless to say we've only scratched the surface of its possibilities here.

More from *Very Vivid, 1499 Queen St. West, Studio 302, Toronto, Canada M6R 1A3 ☎ (416) 537 7222* ■ **Rd**

PERSONAL SUPPORT

▶ Brighton-based company System Support, whose normal line of business is supplying network computer systems to the financial and insurance industries, have decided to enter the music biz as well.

The company have taken on distributorship of Jim Miller's 'Personal Composer' sequencing package for the IBM PC/XT/AT and strict compatibles. 'Personal Composer' is a 32-track MIDI sequencer which also features music notation print-out and an on-screen voice editor with graphic display for the DX/TX range of synths.

Other features include SMPTE auto-locate, MIDI data filtering, punch in/out and a MIDI Event editor. The notation features include on-screen insert, delete, copy and move; single-part extract and transpose; lyric and chord-name entry; and free-form scoring with up to 64-staff systems. Scores can be scrolled whilst a sequence is playing.

For the adventurous (computer) programmer there's a LISP interpreter allowing 'Personal Composer' to be tailored to individual requirements.

System Support will shortly be releasing prices for complete hardware/software packages which will use their own FELIX computer hardware. In the meantime, 'Personal Composer' is available as a software-only package for £370.

More from *System Support Associates Ltd, Melbourne House, Melbourne Street, Brighton, Sussex BN2 3LH. ☎ (0273) 603245* ■ **St**

BANKING ON THE ARTS

▶ What record company can number Brian Eno, Harold Budd, Robert Fripp and Bill Bruford among its recording artists? Editions EG, that's who, and to prove it they're putting on a unique week-long festival called the South Bank Editions Week.

Scheduled to take place in early January at London's South Bank arts complex, the event is billed as "the first ever festival of the sounds and ideas that have changed the face of popular music" (phew!). The full line-up is:

Monday 5: Bill Bruford
Tuesday 6: Harold Budd/Roger Eno/Michael Brook/Laraaji/John Bonner/Brian Eno/Russell Mills
Wednesday 7: Penguin Café Orchestra
Thursday 8: Robert Fripp/League of Crafty Guitarists
Friday 9: Man Jumping

So now it's official: there *is* life after Christmas.

More from *Johnny Black ☎ 01-734 9201*

Tickets available from *Queen Elizabeth Hall Box Office, Waterloo, London SE1 ☎ 01-928 3191/8800* ■ **St**

EUREKA!

▶ Despite its industry-standard status, the DX7 lacks many of the sophisticated features to be found on today's generation of synths. And so long as Japanese manufacturers like Yamaha are reluctant to upgrade existing instruments, it's a state of affairs which seems likely to persist.

However, an enterprising American company called Grey Matter Response have developed their own upgrade for the DX7, called E!, which turns the FM wonder into a considerably more flexible beast. Courtesy of importers Gozen Studios, you can now buy E! in the UK.

First off, E! is a memory expansion board which fits inside the DX and bumps up the synth's internal RAM storage capacity to 256 sounds. But it does much more than that. Each sound can now have its *own* set of function parameters, and an additional volume parameter has been included so that you can match the volume levels of different sounds.

With E! the DX becomes a much more effective master keyboard, with the ability to send sequence start/stop/continue commands from its front panel, turn local on/off (invaluable when working with sequencers), and transmit on two MIDI channels with floating split-point. Other MIDI features include separate send and receive channels (1-16 in both cases), a wide range of MIDI data filters (both in and out), and MIDI merge.

In the pipeline is an EPROM-based software update for E! which will provide a staggering 576 onboard memories (320 RAM and 256 ROM), cross-patching, microtonality and a 'brightness' parameter. Gozen inform us that this upgrade will be available free to DX7 owners who have already bought the current version from them.

The company charge the same price for E! whether you fit the board yourself or ask them to do it for you. If you decide against the DIY approach you'll have to trundle your DX along to them to have the necessary surgery performed, though anyone living in the London area might find that Gozen are prepared to come to them.

Price *£399 including VAT*
More from *Gozen Studios, 86b Endlesham Road, Balham, London SW12 8JL. ☎ 01-675 7371* ■*St*

taking a trip round

APPLE WORLD

Photography *Matthew Vosburgh*

▶ The metamorphosis of London's dowdy Agricultural Halls into the Islington Business Centre could be taken as symbolic of the AppleWorld show itself in a couple of ways. Firstly as a parallel to the Apple IIe transformation from ugly duckling to stylish GS, and secondly in the theatre of business.

The upgrading of the Apple IIe to something as visually striking and sonically capable as the Apple IIGS is a remarkable move, and a good enough reason for attending the show. By the afternoon of the first day I'd located Apple's own demonstration of the IIGS, by which time the demonstrators had just about sorted out the leads to link up the computer to the Bose monitors (carefully colour co-ordinated with Apple's logo).

The display program that opened the demonstration began with a slowly changing graphical representation of a sax player and accompanying sampled music. Those of the show visitors accustomed to the 'beep' style of computer voicing were clearly impressed by all this, and it soon became quite apparent which popular keyboard sampler's chip has found its way into the GS... The bandwidth and signal-to-noise ratio are pretty much the same as those of the Mirage, and while the Mirage is no longer the leader in the sound quality stakes for sampling keyboards, as far as compuputers are concerned it's real high-fidelity. Compare this standard of ▶

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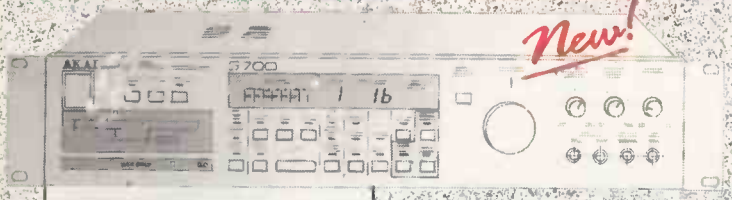

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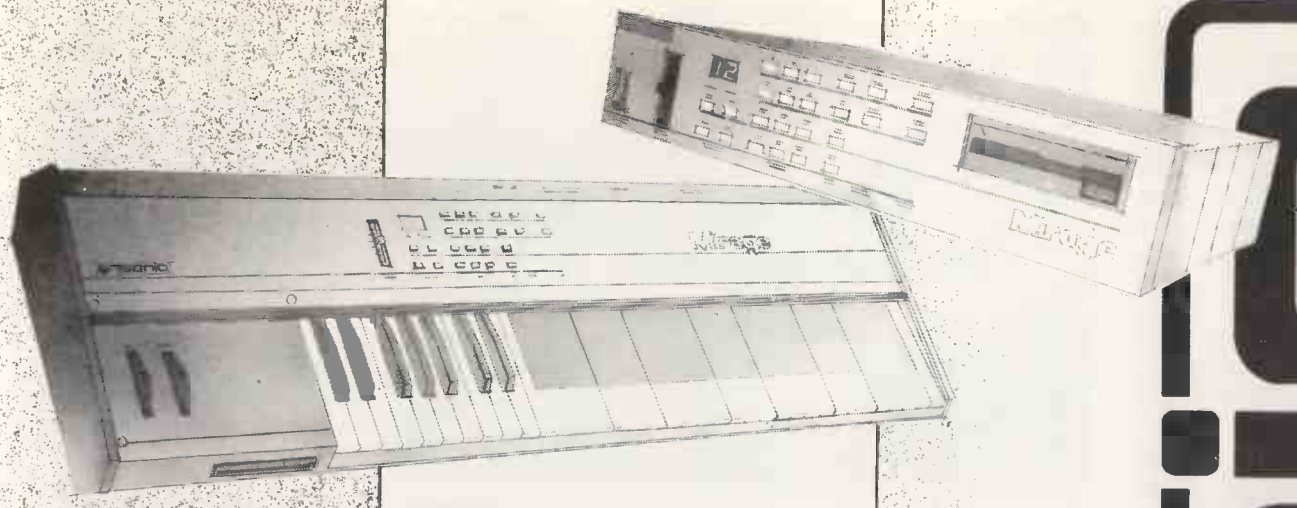

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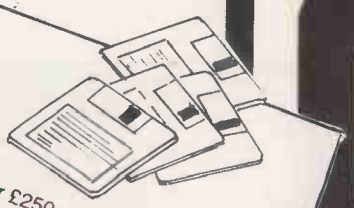

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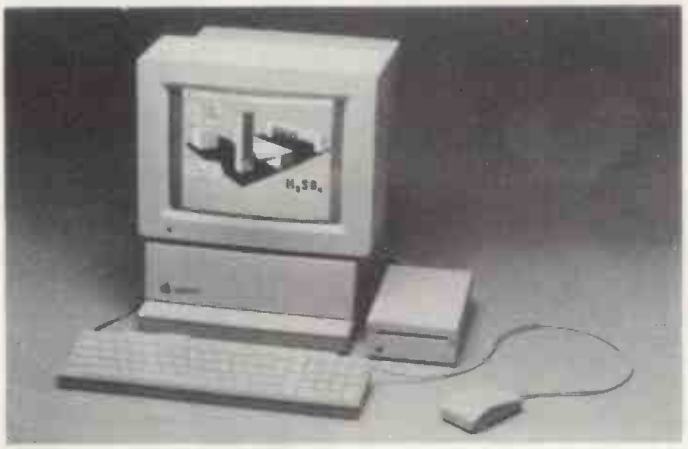
▶ sound quality with other personal computers – the Amiga included – and it starts to look very healthy indeed. What's really needed now is for Ensoniq to make some of their factory Mirage sounds available on IIGS disks. And the addition of a professional sequencing package (along the lines of LEMI's Future Shock package for the Apple II) would give you a pretty impressive compositional arrangement, leaving a MIDI interface to give access to any number of MIDI keyboards, expanders, drum machines and so on.

Another of the digitised music programs demonstrated gave the options 'Ensoniq' and 'DX-1'. Although nobody was certain, these seemed to offer two methods of inputting sound to the sampler via some sort of Ensoniq interface or the DX-1. (In case you're confused, that's the Decillionix DX-1 sampling card for the Apple – *not* Yamaha's FM flagship). So we'll have to wait and see what transpires.

Photography *Matthew Vosburgh*



As far as the IIGS's colour graphics were concerned, several pretty demonstrations were shown and, while they didn't have the speed of the Amiga, they certainly managed to make the static black and white of the Mac look rather silly, to say the least.

On the business front, the primary sales of all the exhibitors were to business users – and principally in the field of the Mac. Accounting packages, spreadsheets and their like were there in force – but there was precious little in the way of leisure or artistic software.

An exception were Apple stalwarts Greengate who were talking about their DS:4 – though curiously, only the old DS:3 was in evidence on their stand. Admittedly the DS:3 was working with the IIGS, a Yamaha FB01 expander and a MIDIverb. But by the way the DS:4 was described, it sounds as if there's only one, and that's "presently in Denmark putting cannons on the 1812 Overture"; pressed for a release date, the month of January was mentioned.

Sadly, the Greengate stand was the extent of the musical presence at the show, although Argent's (who were unable to be present to show their Opcode, Mark of the Unicorn and Digidesign Mac software) claim to have had considerable response from a few strategically distributed brochures.

In my opinion, the trouble with AppleWorld (as with the whole of the computer industry – Jack Tramiel's Atari excepted), was that the potential of the musical application of the IIGS was not being taken seriously. So here's hoping that sound disks from Ensoniq, MIDI interfaces and sequencing packages can make the IIGS as attractive to the musician as it is to the business community. ■ *Paul Wiffen* ▶

SOUND RE-CREATION

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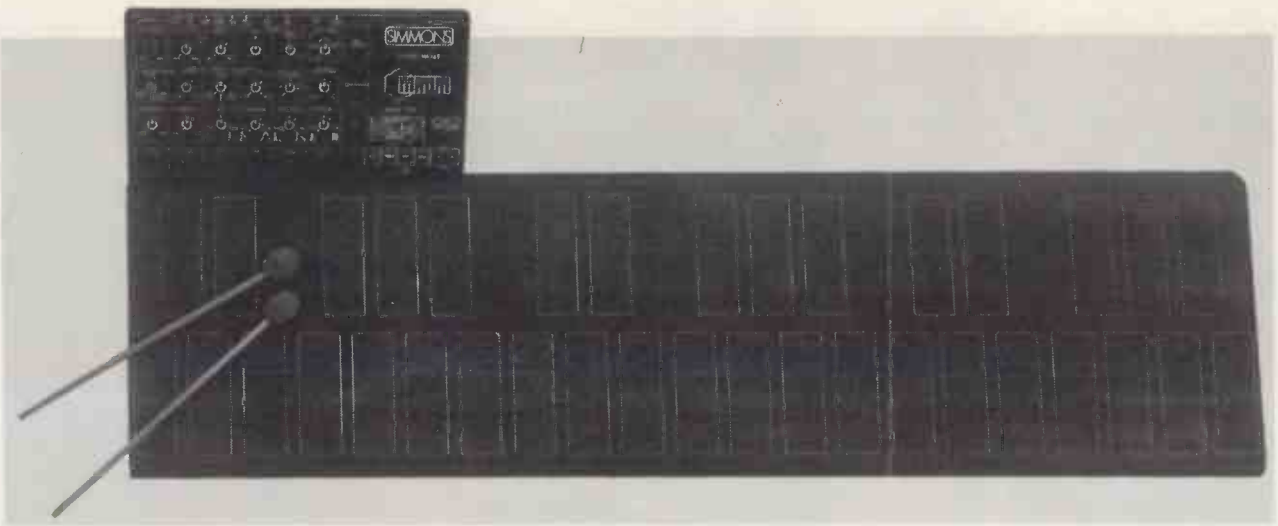


MIXING MALLETS

▶ Simmons have long been one of the most innovative companies in the musical instrument business, and two new products from the company look set to further their reputation.

First up is the SPM8:2, an 8-into-2 MIDI mixer which Simmons have somehow managed to cram into a 1U 19" rack-mount. The SPM8:2 is capable of storing 64 mixes (level, EQ, panning and effect send settings for each channel) which can be called up remotely by means of MIDI patch changes. A cross-fade time between one patch and the next is programmable from instantaneous to 10 seconds.

Don't dismiss the SPM8:2 as yet another product for electronic drummers; it is equally valid as a keyboard mixer, and retails at a respectable £599.

The other new product to be announced by Simmons is the Silicon Mallet, the result of a two-year research project into the application of electronics to mallet percussion instruments.

The Mallet has a dynamic, three-octave playing surface (expandable to five octaves for the truly adventurous) designed along the lines of a vibraphone or marimba, and is six-voice polyphonic. Simmons have of course had much experience in designing playing surfaces, and the FS (force sensing) bar has been specially developed for their newest instrument.

The Silicon Mallet comes with its own voice unit providing 19 factory preset and 80 user-programmable sound memories. Presets include vibes, marimbas, xylophone, tubular bells, glockenspiel and bass. A single split-point can be set anywhere on the playing surface allowing, for instance, a bass marimba on the lowest octave and tubular bells on the remaining bars. Patch changes (including split) can be stored onboard in a single 99-step sequence.

Simmons have included MIDI Out and In on the Silicon Mallet so it can play and be played from any other MIDI instrument, and can be incorporated into a MIDI sequencing setup.

Simmons have recently shown the Mallet at the Percussion Arts Society International Convention in Washington DC, where they've been actively seeking the opinions of both experienced and student percussionists prior to manufacturing the instrument in the Spring of '87.

More from *Simmons Electronics, Alban Park, Hatfield Road, St Albans, Herts AL4 0JH. ☎ (0727) 36191* ■ **St**

STREETWISE SURFACE

▶ Following our mention last month of a new music shop soon to open in Manchester, it seems that Streetwise Music have surfaced at 275 Dean Gate, Manchester ☎ 061-835 2127, and are now open for business. Behind Streetwise you'll find Dougie (from Dougie's Music) and Peter Jones (ex-Akai UK), and they're hailing their new venture as a "fresh, young, swish hi-tech shop stocking a full complement of hi-tech gear". Seeing is believing – so be wise and check it out for yourself... ■ **T***mcg*

CHEETAH UNCAGED

▶ As the 19" rack-mounting version of the synthesiser continues to proliferate, the idea of laying out hard-earned cash on dumb keyboards that won't make a squeak becomes more acceptable.

To make the situation less painful, Cheetah Marketing have just announced their MK5 MIDI master keyboard. The first thing to note about the MK5 is the price – a mere £99.95 for five octaves, 128 patch memories and full 16-channel MIDI operation.

An additional £29.95 will buy you an interface enabling control over the internal sound chips contained within the Spectrum 128 and Amstrad 464, 664 and 6128 micros should you have a need for it.

In case the name Cheetah is an unfamiliar one, they also market the SpecDrum, a fully programmable add-on for the Spectrum featuring eight digitally encoded voices, real- and step-time programming, 1000+ pattern memory capacity, tape sync and a graphic display to assist programming. The basic SpecDrum retails at £29.95, but for the more ambitious there's a collection of Latin sounds (£3.99), a collection of Electro sounds (£4.99) and a new Afro Kit featuring congas, claves, coconuts and the like for £4.99.

Not content with that lot, there's a digital sound sampler for the 48K and 128K Spectrums for imminent release. Both versions feature an impressive 17.5kHz bandwidth, waveform editing facilities with on-screen graphic display, looping, reversing and playback up to an octave either side of the original sample pitch.

The 48K version will give 1.2 seconds at full bandwidth, whilst the 128K version gives three seconds. Both of these amounts may be extended if the sampling rate is halved.

A selection of effects programs accompanies the sampler program, lest the novelty of hearing Mrs Thatcher saying "noitalfni" wears off.

More from *Cheetah Marketing Ltd, 1 Willowbrook Science Park, Crickhowell Road, St Mellons, Cardiff. ☎ (0222) 777337* ■ **T***g*

OBERHEIM PLAYS BACK

▶ Our suspicions have been confirmed: Oberheim have finally entered the digital sampling market, but much to our surprise (and everybody else's, no doubt), they appear to have silently slipped in the back door with their DPX-1 rack-mount sample playback expander.

Sample playback? That's right, the DPX-1 does not sample sounds, but loads them from either of its two disk drives. The trick is that one drive accepts 3½" Ensoniq or Prophet 2000 sample disks; the other drive accepts 5¼" Emulator II disks.

This enables DPX-1 owners to playback samples from three of the most extensive disk libraries around.

The DPX-1 occupies two rack spaces and houses the two drives and 20 Megabytes of internal RAM. This much RAM is certainly uncommon among affordable samplers that we've heard about, but the DPX-1 requires this amount of memory in order to translate samples into their own format so they can convert the data. Having this much memory will also enable the folks at Oberheim to add other disk libraries to their list.

The unit's unassuming front panel features only the two drives, a two-digit display and a couple of switches, while the rear panel sports the expected MIDI In, Out and Thru jacks along with a 'sum' audio output. (No separate outputs are available.)

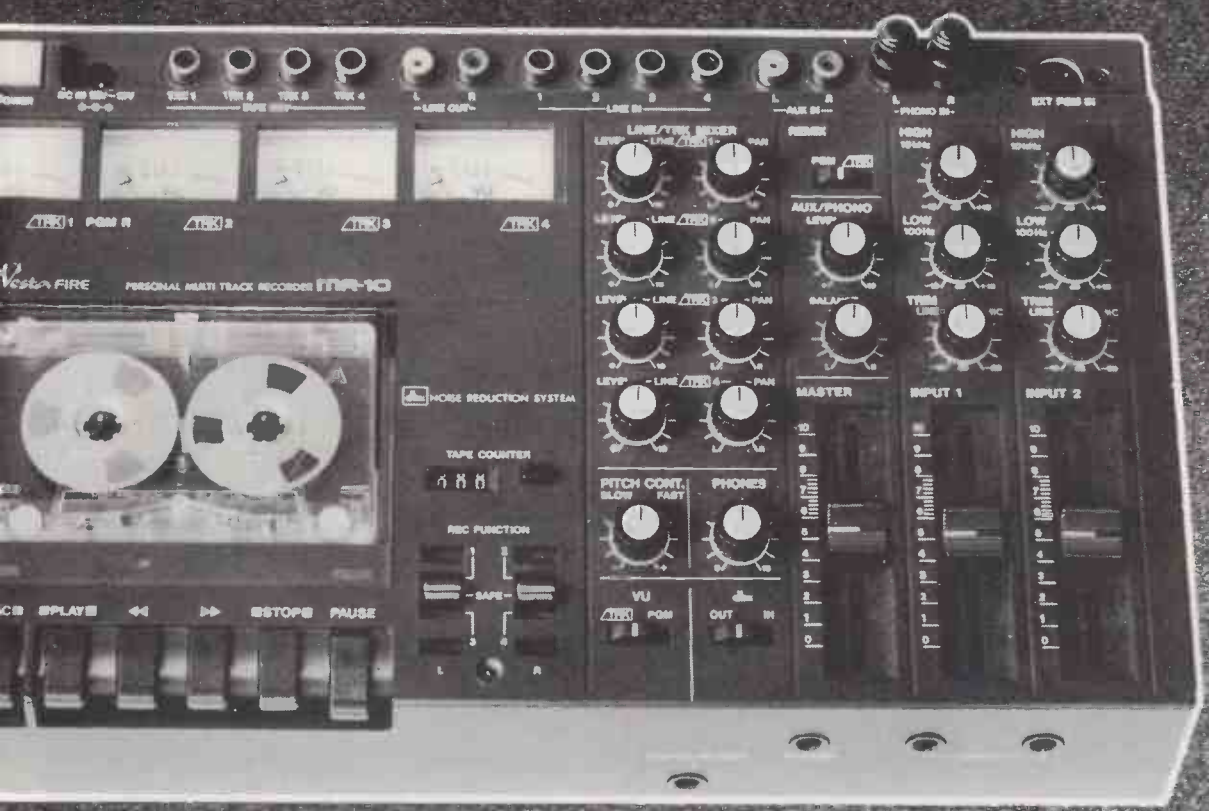
Naturally, the DPX-1 requires an external controller to play the samples, and no doubt Oberheim's own Xk MIDI keyboard controller will do just fine.

Interestingly enough, the DPX-1 doesn't copy disks, nor does it convert samples from one format to another. It's nice to see a manufacturer actually avoid implementing such features, considering how controversial the whole sample bootlegging topic has become of late.

With the single summed output, the DPX-1 doesn't render obsolete any of the samplers whose disks it's capable of loading, but the 'one size fits all' approach will certainly make this a welcome addition to any studio, touring band or session musician's set-up.

More from *Sound Technology, 6 Letchworth Business Centre, Avenue One, Letchworth, Herts SG6 2HR. ☎ (0462) 675675* ■ **R***d*

Why you should meet Mr Ten...



Choosing a multitracker can be a difficult business. But Vestafire have now made the task a little easier.

The MR-10 is the result of years of design and manufacturing experience in the multitrack field and Vestafire have drawn on their understanding to create unique features which greatly increase flexibility and widen the scope of your creative process.

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Add to this features like electronic punch-in, switchable dbx noise reduction (the professional standard) and ten inputs including two phonos for recording from a music source and you'll wonder how Vestafire do it for £320.

The MR-10. Flexibility is the word.

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MAKE A NAME FOR YOURSELF, TODAY.

Make no mistake, if you really want to make a name for yourself you need equipment that gives you truly original sound. The kind you can only get with professional equipment. And usually, a lot of money.

Now Casio bring the price of fame within your grasp with a range of fully featured synthesizers that start, amazingly, at under £350 – about the same as you'd pay for a conventional keyboard.

These synthesizers are professional machines, played every day by professional musicians at gigs and in the studio.

In fact, Casio synthesizers feature on many top albums.

They produce a dynamic sound – Casio's unique PD sound produces the richness of analogue sound with digital clarity.

And there are four Casio synthesizers to choose from, all combining the very latest technology with pure simplicity – so you don't have to be a technical genius to play them.

At an incredible price of £345 RRP, the CZ101 is compact enough to strut around with, but big on features – 49 mini keys, 16 pre-set voices, 16 programmable memories and external RAM storage facility. It's the first of a great range of Casio synthesizers.

If you want full size keys, the CZ1000 offers the same features in a larger format, for just £445 RRP.

The CZ3000 will handle the demands of the most ingenious talent, 61 full size keys and a host of special effects. It offers 32 pre-set voices and 32 programmable memories to put real synth creativity at your fingertips for only £555 RRP.

All three synth's can be expanded even further by adding the SZ1 4-channel sequencer with its on-board memory of 3600 events. At £295 RRP, it gives you practically unlimited scope.

The practised pro will really appreciate the Casio CZ5000 with 61 full size keys and an on-board 8 track sequencer, allowing up to 6800 notes to be stored – i.e. full multi-track facilities for a mere £895 RRP.

All Casio synthesizers are also fully equipped with MIDI.

If you're serious about making music, take yourself down to your local Casio stockist or clip the coupon today.

— — — — — — — — — — —

To: Casio Electronic Co. Ltd., Keyboards Division, Unit 6, 1000 North Circular Road, London NW2 7JD. Telephone: 01-450 9131.

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Dear MT

Black Notes

Having read Melanie Black's letter (E&MM September '86) about the lack of contemporary music tuition in the UK, I thought my company might be of interest to your readers.

At the Sound School in London we offer synthesiser and keyboard tuition. This tuition is run on a very individual basis, and caters for the complete beginner as well as the advanced player. The syllabus covers all aspects of contemporary keyboard-playing, including playing technique, programming analogue and digital synths and drum machines, home recording techniques, computers and so on. Even advice on the music business in general is available.

The classes are held in an eight-track studio, and use synths from most manufacturers, as well as drum machines, outboard gear and the UMI system. With this setup, pupils can not only learn but gain practical experience by recording demos, which highlight their newly-found playing and programming skills.

Finally, for those who live too far from London, we offer certain aspects of the course in information packs which consist of a cassette and notes.

For further information, contact the Sound School on ☎ 01-267 3254.

■ C Youdell
London

Dear MT

ITS EMPathy

I sympathise with Melanie Black's concern for electronic and rock music tuition in secondary schools. There are, however, signs of change.

For many years, music teaching has been dominated by examinations biased towards the absorption of information about music, rather than the development of appropriate practical skills in it.

Most of the new GCSE music examinations now demand that teenagers are given extensive opportunities to compose and perform music. Music teachers whose work has been concerned with massed singing, descriptions of famous composers and music notation may be perplexed by these demands. Singing is, of course, valuable, but massed singing is rarely concerned with pupil composition or the individual skills of each singer.

Notation and descriptive work are valuable when they are associated with direct musical experiences, but are only a means to this end. Access to much of the world's music is through memory and aural sense alone, and teachers who can only work through notation will find themselves culturally divided from their pupils.

The development of electronic music technology is putting many music teachers in a difficult position. Young people's music is often approached without using notation in order to allow personal style to develop. At the same time, music technology requires knowledge of sound synthesis and computer procedures to make its use effective.

Some teachers may therefore find themselves in the unenviable position of having to relinquish a familiar set of conventions, while trying to absorb and utilise the unfamiliar – but there is help available from some local authorities. Tameside Education Authority Support Services include, as part of their Instrumental Teaching Service, an Electronic Music Project (ITS EMP) which exists to help teachers make use of electronic and electro-acoustic media. We have a variety of equipment, most of which can be taken into the classroom. Courses and advice on equipment purchase are on offer. As extra money is being provided for GCSE work at the moment, this is a good time to ask for some of it.

ITS EMP also has a studio, which houses a Fostex A8 tape recorder and various other devices suitable for electroacoustic/multitrack recording.

Tameside schools are welcome to use this facility, with as much help as they need from me. The priority is that teachers and pupils involved in music education are given as much opportunity as possible to become familiar with music technology.

With luck, projects such as this in teacher training establishments will make a major contribution to modern music education.

■ Nigel Cross
Tameside Schools Support Services
ITS EMP

Dear MT

Programmed Pleasure

I don't know what the rest of your readers are like, but I find I get more pleasure from programming a synth than I do from playing it. I can spend literally hours with my shoulders hunched over my keyboard, fiddling with the parameters until I get a sound exactly as I want it.

So, as you can imagine, I find it amazing that some people (most DX7 owners) try to find a preset that is good enough for the job they want to do. If they can't find one, they buy yet another ROM cartridge in the hope there will be something there.

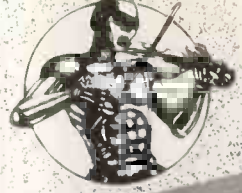
Whatever happened to creativity? If I write a piece of music, I start from scratch, and create the sounds I want for that song from basics. That way, I feel that I've created the whole piece.

Presets ruin a good synth. Yamaha produce such a marvellous system in FM, and then go and ruin it by giving the DXs presets, so nobody bothers to learn the technology behind the sounds.

How about running a series from the programmer's point of view? It could prove very enlightening.

And how about other people's views on the preset/programmed front? I'd love to read about them in your pages.

■ R Davies
Notts



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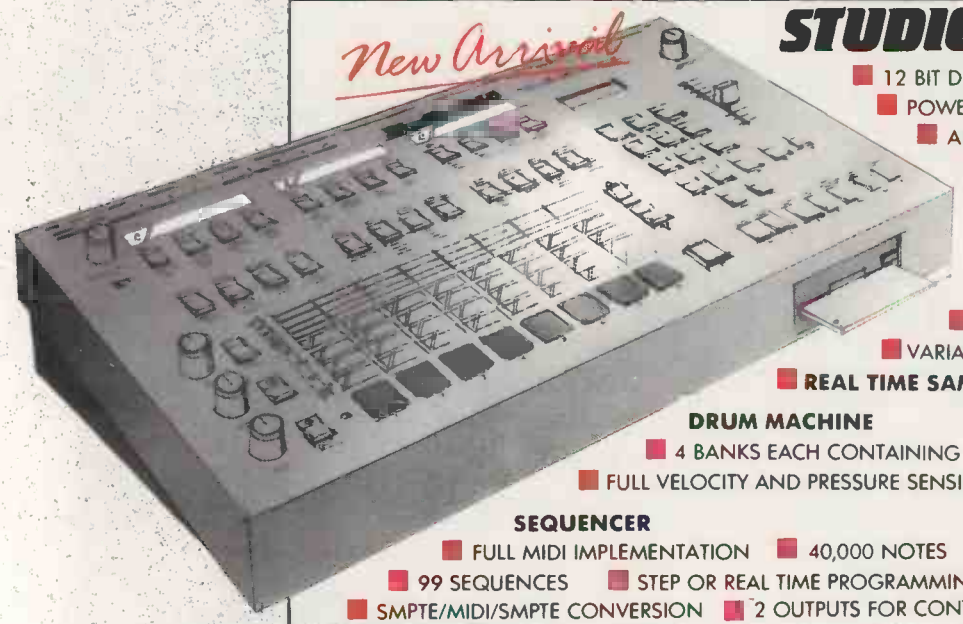
New Arrival



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INTERFACE

Your questions answered by MUSIC TECHNOLOGY's resident team of experts. If you have a query about any aspect of music technology, or some information that might be useful to other readers, write to Interface at the editorial address.

Q ***Congratulations on the change of name – it's much more apt.***

In E&MM August '86, you ran an article by Annabel Scott on the musical application of MSX. Now, finding a Toshiba HX10 was easy (in a back room of the local branch of Currys for around £50). But having read the article, I would dearly love to lay my hands on a Toshiba HX/MU 901, but where do I get one? I can't track one down and am unable to find Toshiba's address. Can anyone help – please?

■ **T Young**
Worcester

A *Tracking one down is likely to be rather a hit or miss affair, I'm afraid. On the other hand, Toshiba are known to be alive and well and living at the following address: Toshiba UK Ltd, Toshiba House, Frimley Road, Camberley, Surrey, GU16 5JJ. ☎ (0276) 62222. Contact them direct for your nearest dealer.* ■ *Tg*

A *Congratulations on the name/style change, it looks much better. Are the new T-shirts available yet?*

Now the important bit – with reference to last month's enquiry from Baz of Essex concerning Mark Shreeve, you might like to know that the 'Assasin' album is by no means the only other recording the man has released. Back in 1981 there was 'Thoughts of War' on the Uniton label, and before that a number of cassettes (I have one called 'Ursa Major').

As far as I know the 'Thoughts of War' LP is now deleted, though I expect you can still pick one up secondhand (that's how I got mine). The cassettes, on the other hand, are definitely still available and are distributed by Mirage, 614 Southmead Road, Filton, Bristol.

■ **Stephen Brereton**
York

A *I noted with interest the distress call from an ARP owner in E&MM October '86.*

Here at the Shadow Factory we have a company called Synergetic Systems who retail, install, repair and service pro-audio equipment. We do hold a number of spares and have a reasonable rate of success in getting hold of spares for ARP products. In addition, we have a tech who has a lot of experience working on ARP products.

If we can help any of your readers, they can contact us at: The Shadow Factory, Factory Yard, Lower Boston Road, Hanwell, London W7 3UG. ☎ 01-579 4063 or 01-567 2816.

■ **Bruce Thomson**
Synergetic Systems

Q ***Firstly, congratulations on the new-look magazine. Secondly, I'm very interested in the Ensoniq ESQ1 and I was wondering if you had reviewed it and in which issue.***

Finally, if I connected a synthesiser to my hi-fi and MIDI'd a drum machine and digital delay to its sequencer, would it be possible to record all these in action (along with a microphone) on a Fostex X-15?

■ **Miles Coni**
Cambridge

A *The ESQ1 was reviewed in E&MM August 86, but you can trace the whereabouts of all recent E&MM reviews and features by referring to last month's 1985-86 Index.*

You can record all the instruments you mention direct onto the X-15 without the use of your hi-fi using the onboard mixer, but you'll have to organise some method of monitoring what's going on. Headphones are the easiest solution, but you may find a mix done on headphones sounds drastically different when played back over a system using speakers for sound propagation. This is where your hi-fi comes in – as a monitoring system.

But there are one or two things to beware of. A hi-fi set-up produces a very 'coloured' sound; that means the speakers and amplifier alter the sound passing through them. In an ideal studio you'd find monitors capable of reproducing sound that was totally uncoloured giving you a known reference point from which to do your mixing and EQing. Most studios also install something along the lines of Auratones, which are cheap 'n' nasty nearfield monitors designed to give a more realistic idea of how your mix will sound on someone's stereo. To this end, studios often use a transistor radio for low-fi mono monitoring too – after all, that's how you hear most pop music. ■ **Tg** ►

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ROLAND JUNO 2	£890.00	£POA
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CASIO CZ101	£345.00	£299
CASIO CZ3000	£555.00	£POA
CASIO CZ1000	£445.00	£POA
CASIO CZ5000	£895.00	£POA
KORG DW6000		£POA
KORG DW8000	£1249.00	£POA
KORG POLY 800II	£649.00	£POA
KORG SAMPLING SYNTH DSS1	£2259.00	£POA
YAMAHA DX7	£1599.00	£1199.00
YAMAHA DX27	£549.00	£POA
YAMAHA DX21	£749.00	£POA
YAMAHA DX100	£399.00	£POA
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YAMAHA TX816		£2999.00
YAMAHA TX216		£1195
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PROPHET VS	£1899.00	£POA
ENSONIQ ESD1	£1225.00	£1225.00
SEQUENTIAL MULTITRAK	£799.00	£599.00
MOOG SOURCE	S/H	£199.00
E&MM SPECTRUM SYNTH	S/H	£125.00
ROLAND SH200	S/H	£150.00
KORG MICRO PRESET	S/H,	£75.00
KORG LAMDA	S/H	£149.00
KORG MS10	S/H	£99.00
CASIO CT101	S/H	£99.00
CASIO CT1000	S/H	£149.00
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TECHNICS SK250	S/H	£299.00
YAMAHA PS25	S/H	£299.00
YAMAHA PS55	S/H	£499.00
YAMAHA MK100	S/H	£199.00
YAMAHA YS1000	S/H	£169.00
CASIO MT70	S/H	£149.00
ROLAND SH09	S/H	£175.00
ROLAND JUNO 106	S/H	£499.00
ROLAND JUNO 1	S/H	£449.00
KORG SIGMA	S/H	£99.00
KORG POLY 61	S/H	£345.00
KORG POLY 800	S/H	£299.00
ROLAND MKB200	S/H	£399.00
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ROLAND HP2000	£1399 00	£999.00
ROLAND HP3000 EX DEMO	£1550.00	£999.00
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ROLAND HP450	£1400.00	£695.00
ROLAND HP350	£1295.00	£595.00
ROLAND EP50	£750.00	£499.00
YAMAHA PF80	£1099.00	£POA
YAMAHA PF70	£999.00	£POA
ENSONIQ PIANO	£1225.00	£1225.00
KORG PIANO SG1	£1775.00	£POA
		SALE
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ENSONIQ MIRAGE KEYBOARD	£1425.00	£1425.00
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PROPHET 2000	£2195.00	£POA
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AKAI X7000	£999.00	£POA
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YAMAHA VSS100	£179.00	£149.00
CASIO SK1	£119.00	£99.00
ROLAND S10	£1099.00	£POA
ROLAND S50	£2200.00	£POA
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		SALE
DRUM MACHINES	RRP	PRICE
ROLAND TR707	£660 00	£POA
ROLAND TR505	£299.00	£POA
ROLAND TR727	£660.00	£POA
ROLAND R70O0	£375.00	£POA
BOSS DR220		£165
YAMAHA RX21	£269 00	£245.00
YAMAHA RX21L	£269.00	£245.00
YAMAHA RX11		£499.00
CASIO RZ1	£395.00	£345.00
ROLAND OCTAPAD	£490.00	£POA
KORG DDM110	PHONE FOR BARGAIN PRICE	
KORG DDM220 PERCUSSION	PHONE FOR BARGAIN PRICE	
KORG DDD1 DIG DYNAMIC DRUMS NEW!!		P.O.A.
DR55	S/H	£49.00
ROLAND TR606	S/H	£149.00
KAY RHYTHM UNIT	S/H	£35.00
ROLAND CR5000	S/H	£199.00
ROLAND CR78	S/H	£149.00
MPC THE CLAP	S/H	£50.00
YAMAHA MR10	S/H	£59.00
KORG DDM20	EX DEMO	£175.00
BOSS PC2 PERCUSSION SYNTH	EX DEMO	£40.00
DIGISOUND VARIOUS UNITS	£99.00	£75.00
APT C'DUCER DRUM SYSTEM	£315.00	£250.00
EMU DRUMULATOR		£249.00
ROLAND TR606	(SEP. OUTS.) S/H	£149.00
SEQUENTIAL TOM	EX DEMO	£399.00
BOSS HC2	EX DEMO	£45.00
		SALE
DRUM KITS	RRP	PRICE
SONOR HITECH KIT 10 DRUMS	£2500.00	£1495.00
PERFORMER 7 PIECE	£1150 00	£999.00
YAMAHA 5000 4 PIECE	£499.00	£350.00
PEARL EXPORT 5 PIECE	£550.00	£399.00
PREMIER ELX 5 PIECE	£575.00	£399.00
YAMAHA 9000 SERIES 20% OFF!!	FROM	£1196.00
SONOR SIGNATURE 6 PIECE	£2799.00	£2650.00
PEARL DLX 5 PIECE	£800.00	£625.00
SONORLITE 4 PIECE JAZZ	£1950 00	£1550.00
SONOR PERFORMER	FROM	£699.00
REMO ENCORE KIT	FROM	£499.00
PEARL SUPER PRO		20% OFF
PEARL PRO, 6PC, WHITE		499.00
TAMA FIBRESTAR (EX SIMON PHILLIPS)		£POA
SONOR SIGNATURE 7 PIECE BUBINGA		£1399.00
TAMA SWINGSTAR 5PC SILVER S/H		£349.00
		SALE
ELECTRONIC DRUM KITS	RRP	PRICE
SIMMONS SDS9	£1199.00	£1199.00
SIMMONS SDS1000	£750.00	£750.00
SIMMONS TMI	£250.00	£250.00
SIMMONS MTM	£599.00	£599.00
SIMMONS SDE EXPANDER	£450.00	£450.00
PEARL DRX	£888.00	£299.00
UP K2X	£850.00	£699.00
SIMMONS SDS 5 PERFECT		£POA
ROLAND SWINGSTAR 5PC SILVER S/H		£349.00

DRUM STANDS	RRP	SALE PRICE
TRAK BOOM STAND SYSTEM 4	£55.00	£45.00
TRAK TELESCOPIC SYSTEM 4	£60.00	£50.00
TRAK HIHAT SYSTEM 4	£55.00	£45.00
CAPELLE EXCALIBER PEDALS	£70.00	£60.00
CAPELLE STOOL	£40.00	£33.00
PEARL B800	£50.00	£40.00
PEARL C800	£45.00	£37.00
		SALE
SNARE DRUMS	RRP	PRICE
MAXTONE 6.5" CHROME	£99.00	£85.00
YAMAHA 9000 14"x5" JADE GREEN	£189.00	£99.00
		SALE
PERCUSSION	RRP	PRICE
BLACK MAMBA BONGOS	£125.00	£85.00
GUIROS	FROM	£15.00
TAMBOURINE HALF MOON	£15.00	£10.00
CLAVE	£7.50	£5.00
LARGE RANGE OF LATIN PERCUSSION ALWAYS AVAILABLE		
		SALE
PERCUSSION	RRP	PRICE
BASCHET SOUND SCULPTURE NO 1		£175.00
BASCHET SOUND SCULPTURE NO 2		£199.00
BASCHET SOUND SCULPTURE NO 3		£159.00
PAISTE 36" GONG + STAND		£399.00
PAISTE 28" GONG + STAND		£199.00
		SALE
PRACTICE DRUM KITS/PADS	RRP	PRICE
PRACTICE KIT 5 PIECE	£150.00	£99.00
LIMPET PADS	£6.50	£4.99
DEADHEADS	£50.00	£40.00
		SALE
CYMBALS	RRP	PRICE
SABIAN AA 18" THIN CRASH	£130.00	£106.00
SABIAN AA 16" EXTRA THIN	£120.00	£89.00
SABIAN AA MINI HI-HATS	£125.00	£99.00
SABIAN AA 20" CHINA	£150.00	£119.00
SABIAN AA 18" MED. THIN	£130.00	£108.00
SABIAN AA 21" DRY RIDE	£160.00	£125.00
SABIAN AA 20" MED. RIDE	£150.00	£119.00
SABIAN AA REGULAR HI-HATS	£180.00	£154.00
SABIAN AA FLAT HI-HATS	£180.00	£154.00
SABIAN AA 16" THIN	£120.00	£89.00
SABIAN AA 12" SPLASH	£75.00	£59.00
SABIAN AA 20" FLANGE RIDE	£150.00	£119.00
SABIAN AA 18" MED. THIN	£130.00	£108.00
SABIAN AA 20" MED. RIDE	£150.00	£119.00
SABIAN AA 10" SPLASH	£69.00	£49.00
SABIAN HH 19" MED. THIN	£175.00	£150.00
SABIAN HH 18" MED. THIN	£160.00	£139.00
SABIAN HH REGULAR HI-HATS	£250.00	£199.00
SABIAN HH 20" HEAVY RIDE	£185.00	£162.00
SABIAN HH 18" CHINA	£160.00	£139.00
SABIAN HH 22" CHINA	£250 00	£192.00
SABIAN B20 CHINA	£99.00	£80.00
SABIAN B8 – COMPLETE SET	UNDER £100.00	
NEW DB PLUS – NOW IN STOCK	£POA	
PAISTE 2002 SOUNDEDGE HATS	£260.00	£225.00
PAISTE 2002 20" POWER RIDE	£150.00	£135.00
PAISTE 2002 18" MED RIDE	£100.00	£80.00
PAISTE 200;2 14" HEAVY HIHAT	£170 00	£143.00
PAISTE 2002 20" CRASH	£150.00	£135.00
PAISTE 2002 16" CRASH	£100.00	£90.00
PAISTE 2002 14" CRASH	£80.00	£72.00
PAISTE 505 14" MED HI-HAT	£100.00	£82.00
PAISTE 505 18" CHINA	£85.00	£72.00
PAISTE 505 18" HEAVY RIDE	£80.00	£70.00
PAISTE 404 18" CRASH	£65.00	£58.00
PAISTE RUDE 18" RIDE/CRASH	£100.00	£92.00
PAISTE RUDE 20" CRASH/RIDE	£115.00	£100.00
PAISTE RUDE 16" CRASH/RIDE	£90.00	£80.00
PAISTE COLOR 18" BLACK	£95.00	£70.00
PAISTE COLOR 14" HI-HATS	£120.00	£90.00
PAISTE COLOR 16" RED	£80.00	£80.00
PAISTE COLOR 20" RED	£60.00	£40.00
ZILDJIANS – COMPLETE RANGE	PHONE FOR PRICES	
ROGERS – COMPLETE SET	UNDER £100	
		SALE
GUITARS	RRP	PRICE
TOKAI TST50	£371.00	£199.00
GIBSON FLYING V INC CASE	S/H	£399.00
ARIA ZZ DELUXE INC CASE	£399.00	£298.00
WASHBURN FORCE 3	£299 00	£175.00
FENDER ELITE TELE	£749.00	£495.00
ARIA PRO CAT INC CASE	£199.00	£169.00
IBANEZ RS1300	£475.00	£249.00
IBANEZ AS50	S/H	£299.00
LADO HANDMADE CUSTOM	S/H	£299.00
GIBSON LES PAUL CUSTOM	S/H	£395.00
YAMAHA SG2000	S/H	£349.00
ARIA PRO II	S/H	£139.00
YAMAHA SG1300T	EX DEMO	£325.00
WESTONE TH.1A FRETLESS BASS	S/H	£145.00
ARIA SB60 FRETLESS BASS	S/H	£249.00
FENDER PRECISION, BROWN	S/H	£185.00
TOKAI ORIGINAL	S/H	£135.00
		SALE
BASS GUITARS	RRP	PRICE
YAMAHA BB5000 W/CASE	£999.00	£999.00
YAMAHA BB1100	£439.00	£329.00
YAMAHA BX1 HEADLESS W/CASE	£639 00	£579.00
IBANEZ RB750	£399.00	£249.00
IBANEZ RB850	£425.00	£295.00
HOHNER 'STEINBERGER'	£225.00	£199.00
IBANEZ ROADSTER RB620	£249.00	£199.00
CLARISSA ACOUSTIC/ ELECTRIC BASS	£399 00	£299.00
WESTONE SUPER HEADLESS W. A. PLUS	£549.00	£299.00
YAMAHA BB300		£159.00
YAMAHA BB1VS W/CASE		£139.00
IBANEZ RB650	£199.00	£189.00
		SALE
ACOUSTIC GUITARS	RRP	PRICE
OVATION BALLADEER ELEC., W/CASE	£749.00	£675.00
OVATION ULTRA DELUXE ELEC., W/CASE	£475.00	£425.00
OVATION ULTRA STD. ELEC., W/CASE	£395.00	£349.00
YAMAHA FG410	£129 00	£115.00
YAMAHA FG420 ELEC. CUTWAY	£269 00	£215.00
YAMAHA FG440 12 STRING	£249.00	£179.00
CLARISSA ACOUSTIC/ELECTRIC 12ST	£399 00	£299.00
		SALE
ACOUSTIC GUITARS	RRP	PRICE
IBANEZ V810	S/H	£179.00
TAKAMINE JAZZ	£525.00	£449.00
TAKAMINE CUTAWAY CLASSIC	£381.00	£225.00
WASHBURN SOLID FOLK	£325.00	£199.00
		SALE
COMPUTER MUSIC	RRP	PRICE
ATARI 520 SYSTEM + PRO24	NOW	£799.00
ATARI 1040 SYS + PRO24	NOW	£1099.00
ROLAND MC4B PLUS OP8	NOW	£299.00
ATARI PLUS STEINBERG		£POA
YAMAHA CX5M11	£449.00	£399.00
YAMAHA YK10 KEYBOARD	£85.00	£75.00
YAMAHA YK20 KEYBOARD	£165.00	£149.00
YAMAHA YRM501 MUSIC COMPOSER	£39.00	£35.00
YAMAHA YRM502 FM VOICING	£39.00	£35.00
YAMAHA YRM504 MUSIC MACRO	£39.00	£35.00
YAMAHA FD05E DISK DRIVE	£399.00	£359.00
YAMAHA PN101 PRINTER	£269 00	£239.00

COMPUTER MUSIC	RRP	SALE PRICE
APPLE IIE + MONITOR, PADDLES & DISK DRIVES	NEW!!!	£799.00
COMMODORE 64 + DISK DRIVE & CLAB SOFTWARE	EX DEMO	£395.00
YAMAHA CX5M 128	NEW!!!	£449.00
BBC B + OPUS DISK DRIVE & VIDEO DIGITISER + SOFTWARE	EX DEMO	£495.00
EMR BBC B MIDI SOFTWARE	NEW!!	£149.00
ROLAND CMU802 SYNC BOX	£89 00	£29.00
ROLAND COMPUMUSIC + SOFTWARE (FOR APPLE OR CM64)		£99.00
IBMPC + 2 DRIVES 128K + MONITOR (MUCH SOFTWARE)		£899.00
SPECTRUM + MIDI INTERFACE + SEQUENCER SOFTWARE		£99.00
BBC B + DATARECORDER + EMG MIDI SOFTWARE + TATUANG MONITOR	EX DEMO	£399.00
ROLAND CMU802 COMPUSYNC		£35.00
		SALE
MULTITRACK RECORDING	RRP	PRICE
AKAI MG1212	£5995	£3999
FOSTEX 160	NEW	£499.00
FOSTEX A80	£1699.00	£1499.00
FOSTEX A20	£995 00	£895.00
FOSTEX 260	£799.00	£699.00
FOSTEX X15	£269.00	£245.00
YAMAHA MT1X	£499.00	£449.00
FOSTEX A80 PLUS SECK 12/8/2 PACKAGE		£1999.00
FOSTEX A80 +LUS FOSTEX 450 PACKAGE		£1999.00
FOSTEX E16	£4999 00	£POA
TASCAM 38		£POA
TASCAM PORTA ONE		£POA
TASCAM PORTA TWO		£POA
		SALE
MULTITRACK RECORDING	RRP	PRICE
FOSTEX B16 + REMOTE	S/H	£2999.00
FOSTEX A80 S/H		£1299.00
FOSTEX 250 MULTITRACKER + FLIGHTCASE		£549.00
YAMAHA MT44D 4 TRACK	EX DEMO	£595.00
YAMAHA MT44 S/H		£399.00
SOUNDCRAFT 2400 24 TRACK DESK	EX DEMO	£9999.00
SOUNDCRAFT 2" 24 TRACK RECORDER	EX DEMO	£7999.00
MCI 2 NTRACK CONSOLE	EX DEMO	£POA
TASCAM 2 TRACK	S/H	£POA
TASCAM 38 8 TRACK	S/H	£POA
FOSTEX A8	S/H	£899.00
RSD 4 TRACK CASSETTE PLAYER	S/H	£299
		SALE
MIXERS	RRP	PRICE
FOSTEX 450	£799 00	£719.00
SECK 18:8:2	£1699.00	£1199.00
SECK 12:8:2	£899.00	£899.00
DYNAMIX 24:8:16:2	£1499 00	£1299.00
DYNAMIX 16:8:2 FLIGHTCASED		£999.00
PROMARK MX3	£466.00	£375.00
BOSS 8:2		£299.00
CANARY 12:2 POWERED	£499.00	£399.00
		SALE
SEQUENCERS	RRP	PRICE
ROLAND MC500	£999 00	£799.00
KORG SQD1	£699.00	£555.00
KORG SQD1 S/H		£399.00
YAMAHA QX5	£489.00	£419.00
YAMAHA QX21	£259.00	£229.00
YAMAHA QX1	£2499.00	£1299.00
CASIO SZ1	£295.00	£245.00
		SALE
DIGITAL DELAY + REVERBS	RRP	PRICE
YAMAHA REV7	£1199.00	£949.00
YAMAHA SPX90	£599.00	£599.00
ROLAND SRV2000	£1400.00	£999.00
YAMAHA REV1 + REMOTE	£7588.00	£3999.00
ROLAND SDE1000	£485.00	£399.00
ROLAND DEP5	£675.00	£POA
ROLAND SDE2000		£299.00
ROLAND SDE2500	£549.00	£499.00
ROLAND SDE3000	£899.00	£749.00
BOSS RDD10 DELAY	£185.00	£149.00
BOSS RSD10 SAMPLER/DELAY	£199.00	£199.00
KORG SDD2000 SAMPLER/DELAY MIDI	£799.00	£399.00
IBANEZ DM2000 DELAY	£499.00	£299.00
DELTA LAB DELAY	£249.00	£199.00
KORG SDD1000	£399.00	£299.00
IBANEZ DM1100	£325.00	£249.00
KORG GR1 REVERB	£299.00	£199.00
CARLSBRO PRO FX ADR1	£347.00	£220.00
VESTA KO2D DIG 420 SAMPLER/DELAY	£320.00	£249.00
RAINBOW 2 SEC SAMPLING DELAY		
		SALE
POWER AMPLIFIERS	RRP	PRICE
YAMAHA P2150	£429.00	£399.00
ROLAND SPA240		£299.00
ROLAND SPA120		£275.00
ROLAND SRA RANGE		P.O.A.
		SALE
AMPLIFICATION	RRP	PRICE
CARLSBRO WASP LEAD	£87.00	£75.00
CARLSBRO SCORPION LEAD	£137.00	£125.00
CARLSBRO HORNET LEAD	£201.00	£181.00
CARLSBRO STRINGRAY 2x12 LEAD	£449.00	£299.00
CARLSBRO SCORPION BASS	£121.00	£110.00
CARLSBRO COBRA 90 BASS	£263.00	£235.00
CARLSBRO STRINGRAY 150 BASS	£426.00	£385.00
CARLSBRO HORNET 45KYBD	£221.00	£189.00
CARLSBRO COBRA 90KYBD	£340.00	£275.00
CARLSBRO 150 KYBD	£532.00	£415.00
SESSION ROCKETTE 30	£175.00	£155.00
SESSION 90W 1x15" BASS	£375.00	£325.00
SESSION 75-2x10	£315.00	£275.00
FENDER YALE REVERB	£299.00	£198.00
FENDER SIDEKICK 65	£305.00	£275.00
FENDER STUDIO LEAD	£445.00	£299.00
CARLSBRO MARLIN 150PA	£324.00	£289.00
CARLSBRO MARLIN 300PA	£447.00	£395.00
CARLSBRO TAURUS ST4080 PAIR	£456.00	£355.00
CARLSBRO TAURUS ST2120 PAIR	£375.00	£242.00
BOSS MS100A MONITOR	£115.00	£99.00
CARLSBRO MARLIN 150PA	£342.00	£285.00
CARLSBRO MARLIN 300PA	£442.00	£395.00
ROLAND CPM120 POWERED MIXER	£579.00	£499.00
ROLAND PA250 POWERED MIXER	£915.00	£795.00
ROLAND CUBE60K KYBD AMP	£375.00	£299.00
ROLAND CUBE AND DAC RANGE		P.O.A.
SESSION 1x12 BASS COMBO + EXT CAB		£345.00
CARLSBRO 150 KYBD HD	£311.00	£233.00
CARLSBRO 90W BASS HD		£135.00
CARLSBRO 6–150 PA HD		£265.00
		SALE
AMPLIFICATION + PA EQUIPMENT	RRP	PRICE
ROLAND BOLT 60	S/H	£199.00
FENDER SIDEKICK 30 BASS	S/H	£150.00
FENDER SIDEKICK 50 BASS	S/H	£199.00
BURMAN BASS RIG COMPLETE	S/H	£495.00
FENDER BASSMAN 135+4x12	S/H	£295.00
TRACE ELLIDT GP11	S/H	£650.00
ROLAND SPIRIT 50	S/H	£175.00

FENDER 1x15 BASS CAB	S/H	£149.00
1x15 PA CABS 200W EACH	S/H	£175.00
2x12 75W CAB EACH	S/H	£95.00
H/H VS MUSICIAN	S/H	£95.00
H/H MID RANGE HORN	S/H	£50.00
H/H 4x12 CAB	S/H	£95.00
BADGER DOWNBEAT	S/H	£95.00
KUDOS 6x6 PR	S/H	£475.00
ROLAND SPA240	S/H	£299.00
ROLAND PA250 POWERED MIXER		£499.00
OHM 2x15 CAB	S/H	£85.00
30W BASS COMBO	S/H	£85.00
FENDER HARVARD REVERB 2	EX DEMO	£135.00
		SALE
MIDI HARDWARE + SOFTWARE	RRP	PRICE
PITCHRIDER 2000 FOR MONO INPUT TO MIDI		£399.00
LEMI MIDI INTERFACE FOR APPLE IIE		£299.00
		SALE
COMPUTER SCREENS	RRP	PRICE
TATUNG RGB		195.00
ROLAND DG CC141		£395.00
ROLAND DG R2-121G SCREEN		195.00
		SALE
PLOTTERS	RRP	PRICE
ROLAND DG DXY100	£399 00	199.00
ROLAND DG DXY880	£943 00	£899.00
ROLAND DG DXY800	£448.00	£399.00
		SALE
LIGHTING EQUIPMENT	RRP	PRICE
PROJECT LS808 LIGHT MIXER FLIGHTCASED		£499.00
PROJECT LIGHTING RIG LS888 + 8 STAGE BLAZER AND STANDS AND LEADS		£999.00
PROJECT 4 WAY LIGHT BOX		£199.00
COMPLETE FLIGHTCASED SET OF 3 RED HEADS + STANDS UNOMATT		
LX601GS VIDEO LIGHT		£75.00
GREAT WEST LIGHTING 12 CHANNEL LIGHTING		
RIG + 50 KANS		1500.00
PROJECT 8 WAY PINSPOT + FRAME		£99.00
		SALE
EFFECTS PEDALS	RRP	PRICE
BOSS CE3 CHORUS	£105 00	£85.00
BOSS DC2 DIMENSION 'C'	£129 00	£129.00
BOSS DD2 DIGITAL DELAY	£175.00	£139.00
BOSS DF2 DISTORTION/FEEDBACK	£77.00	£59.00
BOSS DSD2 SAMPLER/DELAY	£200 00	£160.00
BOSS HC2 HANDCLAPS	£78.00	£49.00
BOSS HF2 FLANGER	£89.00	£89.00
BOSS HM2 HEAVY METAL	£68.00	£55.00
BOSS OC2 OCTAVER	£75.00	£59.00
BOSS CE2 CHORUS	£100,00	£79.00
BOSS PH2 SUPER PHASER	£110.00	£89.00
YAMAHA CO1OMII COMPRESSOR	£43.00	£39.00
YAMAHA O1ODMII DISTORTION	£43.00	£39.00
YAMAHA GO1OMII OVERDRIVE	£43.00	£39.00
YAMAHA CH1OMII CHORUS	£59.00	£54.00
YAMAHA FL10MII FLANGER	£59.00	£54.00
YAMAHA GE10MII GRAPHIC EQ	£59.00	£54.00
FRONTLINE VOLUME PEDAL	£22.95	£22.95
FRONTLINE WAH WAH PEDAL	£31.95	£31.95
YAMAHA PARAMETRIC EQ	£59.00	£30.00
IBANEZ TUBE SCREAMER	£55.00	£30.00
LOCO FLANGER	£59.00	£45.00
KORG DISTORTION	£67.50	£54.00
KORG OVERDRIVE	£65.00	£52.00
KORG CHORUS	£69.95	£55.00
KORG PHASER	£89.95	£69.00
IBANEZ – COMPLETE RANGE IN STOCK AT SALE PRICES		
DOD PEDALS HALF PRICE INC. FREE MAINS SUPPLY!!!		
ARIA BIG FOOT PEDALS JUST ARRIVED		
COMPLETE RANGE IN STOCK		
DOD FX90 DELAY	£119.00	£59.00
DOD FX65 STEREO CHORUS	£89.00	£45.00
DOD FX80 COMPRESSOR	£69.00	£35.00
DOD FX75 STEREO FLANGER	£89.00	£45.00
DOD FX65 AMERICAN METAL	£89.00	£45.00
DOD FX45 STEREO REVERB	£175.00	£87.00
AMDEK GRAPHIC EQ KIT	£99.00	£49.00
AMDEK TAK100 TUNING AMP	EX DEMO	£19.00
MXR PHASER	S/H	£49.00
ELECTRO HARMONIX BASS BALLS	S/H	£10.00
ELECTRO HARMONIX OCTAVER	S/H	£5.00
ELECTRO HARMONIX POWER BOOSTER		£5.00
YAMAHA REMB BOARD INC. PHASER, COMPRESSOR, FLANGER		
LINE SELECTOR		£99.00
BOSS CE2	S/H	£50.00
BOSS BF2	S/H	£55.00
PEARL OCTAVER	EX DEMO	£49.00
		SALE
WIRELESS MICROPHONES	RRP	PRICE
SUZUKI WGS800 GUITAR SYSTEM	£99.00	£75.00
RESLO CABARET COMPLETE	£2000.00	£295.00
TOA MIC SYSTEM		P.O.A.
YAMAHA GUITAR SYSTEM		P.O.A.
		SALE
RACK EFFECTS	RRP	PRICE
MXR FLANGER/DOUBLER	S/H	£175.00
ROLAND SE0331 GRAPHIC EQ	EX DEMO	£325.00
CHASER ECHO	S/H	£99.00
CUTEC GE2010 STEREO EQ	S/H	£75.00
		SALE
TAPE ECHOS	RRP	PRICE
ROLAND RE301	S/H	£299.00
ROLAND RE101	S/H	£199.00
		SALE
VIDEO EQUIPMENT	RRP	PRICE
JVC 6000E VHA 1IL RECORDER		£295
CEL P147 DIGITAL TIME BASE CORRECTOR AND SPECIAL EFFECTS CONTROLLER		£POA
JVC 1100 PORTABLE 3 TUBE COLOUR CAMERA PACKAGE		£2500
SONY 5030 "V" MATIC PLAYER PLUS REMOTE CONTROLLER SEGMENTER		£950.00
JVC 2700E 3 TUBE VIDEO CAMERA	EX DEMO	£2999.00
SONY SERIES 5 EDIT SUITE WITH RM440 CONTROLLER + SONY		£990.00
5030 PLAYER IN WINSTED RACK	EX DEMO	£7995.00
SONY 4800 PORTABLE UMATIC RECORDER/PLAYER	EX DEMO	£1150.00
SONY C9 BETAMAX RECORDER	EX DEMO	£395.00
SONY 3000 PORTABLE BETAMAX PLAYER/ TUNER	EX DEMO	£195.00
BARCO 26" RGB/COMPOSITE PROFESSIONAL MONITOR	EX DEMO	£395.00
SONY 20" PROFEEL MONITOR	EX DEMO	£00.00
BARCO 2032 14" RGB COMPOSITE MONITOR	EX DEMO	£195.00
CEL P135 CHROMASCOPE VIDEO SWITCHER SPECIAL EFFECTS GENERATOR	EX DEMO	£495.00
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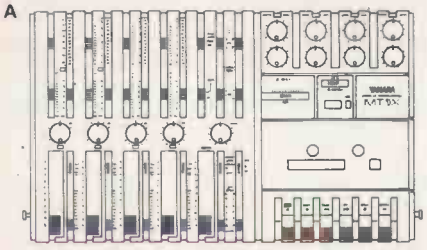

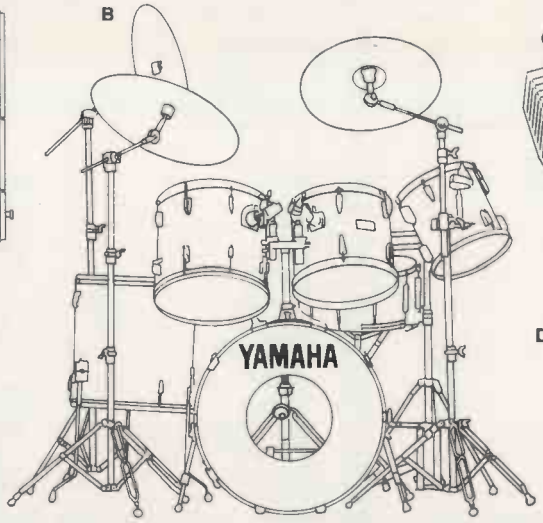

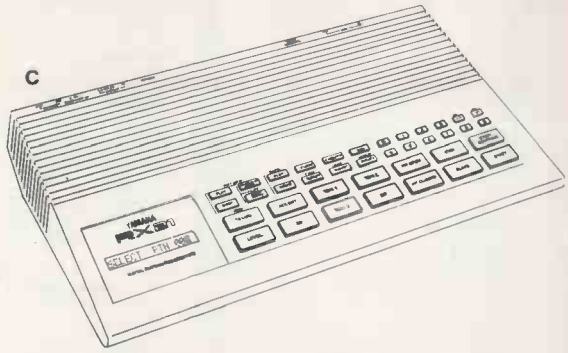

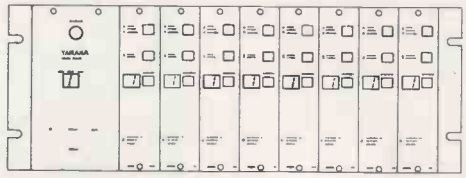

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A MT1X
4 track multitrack recorder. Normal tape speed, EQ, DBX. Noise reduction.

B Yamaha Drums
4000, 5000, 8000, 9000 Series now in stock at all our drum stores.

C RX21 Digital Rhythm Programmer
9 PCM sounds, MIDI, 40 preset patterns. 56 user programmable patterns.

D TX816
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E CX5 Mk11/128
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F KX88 MIDI Master Keyboard
88 note weighted keyboard – the best! Breath control and foot control inputs, dual and split modes, 2 control wheels, many other features most sophisticated MIDI keyboard on the market and now at ridiculously low price.

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192 preset, Rom and 24 Ram voices, cassette dump. The perfect introduction to FM technology or as an expander to an existing MIDI set-up.

H S250X Compact PA Speaker System
250W power handling, 2 way bass reflex design, carbon fibre cones. Rugged and portable.

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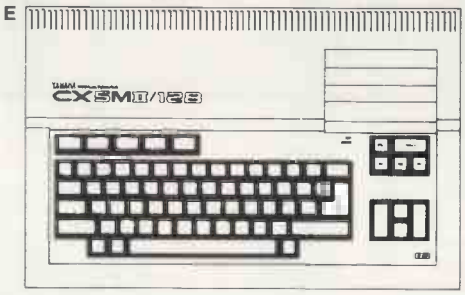
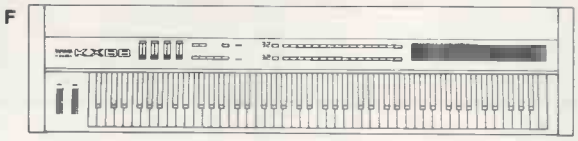
FM Tone Generator 4 operators, 240 presets, 8 note polyphonic one voice, 4 note poly dual voice, mono with 8 voices and split modes, MIDI.

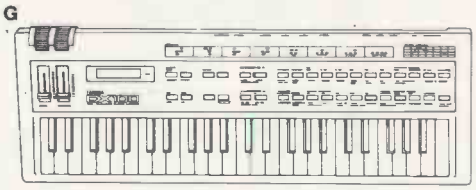
J SE Guitar Range
4 pickup configurations, lock vibrato, traditional no-nonsense styling, 6 colour choices.

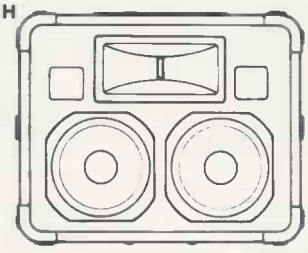
K MEP4 MIDI Event Processor
60 MIDI set-ups, complete function control of 4 separate MIDI devices, unprecedented versatility.

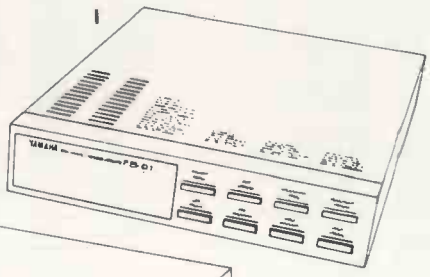
L SPX90 Digital Multi-Effects Processor
30 Rom preset effects, 60 Ram memories, 9 control parameters, MIDI compatible, the complete processing device.

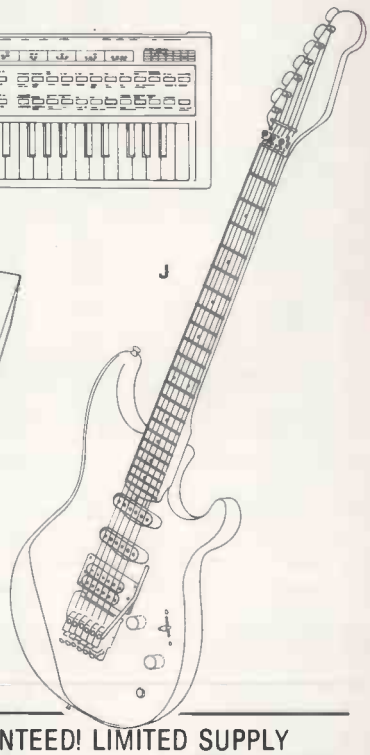


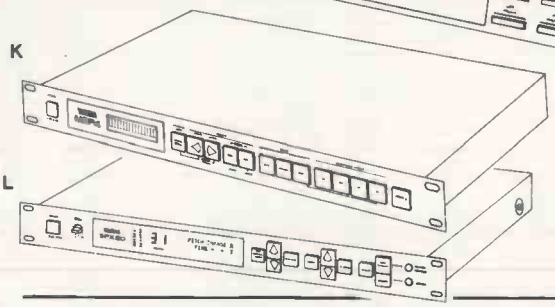












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TX216 2 x DX7	~~£1899~~	£889	**BX1** Bass guitar	~~£809~~	£499	**DX27** FM synth	~~£575~~	£499
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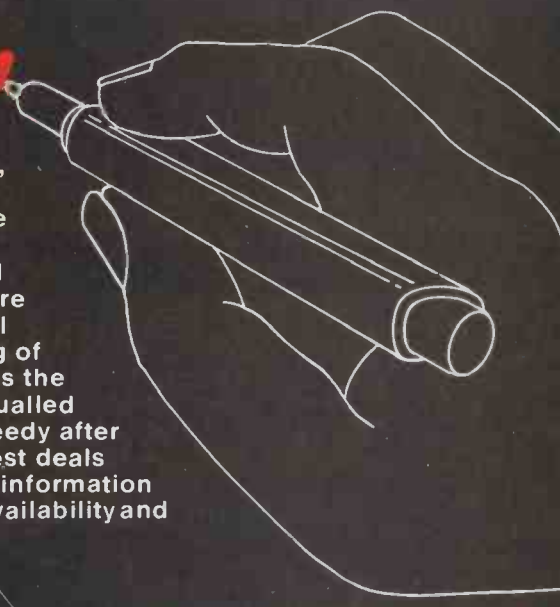
Design, form and function



For years Roland have consistently produced startlingly innovative products, pioneering a music technology perfect in its design form and function. Clearly, with this unique musical pedigree, Roland deserves it's claim 'We Design The Future'.

As Roland's biggest and oldest main dealer Future Music has built an equal expertise in the retailing of Roland's products. It has the largest stocks, an unequalled product knowledge, speedy after sales service and the best deals around. Call us now for information on any Roland product availability and a special deal.

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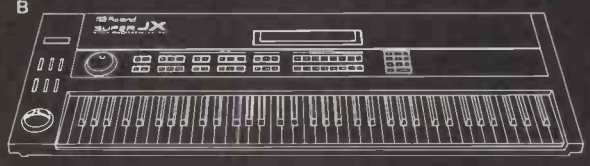

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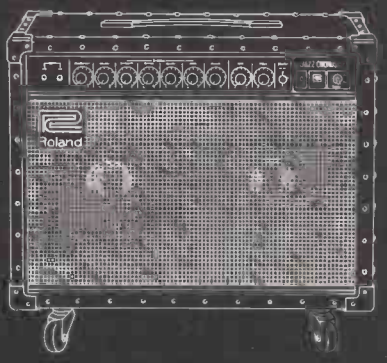

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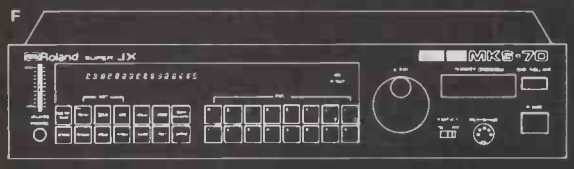

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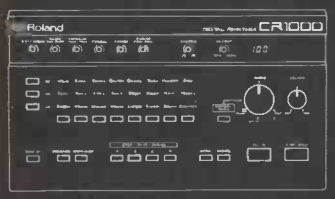

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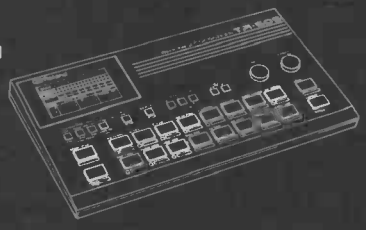

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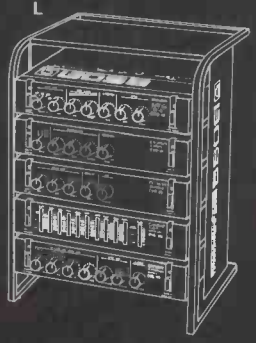

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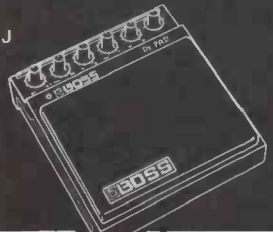

K

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SRV2000 Digital reverb	~~£1400~~	£799	MPU 103 MIDI converter	~~£250~~	£175	RBF10 Flanger	~~£130~~	£89
DDR30 Complete kit	~~£1799~~	£999	MPU 105 MIDI output	~~£110~~	£75	PRQ 10 Parametric eq	~~£130~~	£89
MKB 200 MIDI Controller	~~£798~~	£499	GR707 MIDI guitar synth	~~£947~~	£549	BOSS DB11 Metronome, timer	~~£39~~	£19
CPM 120 120W Powered mixer	~~£599~~	£399	G700 MIDI floor unit	~~£2050~~	£1199	BOSS CE 300 Rack chorus	~~£299~~	£199

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Roland

A S-50 Sampling Keyboard
16 voice polyphonic, velocity and pressure sensitive 61-keyboard, 32 envelope generators, built in disk drive for 3½" disk. RGB monitor display output. 4 outputs. 16 split points. up to 30 second samples.

S-10 Sampling Keyboard
8 voice polyphonic, velocity sensitive. 49 keys and 8 envelope generators 8.8 seconds sampling 2.8" Quick Disk drive.

B JX-10 Polyphonic Synthesizer
76-keys, 64 memories. 12 voice polyphonic split mode, velocity and pressure sensitive.

C MC-500 Micro Composer
3½" disk drive, 8 songs or 25,000 notes. 4 tracks, polyphonic MIDI.

D GM-70 MIDI Guitar Converter
GK-1 Synthesizer Driver
Fits any guitar and controls GM70, 64 memories, fully polyphonic.

E DEP-5 Digital Effect Processor
Digital reverb, delay equalizer and chorus. 16-bit A/D-D/A converter, 99 memories. MIDI Stereo.

F JX MKS-70 Polyphonic Synthesizer Module
Rack-mount version of JX-10. All functions fully programmable with PG800.

G JC-77 Guitar Amplifier
80 watts, 2 10" speakers, chorus, reverb. 40 watts per channel, stereo.

JC-55 Guitar Amplifier
50 watts, 2 8" speakers, chorus, reverb. 25 watts per channel, stereo.

H CR-1000 Digital Drummer
16 PCM digital sounds, 24 pre-set rhythm patterns, fill-in, shuffle. MIDI tempo display.

I TR-505 Rhythm Composer
16 PCM sounds, 96 rhythm patterns, 6 songs, MIDI.

J Dr. Pad Electronic Percussion
6 PCM sounds per pad, pitch decay, range controls, Trig in 3 versions, total 18 sounds.

K DR220A Dr. Rhythm Acoustic
DR220E Dr. Rhythm Electronic
11 PCM sounds, 64 rhythm patterns, 8 songs, LCD display.

L Micro Rack
Bass Micro Rack
New additions, REC10 digital chorus ensemble.
RPS 10 digital pitch shifter/delay
RSD-10 digital sampler/delay

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Q *I have recently become interested in synthesisers and synth technology and, though I find Music Technology interesting and informative, I feel a great deal of the more technical information goes straight over my head.*

Is there a book available which will provide me with a thorough grounding in all aspects of synth technology and its peripheral subjects?

■ **S Davies**
Bath

A *MT's own Sight Reading column is dedicated to nothing less than book reviews. As you can see, this month there is a collection of books reviewed and, although there's nothing specifically suited to your needs, on the 'impending' list is Dean Friedman's 'Synthesiser Basics' (available from Book Sales) which may be just the job.*

The book covers both analogue and digital techniques with additional sections devoted to MIDI and samplers. You can either hang on for the review, or rush out and spend £11.95 at your own risk.

You should also check out David Crombie's 'The New Complete Synthesizer' (£7.95) published by Omnibus Press and also distributed by Book Sales, 78 Newman Street, London W1P 3LA. ☎ 01-636 1845.
■ Tg

Q *Why is it that as often as not the programs published in Patchwork sound nothing like their title?*

I get teed off when I program the latest sound into my DX7 only to find that it sounds nothing like I'd hoped. A case in point: September's 'More than a Grand' sounded like a piano 22 feet in length and made entirely of metal. For instance, the transpose point should have been around C3 not C2, while the operator level for operator three is much too high at 97 and should be set at 75 to 80. The keyboard scaling on that operator is way off too; the break point should be an octave lower, around E3, with the left-hand slope much gentler and the right-hand slope much steeper – around 65 for both sounds pretty good.

It's not all grief though, as most of your CZ101 patches are consistent – the 'Reverb Flute' in the same issue is excellent. Could your printing be at fault?

■ **Paul D Lehrman**
Cambridge, Massachusetts

A *No, Paul, it's not our printing. The fact is that sound programming is a very personal affair – as it should be – and what sends you into raptures of delight is quite likely to invoke terminal mirth in another programmer.*

Surely the point is that having programmed in the patch in question, to assess it and discard it or modify it to suit your needs.

Of course, if you believe you've made a worthwhile improvement to the original sound, you could always re-submit it to 'Patchwork' for the assessment of the remainder of the readership – including the original programmer. Now that could prove interesting...
■ Tg

Q *I have just completed my degree in Computer Science and Electronic Engineering. In my final year I became very interested in music technology, and wrote a drum sequencer package as my third year project. Having come out of university I would like to persue my interest further.*

I have had very little formal music training and hence would like to do a course which comprised partly of music theory and partly of music technology. Eventually I would like to write music software or work for a hi-tech music company.

Are there any serious courses which suit my purpose?

■ **Aurielio F Campa**
London

A *We frequently get enquiries about courses and their content but it's very difficult to keep track of who's running what at any given time; and to recommend a particular course without having full details about both the course syllabus and the requirements of the enquirer would be pretty foolhardy.*

In order to provide a comprehensive guide to anyone in need, we are currently appealing for information on courses of all descriptions – music technology, music theory, electronics & music, recording and so on... If you're running a course or know of any that fit the bill, please drop us a line (marking your correspondence 'Course Survey'). ■ Tg

Q *I've recently purchased a Sequential Sixtrak and the instruction manual talks about MIDI Mode 4 where you can assign a different MIDI channel to each oscillator. Once this is done, is there any way I can assign a different sound to each oscillator so I can sequence it from a QX21?*

■ **Charlie Shilling**
London E11

A *Well, the answer is obviously yes, as the SixTrak can manage this technical feat in its own internal Stack mode (where each oscillator is set to a different preset sound). But unless your sequencer specifies which programs are to be played by each voice, then the currently selected program will be played by all tracks. Our American Editor took time off surfin' to explain:*

The practice is that each time you record a track on the QX (before you actually play any notes), you select the desired program number and MIDI channel on the SixTrak; on playback the recorded tracks will be sent from the QX on individual MIDI channels to the six oscillators, each of which will be assigned a different preset.

The SixTrak must be prepared for all of this. To elaborate, in order to record your tracks, you need to set the Sixtrak to Mode 3 (enabling Program Changes over MIDI), set the MIDI channel (let's say channel 1 for the first track), and select the required preset that you'd like it to play back on. Then simply record your first track (remember to select the program number before you begin playing); any program changes selected during recording are stored along with the MIDI data by the sequencer.

Follow this procedure for the other five tracks, selecting the required preset and a consecutive MIDI channel (say, from 2 through to 6), until you've completed your recording.

For Playback, simply set the Sixtrak to Mode 4, set the Sixtrak's MIDI receive base channel to the lowest channel number used by the sequencer (channel 1), and the QX21 will output the six monophonic sequence lines to channels 1-6, assigning the correct preset sound to each one.

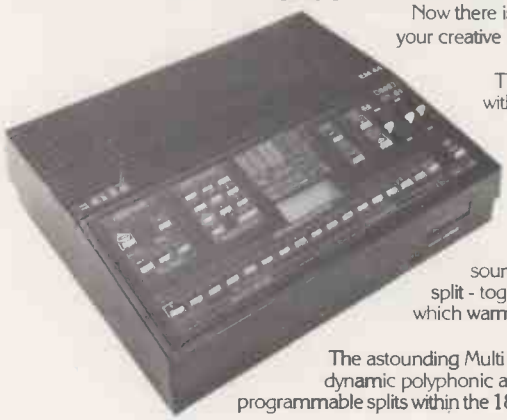
Now it's worth remembering that you needn't have the SixTrak in Mono Mode while recording or overdubbing; Omni mode will do fine while recording, but the disadvantage is that you'll hear all tracks playing the same program while overdubbing. Mono Mode, where each track plays a different sound monophonically, is really only required for playback.

Perhaps a more straightforward method would be to record six tracks on the QX21 (on MIDI channels 1-6) but without including the program numbers required. Then for playback, simply select Stack Mode on the Sixtrak, and then assign a different preset sound to each oscillator. Set Oscillator 1 to receive the MIDI base channel (in this case Channel 1), and Oscillators 2-6 will be automatically configured to receive data on MIDI channels 2-6. A drawback with using Stack mode though, is that if program changes are required during playback, these will have to be inserted by editing the QX21's sequence data for the appropriate track. ■ Rd

▶ *Following the advice given in last month's MT regarding synchronising a Drumtraks to a Pro-One, a helpful reader from Coventry has added that the Drumtraks' time signature should be configured to match the pattern recorded by the Pro-One's sequencer (by selecting 16/16 instead of 4/4, for instance). So apologies if you've been struggling with that one...* ■

Total music communication...

Advances in technology have meant that musicians demand greater and more complete MIDI communications and the ability to have total and effective control over the sound architecture of digitally generated instruments.



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The EK 22 combines sophisticated analog and digital technology resulting in highly innovative timbric generation. Two DCO's provide a host of defined and variable waveforms with two 8 element digital envelopes complete with time rescaling.

With the programmable split the keyboard divides into two sections with different timbres and MIDI channels.

Common concepts to both instruments are touch, velocity and pressure sensitive 61 note weighted keyboards, 32 character LCD, Arabian scaling, 64 permanent, 32 programmable memory locations, 16 performance registrations plus a further 64 sound storage areas accessible on ROM/RAM packs.

MIDI IN-OUT-THRU ports are provided with stereo line and headphone outputs, foot communications to volume, sustain, portamento and performance registration advance.

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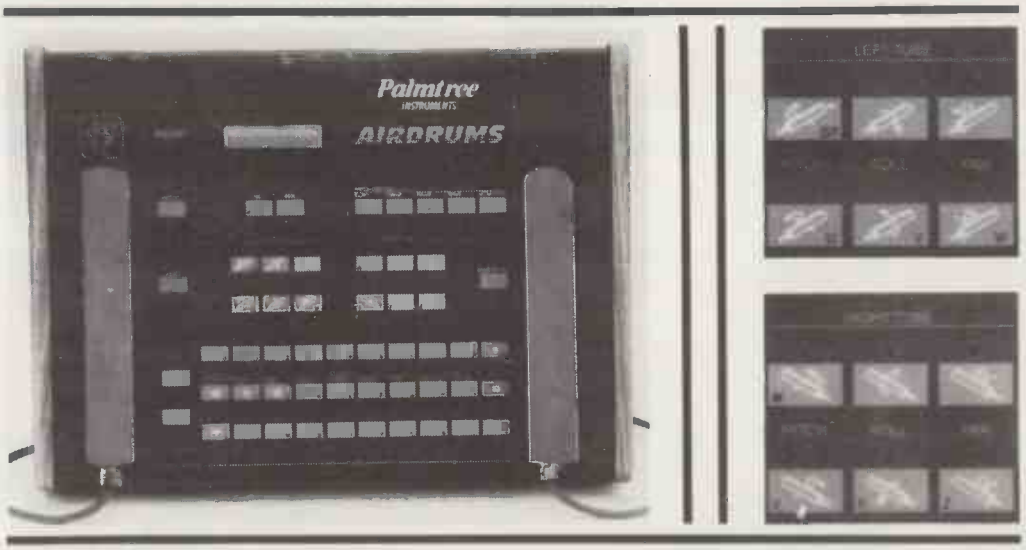
Palmtree Instruments Airdrums



THERE'S NO DOUBT about it. Since Simmons unleashed their first hexagonal drum pads upon the music industry, we've been seeing more and more sophisticated percussion controllers being developed. Dynacord have the Rhythm Stick. Roland have the Octapads. And Simmons' own MTM has taken things even further by letting drummers trigger chords or sequences of notes from the same pad.

Now an American company called Palmtree Instruments have designed the Airdrums – two hand-held tubes which trigger MIDI instruments merely by the user shaking them up, down, left, right, or by rotating them. But these two tubes shouldn't be underestimated; each one can trigger six different MIDI events, which can be programmed ahead of time into any of 30 patches. Alternatively, they can process MIDI messages received via MIDI In.

The Airdrums' sensors are triggered by acceleration rather than force-sensing, so playing them is more like playing hand-held percussion instruments than it is like playing drums.

Maracas, for example, don't make any sound if you move them at a steady speed, but start making noise when you make abrupt movements. Likewise with the Airdrums: when you move either tube, nothing happens until you stop moving them; at which point the internal sensors detect a negative acceleration, and programmed MIDI events are sent from the Airdrums' MIDI Out.

Each tube has six internal acceleration sensors, and each one can be programmed to generate specific MIDI events (such as playing a C♯ chord on a synth or triggering a kick drum on a drum machine), or to replay notes or chords received at MIDI In (creating rhythmic accents on music played by another musician). So altogether, there are 12 complex events to be played from these two innocent-looking padded tubes.

An indentation along the side of each tube accommodates your thumb, and acts as a "this side up" reference point. The front panel sports 30 program-selection switches, which double as parameter selectors when you're creating or editing patches. Although these switches are numbered 0-29, there are only 29 patches (1-29). The "0" switch toggles between the current patch and the one selected just before it. A 32-character LCD shows all the various patch names and parameters as you program them.

There are 12 tube sensor switches, with LEDs which light whenever activated from the corresponding tube. The switches select whichever sensor you wish to program, and when in Play mode, mute the sensor. Sometimes it's useful to mute one or two sensors to suit a particular application, so there's no chance of accidentally triggering unwanted MIDI events. (It's also possible to program either auxiliary footswitch to mute any combination of sensors on either tube, simply by programming the footswitch to do so.)

Programming the Airdums isn't difficult, once you understand the types of message you can program it to transmit, and how to use the internal message busses. These allow you to program some sensors to turn others off – thus a C chord triggered by shaking the left tube to the left could be turned off by rotating the right tube to the right, which might trigger a crash cymbal sample at the same time.

Some rather neat features have been included, like a Swap function which allows you to swap the functions of any two sensors. And the trigger threshold and response curves are programmable for each sensor, as is the type of event it triggers (Note On, Note Off, or Note On followed by a Note Off with programmable gate time).

As mentioned earlier, it's possible to capture MIDI events sent by another instrument, and then re-transmit these by triggering any sensor.

The Airdrums deal with MIDI in a manner that is likely to make them welcome in many a MIDI studio setup, and the range of possibilities they open in live performance is enormous.

As percussion controllers they're unique, yet they do not rely solely on novelty to make them attractive. And after the first couple of minutes spent getting used to the feel of the tubes (the acceleration-sensing technique *does* feel different from actually hitting things), playing the Airdrums becomes very intuitive.

So yes, the Airdrums should make plenty of friends when they make their way into the hands of some imaginative musicians. And coming from out of the blue as they have, they should enjoy a lot of attention for some time. As soon as their UK distributor has been named, we'll let you know. ■ *Rick Davies*

Price *$1895*
More from *Palmtree Instruments, 5666 La Jolla Boulevard 81, La Jolla, CA 92037. ☎ (619) 452-5199*

Roland

Roland Juno I	£599
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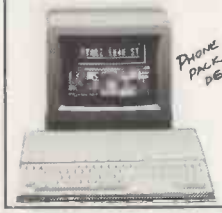

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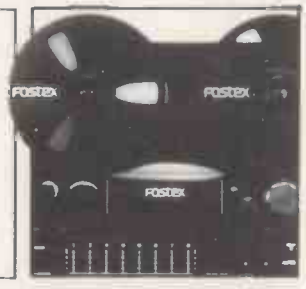

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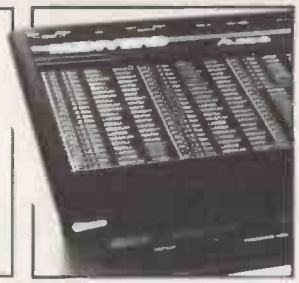

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Based on Sequential's proprietary sampling technology, each of the Studio 440's eight voices delivers the superb clarity and transparent high-end which is the hallmark of *true* twelve-bit digital resolution. Additionally, the Studio 440 provides the user with *all* of the features required to produce professional audio products. Features like:

- Selectable sampling rates of up to 41.667 kHz so you can optimize memory and achieve full bandwidth on playback.
- Computer-assisted looping functions (including cross-fade looping) so that you can easily produce your own library of custom sounds.
- Multiple sample locations for storing up to 32 different samples in memory at one time.

- True stereo outputs (2) plus separate audio outputs per voice (8) for individual processing of each.
- 32 levels of programmable panning per voice.
- Separate analog and digital controls per voice, including fully sweepable filters and VCAs for modifying any sample.
- Lots of on-board memory (768K bytes) with instant access to hard disks or CD-ROMs via the built-in Small Computer Systems Interface (SCSI).
- A 3½ inch double-sided disk drive for storing all work quickly and reliably.
- *Real-time sample monitoring.* You hear exactly how your sample sounds at different sampling rates both prior to and during the actual sampling process.

The Studio 440 is an amazingly fully-featured sampler. We urge you to compare its sound quality with samplers priced to $15,000. We think you'll agree that the STUDIO 440 is in a class all by itself.

The Master of Controllers

MIDI Sequencing

The STUDIO 440 sequencer controls parallel the transport controls of a typical multi-track tape recorder, emphasizing ease of use. It operates in MIDI Modes 1, 3, and Multi-mode (an enhanced Mode 4), and records up to 50,000 notes with as many as 999 measures per sequence, 99 sequences, a song build function, manual tap or programmable tempo control, single-step and real-time recording. Its two independent MIDI outputs can control up to 32 channels of external MIDI equipment. Each of the sequencer's eight tracks can hold any combination of internal sound events and external MIDI events. And for ease of editing, all MIDI channel information is retained per track.

SMPTE Time Code

The STUDIO 440's audio-for-visual features are impressive, both as a master controller and as an audio slave. It reads *and* writes all four types of SMPTE time code, and can synchronize to five different sources: 1) internal clock, 2) slave to external SMPTE, 3) external MIDI clock, 4) external MIDI Time Code, and 5) external clicks of 96, 48, or 24 ppqn.

Production Machine

MIDI Time Code

In addition, the Studio 440 is the first sampler or sequencer to incorporate the new MIDI Time Code, a protocol that encodes SMPTE and sends it over MIDI for use in cue or event lists. Now it is possible to cue punch-in/punch-out recording by bar number, or with sub-frame resolution by programming to SMPTE Time Code. You can even selectively pre-trigger external synthesizers to compensate for their internal timing delays. The Studio 440's capabilities will be further enhanced when used in conjunction with forthcoming librarian, editing, and post-production software packages by companies such as Digidesign, Hybrid Arts, Dr. T's Music Software, and Opcode.

The Ultimate Drum Machine

If you combine a high quality digital sampler featuring individual outputs with a 50,000 note SMPTE/MIDI-based sequencer, all you need to create a superior drum machine is velocity and pressure-sensitive pads. The 440 has eight, organizing its 32 sound samples into four kits and four banks over these eight sound pads. In addition, every sound has two sets of sound parameters that include sample playback direction, pitch-bend envelope, loop types, loop points, start-point modulation, and the familiar VCA/VCF controls.

The four programmable kits allow for infinite variations of the same sound by editing only the performance parameters. Performance parameters can be assigned to any pad and include sound number, pan, pitch, volume, and a choice of one of the two sound parameter sets. These performance parameters are easily edited in real-time, and settings for all eight pads can be stored and recalled instantaneously from any one of the kits. And since the alternate parameters can have individual start/end points for each sound, there are actually up to 64 "different sounds" available at one time.

Sequential's factory library includes over 300 sounds, and is immediately available. In addition, any Prophet 2000 or 2002 sample can be loaded directly into the 440, so the actual number of sounds now available is too numerous to list. The STUDIO 440 is the *ultimate* drum machine.

The Best Value

The STUDIO 440 is a complete, four-in-one professional audio production machine that is small enough to fit under an airline seat, light enough to carry under your arm, yet big enough for any job. The STUDIO 440 is now available through selected Authorized Sequential Dealers. Insist on a demonstration in stereo.

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Akai MX73 MIDI Master Keyboard

AS THE NUMBER of low-cost MIDI synths and expanders continues to grow, manufacturers seem determined to open up the market for budget controller keyboards to play them from. Alongside the Bit controller (reviewed elsewhere this issue) and Roland's MKB200, Akai have come up with the six-octave MX73.

It's a very plain-looking instrument, but don't let that fool you – Akai have given their controller a flexible set of facilities, and a straightforward set of controls to make use of them.

While the MX73's keyboard probably won't satisfy those musicians whose ideal is a piano-style mechanism, it's still an effective compromise between piano and synth – and there's no harm in that, given that many musicians nowadays are more at home with the latter.

Precise details of design philosophy vary from controller to controller, but most musicians expect the keyboard to offer dynamic control. The MX73 offers attack velocity, but surprisingly, Akai haven't included aftertouch among their controller's facilities – presumably the keyboard isn't capable of conveying this information.

But the MX73 *has* been given a generous quantity of four keyboard zones (Akai call them "areas"). Each of these can be given an upper and a lower note limit, allowing you considerable freedom deciding where on the keyboard you want to allocate a zone, and which range each zone will span (from as little as a single note to the full keyboard).

Four zones may sound like a bit much, but even if you only want to use two (for standard split/layer textures) it can be handy to have more zones for highlighting certain notes, or for sending independent patch-changes to MIDI effects units, for instance.

Zones can easily be turned on or off by switching their MIDI channel assignment on/off. Alternatively, if you want to make use of some zone features but don't want to play a zone, you can set its range to one or other extreme of the keyboard.

Each zone can be assigned its own MIDI transmit channel (1-16) and its own MIDI program number (0-127). A master transpose control (up or down 11 semitones in semitone steps) affects all four zones alike, and you can also transpose individual zones up or down three octaves in octave steps – giving a total MIDI note transmit range of 0-120.

Attack velocity can be adjusted for each zone on a scale of 1-10 – a useful way of centrally adjusting parameters such as volume and filter cutoff, which attack velocity frequently controls.

On the left of the control panel is a master volume slider which works by sending MIDI volume controller messages on all channels. This means you can, for instance, fade out all your instruments from the MX73 – assuming all your slaves can respond to the MIDI volume command.

In addition to the regular pitch-bend and mod wheels (which can be turned on or off independently for each zone), Akai have given the MX73 a generous number of assignable controllers: four footswitches and four foot-pedals, one of each per zone. If you don't have that many pedals to hand (or foot), you can make use of four front-panel sliders and switches instead. The effect of these controllers can also be switched on/off independently for each zone.

While you can allocate any of the four assignable footswitches to sending sustain messages, Akai have also included a single dedicated sustain pedal input to fulfil this function. You can turn the sustain effect from this pedal on/off independently for each zone.

All these parameters are storable in up to 100 programs, which may be called up from the front-panel keypad or stepped through from a "program up" footswitch input.

The MX73 has two dedicated MIDI Outs, but there's also a third MIDI socket labelled "External". This is effectively a third MIDI Out, but when you select the "External" control, you can dedicate it to sending MIDI patch changes which you enter from the front panel, independently of the MX73's programs.

Tape in/out jacks allow program data to be stored to cassette (though there's no provision for dumping program data via MIDI – but then, neither is there a MIDI In).

With the MX73, Akai have come up with a controller that is easy to understand and use, yet offers a healthy degree of performance flexibility, over and above what you'd find on a synth.

But the Bit Master Keyboard's inclusion of MIDI In enables its many facilities to be incorporated into a sequencer-based environment – an area the MX73 doesn't involve itself in. And what may prove disappointing to some musicians is the lack of aftertouch on the MX73 – it is, after all, a feature that's increasingly being taken for granted on synths and samplers. ■

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MEL FX1001 Signal Processor

THE LAST YEAR has seen signal-processing technology develop at a frantic pace, with, as usual, the Japanese and the Americans making most of the running. Now British company Multi Enterprises Limited (MEL) have entered the fray with the FX1001 Multi Effects Processor, which offers up to 10 effects within its 2U-high, 19" frame. These effects come in the form of slot-in PCB cards (one effect per card), each with its own jack input and output sockets.

Our pre-production review model came with six effects: chorus, flanger, phaser, delay, two-band parametric EQ, and shaper, each with its own set of parameters. MEL are not alone in doing this, since Yamaha (SPX90) and Roland (DEP5) have already introduced multiple effects within a single 19" box; the DEP5 even allows two effects to be chained together.

But the FX1001 allows you to chain any number of its effects together, or use them independently to provide up to 10 separate signal paths (one for each effect). You can also adopt any combination of these two approaches at the same time. For instance, chorus, delay and EQ can be linked in an effect chain, while flanging and phasing are used individually – providing three independent signal paths.

You can store these routings, together with the parameters for each effect, in 50 onboard memories. These can be called up from a synth or sequencer using MIDI patch-changes, though on MIDI channel 1 only. The flexibility of this is reduced, however, by the FX1001's inability to 'cross-patch' incoming patch numbers with its own memories. Memory 22, for instance, can only be called up by patch number 22 – and any patch numbers higher than 50 produce no response from the unit. And our review sample was sluggish in responding to valid patch numbers, too.

As a useful onboard alternative to MIDI selection, you can sequence the machine's memories in up to 10 separate 'tracks' of 25 steps each, advancing through a track using a footswitch which plugs into the FX1001's rear panel. Good for live use, if not for MIDI-based recording.

The FX1001's internal storage capacity might seem enough to many people, but MEL have also given their unit an onboard disk drive. You can save all 50 memories and 10 tracks to a 3.5" disk as a file, and store 25 files per disk. With each file taking under 10 seconds to load, you've got ready access to a large number of effect chains and tracks for minimal storage cost. The ability to load in a new file quickly could be a boon for professional studios, for example.

But now we come to the nub of the matter. The FX1001's analogue effects (for that, unusually for this day and age, is what they are) turn out to be competent but uninspiring. The thing they lack most is bandwidth, which means a loss of brightness and clarity next to digital equivalents. And the delay section, in particular, also suffers from noise. Sad to say, the chorus, flanger and phaser sections taken individually sound little better than the average guitar footpedal – though chaining them together can produce more satisfactory results.

What doesn't help is that the FX1001 has mono outputs only, both for each effect and for the master (chain) output. And the lack of a dry/effect mix will do nothing to endear the machine to recording engineers.

But the good news is that MEL are working on a digital delay module for the FX1001. This should bring the sound quality side of the machine's performance into line with its sophisticated programming, chaining, tracking and storage facilities.

As it stands, it's a little hard to see where the market for the FX1001 lies. Its format should have been enough to win it many friends in professional and semi-pro recording studios, but at the moment, its sound quality lets it down, and with MIDI sequencing becoming an increasingly common aspect of recording, so does its MIDI implementation.

The live stage is more likely to be the kind of setting where the FX1001 will prosper, though it's still dependent on users (and in this case musicians, rather than engineers) programming it to get the best from its analogue effects circuitry.

The likes of Roland and Alesis have already shown us that, where modern sound treatment is concerned, the guiding principle is: "never mind the width, feel the quality". It's a lesson that, at the moment, MEL would do well to learn. If they do, then the FX1001 has the potential to be improved simply, quickly, and with great benefit to those who use it. ■ *Simon Trask*

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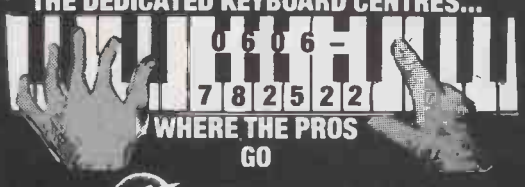

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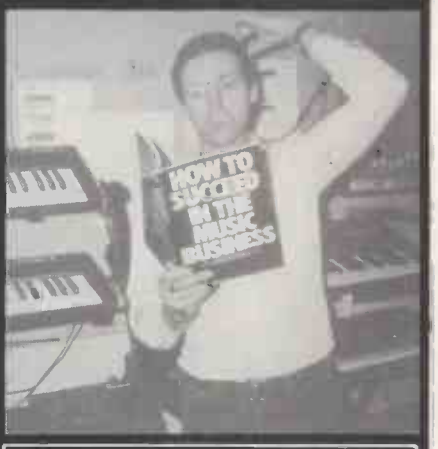

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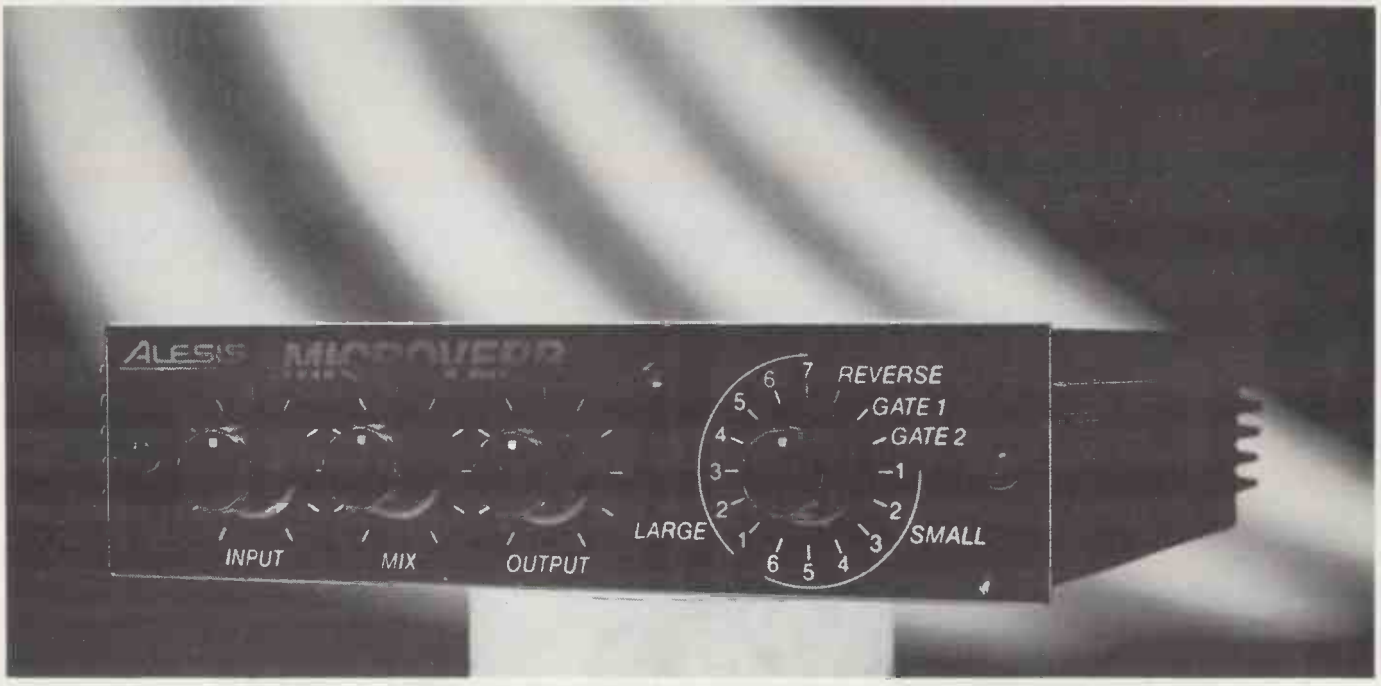

REVERBERATION IS STILL the most important effect used in sound recording. And until recently, one of the main factors separating the sound of a cheap demo studio from that of a professional facility was the quality of the reverb used.

But thanks to machines like the Alesis MIDIverb, the digital reverb revolution is well underway, and plenty of small-studio users are finding it possible to match the kind of reverb quality achieved on records.

And if the £395 the MIDIverb costs is still beyond your grasp, Alesis can now offer you the Microverb. It's a small (about the size of a car radio), black, aluminium-cased device with only three pots, an LED and a rotary selector switch on its front panel. The LED is tri-coloured and acts as a basic input level indicator (like a breathalyser, but without the consequences).

There weren't many frills on the original MIDIverb, but what there were have had to go on the new machine: so there's no MIDI control of programs, and only 16 preset effects (no names, just numbers).

Like the MIDIverb, the Microverb has stereo inputs and outputs, though the reverb input is derived from a mix of the left and right input channels in the usual way. This means, though, that you can use the unit with a stereo instrument without having to resort to a separate mixer. The reverb output is stereo whether the input is stereo or not, but there is one further refinement: having a stereo input normally means that a dry signal connected to just one input comes out of only that side while the reverb is working in stereo – on the Microverb, one input is configured such that when used on its own, it's routed to both outputs equally.

There are both input and output level controls, and this, combined with a high input impedance, means you can plug virtually anything into the Microverb and be sure of a decent match. I tried an electric guitar and the +4dB output from a mixing desk with equally good results. The output level control ensures the level is always right for the next piece of equipment in the chain, so the Microverb is equally at home in the studio or at a local pub gig. And particularly handy for live use is a rear-panel remote socket, which takes an ordinary footswitch to act as a bypass control.

The MIDIverb's smooth, quiet sound was the benefit of using a 12-bit conversion system, but the Microverb uses 16 bits, which not only produces a smoother reverb sound, but also a staggering 90dB dynamic range: about as quiet as a CD player. The same RISC (Reduced Instruction Set Computer) is used to achieve the high computing speed needed to recreate dense, complex reverb patterns, and the system has the same 10kHz bandwidth as far more expensive machines.

The effects themselves come in four categories: small spaces, large spaces, gated and reverse. The first six ('small') offer a good choice of ambient, room and plate sounds, with the smallest sounding like a coal bunker and the largest like a school gym. There are also a couple of plate-like treatments with fast attacks followed by smooth, bright decays. These work particularly well on drums and can add sparkle to vocals.

The seven 'large' effects start out with something resembling a stately home and end up with a massive 20-second cavern. In between are long plates and different rooms and halls, including one or two with pronounced, characterful early reflections. The larger halls have a slow build-up to the reverb part of the sound, while the plate and room sounds have a much faster attack.

The single reverse setting has around half-a-second of decay, and is certainly pretty spectacular. Lastly, the gates are best described as short and medium, and give the now traditional (boring?) gated drum sound. However, they can also sound effective on guitar and vocals, so don't be put off experimenting.

The Microverb is the cheapest digital reverb currently in production. It doesn't supercede the MIDIverb; it just makes the basics of that machine's appeal available to a wider audience of studio users. In fact, I can see a lot of keyboardists and guitar players going for the Microverb, even if they don't have access to any recording facilities. Using it is simplicity itself; listening to it – especially next to a spring reverb – is a revelation. ■ *Paul White*

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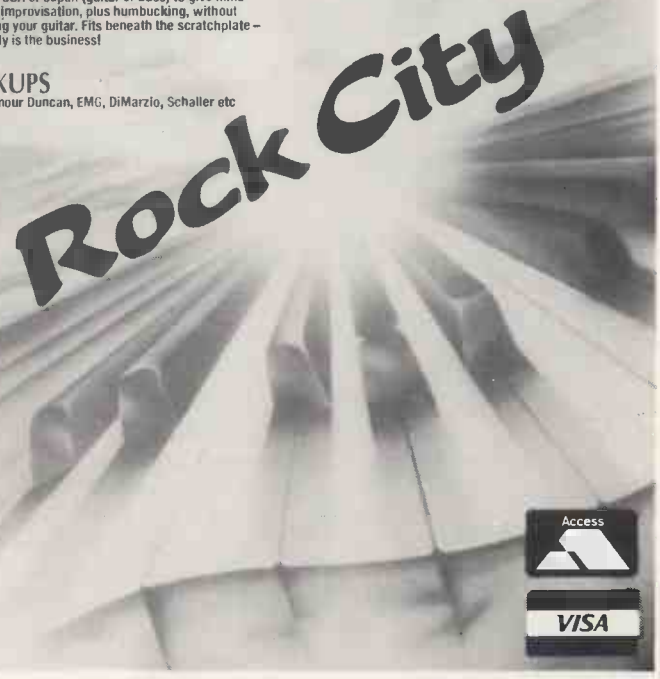


KAWAI K3

Digital Wave Memory Synthesiser

Additive synthesis finds another outlet in the K3, a polyphonic synth whose friendliness is aided by Hybrid Arts' visual editing software. But do the sounds come up to scratch? Review by Rick Davies.

IF THERE'S ONE THING more pleasantly surprising than the number of budget sampling keyboards to appear over the last couple of years, it has to be the variety and popularity of synths employing digital oscillators and analogue signal processing. Especially pleasing are the very different approaches taken towards implementing this hybrid: PPG's wavetables, Sequential's Vector Synthesis, and so on.

Over the past year or so, some simpler, less expensive methods have emerged which may have done little to transcend the limitations of static digital waveforms, but have at least put the "digital sound" into the realm of budget synths. In some ways, this is also true of Kawai's K3 digital wave memory synthesiser, but Kawai have taken steps to ensure that the K3 is not merely another six-voice, five-octave, velocity- and pressure-sensitive MIDI keyboard synth.

For a start, they've included 32 preset digital waveforms covering a wide range of "real" and synthetic timbres, but to take it one step further, the K3 allows the user to create custom waveforms using additive synthesis techniques (either on the K3 itself, or using Hybrid Arts' K3 Wave Edit Program for the Atari 130XE computer).

Voice Description

VOICE STRUCTURE IS based on the two-oscillator, mixer, VCF, VCA formula made popular by such synths as the Prophet 5 and Oberheim OBx, though as mentioned above, the analogue oscillators have been replaced by far more stable digital oscillators, which are also capable of producing a greater variety of waveshapes. So from the word go, the K3 produces basic timbres beyond the scope of most analogue machines.

Having two independent digital oscillators which can each take on any of 33 digital waveshapes gives the K3 the added advantage of being able to blend two very distinct timbres, which may also be detuned by coarse or fine amounts for an even wider timbral palette.

A nice touch in the pitch department is the K3's auto-bend feature, which bends into the note played by a programmable amount (positive or negative). Thus the K3's brass patches can achieve an "overblow" effect. All six voices can be played in unison when the Mono parameter is switched on, and Polyphonic glide can also be achieved, using the Portamento and Porta Speed parameters.

The LFO is the primary modulation source, and can be routed to the oscillators (both at once only), to the VCA, and to the VCF. It can be programmed for the standard triangle, sawtooth and square waveforms, but also has random and "chromatic random" waveforms for a variety of sample/hold-type effects. The inclusion of an LFO delay was a good move, since this turns out to be the main way to increase the amount of LFO modulation gradually.

A Balance control sets the basic timbre prior to dynamic filtering in the VCF section. Because of the timbral contrasts possible between the K3's oscillators, the Balance control setting can have as drastic an effect on the overall sound of the program as the filter cutoff frequency; yet because of the complex harmonic structures of digital sounds, the effect is much harder to describe. One of the K3's strong points is that keyboard pressure can affect this balance. On some programs (internal patch 35 in particular), bearing down on the keyboard causes all voices to change tone with an effect not unlike the Sequential VS' mixer envelope modulation, though the K3 does not do so polyphonically. It would have been nice if the K3 did allow LFO modulation of the balance, but as it is, the pressure modulation gets full points in this area.

The four-pole VCF section features pretty standard controls – cutoff, resonance, envelope amount, and the standard ADSR envelope parameters – but an additional low-cut filter helps tailor the sound just a bit more. No frequency control exists here, only a cut amount. Few of the factory programs actually use this parameter, but it does help remove a bit of "boom" from some programs when played in the lower octaves.

The filter section is also subject to velocity and pressure modulation, affecting the cutoff naturally, and there are no surprises here, though I was a bit disappointed to find that velocity adds to the filter cutoff frequency, rather than scaling the cutoff after the addition of the envelope; I find the latter method more effective in most cases. For the most part, though, the filter helps bring out the analogue character of the K3 quite well.

The final stage of a K3 voice consists of the VCA with its ADSR, and the stereo chorus. Velocity-sensitivity of the final VCA, like the VCF, can be controlled by key velocity per voice, or by pressure for all voices.

The stereo chorus has seven preset settings which work adequately, though the lack of programmability in this area is a bit of a let-down. Still, the stereo effect is always an effective way to add depth to just about any sound, and this is precisely what the K3's chorus does.

The five-octave keyboard has a good, stiff action, but I found that the note turn-off threshold was a bit low for my technique, and while this does allow for faster-than-average retriggering, it takes a bit of getting used to.

Sounds

SO, KNOWING WHAT to expect from the K3, the next questions are: "how does it sound?" and "what's it like to program?"

The factory-supplied programs are as good a starting place as any. The K3 holds 50 patches internally, and can access an additional 50 on cartridge. Kawai are kind enough to supply a RAM cartridge with their production units, so owners can get on with programming from the moment they remove the K3 from its box.

Kawai have recorded the 50 internal factory patches in the K3's ROM as well as in RAM. To reload all 50 patches, simply hold down the first three keys on the 61-note keyboard while switching power on. This also ensures that no matter what horrible fate might befall the lithium battery within, the K3 can still produce useful sounds without the user resorting to an unscheduled programming session.

Patch selection on the K3 is of the single key-press type, and upon selecting a patch, the left-hand two display digits show the new patch selection, while the remaining four digits remain blank. The patch selector buttons double as parameter select switches, and for organisational purposes are ordered in columns rather than in rows.

The factory programs contain most of the analogue standards like strings, brass, electronic piano, and organ, along with some meaty solo synth sounds and admirable digital bell tones. But I wish more of the patches demonstrated the pressure/balance facility more often, as this is one aspect of the K3 which really makes the unit shine. Still, many of the patches make good use of the auto-bend and mono (unison) features, showing the K3 to be capable of some rich, warm textures as well as some strong lead sounds.

Pressing the Parameter Edit switch puts the K3 into edit mode, and the remaining display digits come to life, showing the last parameter selected and the current value. Parameter values are adjusted by a large "Increment" dial to the left of the switches.

Only patch parameters can be adjusted at this stage. There is yet another set of parameters which affect the K3 as a whole, and deal with its MIDI mode, channel, and other functions. This second set of parameters (known as "Masters") is selected for editing by pressing the Master Edit switch, which is logical enough. Just like the parameter select switches, the master switches use the patch select buttons in master edit mode. The K3 labels the masters in black lettering and the parameters in white, so there is an obvious distinction.

Although random access to parameters may not be anything new, a pleasant side-effect of this method is that each time a patch is selected, the last parameter edited (prior to that patch being written into memory) is automatically called up, though the display doesn't show this until the Increment dial is adjusted. This means you can have specific parameters ready to edit with the dial for certain patches.

For example, on one patch the dial could control the depth of LFO modulation, while on another it could change the wave used by either oscillator.

As it turns out, this is a good thing because, much to my disappointment, the K3 has only one wheel, and it is dedicated to spring-loaded pitch-bending. Thus the K3 relies entirely on the dial to add further performance control, and though the flexibility of the dial's programmable function is very useful, the dial is placed too far away from the pitch wheel to act as a true replacement for the modulation wheels so many musicians have known and loved.

Over MIDI, however, the K3 accepts mod wheel change messages, and automatically assigns them to control the depth of LFO-oscillator modulation. Although this is consistent with other synths, it's a shame that the advantages of the Increment dial control are lost over MIDI (at least when using a standard mod wheel).

The K3's switches are of the "under mylar" type (first popularised by the DX7), and part of the front panel is recessed to accommodate the mylar strip which bears the switch labels. This provides a convenient area into which the factory-supplied patch and waveform reference card fits neatly. To the far left of the control panel is the master volume switch, which works in conjunction with the rear panel Level switch to set the final volume range of the K3.

While we're looking at the back panel, we also find the two audio outputs (right and left, the latter doubling as a mono output when the right output is not in use), a memory protect switch, standard MIDI In, Out, and Thru jacks, and Release and Program Up footswitch inputs. Both footswitch inputs operate with a normally-closed momentary footswitch, so you have to be sure you have the right kind plugged in, or all the programs drone. It's interesting how Kawai have implemented the release footswitch function; depressing this switch essentially holds any notes played, so that the VCA and VCF envelopes remain in their sustain phase. This method is different from that used by many synths, which have two programmed release settings.

The Program Up footswitch normally just steps through the patches, but when the Link function is selected, the footswitch steps through a programmed series of patch changes. A nice touch for live performance.

Finally, the Link switch doubles as the Master Tune function selector when in master edit mode. ►

User Waves

THE K3 COMES supplied with 32 waveforms, ranging from woodwinds and brass to vox humana and pipe organ. Though these blend together well, you are still limited to 32 timbres (though that's not really much of a limitation compared to the sine, triangle and square waves available on analogue synths), and half of the trick to programming the K3 is finding the right combination of waveforms to start with.

The K3 reserves wave 32 for a user-definable waveform, which is designed with an additive synthesis facility to offer 128 harmonics of variable intensity. A second user waveform resides on cartridge (also in location 32), but unfortunately, there's no way you can combine the two into the same patch.

User waveforms are built up using two main parameters: Harmonic and Intensity. Creating waveforms is a bit more involved than merely adjusting these two parameters, though.

First, you need to select a patch which uses waveform 32, and then edit that patch so that the user waveform is isolated. Entering master edit mode lets you select the Harmonic/Intensity function, which displays the currently selected harmonic and the corresponding intensity. Pressing Harmonic/Intensity toggles between the two parameters, but no change can be heard in the waveform until you press the Write switch. The user waveform is then updated and can be heard.

Unfortunately, in order to return to editing the waveform, the Write switch must be switched off again. Though this is only a minor detail, if you plan on spending a lot of time editing the waveform, this second keypress can become a nuisance.

Kawai have incorporated a couple of helpful harmonic sculpting tools via a Copy function. This lets you design a contour – say a two-step drop per consecutive harmonic – and then, by adjusting the harmonic number with the Increment dial, apply these decreasing intensity values to all harmonics you step through.

An alternative method to using the K3's built-in waveform editing functions is Hybrid Arts' K3 Wave Table Editor program, written for the Atari 130XE computer and MIDI-Mate interface (available to special order in the UK from Syndromic Music). The program, which is considerably more colourful than other Hybrid Arts programs, makes waveform creation much easier by displaying all 128 harmonics simultaneously. The left and right cursor switches select the desired harmonic, while the up and down cursor switches adjust the harmonic intensity.

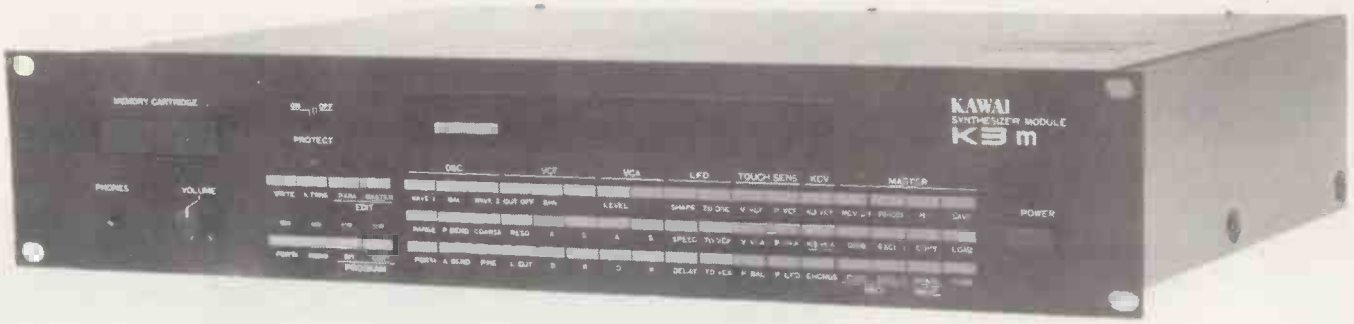
Again, in order to edit the user waveform, you must first select a patch which has waveform 32 isolated (ie. the Balance control set entirely to that oscillator). Then each time you wish to hear the edited waveform, you must type "W" on the Atari, then reselect the patch on the K3.

Since the waveform edits cannot take place in real-time (presumably due to lack of K3 processor power), a lot of switch-pressing is required to make new waveforms. Still, there are 128 harmonics to work with, though I had a hard time hearing any significant changes in tone when harmonics above number 60 were adjusted.

The program also features patch-programming facilities with envelope displays and so forth, but most important, there is a patch librarian.

All MIDI functions are set from the master edit mode, including the MIDI mode (Omni or Poly), the receive channel, and the transmit channel. All MIDI enable and disable controls depend on the Function parameter, which has five values, each one corresponding to a different combination of enabled MIDI messages.

Kawai's rack-mounting version of the K3, the K3m, differs from the K3 in that it sends and receives on the same MIDI channel, and a Note Priority parameter replaces the Send Channel parameter (43). And the K3m has an advantage over the K3 in that, having no keyboard or wheels, the missing mod wheel is not a problem.



Verdict

THERE IS STILL a need for synthesisers which offer a wide range of sounds without having to resort to complicated programming techniques. And although the user wave feature *could* have been much more effective had the K3 the capacity for more of them, it does give the programmer just that extra amount of control over new patches.

Both the K3 and K3m have a number of features which set them apart from the competition, and if they may be taken as an indication of where Kawai plan to go with future synthesisers, there's plenty more to look forward to as well. ■

Prices *Kawai K3 £1085; Kawai K3m £785, including VAT*

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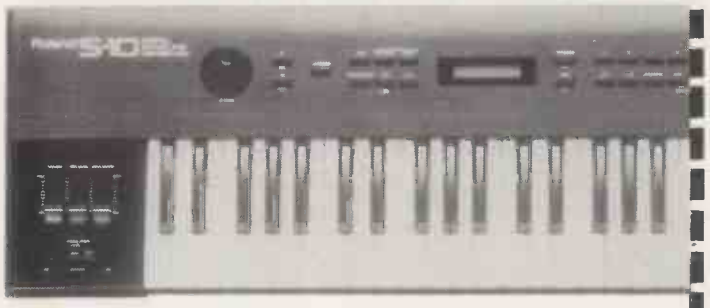

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Software for Yamaha DX/TX and Atari ST

Computers can't do all our synth programming for us, but ProCreator can make life more interesting by creating random patches. Is this the end of the FM programmer's blues? Review by Simon Trask.

WHAT DO YOU DO when you program a synth patch? You might think you're engaged in a creative, artistic, and highly skilled craft – which indeed you are. But these days, what you're really *doing* to get to that stage is punching in a load of numbers. Dull, repetitive, non-creative and non-artistic numbers.

It's a pretty laborious process as far as many musicians are concerned, so as with many laborious processes (though not some I could think of), you get a machine to do it for you.

That is the reasoning behind Steinberg Research's latest software package, the aptly named ProCreator, which has been written for the Yamaha DX7, TX7, TX216 and TX816 synths, and the Atari ST series of computers. ProCreator can generate lots of patches, both randomly and as variations on an existing patch. But what really matters is whether or not it can come up with any *good* patches. After all, how can a piece of software know what sounds good and what doesn't?

Really, there are no simple responses to a program like ProCreator. Given that it *can* produce good results and is therefore worth taking seriously, what are its implications for synth programming? Whether you're a seasoned DX programmer or a nervous novice, it's time to pause for thought...

Structure

THE FIRST THING to bear in mind is that ProCreator is *not* a DX7 Voice Editor. It does not take a DX's entire internal programming system and put it up on-screen in the form of big, friendly computer graphics for you to play around with.

The next thing is that, aside from generating synth patches, ProCreator also allows you to store them to disk. In fact, the librarian facilities by themselves make the software worth its asking price.

The main screen display lists two banks of 32 sounds each. One of these banks may be active at any one time; patches can be transferred either singly or in bulk between this bank and your DX/TX, or the Atari's disk drive.

Having two banks on screen is invaluable when it comes to organising the mass of patches you invariably build up. Using two simple commands; Copy and Swap, patches can be moved between the two banks with the greatest of ease, by pointing the Atari's mouse controller at the relevant patch name, clicking on the mouse, and 'dragging' the patch name from one position to another. In this way, you can compile new banks from existing sounds contained in various other banks; or devise a new order for a bank of sounds which is either held within the synth's internal memory or stored on disk; or build up a bank of patches selected from those generated by ProCreator.

Each 3.5" disk can store countless banks of sounds (well, I lost count anyway), which makes disk storage considerably cheaper than cartridge. Loading a bank from disk and transferring it to your synth takes a reasonable eight seconds, so now you can use disks at home and in the studio while saving your cartridges for gigs. It's a whole new world.

Another whole new world is, of course, ProCreator's ability to give birth to new sounds. As mentioned earlier, there are two ways in which ProCreator can go about this: either randomly or by varying an existing patch. In both cases, you can decide whether you want to alter voice parameters only, function parameters only, or voice and parameter functions together. (Remember that the DX7 will receive only a single set of function parameters at a time.)

The random method takes whichever patch is currently selected within ProCreator and randomises its parameter values, giving you up to 32 new patches at a time (you decide how many you want).

You can choose which patch parameters you want randomised and which not. So, for instance, you could decide not to randomise the algorithm, the LFO speed, and the frequency coarse values. Parameters which you decide not to randomise will be left unchanged, which means you can take any sound and be selective about what aspects of it you want altered. At the opposite extremes, you can randomise none of the parameters (which is rather pointless), or randomise all of them (in which case you're effectively starting from scratch, and will have absolutely no realistic idea what you're going to get).

It's a flexible system, but two further features would have made it more flexible still: first, the ability to decide which operators should have their parameters randomised (at present, any choice applies to all operators); and second, the ability to choose a value range for each parameter. These would give you more control – if you wanted it – in defining how a sound is going to change.

Mixing

THE OTHER METHOD of generating new patches is known as Mix, so called because you can take any number of patches up to 32, and ProCreator will attempt to combine them in a meaningful way.

Being of a slightly perverse disposition (you have to be to work in this business), I began by mixing 32 patches together at the same

time, and the results weren't very impressive. Maybe I just had the wrong combination of sounds to start with. Realistically, 2-5 patches seem to fit the bill.

What ProCreator won't do, just in case you were wondering, is take a piano and a strings patch, say, and come up with a result which gives you both sounds in one patch. What it does instead is mix together certain *characteristics* from both patches. You can also pick just one patch, in which case the software will give you up to 32 variations on that patch.

Quite what Steinberg are doing to achieve their results here isn't clear, and the manual gives nothing away. But the sounds that appear at the other end have the uncanny knack of striking a successful balance between similarity and variation, so that the patch you start off with does have a noticeable influence over the end result.

Possible improvements? Well, being able to choose from several degrees of change might be useful. That way, the slightest degree could provide you with minor changes which left your original hardly altered, while the greatest could provide you with altogether more adventurous variations.

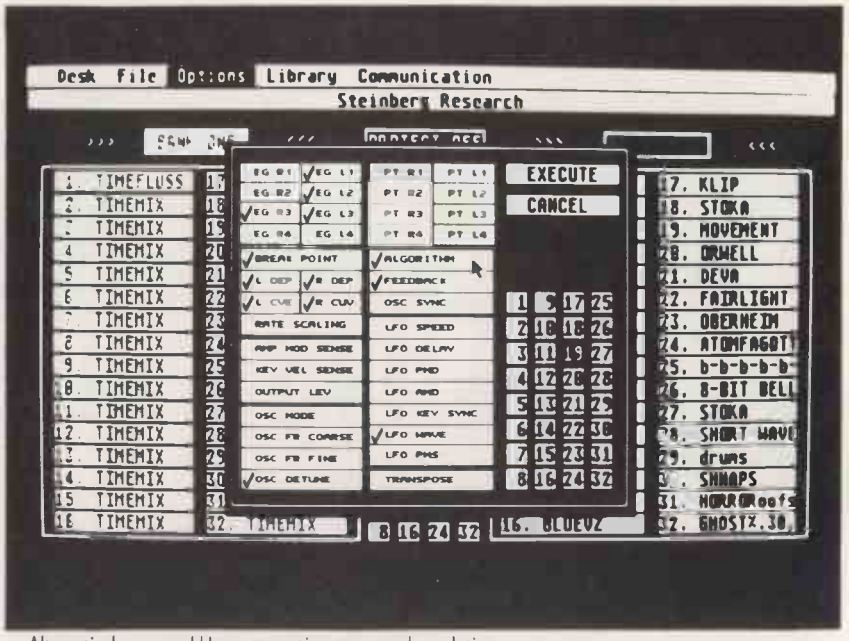
None of this would be possible without the host computer, since it's the Atari's computing power which is doing all the digital arithmetic necessary to carry out all the patch generation. And seeing as all these wondrous new sounds are being created within the computer's memory, you're going to need some way of getting them back into your synthesiser.

With ProCreator, you can send patches individually or in bulk to your DX/TX. The method of transmitting single patches is particularly neat: you select a patch from the relevant list on screen, and then "drag" it to an edit buffer box in the centre of the screen display, at which point it is automatically transmitted to the DX/TX's edit buffer. Talk about fast.

But in practice, I tended to keep my original in patch 1 and use positions 2-32 for new patches, transferring all 32 patches (ie. a bank) to the synth's internal memory, where I could flick through them and compare them to the original.

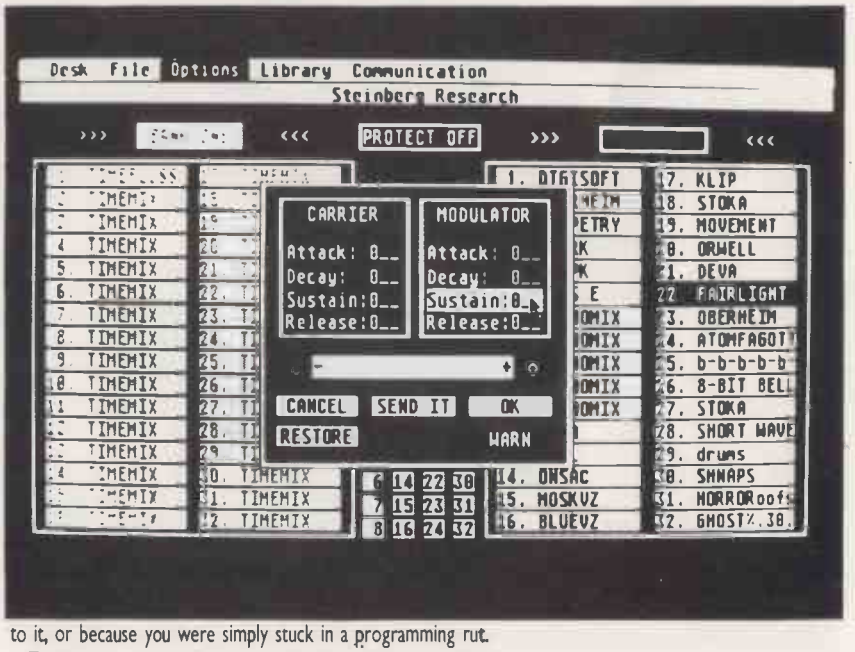
Although ProCreator isn't an editing program, Steinberg have nonetheless included what they call an ADSR Editor – and a very sensible inclusion it is, too. It presents a simplified form of the DX/TX's envelope structure, which you can modify by taking the carriers as a group and the modulators as a group – meaning that you can alter the amplitude and the timbre envelopes of a patch separately. These alterations can then be sent to your synth for immediate playback.

By now, TX owners will probably be wondering how they are supposed to play their sounds without disconnecting computer and instrument. The answer lies in a Play Module window which gives you a four-octave keyboard display. Notes are played on the keyboard by clicking the mouse on them, at which point the relevant note message is sent out over MIDI. You can even alter the attack velocity value, so you can hear how a sound alters with varying velocity.



Alternatively, you could keep generating new sounds, each time taking as your source the patch that's nearest to what you want. ProCreator is fast enough to make this approach feasible, but it's still a long-winded method, and there's no guarantee you'll get what you hear in your head.

That's not intended as a criticism of ProCreator. The important thing is that this software has the ability to *surprise*, coming up with fascinating sounds which you might never have programmed in the ordinary scheme of things, either because you hadn't conceived them in your head, or because your programming ability wasn't up



to it, or because you were simply stuck in a programming rut.

The program's strength lies in its ability to provide a broad and colourful palette of sounds, which can act as a solid base for further programming. Maybe that's why, in the final analysis, it's still the seasoned FM programmer who will be able to make the best use of ProCreator. In fact, ProCreator could well become an essential tool of the trade for any serious FM programmer.

But having said that, *anyone* with this kind of synthesiser should find ProCreator a valuable (and amusing, and educational, and inspiring) program to have around. Try it. It may change your whole attitude to programming. ■

Verdict

YET IT'S WITH the DX7 that ProCreator is ultimately most successful, because you can move so easily between editing on the DX7 and conjuring up new sounds with Steinberg's software. Why should you want to do this? Because while the software will generate plenty of sounds, many of them will benefit from a spot of tweaking – perhaps something as simple as cancelling a sub-algorithm.

There's no substitute for being able to hear what's "wrong" in a sound and knowing how to cure it. Part of the skill of programming is, after all, knowing how to *tailor* a sound, and that's not really the sort of job a piece of software can do – though no doubt some clever-dick programmer will prove me wrong one of these days.

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ROLAND S50

Digital Sampling Keyboard

It's the only 16-voice sampler in its price bracket, it has a fine set of library disks, and a unique monitor connection for easy on-screen editing. How will Roland's upmarket sampler fare in a marketplace that's already overcrowded? Review by Paul Wiffen.

AS THE MARKET for sampling keyboards is split more and more ways, manufacturers are turning to various additional features to give their instruments an advantage over the competition. Additional memory, separate outputs, extended synthesiser sections – we've seen all these introduced on sampling keyboards in the last few months.

Like its recently announced competitors, the Roland S50 has its own fair share of notable features. To begin with, it's the only 16-voice sampler on the market (unless you include the expanded version of the Synclavier and the Fairlight Series III), yet costs roughly the same as the majority of available eight-voice machines. This fact alone may be enough for some people to make the S50 their choice of sampling keyboard, especially if they're used to playing a DX7.

The 16 voices can be used to mix two separate sounds per note, and still leave you with a generous eight-voice polyphony. This can be implemented in two different ways: either as Velocity Crossfade (allowing the authentic imitation of the dynamics within a sampled instrument) or Mix, where independent sounds can be combined (strings and brass, to quote a popular example).

Another feature which could decide keyboard players in favour of the S50 is its weighted velocity- and pressure-sensitive keyboard, which is a real joy to play. These days you can play any MIDI module from a wooden, weighted six- or seven-octave keyboard, but for the musician not on an unlimited budget (and most of us who haven't quite made megastar status yet), a good keyboard on the instrument itself represents additional value for hard-earned sterling.

But the major innovation on the S50 which holds enormous potential is the ability to visualise programming procedures simply by plugging the keyboard directly into a computer monitor. This can be a colour monitor if you have the eight-pin DIN RGB connecting cable. I didn't, so I simply plugged in a black and white (well, black and green) monitor.

Now, while a colour monitor would have made a few parameters which are colour-coded a bit clearer, there is sufficient contrast in the different shades of grey (or green in my case) to be able to distinguish what's going on.

Previously, a display like this was only possible on expensive systems like Fairlight, PPG, and Synclavier, or via the addition of a computer, MIDI interface and appropriate software, with all the hooking-up and time-delay problems that can cause. On the S50, you just connect the monitor directly to the sampler, and all programming can then be carried out on the S50 (instead of a QWERTY keyboard or mouse which may still be unfamiliar to musicians), but with the increased user-friendliness of a monitor display.

Many of the programming operations can be performed perfectly well on the S50 in isolation, though, using the Alpha dial to scroll through parameters, swiftly changing values and settings (apart from the Microscope feature on the MC500, this is the best use Roland have made of their Alpha dial). But there are some areas of sampling (eg. the digital manipulation of samples, as in looping and truncating) which are made a great deal easier by visual editing.

Operation

ON THE S50, this is divided into various areas called Modes, of which there are seven: Play (allowing different presets to be selected), Rec (sampling), Edit (for making samples into presets), Function (tuning, assignment, and so on), MIDI, Disk (loading and saving) and Aux (which in software version 1.00 has yet to be implemented). These are each selected by dedicated buttons, while individual parameters are accessed by the Page and Cursor buttons.

Since the S50's operating system is stored on the same disks as the sounds, you can't access any of these functions until you insert a disk into the drive, though a disk will load automatically if the S50 is switched on with it in the drive. Otherwise the display (and the monitor if connected) will prompt you to "Please Insert System Disk". All disks formatted for the S50 are in fact system disks, so you can use any of the five disks supplied with the machine.

The display and monitor immediately tell you which version of the system you are loading (only 1.00 is available at the moment), after which the S50 begins to load the sounds from disk automatically. Now, while this is fine for people who have no experience of disk-based instruments, it's a nuisance if you want to begin sampling immediately, as

you're loading sound data which you'll only have to erase (a lengthy process) afterwards.

As the data is loaded the S50 counts down (in half-seconds) from 70 to zero, at which point it is ready to play. Load time is between 30 and 40 seconds, which is comparable with other 512K machines.

It has to be said that the first disk I loaded into the S50 was the best piano disk I've yet heard, and despite the fact that the machine doesn't implement positional crossfading, the changes in multisamples as you move across the keyboard seem conspicuous by their absence. And thanks to the S50's Velocity Crossfade function, the response to touch has been made very expressive as well. Knowing how many musicians are looking to samplers to provide a good piano sound first and foremost, this disk, in conjunction with the authentic feel of the keyboard, should sell a few S50s on its own.

The strings/choir disk is fine, and the excellent brass/bass/tuned percussion sounds make maximum use of that disk's memory. The wide variety of acoustic, electronic and gated drums are arranged in various useful combinations (this disk is marred only by the crash cymbal, which has been starved of memory and bandwidth). And for those who like the sampling clichés of orch-hit, gunshot and smashing glass, the Effects disk will probably be welcome.

But let's get back to what the S50 can actually do – all this concentration on factory disks is *very* unhealthy.

For the spec hunters, the S50 uses 12-bit sample resolution and can sample at two rates – 30kHz and 15kHz (though no great loss, the originally announced 7.5kHz sample rate seems to have been dropped). This allows maximum sample times of 14.4 seconds and 28.8 seconds respectively.

In practice, the results I obtained with the 30kHz rate proved to be acceptable in 95% of cases, and I'd like to think that you'd rarely have cause to complain about the S50's fidelity (the brightness of the factory disks attests to this). And the generous 14.4 seconds of sample time at this rate, if used properly, is more than enough to capture something of the range and character of any instrument.

The sampling process itself is quite straightforward once you've cleared enough memory to allow the flexibility of assignment to show through (you can simply "resample" any of the sounds loaded off disk, but you're then stuck with the sample lengths used on those sounds).

But to clear the memory using Tone Delete is rather time-consuming: a faster way to free memory is to load a blank formatted disk (which you will need to save good results to anyway), though the S50 still spends 35 seconds filling the sample memory with nothing.

Once the memory is clear, going into Rec mode allows you to set the bank (A or B) and the tone number (1 to 8 in each bank) where you plan to put your sample. Then, pressing Enter prepares the S50 to receive a sample (erasing the sound in that particular tone number if you haven't cleared memory).

You can now set your sample rate, sample length (up to the full 7.2 seconds in each of the two banks at 30kHz), and threshold. The display on the S50 has a neat way of showing the level of the incoming signal, the upper line giving an LCD-type indication with the threshold and distortion level markers below it. On the monitor the extra space available is used to enlarge the display, but it's basically the same left-to-right representation. An alternative display, called W.Scope, is available on the monitor and shows the waveform of the incoming signal.

► *"Many programming operations can be performed on the S50 itself, but digital manipulation of samples is made a lot easier by visual editing on a monitor."*

The level of this signal can be altered in two ways. On the back panel, next to the sample input, is a pot which allows you to vary between the extremes of Line and Mic levels. Then just above the standard Roland bender/modulation switch is a slider marked Rec Level, for finer adjustments once you've got your basic input level right. And if you don't get a perfect result first time, there's a Resample option to allow an immediate retry.

The S50 can hold 16 different multi-samples, eight in each bank, and this allows the two banks to be paired against each other for the three keyboard modes which use two timbres per note.

By sampling one bank with gentle notes and the other with harder playing, you can use your playing technique to velocity switch and crossfade between them when the time is right. Or you can sample completely different instruments into each bank and use them separately in some presets, and then double up on other presets to double up or crossfade between them in Velocity Mix mode.

Velocity Mix mode is worth looking at a bit more closely, as a Level Curve parameter allows you to select different ►

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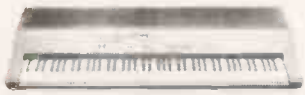

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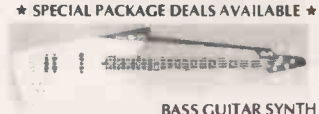

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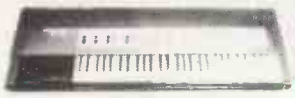

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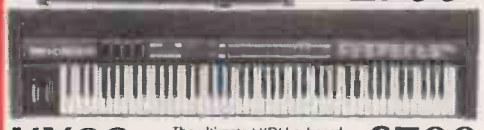

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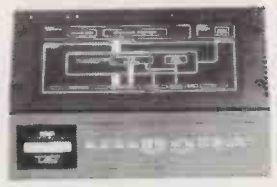

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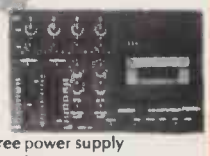

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response curves. Setting this parameter to 0 for both would give a straight mix, and all sorts of different responses can be set to suit your playing and the particular application best.

Editing

THE EDIT MODE has three separate pages, and each of these represents a different level of editing. We'll start from the back, seeing as that's the way Roland have approached things in the S50 manual.

Photography *Matthew Vosburgh*

► *"By sampling one bank with gentle notes and the other with harder playing, you can use your playing technique to switch and crossfade between them."*

The third page allows digital editing of individual sample waveforms. Its first two functions are fairly standard: Tone Delete and Tone Copy (though the latter allows you to reverse samples – a slightly unusual way of doing it).

But two more exciting functions come next: Wave Mix and Digital Filter. The first of these allows you to mix two samples together to a third tone number (so you can keep both original samples as well as the resulting waveform), and you can set proportionate levels for both waveforms being mixed.

Digital filtering allows you to treat any sample with a highpass or lowpass filter and, as with the last digital process, the result is saved to a separate tone location so you can compare results. The lowpass filter is particularly good for pinpointing unwanted noise in the signal (whether from quantisation, aliasing or clock) and suppressing it.

Now don't go thinking that aliasing, quantisation or clock noise is any worse on the S50 than other 12-bit samplers; you're just getting an extra weapon to help reduce their effects. What's more, the resonance on the digital filter helps accentuate higher frequencies which may have become attenuated in the sample.

There are a few other digital functions I'd like to see implemented soon, though, such as splicing (with a time parameter) and individual sample value editing, as these are especially useful when you can actually see your samples on screen. But it's possible that such features will be added in future software updates; the four free parameters on this third page certainly hint at more to come.

The second page of Edit Mode covers the parameters affecting each sample. Although you're able to truncate a sample immediately after exiting Rec mode, if you want to do so later, Edit mode allows both the start and end to be truncated. The waveform is not displayed on the monitor here, but the manual does point out a means of doing this via a loop set (which gives you a loop window very similar to that recently implemented on Digidesign's Sound Designer).

The loop window is a marvellous way of finding the best loop points, as it puts the waveform section at the end of the loop hard up against that at the beginning, so you can see exactly how they match up – no need to rely on zero crossings. Not only can you look for equal values at the loop point, you can also check that the general pattern of the waveform is compatible before and after the loop point. And digital readouts give you the sample numbers of sample start, end and loop point.

But the looping facilities of the S50 don't end there. On many sampling keyboards, it's possible to end up with a loop that's fine in most respects, but which changes in pitch from the rest of the sample by an eighth of a tone or some other slight amount. Now Roland have become the first manufacturers to give you the ability to tune your loop by up to a semitone up or down, so you should arrive at acceptable loops much more quickly: you only have to find one which is harmonically appropriate, since slight pitch problems can be corrected.

If the instrument sampled was sharp or flat, then the whole pitch of the sample can be altered, and the key on which the sample is placed can be moved around the whole MIDI range (0-127 or C0 to C9), ie. greater than the five octaves of the S50's keyboard. This means you can put samples outside your playing range to be triggered from an external MIDI device (a drum machine or sequencer, for example) or to give a full range when played from a six- or seven-octave master keyboard.

Other parameters which you can use include Vibrato (with delay if required), and Enveloping (which is achieved by setting eight rates and eight levels – any of which can be the sustain and end portions of the envelope). This is certainly a complex envelope, but it seems a little excessive for sampling, which picks up so many of the dynamics from

the sound being sampled anyway. Still, I guess you could use it to liven up samples which have been looped early on. Velocity and Keyboard Follow can also be used to control the envelope's effect.

And so to the first page of Edit mode. This deals with combining the individual samples into the multi-samples which form the presets or Patches, of which the S50 and its associated disks can hold eight.

Within the Patch you can set the key modes we looked at earlier, plus aftertouch effect and velocity switch threshold. And with the monitor again coming into its own, you can verify and change tone assignments to the keyboard. The split information and original keys are shown one by one in the S50's LCD, but the monitor allows you to view all the assignments at once, and change each with reference to a full keyboard display. Something else you can normally only do with an external computer...

The S50's MIDI mode allows various parameters like bender, LFO mod, sustain, volume and aftertouch to be enabled or disabled over MIDI, as well as selecting MIDI channel and turning Omni Mode on/off. The program-change section is particularly flexible, as the S50 can send and receive all 128 program-change numbers and relate them to its own eight patches.

I was disappointed to see that Mono Mode hasn't yet been implemented on the S50, but maybe this is also pending a later version of the machine's software.

Disk mode is very flexible, allowing loading and saving of all data, samples only, function data only, or MIDI data only. It also includes Backup and Format commands to allow you full use of disks, as well as cataloguing functions so you don't have to load a disk to find out what's on it.

Function mode covers master tuning, the controller and aftertouch assignments, and a handy Trigger feature which enables the audio input to trigger up to eight keys on the keyboard with associated samples, and allows the S50 to replace drum sounds off tape triggers, or for the sample playback to be started by footswitches.

▶ *"Knowing how many musicians are looking to samplers to provide a good piano sound first and foremost, the Roland disk should sell a few S50s on its own."*

Verdict

AS YOU WILL have gathered from the tone of this review, I like the S50 very much. There are always a few criticisms, and one of mine is the difficulty I had trying to discover instructions on how to assign the four separate outputs the S50 boasts. I eventually uncovered a diagram which showed the four individual outputs marked with an asterisk, and the key to the diagram said the asterisk meant "These are provided for other software which are coming up in the future" (don't you just *love* these Japanese manuals?). Strangely enough, though, the strings on the factory disk come from outputs A and B in the "Stereo" preset. No doubt the software update enabling this function will be forthcoming from Roland.

Other complaints not already aired are fairly minimal. Like the Akai S900, the S50 has only static filtering (ie. no filter enveloping), and while the monitor connection allows more accurate editing than was previously possible on a keyboard sampler without using a computer, I can't help but feel there's still a lot of unexplored potential in that area.

But it's a good sign that Roland have included a parameter which allows you to copy new system updates onto all disks – this should ensure that the S50 keeps pace with all new developments.

Generally, the two user manuals (one for operating without a monitor, one with) cover most things adequately, and Japanese typesetting errors like "Saustin" and "Smapling" lead more to welcome amusement than painful misunderstanding.

All in all, the S50's 16-voice polyphony, fine dynamic keyboard, ease and flexibility of programming (especially when coupled with the monitor), and excellent factory disks make it a sampler to be reckoned with.

And if Roland continue to support the expansion of its operating system, the S50 could become an altogether more sophisticated instrument than it is now. Look out, world. ■

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MIX*down* LOW *down*

Last month we looked at the corrective role of signal processors and the use of insert points and auxiliary sends. Now we'll move on and examine the mix itself, beginning with ways to create the illusion of stereo. *By Paul White.*

AS I INTIMATED last month, there are no hard and fast rules when it comes to mixing. If there were, everyone would produce exactly the same result from any given multitrack tape.

But there are guidelines to get you off to a good start, and once you've put them into practice, you'll be able to decide for yourself which rules to break and which to stick with.

I'm assuming you're starting out with a four-, eight- or 16-track master multitrack tape and that few, if any, effects have been recorded onto tape. I'll assume the instrument line-up consists of drums or drum machine, guitar, bass, synths and vocals, as even in these pioneering times, this still seems to be the most popular combination. If part of your instrumental line-up is driven via a MIDI sequencer synced to tape, then the same techniques apply. My last assumption (isn't generalisation wonderful?) is that you intend your finished product to be in stereo, rather than mono or multi-channel surround-sound.

▶ *"The unsubtle use of flangers is rather passé nowadays, but used with imagination, they do have their more creative uses."*

Now, a misconception exists about mixing in stereo. To many people, it simply means positioning the sounds in a mix using a pan-pot. Though this is a valid mixing technique, there are many other approaches that can work just as well without being quite so obvious.

But first a quick look at the mechanics of stereo in real life. Although most sound sources are essentially mono in that they emanate from a single point source, they may be nearer to one side of the listener than the other, giving an equivalent of the pan-pot effect. But this alone doesn't create the sense of depth and reality that we are looking for. (Our ears and brain actually react to off-axis sounds in a much more complex way than the previous couple of lines might imply, but to investigate further would mean an unacceptably lengthy, though interesting, digression.)

The sense of depth that we get from hearing a sound in a normal environment is not merely a function of its position, but is largely due to the addition of reflected sound. You may instantly think of reverberation, which is certainly a step in the right direction, but in many everyday acoustic environments, the reverberations may be too heavily damped for us to perceive.

Take, for example, your living room. Though it probably wouldn't sound very live if you clapped your hands in there, if you were able to do a direct comparison between that sound and the same handclap in a completely dead (or anechoic) room, the absence of those vital few early reflections would make a startling difference.

In recording, we tend to keep everything as dry and separate as possible. Close-miking techniques eliminate most of the room's natural reflections, and the room itself will probably be as dead as we can make it anyway. What we've done is to rob the sound of its spatial identity and record it in mono onto one track of tape. In exceptional circumstances, you might have found enough spare tracks to use two mics and record in stereo, but the chances are that the room ambience will still be lacking, as is typically the case when two mics are positioned close to a piano or drum kit.

An alternative approach is to record these instruments in stereo in a live room, but if your studio is at home, you may well find this impractical. And if you're using a drum machine instead of real drums (or indeed any DI'd signal), the sounds are likely to be very dry and lacking in natural ambience.

Having set this grim scenario, we'll now look at things we can do in a mix to recreate the missing sense of space, other than simple left/right panning.

False Ambience

A REVERB UNIT can be used to create a

stereo ambience to complement a mono sound, but a simple spring unit may have too long a decay time to add ambience without adding a noticeable amount of reverb at the same time.

A better approach is to use a digital unit. These generally accept a mono input and provide two outputs to simulate the different reflection patterns reaching the ears of the listener, and most will allow you to set up a short reverb time of between 0.4 and 0.8 seconds, which will give an impression of "roominess" without much in the way of obvious reverb.

Some machines even allow you to set up an early reflection pattern without the following body of reverb, which can be useful on vocals to add presence in the spatial sense of the word, without cluttering the sound with reverb. If you want a certain amount of obvious reverb as well, then fine – just select a longer reverb time or use a spring.

Now, you may well face the dilemma of having one reverb unit and requiring it to do several jobs simultaneously. You can plan for this at the recording stage by adding a little reverb in mono to the desired tracks, and then adding an overall short stereo reverb to them all when mixing. This will reintroduce a sense of space that simply adding reverb in mono won't achieve.

Of course, you may be faced with a tape that's already recorded, or you may not have access to a digital reverb in the first place. So what can you do, apart from shake your fist at the skies? Fortunately, quite a lot.

One source of ambience that tends to get overlooked is the natural ambience of rooms themselves. Wouldn't it be nice if you could steal the ambience from, say, your bathroom and add it to your drum machine?

Well, this is how to do just that. After evicting your sister from the shower and running some extension cables up the stairs, the setup should look something like this: one of your hi-fi speakers now resides in the bathroom facing a hard, preferably tiled, wall and this is fed from your hi-fi amp which, in turn, has its aux input wired to one of the aux outputs on your desk. Turning up the drum track aux send on the desk may now elicit howls of protest from the rest of the household, as the drums come thundering forth from the bathroom.

The next step is to pick up this new "live" sound, and a little experimentation will pay dividends here. The object is to position two mics (preferably the same type) in the bathroom so that they pick up as much reflected sound as possible, and as little direct sound from the speaker as possible. A couple of PZM microphones taped to the walls are ideal for this job, due to their excellent clarity when working at a distance. ▶

▶ The next bit is simple. Just make sure nobody flushes the lavatory for the next half-hour, and proceed with your mix while pretending you have the latest ultra-sophisticated digital room simulator on the other end of the line, rather than a bathroom.

There are dedicated stereo simulators which you can use to widen mono sounds, and these use delays to simulate the sound bouncing off adjacent walls. Usually you only get one reflection per side, but you often have the option of sweeping the delay in a slow chorus-like manner to add movement to the sound.

▶ *"An early reflection pattern can be useful on vocals, where you want presence in the spatial sense without cluttering the sound with obvious reverb."*

I've found such devices to be most effective on synthesised sounds, or the types of sound that usually benefit from a little chorus, but they don't really create ambience in the true sense of the word, and they can be expensive. The stereo simulation programs of the Alesis MIDIfex utilise a greater number of reflections and are more convincing, though the unit offers no modulation facility.

If you're limited in resources, here are a few things you can try for yourself. The following treatments work well on synth sounds, guitars and vocals, but may not give the desired effect on drums.

▶ *"The natural ambience of rooms themselves tends to get overlooked; you can steal the ambience from your bathroom and add it to your drum machine."*

DIY Ambience

FIRST WE HAVE the old trick of panning a sound hard to one side, and then placing a delayed version at the other side, the delay being in the order of tens of milliseconds. The reason this is so effective is that it simulates, to some extent, what happens when we hear a sound in real life. First we hear the direct sound, and then a short time later we hear a reflected version bouncing off a wall or floor. True, subsequent reflections complicate this state of affairs in nature, but the single delay can still be surprisingly effective.

One thing to be aware of, though, is that this kind of trick is not always mono-compatible. As students of the art will realise, adding a signal to a delayed version of itself sets up what is known as a comb filter, which is the basis of flanging and phasing. Depending on the delay you've chosen, some sounds will add to each other and some will cancel each other out. And although this is not apparent when the two sounds are panned to either side, it will show up as tonal colouration when the sounds are summed to mono.

If you have a delay unit that offers both in-phase and out-of-phase outputs simultaneously, try positioning the dry sound in the centre of the mix, with the two outputs from the delay unit panned to either side. This will give an impressive illusion of depth, and when you sum to mono the two delayed outputs will cancel, leaving you with the original mono sound. Neat.

And that's not all. If your DDL has a built-in modulation facility, as most of them do, you can use a little slow, shallow pitch-shift to add a sense of movement as well as stereo separation.

Now, if your DDL is tied up with more important work, how about using that old analogue chorus, or even the flanger pedal you have tucked away somewhere? You can perform the same trick here by feeding a dry signal to one side and a chorused version to the other, keeping the levels roughly equal. The result is a wide, three-dimensional sound that works particularly well on synths, basses and clean guitar. If you're using a flanger, turn the feedback control down to minimum and you should get a similar effect.

The unsubtle use of flangers is rather passé nowadays, but with a little imagination, they do have their more creative uses. For instance, a bassline generated by a synth, or even a bass guitar, can sometimes start to sound muffled in the context of a mix, and may tend to get lost or sound boomy. Feeding this through a flanger (set to a low speed with only shallow modulation) can give the sound a harder edge without it sounding too obviously 'flanged', and may even succeed where EQ fails. By adjusting your flanger's range control, which basically varies the delay time, you can tune the effect to some extent; this may allow you to emphasise some frequencies or cut others as needed.

There's no magic formula here: just sweep through the range until the result sounds good to you. You can then either use the new flanged sound on its own, or add a little of the dry sound to make the effect even less obvious.

As to other uses for flangers, consider this: split a signal into dry and flanged versions as before, but then feed the output of the flanger through a noise gate. Trigger the gate via its key input from a rhythmic sound such as the drum track, then set the release time for half-a-second or so and see what happens. Every time a drum beat occurs, a flanged version of the dry sound will be added to the mix, which will then fade away according to the time set by the release control of the gate.

You might even try to miss out the dry sound entirely and have, say, a burst of flanged string synth popping up only where triggered... Use both channels of the gate with the same setup but with different attack and release settings, and you could get a flanged sound that moves from left to right as it's triggered.

Has this set you thinking? I hope so, because there are endless tricks based on this arrangement which all sound as original as your own application of the technique.

Pitch Changing

UNTIL RECENTLY, I wouldn't have dwelt too long on the uses of harmonisers or pitch-shifters, simply because, to be honest about it, the good ones were too expensive for widespread home use, and the cheaper ones were not that good.

This last year has changed all that, though, and we now have the pitch-shifting section of the Yamaha SPX90 and the little Boss RPS10 pitch-shifter; both fall easily into the semi-pro price range, yet still turn out excellent performances.

The creative uses of large pitch-shifts are rather limited, as the "chipmunk" effect becomes all too obvious. But using just a fraction of a semitone of shift can fatten a sound enormously, and doesn't cause "churning" the way a chorus unit does.

The preferred technique is, once again, placing a dry sound at one side of the soundstage and a shifted version at the other. But if you have a dual-channel device like the SPX90, you can keep the dry sound in the middle and then place an upward-shifted version at one side and a downward-shifted version at the other; this really fattens things up.

This treatment is extremely effective, yet is subtle enough to be used on virtually any sound source, voice or instrument, without giving the game away.

Next month, I'll be explaining how the above techniques are actually put into practice during the mixdown. ■

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FOSTEX 160

Four-track Cassette Recorder

A new entry into the personal multitrack war, Fostex' futuristically styled 160 incorporates some ingenious design innovations to make it more flexible than its predecessors. Review by Paul White.

Photography *Tim Goodyer, Trevor Gilchrist*

CASSETTE-BASED MULTITRACK all-in-one studios appear in many different guises, ranging from the basic to the incredibly sophisticated. The new Fostex 160 is positioned somewhere in middle ground, boasting simultaneous four-track record capability, double tape speed, and both EQ and auxiliary send facilities. It also includes a separate input for recording timecodes cleanly onto track 4, not to mention channel insert points and separate monitor outputs.

But some compromises are always necessary to maintain an attractive retail price. For example, the 160 has only four input channels rather than the six found on top-of-the-market models, and the routing facilities it offers are slightly unconventional. The way in which effects are connected is not quite as comprehensive as on more expensive systems, and the tape transport buttons are mechanical, rather than the soft-touch type that we have come to expect from stereo hi-fi machines.

Physically, the 160 is compact, yet has an open layout that allows easy access to all controls, while the black moulded plastic case sports clearly screened white legending.

Rather than adopt the approach of having the mixer on one side and recorder on the other, Fostex have opted to locate the recorder above the mixer, resulting in a narrower unit than most. This is arguably a sensible space-saving move, and though you do have to reach over the mixer section to operate the tape transport controls, this doesn't present a problem thanks to the relatively small size of the machine.

All the phono inputs and outputs are located on the top panel in plain view, so there's no groping around the back when repatching. Meanwhile, the Mic, Line, Phones and Punch In/Punch Out jack sockets are mounted in the traditional position along the front edge of the mixer section.

The 160 comes complete with a separate AC adaptor which powers the unit, but outdoor types should note that ▶

► there's no provision for battery operation. Now for a look around...

Mixer Section

ASSUMING THAT THE recorder section performs up to scratch, it's the mixer of any multitrack recorder that determines the system's capabilities and limitations.

The Fostex' mixer is a little unusual in that its channels are not routable via routing buttons when recording (channel 1 feeds track 1, and so on), though you can use the Mix option to feed the channel input to all channels simultaneously. You then use the Pan control to set the balance feeding odd and even numbered tracks.

This method allows you to set up a mix on all four channels and record it onto any track you wish. You can also bounce two or three tracks down to one once you've filled up a few tracks, and here again, routing is handled by the Mix buttons and Pan controls. When you come to do the final mix, channels are directed to the stereo buss and the pan-pots are used to position the sounds between the left and right speakers.

Four bar-graph meters monitor either the four tape in/out levels or the two-track output signal, depending on the status of the Meter switch. And the output monitor sockets may be switched to carry the stereo mix, the aux buss or both.

► *"The mixer channels aren't routable via routing buttons when recording, though you can use the Mix option to feed the channel input to all channels simultaneously."*

The way the system is arranged, you can't monitor the input signal unless the Record switch has been pushed once. At this stage a green LED flashes and the input signal is monitored for all channels that are set in ready-to-record mode. When you enter record, the flashing green LED becomes a steady red LED.

Let's take a look through the channel controls to see how all this hangs together.

There are four line inputs but only two mic inputs, the latter accepting unbalanced low-impedance mics and feeding channels 1/3 and 2/4 simultaneously. If a line input is connected, the mic input is overriden and the line takes priority. Unlike a conventional mixer, though, the 160 offers no separate input gain control to set – the channel fader takes care of that.

Channel layout is also a little unorthodox, as the Aux control is nearest the fader. The aux buss may be fed either from the channel or from the off-tape signal, depending on the setting of the Source/TRK switch adjacent to it, and the auxiliary output is in the form of a phono connector at the top of the unit; there is no master auxiliary control.

These controls may be used during recording to set up a monitor mix. When switched for use as effects sends during mixdown, their operation automatically changes from pre-fade to post-fade – a neat idea.

Next in line is the Pan control, which routes between odd and even busses, and at the mixdown stage is used for positioning sounds left to right. The associated Mix/Direct switch bypasses the Pan control during recording, and feeds the channel output directly to the corresponding tape channel.

EQ is a conventional but effective two-band shelving cut/boost affair, giving 15dB of cut or boost at 10kHz and 150Hz. Though this isn't ideal for complex equalisation tasks, it's adequate for most sound-tweaking requirements.

Between the EQ section and the channel fader is the Input/TRK button. This determines whether the channel carries the mic/line input signal or the off-tape signal, and is set to tape (TRK) during mixing or bouncing.

The main output stereo fader is to be found to the left of the mixer section (rather than to the right, as is more usual), so if you're right-handed, you'll have to avoid disturbing the channel faders with your shirt cuff during fades.

Returning to the Cunning Innovation Department, we find the line input jacks are in fact stereo jack sockets, and can double as insert points when a suitably wired stereo lead is connected. When a mono lead is used, they revert to being line inputs. This is handy for patching in effects and

signal processors when mixing or bouncing tracks, and is another novel way of conserving space.

As mentioned earlier, channel 4 has a separate sync code input. This doesn't generate any code, but simply provides a clean signal path to and from tape for FSK or sync pulses, which will be unaffected by EQ or noise reduction. When this socket is in use, the mic and line inputs for that channel are overridden.

Recorder Section

THE CASSETTE MECHANISM runs at 3¾ips – twice the normal cassette speed. Naturally enough, this gives higher recording quality, but offers only half the recording time for a given tape length. Whatever you do, don't yield to the temptation to use C120 cassettes, as these use very thin tape which cassette machines of all types love to eat.

A standard two-head setup is used, so recording and playback are carried out by one head, erasure by the other. You don't have to worry about sync problems, as everything you record will be in time with any material already on tape (playing skills permitting, that is).

Fostex have given the 160 Dolby C noise reduction, in my view the best non-professional NR system available. It manages to keep the noise down without doing anything unduly detrimental to the sound quality, but you can still bypass the system if you wish.

Elsewhere, the obligatory Varispeed control gives as much as 15% of speed control up or down, and the mechanical tape counter features a stop-at-zero facility.

The transport controls are absolutely straightforward, and as I've said, take the form of mechanical switches rather than soft-touch buttons. Even so, their feel could still be described as refined, as it lacks the dreaded bangs and clunks of lesser designs. Ready-to-record status is selected on a track-by-track basis using the four Record Track buttons.

It's worth mentioning that all the buttons have coloured sleeves that show when the switches are in their out position, the idea being that this makes it easier to see what's going on. But while this system is a good one, the coloured bands could have been larger as they're still fairly difficult to distinguish.

Dropping-in on a track is accomplished by running the machine during playback with the appropriate Record Track buttons pressed down. When the drop-in point is reached, you press the Record and Play buttons simultaneously, and monitoring goes from off-tape to input automatically. To exit record, you simply press Stop, or an optional punch in/out footswitch which does the same job.

Remember that dropping out always leaves a slight gap, due to the time it takes for the tape to travel from the erase head to the record head. So if you drop in or out on a strong beat, preferably where there's something like a snare drum sounding, it'll help you to disguise any discontinuity that may occur due to imprecise playing.

That's all there is to it in the control department, so it's time to see how the 160 handles out on the road.

Studio Test

IF YOU'RE USED to working with a conventional mixing console, the 160's lack of routing buttons is a bit disconcerting, though it only takes a few minutes to get the hang of things. You just have to remember to push the Record button to get into input monitoring mode, and this soon becomes second nature (though you may spend a minute or two wondering where the signal has gone).

Having recorded something onto tape, I was pleasantly surprised at how quiet and clean the recording sounded. There was no evident breathing from the noise reduction, even on complete mixes, and the percussion sounds were still as bright as when they started out. Bouncing three tracks down onto one was no problem, and I could still add extra parts live while bouncing via the mic or line inputs.

I found the cueing system a great help in locating positions on tape. If the fast wind buttons are pressed when the machine is in play mode, the monitors carry an attenuated version of the fast wind sound output, and as soon as the wind button is released, the machine goes back into play. Neat (again).

"Dolby C noise reduction manages to keep the noise down without doing anything unduly detrimental to the sound quality, but you can still bypass the system if you wish."

Drop-ins are implemented most easily using the optional footswitch, and are precise and free from noticeable clicks.

Mixing down is also straightforward. You can connect effects processors to the insert points and use the auxiliary controls to drive an external effect, bringing the outputs back into the stereo buss input sockets. The only disadvantage here is that some effects units don't have an output level control, so you could end up with unnecessary noise if you have to reduce the input to the effects unit in order to regulate the amount of effect.

And if you use an effects unit with no input gain control, you have to reset all four aux sends when setting up the input signal level, as there's no aux master output control on the Fostex.

For four-track use this compromise isn't too tiresome, and anyhow, you *could* stick a ganged pot in a coffee tin and use this to knock down the input to your effects unit if it's too high.

Verdict

AN ELEGANT MACHINE, both in terms of its features and its construction, the Fostex 160 also offers a remarkably high sound quality. I think it's fair to say that the degree of sophistication on offer belies the machine's reasonable selling price, and that the sound quality would bear comparison with any cassette-based home studio, regardless of cost.

The mixer section may not work in an absolutely conventional manner, but it's fairly flexible and does everything you could reasonably expect of it. It's easy to say that additional aux sends and extra channels would be nice, or that more EQ bands are needed, but you have to call a halt somewhere if you're to keep a machine like this one within its target price range. And you can still feed the tape outs to a separate mixer, or plug a small mixer into the stereo buss returns, if you need more channels at mixdown with a MIDI system running off the sync track, say.

Used properly, the 160 is capable of producing some very sophisticated recordings, and the manual gets you off to a good start. You can get away with two or three track bounces without adding much in the way of noise, and the sync facility means you can run your drum machines and sequencers from code without running into mis-reading problems. ■

Price £499 *including VAT*
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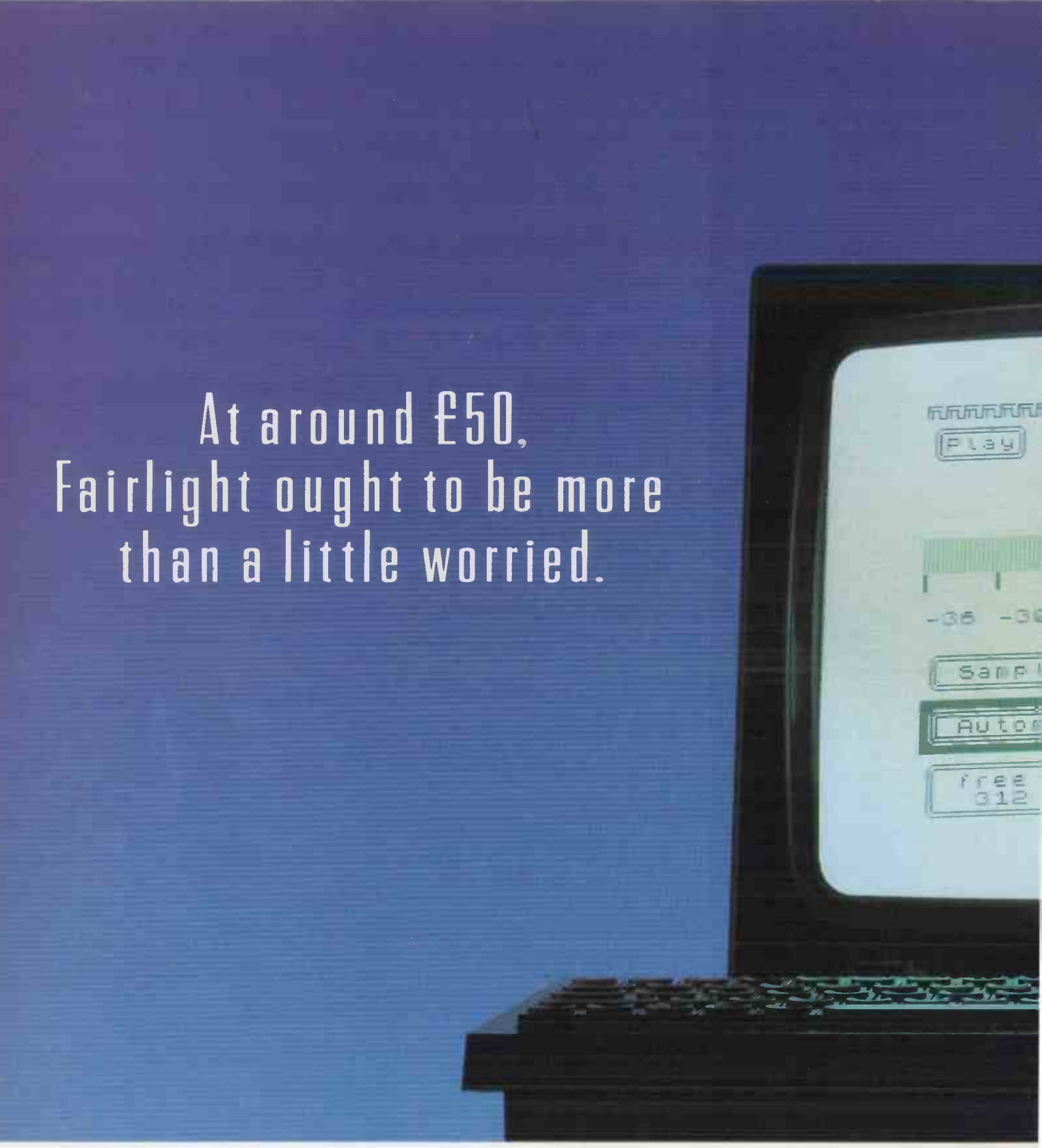
At around £50, Fairlight ought to be more than a little worried.



While the legendary Fairlight CMI may have to remain a dream for most of us, it's astonishing to see how much the rather more modest sum of £50† will buy.

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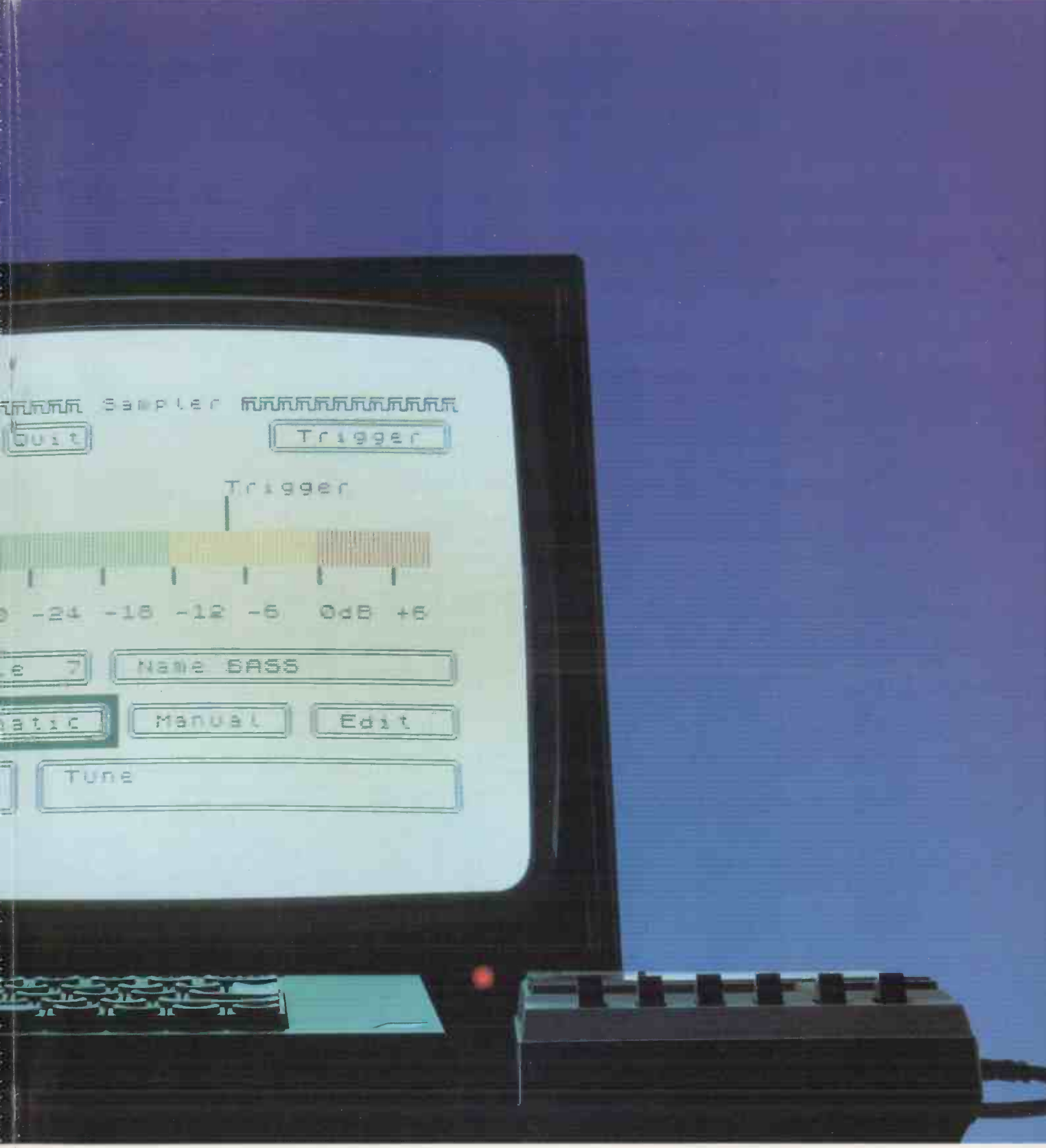

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Christmas is coming, and this year, more than ever, the book publishers are tempting musicians with a tree-full of buyers' guides and educational handbooks. Which deserve a place in your stocking?

'Keyfax 2'

by Julian Colbeck

Virgin Books, £6.99

The Book

'Keyfax' is one of the success stories of modern music book publishing. It's a brilliant idea. List all the electronic keyboards (synths, samplers, home keyboards, and so on) ever built, print some basic specifications for each, run the odd blurred photograph, and give a subjective impression of the machine's usefulness in the mid-eighties.

And it's brilliantly executed. Hardly a stone is left unturned, so that some incredibly obscure instruments are covered in remarkable depth, while only-just-released machines get surprisingly detailed overviews.

There are informative introductions to each section, and the whole thing is

written with wit, charm, and no obvious eye on the clock or the bank account.

The Author

Julian Colbeck, occasional contributor to these pages, but better known for his lengthy career as freelance hi-tech instrument reviewer for 'Sounds', the weekly music paper that makes 'Melody Maker' appear intellectual.

Now, because Mr Colbeck has been writing about – and playing – electronic keyboards for so long, there are few people better placed to comment on the instrument's development in recent years, and it shows. Not only is each machine commented upon concisely and with obvious care and enthusiasm, but the whole subject of electronic music production is given a refreshingly urbane and gimmick-free treatment – no "Best Thing Since The Tape Recorder" nonsense here.

From personal experience, I happen to know that Mr Colbeck is also something of a connoisseur of manufacturers' free food, drink, and unethical hospitality, but thankfully, that doesn't show at all. There's no apparent bias toward any particular 'kind' of instrument, let alone any one company.

The Second Edition

'Keyfax' was first published last year, was reviewed in the pages of E&MM, and sold better than anyone had expected.

'Keyfax 2' has acquired a larger, friendlier format, a more tasteful front-cover photograph, and a clutch of updates, a few of them correcting earlier omissions, the majority of them covering product introductions made during the last year.

The updating has been no small endeavour (as Colbeck himself admits in the intro), so even if you bought the original book, investing in this new edition still makes a lot of sense, even at the increased price.

My gripe about the rather arbitrary system of grading (Qs for quality, Vs for value, a hangover from 'Sounds' practice) remains, as there's no denying it's the first thing many readers will turn to for each instrument reviewed.

But if you ignore those markings, and accept that a book such as this one is never going to do more than act as an introduction to the range of instruments available, then 'Keyfax 2' becomes a real gem of a volume. As useful a reference work as its predecessor, it's more valid than ever now, simply because the pace at which new machines are introduced is hotter than it's ever been, and anybody who is anybody needs a book like this just to keep up with that pace.

Doubtless work is already proceeding on 'Keyfax 3', but that's no bad thing: this one deserves to run and run. ■*Dg*

'Easy DX7' and 'Easy DX100/27'

by Yamaha Music Foundation

Hal Leonard, £7.95 each

Despite the difficulties inherent in getting to grips with FM synthesis, Yamaha have failed to provide a free FM Brain Pattern Dump to every DX owner. Instead, their Music Foundation has opted to publish a range of books aimed at setting newcomers to FM on the right road to self-programming.

The first of these books beamed down to us, 'Easy DX7', tackles its task in a straightforward and logical manner, and is divided into three main sections.

The first covers the functions and

controls of the DX7, and while duplicating in theory the user's manual supplied with every instrument, it does manage to set the scene for the following section: 'Practical Synthesis: Learning to Create New Sounds'. This second part, covering 48 of the guide's 88 pages, promises to fulfil every DX7 user's dream, but is in fact a bit of a misnomer; 'Making New Sounds from Old' would be more apt.

Essentially, this takes you through a total of 21 preset sounds, and shows you how to edit them to make a different version of the same sound, or even something completely different. Take for instance 'Changing Brass 2 to a Reverse Cymbal Sound', 'Changing Log Drum to a Synth Drum', 'Making the Calliope Sound Straighter and Emphasizing the Breathiness', and 'Editing Out the Fifths from Piano in Fifths'. You get the gist?

Each "pattern" concentrates on particular parameters of the DX7, and by offering easy-to-follow exercises on how to manipulate the sound using the various controls (with a generous dollop of hints and tips), aims to make the art of FM programming clear to all and sundry.

And frankly, the "listen and learn" approach is both laudable and logical: how better to explain the intricacies of FM than to take a sound that's pleasing to the ear, and edit certain elements to make another pleasing sound? It avoids the tedious fiddling with dull sinewaves (guaranteed to drive any dog wild), and each exercise can be accomplished well within the boredom time threshold.

To put your new-found wisdom into

practice, Part 3 gives you 20 new voices for you to program into your DX7, complete with a description and tips on how to get the best from each one.

The final three pages are devoted to 'MIDI on the DX7', otherwise known as 'how many other Yamaha products are available to link to your DX7'. Don't expect it to tell you anything you didn't already know (unless you're just back from a five-year journey on Fireball XL5).

Though the 'Easy DX7' book arrives a mite late for the first billion DX7 users, for new owners and those of us who haven't made it past "Play Mode – Select Voice", it'll be a very welcome inclusion in this year's Christmas stocking. Of course, I'll need the DX7 to go with it...

Another 88-pager is devoted to the DX7's little brothers, the DX100 and DX27. I'd have assumed that the approach adopted in 'Easy DX7' would be just as suitable here, but the bigwigs at the Music Foundation seem to have decided that DX100/27 users are more interested in synthesiser *technique* than FM programming.

Divided into four parts, 'Easy DX100/27' devotes its first section to getting acquainted with your synth, which involves listing the 192 preset ROM voices, and in-depth explanations on how to edit, save, store and load voices (useful if you found the owner's manual lacking in this area).

But the greater portion of the book (39 pages, to be exact) concentrates on Synthesiser Techniques, aided and abetted by numerous musical notation examples for you to practice. Techniques covered include the correct use of pitch-bending and vibrato in guitar imitation, the different styles of bass and keyboard playing, the expression needed to simulate brass and woodwind sounds, and tips on the effective use of strings.

Now, while I agree wholeheartedly with the sentiment that "making music requires...a personal touch and subtlety", and that "the synth operator needs to possess certain techniques to breathe life into his or her synthesiser", this section will be of little help to you unless you can read music well *and* you are a relatively proficient player. To be honest, anyone who can manage to play the more difficult of the examples here probably has the musical background to figure out the techniques for themselves. So much for synths being ideal for the one-fingered non-musician.

That said, some of the examples do offer valuable hints on how to emulate traditional instruments, and moreover, they relate to synths *in general*, not just the DX100 and DX27. Judging by the many enquiries we receive on this subject, Yamaha might do well to expand on this idea and offer it as a separate publication.

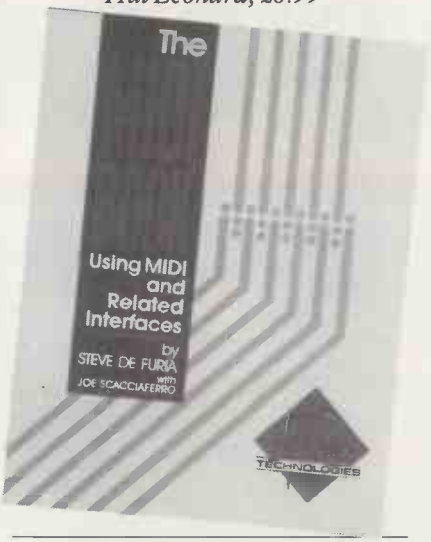
The third part of this book briefly runs through the two baby DXs' various features, and shows you how a Horn patch can be built up from scratch, while the final part gives you 20 new sounds to program in to your synth.

It's a useful book for the accomplished musician struggling to play traditional instrument sounds with some degree of authenticity. But if you're a DX100/27 owner looking for the key to unlock the secrets to programming original FM sounds, you could be disappointed. ■ **T***mcg*

'The MIDI Book'

by Steve De Furia with Joe Scacciaferro

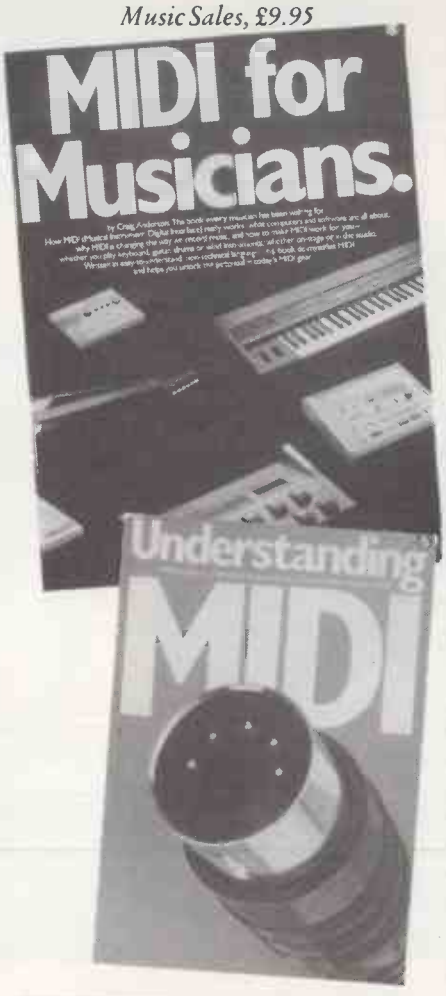
Hal Leonard, £8.95



'MIDI for Musicians'

by Craig Anderton

Music Sales, £9.95



'Understanding MIDI'

edited by Jock Baird

Music Sales, £4.95

Three books. Three very different approaches to explaining MIDI. The demon interface has been with us for several years now, but books on the subject have been few and far between, and have concentrated on the technical approach to MIDI rather than developing an explanation meaningful to the majority of musicians.

Craig Anderton's 'MIDI for Musicians' breaks the mould by putting musicians first and foremost. His evident enthusiasm for the subject is infectious, and his book is never less than interesting and always enjoyable.

Anderton takes the view that it's important to look at how MIDI is implemented in the "real world", and specifically includes a chapter on "typical MIDI implementations and products" which looks at examples of everything, from synths like the DX7 and CZ101, through Simmons' MTM percussion controller to MIDI guitar amplifiers such as the Peavey Programax 10. It's indicative of the scope of MIDI applications which Anderton has tried to cover, though guitarists and drummers looking for a thorough explanation of what MIDI can do for them won't find it here.

In complete contrast, Steve De Furia has decided to remove all reference to real instruments in both text and diagram. This, together with his dense writing style, has the effect of making 'The MIDI Book' more like a computer science textbook for musicians. Even the section "Practical Applications of MIDI Interfacing" comes across as surprisingly non-practical. But De Furia's explanations are clear and well-ordered, and his incisive approach makes 'The MIDI Book' a very handy reference book.

'Understanding MIDI' is a motley collection of articles and interviews culled from *Musician* magazine in the States. Although it includes a chapter on the MIDI spec, much of the book concentrates on the use of MIDI.

Chapter headings like 'Kicking and Screaming, A Guitarist Enters the MIDI Age' and 'A Harrowing and Hard-Boiled Look at How Everyman Found True MIDI Happiness' give you some idea of what's in store, should you decide to invest a fiver or so in this slender volume.

Two of the most substantial articles, Craig Anderton's 'The MIDI Recording Studio' and 'Synchronicity', appear in different form in Anderton's own book.

Alongside the more "technical" articles are MIDI-oriented interviews with the likes of Joe Zawinul, Howard Jones and The System. Unfortunately, these are little more than tantalising glimpses at the MIDI worlds of some very fine musicians. The impression is that they've been included more for their name value than anything else – disappointing.

Bewildered musicians looking for a painless, non-technical induction into the world of MIDI will do no better than to pick up Anderton's 'MIDI for Musicians'. De Furia's book, on the other hand, will suit people more at home with the "bits and bytes" approach to MIDI. Both are well written in their own different ways, and are worth investing in (or dropping subtle hints for just before Christmas), whether you're an absolute beginner or have already set out along the MIDI path. ■ **S***t*

more

TRUE STORIES

During Talking Heads' decade of rock innovation, frontman David Byrne has been the focus of most media attention. But arguably, keyboardist Jerry Harrison has contributed more to developing the band's sound colour.

Interview by Tim Goodyer.

THE YEAR IS 1975. David Byrne, 23, is attending the Rhode Island School of Design on America's East Coast. There he meets Chris Frantz and Tina Weymouth, and between them they decide to form a band. Byrne takes up guitar and sings, Frantz sits behind the drum-kit, and Weymouth fills the vacant spot on bass guitar. They steal a name – Talking Heads – from the American *TV Guide*.

Eleven years later, Talking Heads have carved out one of contemporary rock music's most startlingly consistent careers. Eight albums of scintillating, constantly innovative music have made their way into the homes of millions around the world, since the band played its first gig at New York's CBGB club, supporting the Ramones.

At the time of that performance, the group was strictly a three-piece. But after two years of gigging and formulating ideas, a fourth member, keyboardist Jerry Harrison, became involved.

"It was at a time when I'd gone off at a tangent in my music, and it took a while for other musicians to reach a place where they could appreciate what I was playing", the keyboard player recalls.

Harrison came to Talking Heads' attention following his involvement with Jonathan Richman and the Modern Lovers.

"Ernie Brooks, a friend of mine from the Modern Lovers, ran into them in New York. They said they were looking for someone who played keyboards and he suggested me. They'd heard one of the Modern Lovers' albums so they called me up and I came down to Boston.

"It took me a while because I was pretty broke at the time. In the end I couldn't even bring a keyboard so I showed up with a borrowed guitar – which surprised them a little bit – but we got together and played and it really worked out right from the start.

"At that time I was at the end of Architecture School, so they had to wait a semester for me. During that time we reaffirmed that it was working by playing together every so often. But I feel very lucky that they were so patient with me, because anyone else could have come along and done the job just as well. I finally joined in January of 1977, about two months before we began making the *Talking Heads '77* album."

The completed Talking Heads line-up saw the punk revolution arrive, and can quote as New York contemporaries Tom Verlaine's Television and the Ramones. They also shared the musical attitude of the punk movement itself, though that in itself was pre-empted by a number of forward-looking bands.

"I think the Modern Lovers were about the same thing that the punk and new wave scene was about: honesty in music and commitment to what you were saying, rather than playing technique. Because of all this there was a certain simplicity in means. It's hard to remember what it was like back then, but music had taken on a rather rococo flavour, a little like it has again with people falling into the music 'specialist' categories, like studio musicians who do certain things extremely well but often don't have that much to say."

Reading between the lines, it appears Harrison's pragmatism was the key to his acceptance in Talking Heads.

"We had formulated certain principles about what we wanted Talking Heads to be. In the beginning those principles were based on what we could do. Every musician has limitations and we wanted to turn ours to our advantage and, as a result, we went off in a real left-field direction.

"Over the years I suppose people's tastes have acclimatised to our style, and our abilities have drawn us back into the mainstream. Certainly on this last album, we've played music we would never have played on *Talking Heads '77*. It's ridiculous to be unusual just to be unusual."

"'Little Creatures' and 'True Stories' are a return to melody; with 'Remain in Light' the rhythm was the essential feature of the music, but once you start concentrating on melody, rhythmic aspects become quieter."

A SOBERING REVELATION from a band generally regarded as being anything from revolutionary to just plain weird. Eight albums on from *Talking Heads '77*, Harrison is promoting the band's latest, and in many ways strangest, recorded work. *True Stories* is the soundtrack to a film of the same name, conceived and directed by Byrne. But in contrast to the musical innovation of tracks like 'Psycho Killer' from '77 and 'I Zimbra' from 1978's *More Songs About Buildings And Food*, *True Stories* marks a return to more conventional, if varied, forms of songwriting.

"Because the songs were written for the characters in the movie, they were written in idioms", Harrison explains. "To try to make those idioms sound different would be missing the point. The other thing is that, no matter what we do, we've progressed to the point where we always sound like Talking Heads, so there's no longer that fear of doing things the same as other people. Somehow our personality will shine through in a plain song.

"A perfect example is 'Puzzling Evidence'; it has the feeling you used to have when you went to your favourite dance at high school. It would have been pointless to have interesting sampled sounds or synthesised sounds, because they wouldn't have conveyed that feeling at all."

True Stories – the movie – is a cinematic look at the oddities of American life, portrayed in a series of short stories set in Texas. The stories, while not actually true, are based on facts drawn from press cuttings, a process Byrne began during ▶

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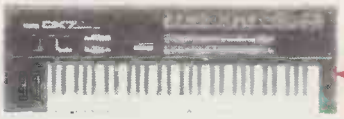

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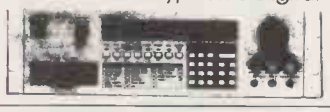

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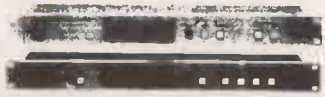

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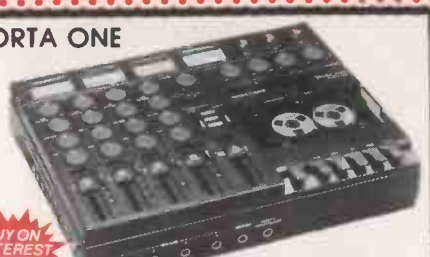

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▶Talking Heads' *Stop Making Sense* tour. Despite its critical standpoint, the film is currently meeting with widespread approval in the States on the strength of Byrne's humour.

"The movie is really interesting", comments Harrison. "Tina, Chris and I only appear in it within videos, though they will be seen outside the film. It's a movie that's quite charming – it offers a kind of idiosyncratic view on life. It'll be interesting to see how it moves people beyond just being a movie. There's no question that people who are into seeing movies in a different way will find it really fascinating and quirky."

But while *True Stories* – the album – features the singing of Byrne, Harrison, Weymouth and Frantz, the film allows the characters to sing their own lines. Apart from Byrne, this effectively limits the involvement of Talking Heads to that of session musicians.

"I was involved when David was first coming up with ideas. I went out with him to Los Angeles to help select some writers, then we went down to Texas and looked at locations. But we made a group decision that it was going to be David's project. There was a great fear that being an actor directed by someone in your band could be humiliating, or in some way upset the normal balance that we have.

"It's like a fraternity or a secret society. I think we all make a great effort to be unanimous, but if someone really doesn't like something then we won't do it – and anyone in the band can exercise that right of veto.

"Understanding that made us a little more cautious about handling something like a movie. Movies, don't forget, are very expensive, and when you get into shooting, they can't afford to be run on a very democratic process; they have to be run by one authoritarian. That's OK unless you've been used to having give and take with someone.

"Also, as the script was written the roles started to emerge and we were constantly begging the question: 'What role can I have?' There was one I thought I could handle – the computer whiz – but the roles weren't written with any of us in mind. I think we shine quite a lot in the videos we're in anyway."

So there are videos as well as the movie..

"David has documented that movie in more ways than I could have imagined – there's a movie about the movie, there's the book about the movie, there's the record that goes with the movie. He's really covered every base."

BACK TO HISTORY. The 1979 release, *Fear of Music*, was Talking Heads' third album, and marked the beginning of two significant periods in the band's development.

The first of these was the involvement of Brian Eno as co-producer. Eno's influence extended to full production work on the following album, *Remain In Light*, and finally to a collaborative LP with Byrne entitled *My Life In The Bush Of Ghosts* in '81.

One of the results of this association was discontent within the band – Harrison, Weymouth and Frantz feeling threatened by the influence of an outsider.

So the band split up temporarily, Byrne scoring for Twyla Tharp's ballet *The Catherine Wheel*, Weymouth and Frantz forming the commercial Tom Tom Club (remember 'Wordy Rappinghood'?), and Harrison producing his own solo vinyl debut, *The Red and the Black*.

But before that, *Fear of Music* had borne the first evidence of a fascination with percussively based material that came to fruition on *Remain In Light*.

"*Remain In Light* was born with the song 'I Zimbra'. I remember how excited we were making that song. Originally it wasn't going to be on *Fear of Music* but I had a demo-tape at home and I just loved it. We were actually at the point of listening to the masters for *Fear of Music* in the studio and I said, 'can we just put that rough mix of 'I Zimbra' up?'. It was an instrumental at the time, and we ran it and it sounded *so* great that everyone said, 'God, we've got to finish this song'. We all went to Australia and Dave and I flew back to finish it off. It was that song that set the root of the next step.

"I think it depends what you focus on. *Little Creatures* and *True Stories* are a return to melody, which is great; David's singing is better than it's ever been. Once you start conentrating on melody, the rhythmic aspects become a little quieter. In the *Remain In Light* period, rhythm was the essential feature of the music. I think there are some great rhythms on the new tracks as well, but they're not mixed as far to the forefront."

The trial separation ended in 1982, in a grand tour recorded and released as the LP *The Name of this Band is Talking Heads*▶

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▶and immortalised on film by director Jonathan Demme.

The film and album are considered by the band to represent the end of an era, a statement that invites the question: "What do you do upon reaching the end of an era?"

"Begin a new one", says Harrison, without hesitating. "It's the great problem with all bands that have had successful songs. It's also a reason for us taking so long between tours. Unfortunately we didn't come over here with the *Stop Making Sense* tour so it's been even longer since Britain last saw us play live. But I certainly don't want to be in the position that Chuck Berry is in where, for 30 years, he's played songs that are classic songs that he wrote in the first five years of his career.

"So we're always looking for a way to have new with old. There's no way people are going to latch onto something new unless it becomes such a hit that it takes on the same importance. So far we've always been able to re-invest energy in old songs. We've played songs like 'Psycho Killer' in a multitude of different arrangements so it can still seem fresh.

"I don't have any problem with playing old songs because I love them all, but you can play them for too long. Sometimes I think we should do a tour of entirely new songs and announce that in advance, then you could do another tour for people that want to hear the old songs. Perhaps we'd play smaller places with a more intimate environment to which people that now love those old songs could come to love them.

"There's no question that the larger you become, the more you're working with the memory of the audience because they can't be involved closely in the performance. But, because of what they've heard before at home, they have a picture in their minds already, so you're just adding to that. That can be an advantage, but overcoming those expectations can present even more of a problem. Personally, I'd prefer to state that there'd be no old songs, only new ones.

"We're talking about another tour at the moment. David, I think, feels that we have to be entirely different from anything we've done before. It's only now that he's finished his movie that he's giving it any serious thought. Until we come up with what our plan is, we won't be able to set any dates."

ON THE SUBJECT of equipment, Harrison has gravitated through the use of sampling to the Emulator II.

"When the Emulator II first came out, E-mu were smart enough to invite a number of musicians to be the first user group. And in the States, there's a large user group that is pretty open to trading. You can buy samples, and it really appeals to me that there's a great experimental base out there.

"I do like sampling, but you tend to spend so much time collecting samples and thinking about it that you can lose your ability to remain objective about the sounds. What's starting to happen with sampling is what happened to the DX7, in that you're starting to be able to recognise sounds throughout other people's records, like the shakuhachi sound that the Emulator uses. I used it too with the Violent Femmes and then, suddenly, I was hearing it everywhere and that was a drag.

"I recently bought the Optical Media CD ROM for the E-mu, but I haven't used it much yet because I'm waiting to get the hand-held CRM3 controller. Going through the original Macintosh interface is a bit slow. It's wonderful for the studio because everything's there: you haven't got to shuffle through disk after disk of samples."

For Harrison, though, digital sampling hasn't entirely replaced favourite analogue techniques.

"When I was looking for a synthesiser I was directed towards the Prophet 5, which was new then. I had my first Prophet 5 through England because I just couldn't get one in the United States. Now the trouble with the rev2 Prophet is that no-one makes a good MIDI retrofit."

Mention more modern synth gear to Harrison, and your words are met with a knowing smile. The problems of keeping abreast of developments without falling into the trap of "too much technology, too little creativity" are obviously familiar to him.

"I think what happens is that it takes so long to learn one instrument these days, it gets to be very hard to want to change. For instance, I can't imagine trying to recreate all my samples on another sampler. Although you can move samples using the Digidesign software, they're still not the performance things, all the balancing and setting up of how you want to access them from your keyboard.

"With the DX7 you have such a

tendency to page through sounds 'til you find one that fits your needs. Generally I like to blend sounds together, like a couple of DX7 sounds along with a sample. That way it's different to anyone with the same DX7 sounds or sampled sounds – they're not going to automatically sound the same as you.

"Now I'm using a TX816 rack, but before I was using two DX7s. I got on with the programming all right for a while, but now I've got the Emulator I'm spending more time with that.

"I feel I've lost a little of my remembrance of the DX7. What I mainly do now is search for a sound and then change the envelopes a little bit – that gives you the most immediate change in sound. If you're trying to make a sound a little more dynamic you can have trouble with recording – the top becomes just too much. If you start making it less dynamic, you've got to start changing so many things just to remove some of the touch-sensitivity. If you simply lessen the sensitivity, the sound becomes duller because you're taking it from the top and not the bottom; that's such a pain.

"I've sampled a few of the sounds off the DX7; generally I like it better than just playing them on the DX7, but then the touch-sensitivity is different. Just opening up the filter or making it louder isn't the same as what happens with the DX7's touch-sensitivity.

"I've been working on another solo album for a few years. When I first started I only had a DX7 – it had only just come out and all the sounds were so new. Now you've heard them all. The sounds I began using were all cartridge sounds because I didn't know how to program, but some of the results are wonderful where I've mixed two sounds together.

"The trouble is, I didn't write down what I'd done. I try to write down the things I do but I'm not too good at it. What happens is you get excited and you start moving more quickly, and you hate to keep interrupting your process. So they're lost to me now."

IN KEEPING WITH the solo projects that first evolved during Talking Heads' period of recuperation, Harrison has a number of projects of his own currently underway. First there's Harrison the solo artist, with the new album just hinted upon.

"I used Alex Weir who played on *Stop Making Sense*, but he's the only musician that's contributed. They're all my songs, but there's been people that have contributed. It's closer to the *Remain In Light* Talking Heads than our latest album."

Then there's Harrison the producer...

"I was over here in October to see It's Immaterial, who I did a single called 'Driving Away From Home' with a while ago. But I asked for my name to be taken off it because they did a remix and took away the life of the drums.

"They came out from England to Milwaukee, which must have been quite a shock for them on their first time in America because it's not the most glamorous place, but I had this little studio I worked in there. I was between a bunch of things but I fitted it in.

"I had a lot of real great musicians around there; I had a great real drummer and they made him sound like a drum machine. I think drum machines are great in their place, but I can't see why they wanted to do that. It's one of those songs that grabs you and you don't know why – it's not the lyric exactly, there's just something kind of mysterious about it. It was an unfortunate situation because I never spoke to the band again, only the record company, so I didn't know who was doing what.

"We were joking about how successful it had been in England after I'd asked for my name to be taken off the other day, but it was a matter of principle more than anything else."

▶ *"I've sampled sounds off the DX7; generally I like it better but the touch-sensitivity is different. Just opening up the filter or making it louder isn't the same as what happens with the DX's touch-sensitivity."*

So is Jerry Harrison enjoying himself now?

"It's an exciting time because there seems to be a number of things to do, but the hardest thing is scheduling. People take on outside projects and, when they don't last the amount of time they were intended to, things overlap.

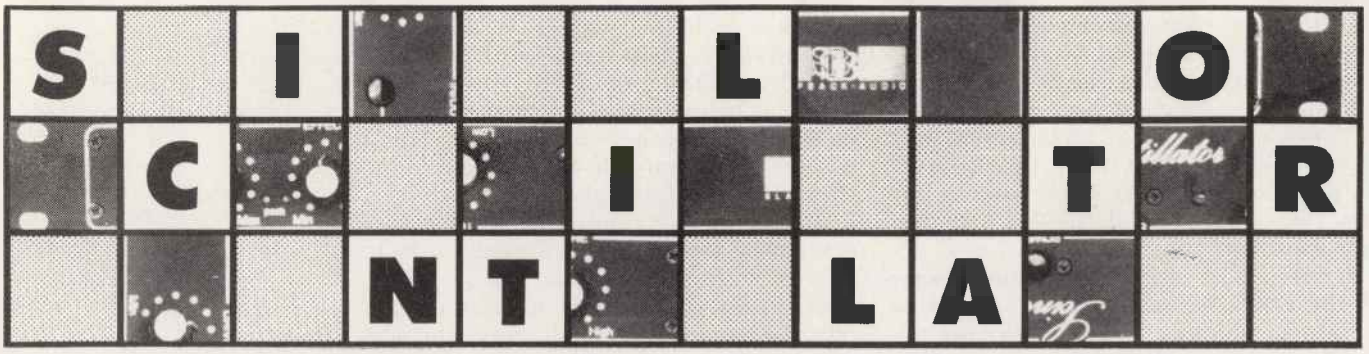
"It *will* be interesting to see what we next do as Talking Heads. I really don't know what it will be because the making of *True Stories* is like the end of *another* era. Talking Heads actually made two albums during that period. I think David's theme will be casting around a little bit looking for what comes next, and seeing whatever takes his attention.

"The rest of us will not have something as monumental as *True Stories*. For me I did the Violent Femmes album, the It's Immaterial single, a single for Fine Young Cannibals, and I've been working on my solo album. But I've been working on the solo album for as long as David's been working on the film. It was just about done right before the Talking Heads album came out; now I've stopped working on it but it shouldn't be released until sufficiently after the Talking Heads album, so we won't be competing with ourselves."

And so it is that with two distinct and contrasting eras behind them, Talking Heads face yet another crossroads. Will they continue working together as a unit?

"As long as we enjoy working together we'll continually return from doing these solo projects to make records", Harrison asserts.

"With *Remain In Light* I started to see this circuitous path that we had followed, and that the albums marked the directions of that path. To me it's continuous." ■



MISSION *impossible*

Part 2: Word Up

LACKING A LITTLE on top? A bit short on natural brilliance? Tired of adding more and more hiss to your multitrack recordings by winding up the treble in an attempt to restore life to rapidly fading backing tracks?

Or maybe it's that irreplaceable back-catalogue of your recordings that grieves you. You remember those magic moments captured in a garage on an old cassette recorder – the ones you can't hear any more after three generations of tape copying have buried them under a layer of noise. Either way – what you really need is a little scintillation (the Editor needs something more though...).

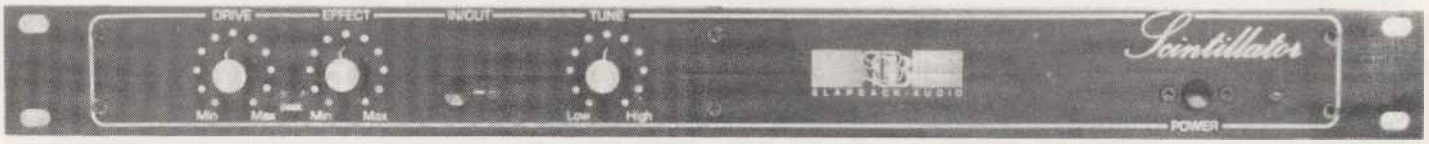
And that's where Part 2 of Mission Impossible comes in. Last month we offered you the chance to win one of the latest Akai polysynths – the AX73 – now it's the turn of sound processing to form the competition prize. So how about a Slapback Audio Scintillator?

For the uninitiated, the Scintillator is what the boffins call a psychoaccoustic enhancer. Sounds impressive, but exactly what is it? Simply, it's a 1U-high, 19" rack-mounting unit whose purpose in life is to enhance audio signals. The way it does this is to extract a mid-range element of the input signal, synthesise additional upper harmonics based on the frequencies already present, and then sum the original and enhanced signals at the output producing a much brighter sound. EQ'ing a signal for more top boosts not only the signal present on the tape but the tape hiss too, whereas the Scintillator allows you to lift a signal from the depths of tape noise and instill it with new life – in fact, you can even finish up with a richer signal than was recorded in the first place.

Not only individual tracks in a multitrack recording can benefit from this treatment, complete recordings may be salvaged too; though predictably you've less control over the final result.

How do you win it? Well, your mission, should you decide to accept it, is to list as many different words as possible made up from the letters S-C-I-N-T-I-L-L-A-T-O-R. You know the sort of thing: late, stall and so on. To prevent things getting out of hand, all the words you submit must be in the Oxford English Dictionary (ie. no serbo-croat...) but we *will* accept plurals.

Entries should be made on a separate sheet of paper accompanied by the entry form below, and should reach us no later than second post **Monday, January 5**. The winning entry will be the one judged to have the greatest number of eligible words. In the event of a tie, the winner will be the first entry drawn from a hat (or dustbin – if part one of Mission Impossible is anything to go by).



MISSION *impossible*

Part 2: Word Up

ENTRY FORM

The total number of words I've found in SCINTILLATOR is: _____

Name.....

Address.....

.....

.....

..... Postcode..... Daytime ☎.....

Send this form to: **Mission Impossible (Closest Thing to Heaven), MUSIC TECHNOLOGY, Alexander House, 1 Milton Road, Cambridge CB4 1UY**, to arrive no later than second post, **Monday, January 5, 1987.**

Employees of Music Maker Publications Ltd, Slapback Audio and their relatives, are ineligible for entry. The judges decision will be final and no correspondence will be entered into. ■

The moment you start to play the new Casio CZ1, you can feel it's no ordinary synthesiser.

It combines the realism of Casio's unique PD sound creation system with the expression of velocity and after –touch responsiveness, in a full size keyboard. The parameter settings have also been simplified so you spend less time poring over manuals and more time playing.

With 64 preset voices, 64 programmable internal memories and 64 voices programmable

onto RAM cartridge, the CZ1 gives you access to 192 sounds.

Add to this a further 64 tone-mix memories and you can see why the CZ1 really is the ultimate synthesiser.

Get your hands on one today—and feel the difference.

CASIO®

THE NEW CASIO CZ1 £999.00 (R.R.P.)
AVAILABLE AT MOST GOOD MUSIC STORES

Prices correct at time of going to press

patch W·O·R·K

Now that Patchwork is bigger than ever, you've an even better chance of seeing your favourite sound in print, not to mention your favourite magazine on your doorstep free of charge. And if you're still waiting to see *your* particular synth featured in these pages, why not be the first to submit some sounds?

Many readers are now supplementing their patch charts with a short demo cassette of the sounds in question, and this is *really good news* for our overworked (and generally hungover) editorial team. Don't worry too much about classic performances and impeccable recording quality; just present your sounds simply and concisely – and convince us you're the best of the bunch.

Don't forget that if your patch gets published, you'll receive a **free year's subscription** to MUSIC TECHNOLOGY with our compliments. So send us your favourite sounds on a photocopy of an owner's manual chart (coupled with a blank one for artwork purposes) accompanied, if possible, by a short demo-tape. Include a decent-length description of your sound and its musical purpose in life, and write your full name and address on each chart. And remember, edited presets are all very well, but an original masterpiece is *always* preferable. OK?

The address to send sounds to: Patchwork, MUSIC TECHNOLOGY, Alexander House, 1 Milton Road, Cambridge, CB4 1UY. ■

ROLAND ALPHA JUNO 2
Harmonica
Ian Chisholm, Cleveland

The first airing for one of the new Roland Junos, and about time too. Let's hear from some other proud Alpha owners soon.

A good Harmonica patch may not be an essential in every programmer's sound armoury, but Ian thought it was worth trying to improve on the Juno 2's preset offering. Can you do better? ■

Parameter	**Value**
DCO Range	8′
DCO LFO Depth	07
DCO ENV Depth	00
DCO ENV Mode	Normal
DCO Aftertouch	00
DCO Bend	02
Waveforms:	
Pulse	01
Sawtooth	05
Sub Osc	02
Sub Level	00
Noise Level	00
PW/PWM Depth	76
PWM Rate	00
HPF Freq	03
VCF Freq	80
VCF Resonance	00
VCF Env Depth	90
VCF Env Mode	Normal with Dynamics
VCF LFO Depth	30
VCF Keyboard Follow	10
VCF Aftertouch	00
VCA Level	81
VCA Envelope	Env with Dynamics
VCA Aftertouch	00
Chorus	On
Chorus Rate	00
LFO Rate	86
LFO Delay	69
ENV Time 1	32
ENV Level 1	127
ENV Time 2	00
ENV Level 2	127
ENV Time 3	96
ENV Level 3	61
ENV Time 4	21
ENV Keyboard	00

YAMAHA DX7
Timefluss
Roberto Laneri, Italy

From a selection of patches by Roberto, we chose a lovely, flutey brass sound that encourages you to make good use of the DX7's velocity-sensitivity; harder key strikes introduce a muted brass element and a prominent modulation effect. Given an impressive hi-tech setup which includes a DX7 plus four TX7s, you should find plenty of other good FM sounds on Roberto's record, 'Two Views of the Amazon' (Wergo SM1046). A review may follow if a copy finds its way to the Music Editor... ■

1 ALGORITHM	2 FEEDBACK	3 LFO WAVE	4 LFO SPEED	5 LFO DELAY	6 LFO PMD	7 LFO AMD	8 LFO SYNC	9 MOD. SENSITIVITY PITCH
16	7	Saw Down	47	82	0	22	On	1

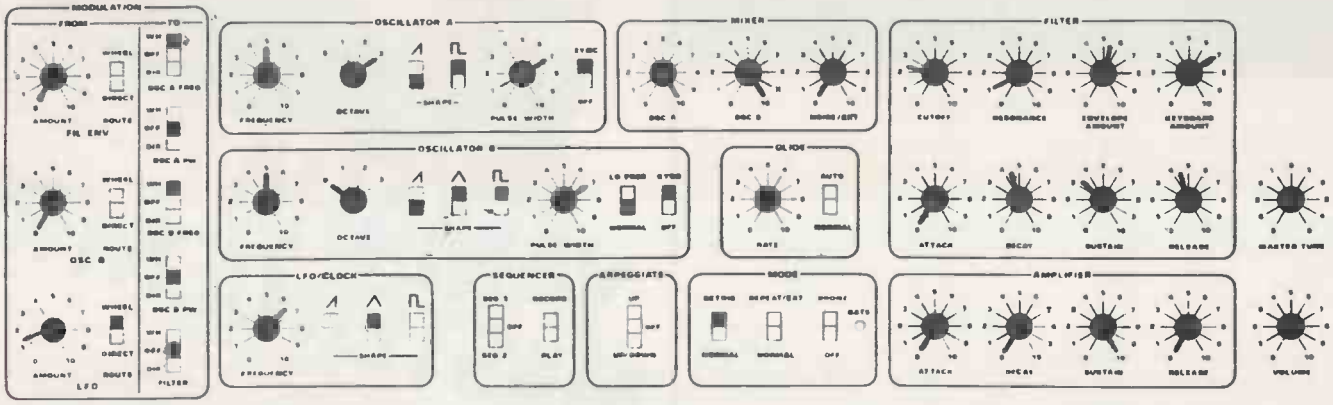
OP	MOD. SENSITIVITY AMPLITUDE
6	0
5	0
4	0
3	0
2	1
1	0

POLY/MONO	PITCH BEND RANGE	PITCH BEND STEP	PORTAMENTO MODE	PORTAMENTO GLISSANDO	PORTAMENTO TIME
Poly					

OP	MODE/SYNC	FREQ. COARSE	FREQ. FINE	DETUNE	EG RATE 1	EG RATE 2	EG RATE 3	EG RATE 4	EG LEVEL 1	EG LEVEL 2	EG LEVEL 3	EG LEVEL 4	KLS BREAK POINT	KLS CURVE L	KLS CURVE R	KLS DEPTH L	KLS DEPTH R	K.BOARD RATE SCALING	OUTPUT LEVEL	VELOCITY SENS.
6	R	4.00		0	40	33	28	52	90	95	77	0	C3	-LIN	-EXP	33	85	2	93	5
5	F		5.012	0	35	32	36	56	61	97	80	0	C3	-EXP	-EXP	18	50	0	82	1
4	R	11.00		-2	47	46	48	48	94	97	66	0	F2	+EXP	-EXP	18	99	1	63	1
3	R		1.98	+7	35	36	39	56	68	80	71	0	C3	-EXP	-EXP	18	14	0	99	3
2	R	2.00		+3	26	25	22	56	83	97	53	0	C3	-EXP	-EXP	18	98	5	89	2
1	R		1.99	-3	54	43	28	53	99	87	80	0	C4	+EXP	-EXP	40	34	1	99	0

PITCH EG RATE 1	RATE 2	RATE 3	RATE 4	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	KEY TRANSPOSE	VOICE NAME
82	99	99	99	48	50	50	50	C2	TIMEFLUSS

	RANGE	PITCH	AMPLITUDE	EG BIAS
MODULATION WHEEL	33	ON	ON	ON
FOOT CONTROL	33	ON	ON	33
BREATH CONTROL				
AFTER TOUCH	60	ON	ON	ON



SCI PRO-ONE
Pro-Clunk
Steve Byhurst, Surrey

The new, extended Patchwork allows for the inclusion of patches for some older synths, and 'Pro-Clunk' should confirm that there's life in the old monosynths yet... As you may have guessed, this is a clunky type of sound: one oscillator provides the low bass part while the other supplies the higher portion.

'Pro-Clunk' is useful for sequencing work, especially as a bass part, but can also double as a solo sound using the LFO for adding vibrato via the mod wheel (preferably with some deep reverb added). But this is a versatile sound, and Steve suggests changing the cutoff frequency to make it more brassy or brighter. Experimenting with the Filter EG controls can also provide some interesting, if not always very usable, results. ■

KORG MONO/POLY
Trivial Percussion
Adrian Bennet, Northumberland

It's a long time since the Mono/Poly got a look in these pages, but we couldn't resist this oddball selection of bell and percussion sounds. Our favourite was 'Bamboo Chimes', but even the more obscure sounds have some musical use. Adrian waxes lyrical over them as follows:

Scaffolding – is a hollow metallic clunk which sounds exactly like builders throwing scaffolding onto the back of a wagon.

Knackered Tubular Bells – are quite realistic, but with something rather unsettling about their harmonic content. They sound even better through a stereo chorus unit.

Talking Milk Bottles – milk bottles used as pan pipes; a breathy puff to start with, followed by a hollow reverberation which continues for a moment after you stop blowing.

Soprano & Bass Woodblocks – very realistic and with many musical uses.

Bronze Bell – is a large and very realistic reverberating bell, and again it sounds good with stereo chorus.

Twanging Rubber Band – starts with a nasty buzzing twang which gives way to a short rubbery note that quickly (and mercifully) dies away.

Bamboo Chimes – the initial clunk of wood striking bamboo, followed by a rich, hollow reverberation.

Tea Cup – a teaspoon strikes Auntie's best china... ■

TITLE	Scaffolding	Knackered Tubular Bells	Talking Milk Bottles	Soprano Woodblock	Bronze Bell	Twanging rubber band	Bamboo Chimes	Bass Woodblock	Tea Cup
WAVEFORM *VCO1*	^	^	^	^	^	^	^	^	^
OCTAVE	4'	4'	8'	2'	16'	2'	2'	2'	2'
LEVEL	0	0	0	0	4	0	10	0	0
WAVEFORM *VCO2*	^	^	^	^	^	^	^	^	^
OCTAVE	4'	4'	8'	2'	4'	2'	8'	4'	2'
LEVEL	0	0	0	0	3	0	0	0	0
WAVEFORM *VCO3*	^	^	^	^	^	^	^	^	^
OCTAVE	8'	8'	8'	2'	8'	4'	8'	8'	2'
LEVEL	0	0	0	0	0	0	0	0	0
WAVEFORM *VCO4*	^	^	^	^	^	^	^	^	^
OCTAVE	4'	4'	8'	2'	4'	16'	8'	4'	2'
LEVEL	10	10	10	10	10	10	10	10	10
CUT OFF FREQ.	0	0	1½	0	0	0	0	0	3
RESONANCE *VCF*	0	2	0	0	1	2	2	4	0
EG INTENSITY	+3	+2½	+2	+4	+2½	+5	+4	+3	+3½
KBD TRACK	0	0	0	0	0	5½	0	0	2
ATTACK *VCF EG*	0	0	1	0	0	0	0	0	0
DECAY	2½	3½	4	0	4	1	0	1	1
SUSTAIN	2	5	0	2½	5	3½	3½	2½	2
RELEASE	2½	10	2½	0	10	1½	1½	1	2
ATTACK *VCA EG*	0	0	1	0	0	0	0	0	0
DECAY	9	10	4	0	10	2	1	9	1
SUSTAIN	10	5	0	3	5	0	0	10	2
RELEASE	3	10	3	0	10	2	2	3	1
NOISE	0	0	2½	0	0	0	0	0	0
TRIGGER (MULTI)	M	M	M	M	M	M	M	M	M
DETUNE	0	0	0	0	0	0	0	0	0
TRANSPOSE	NOR	NOR	UP	UP	NOR	NOR	NOR	DOW	UP
EFFECTS *FX*	ON	ON	ON	ON	ON	ON	ON	ON	ON
X-MOD	9	8½	9	8½	6	8	8	9	9
FREQUENCY MOD	0	0	0	0	0	0	0	0	0
VCF EG/MG1	-	-	-	-	-	-	-	-	-
SYNC/X-MOD	X-	X-	X-	X-	X-	X-	X-	X-	X-
SINGLE/DOUBLE	DBL	DBL	DBL	DBL	DBL	DBL	DBL	DBL	DBL
KEY ASSIGN MODE	UNI	UNI	UNI	UNI	UNI	UNI	UNI	UNI	UNI

Monst-ROM 512

ROM cartridge for Yamaha DX7

Price £145 including VAT

IT SEEMS FAINTLY absurd that over 500 synthesiser sounds can come from a plastic cartridge measuring no more than three inches by two. Yet in this age of continuing miniaturisation, it should come as no surprise to learn that a West German company has succeeded in squeezing that many sounds onto a ROM cartridge identical in external spec to Yamaha's original DX7 design.

The ROM in question carries the unpromising title of Monst-ROM, and two switches protrude through its casing out of the printed circuit board that lies within. One of these selects the bank you're using, the other the group; since an unmodified DX7 can cope with banks of no more than 32 sounds at a time, the Monst-ROM's voices are divided into four groups, with each group possessing four banks. That's 16 banks and 512 sounds in total, so you can put the calculator away.

Now, lest you start to feel sympathy for the engineers who had to program these sounds, I ought to point out that, according to UK importers Executive Audio, they were "created by advanced computerised resynthesis techniques". Whether this means the Monst-ROM voices are the result of a software program like Steinberg's ProCreator (reviewed elsewhere this issue) isn't clear, but I know *I* wouldn't like the idea of having to program 512 DX voices, so the computer has obviously earned its keep.

Each of the 16 banks on Monst-ROM represents a family (sometimes two families) of sound, so that, for instance, bank A1 consists mainly of piano sounds, A2 deals with human voices, D1 houses studio sound effects. and D2 plays host to a variety of bass sounds.

But the first thing you learn about Monst-ROM is that the names its patches have been given aren't necessarily a very good guide to what they're going to sound like. This is bad enough with voices such as "Trumpet 1" and so on, but a real pain when you're faced with sounds called "Moog Mini", "Kurzweil 1" and "CS80", which do almost precisely the opposite of what you expect them to do.

The worst offender here is bank C2, whose patches are named simply "Synth 1" to "Synth 32" inclusive, despite the fact that none of them really sound like synthesisers at all. Then again, there are some who'd argue that sounding like a synthesiser is not a DX7 forté in any case...

But to more serious matters, and the vexed question of whether the bulk of the voices on Monst-ROM really sound any good – regardless of what they're called. Well, I have to report that the standard of sounds on this ROM is sickeningly high. There are the usual DX let-downs like weedy analogue leadline imitations and wayward bass crunches, but in the main, the Monst-ROM's sounds pack a hell of a punch.

Among the most realistic are the organs (acoustic and electric, but especially the Hammonds), the electric pianos (we're used to great Rhodes rip-offs, but it's the Wurlitzers that stand out here), some marvellously "chiffy" flutes and panflutes (including one called "Zhamfir"), and the usual complement of sparkling bells, vibes, marimbas and xylophones, some of which are refreshingly distinctive.

Moving away from realism and onto less likely programs, there are some fine vocal approximations lurking under the guise of "PPG" patches, a fair sprinkling of "dreamy" slow-attack synth sounds (just right for ambient washes), and some novel combination sounds, the most successful of which is the striking "Bell/Str". If I had to pick a favourite from the 512 (it was a long night), this hybrid of a hollow, rounded bell tone and silky (and unexpectedly "analogue") strings would be the one.

£145 may seem a lot to pay for a collection of synthesiser sounds, but set against the cost of a DX7, it seems incredibly little. The Monst-ROM is a vast library of useful sounds that could come into their own in any number of recording situations, even if those switches could be a bit fiddly to use live.

And if, on hearing this astonishing selection, you decide to have a bash at programming your DX yourself, I can't think of a better place to find source patches than the Monst-ROM; imagine tweaking *this* little lot. ■ **Dg**

More from *Executive Audio, 159 Park Road, Kingston-upon-Thames, Surrey KT2 6BX.* ☎ *01-541 0180*

BIT ONE
Bit for a King
Marcus King, Wilts

Who fancies a Bit then? Quite a few of you, if the amount of patches we receive are anything to go by. Marcus has sent us four of his faves for the Bit One, and describes them as:

Filter Sweep (A) – a very "synthetic" voice with a long release time, useful for block chords.

Expansion (B) – an atmospheric sound with long attack and release. It should be played staccato, allowing the sound to expand in the same way as the similarly named voice on the DX7.

DX Strings (C) – are best used for playing string quartet-style parts; played sympathetically, it can sound surprisingly realistic.

Croc Rock Organ (D) – is a gutsy, slightly distorted-sounding organ, modelled on the one used on Elton John's 'Crocodile Rock', hence the title. ■

	(A)	(B)	(C)	(D)
LFO1				
1	1	1	1	1
2	0	0	0	0
3	0	0	0	0
4	1	0	1	1
5	1	0	1	1
6	0	0	0	0
7	0	0	0	0
8	39	39	46	38
9	0	0	28	0
10	28	28	26	26
11	0	0	0	0
VCF				
12	12	0	0	0
13	63	63	27	29
14	8	0	0	38
15	51	63	15	43
16	10	10	16	0
17	6	6	0	0
18	10	2	25	0
19	29	16	0	0
20	54	63	48	0
21	17	0	45	0
22	0	1	0	1
DCO1				
23	1	1	1	1
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	1	1	1	0
29	1	0	1	1
30	0	0	0	0
31	0	0	0	0
32	30	14	0	12
33	61	25	33	0
DCO2				
34	1	1	1	0
35	0	0	0	0
36	0	0	0	1
37	0	0	0	0
38	0	1	0	0
39	1	0	1	0
40	1	0	1	1
41	0	0	0	0
42	0	0	0	0
43	30	30	0	12
44	53	22	34	0
VCA				
45	0	0	0	0
46	0	0	32	0
47	0	0	19	2
48	0	0	0	37
49	63	63	63	35
50	39	63	28	13
LFO2				
51	0	1	0	1
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	63	0	0
59	61	0	61	0
60	53	4	53	19
61	53	0	53	0

Photography *Tim Goodyer*

CASIO CZ101
Rich Reward
Jacek Grudzien, London SW18

Although received devoid of any descriptive prose, 'Rich Reward' turned out to be a good, fat sound for the CZ that should find its way into a good many solo meanderings. Jacek, incidentally, is a young Polish composer currently on a music scholarship in London, and his sound's inclusion in Patchwork has absolutely nothing to do with the Editor's ancestors being Polish. Honest. ■

PARAMETER	TONE NAME	CARTRIDGE NO.	TONE NO.
	RICH REWARD		

LINE SELECT	MODULATION RING	MODULATION NOISE	DETUNE +/-	DETUNE OCTAVE	DETUNE NOTE	DETUNE FINE	VIBRATO WAVE	VIBRATO DELAY	VIBRATO RATE	VIBRATO DEPTH	OCTAVE +/-	OCTAVE RANGE
1+2'	OFF	OFF	+	00	00	06	1	00	45	08		0
(1,2,1+2,1+1')	(ON/OFF)		(+/-)	(0-3)	(0-11)	(0-50)	(1-4)	(0-99)	(0-99)	(0-99)	(+/-)	(0-1)

1

DCO 1

WAVE FORM FIRST	WAVE FORM SECOND
3	5
(1-8)	(0-8)

ENV (PITCH)

STEP	1	2	3	4	5	6	7	8	
RATE	00								(0-99)
LEVEL	00								(0-99)
SUS/END	END								

DCW 1

KEY FOLLOW
0 (0-9)

ENV (WAVE)

STEP	1	2	3	4	5	6	7	8	
RATE	87	00							(0-99)
LEVEL	90	00							(0-99)
SUS/END	SUS	END							

DCA 1

KEY FOLLOW
0 (0-9)

ENV (AMP)

STEP	1	2	3	4	5	6	7	8	
RATE	75	35							(0-99)
LEVEL	99	00							(0-99)
SUS/END	SUS	END							

2

DCO 2

WAVE FORM FIRST	WAVE FORM SECOND
5	3
(1-8)	(0-8)

ENV (PITCH)

STEP	1	2	3	4	5	6	7	8	
RATE	00								(0-99)
LEVEL	00								(0-99)
SUS/END	END								

DCW 2

KEY FOLLOW
0 (0-9)

ENV (WAVE)

STEP	1	2	3	4	5	6	7	8	
RATE	94	00							(0-99)
LEVEL	85	00							(0-99)
SUS/END	SUS	END							

DCA 2

KEY FOLLOW
0 (0-9)

ENV (AMP)

STEP	1	2	3	4	5	6	7	8	
RATE	75	35							(0-99)
LEVEL	99	00							(0-99)
SUS/END	SUS	END							

BIT MIDI MASTER KEYBOARD

For those who think all controller keyboards are essentially the same, here's one from Italy that features a built-in four-track sequencer and a host of MIDI-related features. By Simon Trask.

PAST CONTROLLER KEYBOARDS have concentrated on providing "professional" quality keyboards together with the kind of rugged casing construction that would make a Chieftain tank seem flimsy. And because such instruments are by definition devoted to the act of controlling, their facilities have provided various degrees of complexity and resourcefulness, over and above what you'd expect to find on a typical synth.

But no matter how comprehensively specified a controller keyboard is, there's only one way it will sell in any real quantity: if the price is right. After all, few musicians will decide to go for a "silent" machine when the same amount of money will buy them an instrument that actually makes a sound.

One of the more affordable controller keyboards heralds from Italy, and goes by the name of the Bit MIDI Master Keyboard. The machine's designers have taken the role of a master keyboard as a central controller very seriously, to the extent of including a very well-specified onboard sequencer, of which more later.

Keyboard quality and constructional strength of the Bit Master Keyboard conform more to synth expectations than to the bulky piano-like characteristics of some other, more pretentious (and more expensive) controllers. Now, what you lose in constructional rigidity you gain in portability. But one slightly alarming feature of the Bit's construction is that the keys slightly overhang the instrument's casing. Wonder how long they'd last when subjected to the rigours of the road..

The six-octave keyboard is sensitive – though it doesn't *feel* all that sensitive – to both attack velocity and channel aftertouch, and you can set response scales for both of these. Aftertouch information can be converted to either pitch-bend or modulation data, allowing instruments which don't recognise such information (such as the cheaper CZs and DXs of this world) to respond to it in a meaningful way.

Like Oberheim's Xk controller keyboard, the Bit allows you to specify three keyboard zones, each of which has its own MIDI channel, patch number (1-128) and – if required – transpose value. The latter setting can be useful as a quick way of adjusting the range of a slave instrument's sound.

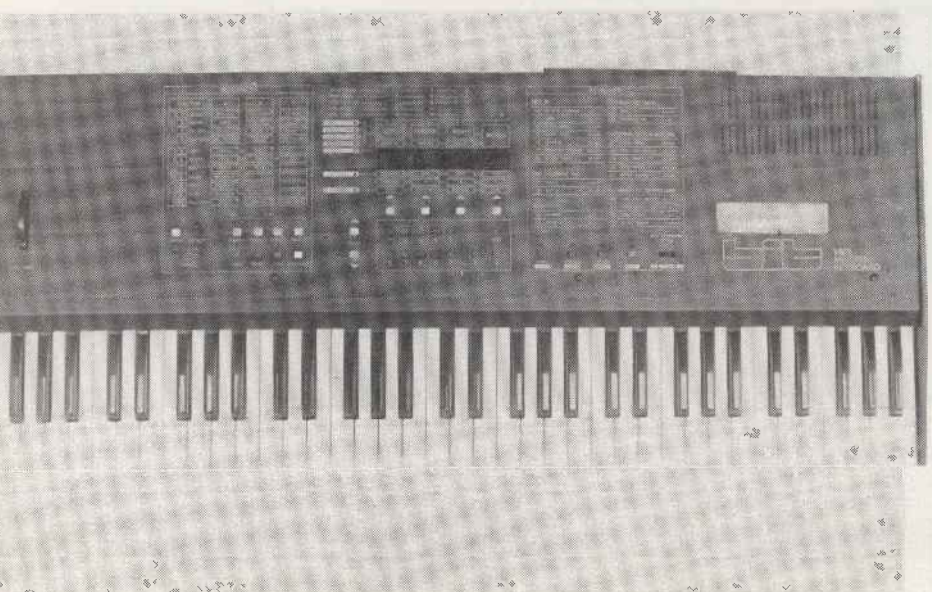
The Right zone has a programmable lower limit and the Left zone a programmable upper limit, allowing you to set up straightforward split and dual textures as well as all manner of overlapping zones. These limits can be set from the keyboard by holding down the appropriate selector button and playing the required notes – a lot easier than having to bother with numbers.

The Center (Italian design, American spelling) zone can be turned off if required, and can occupy the central area of the keyboard for a three-way split, or else can be assigned to the range of the Left or Right zone – keeping its own settings, of course.

As well as being able to send a patch number for each zone, the Bit allows you to specify patch numbers for the remaining 13 MIDI channels – so every MIDI channel gets its own pach number. This ability could be useful, for instance, for changing patches on MIDI'd effect units or the Bit's own sequencer tracks.

In addition to the usual pitch-bend wheel, the Bit has three assignable controllers: one wheel, a footswitch and a footpedal. Not only can these be assigned to send any controller number within their own type (ie. continuous or switch), but you can individually assign each controller – along with pitch-bend and aftertouch – to a specific MIDI channel, or to one of the three keyboard zones. This means you can direct sustain or pitch-bend, for instance, to a specific instrument – invaluable when using the onboard sequencer.

All the above-mentioned settings are stored in 64 onboard program locations, which can be called up from the front panel or stepped through using a footswitch.



Photography *Tim Goodyer*

Sequencing

THE BIT's designers have given their instrument a 4000-note sequencer, with four polyphonic tracks and both real-time and step-time recording capabilities. Step-time recording can be polyphonic for each step, and velocity data is recorded. You can record up to eight

four-track sequences, each of which can last for up to 99 bars of either 3/4 or 4/4. These sequences can be chained together in up to 32 steps to make a single song. And for a greater number of steps, you can link pairs of sequences together to form a single step.

You can also mute different tracks of a sequence in different song steps, a feature which allows you to get maximum mileage out of the limited number of sequences available, and to economise on sequence memory.

Also useful is the ability to insert patch changes at any point – down to the smallest step value – on each of the four tracks. So you can, for instance, insert program changes at the beginning of each sequence so that the correct patches will automatically be called up.

Sequence editing features include the ability to copy one track to another, delete any portion of a track, erase a sequence and copy one sequence to another. Not that comprehensive – you can't drop in, for example – but certainly usable.

One of the most useful features is Track Mix, which effectively allows you to record more than four parts. You mix two tracks onto one of the two, which means you don't have to keep a track spare all the time. This facility can also come in useful where you've recorded a track in step time and want to add controller data: while playing back the step-time track, record the relevant controller(s) on another track and then mix the two tracks together.

Each track is allocated to a single MIDI channel. First, this means that mixed-down tracks are still sent on one MIDI channel (not necessarily a problem, of course), and second, it means the sequencer doesn't conform to the three-zone layout of the Master Keyboard's patches. However, you can use any of those patches when playing along with the sequencer tracks, which means you can have up to seven different MIDI channels active from the Bit at any one time.

The Bit has a healthy complement of rear-panel connections, including MIDI In, Thru and two Outs. MIDI In on an instrument which makes no sound may at first seem rather unnecessary, but it actually allows you to route a remote keyboard through the Bit (for those front-of-stage excursions) or to take an input from an external sequencer. The latter option lets you record into an external sequencer over one of the MIDI Outs, while playing your slave instruments over the other MIDI Out *and* having those instruments played from existing sequencers' tracks (the MIDI In passes data on to the MIDI Outs, as well as the MIDI Thru). And the internal four-track sequencer can be active at the same time.

In this way, you can still take full advantage of the Bit's facilities with tracks which have been recorded into an external sequencer. Any problems concerning which MIDI channels are to be routed where are easily remedied by the fact that you can select which MIDI channels are sent on which of the two Outs – a feature which can also be useful in minimising the amount of data the MIDI buss has to convey. You can also route MIDI timing data selectively to either one of the Outs – another way of cutting down on unnecessary data.

Ever thorough, the Bit's designers have also allowed you to filter out MIDI pitch-bend, mod wheel, sustain, patch-change and aftertouch data individually, on any selection of MIDI channels between the In and Out stage – particularly useful when working with an external sequencer.

But one possibly useful feature that's been omitted is the ability to call up the Bit's own patches from patch changes received on MIDI In – that would have allowed the Bit's keyboard textures (not to menton patch

assignments for all 16 MIDI channels) to be controlled remotely from an external sequencer.

In addition to MIDI connections, the Bit has Sync In and Out sockets for connection to non-MIDI drum machines and sequencers, inputs for sequencer Run and Stop/Continue (so you don't need to take your hands away from the keyboard), a Patch Advance footswitch input, controller pedal and footswitch inputs, and dual-purpose sockets for tape sync in/out and tape save/load of patches and sequences. There's even a Metronome Out socket for sending a signal to an external amplifier or mixer.

Patch and sequence data can be saved to tape or over MIDI. The latter option allows for patch software from some enterprising software company (full System Exclusive details are given in the manual), but the ability to dump sequence data opens up interesting possibilities for anyone who can decipher how the Bit stores that data.

Verdict

THE EXTENSIVE abilities of the Bit Master Keyboard mean that it isn't easy to grasp all its possibilities straight away. But the extremely informative front panel, straightforward operation and helpful (not to say amusing) manual all conspire to make the learning process fairly agreeable.

And while its keyboard won't appeal to those players who like that magical "pianistic" feel, there's no doubt that a tremendous amount of thought has been put into the Bit's design. The end result is a usable and useful controller which achieves an effective balance between the comprehensive and the comprehensible, and should form a fine centrepiece to many a MIDI setup. ■

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MONO MODE

MIDI and drum machines have gone hand in hand for a number of years, but so far only one model – Sequential's Tom – has been given an implementation of MIDI Mode 4. It should encourage others to do the same. *Text by Paul Wiffen.*

FOR MANY MUSICIANS, MIDI and drum machines still don't quite go together. Sure, people use MIDI-equipped beat boxes, but because little has been specifically laid down for drum machines in the MIDI spec, too many of those users don't make the most out of MIDI on a drum machine the way they would on a synth or a sampler, say.

But think about it for a minute. The MIDI Clock has worked wonders in the area of synchronisation, replacing the vast range of sync standards and other incompatible systems which existed before MIDI.

And the Start, Stop and Continue commands, in conjunction with the MIDI Song Pointers, go further than ever before to the development of a drum machine/sequencer system which can be rewound or fast-forwarded and then started at any point in the song, with all the separate machines still knowing *exactly* where they are supposed to be playing from. Adding a suitable SMPTE-to-MIDI converter means this process can be controlled from a multitrack tape machine, allowing valuable tape tracks to be freed for things that can't be sequenced: vocals, guitars, and the rest.

But all these worthwhile practices are based on the assumption that you're recording and playing back your drum patterns on the machine itself. What about programming drum parts from a keyboard or pads – so often a more "musical" way of entering drum parts? Or triggering the sounds from a MIDI sequencer?

Well, most MIDI drum machines do allow you to do this, but there is no standard format laid down for the way in which it's done. Different manufacturers have evolved various systems using MIDI note number assignments. So, if you record a drum part onto a sequencer using one machine and then decide to play it back on another, you'll get a highly unpredictable (and probably unusable) result.

The first MIDI drum machine on the market, Sequential's Drumtraks, assigned its various drum sounds to notes in the bottom couple of octaves of a standard five-octave keyboard. This same system of allocation was carried over to the Tom, which assigns its drum sounds to exactly the same keys when in MIDI Modes 1 and 3. Roland's TR909 used a similar system, but (unfortunately) *not* the same allocation. Still, the two manufacturers' systems are sufficiently similar for users to be able to trigger one from the other without too many problems, so all three of these drum machines can be played from the first Roland Octapad preset quite easily.

When Yamaha entered the MIDI drum machine market, their RX11 and RX15 allowed the user to assign a MIDI note number to each drum sound, and this assignment was remembered even when the machine was switched off.

More recent Roland machines like the TR707, TR727 and TR505 (and also the Octapads – designed for playing the sounds in drum machines via MIDI and thus recording rhythm patterns into MIDI sequencers) give the best of both worlds, with preset assignments which come close to being standards, coupled with the opportunity to change individual note assignments if incompatibilities occur.

Now, on drum machines that allow dynamic tuning of sounds (ie. where the pitch of a sound can be continously changed between one hit and the next – and then memorised within a pattern) some way had to be found to make this facility available via MIDI.

E-mu Systems added a special function to their SP12 to treat incoming MIDI note numbers as tuning controls instead of triggers for different drum sounds.

When originally released, the Drumtraks had dynamic tuning but no way of accessing it through MIDI. A software update (version 0.5, which should still be available though your nearest Sequential dealer) changed this and made tuning available via MIDI in two ways: first by using the bend wheel on a synth to change the pitch of the last sound triggered, and second by holding down the note which triggers the sound you want, and then choosing from a 16-note range just above Middle C which acts as the tuning control.

The new Korg DDD1 uses the same area of the keyboard to achieve tuning control (and the area below the MIDI note triggers for decay controls).

The problem with this method is that you can only control one sound at a time via MIDI. Now, this isn't so bad if you're using the internal patterns of the drum machine to sequence your drum sounds, and are only using the MIDI controller (keyboard or drum pads) to play the patterns in one part at a time, as the drum machine only needs to be able to recognise one tuning instruction at a time. (The others, if there are any, are already stored in the machine's internal patterns which don't use MIDI assignments.)

But if you send the data to be recorded on a MIDI sequencer (via the Thru socket on your drum machine) and then try to "overdub" another drum part which uses tuning control as well, you'll have trouble when replaying your drum part. Why? Because there's no way for the drum machine to know which sounds the tuning ►

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amounts are meant to refer to, and some strange tunings are likely to result.

The answer Sequential found to this problem on the Tom was to use our old friend Mono Mode. By putting each drum sound on a different MIDI channel, you can use all the MIDI note numbers to represent different pitches.

Well, that's exaggerating a little. Internally, the Tom allows for 32 different tunings of each drum sound. In MIDI Modes 1 and 3 (Poly Mode with Omni On and Off, respectively), the tuning ranges lie above Middle C (so as not to interfere with the MIDI note numbers used to trigger sounds) and are restricted by the lack of space on four- and five-octave keyboards.

But in Mode 4, where the sounds are selected by the MIDI channel the data arrives on, the note numbers for determining pitch start at the bottom end of a five-octave keyboard. This means that C1 (MIDI note number 36) causes the lowest pitch of the selected instrument to sound. This makes F#3 (66 in MIDI terms) the highest pitch of the 32-note range.

So now you can use this note range to control all 15 available sounds independently over the Tom's full range on separate MIDI channels.

The channels which the Tom assigns each drum sound to are as follows:

Bass Drum	1
Snare Drum	2
Tom 1	3
Tom 2	4
Open Hi-hat	5
Closed Hi-hat	6
Crash Cymbal	7
Claps	8
Cartridge 1	9
Cartridge 2	10
Cartridge 3	11
Cartridge 4	12
Cartridge 5	13
Cartridge 6	14
Cartridge 7	15
Trigger Out	16

Clearly, if you're simply playing patterns which have been pre-recorded on the Tom into a MIDI sequencer and then replaying them on the Tom from the sequencer (see Diagram 1), you don't need to know this allocation.

All you have to do is put the Tom into Mono Mode before you start recording, make sure it's in Mono Mode before playback, and everything should come back exactly as recorded, no matter how many of the Tom's instruments you are using with tuning variations.

Don't forget you can also send and receive the "special" key note numbers the Tom also implements in Mono Mode. These are C#4 (note 61) for instrument direction, which governs whether the sound is played forwards or backwards, and D4, D#4 and E4 (62, 63 and 64) which set the stereo panning of the sound to left, centre or right respectively.

The Tom's Mono Mode implementation also allows for additional data which can't be transmitted or received at all in the other modes. Notes F4 (65), G4 (67), A4 (69) and B4 (71) all control the amount of "flange" an instrument sounds with, provided the Stack control on the Tom is switched on. This effect is achieved by detuning the sound against itself; B4 gives you the maximum flange effect, while F4 turns the effect off completely.

Overall, the Tom's implementation of Mono Mode has a good many more uses than the simple transfer of drum patterns to a MIDI sequencer intact. You can use the transmission on multiple channels (another example of the implementation of Mono Mode beyond that provided for in the MIDI spec) to trigger a sampler which is also in Mono Mode. In fact, if you use the assignment I suggested in our Mono Mode feature on the Prophet 2000, you'll find the bass drum, snare drum and toms trigger as they are.

But one aspect of the Tom's Mono Mode that may cause you a few headaches is the fact that each MIDI channel is assigned its own sound, meaning that drum sounds may trigger on channels that are meant to be sequencing other things (keyboard parts, for example).

You can reduce this problem by taking the cartridge out of the Tom and not using the trigger output. This will allow channels 9-16 to be used for other MIDI devices; nothing will sound from the Tom as the sounds which would normally be triggered on the machine are just not present.

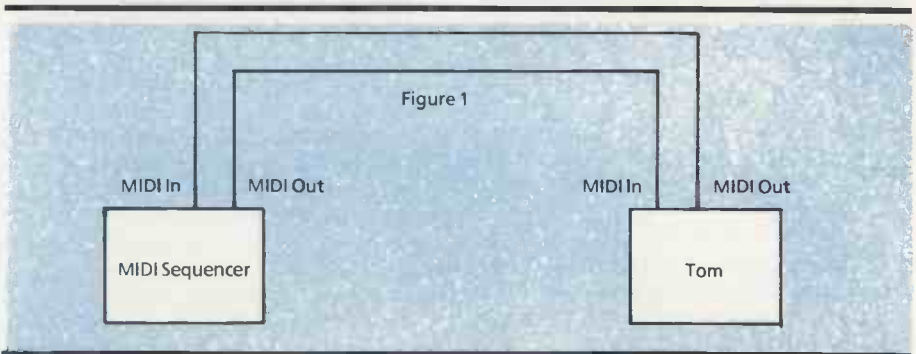
If it's possible to assign different MIDI channels to each pad on your MIDI drum controller or electronic kit, you'll be able to play the sounds on the Tom in Mode 4 and record them onto a MIDI sequencer simultaneously. This is most easily achieved on a sequencer which can "Mix" MIDI Out and Thru signals, as Sequential neglected to put a MIDI Thru socket on the Tom. Using such a system, you'd connect your pads, sequencer and Tom as shown in Diagram 2.

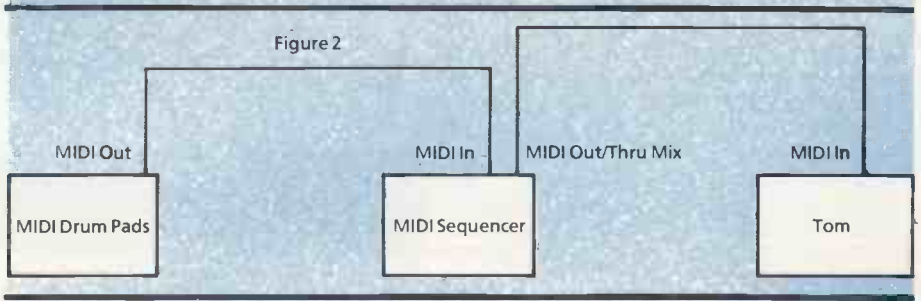
If your sequencer doesn't have a Mix facility, you'll need to use a MIDI Thru Box, and you'll have to keep replugging the MIDI cables as shown in Diagrams 3a (for recording drum parts) and 3b (for playing them back).

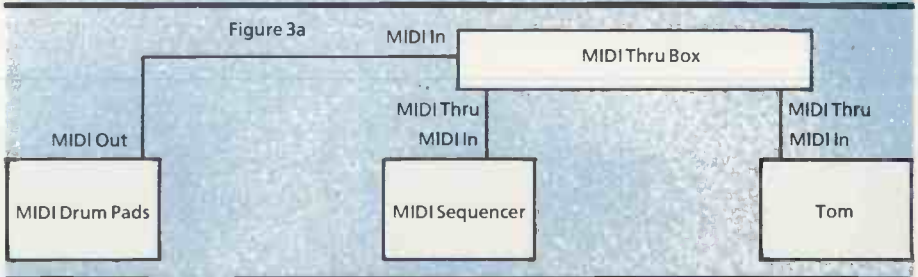
The Tom's ability to receive in Mono Mode is mirrored by a similar ability to transmit on more than one MIDI channel (an ability not strictly within the confines of Mono Mode which, according to the 1.0 spec, enables a machine to receive on multiple channels while still transmitting only on the base channel). This means you can send to other machines which receive in Mono Mode, like the Prophet 2000/2 and Akai S900 samplers. By sampling drum sounds on the same MIDI channels as Tom's assignment, you can trigger these direct from the patterns on the Tom.

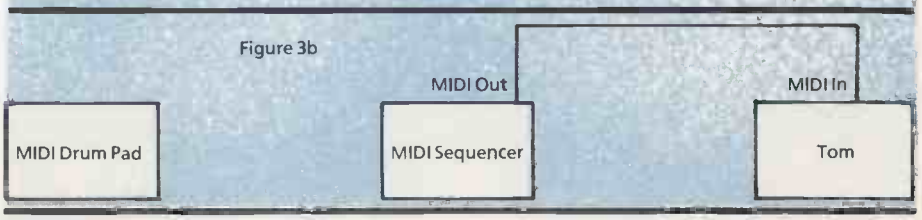
We can see, then, that there are myriad ways of using Mono Mode on a drum machine. Unfortunately, no other manufacturers have noticed this yet, so our investigation of Mode 4 in this area must end as abruptly as it began.

Next time, we'll move on to see how Mono Mode makes itself indispensible to the MIDI-equipped guitarist. ■









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Kraftwerk
Electric Café

EMI LP

Good news. Five years on from *Computer World*, Kraftwerk are still in love with synthesisers, with electronic percussion, with mass communication, and with voice sampling.

Since 1981, of course, electronics have become an integral part of the pop industry, and Kraftwerk have influenced everybody from "New Age" instrumentalists to hip hop DJs. The band themselves may have produced only one single – 'Tour de France' – in that time, but the rest of the industry has spread their message for them.

But now we have *Electric Café*, an album that couldn't have been made by anybody except Kraftwerk.

The first side is an inconsequential piece of hip hop nonsense, beginning with 'Boing Boom Tschak' (vocal samples of the phonetic sounds drum machines normally make), running through 'Techno Pop' (pretty synth melodies and more vocal samples), and culminating in 'Musique Non Stop' (still more vocal samples, this time with obvious chipmunk effects à la *Zoolook*).

Side 2 begins with a song, 'The Telephone Call', with its obvious telephone noises, international operator messages, and endearingly out-of-tune singing. It is to *Electric Café* what 'Computer Love' was to *Computer World*.

Then comes the album's highlight, 'Sex Object' – all pounding drum beats, clinical vocal delivery, and cleverly spun-in TV dialogue. But there's the unexpected bonus of a DX-ish (and very un-Kraftwerk) strings section, and a neat sampled slapped bass in what, for convenience, I'll call the instrumental break.

The album's finale and title-track is really just 'Trans Europe Express' re-written, and comes as a disappointment after the surprises that precede it. The French vocals – more brash statements about the electronic age – are fun, though.

No matter how thin *Electric Café* seems to be in the creativity department, Kraftwerk's finesse at crafting (pun intended) all-electronic pop is constantly in evidence. This album is appealingly sparse – everything serves a purpose, and everything works, from perfectly positioned beep to perfectly positioned beep.

But the sparseness is deceptive. Listen closely and you realise there's an awful lot going on at any given moment, especially in the areas of vocal treatments and stereo panning.

The real charm of *Electric Café* is the fact that it sounds as if it was recorded with a few Casio keyboards, a vast chunk of outboard gear, and some meticulous attention to detail.

It's enough to make you re-think not only all the music that's been recorded in the last five years, but also all the music you've ever recorded. Maybe that's what Kraftwerk have always done best. ■ Dg

Mantronix
Musical Madness

10 LP

An advance release from American hip hop maestros Mantronix recently arrived on the Out-Takes desk without so much as a title to announce it. But a quick phone call sorted out that problem, and promised a release date of early December.

Mantronix are a two-piece – rapper MC Tee and turntable king Mantronik – and have turned out eight pounding tracks of insistent electronics and street chants. The opening cut 'Who Is It', tipped for imminent single release, is typical of their formula: TR808 rhythms (complete with ringing bass drum) meet scratched records and hard-hitting, no-nonsense rapping.

Sampling is also a major feature of the LP, no more obvious than on 'Get Stupid Fresh' where the harmonica line from Whistle Test theme 'Stone Fox Chase' is stolen intact and regurgitated throughout the piece.

'Scream' is one of the album's highlights, an uptempo (even by hip hop standards) thrash which attempts to cram more TR808 snare beats into five-and-a-half minutes than any previously recorded track. It also comes closer to a conventional "toon" than anything else here – a potential single?

The most unusual track closes side one. With its jungle drums and sampled brass, 'Big Band B-Boy' is more reminiscent of the 'Song of the Volga Boatmen' than mainline hip hop. But don't dare think it doesn't work: 'Big Band B-Boy' is probably the album's greatest strength. The TR808 still chips in to the rhythm, but it's a sampled rhythm bearing a passing resemblance to Cozy Powell's 'Dance with the Devil' that carries the beat.

The LP closes with 'Mega Mix', the only track not edited by Chep Nunez. Instead, Omar Santana takes the reins for a medley that draws all the preceeding material together for an orgy of dancefloor excess.

The beat is all. ■ Tg

Kitaro
Tenku

Geffen LP

The opening bars might suggest you're listening to an alternative soundtrack for *Star Wars*, but in fact, *Tenku* represents Japanese synth composer Kitaro's current musical observations on mother nature. If Eno's Ambient series is music for interiors, this is music for an exterior landscape – very natural, very outdoor.

It's a peaceful album, with richly layered synthesisers of assorted origins (Yamaha, Korg, Roland, Moog) providing a seamless tapestry of sound involving everything from DX clarity to good old analogue filter sweeps.

The rhythms are implied rather than stated, rarely having a higher profile than a hi-hat and an occasional bass drum for punctuation. The exception to this is the closing track on side 1, 'Aura', which employs a rock chord sequence and "epic" drums. The result, oddly, is something not too far removed from Culture Club's 'Victims', less the vocals. A little out of context with the remainder of the album, really.

Kitaro's synth textures are complex and obviously the result of hours of painstaking work, but he makes the mistake of letting the same patches recur throughout the course of the LP – a brass patch that invokes images of ELP's 'Pirates', together with Medieval English flutes and tambourines. It *is* possible to have too much of a good thing.

Identifiable musical influences cover Tangs (circa *Phaedra*) and Jean-Michel Jarre, but Kitaro's themes are repetitive (albeit deliberately so), overworked and underdeveloped.

Tenku boasts immaculate sound clarity and works best at high volume – in contrast to its ambient relations. But ultimately, it's short-sighted and unrewarding. ■ Tg

Harold Budd
Lovely Thunder

EG LP

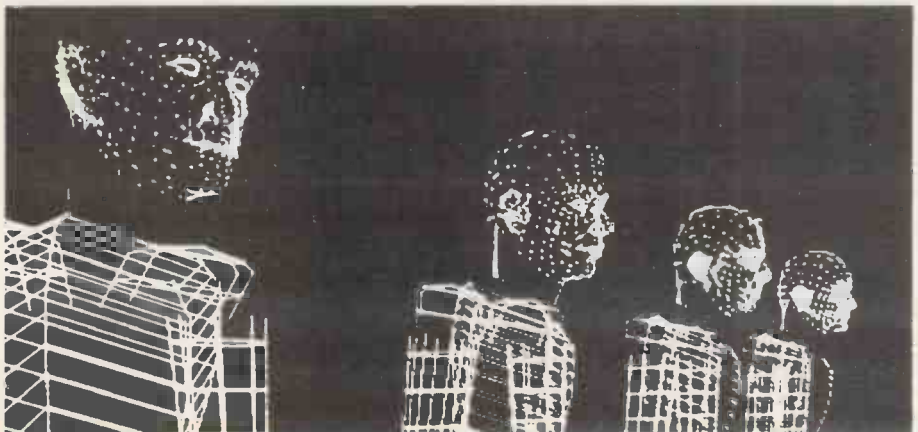
While parts of the music business fall over themselves to produce "New Age Music" for a market eager for some instrumental colours to distract it from the monochrome of pop, a handful of artists continue to produce the kind of music they've been writing for years: slow, tranquil, carefully considered, and utterly beautiful.

Harold Budd is just such an artist, and *Lovely Thunder* is his latest excursion into colourful tranquility. Some of the pieces ('The Gunfighter', 'Flowered Night Shadows') are based round simple, sustained piano melodies, while others ('Sand-treader', 'Olancha Farewell') are washes of slow-attack synth chords.

But the star on Side 1 is 'Ice Floes in Eden', three-and-a-half minutes of moody Rhodes and vibes, punctuated by distant bubble-gum organ, spikey strings and the occasional (and decidedly atypical) heavily reverbed bass drum boom.

Side 2 is devoted entirely to 'Gypsy Violin', Budd's magnum opus derived from a Synclavier violin sample of the same name. With its haunting melody and drifting, wavering synth chords, it's a moody and deeply evocative (though I'm not sure of precisely what) piece. Probably, it could all have been said in slightly less time, but as it stands, 'Gypsy Violin' is a subtle blend of well-balanced textures, reassuringly downbeat, but a little unsettling in a delicate sort of way.

Like most of Budd's work, *Lovely Thunder* provides ample proof that a little goes a long way – in terms of sounds, structures, and instruments used. Tender loving care is what it's all about, and tender loving care is the quality *Lovely Thunder* exhibits most strongly. A sparkling, atmospheric education. ■ Dg ►



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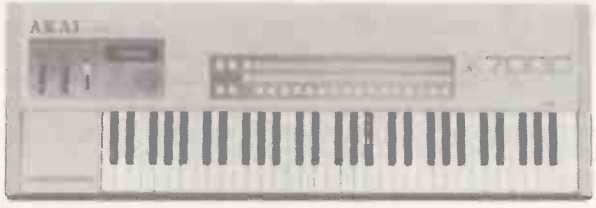

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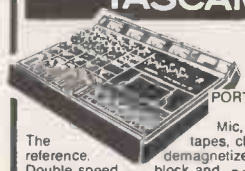

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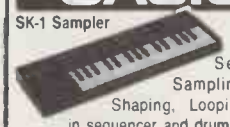

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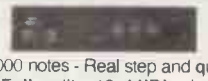

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Sigue Sigue Sputnik

Royal Albert Hall

FOR A BAND created by mega-hype to deliver the goods in any way, shape or form is an achievement of sorts, so the Sputniks' ambitious Albert Hall date can't be called a complete wipe-out. But a few promised aspects of the gig were conspicuous by their absence – the live TV link-up from Moscow, the Rollerball contestants, the music...

OK, so the music at least had some consistency and energy, neither of which were promised by

support band Melon. Melon are an incredible Japanese group formed by ex-members of The Plastics, whose 12-inch 'Serious Japanese' shows them to be masters of the Emulator, the AMS delay and the LinnDrum. None of these facts seemed to apply to the band supporting the Sputniks – time for a change of name, lads?

A good choice of interval music, though – John Carpenter's theme from 'Escape to New York', bits of Walter (Wendy) Carlos and so on, which led into an intro tape with sections of newsreels, Sputnik singles and interviews. Gallons of smoke filled the stage, three big screens and about 20 TV monitors burst into life, and Messrs Degville, James and Neal X were on stage in the flesh.

The Sputniks' approach to electronics is unusual. Their Giorgio Moroder-produced album is full of sequencers and drum machines, but the stage line-up simplifies things with Tony James on Roland bass guitar synth, Martin Degville on vocals, Neal X on semi-acoustic guitar with a DX7 for explosions and other effects, two drummers with five-piece Simmons kits, and a mixing/echo engineer. No musical backing tapes, though a lot of sound effects are tied into the video backing, as we'll see.

Three video cameras projected images from the stage onto the screens – two large ones flown above the stage with part of the PA and one smaller one at the back with the TV monitors. In between the live images came cut-ups from news bulletins, Clint Eastwood and Charles Bronson movies, military documentaries and promo videos, occasionally treated through a Fairlight Computer Video Instrument to create various colourising effects, frame-grabbing passages and multiple images. These were also put to good use on a TV wall at the back of the stage, which showed either one large image or many smaller images in various patterns.

Video control was from the right of the stage with the master video running on a Sony 1" machine with separate timecode and oscillograph monitors. Effects from the video soundtrack were mixed in to the PA sound between songs, so bits of Charles Bronson and Sue Lawley were every bit as likely to appear as pieces of classical music and more Walter (Wendy) Carlos excerpts. The Sputniks must be sick that they can't get 'A Clockwork Orange' on video.

And the music? For just over an hour, Sigue Sigue played a collection of their greatest hit: the same Gary Glitter drumming (without even a little variation between the two drummers), rockabilly guitar licks, four-note bass synth rhythms using the same sound all night, and screamed vocals.

Most of the songs, such as '21st Century Boy' and 'Total Annihilation' sound identical, with just one "love song" ('Charlie') slowing the pace a little.

The Sputniks claim the media were disappointed to find they weren't inarticulate, but all the media really wanted to establish was that they weren't talented. The grinding lack of imagination shown in their live material confirms this pretty unambiguously.

Oddly enough, there was little of the Space Echo manipulation which has characterised Degville's vocal sound, though the rubber-clad young lady on the PA mixer had access to a couple of SPX90s, digital delays, an ART reverb and so on. The overall sound was pretty powerful, particularly in the bass end; the Albert Hall isn't designed for rock music (the Philip Glass Ensemble's concert there a couple of weeks previously sounded better), but the only major problem was distortion during Degville's more powerful screaming sessions.

For a band with a cult following, the response of the two-thirds capacity audience was pretty muted – and there was so much noise on the video soundtrack, it was hard to tell how much was being created "live".

An interesting evening, much better visually than musically, but a little depressing for unsigned bands of real talent. To misquote Paul Morley, "would you fork out a two-quid train fare to go and see this crap?" ■ *Annabel Scott*

Echoes from the Cross

St Peter's Church, Vauxhall

BACK IN THE bad old days, the likes of Tangerine Dream would play regular gigs in churches, museums, art galleries, power stations, and all manner of unconventional music venues.

These days, you're lucky if you see a major act drift from the Hammersmith Odeon (fairly big), Birmingham NEC (pretty huge) and Wembley Stadium (absolutely massive) circuit, with the result that each rock concert sounds – at least in terms of natural acoustics – pretty much like the last one.

Which made this autumn's concert at St Peter's Church in South London all the more refreshing. For reasons of architecture and psychoacoustics that are beyond me, St Peter's is blessed (sorry) with striking acoustic properties capable of transforming almost any form of music into a glittering, constantly changing sonic form.

It was for this reason that the church once (centuries ago) played host to musical events of huge cultural significance. But since then, its heyday long forgotten, it has remained unused by London's artistic community.

Until, that is, illustrator and local resident Russell Mills hit upon the idea of holding a unique musical event there, with the intention of re-kindling public enthusiasm for the church.

His plan worked. Various composers – among them Roger Eno, John Bonnar and John Foxx – wrote pieces especially for the acoustic ambience of St Peter's, and one mild September evening, their pieces were performed in front of a packed and almost wildly appreciative audience.

The sound of chamber orchestra and sustained voices shimmered through archways and corridors; Eno's simple, romantic piano-playing echoed in breathtaking fashion; and Foxx's powerful synth textures and vocoder-treated chanting (definite shades of 'Pater Noster') resounded gracefully – much to the surprise of some of the audience, who were perhaps expecting his armoury of electronics to filter weakly through the heady atmosphere of St Peter's.

Then a pause for breath (and beer), followed by the Happy End, an unruly bunch of jazz brass players and ethnic percussionists crashing their way through a rag-bag of different musics, from Charles Ives to South African spirituals. Buoyant, disorganised and occasionally shambolic, the Happy End's brand of frivolity didn't quite match the ancient, musty ambience as well as the earlier, gentler performances, which was a shame.

Another break, then, followed by 'Maelstrom', a marvellous piece of contemporary film noir by Nigel Grierson. The scenes were brief, beautifully framed and startlingly sensual, and although much of the (minimal) dialogue was lost through the same acoustics that had benefitted the earlier part of the evening, the soundtrack (Brian Eno, Harold Budd, Matt Johnson, Colin Newman) acted as a hypnotic backdrop, and the audience went home happy.

'Echoes from the Cross' was the sort of occasion which, though far from perfect, had enough spice and originality in it to remain firmly in memory for some time to come. If only more artists and musicians had the courage (and the good fortune) to perform in such inspiring venues. ■ *Dg*

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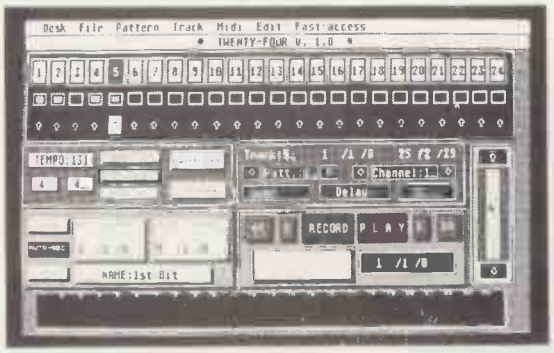

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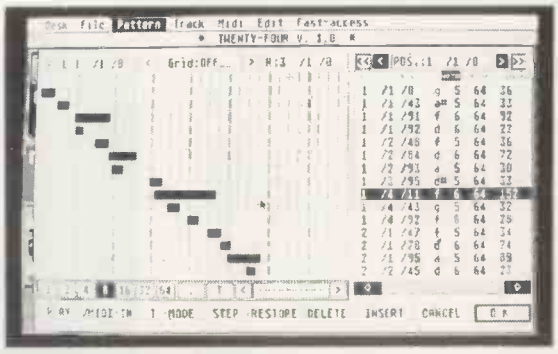

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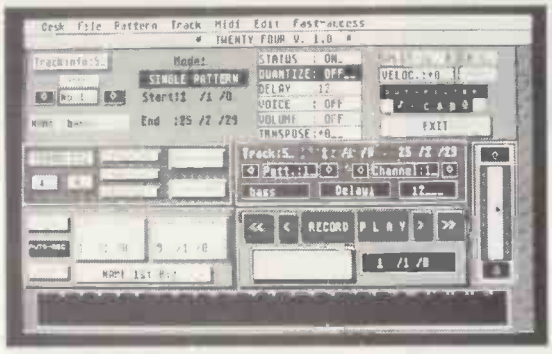

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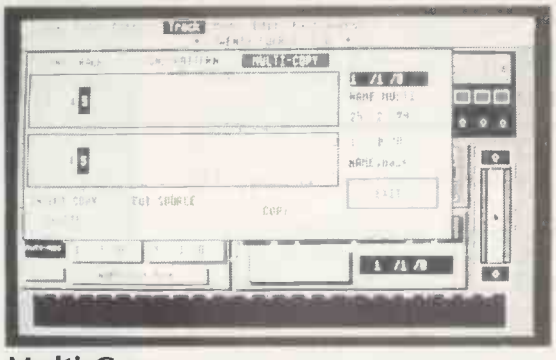

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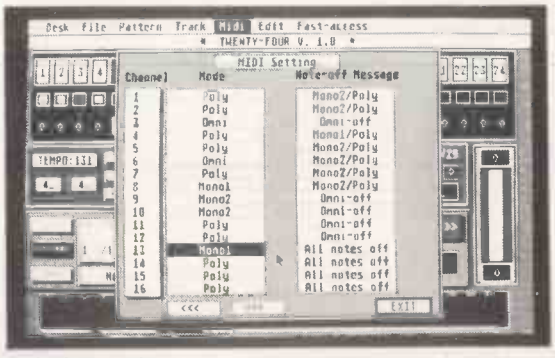

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demoT·A·K·E·S

IN AN EFFORT to prove life really does begin at 30, **Paul Rhodes** has waited until the tender age of 34 before recording his first demo – though he actually claims the wait has been for technology to match his needs as a solo musician and composer. As one dependent on sequencing and MIDI for extra hands and compositional power, he's found a Korg SQD1 and EX800, Yamaha DX7, Roland JX3P and TR707, and Yamaha MT44D multitracker invaluable assets.

The first of two tracks here is an instrumental that invokes vague images of earlier ELP and Druid (*never heard of them – Ed*). But before you shake your heads in despair, Paul's got a few decent licks wrapped up in his SQD1. The number really doesn't come into its own until the middle break (not quite a middle eight), where the pace slackens off and allows some neat playing and clever instrumentation to shine through.

Much the same is true of the second track, 'Morning Dance', except that it has a lyric – or more accurately, poetry overlaid on the instrumental. Not entirely a success, this, as it tends to give the piece something of a pretentious feel. The highlights are the solos where, once again, it's simply Paul's playing that appeals.

The instrumental aspects are *all* sequenced, making the actual process of recording far simpler – a situation that Paul evidently finds pleasing, and one that has produced a professional-sounding result.

A solitary DX7 is the extent of **Phil Goodman**'s keyboard instrumentation, though it is complemented by a guitar, a couple of useful outboard effects and a Tascam 244 Portastudio.

Since this recording, a guitarist and bassist have been recruited to help out. Judging by these three songs, they're a luxury rather than a necessity. The songwriting falls into the popular bracket, but is a little short of being either innovative or wildly exciting.

The arrangements, performance and recording show some very healthy signs, though. The main drawback is a tendency to overuse a particular sound in each song. On 'Light of Day' it's the lead synth sound, which otherwise is pretty good for a DX ripping-off a traditionally analogue role. On 'Hope for the Future', it's a typically thin and piercing string sound that recurs with monotonous regularity.

The patches generally are well up to standard, though, and certain passages are excellent. 'Hope...' is blessed with that golden fleece – space. For the uninitiated, space is where instruments and notes *aren't* falling over each other in a misguided attempt to extol the dexterity of the musicians.

This is a clean recording, too, something that goes a long way toward making it a presentable demo. In particular, 'Quiet Life' (no, not that one) benefits, as it employs the best of the programming.

Next up, Nottingham's **Peris** make a second visit to DemoTakes with two new songs and a new line-up. Obviously aimed at the pop market, 'Stay Away' and 'Last Chance to Stay' are cheerful if throwaway ditties. Throwaway because there's no detectable conviction in either the songwriting or the performance.

The notable addition to the old nucleus is singer Lydia, a renegade from an un-named cabaret band. Perhaps she remains too close to the other side of her Jekyll & Hyde existence to provide the excitement a pop band really needs to generate.

But it's unfair to lay the blame entirely at her feet, as both songs are slow and lacking in direction. 'Stay Away' is the worse offender, with any initial impact it may have had being diluted by the use of a loose, downtempo intro.

'Last Chance to Stay' opens with more gusto, before losing momentum somewhere in the middle. It also possesses a wonderfully catchy verse melody which deserves better than the treatment given it here.

The band have opted to forsake professional eight- and 16-track studios in favour of their own four-track setup. Generally the move seems to have been a successful one, though both songs suffer in production terms from too much reverb. It's the most useful effect there is – and can easily make or break a recording – but it's also the most *subtle*, and doesn't tolerate overuse.

Finally this month, **The Network** claim to have invented "dance with direction". Well...it's definitely dance.

The music is raw, with a live drum kit, lots of guitars, a sprinkling of keyboards and more than a passing similarity to Bryan Ferry (again...) on the vocal front. In fact, live seems to be the important word here; The Network sound like they'd be a damn good live band to me.

But translating live energy onto tape isn't the easiest of tasks, regardless of your stature in the music arena. And so the boys from The Network have found. Simply including the three-finger burn-out that marks the conclusion of a song on stage ('Sometimes') doesn't instantly provide the atmosphere of a gig full of sweaty, dancing bodies. Nor does loading buckets of echo ('Perfect Someone') onto a 90mph synth solo.

But the material does have its moments. There's some interesting interplay between bass, drums and synth on 'Perfect Someone' – though at a guess, I'd say keyboard player Tony Chilvers' perfect someone is the Stranglers' Dave Greenfield. We all agree it's good to have heroes, but... ■Tg

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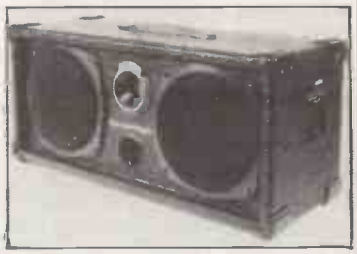

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NEWMAN'S A to Z

How does an avant-garde punk musician become involved in creating a hybrid of classical and electronic music? Colin Newman gives his version of the story. Interview by Tim Goodyer.

ANYONE CALLING AN ALBUM *Commercial Suicide* in the current musical climate is asking for trouble. The press will ignore it. The radio stations won't play it. And people won't get to hear it. Or at least, that's my feeling.

But Colin Newman, the man responsible for a new album of precisely that title, doesn't share my concern.

"There's a song called 'Commercial Suicide' on the record that originally sounded like the band Suicide – only more commercial. Hence *Commercial Suicide*..."

Fine.

"...And if you believe that, you'll believe anything."

But I believe it. Perhaps London on a miserable Monday afternoon has left me in a particularly gullible mood, but the reassuring smile on Newman's face suggests this isn't the case.

Commercial Suicide is Newman's fourth solo LP away from cult new wave act Wire, dormant for quite some while now. It's a curious mixture of violins, cellos and other things classical, alongside elaborately layered synthesisers. And in keeping with the classical school of thought is an almost total absence of drums, tempo being kept instead by rich, rhythmic basslines.

"It's basically a combination of synths and classical players", the artist explains. "What originally distinguished rock 'n' roll was the beat, but by the late seventies, engineers were saying: 'did you hear the snare sound on...? I heard it took five days to get'. Then the LinnDrum arrived, and at the touch of a button, you had a sound that a lot of engineers would have been quite happy with after a couple of days work. So the drums became louder and louder in the music, until you had music that was drums and vocals and not a lot else. *Commercial Suicide* was my reaction against that.

"There's also a musical theme, in as much as it's an attempt to reconcile popular music and orchestral music. It's something I don't think has been exploited since the sixties, with the work that Terry Riley did with John Cale, like *Church of Anthrax*."

The orchestral credits on *Commercial Suicide* are taken by no fewer than 11 Belgian musicians, leaving Newman in charge of the technology and production. Considering recent advances in technology and Newman's enthusiasm, it seems strange not to be using orchestral samples in place of the real thing.

"Anything on the album that sounds like a real instrument is a real instrument – there's no use of imitative sampling. It's not that I'm against it; I just didn't want to work like that.

"If you make every sound so perfect you can almost 'hear digital'; you hear perfection rather than music.

If you didn't know of Newman's involvement with Wire (the band made three albums in the late seventies under the guidance of producer Mike Thorne), and hence the punk movement as a whole, you'd be hard pushed to guess his background. Today, the most outlandish feature of his dress is a decidedly tasteful pair of red braces, but...

"...It all started in 1976 with the formation of Wire as a guitar-based five-piece.

"Mike taught me a lot about recording and recording studios. The first album was done mainly with guitars, bass and drums and a certain amount of heavy metal technology – lots of tracking of guitars, walls of sound, that sort of thing. On the second album we started using synths because Mike had an Oberheim at the time.

"I suppose the third album was the most hi-tech, though all the recording was still being done with the guitars, bass and drums plus a few synth overdubs. At that time people thought that anything sounding weird must be a synthesiser, so we developed a lot of guitar treatments – you wouldn't know whether the sound you were hearing was actually a guitar or synthesiser."

Having taken Wire as far as it would go, band members Graham Lewis and Bruce Gilbert began a series of separate projects, among them Duet Emmo, a trio (perversely) with Mute Records svengali Daniel Miller. This left Colin Newman free to begin work as a producer, and to start out on his own solo recording career.

"My first LP was called *A-Z*. That was the first time I recorded with the Synclavier. The other thing we were using then was the EMS Synthi, which was great for guitar treatments. At that point I was very much into treatments of sound – using guitar treatments on voices and anything else."

And sound treatments still play a large part in Newman's production philosophy.

"I'll use anything I can lay my hands on, especially old guitar effects. The old effects are much more extreme; more modern devices are so safe they actually sound nice. I've got a few old boxes: put them on one setting and they sound awful, put them on another setting and they sound worse, but I'd rather have something like that. I like the idea of putting very cheap guitar effects onto synthesisers. That's

very anti-purist, but my basic attitude is 'if you've got it, use it, and don't moan about what you haven't got'."

THE RELEASE OF a second solo LP, *The Singing Fish*, marked the end of Newman's association with producer Thorne, so the third album, *Not To*, found the artist in the role of producer with a renewed understanding of commerciality.

"*Not To* was a kind of pop record which was much more straightforward than anything I'd done before. The most important thing in popular music is the voice, and that *doesn't* come out of a machine. A good vocal performance with a lousy backing is always going to be more successful than a great backing with a lousy vocal. You have to make the voice work – then the backing will fall into place.

"I like to get the vocal down fairly early, because it tells you a lot about what you can't do with the piece. Alternatively, if you *want* to subvert the voice, it'll guide you through that.

"...My main working partner on *Commercial Suicide* was John Bonnar, a composer who knew nothing about pop music or multitracking before this. He was writing arrangements for instruments he'd never worked with before – he'd only worked with dots on lines – so it was pure excitement for him. But when we got to actually making the record, we realised we didn't know how to do it. With pop music you do the drums or a click-track first, and if you're not using drums you do the bass, so we started with the bass. We used four DXs, a Mirage and a Roland, MIDI'd together to make the fattest noise I could imagine.

"I think MIDI chaining is great in that respect. The only synth I've ever actually owned is a Casio CZ1000, which I like in combination with a DX and an analogue synth rather than on its own. The CZ is squeaky, Rolands are big, and the DX somewhere in between, so I like the kind of complete, round sound where you get a bit of everything chucked in."

Listening to the sensitive, highly distinctive textures on *Commercial Suicide*, it's hard to accept Newman's assertion that some of the sounds are DX presets.

"I won't program a DX7", he maintains. "I just keep paging through presets until I get something that vaguely resembles what I want, and then stick something else with it. I know I shouldn't do it, but put together with another sound, the two completely subvert each other.

"Every synthesiser has its own sound – including sampling synthesisers – and the problem is how to overcome that. I think MIDI chaining is the best way: mixing the tonal qualities of one synthesiser with another. Especially now you can sample non-MIDI synthesisers – you can use totally different technologies together. The problem with working like that is sometimes you get to the stage where everything sounds like an organ, but that's another kind of challenge, I suppose.

"Combinations of the same sound also work very well – six synthesisers all playing the same thing can sound great. If you track a part you can never match the two parts perfectly. Something I did a while ago used an Emulator II cello preset which I tracked about five times, and it acquired a totally different character to the original patch. If you track a sequencer and alter the varispeed, the timecode will keep it in sync but the pitch will vary. You can do that as many times as you want and get massive sounds."

In conversation, Colin Newman skips between the role of musician and producer – subjective and objective – with alarming frequency. But maybe that's not surprising, seeing as he chooses to see himself in both roles simultaneously.

"In the last six or seven years the producers that have emerged have been engineer-producers, so there was a tendency for the music they produced to be dependent on sound, rather than music. As a musician-producer, what's important to me is the music.

"You need that sympathetic crossover: there's nothing worse than working with a producer whose only interest is sound. Sometimes things fight each other so what might work musically might not work in sound terms, but in trying to make it work, you create something that's outside both disciplines – that's called magic!

"When I read interviews with musicians their attitudes are usually either 'pro-' or 'anti-', but why not use everything you can get? One thing I've learned is not to reject anything from the past. But equally, you can never be precious about things; you've got to be prepared to chuck it all away and start again. You can't be objective – you just have to follow your nose."

Following his nose has taken Colin Newman from the dangerous ground of punk to the (equally) dangerous ground of sixties-style experimentation, but it's never allowed him to lose sight of his music. Right now, Wire have reformed and are soon to begin touring. I wonder what dangerous ground they'll tread this time... ■

using

THE NEW STANDARD

Illustration *Stuart Catterson*

Transferring sound samples between MIDI machines in digital form is now a reality, thanks to the Sample Dump Standard – SDS for short. We look at the development of SDS, and how it's implemented on the Prophet 2000 sampler.

Text by Chris Meyer.

THE MIDI SAMPLE Dump Standard was born during the development stages of Sequential's Prophet 2000 in May 1985. I was in charge of specifying the MIDI handler on the 2000, and the project manager came up to me wanting a way to transfer files between the Prophet 2000 and some custom development software he had written on an IBM XT personal computer.

At this time, the E-mu SP12 sampling drum machine had already been announced, and much splash was being made about it using a 12-bit linear data format – the same as we intended for the P2000. Knowing this, I wanted to support both Sequential's own internal sample dump protocol and also be able to receive samples from the SP12 (in the name of compatibility, but also to steal their samples as soon as possible to help get our library started). Unfortunately, the SP12 sample dump routines did not exist.

So, with the best poker face I could put on (Sequential hadn't yet announced the existence of the P2000), I approached Dave Rossum of E-mu in the name of trying to come up with a common Sample Dump Standard.

Starting with the in-house protocol I had created, Dave Rossum and I lashed together an initial proposal for the Sample Dump Standard in June/July 1985. Pushed to make a shipping deadline of September 1985 for the Prophet, I implemented it on the first version of the firmware as a trial run – much to the consternation of other manufacturers, since the "Standard" was still only a proposal and not yet fully approved.

With the experience of making the Prophet 2000 and the Sample Dump Standard work with early versions of Digidesign's Sound Designer software, and after discussion and consultation with other companies (including Octave-Plateau, J L Cooper, Ensoniq, SSL, After Science, E-mu and others), the Sample Dump proposal was updated to its current level.

It was approved by both the MMA (MIDI Manufacturers' Association) and the JMSC (Japanese MIDI Standards Comittee) at Winter NAMM in January 1986.

Overview

THIS STANDARD IS the first set of protocols to use the new MIDI Universal System Exclusive area. This area is a set of three System Exclusive ID numbers set up by the MMA and JMSC, and approved at the same meeting in January 1986 as the Sample Dump Standard. Normally, a manufacturer owns their own System Exclusive ID number, and puts any messages or MIDI protocol specific to their devices behind it. The purpose of the Universal System

Exclusive area is to have a set of messages agreed upon and used by a variety of manufacturers, as a way to extend the MIDI specification to handle common, more complex duties.

The SDS (Sample Dump Standard) was created to work in a simple or complex system. In a simple system, only one MIDI cable is connected from the master to the slave. The master sends out short bursts of information (called "packets"), pausing between each one to give the slave a chance to read it and accept the next one. There is no communication back from the slave to the master, so the code to dump (or receive) a sample is not much more difficult to write than a normal program dump routine.

The complex system is referred to as a "closed loop" system. In this, there is two-way communication between the master and the slave (two MIDI cables connecting the two together). The master sends the slave a packet (complete with an error-checking byte on the end), and the slave tells the master either to Wait, that there was an error with the packet and it's therefore refused it ("NAK", or Not Acknowledge), or that the last packet was received intact and it is ready for another ("ACK", or Acknowledge).

If the last packet was refused, the master has the option of resending the last packet, or ignoring the slave and sending the next one (the packets are numbered, so the slave can see if it's getting a new packet, or a copy of the old one).

Packets were held down in size to 127 bytes. MIDI buffers tend to come in sizes that are powers of 2, with 128 bytes being a common and more or less comfortable size. This helped prevent sending so much information in a string that the slave would overflow and miss some of it.

Small packets also allow regular checking of, and recovery from, errors. Almost everyone agrees that error checking is a theoretical must – but as an interesting aside, neither Sequential (with the SDS) nor Ensoniq (with their own protocol) have ever seen a case where a byte was dropped and an error has actually occurred as a result.

The data format for the SDS was chosen as linear. This is the simplest of formats, and seemingly the one of preference for higher-resolution applications. Every manufacturer is responsible for converting from their private, internal format into linear. This is much better than each slave, upon receiving a sample, being responsible for converting it from any of a variety of formats into its own – a master, instead, only has to convert from one.

For example, converting from formats such as eight-bit COMDAC to linear is easy – a 256-value look-up table is all that is needed, and there's no tricky internal arithmetic to be done. It was thought the minimum resolution worth supporting was eight-bit linear, with the maximum being the AES standard 24-bit linear. Since MIDI data likes to come in multiples of seven bits (7, 14, 21, 28, and so on), 28-bit linear was chosen as the upper limit.

The SDS also includes a way to specify which resolution is being used, and the slave is supposed to switch to that resolution. Therefore, each individual "sample" is encoded into 2, 3, or 4 MIDI data bytes. To simplify receiving routines, 120 bytes was chosen as the common length of data per packet (it's nicely divisible by the 2, 3 or 4 bytes it takes to make up a sample word).

Following the same philosophy of using data that was multiples of 7 bits, 21 bits was chosen to define the length of samples, along with the addresses of the loop points. This translates to a maximum length of 2,097,151 samples per sound. In the not-so-distant future, 2048K of sample memory may not seem as outrageous as it did then (or even now), but considering that's *per sample*, it should prove to be sufficient. Totally beside the point is that it would also take well over 23 minutes to transmit 2,097,151 samples of even eight-bit data via MIDI. So now you know.

Deciding how to represent sample rate was more sticky. Representing it as simple cycles per second does not give sufficient resolution. For example, the difference between C0 and C#0 is only two cycles per second. To achieve sufficient resolution would require at least fiftieths of a cycle per second (giving 1 cent). A sample rate of 100kHz (a goal of Fairlight and Synclavier) translates to a number over 5 million – taking 23 bits to represent.

So, the sample rate was flipped upside-down and represented as seconds per sample (actually, nanoseconds). This gave exceptional range and resolution within 21 bits, and is actually better suited to some samplers, since they tend to think internally in terms of how long it is between samples – not how many samples to put out in a given length of time.

Finally, room for defining up to 16,384 different samples and 128 different loop types was allowed. Loop points are the one current shortcoming of the SDS – only one set was provided for, and only two loop types were initially defined. However, I am happy to report that proposals are already in motion to remedy these two problems.

Table 1

Sample Rate	Sample Period	Period in 7-bit bytes (LSB first)
15.625Hz	FA00H nsec	00H 74H 03H
31.250Hz	7D00H nsec	00H 7AH 01H
41.667Hz	5DC0H nsec	40 3BH 01H

Technical Details

WHAT FOLLOWS IS a technical description of the SDS itself, given in the context of the implementation on the Prophet 2000, so as to get a sort of handle as to what a sampler would do with all these messages. Prior knowledge of MIDI is, of course, assumed.

Dump Request:
F0 7E cc 03 ss ss F7
(cc = channel number)
(ss ss = sample requested, LSB first)

Upon receiving this message, the Prophet checks "ss ss" to see if it is within legal range (00 00 – 0F 00, since the 2000 holds up to 16 samples). If it is, this sample requested becomes the Prophet's current sound number, and it is dumped to the requesting master following the standard outlined below. If it is not within range, it ignores it.

The channel number was added to all Universal System Exclusive messages to accommodate multiple samplers in the same MIDI system. It allows up to 127 devices to be individually addressed (channel number 128 = "for everybody in the system"). The actual definition of what the channel number does came after the room was originally saved aside for it.

As a result of this timing, the P2000 properly selects the channel number, but ignores it. Luckily, this has yet to be a problem since in most applications there are only two devices – the master and the slave (but in the future...who knows?). In the case of the Prophet 2000, on transmit, the channel reflects the Prophet's current MIDI base channel. Future devices will probably have a separate Device ID for this channel.

ACK:
F0 7E cc 7F pp F7
(cc.,= channel number)
(pp = packet number)

One of four handshaking flags, this one means "Last data packet received OK; start sending next one". The packet number reflects which packet is being acknowledged as correct. This will be explained in context later on.

NAK:
F0 7E cc 7E pp F7
(cc = channel number)
(pp = packet number)

Another of the four handshaking flags. ▶

▶ Means "Last data packet received had an error; please resend". The packet number reflects which packet is being rejected. This too will be explained in context later.

Cancel:
F0 7E cc 7D pp F7
(cc = channel number)
(pp = packet number)

The third of our four handshaking flags. Means "abort dump". The packet number reflects on which packet the 2000 decided to abort the dump. And you've guessed it: this will be explained in context later on.

Wait:
F0 7E cc 7C pp F7
(cc = channel number)
(pp = packet number)

Fourth of the handshaking flags. Means "do not send any more packets until I have finished with this one". It helps systems where the slave (ie. terminal support computer) may need to perform other functions, such as disk access, before receiving the remainder of the dump.

Header:
F0 7E aa 01 bb bb cc dd dd dd ee ee ee ff ff ff gg gg gg hh F7
(aa = channel number)
(bb bb = sample number, LSB first)
(cc = sample format – significant bits, from 8-28)
(dd dd dd = sample period (1/sample rate), in nanoseconds, LSB first)
(ee ee ee = sample length, in words, LSB first)
(ff ff ff = sustain loop start point (word number), LSB first)
(gg gg gg = sustain loop end point (word number), LSB first)
(hh = loop type – 00 = forwards only; 01 = backwards/forwards)

Data Packet:
F0 7E aa 02 ii [120 bytes] jj F7
(aa = channel number)
(ii = running packet count – 00-7F)
(jj = checksum – EXOR of previous 7E, aa, 02, ii, [120 bytes])

The total size of a data packet is 127 bytes. As mentioned earlier, this was an attempt not to overflow MIDI input buffers in machines that may want to receive an entire message before processing it.

You may notice that the data packet is enclosed as its own System Exclusive message. This was done for two reasons: if a byte was dropped in a packet without some way of telling when a packet started and stopped, it would not be detected until the next packet started – much too late. Then there are devices such as the Roland MPU401, which expect each System Exclusive message to be wrapped with a typical F0/F7 in order to recognise it. If it was not, it would be very difficult for the MPU401 to handshake it.

The checksum includes the header (minus the "F0"), in keeping with other communication protocols. It was decided not to include the packet length in the header, to reduce needless complexity (the packet is always of a fixed length).

Once a dump has been requested – either over MIDI or from the front panel – the Header is sent. As mentioned earlier, the channel number equals the 2000's base channel on transmit, and is ignored on reception. The sample number reflects the current sound number selected on the Prophet (00 00 – 0F 00). The sample format in the 2000 is 12 (OCH, for 12-bit linear – again, as mentioned earlier, all samples dumped via the SDS are encoded in linear format). Sample period for the Prophet 2000 follows Table 1.

Sample length and the sustain loop start and end points are in words, with the first word being called word #00 00 00. Since the 2000 allows only forwards-only sustain loops, the loop type for it is always = 00.

In Practice

THIS IS HOW it all works out in practice. If the 2000 is receiving a data dump, it'll ignore the sample number and the sample rate in the header and use the currently selected one, to facilitate cross-loading between machines with different sample rates (the sample can always be retuned) or between different sample numbers. The Prophet has the facility to force the sample rate as part of a different command (used by Sound Designer and other P2000s).

After sending the header, the master must pause for at least two seconds, allowing the receiver to decide if it will accept this sample (it may not if there isn't enough memory, say). If it receives a Cancel within this time, it will abort the dump immediately. In the case of the Prophet 2000, any other inappropriate MIDI message (eg. a note-on) within this time will also abort the dump.

If it receives an ACK, it will start sending data packets immediately. If it receives a Wait, it pauses indefinitely until another message is received (for example, an ACK, which will continue the dump). If nothing is received within the two-second pause, the master assumes an open loop system, and should start sending packets.

If the 2000 is receiving a data dump, it'll ignore the length if over the space allocated to the current sample, and take in as much of the sample as possible. If either of the loop points is also beyond the end, they will be set to the end of the sample. If the sample received is shorter than the space currently allocated for it in the 2000, this leftover space will remain allocated (the Prophet has other means by which it can recover this memory).

A data packet consists of its own header, a packet number, 120 bytes, a checksum, and an End of Exclusive message (EOX).

On transmit, the channel number equals the 2000's base channel (this is ignored on reception). The packet number will start at 00 and increment with each new packet, resetting to 00 after it reaches 7F. As mentioned briefly earlier, this is used by the receiver to distinguish between a new data packet, and a resend of the previous one (in the latter case, the packet number will be the same as the previous one). This will be followed by 120 bytes of data, which form 60 words (MSB first).

Each data byte holds seven bits. If the sample format is 8-14 bit, 2 bytes form a

word; 15-21 bits require 3 bytes/word (giving 40 words/packet), and 22-28 bits require 4 bytes/word (30 words/packet). The receiver should be able to adjust depending on the sample format in the header.

Information is left justified within the seven-bit bytes, and unused bits will be filled out with zeroes. For example, a sampled word of FFFH will be sent as 01111111B 01111100B. A word of FFFH happens to represent a full positive value (000H represents full negative).

The checksum is the digital logic EXOR (EXclusive OR) of 7E (channel), 02 (packet number), and the 120 data bytes.

If the Prophet is receiving a data dump, and the specified format is over 12-bit, it will adjust to the correct byte/word count, round up the 13th bit, and throw away the unused bits. It keeps a running checksum during reception. If the checksums match, it will send an ACK and wait for the next packet. If they do not match, it will send an NAK (see above) and wait for the next packet.

After sending a packet, the 2000 will watch its MIDI In port. If an ACK is received, it will start sending the next packet immediately. If it receives an NAK, and the packet number matches the packet just sent, it will resend the previous packet (if the packet numbers don't match, it ignores the NAK). If no activity occurs in over 20 msecs, it will assume an open loop situation, and send the next packet.

If a Wait is received, the Prophet will watch its MIDI In port indefinitely for another message, and process it like a normal ACK, NAK, Cancel, or illegal message. By using the Wait command, a host computer can stop a sampler in the middle of a dump while it saves part of the sample to disk, and so on.

The packet numbers are included in the handshaking commands (ACK, NAK, Wait, and Cancel) to accommodate future machines that might have the intelligence to re-transmit specific packets after the entire dump is finished, or if synchronisation is lost.

If a receiving Prophet 2000 sends an NAK, but the next packet has a different packet number, it assumes the NAK was missed (open loop situation), will ignore the error, and will continue as if the checksum had matched. Other more intelligent machines may be able to transmit (and receive) packets out of sequence.

This process continues until there are less than 121 bytes to send. The final packet will still consist of 120 data bytes, regardless of how many significant bytes remain, and the unused bytes will be filled out with zeroes.

On the receiving end, the slave should take in and handshake on the last packet (the 2000 will Cancel as soon as its memory is full – it will not handshake the last packet). The Cancel is useful if the master is trying to dump more data than the slave can accept – it stops the dump as soon as it is no longer needed. On the Prophet 2000, any unexpected messages (eg. a note-on) will abort a dump.

Conclusions

IT IS WIDELY realised that the Sample Dump Standard (like any "standard") has compromises. However, everyone hopes it'll be comprehensive and flexible enough to cover most people's basic needs. By having a Standard in place as the majority of new "affordable" sampling machines are entering the market, there is a better chance that it'll be used by several manufacturers, instead of waiting for second or third generation machines to come along.

In the meantime, the more ambitious (read: crazed and bored) of you can start hacking now. Have fun. ■

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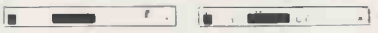

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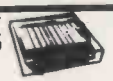

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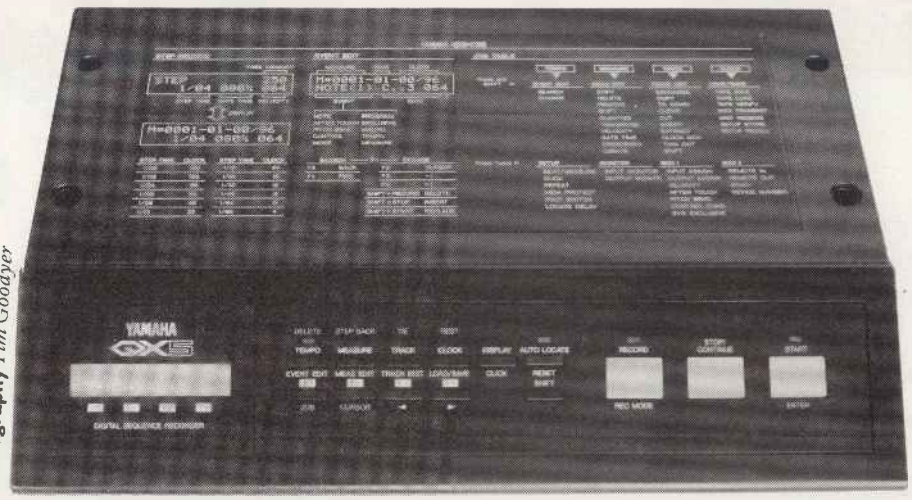
YAMAHA QX5
Digital Multitrack Sequencer

In another variation on their MIDI recording theme, Yamaha introduce an upgraded QX7 that contains a few features even the QX1 couldn't boast. Confused? It's simpler than it looks. Review by Simon Trask.



Photography *Tim Goodyer*

LET'S FACE IT. Dedicated sequencers don't appear to have a lot going for them. They don't make any sounds themselves, and unlike those other noiseless wonders, controller keyboards, they don't even have any nice keys for you to run your fingers over. And whereas computer-based sequencers offer nice screen displays for musicians to gaze at, the typical dedicated sequencer is little more than a dull black (or grey) box which seems to bear little relation to the wonderful, exciting world of *music*.

But in truth, today's dedicated sequencer might just prove to be the best musical accomplice you've ever had.

At first glance, Yamaha's newest offering appears to be pretty much like their previous two budget sequencers, the QX7 and QX21 – which were actually very similar apart from one important feature: their price. The QX5 weighs in at around the original asking price of the QX7 but offers a good deal more sophistication, and so turns out to be a very successful compromise between the cheaper QXs and the (originally) high-priced QX1, while at the same time introducing some useful features not to be found even on its more expensive relative.

Out there in the big bad commercial world, the QX5 is competing with both Korg's SQD1 (reviewed E&MM September '85) and Roland's MC500 sequencer.

Operation

GIVEN THE NEW Yamaha sequencer's myriad functions, its two-line backlit LCD and small number of multi-function buttons suggest this is one sequencer that's going to be a bit of a pain to use. In practice it's surprisingly friendly, a result of carefully thought-out design – though the function list and operations guide printed on the top panel are essential to this amicable state of affairs. The manual, meanwhile, maintains a clear and informative standard of presentation throughout.

Recording can be in real or step time, and you can use punch-in/out for real-time re-recording of those bits that didn't quite work out as you intended. You pre-define the punch-in/out locations in bar/beat/step format, and then start playback from any preceding point; the sequencer will automatically drop in and out of record mode at the locations specified.

Another useful feature of real-time recording is autolocate, which allows you to specify a location from which recording and playback will automatically begin every time – handy for when you're working on a particular section.

If you're using real-time record as opposed to dropping in, you get a two-bar count-in (from either the QX5's quiet internal metronome beep or an adjustable-level click via the sequencer's Click Out), during which time you can record a program-change which will be stored at the beginning of the track – a very useful feature.

The QX5 eschews the pattern-chain approach to recording, while allowing you to record onto any section of track that you want – just as you can with tape.

Step-time recording allows you to enter single notes or chords for each step (which may be as little as a 96th of a beat, if you *really* go in for excess). You can also enter a program change on any step, and define gate time and velocity for all notes in a step, velocity being set from the QX5's front panel or from the keyboard. You can enter rests and tie notes, and there are limited editing facilities; though input of gate time, velocity, ties and rests can be achieved more quickly by specifying MIDI controllers to do the job (a nice touch).

Essentially the QX5 is an eight-track sequencer, but through the inclusion of what Yamaha term "macros" (see later), it's capable of offering a greater number of tracks. Memory capacity (always something of an approximate figure) is quoted at around 20,000 notes, or 15,000 when recording velocity data.

As with the QX5's budget predecessors, recording is always to track 1, after which you can transfer your recording to another track or to a macro. To edit tracks and macros after this, you have to transfer them back to track 1 in most instances. While it's a limitation in some ways, at least this approach encourages you to make copies of tracks before editing them. Every cloud has a silver lining, and all that.

Many sequencers nowadays restrict recording to a single MIDI channel at a time – and in turn assign a single MIDI channel to a track. The QX5 (together with Roland's MC500, incidentally) allows you to record on as many channels as you want, and stores these channel allocations unaltered in its tracks and macros. This system gives you the ►

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► freedom to record using whichever sonic textures you want, whereas the single-channel approach usually limits you to recording one "instrument" at a time and one per track.

Each and every incoming MIDI channel can be assigned to a new channel at the recording stage (in which case the reassigned channel(s) will be recorded), and you can alter the channel assignment of an already recorded part within a track, or reassign any channel at the output stage – options which give you just about all the flexibility you need in this area.

If you get confused about which channels are coming in and which channels are going out, the input and output monitor displays will prove invaluable. Also highly useful is the ability to mute tracks, either during playback or idling mode.

Although the QX5 is an eight-track sequencer, there are ways in which you can effectively increase this figure. The most obvious way is to use "track down", which mixes the contents of two tracks and puts the result on the second track. With sequencers which limit you to a single MIDI channel for each track, you find at this stage that what you thought was a marimba part on your DX21 has suddenly become a string part on your CZ101, along with the existing string part (ie. both parts are now on the same MIDI channel). But the QX5's system preserves the channel assignment of each part, so you can store up to 16 different channels within a track – though it's worth noting that the QX5 will allow only a maximum of 32 notes to be playing at any one time.

But console yourself with the thought that you can now store a whole song in a single track – a useful way of storing several songs at once in the sequencer.

As already mentioned, the other method of effectively increasing the number of tracks is to use those macros. These can best be thought of as "floating tracks"; they contain the same data as a track, and in fact tracks and macros can be freely exchanged (all macros begin life as a track recorded on track 1).

To make use of a macro, you insert the relevant macro number (there are 32 macros altogether) at any point in a track, and when playback reaches that point, the macro will begin playing along with the data in the tracks. Each macro has its own MIDI channel assignment, which it retains whichever track it is used with.

Memory can be freely shared between tracks and macros, which means that a macro can be as long as a track if you want it to be. Insert a macro number at the beginning of a track, and you've effectively got an extra track.

Now, don't imagine that you've suddenly got a vast number of tracks at your disposal: there can only be four macros playing at the same time. But a combination of track mixing and macros *can* allow you to build up a healthy selection of parts.

Macros can also be useful as a "notepad" section (leaving your main tracks free for building up compositions), or as a temporary backup storage when editing a track – assuming you've enough spare memory. And as you can easily insert a macro at any point in a track (and just as easily delete it), macros can be a useful way of introducing an extra phrase, single note or chord at specific places in a track without altering the track itself.

► *"Console yourself with the thought that you can now store a whole song in a single track – a useful way of storing several songs at once in the sequencer."*

Editing

SO FAR WE'VE looked at the QX5's "surface", which is to a certain extent analogous to tape-based recording. But sequencers can also offer the sort of in-depth editing capabilities which just aren't possible with tape recording.

► *"The system gives you the freedom to record using whichever sonic textures you want...you're not limited to recording one 'instrument' at a time."*

► Which is why they can be such a useful adjunct to more traditional recording, allowing you to get your music just how you want it before you even *think* about turning the tape-recorder on.

There are three levels of editing on the QX5: track, measure (ie. bar) and event. Track editing is performed on any of the eight tracks, while measure and event editing are both performed on track 1 only (requiring you to transfer other tracks and macros back to track 1 before they can be edited).

In addition to the "track down" function mentioned earlier, track editing allows you to exchange, copy and erase both tracks and macros. Track-only functions include inserting track 1 into another track (2-8) at any location, either moving to another track or deleting the latter portion of track 1 (which can be any length), and moving any track forwards or backwards by up to 999 MIDI clocks.

You can also "thin out" selected continuous control messages (including aftertouch and pitch-bend); around half of the selected continuous control message will be removed each time. It's a neat way of cutting down on memory usage, and used in moderation, it doesn't necessarily make much audible difference.

Selected data can be extracted from a track and either deleted or moved to another (empty) track. This allows you to remove, say, all data associated with a particular MIDI channel. For instance, if you have a bass part recorded on one channel and a chordal string accompaniment part recorded on another channel – within the same track – you could remove the bass part, record a new bass part on track 1, and use the Track Down function to include it in its original track.

Other data that you can extract includes notes within a specified range, aftertouch, pitch-bend, continuous controllers, program changes and macro numbers. Finally, you can shift channels, notes, controllers and macro numbers within a track to any other value within their specified ranges; this is where, for example, you can reassign channels once they've been recorded.

Measure-based editing provides you with similar functions and more which can be applied to any range of bars within a track. These include copy, delete, shift and remove. Remove offers the same range of data as extract, but doesn't allow you to move the data to another track.

Other functions at this level allow you to quantise and transpose notes, adjust their velocity values and gate times, and insert empty bars. A more unusual function allows you to insert crescendos and diminuendos into any part of a track: you specify the start and end bars and the amount you want the velocity to vary by, and the QX5 does the rest. Before you start shaking your head in doubt, this can come in useful on parts recorded in step time, or if you have a master instrument which isn't touch-sensitive but a slave that is.

All of which adds up to a lot of editing flexibility. Shortcomings are that you can't copy any section of a track to any other section of the same or a different track (only to the end of the same track), and that a number of the measure-based editing functions apply to a whole track, rather than to a particular channel within a track – meaning that if you've recorded a multi-channel track, you sometimes need to extract individual channels. Still, at least you can get there in the end with a bit of manoeuvring; and with so much editing being centred around track 1, manoeuvring is something you have to do plenty of.

As you might imagine, event editing allows you to go in at the level of individual MIDI codes – which isn't as frightening as it might seem. The QX5 identifies what the data is for you (ie. whether it's a note, a program change or a particular controller value), and allows you to delete, insert or replace data. Here you can work to step resolution (a 96th of a beat).

Event editing (which, again, can be carried out on track 1 only) allows you to work on individual channels within a track – inserting a program change or a sustain on/off command, for instance. It's here that you insert macro numbers to call up anything from a track-length part to a single note.

The event level also includes two unusual functions. First, the QX5 will record System Exclusive data which can then be sent to an instrument during playback, and an Exclusive Dump option allows you to edit recorded System Exclusive data, and insert dump request messages which will be sent to the relevant instrument during sequence playback and recording.

The theory is that you record not only your sequences, but the sounds you want to play those sequences with. It seems a nice idea at first, but in practice it's fraught with too many difficulties to make it of more than limited value. What may prove more valuable for some people is the possibility of recording real-time alterations of sound parameters.

More immediately useful is the second oddball feature, Relative Tempo, which allows you to insert a tempo change at any point in the music, specified as a percentage of the master tempo (from 25% to 398% in 127 exponential steps).

I mentioned earlier that the QX5 competes with Korg's SQD1 and Roland's MC500. One feature which it lacks in comparison with those machines is onboard disk storage of sequences; the QX5 makes do with cassette storage, and that really isn't a good substitute.

On the other hand, its ability to send and receive sequence data via MIDI opens up the possibility of storing sequences to disk using a computer with appropriate software. And in lieu of a MIDI sequence dump standard making data exchange possible between all compatible sequencers, it would also be possible to write a computer-based sequencing program based around the QX's data format – giving the best of both worlds for those that need it, and can afford it.

The QX5 also offers the best of both worlds when it comes to tape syncing. FSK tape sync compatibility is built in, while if your recording setup runs to SMPTE timecode facilities, the QX5 can respond to the pre-MSMPTE complement of MIDI sync codes, including song pointers.

A potentially useful feature when using the QX5 as master is the ability to delay sending of the Continue code for up to 999 milliseconds after sending a song pointer message – which means you can compensate for other MIDI devices taking a short while to relocate themselves to the new position. It's a practical feature which indicates that manufacturers are endeavouring to improve on the thoroughness of their MIDI implementations.

Verdict

LURKING BENEATH THAT bland, uninspiring grey exterior is a powerful device which provides you with the sort of recording power and flexibility that would have been undreamt of only a few years ago.

There's no way you can place the QX5 above its rivals automatically, and no way in which it is inherently inferior to any of them. What it lacks in display information, open-ended software, and storage facilities, it gains in user-friendly operation and a multi-layered (and ultimately valuable) system of editing.

Like I said at the start, these are powerful things, these grey boxes. ■

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dawn of A NEW AGE

OMD take the Hammersmith Odeon stage to promote their seventh album, 'The Pacific Age'. Paul Humphreys and Andy McCluskey explain their progression from bedroom synth pop to eighties hi-tech chart music. Interview by Tim Goodyer.

THE HOUSE LIGHTS DIM. The band take the stage. A tape machine rolls. The first chords of the opening song, 'Southern', liberate the barely restrained exuberance of the crowd. Orchestral Manoeuvres in the Dark are doing what they do best.

The audience have been on their feet for over 15 minutes in anticipation of the show, but as 'Southern' develops, they are treated only to fleeting glimpses of the band as the musicians are caught by the erratic stabbings of the spotlights. Intriguing, frustrating sightings of Paul Humphreys' head bowed over an Emulator accompany Andy McCluskey's dancing form, partly obscured by his bass. Above them, monochrome pictures of sixties America and the distinctive figure of Martin Luther King are back-projected onto oddly-shaped screens.

In stark contrast to the early days of OMD, the tape machine isn't playing a major supporting role supplying drum patterns and sequences. Instead, it releases a series of King's oratories in lieu of a vocal line. It's also running free of any synchronisation with the musicians on-stage – it's all just spun in. The music changes to accommodate the fervour of the voice, rising and falling in sympathy with the message. I ask myself: Is this little more than a re-run of '19'?

"Our approach is quite different", asserts Humphreys, reclining in the peace of Virgin Records' London office suite. "We aren't using Martin Luther King as a gimmick, we aren't doing a '19'; it's the straight speech. We haven't cut the speeches to fit the music – we devised the music to fit the speeches."

"The music was the original idea", agrees McCluskey, explaining the background to what is perhaps the most unorthodox cut from the new OMD album, *The Pacific Age*. "In fact, some of the riffs and instrumentation had been lying around for years: the bassline is from a song called 'Telegraph' – that's four years old. It was supposed to be on *Crush*, the previous LP, but I couldn't sing anything to it so it got dumped.

"This year we had another go at it and decided we really liked the music. Coincidentally I bought a cassette from a place that sells recordings of famous people speaking. Martin Luther King's oratory on it was so powerful, we decided to see if we could work it into the song. The moment we rolled the cassette we knew it was going to work, and once we'd chosen the pieces that we wanted, we went back and rebuilt the dynamics of the song around what he had said.

"Using found source voices isn't new. Byrne and Eno did it and they weren't the

first either. We've been using them for years but we're not trying to say this a new, exciting way to make a song – it just works, that's all. A lot of people that use found source voices tend to use them as an extra effect that they'll chop up. What's being said then is of no importance, it's just phonetic.

"We were conscious of not being disrespectful to Martin Luther King's memory or message; we just wanted him to be saying what he had to say. The speeches are all in chronological order, too."

Back on stage, the opening number is over. The lights come up to reveal McCluskey and Humphreys fronting a six-piece band, the remainder of whom reside on a riser towards the back of the stage set.

Old stalwart Malcolm Homes sits behind his drum kit, while the similarly experienced Martin Cooper alternates between guitar, Emulator II and a Super Jupiter, Graham Weir between trombone and Mirage, and brother Neil between trumpet and bass guitar. Humphreys' Fairlight, Emulator II and Korg Micro Preset (!) are tucked into a corner, leaving most of the stage clear for Andy McCluskey to launch into frenzied dance routines. The music builds on the impetus of 'Southern', but now the voices of McCluskey and Humphreys take the place of the pre-recorded monologues.

The set weaves its way through a collection of material both old and new, imparting it with an energy the band have never quite managed to recapture on vinyl. Songs from the new LP sit well alongside yesterday's hits, with little indication of the years that separate them.

"We wanted to try some of our earlier ideas, but with 1986 technology", reveals Humphreys. "It was an experiment and we didn't know if it was going to work, but we're happy with the way it turned out."

Accompanied by some impressive lighting effects, the band launch into 'The Dead Girls' from *The Pacific Age*. The arrangement employs the kind of simple yet effective melodies that characterised earlier hits like 'Electricity' and 'Messages', McCluskey's lonely vocal set against a sparse backing of sampled choirs.

"It was definitely a conscious attempt to use our ideas from the *Architecture and Morality* period, but with the new technology instead of Mellotrons and other Heath-Robinson instruments", continues Humphreys. "We wanted to see how we could approach that sound now. There were only the Moody Blues using the Mellotron when we did 'Joan of Arc'.

"For the intro we used a French sampler, the Publison Infernal Machine. We fed in two phrases of the vocals from the end of the song where the girl's singing in French, and kept spinning it in until it fitted into the intro. The Publison does time compression so you can keep the same pitch, but extend the length of the phrase. It just spreads out the information over a longer period of time. I think it's the only machine around that will do it."

AS AN ALBUM, *The Pacific Age* sees OMD combine new technology with a more traditional style of songwriting that some would describe as mature, others as boring – though it retains distinctive elements of early OMD melody. The result is songs like 'Goddess of Love' and 'Flame of Hope' – simple, infectious tunes with a solid beat capable of swaying a live audience like a single body.

► *"We wanted to try some of our earlier ideas with 1986 technology. It was an experiment and we didn't know if it was going to work, but we're happy with the way it turned out."*

"In the early days our choruses would be a keyboard melody, but now they're actually sung. Maybe we're getting old and conventional", opines McCluskey. "Some of the ideas are old, like the military ►

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► drum in 'The Dead Girls', but the sound is different to what we've done before on record. It's a lot more punchy, almost live, which is something we've wanted to achieve for some time."

Humphreys: "I think that's down to our approach to production. We didn't want to use many drum machines and sequencers; we tried to keep everything as manual as possible and to use as many musicians as possible, instead of computers. It's definitely contributed to the sound. Between Tom Lord Alge, the engineer, Stephen Hague, the producer, and the two of us, it was a real production effort.

"We recorded the album in a studio in France where the studio room was all mirrors and marble; it was very tight but very hard. It wasn't a processed sound like the Manor or the Townhouse stone room. It didn't sound so compressed; just very bright and ambient – and live. So the drums have got this real snap to them, rather than a Phil Collins type of compressed ambience."

McCluskey: "We started out doing everything ourselves – playing the bass drum, the snare drum, the white noise (rather than the hi-hat) one at a time. We used to like the separation that we got; you could put everything exactly where you wanted it in the mix.

"When you've got a whole drum kit, it's harder to get that situation. In the early days poor old Malcolm used to have to play the bass drum, *then* the snare drum... It must have been very frustrating not playing his whole kit, so this time we said 'go in that room and beat the living crap out of your kit', which is just what he likes to do. He was playing to sequenced bass, but he's a very tight drummer and, rather than dropping him in all the time, we let him go and then went back and manually played in a lot of the rhythm instruments. So the whole thing became manual following the drums.

"The Mitsubishi 32-track recorder was a Godsend too – we actually managed to get everything on one machine. We didn't want to have to slave up two 24-track tapes because it's such a tedious process, and when you come to mixing you're always having to wait for them to lock up. It takes twice the time to mix when you're running two machines in sync."

"The sound reproduction was marvellous, too", says Humphreys. "We'd sit there switching between tape and source and you couldn't tell the difference. It's not like with analogue where, after a while, you start to lose some of the top end, and end up having to boost it up in the mix. The Mitsubishi is exactly the same all the way through recording, monitoring and mixing – the sound does not change.

"The songs were a bit simpler this time too. We didn't have to do so many overdubs on them, though there were a couple of times where there were two or three instruments on one track and we had to use the computer to isolate them in the mix. That created a problem because we only had a 48-channel desk, so 'Our Tom' was always in the other three studios pulling SSL channels out of the other desks. There were a couple of other producers there getting really pissed off because they were losing channels from their desks."

IT DOESN'T SEEM too long ago that OMD would lock themselves in their own studio – The Gramophone Suite – to record their albums. Yet the studio has been out of favour for several years, as McCluskey reveals.

"After we did the *Dazzle Ships* album we got really bored with it. We'd written and partially recorded four albums in there and we couldn't possibly have done any more. It was like going to the office every day, so we needed a change of surroundings. It wasn't conducive to work. Every day you walked in you thought: 'let's go and get a pizza'. The more we worked in other studios that were more professional and had better atmospheres the more we hated going into our place.

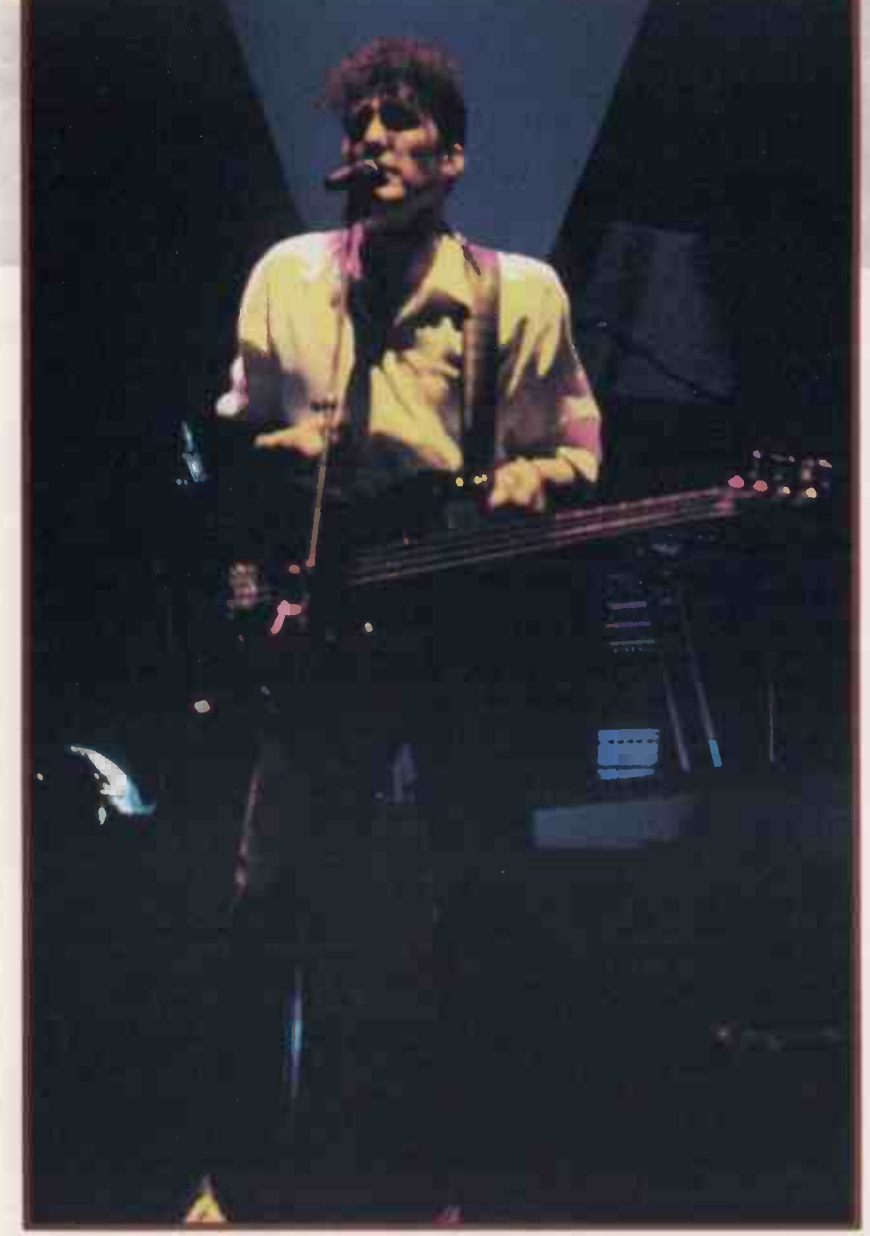
"The problem was we bunged it together in two-and-a-half weeks with our first record advance. We thought 'right, we're never going to sell any records, so let's take the money and build a studio so we'll have something to show for it'. We recorded our first album in three weeks flat and, from that moment on, we never had enough time to take it apart and rebuild it properly. It was basically just a souped-up garage. We had a massive recording room and a tiny control room with bloody great JBLs that pinned you to the back wall if you got past one on the volume control."

► *"Our stage sound is dominated by Emulators. Soon we'll be getting hard disk updates on them, so there'll be no more planning the set running order around the loading time between songs."*

Things have certainly changed since then, as the equipment list that accompanies *The Pacific Age* shows – though Andy McCluskey is characteristically modest about it.

"We have very little equipment these days. It's usually just the Fairlight, LinnDrum, Emulators and the Super Jupiter. Those few instruments are all we need, though it is quite a comprehensive selection.

"Our stage sound now is totally dominated by the Emulators – they cover►



► *"We recorded the album in a studio that was all mirrors and marble. It didn't sound as compressed as the Manor or the Townhouse stone room: just very bright and ambient—and live."*

► almost everything. We'll be getting the hard disk updates on them soon, so there'll be no more planning the set running order around the loading time between songs. On more than one occasion we've had disk-read errors: if you've already started a song and Paul's standing there just looking at you...he's crossing his fingers, looking at his disk drive, and murmuring 'oh, God, *please* load this time'. It can get quite hair-raising.

"For the last two years we've been out on the road running things from the Fairlight's Page R. But in America last year we did some supporting to try to crack the market there, so we thought we'd better get back down to basics. We really didn't want to have to take the extra time required to set up the Fairlight and then have to keep our fingers crossed that it would work, so we dumped all the Page R stuff onto tape and then played all the extra things from the Emulator."

But on stage tonight, it's the Fairlight that's running the show once again.

"We've had it updated to a Series IIX, says Humphreys. "That's been really helpful because, although the sampling on the Fairlight isn't too hot, it's a fantastic writing tool. Now we can get really crisp samples by MIDIing it to the Emulator. We still use it a lot, but there are still certain things, like sampling voices, that it can't handle."

McCluskey: "It's one of those machines that you have to play to its idiosyncrasies to get the most from. We've never worked on the Synclavier or Fairlight III, but the II, for my money, is a great composing tool, and that's the way we use it. I have no patience for reading manuals. I want to learn something for today, and the Fairlight is really easy to learn. Once you've picked it up you can really swiftly move through its functions, and put things together very quickly.

"We quite often use the Fairlight's Page R to write and put the demos together. But we got into big trouble earlier this year when we decided we were fed up with Page R and having to lay down the sync tone and everything. We thought 'let's do it manually like we used to do', so, on principle, we didn't use a sync tone.

"We put down some really dodgy LinnDrum to give us something to play to, then we started to build the track. We thought it was dead good. *Paul* played the drums on 'The Dead Girls' the way we used to do, with a mallet for the bass drum and the snare drum sitting on a chair – it was a real engineer's nightmare. It all went well until we decided we wanted to put a sequencer in it, and there was nothing for it to follow. All we had left of the LinnDrum guide track was one tambourine, because we'd erased all the rest, and that was on a real off-beat that we could hardly follow. Repairing that track in Paris took us days.

"We ended up going back to the drum track and sampling out one of the bass drums and one of the snare drums. In the end our producer went through, dropping them in on the right beat. So much for going back to manual."

BACK AT THE GIG, no OMD live set would be complete without a rendition of 'Enola Gay', the rattling Roland CR78 drum pattern and sequence as compelling as ever. Sadly, the old CR78's days are numbered, not just by drummer Holmes, but by the acquisition of an E-mu SP12 drum machine. And McCluskey's obvious enthusiasm for the new machine conceals any remorse he may feel about the departure of an old friend.

"The SP12 is like a pile of AMSs, but with a built-in sequencer as well. We got fed up with the sounds in the LinnDrum

years ago – even the new chips we got for it. In the end we never had access to the AMS in the demo studio because we were running bloody drum samples triggered off the LinnDrum. We don't have that problem now.

"We're going to load the SP12 with some of our old drum machine samples because, at the moment, we're still carrying the old CR78 Compurhythm around. That *is* the 'Enola Gay' rhythm machine. Once we've got those sounds we can dispense with that. Then Malcolm is going to hook up some pads to the SP12 to trigger some sounds."

Progress, as they say, is progress. But curiously, the same fate nearly befell a much more recent piece of technology – the Roland Super Jupiter synth module. Luckily for the machine (and for the stage show, where the machine comes into its own in the capable hands of Martin Cooper), OMD found a way of keeping it under control, as it were, after a few hiccups.

"We had trouble finding a keyboard to use with it", explains Humphreys. "We went through two Oberheim Xks that wouldn't talk to it – they just wouldn't listen to each other. Eventually we found out that the problem lay with the Oberheim, because we'd been using the Super Jupiter with lots of other MIDI sources without any trouble. It's fine now, but we've been thinking about getting a DX7 – because we don't actually own one – to use as a controller. The problem there is changing the presets on the Super Jupiter, because you can't do it from the DX7."

There's no sign of a DX this evening, though, and even less evidence of the old Mellotron, which has long since disappeared from OMD's stage instrumentation. But its tones linger on, issuing from Humphreys' Emulator II+, and where else should they be heard but on 'Joan of Arc'...? Back at the Virgin offices, McCluskey is at a loss to account for the original success of the song.

"I'm still amazed. I can't quite understand it. 'Souvenir' yes, because it was a ballad, but 'Joan of Arc' and the 'Maid of Orleans' version with all the choirs, I can't work out.

"I think we were on a roll so it got a lot of exposure. Had it been our first single, or had we released it now when we're not on the crest of a wave, it'd struggle to be a hit. But then it was our sixth consecutive Top 20 single, and people expected it to hit. Nobody else, not even us, has made that kind of record again, apart from a couple of tracks on this album."

Humphreys: "That whole period was exciting because *Architecture and Morality* was the first album that really did well. We're still proud of it."

"But *Architecture and Morality* actually sounds the most dated of all our albums", reflects McCluskey. "It sounds like it's 1981. It's not a current sound any more because nobody else has gone *near* that style."

THE CURRENT SINGLE, 'You Know We Love You', brings the end of the Hammersmith set in sight. Then the opening strains of 'Forever Live and Die', its recent predecessor, drift from the stage. Neil Weir has substituted for McCluskey on bass, and McCluskey, in turn, has taken Humphreys' place behind the Emulator while his partner in crime takes the lead vocal. From the moment the opening sequence first issued from the radio a few weeks ago, you knew OMD were back, but equally that they'd chosen a single that lacked the harder edge of some of their LP material. McCluskey can only agree.

"We do suffer from this image of being rather a nice and pretty band, which isn't necessarily the case. This time I think it was the record company being convinced that 'Forever Live and Die' was the right single; they were unanimous about it. But we're going to choose the next single so it'll possibly be a remix of 'Stay'. For the first one we narrowed it down to 'Stay' and 'Forever Live and Die', so we did finished versions of those and 'Stay' didn't turn out quite the way we'd imagined. 'Forever Live and Die' is hardly representative of what's on the album – it's perhaps one of the softest, most polite songs and the other stuff has got a lot more punch.

"'Stay' was one song we had a lot of arguments about. For the most part we were unanimous about how things were being produced and mixed, but I was rather upset about the way that one turned out. Everybody else said 'it sounds fine', but to me, it's just not how it should be."

▶ *"'Architecture and Morality' sounds the most dated of all our albums – it sounds like it's 1981. It's not a current sound any more because nobody else has gone near that style."*

Not that any member of this audience would agree with him. The strident rhythm of 'Stay' lifts them to new heights. And not just the fanatical front few rows – the balcony is more demonstrative than some bands' most ardent followers.

It's a long time since I saw a band earn their encores as OMD did at the Hammersmith Odeon. The audience let them off with just two more songs, though maybe that was out of respect for their heroes' health more than anything else. Eight years and seven albums on, OMD still have a lot of life in them. ■

ROLAND S10

Sampling Keyboard

Roland's entry into the lower end of the sampling keyboard market offers high sound quality in an easy-to-use package, but have a handful of design omissions spoilt it? Review by Simon Trask.

Photography *Trevor Gilchrist*

LIFE WAS SO SIMPLE for musicians once. They could sit at their Ruckers harpsichord or their Broadwood piano, and be pretty damn sure that what they heard was all that they wanted or needed. But then the typical harpsichord or piano maker didn't know much about software – to say nothing of floppy disks.

Nowadays you can have a harpsichord, a piano and countless other instrumental sounds all emanating from a single instrument – and that's only part of the story. Because while you can still sit down at an instrument and accept or reject it fairly quickly on the basis of what you hear (though maybe you were playing some poor sounds), there are many other factors to bear in mind when deciding which instrument is right for your purposes.

Take samplers, for instance. While some machines aim to get the most out of sampling's multi-timbral possibilities, and are therefore ideal for sequencing and recording work (Akai's S900, for instance), there are others that aspire to

the same simplicity of organisation as the average synth. The cheaper of Roland's long-awaited pair of samplers, the eight-voice S10, falls into the latter category.

The S10 is yet another addition to the ranks of the 12-bit samplers, but sells at a price that currently undercuts any of the competition. So what exactly is on offer?

Well, the S10's 128K-word sample memory is divided equally between four samples (labelled A, B, C and D), each of which has a maximum duration of one second at the 30kHz default sample rate (you can also sample at 15kHz).

You can choose to map all four samples onto the keyboard, or a pair of samples, or each sample individually. To make life easy for you, the mapping possibilities have been organised into 11 structures, each with its own button on the instrument's front panel so they can be called up as easily as a synth patch.

Samples can be linked together for longer sample times; AB and CD each give you a two-second sample at 30kHz, while ABCD gives you four seconds (but only one sample, obviously). Split mappings are A/B, C/D, AB/CD and A/B/C/D (the latter mapping all four samples onto the keyboard), and you can set the splitpoint(s) anywhere on the keyboard. Now, this allows you not only to put as many as four different sounds on the keyboard, but also to multisample single instruments to get a more accurate representation (by minimising the distance each sample has to be transposed from its original pitch).

The acoustic piano, harpsichord, flute, pipe organ and acoustic guitar disks that are available for the S10 all adopt the latter approach, while three other factory disks – drum set, combination and strings & chorus – opt for the multi-instrument approach.

load, say, a single multisampled piano sound is not what you want at a gig. More likely, you'll want to set the loading process in motion and then quickly turn your attention to your other keyboards. And no matter how adept you become at manoeuvring your disks, the very process is bound to add on precious seconds; typically it takes 40 seconds to load in four samples.

On the plus side, having one sample per side of disk does make life fairly uncomplicated. And you can get the S10 to divulge which sample is on each side of a disk, which bank it is destined for, and which structure it is part of (just in case you've forgotten to put these details on the disk label). You can also override bank and structure settings and load any single sample into any bank, which allows you to set up new sample combinations with ease.

When you power-up the S10, you can either start sampling from scratch or load in samples from disk. Assuming that at some stage you're likely to venture into DIY sampling, let's look at how you go about this on the S10.

Fortunately, it's very straightforward. You simply select the structure you want, set the trigger level (this is shown as a bar line in the S10's backlit LCD), and the key on which you want the sample to be replayed (this can be changed at any time later). Then stand back and do whatever you feel you have to do (shout, scream) into the nearest microphone.

The recording trigger can be set to auto or manual. If auto, the S10 will begin recording when the trigger threshold is exceeded; manual, in contrast, means sampling will only begin when you press the appropriate button on the front panel, or depress the sustain footswitch.

► *"Mapping possibilities are organised into 11 structures, each with its own button so it can be called up as easily as a synth patch."*

Sounds

OF THE MULTI-INSTRUMENT collections, drum set gives you bass drum, snare drum, tom tom and hi-hat, while "combination" (a non-descript title if ever there was one) provides electric bass, trumpet, cymbal crash, and orchestral hit (OK, so it's clichéd – but it sure packs a punch). By and large these samples aren't the best demonstration of the S10's quality, but the third disk (strings & chorus) is much more effective.

In contrast, the five other disks we had access to are excellent, and display the sparkle and clarity that the S10 is capable of producing. Particularly impressive is the upper range of the piano, which so often proves difficult to capture but here sounds bright and clear.

The main criticisms to be levelled at the multisampled instruments are that the transition from one multisample to another is often noticeable (the acoustic guitar particularly so), and that the loops can tend to sound thin when you're sustaining a sound. The former is partly attributable to the fact that there's no positional cross-fading between samples, while the latter is down to the length of the loop in use – which is why the piano samples, with their relatively lengthy loops, are among the most successful. Still, you ain't gonna get the quality of Roland's RD1000 piano, whose SAS system is altogether more sophisticated than straightforward sampling.

Instead of the increasingly popular (and readily available) 3.5" disks, the S10 uses 2.8" Quick Disks. These store one sample per side, so two disks are needed to store four samples; library disks for the S10 duly come paired in special sleeves.

Although the S10 helps you through the loading process with helpful prompts and automatic loading when a disk is inserted (structure information is stored on each side of a disk to tell the S10 how many samples should be loaded), there's no denying that repeatedly changing disks just to

Editing

ONCE YOU'VE MANAGED to capture a good sample, you can modify the sound in various ways, which fall into two categories: those that alter the actual data (known as Wave Modifications, you'll be stunned to know), and those that don't (known as Wave Parameters). Editing is accomplished using that now ever-present Roland device, the Alpha dial.

In many cases, the first thing you'll want to do after sampling is go in search of the ideal loop. The S10 has three sample looping modes: one shot (which actually means no loop), manual and auto. The S10 auto-loops single and linked samples if the last sample is longer than 0.8 seconds (a two-bank sample has to be longer than 1.8 seconds), finding only a single loop (or not, as the case may be) rather than presenting you with a number of options as, for instance, Korg's DSS1 does. While auto-looping is a handy feature, you'll often find yourself launching into manual mode (ie. doing it yourself). Usefully, the auto-loop addresses (specified as loop end and loop length) are preserved, so you can return to them if your own initial efforts prove disastrous. And you can swap between manual and auto loops simply by changing the loop mode parameter.

The S10 allows you to listen to your sample while changing the loop length and loop end, so you can adjust your samples rapidly while using those valuable accoutrements known as ears. Which is all very well, but ultimately rather random – ideally this speed needs to be combined with the visual feedback that a computer display can offer (though currently there's no editing software for the S10; the upmarket S50, as you'll see elsewhere this issue, comes complete with its own software and a monitor connection). Still, smooth looping is achievable in many cases – the library disks are good examples of this.

Other parameters include loop and sample tuning, scanning mode (forwards, backwards and alternating), ►

▶ sample start point, a five-stage volume envelope, dynamic sensitivity, auto-bend, and envelope velocity-sensitivity (which allows you to control the attack rate through velocity strength). All these parameters can be copied singly or in bulk from one bank to another.

Modifications to the actual sample data include level adjust, digital filtering, sample reverse, mix and combine. You can also copy and swap individual samples around within the S10's sample memory.

Digital filtering seems like it should be impressive, but disappointingly, you can't make adjustments in real time. You choose from four filters (two each of lowpass and highpass, with a choice of mild and sharp cutoff) and set the cutoff frequency (from 100Hz-10kHz) and resonance.

▶ "Particularly impressive is the upper range of the piano, which so often proves difficult to capture but here sounds bright and clear."

You're then faced with a wait which can be upwards of two minutes, during which time you can stare glumly at an arrow moving across the display while the sampler works out what the new data should be. And as it's the sample data itself which is altered, you're well advised to save your sample to disk beforehand, until you find the setting that gives you the result you want.

It's all a little laborious, but can yield good results if you're prepared to be patient – though another problem that can occur is that the loop you've painstakingly constructed to perfection suddenly isn't as smooth as it was.

There's no filter envelope, and keyboard velocity can't be used to open or close a filter either.

The S10's keyboard is the source of two disappointments: first it's only four octaves long, and second it's sensitive to attack velocity, but not to aftertouch (and aftertouch can't be applied to samples via MIDI, either).

The MIDI transmit note range is fixed at notes 36-84 (that's two octaves either side of Middle C), while receive range is 24-103 (an extra 1½ octaves above, one below). Which means you need to play the S10 from another keyboard to make the most of its sample range.

In addition to splitting samples, you can layer them (using single or split structures) in dual mode. This reduces the S10 to four-note polyphony – which raises an interesting comparison with the Ensoniq Mirage, since the latter has two oscillators per voice, allowing you to layer samples without losing polyphonic capability.

Performance flexibility is the order of the day on the S10, though, with two ways of balancing layered sounds dynamically while playing: velocity mix and velocity switch. Both depend on how hard you strike the keys. The former mixes in the second sound, while the latter switches between the two sounds (switching retains eight-voice polyphony, because you are only playing one sample per note). In both cases, either of the two sounds can be selected as the "strong" or "weak" one. And you can set the velocity level above which the mix or switch occurs, which means you can tailor the effect to your keyboard touch. As well as being able to play with different instrument sounds, you could record a soft note and a hard note and switch between them accordingly.

Effects

ROLAND HAVE ALSO given the S10 the ability to detune samples, using any of the structures. When selected, this effect applies equally to all samples on the keyboard – fine for multisampling, but maybe not what you want when you've got several different sounds on the keyboard. Like dual mode, detuning reduces the S10 to four-note polyphony, as two samples (in this case the same sample, if you see what I mean) are used for each note.

The S10's detuning ability (which has programmable range) allows you to apply some very powerful chorusing effects to your samples. For extra flexibility, the amount of detune can be determined by how hard you strike the keys, or can be set to a fixed amount.

And Roland haven't stopped there with onboard effects. They've also included a single-repeat delay, implemented in software (down to four-note polyphony again), with programmable time up to around two seconds, level and key offset. The latter allows you to transpose the repeat up or down an octave in semitone steps, which is most useful when used without a delay (eg. for parallel fifth and octave effects).

Although the parameters governing these effects are programmable, their selection isn't – and you have to remember various sequences of button-pushing to call them up. Why Roland couldn't have provided three or four dedicated buttons is beyond me; the minimal extra cost involved would have been easily offset by the benefits in performance flexibility.

In contrast, the S10's onboard arpeggiator has a button all to itself, making it all the easier to switch the effect in and out in real time. There's no pretence of a recording role with this arpeggiator; you simply hold down the relevant notes, and they are arpeggiated according to the various parameters selected. You can set rate (slowest speed is around two seconds per note); mode (up, down, up/down, random); range (one, two or three octaves); repeat (1-16 repeats of each note before the next note in the arpeggio); and decay (which allows you to program a fade-out effect).

The arpeggio can also be set to internal or external sync; in the latter case, an external trigger signal fed into the S10's input jack triggers the next note in the arpeggio. It's also possible to select a sequence of four notes which will automatically be played whenever a trigger pulse is received on the input jack (from a drum pad, for instance).

Detune, delay and double can each be used together with the arpeggiator (but not with each other). The notes resulting from the delay and arpeggiation effects aren't communicated over MIDI, however, so they can't be doubled on other instruments.

The S10's MIDI facilities don't allow too much room for sophisticated applications. In addition to setting a single MIDI channel (1-16), you can turn transmission and reception on/off individually for pitch-bend, sustain, modulation, program changes, active sensing, system exclusive, bend range and master tune. There's no Mono Mode, but with only four samples onboard, it might be of limited use anyhow.

Verdict

OVERALL, THE S10 is not the instrument to go for if you're looking for a sophisticated multitimbral sampler to use in a sequencing and recording environment; Akai's S900 and Sequential's Prophet 2000/2 still perform the honours there, though both are significantly more expensive than the Roland, the Prophet especially so.

But what the S10 loses in voicing flexibility it gains in user-friendliness. It's one of the simplest keyboard samplers to use, and at this price level, that's bound to be important to users, many of whom may be involving themselves in DIY sampling for the first time.

Sampling quality is high, and the S10 is more of a *performance* instrument than many of its competitors, so you stand a better than average chance of getting those sounds to work for you.

It's a professional instrument that many semi-professionals can afford, and just about any amateur can use. ■

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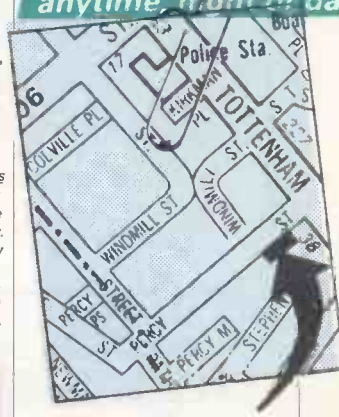

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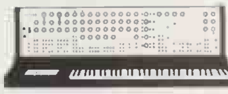

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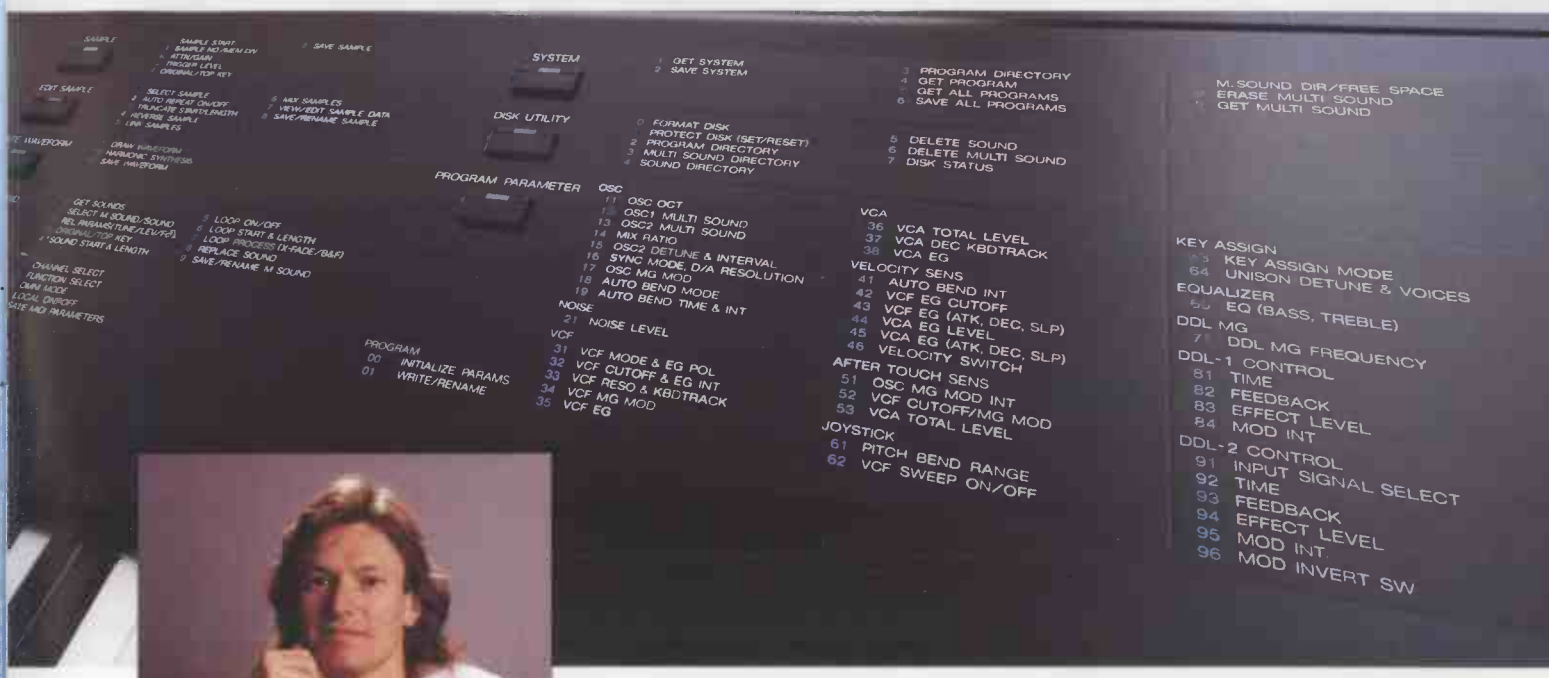

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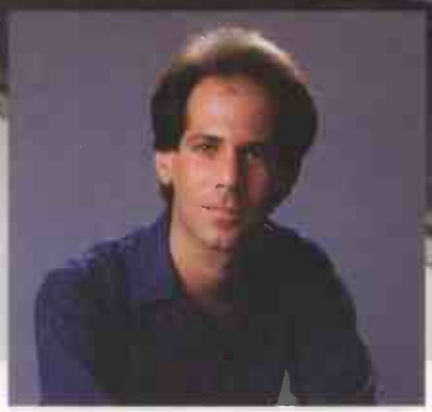

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