E&MM
ELECTRONICS & MUSIC MAKER
THE MUSIC TECHNOLOGY MAGAZINE
AUGUST 1986
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DEPECHE
Modes of Operation

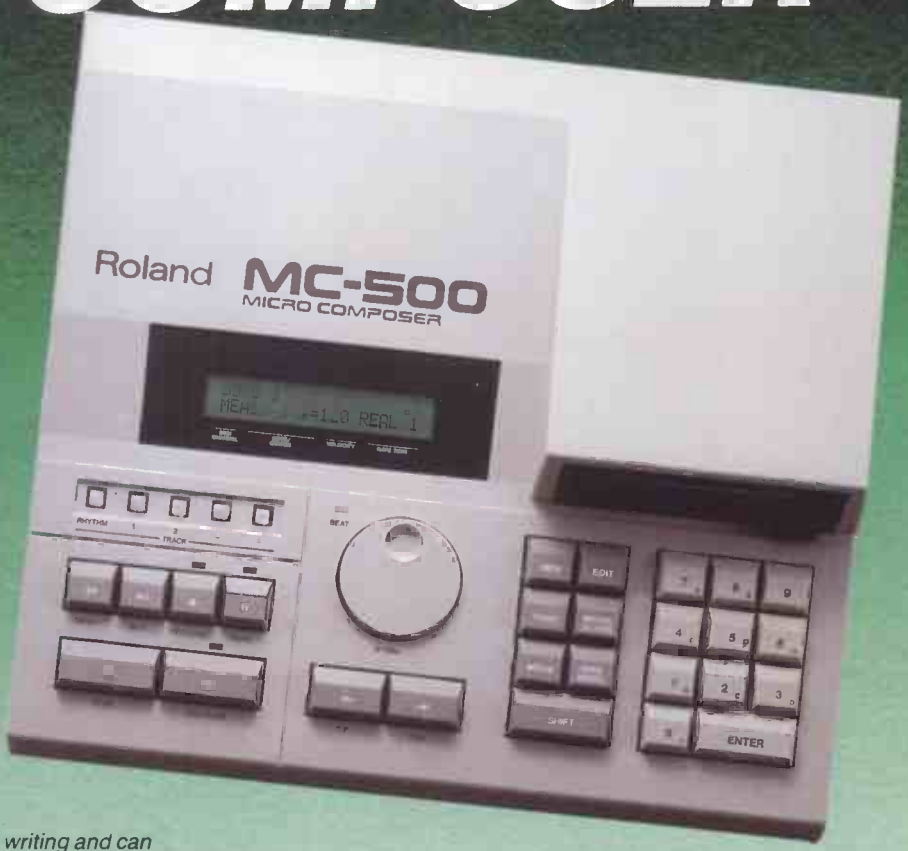
EXCLUSIVE REVIEWS
Ensoniq ESQ1 Synth Alesis MIDIfex
E-mu Emax Sampler

ERASURE
Vince Goes Back to Basics

EXCLUSIVE NEWS
Sequential Studio 440 Recorder Roland MC500 Sequencer
Korg DDD1 Sampling Drums

THE MC-500 MICRO COMPOSER

A Music-Dedicated Computer



The Facts

- *Just like a computer, the MC-500 has no fixed functions. A program booted from a 3½" disk determines how the MC-500 operates.*
- *The MC-500 is extremely easy to operate, featuring an α-Dial, a 2-line LCD display (each line 20 characters long), and a numerical key pad.*
- *The MC-500 can be synchronised with MIDI devices and a multi-track recorder.*

REAL-TIME RECORDER SOFTWARE DISK (comes with the MC-500)

- *The MC-500 comes with a 3½" disk containing programs which let the MC-500 function as a real-time sequencer and provide tremendous memory capacity and a wide variety of functions.*
- *The performance data is written in the MC-500 by real-time recording from a connected MIDI instrument. Once the performance data is recorded, the MC-500 can completely control any MIDI instrument from a synthesizer (such as the αJUNO or SUPER JX), to a drum machine (such as the TR-505, TR-707 or TR-727), or a MIDI sound module (such as the Super Quartet MKS-7). The MC-500 also allows the perfect formation of any MIDI set-up from a simple sequencer-synthesizer set-up to a complicated professional quality set-up.*
- *The MC-500 itself can store the performance data for up to eight songs or about 25,000 notes. The song name can also be stored for each song. In addition, the performance data can also be saved on a 3½" disk. In this case, up to 100 songs or about 100,000 notes can be stored in one disk.*
- *The program provides the MC-500 with four recording tracks. Each track can polyphonically record MIDI messages of all 16 MIDI channels including note, bender, exclusive messages, etc. In addition, a rhythm track is separately provided to control MIDI rhythm instruments. The rhythm track stores the performance data created by step writing and can control up to 32 sound sources. Eight levels of accent can be programmed for each sound source.*
- *Convenient recording functions are provided. The Punch-In/Punch-Out function allows unwanted parts of a recording track to be replaced by other performance data at will. The Quantizing function automatically corrects the rhythm. And the Overdubbing function allows the user to overdub other performance data while listening to a previously recorded performance.*
- *The performance data can also be loaded by step writing – all notes and rests are written in the MC-500 step-by-step.*
- *For greater convenience, a variety of editing functions are provided. The Merge function allows the performance data recorded on several recording tracks to be mixed on a single track. Extract function transfers the performance data of one MIDI channel recorded with other MIDI channels' data on one track to another track. In addition, the performance data for every single measure can be transposed, inserted, and deleted.*
- *A Micro-Scope function allows every single note to be edited over several elements such as the note length and its strength. Even after the performance data is recorded by the MC-500, the tempo can be modified in detail – accelerando (becoming gradually faster) and ritardando (becoming gradually slower) can be programmed.*

STEP-WRITE SOFTWARE DISK (available in the near future)

- *This program allows the user to write the performance data using the MC-500 controls. Even people who cannot play an instrument can easily create performance data.*
- *The performance data is created by inputting a note name, gate time, step time, and other elements for every note of a composition. Any complicated composition – even a composition physically impossible to play – can be easily created.*
- *This software, like the Real-Time Recorder software, offers a variety of editing functions. The total playing time of a composition can also be controlled.*
- *The performance data filed by this software is compatible with the data filed by the Real-Time Recorder software.*

The price – £799

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Comment

MUSIC AND BUSINESS

To most intents and purposes, America's version of the music trade fair is no different from any other. Long gangways crowded with besuited dealers and their wives/girlfriends/daughters, a general cacophony of sound as the musicians inside soundproof booths do battle with those outside, and an abysmally low standard of in-show catering.

But the NAMM show, which takes place twice a year and which had its summer Expo in Chicago's McCormick Place in June, *is* subtly different from both the Frankfurt Musikmesse and our own British Music Fair. For a start, there's a bigger emphasis on dealer education (the public get minimal access to NAMM), with seminars on how modern music technology works and, more importantly, how it could work for the dealers by bringing in new custom.

This year's Frankfurt show had plenty of that, but unique to NAMM is an entirely different kind of seminar – the kind aimed at increasing *sales*, and nothing more. Here the emphasis is very much on getting cardboard boxes out the door and money out of punters' pockets: in the two such lectures I attended, music wasn't mentioned once.

As it happens, music didn't appear to be too high on people's list of priorities in the main body of the exhibition, either. The product demonstrations were often just that – tightly-scheduled demos of products, not musical instruments. The way some of the demonstrators and sales people were carrying on, they might as well have been selling washing machines.

Honourable exceptions to this rule included many of the software manufacturers, and two enterprising drummers – Alex Acuña and John Robinson – on the Yamaha stand. That duo succeeded in showing the huge potential of MIDI percussion control (using the new electronic drum system and a pair of TX816 racks, no less) whilst driving out the most compelling series of musical compositions, all of them original and hastily prepared, this writer has ever heard at a trade fair. As people emerged from the demo, you could hear them mutter not 'that piece of gear was amazing', but 'that was good music'. The appreciation of the music came first, and it made the appreciation of the technology all the greater.

Fortunately, last year's British Music Fair had a much higher level of instrument demonstration, with plenty of concerts, impromptu jam sessions, and punter participation. The result was a vastly increased awareness of what modern musical equipment is capable of doing, not just in terms of cardboard boxes sold, but for the work today's musicians are engaged in.

There's no reason to believe this year's BMF will disappoint in this respect. In fact, with the number of 'name' musicians likely to appear, it should be better than what went on 12 months ago.

What still worries me slightly about all such musical instrument fairs – BMF included – is the extent to which they further the cause of the technological snobs. You hear them at every major event, mouthing off about New Product X beating the pants off *all* the competition, and how no self-respecting musician/engineer/producer will now be able to make music without New Product Y.

If you come across New Products X or Y at the BMF, ask someone on the stand how and why they are so instantly desirable. Then, when you've played around with the instruments for yourself, collected all the leaflets, and survived the train journey back home, ask *yourself* if those machines could be beneficial to your music, or whether some lesser, unsung device could be of more use.

I believe it was Roland who, some time ago, first drew attention to the fact that a new FX pedal could make just as big a difference to somebody's music as a new synthesiser.

And in this very issue, Vince Clarke, as seasoned an electronic music campaigner as any, records his continued amazement at the degree to which musicians sending him demos seem to be 'blinded by science'. They all think their music will improve immeasurably once the deal is struck and the Fairlight is in the living-room, but they couldn't be more wrong.

Money spent on new gear doesn't translate into a proportional increase in talent, just as the number of units sold by a dealer doesn't indicate the service they're providing, long-term, to the musical community as a whole.

Enjoy the show. I know I will. ■

Dg

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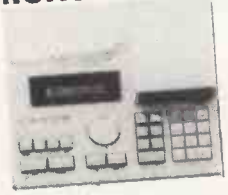

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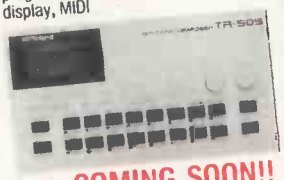

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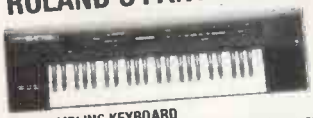

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FUTURE

KORG®

SQD-1 SEQUENCER

KORG DSS1 DIGITAL SAMPLING KEYBOARD

The DSS-1 is a new kind of digital keyboard that blurs the boundaries between sampling and synthesis, between reproduction and improvisation. Any input can serve as your starting point. From a microphone, tape, even another synth. You may also create completely new waveforms by 'drawing'. You may also create completely new waveforms by 'drawing' them or specifying their harmonic composition. Blend and edit your waveforms to alter their timbre any way you like. Never has synthesis been this fast, easy or versatile. You can select any of 32 sound programs in a flash. No waiting like with conventional sampling systems.

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SEQUENTIAL

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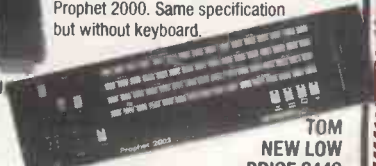

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TOM NEW LOW PRICE £449

The advanced digital drum machine now at this ridiculous price

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SPX90 DIGITAL MULTI EFFECTS PROCESSOR £599

One of the most exciting new products to appear for years! Features include reverb, early reflection, delay, echo, modulation control, autopan, vibrato, reverb & gate, pitch change, freeze, ADR gate, compression, parametric EQ, flange, phase, MIDI. RC7 remote controller available soon

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Combines a four-track cassette recording mechanism with a full-function 4 channel mixer. Mixer includes tape-mic/line input selectors on each channel, level adjustment for mic and line input, auxiliary send and master return inputs for effects processing, and a separate monitor section with level and pan controls for each track. Simultaneous 4 track record facility! **£499!!**

DX27 £499

A regular key version of the DX100. Its features and specs are nearly identical to the DX100 so you can use it as a MIDI on line controller keyboard.

QX21 DIGITAL SEQUENCE RECORDER £259

This high-performance 2-track digital sequencer is capable of recording anything you play on a Yamaha DX synthesizer or other MIDI keyboard, complete with touch response (velocity), pitch bend, modulation, and other function parameters, 6000 to 8100 note memory, 7 character LED display, MIDI.

YAMAHA

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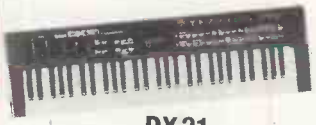

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128 Pre-programmed voices, 32 performance memories, MIDI, 8 note polyphonic

DX100

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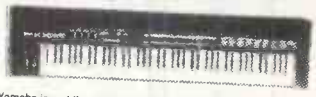

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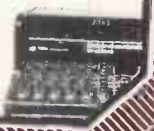
QX7 DIGITAL SEQUENCER RECORDER £299 MT44D Multitrack Recording Systems PHONE



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8 voice polyphonic/polytimbral, 3 oscillators, per voice 80 character display, 40 programs, 8 track, 2400 notes, up to 10,000 with cart. MIDI sequencer.

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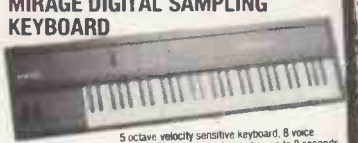
MIRAGE DIGITAL SAMPLING KEYBOARD



£1320 5 octave velocity sensitive keyboard, 8 voice polyphonic, 16 different samples, up to 8 seconds, 3.3" disk drive, on board sequencer, MIDI

MIRAGE DIGITAL MULTI-SAMPLER (RACK MOUNT)

£1080 Rack mount version of Mirage keyboard, MIDI. See above for spec.

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THE AMAZING

MIDIVERB £395!!

Completely digital, the Midiverb offers a powerful range of 63 room programs in full stereo. Everything from small rooms to full halls. Decay times from 0.2 to 20 seconds as well as gated and reversed programs for special effects, plus MIDI.

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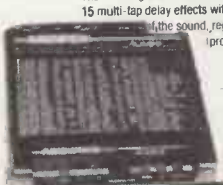
MIDIFEX £395!!

The amazing new multi effects unit from Alesis. 15 multi-tap delay effects with stereo panning [illegible] the sound, regeneration programs and slap-back echoes. In total, MIDIFEX has 63 stereo effects available Call in for a demo today.



FOSTEX

FOSTEX B16 & 260 IN STOCK AND AVAILABLE AT TERRIFIC SUMMER PRICES

MODEL 80 MULTITRACK RECORDER

Fostex pioneered eight tracks on quarter inch. This unique format offers convenience and economy of operation with audio mastering quality. This unique fourth generation Personal Multitrack recorder and uses microprocessor control technology to achieve smoother, faster working. Connections are provided for both the remote and synchroniser accessories.

Model 80 audio quality is tight and clear, the result of no frills electronic circuit design and the incorporation of the latest Dolby 'C' noise reduction. Every feature is included to make the process of recording and overdubbing, faster and even more manageable for working musicians.

- Redesigned cosmetics with bargraph meters
- SMPTE timecode track ● Dolby C
- Improved signal to noise ratio +20DB
- Record on all 8 tracks live
- MIDI interface for controlling synths

450 MULTITRACK RECORDING MIXER

The Fostex 450 mixer is designed to complement the Model 80 recorder in versatility, quality and speed of operation.

It has a total of seven busses, but it's designed to work eight tracks. Efficiently and economically. The state of the art in Personal Multitrack.

Like all Fostex products it's carefully designed and made. Sensible colour coding and light weight are important physical features. Electronically and operationally there's innovation throughout.

Every feature for mixing and monitoring has been included to provide a fast console for music or production applications.

- Completely redesigned cosmetics and routing system
- Bar graph integral meters
- Pre and post 3 band parametric eq ● In line monitoring
- Input solo ● 2 aux sends ● Phantom powering

FOSTEX PRICE RISE! SOME MODELS AVAILABLE AT THE OLD PRICE

NEW FOSTEX E-SERIES COMING SOON CALL FOR DETAILS

MODEL 20 MASTER RECORDER

Based on the same transport as the Model 80 Multitrack, the Model 20 Master recorder offers unique facilities to anyone mastering for production.

The standard mastering two track, two channel format is supplemented by a third, cue channel, located in the centre of the tape, intended for recording and playback of SMPTE time code. This feature, coupled with full synchroniser compatability, puts all of the potential of advanced production techniques into the hands of the user.

The proven cost benefits of the compact Fostex transport, and the incorporation of up to date facilities opens up a new range of opportunities in multitrack.

Until now, synchronisation of SMPTE and MIDI, of music and video, was reserved for select, top of the market studio operations. Now Fostex puts this link to the future within reach of every working studio and musician.

- Matching cosmetics to model 80 & 450 ● Bargraph integral meters ● 15 & 7.5 ips speed ● Varispeed ● Easy editing ● Dolby C ● SMPTE

FUTURE MUSIC PRICE PLEDGE! – PHONE ANY BRANCH FOR DETAILS!

BMF TICKETS GOING FOR A SONG

As the UK music event of the year comes perilously close, E&MM is in the enviable position of being able to offer ten pairs of tickets for the British Music Fair at Olympia 2 – free. All you have to do to become one of the lucky recipients is to answer this simple question: Which issue last year saw the previous 'Electronics & Music Maker' front-cover logo turn into the current 'E&MM'?

A phone call to any of the E&MM editorial staff on ☎ (0223) 313722 with the correct answer will ensure free BMF admission, on one of the public days (August 1-3), to the first 10 callers. Good luck – and don't all ring at once. ■ Tg

KORG DRUMS GO DYNAMIC

One of the stars of a fairly quiet (in terms of new product releases) summer NAMM show in Chicago was Korg's most ambitious drum machine yet – the DDD1. The new instrument is as big a step away from the company's DDM110 and 220 machines as you can imagine, and is aimed fairly and squarely at the semi-pro and pro musician.

Cosmetically similar to the company's SQD1

sequencer, the DDD1 has 18 digital drum voices stored internally, routed to 14 touch-sensitive 'pads' mounted on the machine's top panel. But in addition to those sounds (which are of the conventional kit variety), the new Korg has four insert slots for optional ROM cards, each of which can contain up to eight further sounds. These sounds can then be assigned to any of the programming pads, and initially, a library of 20 different cards – spanning acoustic and electronic drums, Latin and Japanese percussion, and sound effects – will be available.

The DDD1 is programmable in both real and step time, and offers the user a host of programmable features including tuning, decay and dynamics. The internal memory is capable of holding a maximum of 10 songs made up of as many as 100 patterns, and pattern data (including specific instrument settings and assignments) can be dumped to optional RAM card, too.

Also optional is a sampling board for the DDD1, offering a maximum 3.2 seconds of sampling time. At the moment, however, this board offers no means of storing sound samples to any external medium such as tape, disk or card, which is a shame.

The rear panel sports, among other things, six separate audio outputs (user assignable to different drum voices) and MIDI In and Out, plus an audio input for triggering internal sounds, or sampling external ones.

UK price of the DDD1 is expected to be around the £800 mark, and the machine should be generally available in the autumn.

More from Korg UK, 32-34 Gordon House Road, London NW5. ☎ 01-267 5151 ■ Dg

E&MM COMPETITION RESULTS

At last, we can bring you news of the two competitions we ran earlier this year, for which the prizes were a Yamaha DX100 synth (E&MM March '86) and a Toa HY1 headset mic system (April '86).

Winner of the headset mic is Anita Thomas (nice to see a female reader winning something) of Bebington, Wirral. Runners-up (who each receive a pair of RS21M mini monitors) are Phil Stollery of Salford, Lancs, and Peter Greer of Belfast. To those lucky three, your prizes are on their way.

The DX100 competition has already been the subject of a few irate letters and curious phone calls, but the fact is that judging the competition – in which, you may recall, readers were asked to submit editorial features with a view to becoming regular E&MM contributors – has been a much more involved process than we originally foresaw. The delay is due to two factors: first, the sheer quantity of submissions we received, and second, the high overall standard readers attained.

Rest assured, though, that judging is now in its final stages (it's not exactly a 'first out of the hat' job, you know), and that the DX100 winner will be notified of his/her good fortune shortly. As for the winning piece, this'll be published in E&MM September, with several of the other (less fortunate) entries also making an appearance over the next few months. Stay tuned, FM lovers. ■ Dg

STEPPS AHEAD FOR THE ELECTRONIC GUITAR

Across the way from the NAMM show proper, E&MM spies were lucky enough to get a sneak preview of the Stepp DG1 electronic guitar. The instrument has been developed over a number of years by a small British company, and vast sums of research money have been spent in the process.

At first sight, the DG1 seems to be following in the footsteps of the more expensive SynthAxe: it has a moulded body, and two sets of strings – one for picking and one for fretting.

The biggest difference is that the DG1 contains its own voicing electronics and is therefore a self-contained instrument – just plug it into an amp and away you go. And as the multi-timbral synth voices are controlled directly from the guitar via an interface several times faster than MIDI, there's no perceptible delay between plucking any string and hearing the synthesised sound. There are many nuances of guitar-playing that don't translate too readily via MIDI, and the DG1 system is designed to exploit these, too.

MIDI, however, is an important feature, and is supported not only to control external keyboards or voice units from MIDI Out, but also to allow the DG1 voices to be accessed via MIDI In.

The DG1's design incorporates some interesting technological features, particularly in the neck. The frets themselves are made from a semiconductor material which translates the string position into bend information. And it's because pitch information is originated by the fretting system that the sort of tuning problems, delays and mistracking that plague pitch-to-voltage guitars are eliminated on the DG1.

The synth voicing circuitry employs digitally-controlled analogue elements, forming an architecture which, according to the designers, has been conceived with the guitar-like nature of the instrument in mind – though the potential of the system should be great enough to encompass a broad range of different sounds. So that musicians can start using the DG1 straight away, the voicing section comes with 100 useful preset sounds – though all synth parameters are user-programmable.

The designers have succeeded in keeping the size and weight of the DG1 in line with that of a normal electric guitar by relocating much of the electronics, including the voice generators and power supply, in the instrument's custom-designed (and rather neat) stand. And the guitar, like the stand, looks tasteful and well thought-out.

As soon as we get our hands on a finished example of the DG1, we'll compile an 'official' review. In the meantime, final production work is proceeding apace, with widespread availability a matter of weeks away.

More from Stepp, 8 Primrose Mews, Sharpleshall Street, London NW1 8YL. ☎ 01-722 5448 ■ Paul White

SUPER SOUNDS FOR SUPER VOX

Supersoft, developers of the excellent Commodore 64/128-based Microvox sound sampler reviewed in E&MM April '86, have now created a sample library for their system.

The library divides into five sections: Orchestral & Strings, Wind & Brass Instruments, Guitars & Basses, Drums & Percussion, and Keyboards & Miscellaneous. Each section is on a separate disk and fills both sides, and the disks are colour-coded for convenience.

In total there are 123 samples, with electronic and synthesised sounds as well as the 'real thing'. Really good news is that the complete library retails for just £29.95, which a quick burst of mental activity will confirm works out at less than 25p per sample.

Microvox products are available from Gigsounds in Catford, South-east London, JSG Music in Barnsley, Yorkshire, or by mail from Supersoft.

More from Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SG. 01-861 1166. ■ St

LIVE ELECTRONIC MUSIC FOR '86

Thanks to the huge efforts of Andy Garibaldi's Lotus Records, Britain still has a live electronic music festival in September.

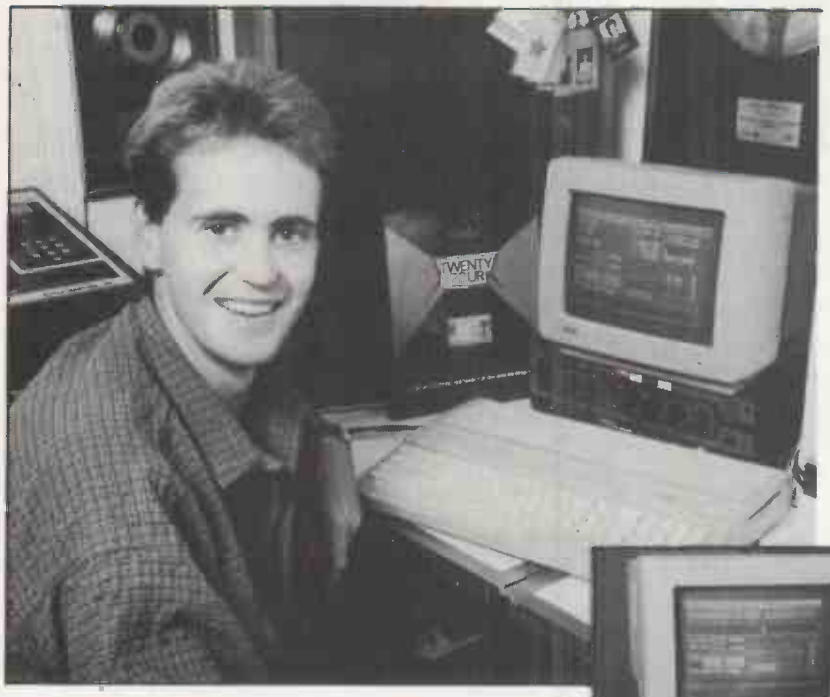
It's called Lotus Electronica, and it follows a format similar to that used by UK Electronica over the last three years. The festival is divided into two halves: a daytime concert and an evening one, with a stall area and a newly-devised video room operating throughout the day.

The venue is a new one – the 600-capacity Borough Hall, Eastgate Street, Stafford – and the date is Saturday, September 13.

Headlining the daytime event are Wavestar, who made such a big impact at last year's UKE, preceded by established synth/piano composer Paul Nagle, Greg Truckell, Pete Tedstone, Kevin O'Neill, and Darkside, a group of ex-Altres members who kick the ▶

PRO-24

'A NEW CONCEPT IN MULTITRACK RECORDING'



STEINBERG RESEARCH pioneer a new generation of professional MIDI software – THE **PRO-24** and **PRO-CREATOR** for the Atari 520/1040 computers

THE **PRO-24** is an innovative 24-track MIDI recording system. It offers unparalled depth of control ranging from note-on & note-off quantise of individual notes, right up to multi-copying of whole sections of tracks.

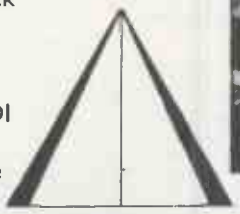
THE **PRO-CREATOR** – is designed for all migraine-suffering FM synth programmers. If you can't quite get the sound that you want, dump it into the Atari and The **PRO CREATOR** will generate up to 32 variations of your original sound. What's more you can even specify the parameters that you want to randomise.

STEINBERG PROFESSIONAL – GUY FLETCHER – DIRE STRAITS

Further products in the **STEINBERG PROFESSIONAL** range include:

- **PRO-16** – 16-track Polyphonic Sequencer
- **TNS** – Scorewriter and Music Editor
- ***NEW* EDIT KIT** Note & drum pattern editor for the PRO-16
- **MIR** – Mirage Visual Editing System
- **SES** – Visual Editor and Sound Library for DX7, DX5 and TX's
- **COSMO** – Visual Editor and Sound Library for Casio CZ Synthesisers
- ***NEW* TRACK STAR** – 8-track Polyphonic Sequencer
- **PPC** – Piano Tutor
- **GPC** – Guitar Tutor
- **MIDI MATRIX** – 4 into 8 MIDI Patchbay

All the above software runs on the C64/128 and SX64



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● Chromatix – Ealing, London W5 ● Rod Argents Keyboards, London WC2 ● Holiday Music – Leytonstone, London E11 ● Gig Sounds – Catford, London SE6 ● Syndromic Music – Muswell Hill, London N10 ● Take Note – Camden, London NW1 ● Sackville Sound – Hove ● Bonners Music – Eastbourne ● Musical Exchanges – Birmingham ● ABC Pro-Shop – Addlestone ● ABC Pro-Shop – Oxford ● JSG – Bingley ● Audio Engineering – Dublin ● Dougies Music – Northwich ● Carlsbro Sound – Norwich ● Sound Control – Glasgow ● Sound Control – Edinburgh ● Underground Music – Leicester ● EMS – Inverness ● Audio Services – Stockport ● Swans Music – Manchester

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Oxford Synthesiser Company Ltd.,
5 Gladstone Court, Gladstone Road,
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Tel: 08675 5277 Telex: 83147 att: OSCAR

SEE THE STEINBERG PROFESSIONAL RANGE AT THE BRITISH MUSIC FAIR 29th JULY–3th AUGUST STAND No. 1–43 (FIRST FLOOR)

► event off at about 1pm (doors open midday).

Beginning the evening concert at around 7pm will be Mike Brooks, and he'll be followed by ex-Throbbing Gristle members Chris & Cosey, making their first UK live appearance in three years. Co-headlining with Chris & Cosey is Ian Boddy, who'll be playing a selection of material including tracks from his new album.

Ticket prices are £7.50 for the whole event (£6.50 if you buy before August 31), and £5 (£4.50 in advance) for just the evening concert.

Send your orders to: Lotus Records, 14-20 Brunswick Street, Hanley, Stoke-on-Trent, Staffs, ☎ (0782) 269012. ■ Dg

TAKE NOTE...

...Is the name of a new London-based retail outlet catering expressly for musicians and engineers interested in computer-based music. The company's showrooms incorporate a permanent MIDI setup, and are designed specifically to demonstrate today's computers, software, MIDI instruments and outboard gear. The emphasis, say Take Note, is firmly on hands-on demonstrations and personal assessment of equipment.

More from Take Note, Unit 7, Carol Street Workshops, London NW1. ☎ 01-485 2988.

Still on the retail front, Carlsbro Sound Centres have opened a purpose-built professional audio facility underneath their Mansfield music store. Naturally, the facility is built around a large demonstration studio, which features – among other things – live and dead areas, along with a 264-point jackfield that allows access to a wide range of signal processors by the likes of Drawmer, Bel, Lexicon, Symetrix and Aphex.

The new facility also deals in multitrack equipment by Fostex and Tascam, and being beneath the main music shop, is ideally placed to demonstrate MIDI keyboards to studio managers and engineers.

More from Carlsbro Professional Audio, 182-184 Chesterfield Road North, Mansfield, Notts NG19 7JD. ☎ (0623) 651633. ■ Tg

SEQUENTIAL UNVEIL STUDIO RECORDER

Hottest news from E&MM's newly-established US office is that Sequential, who weren't exhibiting at this year's NAMM show but who threw a party on a boat instead, are now putting the finishing touches to a studio-standard digital drum machine that also acts as a sampler and MIDI recorder.

The machine is called the Studio 440, and its 512K of memory is capable of holding a total of 32 12-bit sounds, stored as four banks of eight.

User sampling is an integral part of the machine's spec, and this can be carried out at three different sample rates: 16kHz, 31kHz and 42kHz, with maximum sample times of 32, 16 and 12.5 seconds respectively.

Eight pressure-sensitive pads are mounted on the Studio 440's top panel, and these can be assigned to any voice. Four 'kits' (ie. sets of voice-to-pad assignments) can also be stored in the machine's memory, which is configured so that, for example, the eight pads can be used to trigger eight different pitch and pan variations of a single sample. Each voice also has a set of 'alternate parameters', which can comprise different settings for pitch, pan position, and dynamics as well as reverse reading of the sample as on Sequential's earlier Tom drum machine.

The digital recording side of Studio 440 is configured so that it can trigger either the machine's internal sounds, or external voices connected to a maximum 32 MIDI channels (via two MIDI Outs), or any combination of the two.

The sequencer's 200K memory is capable of storing between 50,000 and 70,000 events, depending on the kind of music you're recording and the sort of MIDI data you're storing in addition to note values. It's an eight-track affair that's programmable in both real and step time, and in addition to a host of sophisticated programming and editing facilities, it features a novel idea called Record Phrasing, in which the user inputs all the events first, and then programs a rhythm for them.

Studio 440's back panel is a haven for futurists, with Terminal In and Out sockets for the proposed MIDI-SMPTE standard discussed by Chris Meyer in E&MM July, and an SCSI (Small Computer System Interface) connector for hooking-up to a hard disk storage unit.

First shipments of the Studio 440 should be arriving on European shores sometime around October, though initial models may lack some of the fancier interfacing.

More from Sequential Europe, PO Box 16, 3640 Mijdrecht, Netherlands. ■ Dg

NOW IT'S THE SUPER JX CLUB

Enterprising South London retailer Gigsounds have taken their after-sales care one step further by forming an exclusive club for Roland and Boss users. The organisation is called the Super JX Club, but buying any Roland or Boss product from one of Gigsounds' two stores is enough to secure you automatic membership.

Being a Super JX Club member gets you a variety of benefits, including regular newsletters, exclusive offers on gear on a voucher redemption basis, invitations to regular seminars using the latest Roland innovations, and priority treatment when it comes to getting hold of equipment in short supply.

Fifty club members have already qualified for tickets to the Marillion/Roland concert at the British Music Fair, and in the future, Roland will be welcoming news of members' musical activities, including them – where possible – in their 'Newslink' magazine.

All in all, a smart and highly laudable move on the part of both manufacturer and dealer, and what's more, the entire service is free.

More from Eric Lindsey, Gigsounds, 86-88 Mitcham Lane, London SW16. ☎ 01-769 6496.

Still on the Roland front, copies of the winning entries to the company's Ninth Annual Synthesiser Tape Contest are now available. The 14-track cassette costs £4.95, and is available from Synsound (Dept STC), The Sound House, PO Box 37b, East Molesey, Surrey, KT8 9JB, ☎ 01-577 5818.

Entries for the 1986 competition are now being invited. Prizes include three polysynths, seven drum machines and a selection of synth books, records and tapes, plus the chance to appear on next year's 'Winner's Pieces'.

Your entry must be recorded on cassette and can be no more than five minutes long, and, of course, must be made up of music that is mainly synth-based. Closing date for entries is October 31, and more details are available from Synsound at the address above. ■ Dg

SCHLITZ SOUNDS

Jazz musicians between the age of 18 and 30 are being given the chance to make it big through a national competition, sponsored by the Shlitz beer company to the tune (Ouch! – Ed) of £200,000.

Schlitz Jazz Sounds '86 is open to jazz bands with a maximum of seven performers. The first stage along the route to megaprizes is to submit a demo tape which must run for no longer than 15 minutes, after which come nine regional finals for 27 selected bands in September and October, and a further play-off for the five places in the final.

The final itself will take place in November at London's Heaven nightclub (under the arches at Charing Cross, as if you didn't know), and will be televised by BBC2. Included on the judging panel will be Weather Report's Joe Zawinul.

What you could win for your efforts is £2000 worth of equipment from FD&H Music, £500 in expenses, a trip to the USA with Virgin Atlantic (with the possibility of several public performances in the States), and a professional demo recording at Virgin's studios. Not bad at all.

More from Jazz Services, 5 Dryden Street, London WC2E 9MW; closing date for applications is August 15. ■ St

WHOOPS!

Apologies to all those shocked/surprised/offended by an outrageous howl-up in E&MM July. In the course of Matthew Vosburgh's interview with Douglas Adams, the good hitch-hiker was quoted as saying he bought a load of synth equipment from Rod Argent's Keyboards. In fact, the shop in question was Rose-Morris, so it's egg-on-faces time for the editorial staff. Well, the two shops are in the same street... ■ Dg

ROLAND'S NEW PRODUCT PROCESSION

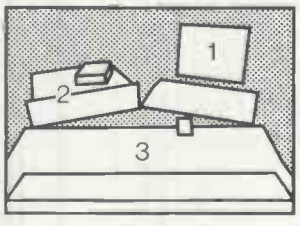
The grandaddy of Japanese synth companies, Roland, pulled off their customary string of surprise product launches at the NAMM Expo. Unbeknown to most of the Roland staff before the show, the company used the fair as a launchpad for several new advances, most notably the DEP5 Effect Processor.

The DEP5 features a newly-developed 28-bit signal processor for reverb simulation, and 16-bit processors for A-D and D-A conversion and control functions. The net result is that it's capable of generating programmable sound treatments of four different kinds – reverb, delay, EQ and chorus. Not only that, but all four sections can be combined to form complex effects algorithms, something the DEP5's main competitor, the Yamaha SPX90, cannot achieve.

Also new from Roland are the GM70 GR-to-MIDI converter, which enables any Roland G-series guitar to control any MIDI instrument. In conjunction with the GK1 synthesiser driver (a pickup and controller package), the GM70 can be used with almost any electric guitar, making the Roland system a truly compatible MIDI guitar network.

From Roland's Boss division come two of the neatest units at NAMM – the new Dr Rhythms. The machines are called DR220A (for Acoustic) and DR220E (for Electronic), and both offer 11 digital drum voices, a memory capable of storing 64 rhythm patterns (32 preset, 32 user-programmable), and the sort of comprehensive liquid crystal display that has made programming other Roland/Boss drum boxes so straightforward for so many.

More from Roland UK, Great West Trading Estate, 983 Great West Road, Brentford, Middx. ☎ 01-568 4578. ■ Dg



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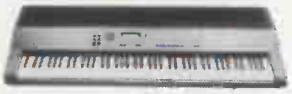

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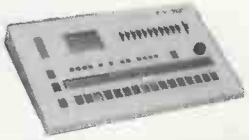

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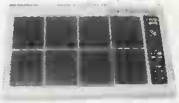

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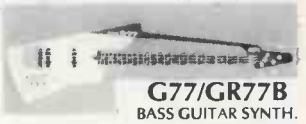

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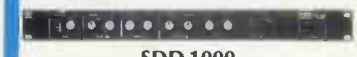

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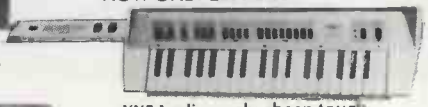

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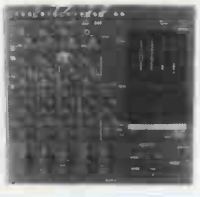

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Communiqué

Write to: Communiqué, E&MM, Alexander House, 1 Milton Road, Cambridge CB4 1UY.

Dear E&MM

Serendipity

I remember when synthesisers fell into one of two categories: preset or modular. The former was decidedly monophonic and fell somewhere between a fashionable addition to the home organ and a practical live instrument for the rock keyboard player. The latter was potentially polyphonic and considered 'the creative instrument', but was generally deemed to be a little on the unmanageable side for anything but studio work. At this point there was no doubt where creative synthesis was to be found.

Next came what was later to be termed the non-programmable synthesiser. Whilst still effectively monophonic, creative synthesis for the masses had arrived. Now it was possible to get all the silly noises you could possibly imagine out of one box that wasn't cursed with buttons labelled 'Trombone' and 'Clavicord'. It's worth noting at this point that the margin of error in creating and reproducing sounds was phenomenal.

Now, we all know polyphony was a landmark in synthesis so I'll skip that one and mention programmability. It's a mixed blessing that programmable synths these days come with memories full of sounds; imagine the outcry if they didn't but look at the result of the impressive DX presets. The DX7 has effectively brought us full circle to the original monophonic preset machines.

The convenience of being able to recall hours of work at the touch of a button is sadly counterpointed by the temptation to re-use the same hackneyed old string sound every time you want to orchestrate something.

It's all too easy these days to concoct a synth/sequencer/drum machine set up in the same way you'd chose a chinese meal. One number 47 (JX3P) a portion of 12 (SQD1) and one number 88 (RX21). The result: the same combinations of sounds every time you switch on the radio or put a record on.

Please, someone, bring back the uncertainty, unreliability and creativity to sound synthesis.

■ Pere Etfils
London

Dear E&MM

Old Dreamer

I am not a nostalgia freak, but...

In the past months there have been many subjects of controversy in Communiqué: analogue vs digital, sampling vs synthesis and so on. Throughout all of this, however, one major issue has gone unnoticed – real-time control of sound.

With the introduction of the programmable synthesiser and, more recently, digital parameter access, it has become nearly impossible to make, for example, the release time longer at the end of a song, or to take full control of filter cutoff frequency for subtle sounds.

Whenever I have a jam in the spirit of the early Tangs (well said, Graham High, it's about time someone spoke up), I find improvisation of sounds as important as musical improvisation. For effects like transforming a brass sound into that of a choir, a Juno 6 fits the bill to a tee, even though a DX7 could produce better imitations of both sounds. Who can tell what sounds may be desirable before the jam?

The new Ensoniq ESQ1 comes close to a solution by having a bank of simultaneously variable parameters, but even this system falls short.

A similar criticism can be levelled at drum machines, but their use in pop music, with its concrete structures, excuses them to some extent.

I'm sure programmability is the prime cause of the Tangs' sad demise in recent years. Perhaps they should buy a Mellotron (with its excusably inflexible sound), a VCS3 and a modular synth system, and 'go out to the cottage to get their heads together'.

On a different note, I feel I must reply to your statement 'Machines that are years out of date, technologically speaking, don't immediately cease producing good noises...' What an irresponsible comment – it heralds the demise of the monopoly sensible people had on cheap, obsolete gear.

Oh, for the good old days, when you could count on a modular system being more entertaining than the light show, when the romantic tones of Mellotrons were counterpointed by rippling eight-step sequences, and the good old MiniMoog could be heard cutting through the mix...

■ Grant Middleton
Glasgow

Dear E&MM

The Sound of Sweden

First of all, I'd like to thank Mick Perrett for his letter in the June issue. He took the words right out of my pen. There is just too much attention paid to gear, and not enough to music.

I can't understand how such a mass of bands can go out and buy the latest synth before they can even play it. Last month I saw a Roland JX10 in a Swedish band before it had even appeared in E&MM. I bet the player had bought it unheard.

My experience is that when it comes to composing and practising, a piano or electric piano is the best thing. So, if you have an analogue poly, a sampler and an FM poly, what else do you need? Why on earth do musicians – amateurs or pros – need a Jupiter 8 and Prophet 5 and OBXa, or a DX7 and PPG and Fairlight? There is one possible explanation: they can't program them and rely on the presets instead. But that's another story...

I'm sick and tired of reading about people like Jezz Woodroffe owning four JP8s. Here I sit with MS20, RS09 and a Drumatix, all secondhand. Sorry. I almost forgot my VL-tone. It took me about five years to amass and now I read about Steve Troughton, who went out and bought a complete MIDI studio. Sadly, he didn't even know what MIDI was. My advice to you, Steve, is to sell the lot bar the CZ5000, and learn to use that from scratch.

Please, E&MM, try asking your interviewees more about their music (if they've got any) because we already know they own a vast selection of keyboards they can't program. No hard feelings – you're a great magazine.

■ Erik Gronberg
Sweden

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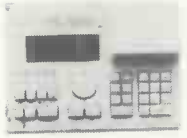

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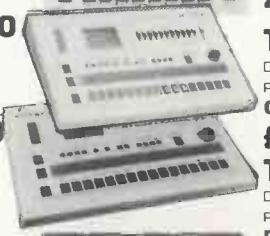

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Interface

Your questions answered by E&MM'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 ***Having recently bought a copy of E&MM, I'm impressed by the range of information presented. Can you suggest a few up-to-date books on the subjects of computer-controlled synthesis and/or digital synthesis? This field changes so rapidly that it's hard for the small-scale hobbyist to stay currrent.***

■ **David Parkinson**
Montreal
Canada

A *A new book from Collier MacMillan entitled 'Computer Music: Synthesis, Composition and Performance', written by Charles Dodge and Thomas A Jerse, may interest you. You might also like to investigate a series of books published by William Kaufmann Inc under the banner 'Computer Music and Digital Audio'. These include the snappily-titled 'Digital Audio Signal Processing: an Anthology' and 'Digital Audio Engineering: an Anthology'.*

If you fancy moving beyond the numbers to consider a broad range of perspectives on computer music from such luminaries as John Chowning, Jean-Claude Risset and George Lewis, then another book in the Kaufmann series titled 'Composers and the Computer' comes highly recommended. All of these books contain reference sections which should lead you along further paths of discovery.

Dave Crombie's book 'The New Complete Synthesiser', published by Music Sales at £7.95, provides a very accessible introduction to digital synthesis and sampling techniques. For a change, it's presented within the context of instruments which most people have heard of, so included is a section on Casio's Phase Distortion synthesis technique, for example.

Also published by Music Sales is 'The Casio CZ Book' by Dave Crombie and E&MM's very own Paul Wiffen, which looks at the Casio synths and Phase Distortion in more detail; this sells for £5.95.

You should also keep an eye out for the forthcoming book on FM synthesis by John Chowning and Dave Bristow. Given the background of its two authors (Chowning is the originator of the musical applications of FM, while Bristow is Yamaha's top product demonstrator), there's every reason to suppose this book will be the last word on FM synthesis and its application in Yamaha's instruments.

Collier MacMillan can be reached at Houndmills, Basingstoke, Hampshire RG21 2XS, England ☎ (0256) 29242.

William Kaufmann, Inc can be reached at 95 First Street, Los Altos, California 94022, USA ☎ (415) 948-5810.

Music Sales can be reached at 24 East 22nd Street, New York, NY 10010, USA; or at 78 Newman St, London W1P 3LA. ■ **St**

Q ***First, thank you for publishing my letter in E&MM June '86; I hope people are kind enough to get in touch regarding Philip Glass recordings.***

For your information, the New Music Distribution Service which I mentioned in my previous letter have informed me that it looks likely the early Glass albums on Chatham Square will be reissued (eventually) on Columbia, which is good news.

Now perhaps you long-suffering folks can help me with a related problem. Your review of the Philip Glass video in January's E&MM said: 'Buy it now, or better still, get someone to buy it for you for Christmas'. Well, I've been trying since Christmas and have drawn a blank. None of the big stores such as Virgin stock it, and my local record store couldn't trace it after many weeks trying. Do you know where I can get it from, or who the distributor is? If you can crack this one for me, I'll mention you in my will.

■ **Philip Davies**
West Kirby

A *No sooner said than done. Distributors of the Glass video are Transatlantic Films, who can be contacted on ☎ 01-727 0132. By the way, can you leave me the Fairlight?* ■ **St**

Q ***I'm in a young band and hoping, at some future date, to find fame and fortune with a recording contract. I find myself in the position of a composer/performer constantly committing original musical ideas to cassette tape and despatching them all over the country, and while I accept that this is an essential part of attracting the attention necessary to realise my ambitions, I can't help but feel concerned over the issue of copyright.***

Although I've recently taken to writing the copyright symbol on my recordings, it seems all too easy for someone to rip off a piece of my work and hawk it around as their own.

Is there any easy way I can establish copyright on my work?

■ **Les Gravelines**
London

A *Legally speaking, copyright exists on all your work from the moment you complete it. The problem, therefore, is not one of owning copyright on a song, but proving if and when you actually wrote it.*

One common practice is to mail a cassette of the song to yourself by registered post and leaving it unopened, the postmark providing the date. Unfortunately, this is not legally recognised proof of your claims, though it may help you out a little in certain cases.

The best way to establish your copyright is to leave a copy of your demo with a solicitor or your bank manager. Not only will this substantiate your claims, it'll also – at least in the case of your bank manager – cost you nothing. It's worthwhile putting your own name to your work, tao, as you may find you're not taken all that seriously as Ali Borange, Viv Acious, or Neil Sportscar.

Useful sources of information on this and related subjects are:

The Performing Rights Society, 29-33 Berners Street, London W1P 4AA, ☎ 01-580 5544; and the Mechanical Copyright Protection Society, Elgar House, 41 Streatham High Road, London SW16 1ER, ☎ 01-769 4400. ■ **Tg**

MODES

of operation

OPINION IS CERTAINLY DIVIDED ABOUT DEPECHE MODE. 'Teeny-bopper band making awful synth music', some would say. 'Inspiring and innovative pop', others might put it. A couple of years ago, somebody wrote that Depeche were 'the perfect marriage of pure and applied synthesis...with money'. And the editor of this magazine, reviewing the band's latest long-player, *Black Celebration*, referred to them as 'easily the strongest-willed and most deeply, hearteningly talented of the all-synth bands that made it big in '82' (E&MM May).

But to separate objective achievement from subjective comment, the fact is that Depeche Mode have come a long way since they started out in 1980 as a fairly conventional trio based in Basildon, Essex. Martin Gore played synthesiser, Andrew Fletcher bass, and Vince Clarke guitar. When singer Dave Gahan joined in 1981, the band shifted its instrumentation to an all-electronic line-up, and had an instant success with 'Dreaming of Me', a Clarke-penned pop ditty that steamed its way to the top of the indie charts under the wing of Daniel Miller's innovative Mute label. That single and the album it spawned – *Speak and Spell* – set the tone for a generation of melodic, tight-tempo electronic pop bands. The Basildon boys had proved, perhaps unwittingly, that a drum machine and three synths *could* sound as spontaneous, as rootsy, and as 'fun' as guitar, bass and drums. And they also proved, with a bit more self-conscious effort, that musicians with little or no playing dexterity could write better melodies than the classically-trained brigade, and make money out of them, too.

Late in 1981, Clarke left the band to pursue a career with Alf Moyet in Yazoo (see separate story elsewhere this issue), leaving room for Martin Gore to explore his own songwriting talents, subtly different to – though no less inspiring than – those of Clarke. It was Gore who put pen to paper to craft 'See You', the band's biggest hit to date when it was released in January '82. Another album – *A Broken Frame* – followed soon after, an early sign that Depeche were not a band to shirk their artistic responsibilities in favour of swimming pools, fast cars, and women. It was also a sign that the band were

Depeche Mode, with five albums and a long, successful pop career behind them, remain one of the few all-synth bands to stick to their hi-tech ideals while continuing to keep their audience guessing. We speak to two of the Basildon boys. Interview *Paul Tingen*

drifting into an era of post-Clarke melancholy, in which the relentless beat box rhythms began to take a back seat to slower, more considered synth-wash ballads.

With Alan Wilder installed as third synth player at the start of '83, *Construction Time Again* saw the Modes' music take another unexpected turn – this time in the direction of industrial noise and metallic percussion, courtesy of producer Miller's Synclavier II and its sampling capabilities. Lyrically, *Construction* had a stronger political stance than before, with the single 'Everything Counts' proffering a cynical overview of big business, and 'Pipeline' – with its compelling arrangement of Oriental percussion, synth arpeggios and funereal backing chants – taking a much-deserved swipe at the exploitation of Third World countries by multi-national corporations.

And still the hits kept coming. The band's most committed flirtation with industrial sound, 'People Are People', made it to number four in the UK singles charts, while signalling another lyrical shift for Gore.

For if *Construction Time Again* was political, its follow-up, *Some Great Reward* was social in its commentary, Gore and company turning their attention to the problems of love, lust, and marriage in the mid-1980s. The pensive, mesmerising love ballad, 'Somebody', with its haunting piano and heartbeat backing, was a highlight in a rather mixed album of clever touches but generally unfulfilled potential.

YET THROUGHOUT THIS TIME, Depeche continued to find time for the jerky, mechanical rhythms (electronic headbanging?) that had been their musical trademark since Day One. Couple that with a sprinkling of arrangements that have been too unlikely to succeed, and Gahan's occasionally monotonous vocal, and you have the reasons for the critics' ambivalence, my own included.

Now Depeche Mode are based in London, and there's *Black Celebration*. On it, we hear some impressively coherent arrangements (just listen to the title-track), a new-found and very welcome symphonic touch featuring deeper, warmer synth textures, some strong, considered drum programming ('New Dress'), and just the one headbanging track ('Here is the ▶

► House')sandwiched between softer, gentler songs. Gone are the simplicity and directness of the Modes' pop past (with the notable exception of 'A Question of Lust'), which goes some way to explaining the band's comparative lack of recent chart success. And as for the cynics, they'd probably say the band's huge leap forward in arranging skill doesn't camouflage an underlying inspirational infirmity, a sad state of inertia in the Tunes 'n' Rhythms department.

Then again, carving a long and successful career out of an all-electronic line-up takes a lot of courage, more than most acts in Depeche Mode's position are capable of displaying. Limit yourself to synths and samplers, and you have no tradition to fall back on – other than the traditions of songwriting. And there are a whole host of dilemmas to work your way around. If everybody plays the same instrument, what role divisions are there between the members of the band? How do you get pieces together, and how do you present sequencer-based music to a live audience? And most important of all, how do you keep your music alive and vibrant, when the machines you're working with force you to use your head, not your body, to give an idea musical form?

The sleeve artwork of the last two Depeche albums has symbolised the humanity-versus-technology struggle. On *Some Great Reward*, a couple in wedding outfits are surrounded by industrial architecture; on *Black Celebration*, tulips break up the dark patterns of steel and glass.

ALAN WILDER, WHO I GET A CHANCE TO MEET before the release of *Black Celebration*, sees my point about the sleeve of the previous album. 'Yeah, it did occur to us, too. But that cover was actually inspired by what we felt to be the lyrical content of the record: a romantic couple facing the real world.

'What you say is a kind of struggle, because people tend to think that technology is very cold, which it doesn't have to be at all. To me, our music has always been quite warm in a lot of ways, in its lyrical content, in its melodies and so on. People are *always* saying that electronic stuff can never have the same feeling as guitars and bass, but that's rubbish. You use whatever technology is available, and it's you that makes it cold or warm, not the machines.

'We always take a lot of care over the sounds we use. In them we try to catch the atmosphere of the song, and often, that *does* involve a lot of hard searching.

'And as far as drum and sequencing go, our stuff is not dead on time. We do actually play around with timing to get a certain feel. We might use speeding up or slowing down, or push the snare part slightly ahead of the bass drum. But obviously it's all gonna be very tight.'

So Wilder, a tall, shy man in black leather who scarcely looks me in the face as we talk, clearly doesn't believe in the myth of mechanical-sounding technology. And after listening to *Black Celebration*, I'm more inclined to believe him. Between another round of touring, recording and TV appearances, I coax another Depeche interview out of Mute, this time with Martin Gore. With huge, staring eyes and blond flowerpot coiffure, Gore is a more open interviewee than Wilder. In a series of keen, fragmentary sentences, he reveals some of the reasons why *Black Celebration* is so markedly different in mood from its predecessors.

'Partly, the album reflects us being a year farther on in our career, and having a year's more experience, which we used trying to find new samples and searching for new ways of arranging. On the other hand, the songs mostly determine the *kind* of sounds we search for, and the songs on this album are much softer and gentler.

'So we got some very rich, very warm sounds like the ones on 'A Question of Lust' and 'World Full of Nothing'. There are four tracks on the album without any drums whatsoever, so it was easy to make them flow more, make them less jerky.

'We spent more time on the arrangements this time. We spent a month at Worldwide International, a small studio owned by Daniel (Miller), just programming the album. We were able to work more on the song structures and arrangements, whereas before we just programmed as we went. With *Some Great Reward*, for instance, the recording process had already started while we were still programming the songs.'

IN ADDITION TO SPENDING MORE *TIME* on pre-production, the Modes have also altered their equipment setup to offer them a more flexible approach to their arrangements and song structures. Their new nerve centre, effectively replacing the Synclavier of old, is nothing more than a BBC Micro with UMI 2B interface and sequencing software.

'The UMI is very good for programming song structures', Gore explains, 'because it's so flexible. The Synclavier is OK, but it isn't very practical because once you've programmed a song, it's very hard to change the structure. It's a bit rigid. So instead we used the Emulator II for most of the sampling work, and connected the UMI and all the other synths to it via MIDI. We even used some Akai S612 samplers, because they're very easy to use and the quality isn't bad. The Synclavier is now used mainly for drums, because you *do* get a good, powerful sound from it. Most of the drum sounds on the album are Synclavier, though apart from the middle-eight, all the drum sounds on 'New Dress' are analogue ones from an ARP 2600.'

> "When we want something that sounds non-acoustic, something that doesn't reflect or imitate a known instrument, we go for an analogue synth, often the ARP 2600."

Aside from the 2600, Depeche are hanging on to a number of ageing analogue synths, even though their popular image among musicians is one of having an up-to-the-minute sound. An RSF Kobol, a Roland 100M modular system, a Syrinx and even a suitcase Synthi AKS still find a place in the Depeche equipment list. Live, however, the band depend on more recent instrumentation, notably a Roland Jupiter 8, an Oberheim OBX, and a Yamaha DX7. And for *Black Celebration*, they used a PPG Wave 2.3 for the first time.

Wilder: 'When we want something that sounds definitely non-acoustic, something that doesn't really reflect or imitate a known instrument, we usually go for an analogue synth, often the ARP 2600. If we want something that *does* sound like another instrument, we turn to the digital or sampling machines.'

> "UMI is good because it's so flexible. The Synclavier is OK, but it isn't very practical because once you've programmed a song, it's very hard to change the structure."

More than most bands of their generation, Depeche Mode have embraced the *technique* of sampling as an important contemporary music tool. No factory disks for the Basildon boys — with the help of Miller and long-time engineer Gareth Jones, the foursome have continually searched for new sound samples and new ways of manipulating them.

'Usually we spend two or three days before recording just sampling sounds', says Gore. 'Then we sample as we go. If somebody has a good idea, we just stop recording and do some sampling.

'Sometimes we use old favourites — like one sample which we first used on 'People Are People'. It's a Hank Marvin-type guitar sound, an acoustic guitar plucked with a 50-pfennig piece. We've used that three or four times now.

'Then there's the mandolin-like part on 'Here is the House'. That was an acoustic guitar sampled twice — once on a down-stroke and once on an up-stroke. We used them on alternate notes, so every other note was a down-stroke and all the in-between notes were up-strokes. It sounded very funny — almost like a real player.

'There's a Black & Decker drill in the opening of 'Fly on the Windscreen', and the rhythm of 'Stripped' was made up of the sound of an idling motorbike played half-an-octave down from its original pitch.'

Gore admits to being particularly proud of one *Black Celebration* sample. 'It's not that audible, though. It's a sample from a record called 'She Wants to Mambo', an old doo-wop disc. At the end of each verse, the woman who sings sort of moans. We sampled this moan and played it up a few notes, which made it sound like a girl moaning. We used it on the chorus section of 'A Question of Time'.'

And then, of course, there are the industrial sounds and treated vocals of 'It Doesn't Matter Two', where a sequenced vocal pattern gives the song a distinct systems music character. Ingenious use of a Friend Chip SMPTE controller enabled the band to slow the song right down at its end without encountering any pitch problems, but musically, the piece is painfully reminiscent of Philip Glass, almost to the point of plagiarism.

'Probably we were remotely inspired by Glass', concedes Gore, 'though I hardly ever listen to that kind of music. But it wasn't a piss-take or something. It was serious.'

TRACING THE PATH OF AN EMBRYO PIECE of music through the Depeche Mode songwriting process is not an easy task. It starts with Gore, or occasionally Wilder, writing songs at home, making demo versions of them, and submitting the finished tapes to the band.

'Martin and I compose in totally different ways', says Wilder. 'Martin works on guitar and I on keyboards. Yet we present our songs to the band in a similar form. We work on our songs on a four-track machine, and basically get a demo to the point where there's a bassline, a rough rhythm track, most of the melodies and all the lyrics. That's what the band gets to hear.

'Then we all sit down with Daniel, pick the songs we want to put on the album, and talk over the good and the bad points — whether we need to change the structure or add or take out bits here and there.'

Gore: 'I still largely write my songs on guitar, just to get the basic chord structure. Then I move on to electronic equipment to demo the songs. I use an Emulator II, a DX7, and an MC4 Microcomposer to sequence the stuff. ▶

I don't pay too much attention to the sounds at that stage, because you can end up putting months of work into that, and it's something everybody needs to work on later anyway.

'When it comes to production I tend to take a back seat. If Daniel and Alan and the others are doing something which I really don't like, I'll obviously say something. But I'm prepared to step back because if I were to take over completely, there's be no point in us being a band. It's good to get some new enthusiasm for the songs because I've already worked on them for maybe a month or two, while the rest of the band are really fresh, and are more likely to come up with new and inspiring ideas.

'We're all programming and finding samples. Even David is now joining in with that, which is good because he used to be just "the singer". On *Black Celebration* I'm in turn singing four of the tracks – 'A Question of Lust', 'Sometimes', 'It Doesn't Matter Two' and 'World Full of Nothing' – because we've noticed over the years that my voice is more suited to the slower and softer songs than Dave's. Basically, we're a band without roles.'

Still, it's Wilder and Miller who are clearly the most heavily involved in the more technical side. Daniel Miller's role, especially, is an intriguing one.

'He's a technical wizard when it comes to synths', says Gore. 'He also has a lot of good production ideas concerning song structures, especially on a commercial level. He might say, for instance: "This middle-eight is very good, perhaps we should start the song with it".

'And he's very good at *building* sounds. We might start off a song with a single sound on a sequencer and as it progresses, bring in more sounds just to make it richer. We did that a lot on this album – making layers of sounds all play the same part to get a full and warm effect. We could do that because we went 48-track for the first time. Before we used 24-track, which meant that we sometimes had to put three or four sounds on one track. This time we could minimise that, which made things a lot easier when it came to mixing.'

Engineer (and now co-producer) Gareth Jones is the man who 'puts it all together' in the studio, according to Gore.

'Gareth is great at getting the sounds which we find transferred to tape without any loss of character. This time we tried not to put too many effects on at an early stage. We put a lot of parts down very, very dry, and then worked on the effects when it came to mixing.'

SO MUCH FOR RECORDING. What about one of the dilemmas mentioned earlier, the one about playing sequencer-based music live? Well, one thing's for sure: the Basildon boys are no more enamoured of keyboard-playing skill now than they were when they first put fingers to synthesiser keys five years ago. Of the four of them, Alan Wilder is probably the most gifted player, and that's only because he's had a vestige of formal training.

'I had some piano lessons when I was young, but that doesn't come into it a great deal', he says. 'The whole idea of being musically competent is irrelevant to me. I'm not interested in being a great piano player any more. There are loads of good musicians around, all far better than me. If I'd auditioned for another band, they probably wouldn't let me in. But for me, it's shaping songs and sounds which is important.'

In practical terms, the result of this attitude is that Depeche Mode have to resort to machines to re-create their sound live. A TEAC eight-track tape recorder plays most of the drum tracks, some basslines and a few other parts which are either too hard to play or can't be reproduced for technical reasons.

Wilder: 'We never use sequencers live because they go wrong too often. So what we do is take the studio tapes and re-edit them. Sometimes we'll change the structure of songs, or shorten or lengthen various parts because we might think something works better that way live. Then we'll play the different fill-in parts as it comes. We have no labour division there.'

In fact, Depeche use *two* tape recorders because their set is simply too long to fit on one tape. And which song do they have programmed into a sequencer to fill in the gap caused by the tape change? You've guessed: 'It Doesn't Matter Two', complete with the slowing-down at the end.

Gore: 'Programming that was a real nightmare, because the Emulator sequencer is all at one speed. What we had to do was write in unjustified measures, because otherwise the sequencer would auto-correct the slight tempo deviations which we put in. But then, the sequencer is high-resolution so it's never totally unjustified. In the end we made it, but don't ask me how.'

But isn't it all a bit boring, standing there tied to a tape recorder, reproducing the same, easy-play parts, night after night? Martin Gore, in the third month of a world tour and facing several more months gigging in the States, replies tentatively.

'It's a bit of a dilemma, because when you're in your fifth month of touring you can't enjoy every night any more. It's getting to the point already now where I can almost go through the motions half-asleep. Now I automatically change disks at the right moment, without even thinking about it. It *is* quite boring, but we owe it to the fans to play live because the concerts always go down really well. The audiences love it.'

Alan Wilder has a similar story. 'I'm not looking for musical excitement live, because I know what it's going to sound like before I go on stage. Live playing is only about reproducing our music in a very tight and good way. My main enjoyment comes from the contact with the public.

'And we *do* put on a good live performance. We're one of the most exciting bands around. First, we always get a very good sound, because everything goes directly into the PA system. Second, we have a lot of vocal harmonies, which make a very big vocal sound. And third, we take a lot of trouble over the stage set and a good light show. Dave has also become a very good frontman over the years: he manages to communicate very well with an audience.'

WHICH IS ALL FAIR ENOUGH, REALLY. Depeche Mode's live performances are usually very successful, wherever in the world they may take place. But that leaves the question of the band's diminishing success on their home territory. The Basildon boys are spending a lot of time abroad, and in their absence, the last couple of singles haven't done too well in the UK charts. Is the public getting disinterested, or is the band itself losing some of its charisma?

Gore: 'It's difficult to say, but it isn't bothering us that much. At the moment things are looking very healthy for us in Europe and the USA. If Britain wants to remain ignorant, it can. We've been pretty successful at home for five or six years. I think people might lose enthusiasm because they might be temporarily satiated.'

And Gore isn't tempted to write another 'See You' just to get back to the top of the tree. As far as he's concerned, Depeche's current dark image stays.

'We just let things happen', he says. 'I work on my songs and see what comes out of them, without pursuing any planned result. And I know people in England say we're really pessimistic or manic depressive. We don't see it like that. We're just trying to get some feeling, warmth and realism across in our songs. We like to think our songs are more reflective of life than most of the music that's around in the charts these days. A lot of it is just up, up, up all the way. That's the sort of thing the radio likes to play and people like to buy. When people have a choice between buying 'Sunshine' by Imagination and a record by a group that's labelled manic depressive, what do they buy? (laughs)

'What we try to do is present a different kind of pop music to the masses. So we go through the routine of glossy magazines and TV shows. But that doesn't mean our music has to be like everyone else's music.'

A brave way of looking at things, I'd say. Why all the pessimism? Gore blushes and looks away nervously before answering: 'You do get more cynical as you get older, don't you?' And how old is Gore, exactly? 'Nearly 25 now'.

Guess it'll be interesting, hearing what Depeche Mode have to say when they're 30. ■

"People say we're pessimistic or manic depressive, but we don't see it like that. We're just trying to get feeling, warmth and realism across in our songs."

"We're all programming and finding samples. Even Dave is doing that now, and he used to be just 'the singer'. Basically, we're a band without roles."

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E-mu Emax Sampling Keyboard

An 'In Brief' preview that's two pages long? Appalling, isn't it? When *will* Paul Wiffen learn to keep his mouth shut, his paper quantities down, and his wordprocessor in check? Probably never, and certainly not when there are instruments as interesting as E-mu Systems' new Emax sampler around to preview. One trip to E-mu's Californian headquarters and he's away, grabbing hold of one of just three prototype Emaxes currently in existence, and putting it through its paces.

Prototypes being what they are, though, Wiffen finds a fair bit of Emax's software still in the process of being written, so a fully-blown review will have to wait a month or two. In the meantime, here's a rundown of what the 'baby Emulator' can do to get your mouth watering, because what there is of Emax now is already pretty impressive.

Emax retains the same sampling format as its big brother, the Emulator II, but E-mu's engineers have succeeded in reducing the fundamental circuitry so much that it can now be fitted on a single silicon chip, known as the E-chip – hence the dramatic reduction in cost. What's more, memory chips have now come down sufficiently in price to allow the Emax to hold the same amount of sample memory as the original Emulator II.

This means that at the same sample rate as the Emulator II – around 28kHz – Emax samples for the same amount of time: over 17 seconds. But E-mu have added variable sampling rates from 15kHz to 40kHz, the range given in the preliminary specifications. However, on the prototype unit I tried, the display gave the maximum sample rate as 42kHz, which makes Emax at least the equal of the Prophet 2000 and Akai S900 in this respect.

And the quality shows, too. Recording direct from a CD player, sound fidelity was extremely fine, reaching well into those high frequencies above 13kHz which many samplers reproduce poorly or not at all. Of course, you pay for this extra facility by having less sample time available. Maximum sample length at this rate was just over eight seconds, but fortunately, the display told me exactly how much time was available in seconds, not K of memory or hexadecimal.

It's the display (similar to that of a DX7) which makes sampling with Emax so easy. On entering Sample mode, the bottom line of the display acts as a VU meter in much the same way as the EII's, and a threshold can be set visually using a slider. In fact, all the other instructions in Sample mode (Arm Sampling, Force Sampling and Stop Sampling) operate identically to those on the EII.

This user-friendliness isn't restricted to sampling, though. It also extends to the use of all the other modules, and to the provision of one all-important button (missing on most samplers): a dedicated 'load all' switch, which means you only need to perform one action to load a new disk. A Godsend in live performance.

The other modules of Emax (besides Sample) are Master Control, Digital Processing, Preset Management, Preset Definition, Analog Processing, and the Sequencer. Each of these has its menu printed on the front panel (no loose card to lose with Emax), so you can look up which options you want to use and key in

the appropriate number on the keypad. Alternatively, you can use the data slider to scroll through the options and then press Enter to select the one being displayed.

Master Control governs essential functions like master tuning and disk formatting/copying. But it also holds a few more unusual features like Select Velocity Curve and Bird Run. The first is an excellent feature which allows you to personalise the touch response of the keyboard to suit your own playing style. The second is a little bit sillier, causing an Emu (yes, the bird) to trot across the display. I'm not sure exactly *why* it does this, nor am I sure why it's there at all. But I am sure E-mu could have made better use of the memory and processing power Bird Run takes up.

Digital Processing covers all the things you may want to do to a sample once you've made it. First there's the essential Truncate, which allows you to trim any unwanted material from the beginning or end of the sample. Being able to type in individual sample numbers is a great benefit here, as sliders can be a bit fiddly for fine adjustment.

Next come the two loops possible on Emax: the normal loop and the Release loop. Each can be specified by its start point and length. However, before you can begin to adjust these loops you need to go to the Mode parameter to turn the loops on, which is a bind. Once you've done this and set start points and lengths, Emax gives you the option of using Autoloop, which works by finding the nearest zero crossings. This goes a good way towards getting rid of awkward clicks or glitching in a loop.

If this is not enough, however, there's another feature – new on an E-mu keyboard – called Cross-Fade looping. This process actually smooths out the data around the loop point to create a 'seamless' join. It works wonders *provided* you've got as close as possible beforehand using the manual and Autoloop functions.

Other, more 'experimental' Digital Processing options include Tapering, Splicing, Combining and Digital Effects, but these were yet to be implemented on the Emax we tried.

Preset Management is a utilities module, allowing different presets to be Created, Copied, Saved, Named or Erased – essential if unexciting. More interesting things go on in the Preset Definition and Analog Processing sections. In the first of these, you can set up all the crossfades and switches you want. There are three options here: Positional (to smooth out the differences between multisamples as you go up the keyboard), Velocity (to allow different force keystrokes to trigger different samples recorded as 'hard' and 'soft' performances), or Realtime (which allows you to use the mod wheel to change between samples).

It's only when you set up one of these crossfades that you notice what is one of the strongest points of Emax. Normally, when you make such assignments on keyboards, the machine's polyphony is halved: if you're using two voice channels to play different sounds from the same note, then you can only sound half the number of notes. But not on Emax. Each voice is provided with the equivalent of two oscillators, so it can play back two samples simultaneously.

The usefulness of this isn't restricted to crossfade assignments. In Dual Voice mode (another area of Preset Definition), two different samples can be layered to provide, say, Brass and Strings or Piano and Nose-Flute together, again without losing polyphony. This feature is also responsible for the chorusing provided in the Analog Processing section.

Preset Definition *also* covers MIDI options, pitch-bend range, arpeggiator setting-up and real-time control assignments. The last-mentioned refers to the controllers: left wheel (sprung), right wheel, pressure (Emax features a pressure-sensing keyboard as well as velocity control), pedals, footswitches, and MIDI controllers, all of which can be assigned to a host of destinations: pitch, filter frequency, level, LFO, attack rate and sustain, to name but a few.

The two wheels, incidentally, are on the small side and can get fiddly to use, though their action is fine.

The Analog Processing section contains all the things keyboard players raised on MiniMoogs, Prophet 5s and Juno 60s can't live without: VCAs and VCFs (with their own independent five-stage envelopes), filter tracking and resonance, LFOs and velocity amounts to level, pitch, filter, attack and panning.

Panning? Well, Emax allows you to pan each voice to a stereo position, and then move it either through velocity or LFO control. It makes for great effects or realistic mixing, whichever you prefer.

On top of everything else, Emax has a sequencer. Not an exhaustive one, it's true, but then it's not designed to be. The idea is that you can dump sequences recorded on more powerful systems (either PC-based packages or stand-alone units) into the Emax, and then save them onto the same disk you're keeping your sounds on. This means that, during a live performance, you can have everything loaded from one disk. And despite its basic specification, the sequencer is capable of multitrack recording and is particularly strong on the sychronisation side, featuring not only MIDI clock but also MIDI song pointers, which allow you to record and playback from anywhere in the track. Emax can also receive 88 notes via MIDI, over all 16 MIDI channels, simultaneously if necessary.

On the back of Emax, in addition to the 11 audio outputs (Mix, Stereo, R and L, and eight individual outputs), the MIDI connections and the sample and footswitch inputs, sits an RS422 computer port. This will enable visual editing software on computers such as the Apple Mac to communicate with Emax much faster than MIDI can. And as it turns out, Digidesign have already told us that they hope to have their Sound Designer Mac package available for Emax at the time of the keyboard's release this autumn. ■

Paul Wiffen

Prices *US: Emax keyboard $2595; Emax rack-mount module $2395; UK prices to be announced*
More From *E-mu Systems, 1600 Green Hills Road, Scotts Valley, CA 95066. ☎ (408) 438-1921*

Trade members *can see the Emax during an E-mu Systems product presentation at the Royal Garden Hotel, Kensington on July 30 and 31.*

Roland MC500 Sequencer

So, there's a new Roland sequencer at a price significantly less than that of the MSQ700, something of an industry standard over the last couple of years. Yet amazingly, the new MC500 is a lot more sophisticated than the MSQ. In fact, the only machine which bears any sort of comparison with the MC500 is the Yamaha QX1, in that its operating software is at the same level of flexibility.

• But the new Roland scores over the Yamaha in several areas, like price, ease of operation, and MIDI implementation. To start with, its five-track format provides for a real innovation: a dedicated track for recording a rhythm part. This means that drum machines which are unable to store velocity data can be used as velocity-sensitive units – if the drum parts are programmed from a suitable keyboard or set of drum pads.

Complete freedom of movement is possible between real- and step-time recording, playback and editing without the delays that result from disk access. This means you can program a part in step time, overdub a second track in real time, try some auto-correction on that track, revert to the original or use a different value if necessary, copy sections of the piece or insert or delete measures, without any annoying pauses caused by the machine needing to load different software to accomplish the tasks you're asking of it. All this makes for faster music composition, which is what sophisticated MIDI sequencers were supposed to be about in the first place.

Another exciting aspect of the MC500 is that it's able to record and play back MIDI System Exclusive data, not just from Roland instruments, but from other popular machines, too. This means you can hold all the parameter information for an FM or analogue patch along with the sequence to be played, all on the same disk. If that doesn't save a lot of messing around with different RAM packs, I'll eat my chips.

The MC500 is also (as far as I'm aware) the only sequencer which allows you to bounce tracks together and then, if you need to re-record or edit them at a later date, to separate them again. This is possible thanks to the format of the sequencer's MIDI assignment. Data for each MIDI channel is memorised independently within each track, and is always accessible simply by specifying which MIDI channel you want to work on – much as you would do with tracks on a standard sequencer. This gives you the equivalent of 64 tracks to work with internally, all of which can then be bounced down to 16 tracks, with different MIDI channelisations, in your finished song.

The four discrete tracks give you enough 'elbow room' for any simultaneous editing and subsequent bouncing operations you may want to perform in the course of your recording.

The MC500 hardware (as distinct from the initial software supplied with it, which is known as MRC500) has two independent MIDI Outs. Currently, this allows you to assign different channels to each socket (in case you're stuck with an old synth that tries to play all incoming MIDI data), or even send just a MIDI clock signal from one to allow slave sequencers or drum machines to take timing data *without* getting all the note information being sent from the other.

But seeing as the MRC500 software is entirely disk-based, there's no reason why updates or different software packages couldn't provide for two independent MIDI buses, each with their own 16 MIDI channels, allowing 32-track operation. Roland have already announced an alternative systems disk which works in the same way as earlier models in the MC range, ie. as a true Microcomposer.

Synchronisation is also an MC500 strong point, and two of its most important implementations are Sync Record and MIDI Song Pointers. The first allows you to record new tracks while the tempo of the MC500 is being controlled either from another MIDI device, or from tape code. The second means that sequence playback or recording can start from any bar in your piece of music.

In conjunction with a suitable SMPTE adaptor, the MC500 will be the only sequencer on the market that can easily replace or augment tape tracks, all the way to the mixdown stage.

The MC500 seems set to open a lot of musicians' eyes to the possibilities of MIDI-based recording – not simply as a replacement for or an addition to conventional tape, but as a sequencer whose disk-based software allows it to grow with new developments, rather than getting left behind by them. ■

Paul Wiffen

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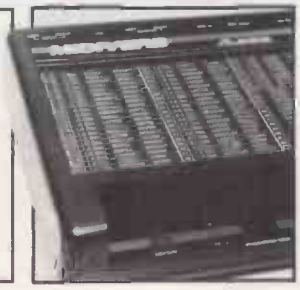

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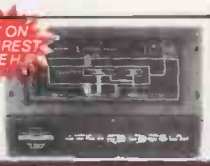

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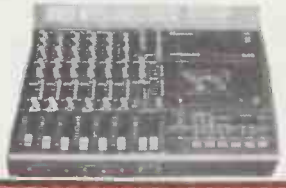

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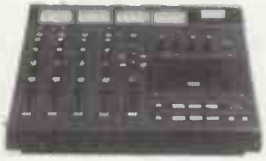

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THE TIME MACHINE

While Bob Moog was still experimenting with vast 'telephone exchange' modular synths, a British company was producing the world's first mass-market synthesiser. We take an affectionate look back at the EMS VCS3, and examine how well it stands the test of time. *Annabel Scott*

Imagine the typical Japanese design job, and you think of sleek lines, tasteful colour schemes, logical (if sometimes bafflingly complex) control systems, and a general air of professionalism and competence. Imagine the typical British design job – and you've got the VCS3.

That's not to knock the basic design of the old EMS synthesiser. At the time EMS went into production in the UK (sometime in the late sixties), Bob Moog had just launched his modular synthesiser range in the States, and such equipment was impossibly expensive for the British musician. Moog synths were large, unreliable, far from portable and, of course, expensive. Electronic Music Studios (EMS) in the shape of chief designer Dr Peter Zinovieff, aimed for something portable, relatively affordable, and definitely home-grown.

The VCS3 (it stood for Voltage Controlled Studio Model 3) was Zinovieff's attempt to introduce all these factors, and it was massively successful, albeit mainly in the UK (the company's German and American offices never did get their export services together properly). At the same time, the machine introduced a few typical design philosophies which have been cursed for their limitations and missed in their absence ever since.

The first of these was the Pin Board. Like the Moog systems, EMS synths were modular, though on the VCS3 and its briefcase-borne portable version, the Synthi A, the modules available were permanently fixed. But rather than using double-ended cords to patch the modules together, EMS took the inputs and outputs for every module to a matrix of relays which could be shorted together by pushing metal pins into holes in the matrix. With 'sources' down the side and 'destinations' along the top, the pin board provided billions of possible patches in a space much smaller than a reasonable fistful of jack sockets.

Suitcase version *of VCS3 was known as Synthi AKS, had touch-operated keyboard and 256-note sequencer built in*

Some of the facilities linked by the pin matrix were fairly standard, some very unusual. For instance, both the VCS3 and the Synthi A had three oscillators as follows:

OSC1 *1Hz-10kHz Sine/Sawtooth*
OSC2 *1Hz-10kHz Square/Triangle*
OSC3 *0.05-500Hz Square/Triangle*

Due to the wide pitch ranges, any of these could be used as audio or control oscillators, and since the pin board allowed each oscillator to control any of the others (and even itself), the possibilities were almost endless. Pitch was set via a Vernier pot with Coarse and Fine controls, but with very little allowance for conventional musical tuning or octave switching – there wasn't even a 440Hz tuning oscillator.

The VCS3 filter was fairly understandable, with just Resonance (marked 'Response'), Frequency, and Output Level controls. As a simple low-pass filter it wasn't amazingly powerful, though it could be set to resonate and it tracked fairly well if used as a fourth audio source. Jean-Michel Jarre, who swears by his VCS3s (he has six), has long since replaced their filters with Moog circuits.

White Noise – with Colour and Level controls – was also provided on both VCS3 and Synthi A, and this could be used as a control source for random effects. Unusually, a spring-line reverb was also provided, and this could add a great deal of depth to the EMS sounds – though it meant that leaning on the synthesiser while working could lead to the appearance of unwanted clonking noises.

All these effects could be passed through a ring modulator and an envelope shaper of somewhat bizarre design. As well as having Attack and Decay parameters (with the pots' clockwise movement marked 'Slow' in each case), there was a parameter cryptically known as 'On' (better known as 'Hold' on later Korg synths) and another named 'Off' (with the maximum setting known as 'Manual').

Additionally, there was a Level section with Trapezoid and Signal parameters, which allowed several other parameters to be controlled by a DC version of the envelope signal for stereo panning and other effects.

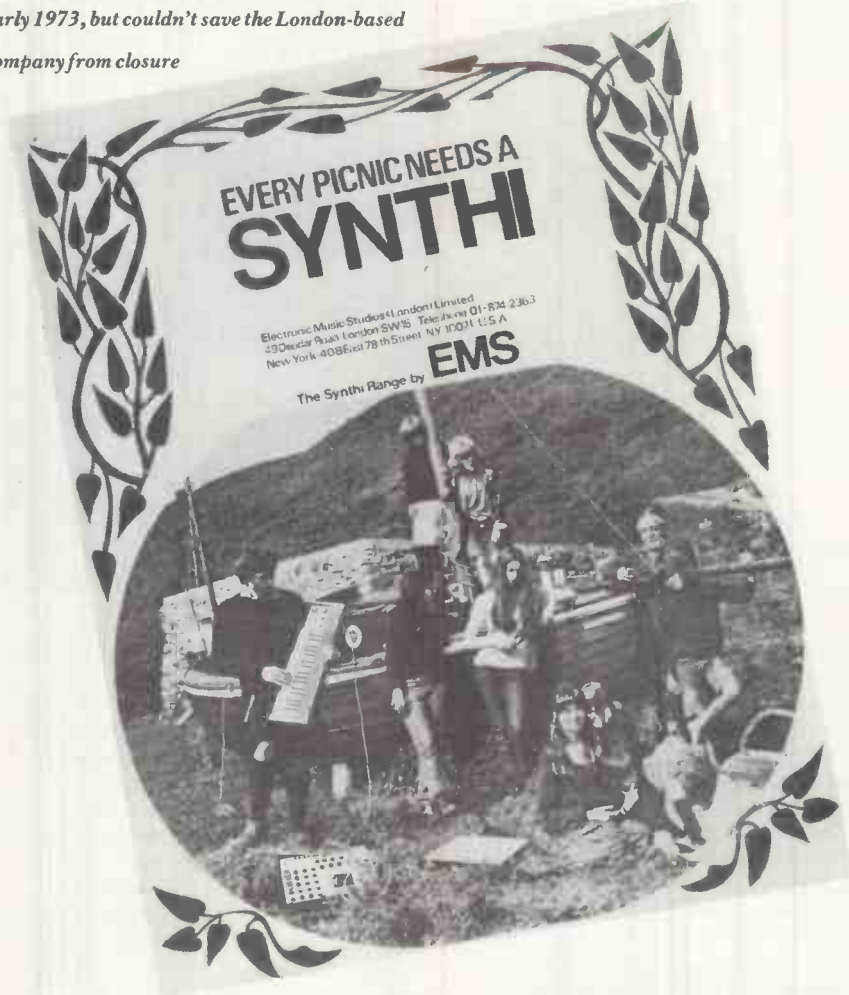
Yes, the VCS3 was a stereo synthesiser, with individual panning and filtering on its output channels, built-in stereo speakers, mic and line inputs with level controls, high and low outputs, and even an auto-trigger facility for the envelope shaper on one of the line inputs. In its own way the VCS3 was pretty accessible, though for some reason, Dr Zinovieff decided not to adopt Bob Moog's one-volt-per-octave standard. A typical EMS standard was around a third of a volt per octave, though as we'll see, the company didn't want its clients to feel constrained even to *think* in octaves.

A couple of major features remain unmentioned, one common to both VCS3 and Synthi A, one packaged only with the latter machine. The first of these is the joystick, which has survived through to the Korg synths of today, but which took on a far more versatile role on the EMS synths.

The joystick's Up-Down and Left-Right movements, each with individual scaling controls, could be set to affect almost any parameter on the synth, from pitch to modulation speed to reverb mix (yes, the reverb mix was voltage-controllable too). Although the EMS joystick has most often been seen in the act of being furiously twiddled by Jarre or Tim Blake for wobbly sound effects, it could in fact be a powerfully expressive performance device – always assuming you were using the synth for anything which could be termed a 'performance'.

That's where we come to the other facility, the keyboard. The VCS3 could be bought with a mechanical keyboard called the DK1, which plugged into a special socket – though on very early models, you had to patch it into the pinboard with a loose wire terminating in a patch pin. But the Synthi A usually came packaged with its own keyboard, the KS (becoming known as the Synthi AKS), which was a capacitative touch-operated two-and-a-half octave model, with a 256-note digital sequencer built in.

EMS advertising *was stylish and daring for early 1973, but couldn't save the London-based company from closure*



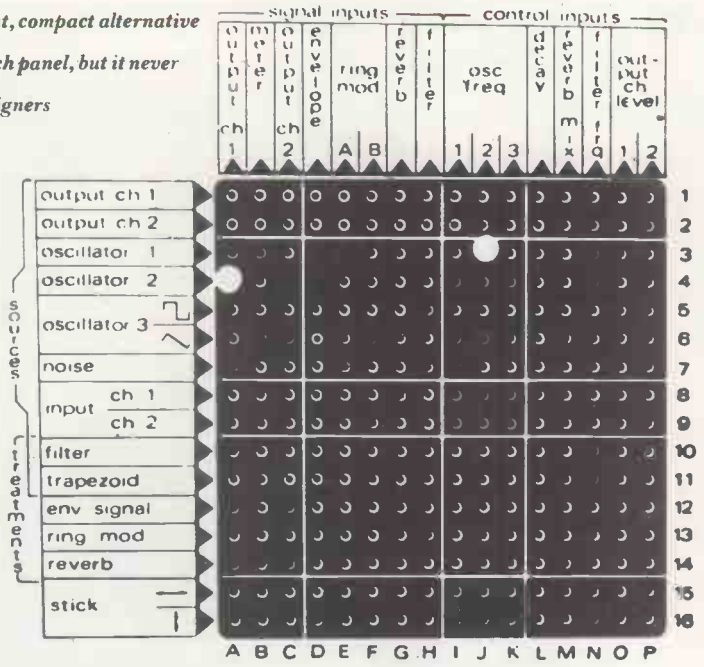
Frequently heard producing rapid flowing sequences (as in 'On The Run' from Pink Floyd's *Dark Side of the Moon*), the KS sequencer was a real-time device which could record as fast as you could play, and stretch your sequences out to 25 minutes at its slowest playback speed. You could transpose sequences up a half-tone or full-tone, a third or a fifth, or play random notes chosen from the sequence using the keyboard. Macrotones and microtones could also be tuned in, and a meter on the synth itself could be set to indicate the length of sequence available by sweeping from left to right in the appropriate time.

Also available on many models of the VCS3 and Synthi A was the Prestopatch socket, a multipin connector beneath the pinboard which allowed you to slot in a plug with the correct connections for a particular sound. It didn't help you with the exact levels of each parameter – you still had to set those up by hand – but it was a useful way of getting over the difficulty of remembering and quickly setting up a patch.

Two major questions remain – what was it like using an EMS synth in those early days, and what good could the machines be now? The answer to the first is pretty simple – not much fun, but a hell of a lot better than what came before. Tape studios began to fade into insignificance as the power of the synthesiser for creating, treating and manipulating sound became evident, and some brave souls even tried to play tunes on the things ('An Electric Storm In Hell' by David Vorhaus' White Noise is a classic example). EMS oscillators tended to stray out of tune even more than Moog's, and there was no standard tuning or tuning aid on the synth in the first place, so a tuning fork was a necessity. The white noise generator took around half-a-minute just to warm up, and the sequencer was eccentric and non-syncable. EMS gear didn't happily link to Moog or any other gear (not that that was unusual in those pre-MIDI days) and the pinboard system was fiddly, if not as clumsy as Moog's patch leads.

But the sound potential was stunning, and that's where we come to today's place for the EMS synths. After their disappearance, synthesisers became more and more ▶

VCS3 pin board *was neat, compact alternative to the programmer's patch panel, but it never caught on with other designers*



► typecast as keyboard instruments, and the standard oscillator-filter-envelope-amplifier patch became fixed on many machines. Result? The variety of new sounds being created was reduced – drastically. Quite simply, the VCS3 and Synthi A have possibilities denied to any other small synth on the market, and to many large ones. You won't find these possibilities on a Jupiter 6, despite its polyphony and MIDI facilities, and you won't find them on a Prophet, either, despite all the wonders of Poly-Modulation. You might find some of them on a DX7 – after all, lots of oscillators (operators) with many patch possibilities (algorithms) are what defined the EMS sound, but somehow, no-one has ever re-created the thrill of a joystick-controlled gun battle or dawn chorus from the VCS3.

Just imagine the possibilities of three oscillators modulating each other in a ring, or sequenced, voltage-controlled panned stereo reverb, or a noise-controlled envelope decay time. The very fact that many *can't* imagine those things, and the fact that it's so easy to predict *exactly* what many new synths will sound like, goes some way to explaining why the VCS3 and Synthi A still change hands for up to £700 on the secondhand market.

You may get a bargain, though, if you find someone who doesn't appreciate the potential of these little monsters – and it's a potential which is, admittedly, more in the effects line than the melodic line (particularly if your model has old and tired oscillators).

Luckily, there are still two companies doing EMS sales, repairs and servicing, along with some mildly wonderful modifications which help take the VCS3 and Synthi A, and thrust them headlong into the 1980s. ■

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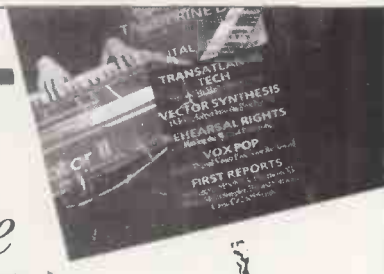

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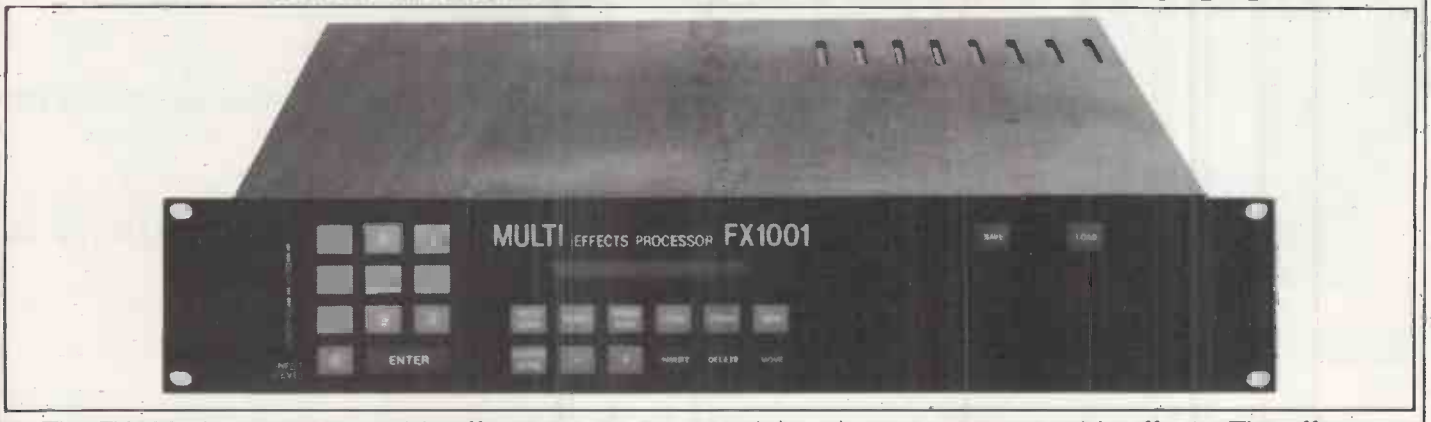

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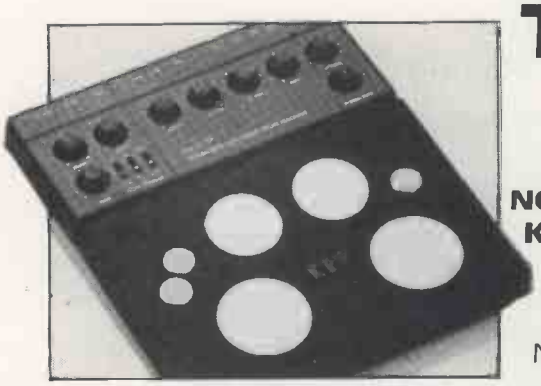

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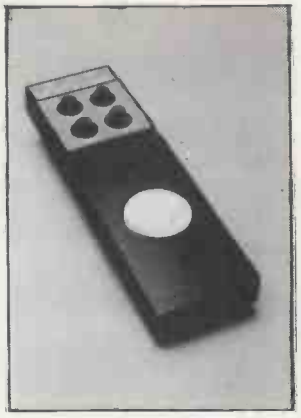

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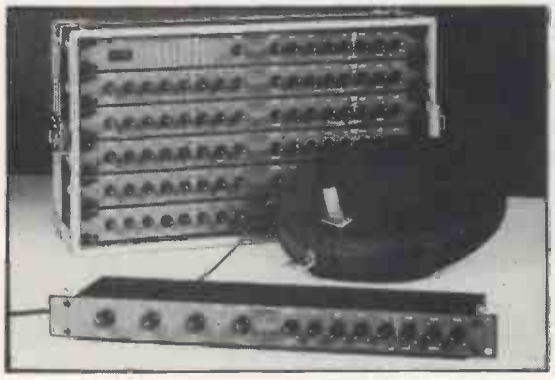

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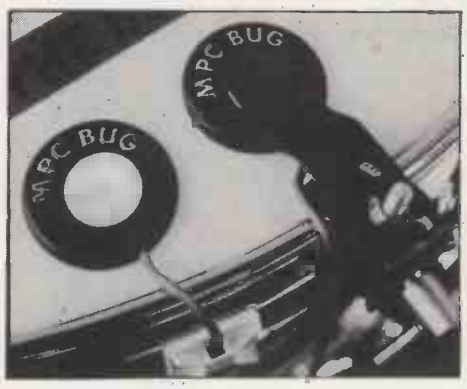

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in the MOOD

Canadian guitarist Michael Brook has a unique style of 'atmospheric' music performance. His methods embrace infinite guitar sustain, FM programming and digital effects, and he has plenty to say on all three subjects. Interview & photography *Tim Goodyer*

CONFRONTED WITH MICHAEL BROOK IN THE FLESH, the easiest thing is to underestimate him. Everything about the unassuming, quietly-spoken Canadian suggests he actively wants not to be noticed, yet he's an accomplished musician, a technical innovator and a unique guitar player.

Apart from a small foray into the more conventional aspects of popular music as a session player for Martha and the Muffins, Brook's associations carry the highest of intellectual pedigrees. Among them are trumpeter Jon Hassell and both Brian and Roger Eno. It's in association with the last of these that he is currently playing live, taking a break in the middle of our conversation to perform. Afterwards, he describes himself as 'happy with reservations'.

'I'd say it went quite well for a first night but I'm hoping it'll go better. There were some good moments and no disasters; if you get that in the first night I think it's pretty good.'

The concert is an unusual affair. The conventional visual and performance emphases take a back seat to the creation of an atmosphere, subtle and delicate, within the concert hall. The lighting is subdued, the volume of the music well below rock concert norm. The audience sit silent throughout, but show through their applause that the event is well appreciated.

'There is a bit of a contradiction in presenting this live', says Brook, 'because it's not event-oriented music, both in terms of what happens in the music and in the way that we're presenting it. And there's virtually no performance aspect to it in that we're not grimacing or dancing around: it's not physically demanding music to play.

'It's something we've all been thinking about but, without trying to be clever, there's a good reason for presenting it this way. At the moment there isn't any music like this live, so giving people the opportunity to go and hear music that is quiet and not particularly eventful is a good thing. They don't really get the opportunity to do that otherwise.

'One problem that can arise is if someone expects something to happen that isn't going to. But this audience didn't seem to be expecting to see a great pyrotechnics display or anything like that. In that respect it was a good audience – better than I hoped for – which meant we could play quietly and do what we wanted.

'When I was rehearsing with Roger we got into a discussion about how we were both coming from exactly opposite directions, yet achieving basically the same results. If it were just being discussed verbally, you'd believe the two to be totally incompatible. He's a schooled musician. His pieces are all composed and he uses changes in key. Because his pieces are all set, it's down to whether or not he can capture the necessary mood for that piece.

'On the other hand, I'm not a particularly schooled musician. My pieces aren't set at all, so in each case it's a structured improvisation. Because of that, the piece is part of the mood – that's what improvisation is.

'But in each case it's the creation of that atmosphere that we're interested in, so the two aren't really very far apart. There are more similarities than dissimilarities in what eventually hits people's ears. It's surprising when you look at the things that have influenced him and the things that have influenced me, and how we go about making our music.'

BROOK'S PERFORMANCE IS A DELICATE SERIES of harmonic manoeuvres that allow him to conduct the listener on a guided tour of his moods. And unlike many 'improvisational' composers, Brook has an intimate understanding of his chosen musical structures.

'I almost always use the same notes, but sometimes I establish different chord centres – it's how you weight the notes you use. There's this beautiful thing that can happen with tonal ambiguity, where everything is obviously modal and you can reach a crosspoint, like a tonal dusk, where it's not evening and it's not day – *if* you do it right. You establish a key and then you keep playing the same notes and then you start emphasising another one that's still part of that mode. If I introduce a sequence, the sequence is usually in the new key so your ear starts saying: "oh, it's not in that key...oh, yeah it is...". But there's no dissonance or tonal stress involved.'

Meanwhile, the improvisational aspects of Brook's music mean that his sequencer programs, for example, are deliberately free of constrictions.

'With my sequences I can change tempo or reverse them, and some of them are purely rhythmic so I'm free to work over them. The big difference between using tapes and using sequencers is having the choice of what you put in and what you leave out. Having this bag of tricks where you can call on what you think is most appropriate is very important, especially in terms of it being a performance rather than a set piece or what might have happened in a recording studio.

'Something like Philip Glass' music is quite digital, in that it's either right or it's wrong. I saw his band a few years ago and I enjoyed it, but I thought I may as well hear the record, where I know they get it right. There's very little room for the flexibility that is inherent in something that is worthwhile performing. You have to have room to move, or it's either right or wrong; I felt there wasn't that room with his music, so it wasn't worth performing it.'

In contrast to Roger Eno's classical training and French minimalist background, Brook draws his current influences from his fascination with the East, and India in particular, following his study of Indian music with LaMonte Young in New York.

Brook's recent album, *Hybrid*, is a clear documentation of this fascination, and utilises drone notes set against seductive rhythmic soundscapes to create the mood of a modern, electronic India. The extensive use of sound-processing, and in particular multiple echo repeats, allows one musician to create a rich, gently moving tapestry of sound, a situation exaggerated by Brook's infinite sustain guitar.

There's nothing new about infinite sustain, of course, but the development of Brook's guitar-playing style and equipment is unique to him.

'When I started recording *Hybrid* I wanted to get an E-bow, so I phoned the guy and placed an order. I sent the money; it didn't come. So I phoned him again and he said it should be coming soon. Then I phoned him again... We went through all the standard bureaucratic bungling until it was obvious it wasn't going to come in time. But, as I built electronic gadgets anyway, I wondered if I could build something that would do what I needed. I'd actually had the idea for quite a while, and I found out later that it works much better than the E-bow.

'I found I couldn't really use the E-bow – you have to pick it up and get it in the right position over a string before you get any sound. With the infinite guitar, you don't have those problems. I also bend notes a lot, and you can't really bend notes with the E-bow because you hit the next string, and you also can't use the vibrato arm, which I like to use a lot.

'My design is in the process of being patented at the moment so, although I'd like to, I can't say how it's done. What it lets you do is sustain a note for as long as you want. It means you don't have to pluck a string to start a note, so it's perfect for me. It means I can fade in notes without having to physically fade them in – they just start up on their own. It also allows you to get harmonics very easily. A lot of the drones on my album were guitar, and not synthesisers as you might imagine.

'I don't think I'll improve it any more because it suits my playing as it is – though obviously I don't know about other people's playing. But I'm more interested in creating music than developing the idea any further right now.'

ALTHOUGH BEST NOTED FOR HIS GUITAR WORK, Michael Brook also makes use of synthesised sound in the form of a Yamaha DX7, TX7 and a pair of TF1 modules in a TX816 rack. They don't play a particularly prominent part in his music, but they retain a strong individual identity courtesy of some sympathetic and effective programming – a rare feat in these days of FM preset mania. As it turns out, Brook has conducted a long affair with FM synthesis which extends as far back as the days of the system's initial development.

'I happened to be in school when John Chowning published his article on FM', he recalls. 'So I'd read about that, and I was working with a guy who was connected with Don Buchla. Buchla had FM at that time and it was linear FM – and that's the crucial point, because most oscillators then were exponential. If you use a linear response oscillator you just get a change in timbre as you increase the modulation index, whereas with exponential oscillators you get a change in pitch as well as timbre. So Buchla had FM synthesis in his system but it never seemed to me to do very much. This was in about 1975. Then he had a computer system with theoretical oscillators, and you could do any of the FM stuff with that but it was absolutely useless because it took weeks before you could hear anything. I wrote a couple of things on that and then I completely lost interest. It's a very academic way of dealing with sound and consequently of no interest to me whatsoever. I saw a couple of other computer music systems that had FM synthesis too, and they were just the same.

'Then, finally, Yamaha came up with the DXs and I thought: "Ah, so *that's* what happened to it all", and it turned out that they'd bought the rights to it so nobody could do it the way Chowning had proposed originally. I suppose I'd waited ten years for it to become usable.

'Now that they're around, I don't know why a lot of people in rock use DXs, because they're so much stronger in my area.

'I think the touch-sensitivity and the fact that you're not using filters but adding harmonics, are huge factors in their usefulness. The only area that they've missed out on for me is LFOs; I'd really have liked to see more than one LFO.'

Considering his obvious enthusiasm for the subject, it seems strange that Brook's involvement with electronics didn't embrace the delicate art of analogue synthesis ►

> "I found I couldn't really use the E-bow – you have to pick it up and get it in the right position over a string before you get any sound, and you can't really bend notes because you hit the next string."

during the pre-DX lull.

'I used to be really involved with synthesisers about ten years ago, but I lost interest over those ten years because they forced you to make trivial music in one way or another. You either did real avant-garde 'bleep bloop' stuff, or you were restricted to very simple melodies in pop music.

'I think the DXs are musical instruments, while most synthesisers aren't.'

A sweeping enough statement by anybody's standards, and one that can't be allowed to pass without some qualification...

'Analogue synths are valid for certain types of music, but it's only the DXs that apply to my music because you can get convincing ethnic instrument sounds on a DX, and you can't do that on any digital or subtractive type of synthesiser. I find I can get all the sounds I want from a DX.'

TO SUBSTANTIATE HIS CASE, BROOK HAS AT HIS FINGERTIPS the most believable tabla patch this author has ever heard.

'If only they'd make a DX with non-tempered tuning, I'd be in heaven. The Prophet 5 would allow you to use just intonation, but it wouldn't stay in tune so it was useless. One thing I have considered is putting more modules into the TX rack and using each module monophonically as a polyphonic system, so each module would have its own tuning. I'm sure you could work something out along those lines.

'It always sounds so academic, but I really believe it is significant. It's a very interesting area and I think there's a lot more to come from it.

'I saw a programme recently about a computer that allowed you to use just intonation monophonically', he muses.

And maybe this time, the delay between computer impracticality to commercial availability will involve Brook in something less than a ten-year wait.

In the meantime, the composer is keen to emphasise that his music also makes use of new technology in other areas.

'Most of what I do isn't just synthesisers', he says. 'It's delaying, harmonising and tracking things. I can build up chords by having feedback loops between the reverb and AMS. But you can get fooled watching me, because the guitar will keep going when I'm not actually playing it.'

Alongside that AMS and a Roland SRV2000 reverb, Brook has a brand-new Yamaha SPX90 multi-processor, and what is probably the largest private collection of old Electro Harmonix 16-second delays. He is equally enthusiastic about both.

'I actually don't use the AMS all that much these days, but those old delays are fantastic. The SPX thing is fantastic, too – really amazing. I need about five of them, that's how good it is. I'm actually thinking about buying one at the moment. The MIDI is useless, though. Nobody's implemented MIDI in a useful way on any of these things; all it means so far is that it saves pushing a button. It means you don't push it there, you push it here – that's all.'

Like so many musicians, though, Michael Brook has found technology to be a double-edged sword, creating as many problems as it solves unless kept in check.

'There's such a danger of becoming a one-man band if you're not careful. I don't think that really works for an audience, so I try to make my concerts more like a solo performer using a little extra sound-generation to help add texture to the music.'

In that, at least, Michael Brook has succeeded admirably. There should be more like him. ■

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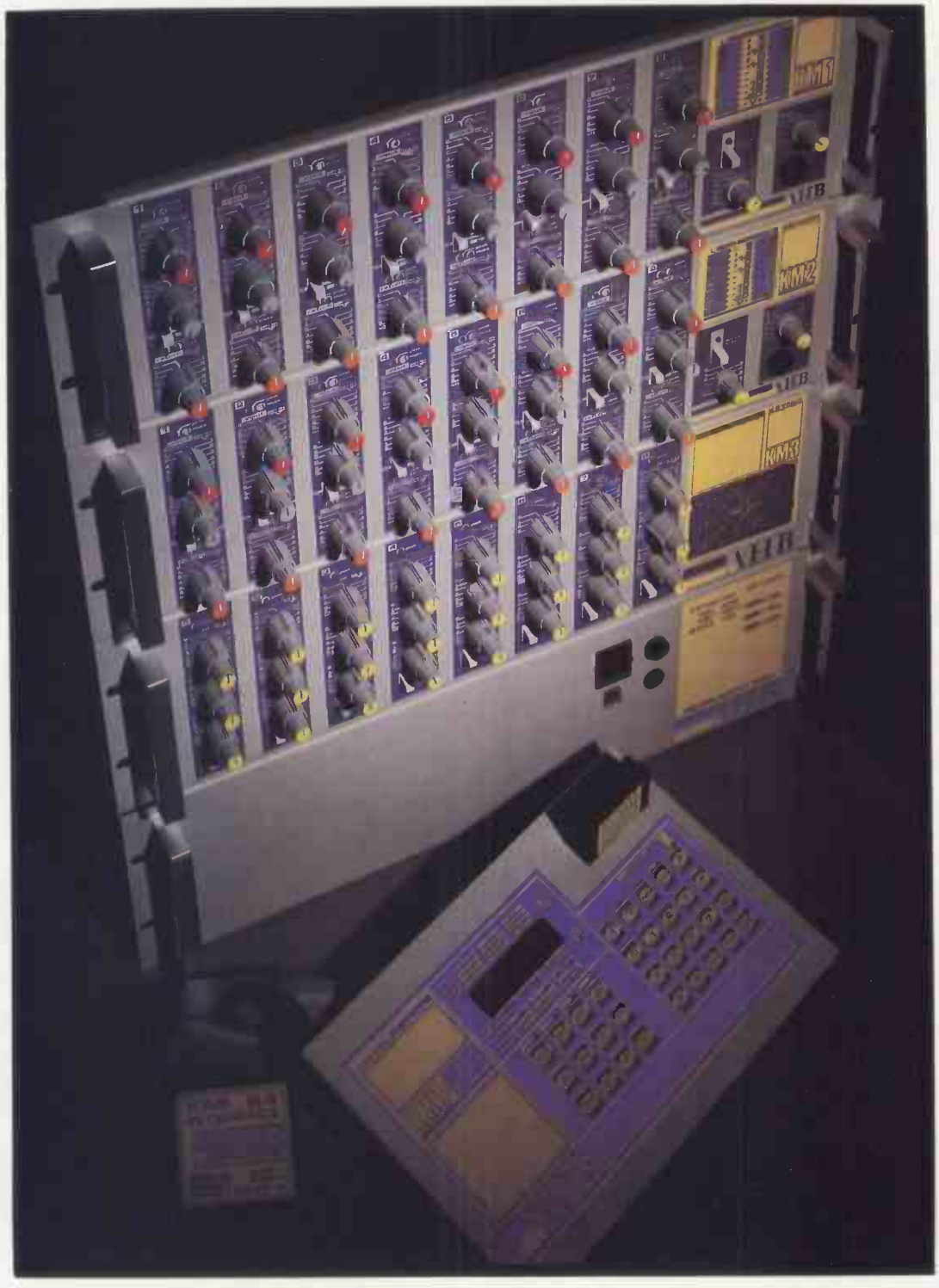


The idea of marrying MIDI with an audio mixer is by no means new, but AHB's Keymix is the first MIDI mixing system to be made generally available. Is the marriage a successful one? *Simon Trask*

For this writer, the concept of a MIDI'd mixing desk has seemed a bit of a nebulous one for some while now. I mean, how are MIDI and your typical mixer going to interact in a meaningful way?

The possibilities seem plentiful, but until Allen & Heath Brenell delivered the goods with their Keymix system, I'd yet to see a MIDI mixer work properly, let alone decipher what, precisely, was going on between the interface and the machine it was stuck to the back of. What AHB have opted to do with Keymix (and their CMC24 and CMC32 mixers, incidentally) is to use MIDI to store input muting and effects routing settings for up to 32 input channels, which can then be recalled as patches from a MIDI instrument or sequencer, or as events recorded into Keymix's internal sequencer.

Keymix has applications both in the studio and on stage, but it's in the former setting that it will most likely find its home. Mixdown automation in some form or other is becoming an increasingly common feature in studios nowadays, and in a studio which makes regular use of MIDI instruments and sequencing, this is the sort of role that Keymix will assume.

With Keymix slaved to a MIDI sequencer, which is in turn slaved to a master SMPTE timecode track on tape, you have a very

precise means of controlling the muting and effects routing of an entire MIDI instrument setup (which of course can include synths, samplers and drum machines).

Keymix isn't intended to replace a standard mixing desk, but rather to take on (by effectively automating) some of the tasks that the engineer is presented with on mixdown.

AHB have designed Keymix as a modular 19" rack-mounting system, consisting of the KM1 eight-channel master mixer, KM2 eight-channel slave mixer, and the KM3 equaliser which offers eight discrete channels of three-band equalisation.

The maximum configuration consists of one KM1 master, three KM2 slaves daisy-chained via multi-way connectors, and four KM3 equalisers which are patched into the mixers, making a total of 32 input channels with equalisation for each channel. But Keymix's modular format allows you to start with just the master mixer and build up the system as and when required, which is no bad thing in this day and age.

The designers have provided two alternative options for controlling the routing/muting of signals: the KMR dedicated remote controller and the KMI64 computer interface. Both of these plug into the KM1 master mixer. The KMI64 consists of cartridge-based software which runs on that old workhorse, the Commodore 64. But more on these later. First, let's look at the mixer and EQ units in more detail.

Background *"The KM3 equaliser has been designed to fit within the Keymix system so that each input channel can be given its own three-band EQ, but the unit can be used with any mixing console."*

The KM1 master mixer unit consists of eight input channel blocks, each with two inputs feeding a master stereo mix output. Each block consists of the main channel input, two auxiliary send controls labelled A and B, and an effects return input. On the front panel are dual concentric controls governing level and pan of the main input and return input in the stereo mix, together with peak and mute LED indicators for each input (the latter is handy for seeing at a glance what channels are muted), and dual concentric controls for the level of sends A and B. There's also a pushbutton control for determining whether auxiliary send B will derive its input signal from the main channel input or the return input, giving you the possibility of switching two outboard effects units into the signal path. The auxiliary sends for each channel are of two types: mono send and return jacks (A) and a stereo insert jack (B).

The master output section consists of two (L/R) balanced XLR sockets which can be used for feeding a front-of-house mixer or a main PA system when used live, stereo and mono output jacks, and a headphone jack. The XLR signal output is independent of Keymix's master level controls, but usefully, it can be muted at the touch of a button along with the stereo and mono outputs, allowing for headphone-only monitoring at strategic moments. There are also separate level controls for the stereo/mono outputs and the headphone output.

The KM2 mixer is essentially the same as the KM1, the only difference being that as the main stereo output is fed into the KM1, there are no XLR outputs. However, the mono and stereo monitor outputs and headphone output are available for independent monitoring of any KM2 slave, and the output muting has been retained, allowing instant muting of any KM2.

The KM3 equaliser has been designed to fit within the Keymix system so that each Keymix input channel can be given its own three-band equalisation, but the unit can equally well be used with any other mixing console. Dual concentric pots are used for frequency sweeping and cut/boost control in each of low, mid and high ranges, covering a total range of 40Hz to 15kHz. Once again, a peak level LED has been included for each channel. There's also an EQ Bypass switch for each channel, which is handy for making comparisons when setting up a sound.

Rear panel connections consist of mono in/out and stereo jacks for each channel, affording the maximum flexibility when patching the unit into either Keymix or another console.

With the help of the KMR or KMI64, you can define route/mute settings for all input channels and then group these settings into patches which can be called up remotely from a MIDI sequencer track or a MIDI instrument (KMR only), or else entered as events in an internal sequencer which can be set to run according to its own internal clock, an external MIDI clock (KMR only), a Sync 24 input, or tape sync (KMI64 only).

Each control option has its own advantages. KMR's is primarily that it allows you to incorporate Keymix into a SMPTE timecode-based system – which will obviously be appealing to some studios. The most likely chain to accomplish this is MIDI sequencer slaved to SMPTE timecode track on tape (via a SMPTE-to-MIDI converter) and Keymix slaved to sequencer (either through direct synchronisation or by patch selection from a sequencer track).

In contrast, the KMI64 interface option (in conjunction with AHB's KMS64 sync interface) is strictly non-MIDI. What it does allow you to do is record a standard sync track onto tape and slave Keymix's internal sequencer to that. The KMS64 interface also outputs start/stop and 24ppqn clock signals, allowing you to slave a MIDI sequencer to Keymix with the addition of a suitable clock-to-MIDI converter. Then again, slaving Keymix to Sync 24 (which is possible with the KMS interface) and a MIDI sequencer to Keymix (as outlined above) would allow you ultimately to slave the whole setup to a SMPTE timecode track – but without all the advantages that set SMPTE above ordinary tape sync in the first place. You win some, you lose some.

Where the KMI64 option really comes into its own is in the display department. There's simply no comparison between the KMR controller's rather limited LCD and the amount of information conveyed via a computer monitor screen – and in the case of Keymix's multiple routing and muting options, that's an advantage not to be dismissed lightly.

In Use *"AHB have realised that entering event timings as bars and fractions of bars is not a lot of fun, so with the KMR, you can program events 'on the fly' by means of a footswitch."*

The KMI64 software includes Channel and Send/Return Index pages which allow you to enter (and subsequently see at a glance) which instruments are connected to which inputs, and which effects units are connected to which auxiliary sends. You can also adjust, and see on-screen, the muting and routing settings for all 32 inputs. This ready accessibility (and consequent easy comprehension) of information really is invaluable, so it's a shame AHB haven't combined the visual superiority of the KMI64 option with the MIDI advantages of the KMR option.

By now, though, you're probably wondering what all this muting and routing business is all about. Essentially, Keymix allows you to decide for each input channel block (up to the full 32) whether you want the input signal muted or not (and if so whether at the channel or return stage) and to what effect(s) you want the input signal routed. Complete 32-channel settings can be stored as patches and recalled in an instant. The KMR controller can store 100 mute and 100 route patches, while the KMI64 can store a staggering 1024 mute patches, but only 56 route patches.

Routing requires some further explanation. Normally with a mixer, the effects send or insert is hard-wired, so that channel 1 is always routed to whichever effect you've plugged into the channel 1 send or insert. Not so with Keymix, because although this may at first seem to be the case (each Keymix input channel block has its own ▶

► effect send/return and insert sockets), the routing of audio signals within each KM mixer unit is actually governed by software. This means you can decide you want the signal on input channel 1 to go not to the reverb unit connected to the channel 1 aux, but to the DDL connected to the channel 7 aux. Routings can only be accomplished to effects connected within each eight-channel mixer, a consequence of making Keymix modular in design.

Once you have your mute and route patches set up, you need to be able to access them in real time. There are two ways to do this with the KMR controller: via MIDI or with the internal sequencer. For MIDI access, you can group pairs of route and mute patches into MIDI patches, which can in turn be set to respond to any incoming MIDI patch number between 0 and 99. The remaining possible 28 patches seem to have been dismissed simply because AHB haven't allowed the KMR to display more than two-digit numbers, which seems a mite unfortunate.

You can of course call up Keymix's patches in real time from a MIDI keyboard, or record them into a sequencer track for subsequent playback. When using a sequencer in this way, editing facilities are determined by what your sequencer is capable of – and you have to dedicate a sequencer track to Keymix, which could leave you short on tracks. The advantage of this approach, though, is that the structure of your 'Keymix' track can conform to that of the other tracks.

AHB have given Keymix an internal event sequencer and a healthy variety of clocking modes. Thus, for instance, you can enter your patch changes into the internal sequencer, which can then be slaved to a MIDI sequencer (or you can do things the other way round if you want). This way, you free a MIDI sequencer track which might well be needed for something else (like sending patch changes to a reverb unit that you've got connected up to Keymix). KMR will send or read MIDI song position pointers as required by the sync mode, allowing it and other devices to be kept in sync at all times.

The KMR controller also has Sync 24 In and Out sockets, allowing you to slave a non-MIDI drum machine to either the KMR's internal sequencer or to a MIDI sequencer; alternatively, if you're feeling really perverse you can slave KMR and a MIDI sequencer to a non-MIDI drum machine.

The KMR controller's internal sequencer allows you to enter up to 10 'songs' at a time, each with up to 100 events; alternatively, you can chain up to 10 songs together to give you a greater number of events. An event in this context signals a new route and mute patch, and is entered together with timing information which specifies the bar (0-99) and the fraction of a bar (in 96th-notes). This tends to suggest 100 4/4 bars, which may not be enough for everyone's liking, but like I say, you can chain songs together to get a greater number of bars.

KMI's internal event sequencer (which lies in the Commodore 64's memory) allows for a single sequence of 2048 events and the use of time signatures other than 4/4, but it also has a lesser timing resolution (eighth-notes).

If you're using the internal sequencer as master, you're limited to one tempo for each song (or just one tempo overall in KMI's case), which again might not be flexible enough for everyone's requirements. Slaving KMS to a MIDI sequencer might be a better bet here – sequencers such as Steinberg's Pro16 and C-Lab's SuperTrack allow you to define a different tempo for each 16-track pattern.

Quite rightly, AHB have realised that entering event timings as bars and fractions of bars is not a lot of fun, so with the KMR, you can program events 'on the fly' by means of a footswitch – and this can be done regardless of whether the internal, MIDI or Sync 24 clock is the master. Of course, you then have to go back and enter what patches you want to call up for each event, but life is still a lot easier than it might have been.

Conclusion *"With Keymix slaved to a MIDI sequencer slaved to a master SMPTE timecode track on tape, you have a precise means of controlling the muting and effects routing of an entire MIDI instrument setup."*

And making life easier is (or at least should be) the name of the game with a system such as Keymix, whose main task is to facilitate automated mixdown in a studio. On the whole Keymix has been well thought-out, but it's a shame AHB haven't seen fit to combine the advantages of the KMR and KMI controller options into one controller. Anyone who's prepared to pay upwards of £1500 for just the basic eight-channel mixer will probably not want to avail themselves of the KMI's sync-to-tape, but will be only too happy to take advantage of the quicker operation that the KMI option provides.

As for the MIDI side of Keymix, it provides an effective means of integrating the system's automation features into a broader MIDI sequencing and SMPTE-controlled recording setup. And Keymix's own muting and routing capabilities are further enhanced by the rapid switching of effects settings that's possible nowadays using MIDI control from a sequencer.

Just how AHB's offering will compare with others – such as the forthcoming MIDI mixers from Akai and Toa – remains to be seen, though Akai's mixer should make more settings programmable and will work out a fader 'path' between two settings. Fader automation doesn't come into the Keymix scheme of things, and although it's by no means a cut-and-dried case as to whether such a facility is desirable, it's possible (given the modular character of Keymix) that AHB will come up with such an option in the future.

Whatever, Keymix is intended more as an adjunct to a standard mixing console, and that's a role which it seems to perform very well. So if you're in a studio that makes regular use of keyboards, drum machines and MIDI sequencing and you want to investigate the affordable mixdown automation, Keymix is definitely worth investigating. ■

DATAFILE

AHB Keymix System

KMS1/KMS2 eight-channel mixers *1/4" unbalanced jack socket channel input; 1/4" unbalanced jack socket effect send and return; 1/4" stereo jack socket insert; frequency response all paths 20Hz-20kHz ±0.5dB; crosstalk better than 60dB; distortion typically 0.05% THD at normal levels 20Hz-20kHz*

KM3 eight-channel equaliser *1/4" unbalanced jack socket input and output per channel; 1/4" unbalanced stereo jack socket per channel; unbalanced HF ±15dB sweep shelf, 5kHz-15kHz; MID ±12dB sweep peak-dip, 300Hz-6kHz; LF ±15dB sweep shelf, 40Hz-400Hz; max output +22dBv; output noise -75dBv with controls flat DIN 20kHz*

KMR remote control unit *MIDI In, Out and Thru; Sync In/Out; 1/4" mono jack socket footswitch input*

KMR software *100 input mute patches; 100 effects send route patches; 100 MIDI patches; 10 song sequences, 100 events per sequencer; real- and step-time event programming*

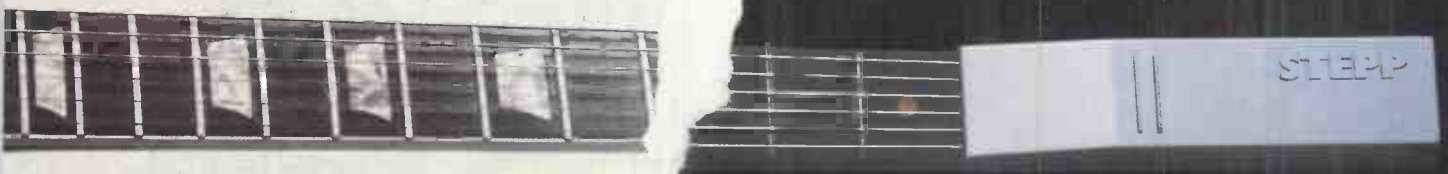
KMI64 computer interface *multi-way connector + cartridge to Commodore 64 cartridge input*

KMI64 software *channel index; send and return index; 56 route patches; 1024 mute patches; 2048-event sequencer*

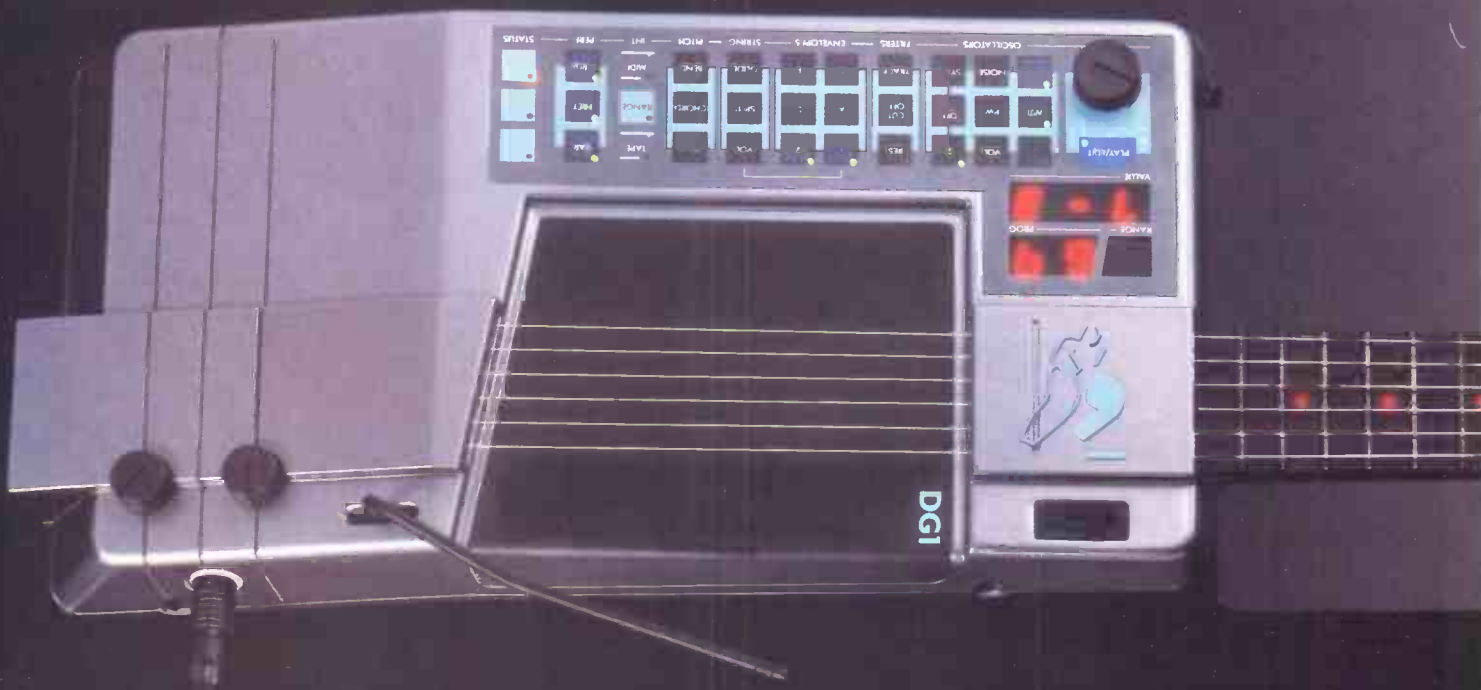
KMS64 synchroniser *1/4" mono jack socket footswitch input; Sync 24 in/out; tape sync in/out*

Prices *KM1 + KMI64 + MPS10 – £1084; KM1 + KMR + RPS10 – £1625; KM2 – £834; KM3 – £471; KMR – £459; KMR + RPS1 – £722; KMR + MPS10 – £550; MPS10 – £91; RPS1 – £289; KMI64 – £150; KMS64 – £85; KMM cartridge – £40. All prices include VAT.*

More from *Allen and Heath Brenell, 69 Ship Street, Brighton, East Sussex BN1 1AE. ☎ (0273) 24928*



THIS IS NOT THE END OF THE GUITAR...



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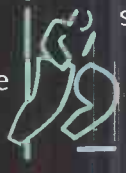

THE STEPP DGI

YOU'RE A GUITARIST – SO PLAY THE GUITAR

YOU AND ME BOTH

After paving the way for electropop with Depeche Mode and Yazoo, Vince Clarke has joined forces with singer Andy Bell to form Erasure. The beat, the melody and the instrumentation are as strong as ever, but so far, commercial success has eluded the duo. Interview & photography *Tim Goodyer*

THE NAME VINCE CLARKE FEATURED IN THE ORIGINAL Depeche Mode line-up of 1980, alongside those of Martin Gore, Andy Fletcher and Dave Gahan. It was Clarke's songwriting talent and willingness to play pop on unlikely new instruments (cheap synthesisers) that gave the Basildon band their initial success with singles like 'New Life' and 'Just Can't Get Enough'.

But at the tail-end of '81, he bravely abandoned the safety of the Depeche camp to begin afresh. He resorted to the classifieds column of *Melody Maker* in an attempt to establish a working partnership with a singer, and received a response from one Alison Moyet. It was an unlikely combination – he a composer of up-beat synth pop from the sticks, she an experienced London blues singer – but the result of the unholy marriage was the enormously successful Yazoo. Huge, worldwide hits like 'Don't Go' and the immortal 'Only You' not only established Clarke's prowess as a popular songwriter and put Moyet on the map as a singer, but also established the viability of an electronically-based duo in modern pop. For Clarke had remained loyal to the instruments he knew – cheap monosynths, drum machines and Microcomposers – and continued to rely on the production skills of Mute label boss Daniel Miller and engineer Eric Radcliffe. With their help, Yazoo proved themselves an immensely capable and versatile act, with two albums (*Upstairs at Eric's* and *You and Me Both*) that demonstrated not just an uncanny ability to create some of the early eighties' best-crafted electropop tracks, but also calmer, moodier songs like 'Winter Kills'.

But all good things, as they say, come to an end. And so it was that Yazoo ceased trading in 1983, with Moyet setting out on what was to be a staggeringly successful solo career, and Clarke beginning a series of uneasy associations with other singers under the umbrella title The Assembly.

The most successful of those collaborations was with ex-Undertone Feargal Sharkey, who sang on the Autumn '83 hit 'Never, Never'. But after that, Clarke sank into a period of inactivity, eventually forming a new duo, Erasure, with unknown singer Andy Bell. Together they've released three excellent (but unrecognised) singles and an album, *Wonderland*, that's offering the public an opportunity to make up lost ground.

Talking with Erasure shortly after the album's release, it transpires that his association with Bell is another example of Clarke's 'classified ad' strategy.

'Andrew and I met about a year ago after I put an advert in *Melody Maker* for a versatile singer. We did about 40 auditions altogether, and he was almost the last person to come along.'

The placing of that advert marked the final admission of failure for the Assembly project, as Clarke explains.

'When we did The Assembly it was meant to be an album full of different singers. We started doing the album after the first single but there were lots of problems in finding singers. People imagine that if you're a musician it's

like one big family, but really you don't know anybody else. I contacted a few people and they either didn't want to do it or they weren't available, and when they were there were contractual problems with other record companies. I also had problems with producers because the producer I wanted to use, Daniel Miller, just wasn't available at the time.

'The result was that we spent a year in the studio hanging around writing songs, preparing for the Assembly album which never materialised. In the end I was just sick of the studio. We started to do the next single but we couldn't get the right singer, so myself and Eric took our synths and went home. It was a really bad time; it was a year wasted and it made me really lethargic because we hadn't actually got anything finished.'

"I spent a year and a half messing about with the Fairlight and I got really sick of it... It proved cumbersome live – we had to use two so that one could load up while the other was playing."

Then, according to Clarke: 'It was time we started a proper band. There's Andy and I in the studio. We find it more workable that way, although we get session people in sometimes to play guitar or whatever. It works very well – we don't have any personality problems.'

Bell describes himself as 'the eternal optimist' to Clarke's 'eternal pessimist'. As if in confirmation of this, Clarke continually refers to *Wonderland* in the past tense as if its failure were a historical fact.

'I liked the album', he says. 'I think it's the best thing I've ever done, but one of the problems when we first started recording was that Andy and I didn't know each other very well – I just wanted to record his voice. It's taken this long for us to get to know each other and know what each other's views are. Consequently, I don't think the album had anything to say lyrically. I'd like to incorporate those views into the next album.'

That next album could be heard in the making throughout the course of our conversation in Mute's own London recording studios, and sounds like it's set to continue where *Wonderland* left off.

WHERE *WONDERLAND* PICKS UP is another story entirely. With its driving drum-machine beat, tingling mono-synth arpeggios and highly-charged vocals, it's an obvious continuation of the theme Clarke began with Depeche and continued with Yazoo. In the light of the universal success enjoyed by Yazoo, it seems strange Erasure haven't risen to instant fame and fortune.

'You've got to have exposure on Radio 1', suggests Clarke. '90% of the population of this country that listen to the radio listen to Radio 1.

'We're doing all right in America. They're still working the first single there cos everything takes a lot longer, but we're doing all right in the dance charts. We've just come back from doing five dates out there and they went really well. It's tough to sell records there because the record companies you're dealing with are so difficult to crack – it's not so much cracking the public as convincing the record companies that the music's worth investing in and selling. Visiting America and seeing Warner Brothers (Erasure's US label) in action really pissed me off. They've signed me for six albums; that's a big commitment for me but it doesn't seem to be a big commitment as far as they're concerned. They'll release a record but they won't do anything about selling it.

'We played LA and there were about 1200 really enthusiastic people at the gig. LA is where Warner Brothers have their head office, so a lot of the Warner Brothers people were there. Backstage afterwards they were all there laying into the drink and Andy came into the dressing room. The first thing that anyone said to him was "where's the corkscrew?". The second thing was "what do you do?" and this was *after* the gig... But if it means we've got to spend six months out there and disregard promotion in this country, it doesn't bother me at all.

'There's a problem here in Britain but I haven't worked out what it is yet. Because I've been away from recording for so long I think I may have missed out on a lot of things. I haven't managed to keep up with what's happening as far as production and sounds are concerned. Radio 1 like to think they're really trendy and if anything sounds a little outdated, they won't play it.

'But you just keep going, trying to improve your technique as a songwriter. Erasure's done a lot of gigging and I think that's helped us build up a grass-roots following. We can only record and gig, that's all. We can't go to Radio 1 and shake the DJs until they play the record.'

On the subject of gigging, one of the reasons most often quoted for the demise of Yazoo was Clarke's reluctance to perform live. Three years on, it's strange to witness the pleasure with which Clarke relates the success of Erasure's recent live excursions in America. Why the change of heart?

'It was only that I wasn't 100% happy with the way that Yazoo were doing it. We had to rely on tapes and ►

► that just wasn't as exciting as it could have been.

'Now we're using the BBC Micro and a UMI software system. It's programmed to trigger seven synths plus two drum machines, and I play keyboards myself a bit, too. That's the basis of the music, and Andy handles the vocals.

'It's definitely a step away from the Fairlight. I spent a year-and-a-half messing about with that and I just got sick of it. I did use it with Yazoo live for a little while but it proved really cumbersome. We actually had to use *two* so that we could have one loading up while the other was playing.'

In conjunction with the UMI, Clarke has an Oberheim Xpander, a Yamaha TX rack equipped with three TF1 modules, and a Casio CZ101. A Yamaha RX11 and a Roland TR727 (the Latin Percussion one) take care of the drumming chores.

'I can trigger 16 polyphonic synths simultaneously with the UMI so, for live work, I use two of the channels for drums and the others for music. I write a blank bar at the beginning of every song which is a patch-change bar; all that happens in that bar is that all the synths change sounds, although I can do patch changes within the songs as well. There are 12 songs for the whole set stored on one disk – backed up many times – and a song will load in about three seconds.'

On top of all the pre-programmed music, Clarke uses a Casio CZ1000 live, but the arrangement is all kept open to allow for further improvement when the time seems right.

'I want to keep updating the sounds all the time, and I want to start using the Pro One live again as well. I've always used it for bass because it's got such a great sound. It's bit dodgy though, because you'd have to use an interface to get it to talk MIDI. I want to start using a TR808 live as well – that'd just use the Sync 24 to the UMI.'

SO FAR THE SYSTEM, WHILE NOT PERFECT, has performed to Clarke's satisfaction both in the studio and on the road.

'The whole system's pretty mobile. We took it to America and hired all the synths out there. It was easier to hire because it's all available there and it's cheaper only to have to ship the BBC. With the Oberheim we stored all the patches on cassette and took them over like that. The UMI stores DX sounds on disk so we put all the TX sounds on that, and there's no problem with the memory on the drum machines because we use those over MIDI.

'There've been a few breakdowns – we've crashed the disk a few times – but even when that happens, you just put a spare disk in and load up another song. Any mistakes like that people seem to love – they go down really well, especially when things work again afterwards. It was the same with the Fairlight and the MC4, but things are so much more reliable now.

'We start a major tour in the autumn and we're hoping to include a drummer in the band, but playing only a snare and hi-hat, not a kit, just to make it more visual. At the moment we've got four of us – Andy and me and two male backing singers – all at the front of the stage, so it's quite strong. But I fancy a stand-up drummer at the other side of the stage from me, so there's the three singers in the middle. I think it makes it more interesting, especially as there's not a lot of people doing guitar solos.'

Banishing a Fairlight from your keyboard line-up is the sort of behaviour that gets you labelled

'arrogant', but Clarke has his reasons and, anyway, there's a Synclavier sitting next door...

'I got sick of hearing samples on records. I think some people do it really well. I really admire the stuff Daniel (Miller) does with Depeche because he never repeats himself. The problem with the Fairlight, and also the DX7, is there are too many presets involved. I look through the trade magazines and there are people advertising DX ROMs, so you don't have to bother programming yourself.

'Even using the TX is a problem, because it's really hard to get away from the inherent sound of the thing. Rather than use too many FM sounds, we're trying to get back to using analogue stuff like the Xpander and the Syrinx – that's a really wild analogue-sounding synth. The Xpander is quite user-friendly as well. There are so many things you can do with it. You've got 30 envelopes and 30 LFOs – it's ridiculous, you can just go wild. I'm the sort of person that likes to stand and twiddle knobs until something sounds good, and the nice thing about the Oberheim is there are so many knobs to twiddle.

'The Synclavier's Daniel's so we've just been messing about with a few things on it. I don't think it's very user-friendly – there are too many multiple function buttons – but the sound quality is excellent. We're getting it MIDI'd up as well now, so we can start doing sequences on it. But hopefully the whole album will be done here with the UMI. That way I won't have to start re-writing programs for live work.'

And as an acknowledged master of the art, how does Clarke see changing technology affecting songwriting as a whole?

'I'm always amazed when I get letters ►

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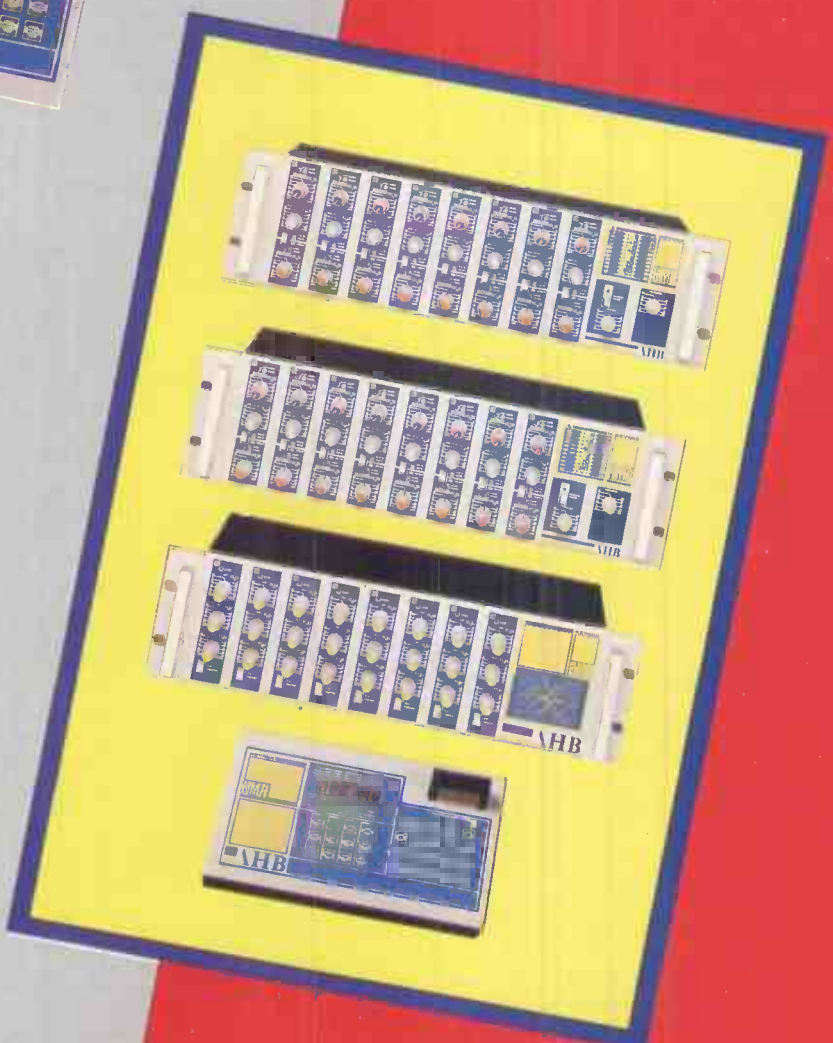

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► or demo tapes from people and they say: "If only I had a Fairlight this would sound really good". That's a really terrible attitude to take – sort of blinded by science. I can't complain with a Synclavier sitting over there, but I do think it's a shame that people don't realise the potential of cheaper synths and drum machines. Casio are really paving the way with their synths, but there are some really good cheap synths about. It's like punk all over again.

'I really like a good tune with a good chorus. I started off doing folk music and playing guitar and it's all derived from that. I only knew three chords to start with, so that was all I could write. Folk music is very simplistic but very effective all the same, and I think I've captured that.

'The way you write depends on whether you view the verse as the rest between the choruses or as a part of the song; to me it's *all* got to be pretty good. It's nice when it doesn't matter if you're listening to the verse, the chorus or the bridge section but it always comes alive.

'Most of *Wonderland* was written in the studio with me and Andy sat around a piano. I don't like using electronic keyboards because they're not physical enough. I like the idea of a piano because you can bang it. I only occasionally start with a sequence – mostly I'll play some chords and Andy'll try to sing a tune over them. We record that onto a Walkman, then we go into the studio and start constructing the parts for the song. The words come last.

'I'm using more black notes now, and there are a lot of chords on the last album, too. I think that I can play a little better than I used to, or ever dared to. When I was in Depeche we played everything manually – now I look back and say: "How did I manage to do that in time?". With Yazoo everything was programmed into an MC4, but I'm getting back into the playing now.

'We decide on the style of song once we've got the melody, then we usually work out a bassline and the drums around that. Then we start overdubbing sounds and experimenting, just layering things on and taking them out if they don't work. We also spend a long time working out the vocal harmonies.'

YOU CAN'T LISTEN TO *WONDERLAND* without noticing the marked similarity between Andy Bell's vocal style and that of Moyet, regardless of the difference in sex. Clarke pleads to have been blissfully ignorant of the fact until it was pointed out to him.

'It didn't occur to me in the beginning. I was really surprised when people first mentioned it, but it's funny that he's also been compared to Feargal Sharkey. Andy met Alf at a party and she said: "People compare me to Helen Terry because I'm fat". It's just association. There are some inflections that are similar, but I know Andy and he sounds just like Andy.

'It doesn't stop us doing what we want to do. I don't think punters sit down and start comparing voices in the same way they don't wonder what synths you use or why there aren't any guitars in a song; they either like it or they don't. The only people that are interested in the actual music are other musicians.'

Bell continues his own defence.

'It's just technique. I love female singers – I listen to them a lot and I learn from them. I think my mid-range is very similar to Alf's, but then we go off into different areas. People were saying that I didn't have any style of my own, and that I was imitating her. Now they're calling it the dreaded comparison, but only because people are getting used to all those other ranges. I don't mind being compared as long as I'm not considered a cheap imitation.'

Bell's limited musical background has also proved to be as big a blessing as it's been a burden to Erasure's progress.

'I've never worked with anything other than synths, so I'm used to that side of it now but I'm only just learning about technical things. It's taken me a year just to get into the group. I feel a bit thick sometimes, sitting around when everyone gets really technical. And I get quite bored while they're doing sounds over and over again, and I can't hear the difference!

'It took us a while to suss each other out and it's taken me all this time to settle in and get used to doing TV work and so on. At first I thought it was a bit weird, but now I really enjoy it.'

With high technology in mind and a vocoded voice from the studio in my right ear, I bring up one of Goodyer's pet subjects – the vocoder.

'That's the Synclavier you can hear', comes the reply. 'Andy doesn't like vocoders. I've got one of those Sennheiser vocoders and I've only ever used it once. It's one of the worst things I've ever bought.'

'I hate them', confirms Bell. 'You know, Herbie Hancock and all that. It's not as if I don't like vocal effects, it's just vocoders. I like things that make you sound like you're on drugs – they do that at clubs sometimes!'

'Actually I quite like them when they're used tastefully', muses Clarke. 'But I'm not really into sampling voices because I think they lose their sparkle that way. It's nicer when you can do things for real.'

An outsider, not versed in the way Vince Clarke works and what his machines can do, would probably consider that last line a downright lie. To the musician, familiar with Clarke's writing skill and the honesty of his approach, it rings as true as 'Only You'.■

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I *want* YOUR SAMPLES!

Thousands of affordable sampling instruments have been sold worldwide in the last twelve months. But once the initial novelty has worn off, what will musicians be doing with them? *Chris Meyer*

YOU JUST GOT YOUR NEW SAMPLER. After taking it out of the box and trying out the factory disks, what's the first thing you do? You plug your cassette deck or turntable into the Mic In and start sampling. At first you're grabbing anything, and looping it just to get Instant Gratification. Listen to that funky rhythm section. Dig that Paul Hardcastle stuttering vocal effect.

Then things get a little more premeditated. You remember a cool bass slap sitting all by itself on one album, or all those wonderful drum sounds on Phil Collins and Peter Gabriel albums just begging to be sampled ('samplability' becomes an additional criterion for each new album you and your friends buy). Then come orchestra breaks off your few token classical albums (even Tomita will do), and valiant searches for sound effects records at your local used record shop. The sophisticates among you who've heard Jarre's *Zoolook* look for ethnic records, too. Of course, you don't intend to *use* these sounds – that's illegal, isn't it? They're just for your own enjoyment.

Next step is going down to the music shop where you bought the instrument, and getting more disks. If you have a good relationship with your salesperson, they'll copy whatever disks they've got lying around for you and give them to you. If they're honest, they'll sell other factory and third-party disks to you. If they're dishonest, they'll charge you for other customer's stealings from albums. (Time to expose a sham right now, and make myself some enemies in the process – some salespeople have and will make bootleg copies of both illegitimate and legitimate factory/third-party disks and sell them at up to list price to unsuspecting customers. If it doesn't have a professional, typeset label, don't fork out over a quid. On the other side of the coin, some manufacturers more or less expect stores to buy only one copy of each factory disk, and freely hand out copies to customers – it's what sells their hardware. Buyer, beware.)

Still hungry for sounds (and not being in possession of a Sony F1 or a recording Walkman), you now seek out friends with other brands of samplers, and start sampling their factory sounds (even some manufacturers have been accused of doing this). If you both have plenty of money stashed away in a Swiss bank account (and Macintoshes, and Digidesign's Sound Designer), you start copying digital files back and forth.

And the point of all of the above? Simply that, inevitably, people are going to copy each other's sounds. Quite often, manufacturers even encourage them to. So, why shouldn't manufacturers make it even easier to do so? Well, some have. It's called the Sample Dump Standard.

The Sample Dump Standard is a MIDI protocol approved by the MMA (MIDI Manufacturers' Association) and the JMSC (Japanese MIDI Standards Committee) for exchanging digital samples between machines. It's designed to handle up to 16,384 individual sounds, a maximum length of two megasamples (independent of format), and resolutions from eight-bit to 28-bit linear. An extension proposal is also in the works to expand the number of loops handled from 1 to 128. It also has some other nice technical gaga features like error recovery and a wide, accurate range of sample rates.

The first two sampling keyboards to feature the Standard are the Sequential Prophet 2000 and E-mu's new Emax sampler (fitting, since these are the two companies that started development). With luck, it'll appear on the new Korg and Roland samplers, too.

WHAT DOES THE SAMPLE DUMP STANDARD BUY YOU? Well, it transfers samples in the digital medium, so essentially there's no generation loss between the two machines (no added noise and distortion from going through one machine's output section, to and through the second machine's input section). According to the Standard, each machine translates from its own internal format (linear, COMDAC, PCM, delta, or whatever) to linear, so incompatibilities there are wiped out (for the record, the EII, Prophet 2000, and Mirage versions of Sound Designer all use the same Mac file format, which Digidesign have also made public – more compatability). It does *not* transfer any analogue settings (such as filter and amplitude envelopes and so on), since these are different from machine to machine. However, loop points *are* transferred.

So what? You and your friends own the same brand samplers, and you just swap disks. So why should you care?

OK, try this for size. Boxes that burn EPROMs ▶

"I wish it was made legal to copy any sound...then maybe we'll all hear the same sounds so often that we'll just burn out that much sooner – and do something original with our machines."

for drum machines are starting to support the Sample Dump Standard, with the Oberheim Prommer being the first to do so. With that, you can blow chips for your Linn, DMX, or Drumtraks from samples on your Prophet 2000 or whatever. Simmons are also looking into receiving the Sample Dump Standard for their own EPB EPROM burner. The potential these two devices offer (not to mention the potential threat to custom drum chip manufacturers) is pretty powerful in itself.

Generic waveform editing programs are another possibility. Virtually all synthesiser voice configurations are different in one way or another, making a generic synth patch editor program impractical. However, when it comes to editing loop points, merging, layering, truncating and the rest of it, digital samples are essentially the same. I wouldn't be surprised to see the appearance of some simple waveform editing software from some of the smaller software houses. Use of the Sample Dump Standard is a boon to these software companies, in that their package immediately works with a new sampler. And believe me, manufacturers would *certainly* approve of software support for their new products the instant they hit the market, too.

Of course, the individual peculiarities of analogue parameters and the like are still different from machine to machine, but they could be added as simple extension modules – this is how Sound Designer is actually set up. And by the way, mapping may be something ripe for a standard, too.

The Sample Dump Standard also opens up some other unique possibilities for software packages. Who says that a 'sample' has to start on the other end of a microphone? Sounds can, in fact, be created in software. Digidesign's new SoftSynth additive synthesis program is one toy that makes this idea a reality. Entire new sounds can be created from scratch, and then downloaded to a sampler for playback (not to mention further mixing with other samplers). Alas, the first version of SoftSynth has to have three different output drivers to send samples individually to the Prophet 2000, EII, and Ensoniq Mirage (and in all fairness, the EII and Mirage were created before the Standard was adopted). If a new machine came out with a new standard, the owner would have to wait until Digidesign could write and release a whole different driver for that (assuming it even looked in their best financial interest to do so). With the Sample Dump Standard, it could work right now.

Moving outside the realm of samplers, some wavetable-based synthesisers such as the Kawai K3 and Prophet VS have the ability to store user-created waveforms in RAM. With careful use, a sampler can become a new source of 'natural' waveforms for such beasts (the Prophet VS does, indeed, use the Sample Dump Standard).

GUILTY AS CHARGED – I HAVE BEEN SHAMELESSLY RAVING about why everyone in the world should adopt the Sample Dump Standard. OK, let's be fair – why not? And, to be more specific in some cases, why won't they?

Case 1 Manufacturers spend a lot of time, money and nervous energy creating their factory libraries. Many people just aren't adventurous enough to sample on their own (at least, not initially), and to these people the quality and quantity of the manufacturer's factory disks are a major factor behind quite a few purchases. If a manufacturer has a killer piano, and has spent ten grand to get it to boot, he's not going to want competitor XYZ to have it too, not to mention in first-generation digital quality.

A subset of the above case is third-party vendors. Given the free-copying climate of today's music shops, it would be devastating if all a vendor could sell was one copy of a disk for one sampler per store. Many companies and individuals will not enter the sample disk market because there are such small quantities to be sold – and therefore, little profit to be made.

Case 2 Some companies have spent quite a bit of time and money on making their sampling input sections as clean and as accurate as possible (something in the order of the Synclavier's 16-bit sampling input is distinctly non-trivial – call them up and ask). To the manufacturers who take care, the prospect of the Sample Dump Standard means their competitor's samplers don't even have to sample – as long as they can digitally transfer the sound from something that does, many won't care.

Case 3 All money issues aside, *every* sampler's playback section sounds different. Different sample encoding schemes – eight-bit linear, 12-bit linear, eight-bit COMDAC, Delta modulation, 16-bit linear – all sound different. And each make of sampler has types and qualities of analogue electronics after the digital-to-analogue conversion. This is no theoretical joke – people who have exchanged Sound Designer files between different machines have noted that the end result sounds different (oddly enough, they also tend to note that the sample sounds the best coming out of the machine it was sampled on – probably because the playback circuitry is optimised for the vagaries of that particular input section). Are you trying to get an exact copy? Too bad – you probably won't.

Case 4 What about all these threats of lawsuits for copying other's sounds?

SO THERE ARE SOME LEGITIMATE MINUS POINTS to the existence and widespread adoption of the Sample Dump Standard. But overall, I still think it's a good idea.

To handle Case 1, manufacturers could explore copy protection, just as the personal computer industry has. Now, I'm not advising the revival of Ensoniq's ill-fated policy of forcing the user to buy formatted blank disks from the factory, making the user pay for *everything*. However, manufacturers can protect their important factory disks, and can give third-party vendors the ability to do the same. This goes for both disks and transfers via MIDI. If this is done, the sound disk business would become more lucrative, and more would enter it. Sure, you may have to pay for some sounds, but at least more of them (and higher-quality ones, too) would be available.

To handle Cases 2 and 3 in one fell swoop, I submit that the way samplers sound different is a feature, and *not* a liability. I'm willing to bet that any reasonable musician or engineer can tell the difference between an EII, a Prophet 2000, a Mirage, a PPG Waveterm, a Fairlight Series II, a Synclavier, and a Prommer that have recorded and are playing back the same sound. I'm even tempted to contend that the more accurate samplers become, the less they become a 'musical instrument' (don't get me wrong – 16-bit linear sampling makes for great studio production tools, but who would want a Fender Strat to sound like a Gibson Les Paul?). Fairlight Series IIs are often revered for the character and colouration they add to a sound. As soon as a programmer releases a program to make a Prophet 2000 sound like one, let me know – I'll buy it.

And as long as I'm inflicting my personal opinions on the defenceless reader, let me tackle Case 4. Frankly, I wish that it was made legal to copy whatever sounds you hear. Technically, we have here a *reducto ad absurdium* – what's the difference between recreating the effects setting that gives Bruce Megastar's drum sound, or sampling it off his album? Is it the thought that counts? In response to a complaint that Depeche Mode stole a Frankie Goes To Hollywood drum sound, Frankie's engineers replied that the Frankie drum sound was actually a Linn – itself a recording! As a matter of fact, it's common practice for engineers to exchange sounds (whether or not their clients realise it).

But none of that is why I am in favour of unlimited copying. What I hope is that we will all hear the same sounds so often that we will just burn out that much sooner – and then take our F1s, Walkmans, and SoftSynths merrily in hand, and do something *original* with our machines.

To wind down on the subject of standards... MIDI is a standard, and see what it has done for the music industry as a whole. I feel the judicious adoption of other standards can only do the same.

Another standard on the horizon is the Sequence Dump Standard. This will be a way of transferring raw MIDI sequence information between machines more quickly than live dubbing. I'm a member of the camp that does not trust using personal computers on stage for critical timing situations, but loves them for graphic editing. Such a standard would allow a user to live in both worlds (hardware live; software off-line). This concept has been kicking around a few American manufacturers for a while, and now I'm told that the JMSC is working out a formal proposal.

Speaking of other standards, a quick update on MSMPTE (MIDIfied SMPTE), which I reported on last month. This proposed standard for the transmission of SMPTE timecode and setup information over MIDI continues to gain enthusiasm and support, and I feel it inevitable that it will be adopted in some form.

In all fairness, though, my original feature took a swipe at the Society of Motion Picture and Television Engineers for supposedly trying and failing to adopt a similar standard. Well, their standard is alive and well, and is apparently near adoption too. I'm still learning more about it, but initially it seems (from talks with other people more familiar with it) that there is even room for coexistence, overlap, and possibly logical connections between the two standards (at least in a high-end/low-end sort of context). I certainly hope so.

In the meantime, I apologise to anyone I may have offended in my flip closing to my last article, though I still feel the same about committees and standards that take years to adopt – the marketplace tends not to wait. ■

Further reading

For those still interested in obtaining copies of the SMPTE Tributary Standards documents, I have some updated numbers and prices. The main document is SMPTE 207M, and costs $6. Appendage documents are RP113, RP125, RP138, and RP139, costing $3 each. SMPTE's new US phone number is (914) 761-1100. And the documents really exist – I know, I have my copies already.

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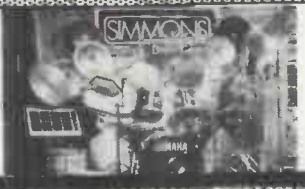

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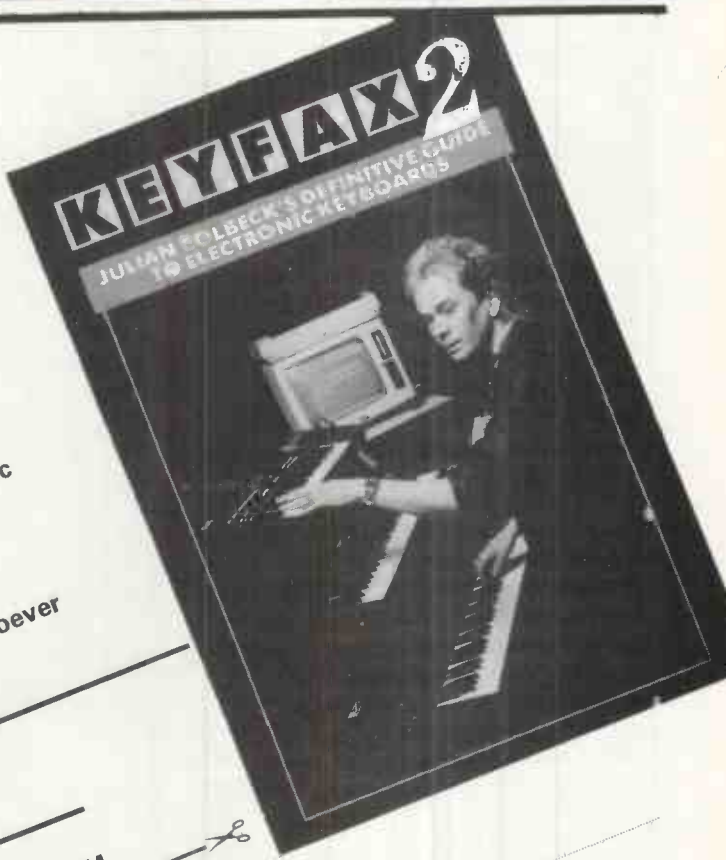

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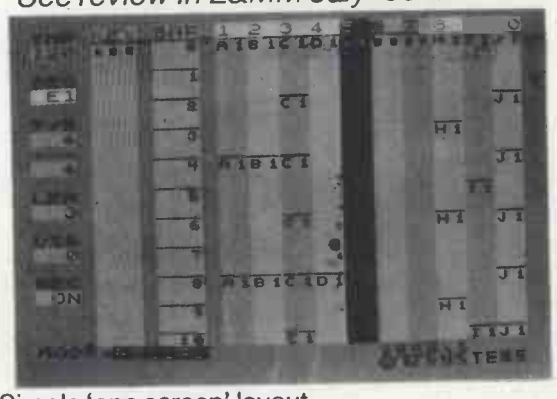

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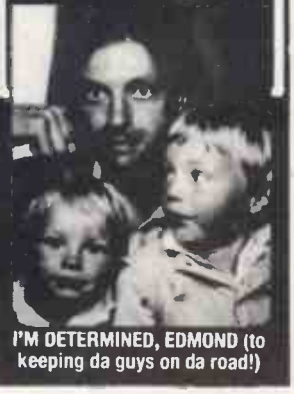

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CENTRAL CONTROL

Having given musicians the first truly affordable sampling keyboard, Ensoniq have taken a step sideways to embrace the synthesiser. The result is the ESQ1, an instrument flexible enough to become the nerve-centre of a complex electronic music system. *Paul Wiffen*

Curious company, Ensoniq. Curious, and clever with it. Eighteen months ago, when everybody was looking to the established manufacturers to come out with a sampling keyboard within range of the average musician, they came out of nowhere with the Mirage. And now that all the other major names have finally got their samplers out, the people from Pennsylvania are already moving into other areas.

Specifically, their latest machines cater for both the traditional keyboard player (with the weighted keyboard and sampled accuracy of the Ensoniq Piano) and the thoroughly modern synthesist via the instrument under scrutiny here.

The ESQ1 is an eight-voice digital synthesiser which also encompasses a versatile multitrack sequencer able to sequence not only internal voices, but also a considerable number of external devices via MIDI. In fact, so complete is its MIDI implementation, you could even use the ESQ1 as a master keyboard, making it the centre of a complete MIDI system.

The first thing in any player's mind when buying a synthesiser will always be the sound of the instrument, so let's take a look at the ESQ1's voicing to start with.

Each of the eight voices has no less than three oscillators – more than any other synth under £2000.

Waveforms for the ESQ1 are drawn from a wider range than previously possible on a conventional synthesiser. In addition to the conventional waveforms bequeathed to us by the analogue synth (ramp, triangle, square, pulse), there are waveforms created by digital calculation to contain certain specific harmonic series. And more excitingly, there are waveforms which have samples of real sounds as their source. Not a new idea, this, but on the ESQ1, the waveforms are derived from multi-samples taken at the point where the sample is brightest, so you have the maximum harmonic content that appears in the sample. This section is then looped so that it sustains indefinitely, as waveforms normally do on conventional synths.

Now, one of the problems musicians and programmers experience with samplers lies in sustaining a sample indefinitely – unless you manage to get a good loop on it. With the ESQ1, these problems disappear, as Ensoniq have already looped the machine's multi-sample waveforms for you.

All you need do is adjust the filter and amplifiers to imitate the changes in loudness and brightness that characterise the original instrument. Even here, Ensoniq have done some of the work for you. The ESQ1 has not only a waveform entitled 'Piano', but also a factory patch of the same name which uses that waveform filtered and enveloped in such a way as to recreate the timbre of a piano. Using a footpedal, you can sustain this sound exactly as you would with a conventional piano. So, we have the realism ►

► of a sampled piano sound with the immediacy of a synth preset (no waiting for disks to load here). What's more, the multi-sampled piano waveform is still available to be used singly, doubled, or in conjunction with up to two other waveforms in the other patches on the machine.

Intriguing though this sampling-meets-synthesis concept is, it shouldn't detract from those ESQ1 waveforms which are entirely synthetic, rather than taken from acoustic sources. Because as it turns out, many of the more exciting patches are made entirely from the synthetic waveforms.

Ensoniq divide their waveforms into five categories. First come 'Classic Synth Waveforms', which include sawtooth, sine, square, pulse, and three noise waveforms. Second are the Sampled Waveforms such as bass, piano, reed, organ, two voices and kick. The third section is created by Additive Synthesis, and the manual actually tells you which harmonics are present in each of the three waveforms in this group. Formant Waveforms come next: these are multi-sampled with a resonant peak which stays around the same frequency (given in the manual) wherever you play on the keyboard. Last come the Sound Limited Waveforms, which are versions of some of the other waveforms with limited bandwidth.

Personal Wiffen favourites are 'Pulse' among the analogue (though you can't modulate the pulse width), 'Bass' among the samples, which has a sharp, realistic top end while retaining plenty of power lower down, and *all* the Formants (I couldn't decide which one of these five was best for vocal sounds – they all sound pretty good). The band-limited patches are great for beefing up the lower end of sounds, while those created using additive synthesis are certainly unusual, and especially interesting played through a slowly closing filter.

But one of the best things about the ESQ1 is the scope it gives you for experimenting with different combinations of waveforms from different origins. After a few minutes' twiddling, you can discover that, for example, an analogue waveform can make the piano waveform sound more authentic, or that a sampled bass waveform can be the basis for a great synth sound. Fascinating stuff, and addictive, too.

Once you've decided on your combination of analogue, digital and sampled waveforms for each of the Ensoniq's three oscillators, you can decide how you want to process them.

Before getting into the filters and envelopes, there are several modulation facilities available. These include a feature I always thought had faded away with the last of the great analogue synths – Sync. For those of you too young to remember the Prophet 5 or Moog Prodigy, Sync is a means of forcing a synth oscillator to restart its cycle (ie. the oscillation that produces the pitch and harmonic content) each time the controlling oscillator begins a new cycle.

This can produce some excellent beefy, distorted sounds, especially if the oscillator being controlled is shifted in pitch by an envelope or glide function as well.

On the ESQ1, the ability to use this facility with multi-sampled waveforms (which have never been 'Syncable' before) kept me occupied for some considerable while, and gave rise to some fine, distinctive sounds.

Another interesting modulation option is Amplitude Modulation. This doesn't use the same process as Yamaha's FM, but the sideband frequencies produced by Ensoniq's process are similar, and the sounds that result have much in common with the electric piano/bell-type sounds that the DX range is so good at generating. And as you're starting with more complex waveforms than you would on a DX, you build up more complex sounds very quickly.

Once you've finished messing around with the harmonic content of the oscillators, you can set a different loudness envelope for each one, if that's what you want. The ESQ1 actually gives you control of the relative mix in real-time, so you can start with, say, just the first oscillator with sharp attack, bring the second in more slowly, and then just as both are dying away, bring up the third oscillator to replace them. The envelopes available to you are more versatile than standard ADSRs, too, so there's plenty of flexibility in the way you combine the different sounds emanating from the oscillators. Imagine, for example, a brassy attack (from a ramp wave) becoming a sharp digital sustain fading into a piano decay... And all this timbre change possible before you even start to use the filter and its associated envelope.

The filter itself (there's one for each voice) is the classic four-pole device which has remained little changed from the days of the earliest analogue synths. Besides the standard Cutoff frequency and Q controls, there are Keyboard Tracking and Envelope Amount parameters.

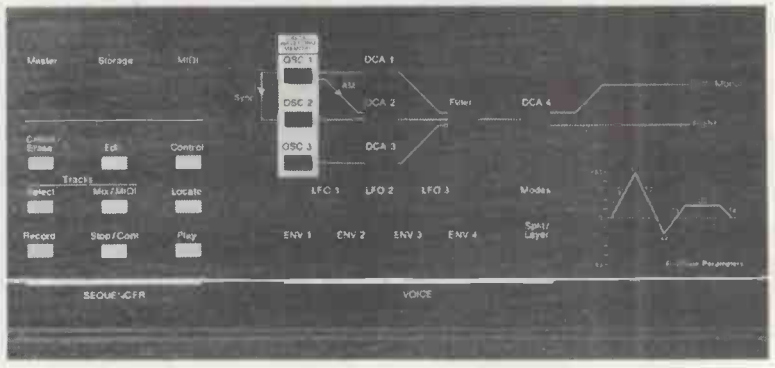
The filter can be controlled by the same versatile type of envelope mentioned above – the sort of envelope which really deserves something of a closer look. Briefly, the ESQ1's envelopes use the Time and Level parameters which are becoming more and more common these days, as they allow complex envelope shapes (in addition to the more standard ADSR shapes) to be created. Each phase of the envelope is programmed by setting a Level, and then a Time which the envelope takes to reach that level.

In ADSR terms, Level 1 would be the peak and Level 3 the sustain level. As the envelope has to return to zero to finish, Level 4 must always be zero. The four Time parameters can roughly be described as Attack (Time 1), Initial Delay (Time 2), Second Delay (Time 3), and Release (Time 4). However, it's possible for these parameters to be set in such a way that they go beyond these descriptions. If, for instance, you set Level 3 above Level 2, Time 3 becomes more like a Second Attack than a Second Delay.

Add to this the fact that all values can be negative as well as positive (useful for controlling the filter, for example), and you begin to see the potential of this system, though it isn't quite as flexible as the eight-stage format employed by Casio in their CZ range.

All envelopes can also be affected by the velocity with which you hit the Ensoniq's keys, which can control not only peak level (and all other levels in proportion) but also the attack time (ie. how much Time 1 varies from the programmable amount). In addition to this, a Keyboard Delay Scaling feature allows you to shorten the overall time the envelope lasts as you go further up the keyboard. This imitates the nature of plucked or hammered acoustic keyboard sounds, which tend to be of shorter duration the higher up the keyboard you go.

There are actually four envelopes per voice on the ESQ1. The first three are each ►



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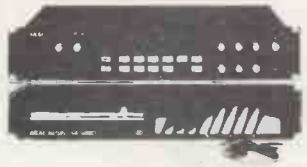

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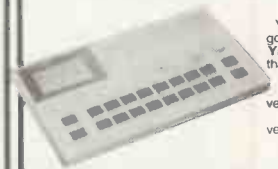

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► assigned to their respective oscillators, the fourth to the overall output level. The filter can be controlled by any of the four envelopes, but sadly, it has no separate envelope of its own.

Including the four envelopes, there are 15 possible modulation sources on the ESQ1. These include three LFOs, various velocity and keyboard tracking curves, plus wheels, pedal or any MIDI controller (including pressure). These 15 sources are always available to modify the pitch and level of the oscillators, the filter cutoff or the stereo pan position.

The modulation sources include the most versatile LFOs I've ever seen, with two levels of effect and delay (rise time), plus the ability for the LFO to be further modulated by another source – even itself, if you're feeling experimental. And in case all this flexibility leaves you feeling a little confused, the manual shows you how to create standard modulations like wheel control of vibrato.

Staying with the manual, it's worth pointing out that unlike the documentation that came with initial Mirages, the manual for the ESQ1 covers all aspects of the machine in great detail, with some fine explanatory sections just in case anything isn't immediately obvious. In this respect, the latest Ensoniq manual is more like the Advanced Sampling Guide for the Mirage, but for the impatient, it also contains two brief sections titled 'Getting Started' and 'Getting at the Sounds'.

To be fair, though, the manual is something you may not need to look at for a while after you've bought an ESQ1. Because unlike so many modern synths, the new Ensoniq has a programming layout that's so easy to get to grips with, it almost *invites* you to delve deeper.

Whole groups of parameters – referred to as pages – are called up into a large 80-character LED display, and can then quickly be accessed by pressing the closest button. The values then shown can be changed using either a slider or up/down buttons – depending on whether you want drastic change or fine control. So each page allows easy access between the related parameters, and saves you darting about between individual parameters 'blind', the way so many digital access systems force you to. It's not as useful (or usable) as good ol' knobs and switches, but it's a step in the right direction.

The Ensoniq's display is one reason for the machine's ease of use, mostly because of the sheer *amount* of information it can convey at any one time. One display, for example, caters for an entire page-worth of standard MIDI features such as Channel Assignment, Mode, Controller, and Program Change Enable, plus additional features such as Overflow Mode and Multi-Mode.

Both of the latter are excellent facilities, but neither is quite the innovation Ensoniq claim. Overflow Mode (where any extra notes played on the ESQ1's keyboard or sequencer which the internal voicing can't cope with are 'requested' via MIDI so you can hook up a second ESQ1 and have a 16-voice system) has been available on the Prophet 2000 for nine months now, while Multi-Mode is similar to the way the Casio CZ5000 sequencer assigns various MIDI channels to its internal sounds and external slave synths.

Specification *"There are 15 modulation sources, including four envelopes, three LFOs, and various velocity and keyboard tracking curves."*

Still, it's good to see companies like Ensoniq continuously looking for ways to increase the flexibility of MIDI, rather than just implementing the basics and leaving it at that.

Another page worth its weight in gold is Split/Layer. This allows you to save *within the program* the fact that two patches are used, and these can then be either doubled to create a layered effect, or arranged so you have two different patches on each side of the assigned split point.

In total, the ESQ1 holds 40 different programs internally, arranged in four separate banks of 10 each. That isn't too many by today's standards, but take heart in the fact that ten named programs can be scanned in the display at any one time, and that each can be chosen in the same way parameters are selected when programming. Another 80 programs can be accessed (in two sets of 40) on the E^2PROM Cartridge, and these can also be displayed in banks of 10 before selection. So for live performance work, you've got instant access to 120 programs – so long as a cartridge is in the slot.

Less instantly impressive than the synthesiser section – though no less useful in the long run – is the ESQ1's built-in sequencer. It's a comprehensive beast as integral recorders go, and you can use it in two different ways.

The first option allows you to sequence just internal voices multi-timbrally. In other words, each track can have a different sound on it, so entire pieces of music, of up to eight parts, can be recorded. The second option allows you to sequence eight external synthesisers to the extent of their polyphonic capability, by assigning each of them to a different MIDI channel.

As a third alternative, though, you can use both methods of working in conjunction with each other, using both internal and external synth voices. For example, you could make tracks 1 and 2 play just internal programs, track 3 an external synth, 4 and 5 doubled on both the ESQ1 and other keyboards, and so on. You're limited to eight voices on the ESQ1 itself, but because of the clever dynamic allocation implemented on the machine, those eight voices are always available to play any sound – so provided they're not being used at that instant anywhere else, you can have up to eight notes on each internal track.

Because of its portability, it's conceivable many musicians will use the ESQ1 as a songwriting tool, and then augment it with other synths in the recording studio to put their original performance on tape, while retaining complete freedom over the sounds they're using. Luckily, the sequencer's assignment potential is wide enough to make this possible.

The sequencer can store up to ten songs, each identified by a name, and these can be made up from 30 sequences. Now, you may find, once you start to put your entire live set into the machine, that the Ensoniq's internal memory of 2400 notes doesn't get you past the third song. Don't worry. A cheap cartridge is easily inserted (and held in place by screws) to expand this capacity to over 10,000 notes.

Operating the ESQ1's sequencer is simple enough. All you do is enter the track you want while the required sound is currently selected. This automatically assigns that sound to the track, and you're then free to record your part.

If you select a cartridge sound, its name is displayed in the track space until you remove the cartridge, whereupon the display informs you that you need to re-insert the cartridge before that track will play. Alternatively, you can just go to the MIDI/Mix page and assign that track to both Record and Playback on a particular MIDI channel, simply by entering the appropriate number.

Once a track is recorded, you can edit it in several ways. First there are standard MIDI sequencer functions like Transposition and Quantisation (otherwise known as Auto-correct). The Quantisation bit is particularly cunning, allowing you to select a resolution between quarter-notes and 32nd-note triplets, listen to the corrected part, and then decide if you want to keep the new version or the original. This way of quantising 'after the event' rather than during recording is ►

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definitely worthwhile, as it allows you to keep the human element in a performance without having to put up with human fallibility (which I specialise in).

Step-time recording – so often neglected by US manufacturers – is also available on the ESQ1's sequencer. This method allows you to be analytical in your composition, and also to program things you find tricky (or just plain impossible) to play. Step size can be from quarter-notes to 32nd-note triplets, as with the quantisation, and the readout shows the bar number, the beat number and the clock number you're currently on, so you don't get lost.

If you prefer a more tape machine-like way of recording difficult sections and correcting mistakes, the sequencer also features Punch In and Punch Out facilities, enabling you to 'drop-in' small sections in your own good time.

There are some more advanced editing functions available, too. For example, you can use Remove Controllers to get rid of any unwanted MIDI controller data. This is particularly useful in conjunction with something like a DX7, which sends out pressure data whether you're using it or not. This would normally use up even the 32K of expanded sequencer memory ridiculously quickly, so it's as well to have a feature whereby you can remove it if it isn't being used.

Other useful edit functions include Merging Tracks (what we'd call 'bouncing together' in the recording studio) and Copying Tracks, which allow you to move recorded parts around and arrange them in the best format. To build sequences into longer sections (thereby freeing sequence locations), you can use Append, which tacks one sequence onto the end of another. Alternatively, you can extend or truncate a sequence to make room for extra bars, or lose some that are less than perfect. And the MIDI/Mix page allows you to adjust the relative levels of your tracks.

When you have your sequences together, you can start to build them up into songs. Each step of a song can be accessed in the Song Edit page, and each one can be Transposed, Repeated, or Deleted. You can insert extra sequences at any time, and you can move backwards and forwards within the song to facilitate this.

You can also go straight to any point in a song using the Song Locate page, and see what tempo and time signature have been used. The 'Goto' parameter jumps automatically to the step you want.

Synchronisation to the outside world is possible via a variety of options. There's tape sync for the recording studio, and MIDI for drum machines and other relative MIDI devices or even SMPTE-to-MIDI syncing. The last facility is particularly useful, as the ESQ1 both sends and receives song position pointers via MIDI. Using the Autolocate controls, you can start playback of all MIDI devices with song pointers implemented from any point in the song. Even more importantly, the ESQ1 (in conjunction with a SMPTE-to-MIDI converter like the Roland SBX80 or Fostex 4050) can be made to autolocate alongside a tape machine to start playback automatically at the same point as the tape. The great advantage of this is that parts recorded on the ESQ1's sequencer needn't be recorded onto multitrack, but played back from the sequencer into the final mix. This frees tracks on tape for other instruments, vocals, and so on which can't be sequenced.

The sequencer can also perform a different role. Taking advantage of the fact that the ESQ1 will store patch numbers and transmit them via MIDI *even if a sequence has not been recorded*, you can hit a sequence number and have up to eight different MIDI patch changes sent to different synths and other MIDI devices like signal processors, setting them up for the next song even if you don't intend to sequence them. Or you can record these program changes as the end of a song in readiness for the next piece. Or why not have the ESQ1 change programs for you on the keyboards you're playing, or while the others are being sequenced?

This facility, together with the flexible MIDI implementation we looked at earlier, means the ESQ1 can readily function as the central controller of an entire MIDI system, especially if you're on the sort of budget where a master MIDI keyboard looks expensive for something that makes no noise itself.

If you own a DX7, you might do your playing and sequence recording from that, to take advantage of the key pressure which the ESQ1 can record and playback – even though it can't generate pressure itself.

If you own a Mirage, you can save and load ESQ1 programs and sequences to Mirage disks via MIDI. This is faster and easier than the tape storage procedure that the ESQ1 also provides, but a bigger advantage with Mirage saving is that you can keep all your ESQ1 programs, sequences and MIDI controller information on one disk.

All in all, it's difficult for me to fault the ESQ1. Yes, I wish they'd put either a MIDI Thru socket on the back, or at least the switch between Out and Thru that the Mirage has, just in case you don't want to use the ESQ1 as your main instrument. And yes, an entirely separate envelope for the filter would have been nice.

But these criticisms seem trivial stacked alongside the ESQ1's good points.

As a synthesiser, it's able to recreate a wide range of 'standard' synth sounds, and create new ones by the innovative way it combines analogue, digital and sampled waveforms. Its voice processing is nothing if not comprehensive, and its programming system is one of the modern synth industry's most friendly.

As a sequencer, it's encouragingly quick and easy to use, and most important, it doesn't do anything which could destroy unrepeatable sequences.

And as the centre of a modern electronic music system – live or in the studio – it has a MIDI implementation so flexible that, whether you're playing your other MIDI instruments directly or sequencing them, it's difficult to imagine a setup that the ESQ1 couldn't cope with.

If this was the latest instrument from an established synthesiser company, it would be worthy of high praise. But as the first synth from a company that hasn't been in existence for more than a couple of years, the ESQ1 is a revelation, and a hugely heartening one at that. Really, an outstanding bargain. ■

DATAFILE

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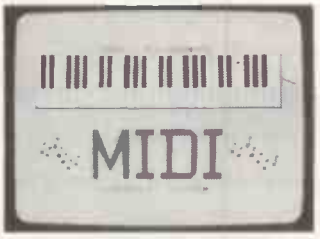

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Patch W·O·R·K

Patchwork returns after one month's sabbatical to face a whole host of new patches, and to welcome a couple of newcomers in the Korg DW8000 and Oberheim Matrix 6. For those of you who've wondered if we 'test drive' the patches selected for publication, let's just say that we test sounds wherever possible. However, for obvious reasons, we don't have access to every make and model of synth ever produced, and this is where a short demo cassette of your submitted patches can be a deciding factor in whether we get around to hearing your creations for ourselves. And let's face it: programming a DX7 with 20 sounds is practically a day's work. Don't worry about your playing or recording technique – just concentrate on getting your sounds on tape, and whet our appetite...

Don't forget that if your patch gets published, a ***free year's subscription*** *will wing its way to your front door with our compliments. Send us your favourite sounds on a photocopy of an owner's manual chart (coupled with a blank one for artwork purposes), including a good description of your sound and its musical purpose in life – and don't forget to include your full name and address on each chart. Remember, edited presets are all very well, but an original masterpiece is ten times more preferable. OK?*

The address to send sounds to: Patchwork, E&MM, Alexander House, 1 Milton Road, Cambridge, CB4 1UY. ■

Korg DW8000
Moments in Love
Simon Lowther, Axford, Hants

No, 'Moments in Love' is not a new Mills & Boons title, but an atmospheric flute-cum-vocal sound for Korg's DW8000. Simon says it's 'great for those Art of Noise impressions' (hence the title), and it makes good use of Korg's ingenious built-in digital delay. ■

DW8000 Parameters

Number	Name	Value
11	**DCO1** Oct	16
12	Wave	2
13	Level	31
14	**Autobend**	3
15	Mode	1
16	Time	3
17	Intensity	4
21	**DCO2** Oct	4
22	Wave	2
23	Level	31
24	Interval	1
25	Detune	0
26	**Noise**	23
31	**VCF** Cutoff	26
32	Resonance	0
33	Kbd Track	2
34	Polarity	1
35	**EG** Int	7
41	**VCF EG** Attack	7
42	Decay	7
43	Break P	17
44	Slope	23
45	Sustain	26
46	Release	12
47	Vel Sens	3
51	**VCA EG** Attack	9
52	Decay	11
53	Break P	0
54	Slope	31
55	Sustain	0
56	Release	4
57	Vel Sens	2
61	**MG** Wave	0
62	Freq	17
63	Delay	3
64	Osc	0
65	VCF	0
66	Osc Bend	0
67	VCF Bend	1
71	**DDL** Time	7
72	Factor	15
73	Feedback	6
74	Mod Freq	0
75	Mod Int	0
76	Fx Amount	8
77	**Portamento**	0
81	**Aftertouch** Osc MG	0
82	VCF	0
83	VCA	0

Oberheim Matrix 6
Phaedra
Gianni Godino, Italy

Nice to see the excellent Matrix range getting a look in. 'Phaedra' is 'dedicated to all Tangerine Dream fans everywhere', according to its creator, but before the rest of you reach for the hair gel, it's not so cosmic as to be confined entirely to that genre. The patch is well suited to atmospheric chordal work, and a little subtle variation can be introduced by reducing the amount of frequency modulation slightly (parameters 22 and 23). A good playing technique will make the most of the velocity sensitivity that's programmed. ■

	0	1	2	3	4	5	6	7	8	9
00	Freq	Fr/Lf1	Sync	Pw	PW/Lf2	Wave	Wsel	Levers	Keybd	Click
DCO1	12	0	0	31	+63	63	PULS	BOTH	KEYB	OFF
10	Freq	Fr/Lf1	Detune	Pw	PW/Lf2	Wave	Wsel	Levers	Keybd	Click
DCO2	12	0	+10	31	+63	31	PULS	BOTH	KEYB	OFF
20	Mix	Freq	Fr/En1	Fr/Prs	Res	Levers	Keybd	E-VCA	VCA/Vel	VCA/En2
VCF/VCA	31	40	+50	+50	0	OFF	KEYB	44	+15	+63
30	FM	FM/En3	FM/Prs	TrackIn	Track1	Track2	Track3	Track4	Track5	
FM/TRCK	0	0	0	ENV3	0	15	31	47	63	
40	R1 Spd	Trigger	R2 Spd	Trigger	Port	Spd/Vel	Mode	Legato	Keymode	
RMP/PRT	0	STRIG	0	STRIG	0	0	LIN	OFF	REASON	

50	Delay	Attack	Decay	Sustain	Release	Amp	Amp/Vel	Trigger	Mode	Lf1trig
ENV1	10	30	5	63	44	63	+63	STRIG	NORM	NORMAL
60	Delay	Attack	Decay	Sustain	Release	Amp	Amp/Vel	Trigger	Mode	Lf1trig
ENV2	0	38	26	44	27	40	+63	STRIG	NORM	NORMAL
70	Delay	Attack	Decay	Sustain	Release	Amp	Amp/Vel	Trigger	Mode	Lf1trig
ENV3	0	0	20	0	20	40	+63	STRIG	NORM	NORMAL
80	Speed	Sp/Prs	Wave	Retrig	Amp	Amp/Rp2	Trigger	Lag	Sample	
LFO1	63	0	RAND	0	0	+63	OFF	ON	KEYB	
90	Speed	Sp/Prs	Wave	Retrig	Amp	Amp/Rp2	Trigger	Lag	Sample	
LFO2	30	0	TRI	0	55	0	OFF	OFF	KEYB	

Matrix Modulation

	Source	Amount	Destination
0	KEYB	-9	VCA 1
1	ENV2	+22	VCA 2
2	VEL	-51	E2ATK
3	VEL	-20	E2REL
4	PED2	+33	E1REL
5	PED2	+35	E2REL
6			
7			
8			
9			

Casio CZ101/1000
Module Two
R Davies, Notts

Christened 'the perfect CZ sound' by its creator (the things people will do for a free sub), 'Module Two' is the result of manipulating two 1+1 synth string sounds, merging them together into one patch, and fiddling with the Detune and Vibrato parameters until a strong Carillon-type of sound emerges. As usual, the patch lends itself to experimentation, and the programmer suggests you 'detune by two octaves for a powerful synth strings effect'. All in all, a distinctive, versatile sound. ■

PARAMETER	TONE NAME	CARTRIDGE NO.	TONE NO.
	MODULE TWO		

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	+	2	00	09	1	20	51	18		0
(1,2,1+2',1+1')	(ON/OFF)		(+/-)	(0-3)	(0-11)	(0-99)	(1-4)	(0-99)	(0-99)	(0-99)	(+/-)	(0-1)

1

DCO 1

WAVE FORM FIRST (1-8)	WAVE FORM SECOND (0-9)
5	2

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 (0-7)
2

ENV (WAVE) STEP	1	2	3	4	5	6	7	8	
RATE	99	40							(0-99)
LEVEL	99	00							(0-99)
SUS/END	SUS	END							

DCA 1

KEY FOLLOW (0-7)
2

ENV (AMP) STEP	1	2	3	4	5	6	7	8	
RATE	72	38							(0-99)
LEVEL	92	00							(0-99)
SUS/END	SUS	END							

2

DCO 2

WAVE FORM FIRST (1-8)	WAVE FORM SECOND (0-9)
2	1

ENV (PITCH) STEP	1	2	3	4	5	6	7	8	
RATE	99	99							(0-99)
LEVEL	66	00							(0-99)
SUS/END		END							

DCW 2

KEY FOLLOW (0-7)
0

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

DCA 2

KEY FOLLOW (0-7)
0

ENV (AMP) STEP	1	2	3	4	5	6	7	8	
RATE	92	95	92	99	32				(0-99)
LEVEL	99	87	99	88	00				(0-99)
SUS/END				SUS	END				

Yamaha DX7
Slaps
Andrew Purdy, Moargreen, Notts

The ubiquitous DX7 comes up with another goodie, this time 'a mixture of deep rich grand and a light harpsichord', though it could be mistaken for a distorted electric piano on a good day. 'Slaps' works well over the full length of the keyboard, but as it's quite an attention-grabber, you may need to use it in moderation. ■

ALGORITHM	FEEDBACK	LFO WAVE	LFO SPEED	LFO DELAY	LFO PMD	LFO AMD	LFO SYNC	MOD. SENSITIVITY PITCH	MOD. SENSITIVITY AMPLITUDE	OP
2	1	∿	99	0	0	0	OFF	7	0	6
									0	5
									0	4
									0	3
									0	2
									0	1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	POLY/MONO	PITCH BEND RANGE	PITCH BEND STEP	PORTAMENTO MODE	PORTAMENTO GLISSANDO	PORTAMENTO TIME									

OP			OSCILLATOR MODE/SYNC	OSCILLATOR FREQ. COARSE	OSCILLATOR FREQ. FINE	OSCILLATOR 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	KEYBOARD LEVEL SCALING BREAK POINT	KEYBOARD LEVEL SCALING CURVE L	KEYBOARD LEVEL SCALING CURVE R	KEYBOARD LEVEL SCALING DEPTH L	KEYBOARD LEVEL SCALING DEPTH R	KEYBOARD RATE SCALING	OPERATOR OUTPUT LEVEL	OPERATOR VELOCITY SENS.	PITCH EG RATE 1	PITCH EG RATE 2	PITCH EG RATE 3	PITCH EG RATE 4	PITCH EG LEVEL 1	PITCH EG LEVEL 2	PITCH EG LEVEL 3	PITCH EG LEVEL 4	KEY TRANSPOSE	VOICE NAME
6	R			6	00	0	75	41	56	45	99	97	91	98	C#5	-L	-L	0	55	1	78	1											
5	R			4	00	-1	75	18	12	46	99	90	0	0	A#3	-L	-L	0	0	3	84	3											
4	R	ON		3	00	0	75	42	31	68	99	97	0	98	C#5	-L	-L	0	46	1	81	0	0	0	0	0	50	50	50	50	C2	SLAPS
3	R			1	00	-1	75	18	17	42	99	92	0	0	A#3	-L	-L	0	0	0	99	2											
2	R			0	50	-7	75	62	41	99	99	90	91	98	A#3	-L	-L	0	0	1	14	0											
1	R			4	00	-7	75	18	17	47	99	82	0	0	A#3	-L	-L	0	0	3	86	2											

17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
MODULATION WHEEL				FOOT CONTROL				BREATH CONTROL				AFTER TOUCH			
RANGE	PITCH	AMPLITUDE	EG BIAS	RANGE	PITCH	AMPLITUDE	EG BIAS	RANGE	PITCH	AMPLITUDE	EG BIAS	RANGE	PITCH	AMPLITUDE	EG BIAS

They stood the world of digital reverb on its head with the MIDIverb, and now Alesis hope to do the same with the MIDIfex, a new budget-price generator of reverb-based special effects. Despite being a preset machine, it sounds more individual than most. *Paul White*

Not long ago, in a review of the Yamaha SPX90 multi-effects processor, I commented on the ease with which equipment designers can now use one set of electronic hardware to perform a variety of different tasks, simply by writing new software.

The Alesis MIDIfex, shown for the first time at June's NAMM show in Chicago, is a prime example of established hardware being put to a different job with the help of new, specially written software. As I understand it, the hardware in the MIDIfex is very similar to that in the same company's MIDIverb, the device that stood the digital reverb market on its head only a matter of months ago.

Certainly, the two machines look very similar, as the MIDIfex is packaged in the same way as its stablemate and features a similar list of available preset patches on its top panel – though the preset names don't always tell the whole story. What's more, Alesis will soon be marketing (at very low cost) a rack adaptor that will allow you to mount two of these units side by side in 1U of standard 19" rack space.

Like the MIDIverb, the MIDIfex offers 63 preset delay and reverb effects which may be selected from the front panel or via MIDI on any one of 16 MIDI channels. No user-programmability is available, so you're stuck with the patches programmed by Alesis – though as this is a major factor behind the unit's low purchase price, there shouldn't be too many complaints.

The front-panel display normally reads the number of the preset selected, but when the MIDI Channel button is depressed, it shows the MIDI channel number that the MIDIfex is currently set to receive. In this mode, the MIDI channel may be changed using the Up/Down keys normally used for selecting presets.

In specification terms, twelve-bit quantisation is used (as on the MIDIverb) and the background noise is low enough not to have to worry about, provided you drive the input hard enough. Similarly, the bandwidth is limited to 10kHz (again the same as the MIDIverb), but this doesn't seem to cause too many problems with the type of effects being generated.

Both inputs and outputs are stereo and on phono connectors. There is no input level control, but there is a two-LED level meter, and the mix of direct and processed sound can be set using a Balance pot on the rear panel. A single Defeat button mutes the processed sound, and the same may be done by selecting a patch number above 63.

Effects *"Having several taps spread across the stereo field with reverse reverb is a great aid to making a simple sound appear more complex than it really is."*

Where the MIDIfex differs from its forebear is in the nature of the treatments it offers, which, although being reverb-based, are quite a bit less conventional – and more complex – than those on the MIDIverb. In fact, quite a number of the new machine's effects couldn't otherwise be created without two outboard effects units. There are no chorus, flanging or vibrato effects, though, as it appears the hardware is unable to support them.

Presets 1 to 21 are called Echo, and have varying degrees of three parameters: Length, Filtering and Ambience. The presets are all delay effects that have no feedback, but some of them are more complex than they first appear.

The filtering is easy to understand: you get high-pass, low-pass, band-pass or no filtering at all. In other words, you get a sound with reduced bass, reduced treble, a middly sound or a natural sound. Delay too is fairly self-explanatory, maximum delay being about half a second.

It's in the Ambience column that the fun starts, because it's here that a simple delay can become anything but. There are three different Ambience settings, the first being

Ambi, in which extra processing gives the delayed sound a sense of depth rather than just making it a blind copy of the input. On vocals this sounds warmer than a simple delay, and it also forms a useful treatment for instruments.

The second setting is described as Thick, which turns out to be particularly interesting. Again, the repeat is not a single straight copy of the input, but appears to be a burst of closely spaced reflections, rather like a gated reverb – this lends a 'bowing' effect to the echo. An obvious application of this is the treatment of synthesised strings, but it also sounds good on voice, electric guitar, and other synth settings, where the tightly-spaced reflections tend to disturb the rigidly coherent phase relationships that predominate simple synthesised sounds, giving a more natural character to the sound.

The third and final Ambience variation is Wide, which appears to be a double delay which has its two delays very closely spaced, one on each side of the stereo field. As its name implies, this gives the effect of a single delay or echo that has an enhanced sense of width. If a sound requires an echo treatment coupled with a stereo identity, it'll benefit from this setting.

The second row of treatments kicks off with 15 multi-tapped delays – nine two-tap and six three-tap. What this means is that each sound you input is repeated twice or three times. Again though, all is not as straightforward as it seems, as there are various panning tricks thrown in and the enhancements and filter settings used in the first row of treatments make another appearance.

What this adds up to is a variety of textural effects with a dramatic sense of stereo spread. Suitable candidates for treatment are electric guitar, piano, synth and possibly vocals, on which Short and Extra Short presets are useful in creating an ADT effect. Drums, though, tend to sound too messy when processed this way, unless you're after a specific messy treatment.

The rest of this section is taken up with regenerative delay effects, ie. treatments that have some feedback to give a repeating series of echoes. Again, filtering is employed and three of the presets use the above-mentioned ambience treatments to create the illusion of depth and width. These settings can usefully be employed in any situation where you might want a conventional repeat echo, and you do at least have the freedom to select the one that has the best filtering and ambience for your application. For example, a vocal track might benefit from the low-pass filtered version with ambience to give a warmer sound than you could obtain using a straightforward DDL.

The third section of effects starts out with a refreshingly uncomplicated set of four slap-back effects, which on the face of it appear to be single, full-bandwidth delays with varying spacings. These are all short-delay treatments handy for beefing up handclaps or snare drums, and maybe for giving vocals a hard ADT sound.

Following on from here is a series of reverb and spatial enhancement programs. Gated reverb puts in an appearance, as does reverse reverb, and these are in addition to a medium warm reverb and a long reverb with high-pass filtering. These are all fine-sounding reverb treatments of the same calibre as their MIDIverb counterparts, ie. the sort of high-quality effects which, up until six months ago, you couldn't obtain unless you had over £1000 to spend.

Background *"Like the MIDIverb, MIDIfex has a list of patches on its top panel – though the names don't tell the whole story."*

More unusual is a preset called Medium Bloom, which has a long build-up to the reverb, rather like the reverse setting, and then a gentle decay like a conventional reverb. Sounds great on vocals and wind instrument sounds.

There's also a reverb program with built-in panning, which is handy for adding movement and life to a static sound, and a setting called Reverse Regen, which is just like a conventional reverse reverb setting except that it repeats until it gradually dies away. Previously, the latter treatment was only possible with a reverse reverb patch plugged through a separate digital delay. It's an ethereal treatment, and it's sure to find a lot of different uses.

Following the reverb programs are three special multi-tap patches which combine elements from the multi-tap presets with reverb. The most involved is Multi-tapped Reverse Pan which, as its name implies, comprises several taps spread across the stereo field, accompanied by that characteristic reverse reverb effect. This gives a wonderful (and slightly unusual) moving texture, and is a great aid to making a simple sound source appear far more complex than it really is.

To finish, there are half-a-dozen spacial enhancement processes, two called Thickener and four called Stereogen. These all add ambience and colouration, and generate an impression of stereo spread without adding any perceptible delay – particularly effective on electric guitar and 'plucked' synth sounds. Because they add colouration, these effects can be used to disguise well-used preset synth or drum machine sounds, as well as to widen less common sounds from acoustic or electronic instruments. They could even form the basis of some interesting treatments for backing vocals.

All in all, the MIDIfex is a difficult machine to evaluate. No other single device currently on offer represents competition for it, and there are treatments available within it that no other signal processor – regardless of cost – can achieve.

That said, a first encounter with the MIDIfex isn't necessarily as impressive as the equivalent meeting with a MIDIverb. Skim briefly through its presets with a drum machine or an electric guitar, and you could easily dismiss many of them as unsuitable. Check out all the treatments with an electric piano, and you could come to the opposite conclusion. That's how *distinctive* the new Alesis' treatments sound.

The bottom line, though, is that the MIDIfex gives inexperienced (and relatively penniless) musicians and engineers access to complex production effects that might otherwise need a lot of expensive outboard gear and expertise to emulate. And the fact that these effects sound completely different depending on what you feed through them means there's less chance of them becoming clichéd.

At a time when so many musicians and producers are using the same effects, the same samples, and the same preset synth voices, it's nice to be confronted with a machine that gives you the chance to be individual. How ironic, then, that it should also be a machine that offers no programmability at all. ■

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Vinyl T·A·K·E·S

Sting
Bring On The Night

A&M LP/CD

Following a lengthy tour and a recent Artists Against Apartheid appearance, Sting has chosen to document his live antics – along with those of his distinguished band – to vinyl/disc.

The album is a double, so it's no surprise to find much of the material is taken from the Police back catalogue. But regardless of whether the material is vintage Police or recent solo Sting, much of it has been reworked for the stage. As the man himself says, 'if I can borrow from T S Eliot, I can certainly borrow from myself', which is fair enough, even if the new arrangements aren't uniformly successful.

Side one opens with a segue of 'Bring on the Night' and 'When the World is Running Down', with the former providing a springboard for a furious piano solo in best jazz style from Kenny Kirkland. This sets the tone for the remainder of the LP, with a tight 'n' talented band running through the likes of 'Consider Me Gone' and 'Driven to Tears' with breathtaking ease.

Highlights include the piano intro and synth (Synclavier?) solo on 'Demolition Man', amply demonstrating Kirkland's dexterity and versatility. 'Children's Crusade' sees Branford Marsalis' stunning sax solo reinterpreted at the cost of its original ominous beauty, but proving Marsalis' mastery of his instrument. Meanwhile, Kirkland's solo on 'Down So Long' has you listening through twice, just to make sure that half of it *isn't* a blues guitar. ■ Tg

Philip Glass
Songs From Liquid Days

CBS LP

After what seems a huge delay, the grandaddy of serial music has finally unleashed his first cycle of songs on the world. Glass isn't a lyricist, so fellow New York literati Laurie Anderson, David Byrne, Paul Simon and Suzanne Vega have put pen to paper for him.

And a pretty good job they've done, too – especially Anderson, whose 'Forgetting' is a fine cameo of modern male emotions. Sadly, Glass' music sounds for the most part uncoordinated and, more crucially, unsympathetic.

It's the usual spiralling, stop-start arpeggiation, conventionally (by Glass' standards) arranged, and played with more precision than emotion by an assortment of musicians. Against this backdrop, Glass' wavering vocal melodies seem incongruous and even elephantine, the guest singers (Janice Pendarvis and Linda Ronstadt among them) struggling to instil life into them. Ronstadt succeeds the most on 'Forgetting', but there's no forgetting the clumsiness with which those concise lyrics have been set to music, or the discomfort which that music induces when combined with its instrumental backing.

Maybe Glass should cock an ear towards Depeche Mode's 'It Doesn't Matter Two' for an idea of how well systems music can be integrated into the format of the popular song. Either that, or go back to composing chamber music and soundtracks. ■ Dg

Chakk
Ten Days In An Elevator

MCA LP

It's been a long time coming and it's cost their record company a lot of money, but Chakk's debut long-player has been worth the wait.

The solid drumming and intimidating bass that give the Sheffield band their hard, industrial funk grounding have been nurtured – by such big name producers as Richard Burgess and Sly 'n' Robbie, as well as by the band themselves – into a frighteningly powerful rhythm section.

Over this, Sim Lister's emotional sax work plays counterpoint to the unorthodox synth meandering of Alan Cross. The keyboard sounds are never run-of-the-mill, but the playing is at its least predictable on 'Over the Edge', where the synth meshes with scratch effects to devastating result, only to be contradicted by a disarming funk guitar and TR808 rhythm.

'Lovetrip' is the strongest track, a sharp trading of blows between unstoppable rhythm and infectious bass riff. As on the rest of the album, the lead vocal is a little doom-laden and monotonous, but its originality steers it (just) out of the 'unremarkable' category.

If all this isn't enough, for the price of the LP you also get a free 12" EP lurking in the same sleeve.

Chakk are an original outfit playing emotional, synth-based music. They occasionally experiment too much for their own good, but in today's muggy musical climate, they remain a welcome breath of fresh air. ■ Tg

Ti Na Na
Kissing For Fun

Genie 45

'Kissing For Fun' is a pop song possessed of all the textbook pop song ingredients: major chords, catchy chorus, sweet female vocal and so on. It's also as fine an example of intricately interwoven synth sequences as you'll find coming out of a QX1 this side of a Dave Bristow demonstration.

Between the sequencing and a gutsy Simmons SDS5 'Kissing For Fun' canters along, playing host to Shirley Gray's breathy vocal and John Harris' slick guitar work.

The problem is that the whole package is really too poppy for its own good – the dreaded word 'Eurovision' comes dangerously close to mind. It's a shame too, because Ti Na Na have plenty of better material just begging to be turned into hit singles. How about it? ■ Tg

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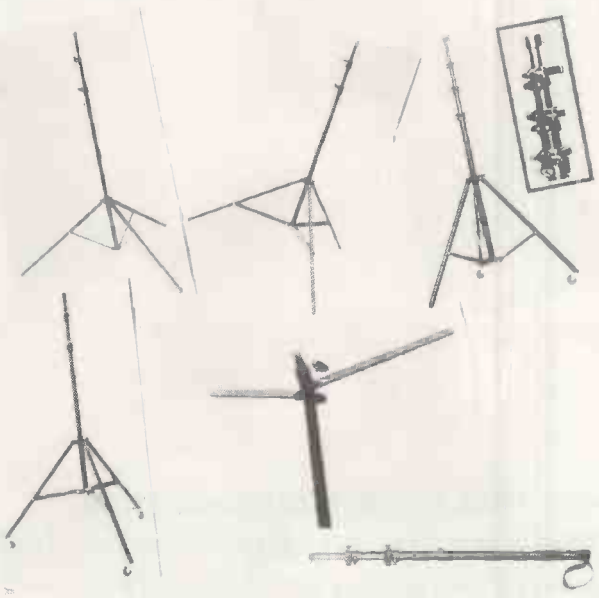

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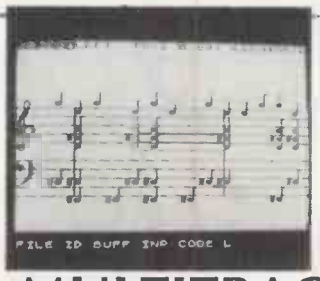

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THEORY & PRACTICE

Commodore's Amiga is now in the shops after months of speculation, procrastination, and hype. But what's the software situation like for the musically inclined Amiga user, and is the long-term future a rosy one? ***David Ellis***

A COUPLE OF MONTHS AGO, I took the plunge and purchased a Commodore Amiga. Well, having eulogised over it in a Newsdesk report (E&MM October '85) on last year's PCW computer show, it was the only decent thing to do. I should also own up to a rather generous discount from Commodore which certainly swayed my purchase decision-making. In fact, just about all the computer journalists in the UK were offered a similar carrot, which probably explains why Commodore were able to announce that all the first 1000 Amigas imported into the UK went in just two weeks.

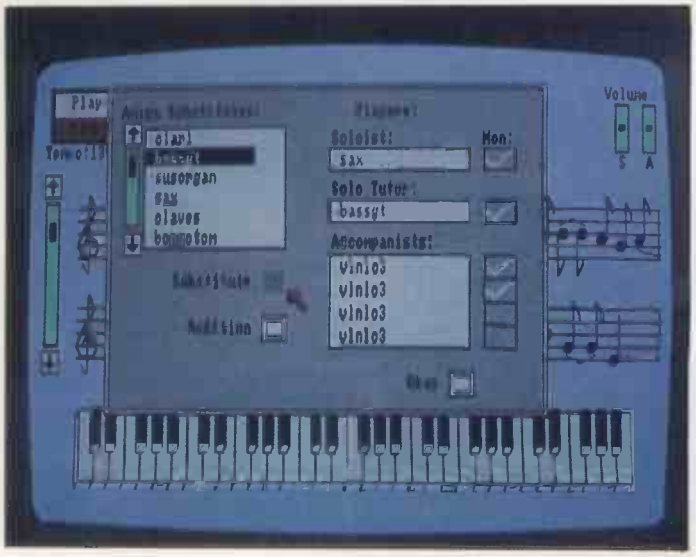
As most of the computer world will probably know by now, the Amiga was originally going to be known as the Lorraine, and was scheduled for release early in 1985. After a lot of expensive chip development work, things went a bit sour financially, with the result that the Amiga Corporation ended up in partnership with Commodore as Commodore-Amiga. Now, if you look inside the Amiga's lid, you'll find inscribed on its underside the signatures of all 53 of the Amiga Corporation's employees – plus the pawprint of their pet pooch. A sort of Parthian shot aimed at the fickle computer industry, I guess. Quite touching.

Like the Macintosh and the current Atari ST range, the Amiga uses a 16/32-bit 68000 processor. This is a *nice* processor, and it's made all the more nice by the fact that it works in conjunction with a trio of customised chips designed by Amiga Corporation's Jay Miner.

One of the most exciting hardware devices in these chips is the blitter. Standing for 'block image transferrer', this is responsible for shifting blocks of data in RAM at ultra-fast speeds – up to ten times faster than the 68000 itself, in fact. That may sound like the hyperbole from which advertising copy is grown, but it's the blitter that gives the Amiga its terrific potential in the area of animated graphics – a potential that has been recognised by BBC TV, who are reputed to have acquired a quartet of Amigas for paintbox-type graphics on the cheap.

A further characteristic that the Amiga shares with the Macintosh and STs is its adherence to the WIMPS philosophy. Briefly, this means that every computing activity takes place inside on-screen windows. Because the Amiga is multi-tasking (meaning that several programs can be run concurrently – unlike the Mac or STs), a number of programs can be run from their individual windows and displayed at the same time – almost like watching several TV screens at once. User interaction with the windows is achieved simply by moving a mouse-controlled pointer to a relevant icon, and double-clicking the left-hand mouse

"The notational aspect of Musicraft is rather disappointing, and that's the fault of the Amiga's problematic high-resolution graphics."



button to select and run that program. It really couldn't be easier, and even though I wasn't a mouse man before, I found myself taking to it like... well, a mouse to cheese, perhaps.

One criticism that's been levelled at the Amiga is its limited amount of onboard RAM. After years of putting up with an Apple II's 48K and a BBC Micro's 32K, I thought at first that the criticism was a mite unfair. But by the 1Mbyte standard of the Atari 1040ST, I have to concede that the basic complement of 256K does seem pretty mean. It's one feature of the Amiga that shows how long it's been in development – no one would have sneered at 256K a few years back.

Fortunately, the UK Amiga system includes as standard an extra 256K that plugs into the front of the Amiga much like a game cartridge (though it's hidden from view). The resultant 512K sounds much more reasonable, and, indeed, it would be on any other machine. But because the Amiga can run several programs at the same time, and because these programs tend to be written in memory-greedy, high-level languages, that 512K gets chewed up like nobody's business. So the first add-on the average Amiga user is sure to look for is extra RAM. Trouble is, add-on companies are being extremely greedy in this respect. I mean, would *you* willingly pay £1200 for another 2Mbyte of memory after spending near £2000 on the machine itself?

BUT BACK, AS THEY SAY, to the music – or rather the lack of it. Because for all the noise that's been made about the Amiga's sound and music capabilities – Rick Wakeman at a recent computer show, Andy Warhol and his gang of audiovisual artistes (Debbie Harry included) at the Amiga's US launch – remarkably little music software of pro quality has appeared.

Before the carping, though, let me recap what the Amiga is claimed to do in this department. Basically, sound production is taken care of by a custom chip called, in an ingratiatingly friendly and typically laid-back American way, Paula. This contains a couple of eight-bit companding DACs, each of which can be fed two channels of waveform data from RAM, along with pitch info and precise (well, 64 levels) specifications for volume. And all that takes place at a maximum sampling rate of 29kHz. Pretty impressive, you're bound to agree. In fact, from those specs, you'd expect the Amiga to sound every bit as good as an Emulator I, Fairlight Series I, Akai S612, or Mirage. But it doesn't. Or at least, that's not the impression given by the software I've heard.

One metaphorical fly in the ointment is the pair of low-pass filters on the outputs of those DACs. According to the Amiga hardware manual (not the one that comes with the system, but one costing an extra $20), these filters start to cut off at 5kHz, and complete their dirty deed by 7.5kHz. That seems strange – surely a 29kHz sampling rate should be given the benefit of the doubt and allowed to emerge in all its glory up to around 13kHz? While that's not a question which has found its way onto the agenda of the PM's question time, it is one that I've put to Commodore UK. So far, though, no response.

One reason for those filtering characteristics may lie with the fact that Paula's DACs are also responsible for regurgitating synthesised speech. Because included in the Amiga's ROMs are some clever routines for translating text into phonetics, and then phonetics into speech. It sounds good, too. It'll even say 'E&MM is the greatest' without mentioning Zlatna Panega or asking for free ad space.

So, what software *is* available? Well, I've had a chance to look at 'pre-release' versions of two programs called Musicraft and Harmony, both from Cherry Lane Technologies. Superficially, Musicraft is much like any Commodore 64 software, with one display showing a pair of staves and another dealing with sound synthesis.

The notational aspect is actually rather disappointing, and certainly way below the quality of either Mark of the Unicorn's Professional Composer or Southworth's Total Music for the Macintosh. That's the fault of the Amiga's problematic high-resolution graphics – more on them later. Although entering notes is reasonably fast, the program is strangely idiosyncratic in some respects. For example, it refuses to acknowledge that you might want to use notes of a duration less than a semiquaver (16th-note). Nor does it allow triplets or any other sort of n-tuplet. And it doesn't accept that it's valid to have a B-flat accidental in the key of C major, either. Perhaps all these curiosities will be corrected in the final release version.

More interesting is the synthesis side of Musicraft. This cunningly emulates an analogue synth, even down to allowing phasing and sync effects to be added to each of its four channels. Adding extra harmonics to a basic waveform is also possible, and by moving the mouse over to the 'OK' box, the new waveform is calculated (very quickly) and stored in RAM. The VCF responds much faster to its mouse-operated controls than you'd expect from a standard software simulation of filtering, so there must be some rather clever filtering algorithms at work.

Sound-wise, though, the synth simulation is on the noisy side, and lacks the sharpness that would be gained from a better output bandwidth from the Amiga's DACs. Interestingly, some of the demo sounds were real samples, but the version of Musicraft I saw didn't seem to have any provision for either user sampling or modification of the ones supplied. Also on the negative side is the complete absence of facilities for linking up Musicraft with MIDI equipment or using any sort of keyboard as a note input device.

In sum, then, a mediocre scoring program with an imaginative synth section.

"Mimetics have built a system around the Amiga's strongest point – the multi-tasking – rather than attempting to emulate the Macintosh's ultra-crisp display."

HARMONY IS A DIFFERENT BEAST altogether, and one that's very much angled at the educational market. It's also one of the first pieces of music software I've seen to claim the influence of artificial intelligence (or AI, for those that prefer their jargon short and sweet). I suppose Kurzweil ought to get a mention here, but I've never been that convinced by their description of musical AI. Harmony stems from some work at Carnegie-Mellon University in the US that took a long, hard look at the nature of musical accompaniment.

Put simply, Harmony displays the lead line of some ten or so popular classics and gets you to play it on either a MIDI or passive keyboard. The software then analyses your 'performance' in real time and accompanies you in four parts. If you change dynamics, the accompaniment changes accordingly; if you speed up or slow down, it does exactly the same; and if you stop and start somewhere else in the piece, Harmony works out exactly where you've got to without swearing at you or emptying a pint of beer over your head. You ►

can also adjust the 'personality' of the accompaniment by changing the values of such intriguing parameters as 'patience' and 'anticipation' from a further pull-down menu.

And if you can't read the dots, there's the option of following a red key that leaps up and down the length of the displayed keyboard with something approaching gay abandon. Another option allows you to re-orchestrate the accompaniment.

If you've unwisely chosen 'Yankee Doodle Dandy' to play with, you might feel it essential to re-orchestrate with anything other than the curiously named 'goodpipe'. All the instrumental sounds on offer seem to have a sampled origin, and some – the violin and trumpet, for instance – actually sound quite respectable. One (major) problem is that there doesn't seem to be any provision for putting in your own tunes and accompaniment, so I guess Cherry Lane are intending people to buy extra disks of arrangements.

In sum, then, a fun piece of software that combines intelligence and good looks, but with a limited outlook on life.

Cherry Lane's Amiga products don't stop there, either. Their Pitchrider, for example, is an ingenious program that turns the Amiga into a monophonic pitch-tracker for controlling a MIDI synth. The US launch of the Amiga had a sax player working with a combination of Pitchrider, Harmony, and an external synth, to impressive effect.

Finally, there's the more upmarket Texture program, which is said to be an extensive sequencer with some form of graphics shorthand for notation.

The one problem facing the release and distribution of all these programs is that Cherry Lane are reputed to have stopped dealing in music software. Whether that's because they tried to do too much too fast, or whether it's an indication of the troubled state of Amiga software development, is anyone's guess. But it does mean the Amiga user probably can't count on getting hold of these products at present.

One further Amiga product that Cherry Lane were intending to bring out was, not surprisingly, a MIDI interface. Unlike Atari, who sensibly went ahead and put a MIDI In and Out as standard on the ST range, Commodore-Amiga opted for a programmable RS232 interface. What that means is that the Amiga can send and receive serial data at the standard MIDI rate, but to do this properly, you need a few extra components to turn the RS232 interface into something five-pin DIN leads can be plugged into.

FOR A COMPUTER SO WELL ENDOWED with interfaces in one shape or form, it's curious that a companding ADC wasn't included in Paula to accompany the two DACs. Still, there's no shortage of companies ready to make up for the deficiency, with no less than four sound digitising packages already available or imminent. Two of these are slanted particularly at the Sample And Regurgitate brigade; the other two are more musically inclined.

The Micro Forge Stereo Sound Digitizer comes into the first category, but, at a UK price of £345 + VAT for a stereo ADC card with a handful of chips on it, which also requires an expansion system (a minimum investment of £250 for a single slot system, or £700 for seven slots) before it'll even make meaningful noises with the Amiga, it's pretty detached from any conventional notions of value for money.

Much better value, at $175, is the FutureSound digital sound recorder, from Applied Visions. This comes with a microphone, and simply plugs into the Amiga's parallel port, enabling high-quality sampling up to about 28kHz.

"If the Amiga's sound is good and its graphics are excellent, there's clearly scope for software that combines both...and that could help cross any boundary between the musical and visual arts."

Given all this interest on the sampling side, it's not surprising that Amiga games are appearing which make good use of samples. Particularly effective is the game One-on-One, with sampled crowd noises, ball thunk, hot-dog vendor, et al. The only drawback is the game itself, which is a dreary (for me, anyway) basketball simulation. The excellent Arctic Fox is a further example of imaginative sampling, and it's a game written specifically for the Amiga, rather than just another Commodore 64 conversion.

From my admittedly short-term reading of the software situation, the brightest hope for Amiga music would seem to lie with Californian company Mimetics, and Music Sales' Mixdown system previewed in last month's E&MM. It's both of these that provide facilities for musical sound sampling.

Mimetics' SoundScape system comprises three separate products: SoundScape Pro MIDI Studio ($149), SoundScape Digital Sampler ($99), and an Amiga MIDI interface ($49). Judging by current trends in the UK pricing of Amiga software, those figures will turn directly into pounds sterling. However, even an end result of £300 should be fair if SoundScape lives up to its spec sheet.

What Mimetics have done is to build a system around the Amiga's strongest point – the multi-tasking. So, rather than attempting vainly to emulate the Macintosh's ultra-crisp display, they've given the user the option to mix 'n' match as many as 32 different modules, using the Amiga's facility of multiple windows, all routed through a main icon-driven patch panel. Thus one module provides an internal MIDI clock with autolocate and function controls, another allows four-voice, eight-bit companded sampling at a rate of up to 30kHz, with definable ADSR, loop points, pitch-bend, and velocity, and a further module is a tape deck with an 'infinite' (according to Mimetics) number of tracks and notes, plus full sequence and song editing, and selectable MIDI filters on In and Out.

To describe this concept as exciting is putting it mildly, though it'll doubtless take some getting used to. A full review should follow shortly, so watch this space.

YET ALTHOUGH THE AMIGA'S SOUND IS IMPRESSIVE, especially when compared to previous personal computers, it's in the area of graphics that the machine has delivered more than mere promises.

Graphics on the Amiga breaks down to five different modes: two lots of low resolution (320×200 and 320×400 pixels, both with 32 colours out of a choice of 4096); two lots of high resolution (640×200 and 640×400, both with 16 colours); and a special 'hold-and-modify' mode that allows all 4096 colours to be displayed on-screen at the same time in any resolution. On top of that, there are some sophisticated animation routines built into the Amiga's ROMs that enable it to do such a convincing job of moving the robots, dog, and fire hydrant to such convincing effect in the much-seen 'Robocity' program.

Just how good the Amiga's graphics can be is demonstrated by the Digi-View video digitising hardware (around $200) from American company NewTek. This box of tricks interfaces between any standard 2:1 interlace monochrome video camera and the Amiga's parallel port. By scanning an image using RGB colour filters – a different one on each of three ten-second passes – you end up with a high resolution image with up to 4096 colours, which looks almost as good as television-quality video.

The only problem is that there's no means of doing anything *with* the digitised images, other than a bit of recolouring and assembling into a glorified slide show. In theory, at least, it should be possible to use them for painting and animation, but, as is so often the case with nice ideas, it's all just vapourware at present.

Other video options on the horizon are the Live! frame grabber, which is claimed to digitise in real time at 20 frames per second, and a Genlock interface that should enable the Amiga to synchronise to any video source and superimpose text, graphics, or whatever. The last two add-ons are both from Commodore-Amiga themselves.

Standard graphics, however, are based on the low- and high-resolution modes. And it's here that the flaws in the mould start to appear.

The first unfortunate fact is that 400 lines on the Amiga's display can only be achieved by using a special interlaced mode that doubles the vertical resolution at the expense of halving the screen's refresh rate. As a result, any mode with 400 lines flickers terribly, which more or less puts paid to any ideas of constructing Mac lookalike displays with 16 colours. For me, that's a major disappointment.

The second limitation lies with the blitter's inability to cope with more than the Amiga's expanded 512K of RAM. Since it's the blitter that takes the lion's share of the work involved in animation, and since any really serious animation is likely to need more than just that 512K, the Amiga is going to come a little unstuck. It's said that the forthcoming Amiga 2 (*what, a new machine already? – Ed*) will both quadruple the amount of RAM and extend the blitter to cover it, but that's hardly any consolation for owners of the current Amiga.

But on to the graphics software that's actually available. The two main products that have so far appeared are Deluxe Paint (around $100) from Electronic Arts, and Aegis Animator ($140) from Island Graphics and Aegis Development.

Electronic Arts attached themselves to the Amiga Corporation right from the word go, so it's to be expected that Deluxe Paint should be one of the front-runners. Put simply, Deluxe Paint is a ►

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► painting program. More than that, it's a program that can turn a non-artist (me, for instance) into a passable impression of an artist. It's also horribly addictive. The program allows you to work in any of the standard graphics modes, though the 640×400 mode is inadvisable because of the interlace flicker.

By pulling down a menu to select colour control, you can make up your own palette of 32 paints by adjusting the red, green, and blue hues. Available brushes include a good variety of sizes, but you can also use a spray nozzle for air-brush effects. Most wonderful of all is the facility that allows you to define any part of a picture as a brush and stretch, colour, and shape it accordingly. So, if you want to paint with King Tutankhamen's nose, no problem. And with the development of cheap, ink-jet, full colour printers, it's even possible to make hard copies of your masterpiece to hand out to adoring techno-art groupies.

Aegis Animator also incorporates a paint system – Aegis Images – that provides very similar features to Deluxe Paint. But as its title suggests, Aegis Animator is designed primarily for the purpose of putting together animated sequences.

Typically, you might start off by creating a back-drop with Images (a lunar landscape, for instance) or by using a low-resolution digitised image. This is stored on disk, and you can then start building up the various elements to be animated. These could be jets of flame, the dust thrown up when the Eagle has landed, or whatever else your imagination and artistic flair might conjure up.

Selecting the storyboard from a pull-down menu allows you to define how the various elements fit together in sequence, edit the images using cut, splice, and paste functions, move objects around the screen, and set the speed of the animation.

If you want to see what Deluxe Paint and Aegis Animator are really capable of in expert hands, you could always take a trip to Philadelphia's Veterans Stadium, where it's reported that baseball fans are being wowed with Amiga graphics on a 42-foot-wide Panavision scoreboard.

So, if the Amiga's sound is good and the graphics are excellent, then there's clearly scope for software that combines both. One of the most eagerly awaited packages is the Deluxe Video Construction Set from Electronic Arts. Not only should this provide animation that's up to the pro speed of 30 frames/sec, but it also claims to allow the addition of music and sound effects, which can then be synchronised to the action with a sort of pseudo-SMPTE time code. The whole lot can then be recorded onto a VCR for dubbing and playback.

As I see it, the nice thing about this sort of combination software is that it crosses any conceptual boundary between the musical and visual arts. There are a great many musicians who'd love to integrate graphics with their music, but hitherto, they've had to find both a computer expert and a sympathetic artist in order to achieve any sort of realistic synthesis.

I don't pretend that the Amiga has actually gone quite that far, but it's certainly well on the way to being an exciting creative tool, and must be a foretaste of the future.

SUMMING UP IS RARELY EASY, and never less so than in the case of the Amiga. There are features that I love about the machine, and there are others that make me hopping mad.

If the Amiga was priced £475 cheaper, it'd be in direct competition with the Atari 1040ST, and there'd be no question about which machine was the better buy. But at £1475 plus VAT for the 512K version with a single disk drive, the Amiga is in an unfortunate no-man's land between low-price business machines and high-price home micros.

In the States, at least, much has been made (by Commodore mainly) of the Amiga's IBM PC compatibility. And while it's true that $199 or thereabouts will buy the US Amiga owner a package consisting of an extra 5.25" disk drive and some IBM PC emulation software called Transformer, total compatibility is an illusion. For a start, the only programs that will run are text-based ones like Lotus 1-2-3 and Wordstar. And once you've got them, they run so slowly it makes a mockery of using a powerful 68000-based machine for the purpose.

"Unless someone can reprogram the output filters so that they cut off at a more reasonable level than 7.5kHz, the Amiga is doomed to emulating lacklustre Spectrum and CBM64 samplers."

From the UK point of view, it's all academic anyway, since Transformer isn't being released here. Commodore's alternative route to IBM PC compatibility is a hardware add-on called Sidecar. Virtually an IBM PC/XT in itself, with an 8088 processor and 256K RAM, this bolts onto the side of the Amiga and enables any IBM PC software to be run at the same time as Amiga software. That's a great idea, but at a price that's quoted as 'substantially under $1000', I wonder whether Commodore can really count on people buying Sidecar, given that IBM PC/XT clones have already broken through the psychological barrier of £500, and Amstrad are poised to do battle for even less come the September launch of their IBM PC compatible.

And then, of course, there are the basic hardware problems of the Amiga. Commodore UK have stressed that they see the Amiga selling to the business and specialised market areas, eg. music and graphics. But even though the latter are the Amiga's strength, they're also the areas which, paradoxically, show up the Amiga's hardware shortcomings.

Unless someone can find a way of reprogramming the output filters so that they cut off at a more reasonable level than 7.5kHz, the basic sound side of the Amiga is doomed to emulating the lacklustre samplers that have been doing the rounds of the Spectrum and Commodore 64 circuits recently. Depending on what you read, the to-be-released Amiga 2 may correct that bandwidth deficiency, but the 50,000 or so current Amiga owners are hardly going to thank Commodore for correcting a limitation so late in the day.

If the Amiga is to break into the business market, then its graphics presentation has got to equal the competition. Apple Macintosh-quality monochrome graphics are so standard now that they're what people are expecting 16-bit, 68000-based micros to look like. Slavish copying is hardly a good thing, but if the Amiga could produce monochrome screens that looked like the Digidesign software for the Macintosh, or the Steinberg Research Pro-24 MIDI sequencer for the Atari, I wouldn't be one to complain. But because of the ridiculous flicker in the Amiga's 640×400 interlaced mode, the highest usable resolution is 640×200, which means the clarity of the Macintosh (512×342) or ST (640×400) monochrome screens is totally out of the question.

To add insult to injury, Commodore's own future as a company seems distinctly shaky, a position that's hardly helped by the prophets of doom and gloom who continue to take vicarious pleasure in predicting its imminent collapse. Whatever happens, though, it seems certain that the widening Amiga user base in the US will continue to be supported. Whether or not the Amiga 2 ever materialises is more open to doubt. My gut feeling is that the prohibitive cost of updating all the custom chips in the Amiga will prevent the Amiga 2 from being an earth-shattering improvement on the current model, anyway. What I guess will happen is that third-party companies will work to extend the Amiga's open architecture with upgrades. But judging by current prices being charged for samplers, extra RAM, and hard disks, it's also a fair bet that enhancements will come at a price.

THE FINAL COMPLICATING FACTOR comes down to the activities of the competition. Rumours are circulating on US bulletin boards of a new Apple IIx 16-bit computer that comes complete with a 32-channel sound chip. Interesting, obviously, but I'll believe it when I see it.

A more immediate contender is Atari. Under the bullish direction of Jack Tramiel, Atari have been transformed from a mid-market games computer company into an aggressive manufacturer of cheap but powerful 16-bit personal computers. My current hostility to the ST series is based on their appalling record of reliability (as discovered only too well by E&MM's editorial staff), a ridiculous design of key-top that turns a competent typist into a quivering wreck and which gives a new meaning to the term 'writer's block', and a vintage sound chip that will probably keep J S Bach turning over in his grave for the rest of eternity, poor fellow.

However, the next few months may well oblige me to change my tune. Not only is the new ST machine reputed to use the very powerful, 32-bit 68020 processor, with 2Mbyte of RAM as standard, but it's also kitted out with an Amiga-type blitter chip and a rather more classy sound chip. Whether this turns out to be quite like the Amy sound chip (64 oscillator channels with 96dB signal-to-noise resolution) originally intended for the ST series is anyone's guess, but the few advance speculations I've gleaned are certainly enough to make me think seriously about changing my allegiance.

It's certainly an encouraging sign of the times that computer manufacturers are at long last putting music on the top of the list of hardware priorities, but let's hope that they don't forget the owners of last year's models – the Amiga included. ■

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STACK IN A RACK

We conclude our two-part review of Tantek's Tanrak system of signal processing units, with the promise of yet more modules to come in the near future.

Ian Waugh

Dynamic Noise Filter 2

Noise is the studio's public enemy number one. One day, of course, all studios and recordings will be digital and quantisation will be numero uno but until then – and until small studios can afford it – we're stuck with analogue signals and noise.

The Noise Gate can help in certain areas, the Compressor and Limiter can help in others. A good noise reduction system is a help all round, but what about recordings you made *before* you could afford all these goodies?

The Dynamic Noise Filter could be the answer. It's basically a low-pass filter whose cutoff frequency rises when presented with high-frequency signals above a certain level – a similar idea in principle to a reverse compressor. When high-frequency signals are present they tend to mask the noise; when they drop, the unit cuts down on the noise level.

I thought this was too good to be true, but it does work. You can leave the unit permanently patched in to the end of the recording chain, or you can process incoming signals through it. All this is possible in stereo, too.

An LED shows when the unit is filtering, and the Threshold control needs to be adjusted carefully to find the optimum level for the signal; if you set it too severe, glitches can occur as it clamps down on noise during quiet sections.

The device works better on some material than others. If you can hear noise in a piece containing high frequencies, you're pretty much stuck with it unless you resort to filtering.

I used the Filter to clean up some old recordings and threw in a bit of Enhancing (see next unit), too. It won't remove every trace of noise in a piece, but it can reduce it and it *is* difficult to tell if the signal proper has been tampered with.

Really noisy pieces tend to be the product of much bouncing, and the Filter can help tidy them up if, like me, you're a messy bouncer.

Psychoacoustic Enhancer

Bit of a weird one, this. When the first such enhancer hit the market some years ago at around £1000, it was very much a black box. Listeners agreed it did *something* to the sound, but no one could quite say what. Research has since opened the box (and took the money) and there are now several budget enhancers on the market.

Tantek thoughtfully tell us how their Enhancer works: it's a mixture of high-frequency boost, compression and harmonic generation. You can hear the HF boost even on so simple a sound as a flute, but is there something else there as well?

Well, sound is all about subtleties, and never is this more true than in the use of the Enhancer. The controls must be set carefully, as you soon learn that it's possible to enhance noise, too. The manual says there is an optimum setting for every situation, but finding it is the trick, as adjusting one control usually affects the others as well.

The Enhancer is particularly useful for giving tired recordings a new lease of interest; the sort of mixes which have been EQ'd and bounced so many times, they sound like rubber cheques. You can place the device anywhere in the recording chain; in a mixer's send and return channel, or direct to instruments as they are being recorded. Plug a drum unit into it, vocals, a synth. Basically, you can enhance anything.

The Psychoacoustic Enhancer works with mono signals only; you need two to process a stereo signal.

Parametric Equaliser

Every recording setup needs good EQ facilities. They should be at the top of your

shopping list – after a mixer, a tape machine, and a mic. A Parametric EQ allows you to select a certain frequency, and then cut or boost it. It can emphasise the kick of a drum, control the ring of a cymbal, or trim the sizzle out of a string sound. The dividing line between using EQ for corrective and creative purposes is very thin. My line vanished years ago, so now I just EQ a sound until it sounds right. If you're a purist, slap my wrists.

The Tanrak Parametric covers an impressive frequency range from 3Hz to 37kHz, with cut and boost ranging from ±10dB at high bandwidths, to ±30dB with narrow bandwidths. The figures are automatically optimised by clever circuitry.

A neat unit and a worthwhile addition to the rack, though if your mixer already has comprehensive EQ facilities, you may not consider it as important as some of the other Tanrak modules.

Digital Sampler-Delay

Well, this is the biggy. It's twice as wide as the other modules, and has twice as many controls. The audio signal is not patched into it directly; you must go round the back and do that yourself. It also has Gate In, Modulation In and CV sockets.

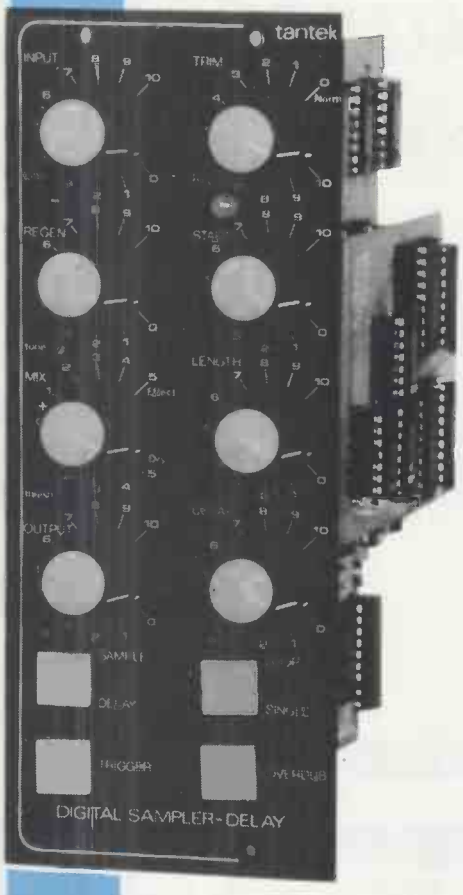
At full 15kHz bandwidth, the Delay/Sample time ranges from 15mS to 1.4 sec. This range can be raised from 90mS to 8 sec with reduced bandwidth. The Length control sets the time and the Trim control fine-tunes it, reducing the bandwidth at the same time. Lower bandwidth settings are reflected in the reduced quality of the echoes, and it's a loss that can become quite noticeable, especially with many repeats when the Regeneration control (feedback) is turned up.

The usual impressive, useful and interesting delay effects can be produced – along with some pretty horrible sounds if you twiddle the knobs (in)correctly. You can plug in the Modulation Oscillator for vibrato effects or just to add something extra to the delay, so long as you're careful that the modulation doesn't cause distortion. Increasing the Trim helps combat this, but at the expense of reduced bandwidth. The Mix controls the balance between the dry and processed signal.

Sampling is easy. Set the sample time and play the sound. The unit triggers automatically (though you have the option to apply an external trigger) so split-second finger movements are not required.

A sample is played by pressing the trigger button, applying an external trigger or by a signal at the audio input. The CV input is calibrated to accept a 1V/octave signal from an analogue synth, and a Tune preset can be adjusted to scale the keyboard if required. This allows the sample to be triggered by almost anything, so long as it has compatible CV and Gate sockets on the back.

The Start control lets you skip any unwanted bits at the beginning of the sample; they can appear at the end, but the Length control can then be used to shorten



the length of the sound. The Decay control helps extend a sample with an abrupt finish, and is most effective during looping, as it controls the rate of decay of the loop.

Looping, however, is something you should contemplate only if it's absolutely essential. It can take a while to find a suitable looping point and some sounds, of course, insist on glitching no matter what you do. In the (admittedly limited) time I spent with the Tanrak, I never managed to produce a loop which didn't glitch at all, but I came close. The loop only plays when it is retriggered, and every time it's gated a length of sample at zero memory is played, so the initial attack of the recorded sound is preserved.

An Overdub button allows you to mix the existing sample with a new one using the Regeneration control. You can build up new sounds and effects quite easily this way, and I succeeded in putting together my own orchestral stab from a variety of motley sources. It weren't 'alf bad.

You can store different samples in different parts of the memory by using the editing controls to select start and finishing positions. At full bandwidth this doesn't give you much time to play with, and as you increase the time you reduce the quality. Situation normal.

Finally, you can save and load samples to and from tape just as you record and play a sample into the unit.

All in all, this is a super module that really is fun to use. It does produce some background noise, though, which seems to be par for the course for an eight-bit companding system these days. My guess is that, with noise at its present level, the Tantek sampler wouldn't meet a professional studio's demands. Whether or not it falls short of yours only you can say, but it's worth remembering (a) that this sampling delay really is incredibly cheap, and (b) that since I tested the Tanrak, the designers claim to have redesigned the circuitry so that noise levels are now reduced by about 10dB.

The Other Modules

Yes, there are more. The Phantom Power module, a Multi-Delay module, a Mixer module and a Panner-Fader. I didn't have any of these to review, but they must be mentioned for the sake of completeness, and I have no reason to doubt that they're built to the same standard as the other Tanrak modules. Tantek are aiming to produce a new module every two months, so buyers have plenty to look forward to, including – and this is a piece of *hot* news – a MIDI-to-CV converter.

Most of the Tanrak units can be used with stereo signals, and although I suspect many home users will tend to record in mono and create their stereo image after (or during) much mixing, there are many applications suited to stereo processing – in these cases the Tanrak won't let you down, though be warned that you may have to reconfigure your patches and some of the modules. The flexibility is there, and it must be welcomed and applauded.

Conclusions

The Tanrak system was developed and designed for the home and semi-pro studio, a market that always has one eye on the price-tag and is keen to appreciate value for money. Well, Tanrak must get 10 out of 10 for value. If you buy the kits, make that 11 out of 10.

Let me put it like this. If I were just starting my studio, Tanrak would be on my shopping list, and probably somewhere near the top. But then, if I hadn't seen the competition, I wouldn't know what a bargain I was getting. At the very, very least, send for details of the Tanrak modules and if you don't buy them, let me know which system you found to be superior.

I was born too soon. ■

DATAFILE
Tanrak Audio Processing System, Pt 2

Description	Kit	Built
Dynamic Noise Filter	£ 35.95	£ 45.95
Psychoacoustic Enhancer	£ 41.95	£ 58.95
Parametric Equaliser	£ 35.95	£ 49.95
Digital Delay/Sampler	£219.95	£299.95
Power Unit	£ 33.95	£ 42.95
Multi Delay	£ 79.95	£110.95
Mixer Module	£ 26.95	£ 36.95
Phantom Power Module	£ 26.95	£ 41.95
Dust Cover Set	–	£ 8.95
Blanking Panel	–	£ 2.95
Sub rack	£ 39.95	£ 47.95

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1984

JANUARY *Sold Out*

Music *Simple Minds, Saga, Hawkwind, Dave Hewson* **Appraisal** *Oberheim OB8, Vigier Bass, SIEL Cruise, The Kit & Accessories, Passport Soundchaser* **Technology** *Using Sequencers, Electronic Metronome* **Studio** *Ibanez DM2000*

FEBRUARY *Sold Out*

Music *Daniel Miller, China Crisis, Don Airey, Mainframe* **Appraisal** *Korg Poly 800, SIEL PX, Yamaha PS55, Eko EM12, Roland Chorus Cube 60, Washburn Bantam Bass, Carlsbro Marlin, Dr Böhm Digital Drums* **Technology** *Drumatix Mods, Voltage-Controlled Clock* **Studio** *University of Surrey Music Studio, Boss DE200*

MARCH *Sold Out*

Music *Vince Clarke & Eric Radcliffe, Blancmange* **Appraisal** *Sequential SixTrak, Roland SDE3000, Roland System 100M, Electronic Percussion Guide (nine reviews inc Sequential Drumtraks, Boss DR110, AHB Inpulse One, Hammond DPM48)* **Technology** *Music Composition Languages Pt3, S-trigger Converter, Lead Tester, Using Sequencers Pt2*

APRIL *Sold Out*

Music *Fad Gadget, Vic Emerson (Sad Café), Brian Chatton* **Appraisal** *Simmons SDS7 & SDS8, Roland Jupiter 6, TR909 & MSQ700, Yamaha PS Keyboards, Crumar Composer, Klone Dual Percussion Synth, Vox White Shadow Bass* **Technology** *Gentle Art of Transcription Pt1, Ins & Outs of Digital Design, Understanding the DX7 Pt1, Syndrom Pt1, Bass Pedal Synth* **Studio** *Ibanez UE400 & UE405*

MAY

Music *Wang Chung* **Appraisal** *PPG Wave 2.3 & Waveterm, Roland Juno 106, Roland JSQ60, Casio 310, M&A Electronic Drums,* **Technology** *PDSG Pt1, Understanding the DX7 Pt2, String Damper, Clap Sounds* **MIDI Supplement Pt1** *Specification, Theory & Practice, Product Guide* **Studio** *Huddersfield Polytechnic Music Studio, Steve Levine on MIDI, Dynacord PDD14*

JUNE *Sold Out*

Music *Orchestral Manoeuvres in the Dark, Indie labels* **Appraisal** *Roland GR700/G707, SynthAxe, SIEL Expander 6, Sequential Model 64 Sequencer, MFB512 Digital Drum m/c, Jen Musipack 1.0, Boss DD2 Delay Pedal* **Technology** *Gentle Art of Transcription Pt2, PDSG Pt2, Understanding the DX7 Pt3, Syndrom Pt2, Multiwave LFO* **MIDI Supplement Pt2** *Inside MIDI, MIDI & The Micro, BeeBMIDI Interface 1 (construction)*

E&MM's editorial team have covered so much ground over the last couple of years, just missing one issue can cause large gaps in a reader's knowledge of contemporary music technology. But if you have missed an issue or two, don't panic. Help is on hand in the form of E&MM's Mail Order Department, who can offer you 1984/5/6 Back Issues at just £1.40 including post and packing. Earlier issues are even cheaper: just £1.00. Those prices refer to the UK and surface mail delivery to Europe and Overseas, though if you are overseas, you can get your issues sent air mail by adding an extra £2.00 per magazine. And don't despair if you want to read something that's in an out-of-stock issue. Photocopies of articles from sold out issues *only* are available at just 50p per article. So, orders please (sterling cheques/POs payable to Music Maker Publications) to: *E&MM Mail Order Department, Alexander House, 1 Milton Road, Cambridge CB4 1UY.* Please allow 28 days for delivery, as the mail order people are a busy lot these days. E&MM January '85 carried a full index to everything we wrote about during 1984, while next month's issue will contain an abbreviated list of 1981-83 Back Issues.

JULY *Sold Out*

Music *Human League, Steve Jolliffe, Jade Warrior* **Appraisal** *Yamaha DX9, Korg Super Section, Yamaha MK100, Microsound CBM64 add-on, TED Digisound, JMS MIDI Software* **Technology** *PDSG Pt3, Spectrum MIDI (Sequential SixTrak and DX7 Patch Dump), Understanding the DX7 Pt4, RackPack, BeeBMIDI 2 (construction)* **Studio** *Ibanez DM1100*

AUGUST *Sold Out*

Music *Rusty Egan (Visage), Cocteau Twins, Hans-Joachim Roedelius* **Appraisal** *Synclavier Update, Technics SXK250, Yamaha PF10 & PF15, SIEL Piano Quattro & PX jr, Roland HP300, HP400, PB300 & PR800, Garfield MiniDoc, E-H Instant & Super Replays, EMR BBC MIDI Software* **Technology** *Fairlight Explained Pt1, Understanding the DX7 Pt5, BeeBMIDI 3 (DX7 Voice Dump), Syndrom Pt3, Miniblo, SynthMix Pt1*

SEPTEMBER *Sold Out*

Music *Thomas Leer, Chris & Cosey* **Appraisal** *Oberheim Xpander, Korg EX800 & RK100, DigiAtom 4800, MicroLink ML10 System, Roland MPU401 & Software, Sycologic AMI & MX1, Passport MIDI/4 Software* **Technology** *OMDAC Update, Fairlight Explained Pt2, Step-time Composition on the Sequential Model 64, SynthMix Pt2, Dual VCLFO, Understanding the DX7 Pt6* **Studio** *Cutec MX1210*

OCTOBER *Sold Out*

Music *Ultravox* **Appraisal** *Yamaha CX5M & Software, Roland Mother Keyboard System, 360 Systems Update, Yamaha PS6100, ddrums, Yamaha RX11 & RX15, Korg DDM220, Tama Techstar Electronic Kit, Frazer Wyatt Speakers, Greengate DS3 Sampler* **Technology** *PDSG Pt4, Fairlight Explained Pt3, OMDAC Update 2, Powertran MCS1 Pt1, Understanding the DX7 Pt7* **Studio** *Reports on ELCS, Hollow Sun, Computer Music Studios*

NOVEMBER *Sold Out*

Music *Cabaret Voltaire, Peter Hammill, Axxess, UK Electronica* **Appraisal** *Chroma Polaris, Emulator II, Chase Bit One, Casio CT6000, Ricol Action Replay, Amstrad CPC464 Computer* **Technology** *BeeBMIDI 4 (programming with interrupts), Fairlight Explained Pt4, PDSG Pt5, Drum Sequencer (BBC B), Wasp/CBM64 Sequencer, Powertran MCS1 Pt2* **Studio** *Yamaha D1500 MIDI Delay, Everything but the Kitchen... (syncing to tape)*

DECEMBER *Sold Out*

Music *Vangelis, Tangerine Dream, Musica Nova* **Appraisal** *Kurzweil 250, Akai AX80, Siel DK600, Technics Digital 10, Roland TR707, Korg DDM110, MPC DSM8, Ultimate Percussion UP5, Acorn Music 500, Software roundup inc reviews on Music Maker (CBM64), SIEL Expander Editor (Spectrum), Island Logic Music System (BBC), UMI 1B (BBC), SIEL Composer/Arranger (CBM64), JMS 12-track Recording Studio (CBM64)* **Technology** *BeeBMIDI 5 (buffers), Fairlight Explained Pt5, Powertran MCS1 Pt3, Syndrom Pt4* **Studio** *Everything but the Kitchen... (interfacing analogue synths)*

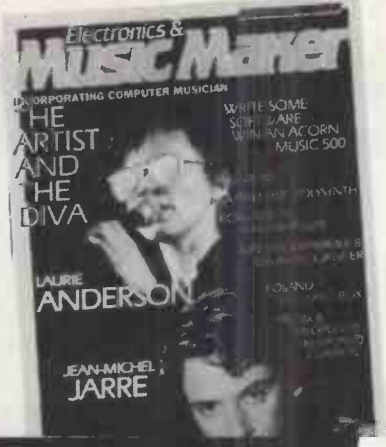
1985

JANUARY *Sold Out*

Music *Tears For Fears, Neuronium* **Appraisal** *Casio CZ101, Simmons SDS EPB, Keyboard Combo Roundup, Elka X30, Sequential MAX, TED Digisound Update, SIEL MK900, LEMI MIDI Software* **Technology** *BeeBMIDI 6 (Juno 106 voice dump), Powertran MCS1, Back to Basics* **Studio** *Everything but the Kitchen... (syncing drum machines & sequencers)*

FEBRUARY

Music *Laurie Anderson, Jean-Michel Jarre, Ars Electronica & ICMC* **Appraisal** *Roland JX8P, MPC Programmer 8, Roland SBX-80, Korg KMS30, Roland MSQ100, SIEL 16-track Sequencer, EMR MIDItrack Performer* **Technology** *Digisound Voice Card, Back to Basics (VCOs)* **Studio** *Newcastle College of Art & Technology, Everyng but the Kitchen... (syncing with timecodes)*



MARCH

Music *New Order, Steve Tibbetts* **Appraisal** *Korg DW6000, MPC DSM32, Synclavier Performance System, Simmons SDS1, OSC Advanced Sound Generator (synth preview), Sycologic M14, ATPL Symphony BBC add-on* **Technology** *CX5M Revisited, Fairlight Explained Pt6, BeeBMIDI 7 (DX7 Editor Pt1)*

APRIL *Sold Out*

Music *Keith Emerson, China Crisis, Tim Souster* **Appraisal** *SIEL DK80, Pearl DRX1 Electronic Drums, Yamaha TX7 Expander & QX7 Sequencer, Linn 9000, Datel Sound Sampler, SDS DX7 Voice Editor, Zlatna ACS100* **Technology** *BeeBMIDI 8 (DX7 Editor Pt2), Fairlight Explained Pt7, Powertran BBC-MIDI Interface, Time Machine syncing project* **Studio** *Delta SX301 DDL add-on*

MAY

Music *Bill Sharpe, I-Level, Severed Heads* **Appraisal** *Yamaha TX816 MIDI Rack, QX1 Sequencer, KX88 Mother Keyboard, Akai S612 Sampler, Sequential MultiTrak, Korg MR16 MIDI Rhythm Sound Unit, Technics DP50 Drum Machine, Joreth Music Composer Software (CBM64)* **Technology** *TechTalk (Robert Moog), Time Machine add-on (RX15-MC202), Powertran MCS1 Software, Fairlight Explained Pt8*

JUNE

Music *Mick Roberts (King), Loose Ends, Ian Boddy* **Appraisal** *Casio CZ5000 Poly, Oberheim Matrix 12, The Anvil (drum machine preview), Keyboard Stand Roundup, MIDI FX (JMS MIDI Master Synchroniser, Quark MIDI Link 999, JMS CGX Interface, Bokse US8 Universal Synchroniser), Microsound CBM64 Sampling System, XRI Micon Software* **Technology** *TechTalk (Dave Simmons), Fairlight Explained Pt9, Fairlight Goes MIDI* **Studio** *Powertran DDL sampling add-on*

JULY

Music *Patrick Moraz & Bill Bruford, Level 42* **Appraisal** *Ensoniq Mirage, Chase Bit 01, SIEL Expander 80, Sequential TOM, Atari 520ST Micro, Passport MIDI/4 Plus & MIDI/8 Plus, Hinton MIDIC, Microskill AS32 (synth preview)* **Technology** *Music 500 AMPLE program* **Studio** *Zeus B Held, Korg SDD2000*

AUGUST

Music *Tim Lever (Dead or Alive), Sting, Stewart Copeland* **Appraisal** *Yamaha DX21, Roland TR727, Simmons SDS9, PolyMIDI 1 Sequencer, SIEL DK80 Graphic Editor & MIDI Data Base software (CBM64), Roland MIDI FX, Micro Musical ML50 Pedalboard* **Technology** *Minimoog retrospective* **Studio** *Eric van Tijn & Jochum Fluitsma (Mai Tai), APRS findings, Logitech sampler*

SEPTEMBER *Sold Out*

Music *Godley & Creme, Trans X, Philip Glass* **Appraisal** *Emulator SP12, Yamaha RX21, Korg SQD1, MultiKlone kit, Casio SZ1, Sycologic PSP* **Technology** *BMF Report, TechTalk (John Chowning) Pt1, Gallery of Misfits Pt1* **Studio** *Yamaha REV7, Roland SRV2000*

OCTOBER

Music *Shriekback, Jansen & Barbieri, Michael Nyman, UK Electronica* **Appraisal** *Yamaha DX5, Boss DSD2 Sampling Pedal, Syntron Digidrum (CBM64), The Music System (CBM64), Chase Bit 99, Prophet 2000 preview* **Technology** *TechTalk (John Chowning) Pt2, Gallery of Misfits Pt2, BeeBMIDI Monitor Pt1* **Studio** *BBC Radiophonic Workshop, Roland SDE2500*

NOVEMBER

Music *J J Jeczalik, Mark Shreeve* **Appraisal** *Korg DW8000, UMI 2B (BBC B), Passport Music Shop (CBM64), Syntech Studio I (CBM64), Akai MIDI FX, Custom Sound Kbd Combo* **Technology** *Syn-D-Kit (DIY), BeebMIDI Monitor Pt2* **Studio** *Paradise Studios, Vesta Kozo DIG420*

DECEMBER

Music *Brian Eno, Stockhausen, Gary Numan* **Appraisal** *Prophet 2000, Roland Electronic Drums, Sound Designer software (Emulator II/Apple Mac), Yamaha CX5M software (DMS 8-track Sequencer, DX21 Editor, RX Editor), Gibson Explorer synth, RAP software (Spectrum/CBM64)* **Technology** *ICMC '85* **Studio** *CTS Studio 4*

1986

JANUARY

Music *Thompson Twins, Penguin Café Orchestra* **Appraisal** *Roland Alpha Juno 1, Oberheim Matrix 6, JMS Scorewriter (CBM64), Mirage Update, Akai S612 Update* **Technology** *TechTalk (Steve Cunningham), Amiga preview, Atari ST* **Studio** *Rebis RA226 sampler*

FEBRUARY

Music *Jan Hammer, Bronski Beat, Roger Eno* **Appraisal** *Yamaha DX100, Roland Alpha Juno 2, Casio CZ3000, Roland PAD8 Octapad, Steinberg Pro16 Sequencer (CBM64), RSF DD30 drum m/c, Dynacord MCC1 MIDI FX* **Studio** *DOD RDS3600, MDB Window Recorder, First Take (studio newcomers' guide)*

MARCH

Music *Talk Talk, Steve Reich, Drum Theatre* **Appraisal** *Linn Sequencer, Dynacord Percuter S, Steinberg Scorewriter (CBM64), CZ Editing Software (XRI/Spectrum, Joreth/CBM64)* **Studio** *Lexicon PCM70, Boss RSD10, Cassette Multitracking Guide*

APRIL

Music *Belouis Some, Mike Oldfield, Sigue Sigue Sputnik* **Appraisal** *Korg Poly 800II, Technics PX1 Digital Piano, Casio RZ1, Yamaha QX21, 360 Systems MIDI Bass, MoPro Atari ST software, Sycologic M16 MIDI Matrix, Digisound PK1 PitchTracker, Microvox Sampler (CBM64)* **Technology** *TechTalk (Rob Hubbard), Fairlight Series III preview, PPG Realizer preview, Zlatna profile* **Studio** *Mike Howlett, Alesis MIDIverb*

MAY

Music *Tangerine Dream, Wim Mertens, Mr Mister, Saga* **Appraisal** *Prophet VS, Oberheim Xk, Casio CZ230S, Mirage Multisampler, Roland TR505, Korg DVP1 Vocoder, Sound Designer 2000 software (Mac), Roland MPS (IBM PC) & MUSE software (Apple II, CBM64), Commodore Music System software (CBM64), Emulator SP12 updates* **Technology** *Dodgy Practices (guide to rehearsing)* **Studio** *Yamaha SPX90*

JUNE

Music *Peter Gabriel, Jezz Woodroffe* **Appraisal** *Roland JX10, Yamaha PF70/80, Yamaha RX21L, Drawmer Midman, Yamaha MEP4, C-Lab software (CBM64)* **Technology** *Secondhand Polysynth Guide, E&MM MIDI Thru (DIY), Casio Mono Mode* **Studio** *Rupert Hine, Bel BD240*

JULY

Music *Tony Banks, Harold Budd, Icehouse* **Appraisal** *Akai S900, Oberheim Matrix 6R, Simmons SDS1000, Shadow MIDI Guitar, 360 Systems MIDI Patcher, Mixdown software (Amiga), 10 Systems Sequencer (Spectrum), Wersi MK1 preview* **Technology** *TechTalk (Douglas Adams), MIDI & SMPTE* **Studio** *Tanrak System Pt1*

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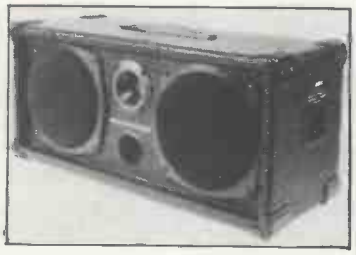

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RAISING THE STANDARD

In the UK, Japan's MSX home-computer standard has made relatively little impact. But Yamaha's CX5M music computer showed what could be done with a little imagination, and now two other manufacturers – Toshiba and Pioneer – have introduced MSX machines which embrace electronic music and audio-visuals respectively. *Annabel Scott*

MSX has been a failure – true or false? The answer to that one rather depends on where you live. In Japan, West Germany and some other parts of Europe, the Far Eastern micro standard continues to be quite a success, now going into its second generation with MSX computers featuring expanded memories and instruction sets and increased facilities.

But as far as the UK market has been concerned, MSX has had a very limited impact, with disappointing sales particularly over the Christmas 1985 period. That's a pity, because the standardisation available through use of the MSX format has as many applications in the field of music as in any other.

There has been one exception to the general run of the MSX story: the Yamaha CX5 Music Computer. The problem with the CX5 was that it couldn't be regarded as being compatible with other hardware as MSX micros were intended to be, simply because you had to go for a Yamaha MSX micro in order to get the FM tone-generation module. When other MSX micros plunged to £99, the CX5 stayed resolutely at several hundred, dropping to just under £300 only when market forces proved irresistible.

All that has changed now. The CX5 tone module has been updated and is available separately, and the machine has competition in musical terms from the Toshiba micro we're examining today. And several recent developments have gone some way towards realising the potential of MSX as it was first announced almost two years ago – for instance, the video-linking Pioneer computer which we're also examining.

So it may now be possible to assemble a powerful music-and-video system based on MSX computers, combining the best of the recent hardware with the cheapest of the 'old stock' accessories.

To go some way towards testing this theory, let's look first at the Toshiba HX10 computer, and its optional HX-MU901 keyboard and synth module.

First, you should be able to obtain an HX10 for around £99 – if you can still find one in the shops. In theory it has been replaced by the HX20, which has twice its 64K of memory, but in practice, either will work perfectly well with the Toshiba keyboard and software.

The HX10 is a conventional enough MSX micro, with Joystick and Printer ports to the right, Recorder, RF, Audio and Video, Cassette and Expansion ports to the rear, and a Cartridge slot on the top panel. Some later micros have two cartridge ports and this could have some musical applications, but the HX10 is an attractive enough little machine with a pleasant QWERTY keyboard and neat layout.

The HX-MU901 Keyboard and Tone Module system is now in the shops for £99, and for that price, it makes an impressive package. It consists of a full-size four-octave keyboard with Enter and Stop touch panels and a long multi-purpose sensor panel, plus an FM synthesiser cartridge which presumably uses Yamaha patent chips, despite having only two operators and two algorithms. The cartridge connects to the keyboard with an integral lead and plugs into the computer's cartridge port. There are two phono audio outputs on the cartridge, and the sound comes over the TV monitor as well.

The software loads automatically from the cartridge and presents a graphic picture of a keyboard and drum kit. This has three demo tunes (a bit of classical, a bit of Scott Joplin – the usual stuff) but rather cleverly conspires to make both keyboard and drum kit play along with the music. The synth module is nine-note polyphonic, but doesn't have the CX5's multi-timbral capabilities except in the sense that it can play bass, chord and drum sounds simultaneously (reducing the main part of the keyboard to two-note polyphony).

We'll come to the sounds later, but for the moment let's get off the opening display by pressing 'Edit/Space'. This takes us to the main screen, referred to as Display 2.

On this page you find ten main sections.

The first of these, Poly, lists the voice number from 1 to 65, allows you to switch Vibrato on or off, and to select long or short sustain. These parameters are selected using the computer's four cursor keys, and altered using the space bar and back space key.

The Bass section allows you to do exactly the same with the bass side of the keyboard when you're in Split mode. Bass parts are monophonic, and the split-point is set at the second F♯.

The Chord section provides the same options, and is active when the accompaniment is running, while the Level section allows you to mix the volumes of the Poly, Bass, Rhythm and Chord parts using a small bar graph display.

The Rhythm section allows you to select any one of 20 drum patterns ranging from ▶

► Rock to Swing to Big Band. Tempo can be set from 40 to 200 BPM, and the Bass facility can be set to either Walk or Root. Next to the rhythm display is the Chord box, which identifies chords played when the accompaniment section is active. This can cope with some quite complex shapes such as G♯sus.

Play Mode is obviously the most important section, and sets the keyboard mode to Normal (right-hand sounds only), Split (Poly right and Bass left) or Ensemble (Poly right and Accompaniment left). Sensor Mode can be set to Percussion, Rhythm Pattern, Rhythm Edit, Voice, Arpeggio or Chord, and we'll look at these facilities shortly.

The Record section has on and off selectors for the right and left hand, and allows you to enter performances (including accompaniment selections) in real time. The memory capacity isn't stated in the handbook, but must run into many thousands of notes – though there are few editing facilities beyond the possibility of replacing backing chords by pressing Stop, the new chord, and Enter on the music keyboard. And just in case your computerised doodlings throw up a work of unexpected genius, recorded performances can be saved to disk or tape.

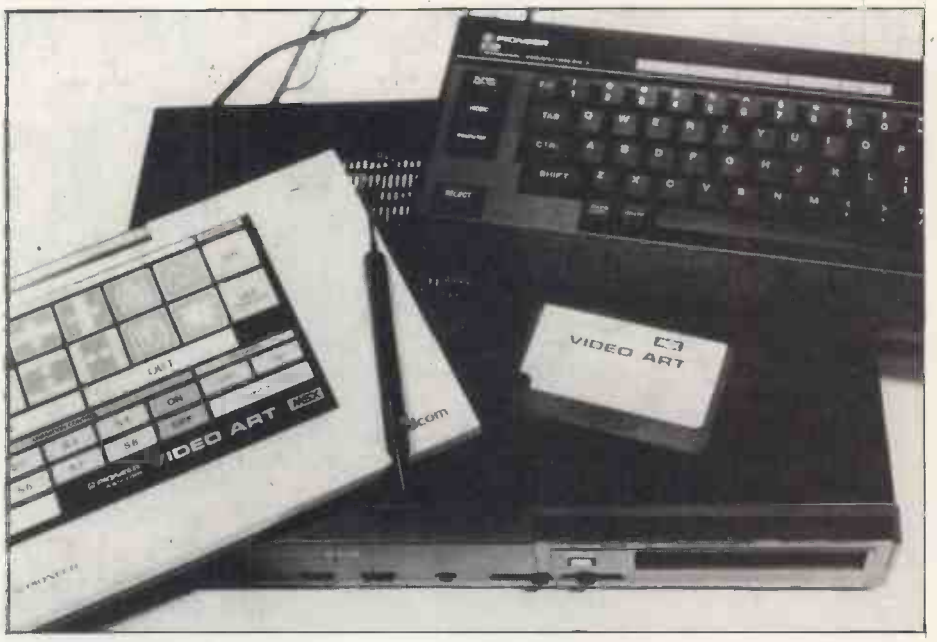
Meanwhile, the Function section allows you to transpose the whole keyboard in semitones, to tune it to other instruments, to set the vibrato depth and to go to the Save-Load page. Beneath the main screen display is a representation of the multi-sensor on the music keyboard, and this changes to represent each function of the multi-sensor as it is selected.

So, in performance terms, the Toshiba resembles a home keyboard with a useful if rudimentary sequencer. The FM sounds are pretty reasonable, and cover all the obvious brass, piano, string, bass, metallic and abstract effects, with most of the power and clarity of, say, a Yamaha DX9 FM poly.

The drums are OK, too, though obviously you don't have individual outputs, just the stereo phono outs which split the left- and right-hand sections.

The Multi-Sensor is a cunning and versatile device which has some real uses, as well as representing a gimmick for beginners. Five coloured strips above it divide it into five ranges for percussion functions, and the first function ('Percus') allows you to tap out bass, snare, tom, cymbal and closed hi-hat sounds manually. Most of the sounds come straight out of Joy Division, so if you've ever wanted that authentic 'She's Lost Control' boingy snare sound, this is where to look.

The second Sensor mode, 'RhyEdt', allows you to enter a new rhythm pattern in real time, choosing one of the existing patterns for erasure. This function can be combined with the third mode, 'RhyPat', which allows you to enter any five of the preset rhythm patterns onto the five areas of the multi-sensor. This allows you quickly to call up the pattern with a single touch during performance, and partly makes up for the fact that there's no other facility for composing a complex drum pattern.



'Voice' offers the same functions for the polyphonic voices, allowing you to call up any five voices immediately from the multi-sensor.

The remaining sensor functions, 'Arpeggio' and 'Chord', work only when the accompaniment is running. Chord will play rhythmic chords in any sound you choose, with a different pattern to accompany each rhythm, while Arpeggio will pluck notes out of the left-hand chords and play them over all four octaves as you run your finger along the multi-sensor – in much the same way as that pioneer of budget auto-accompaniment, the Suzuki Omnichord.

Overall, the best points about the Toshiba are that it's cheap and easy to operate. The sounds are usable, but can't be edited in any more sophisticated fashion than selecting sustain and vibrato. The sequencer is useful even though it has no synchronisation facilities, and parts of the software could have some educational use – specifically the chord box on the main page which will name almost any chord you'd care to play, and the moving keyboard display on the intro page which will show you how demo pieces are put together (it lacks the top note of the keyboard, though).

Obviously the Toshiba computer will carry out all the games and other functions of any other MSX model. But in going on to our other MSX review, we find a micro which has some unique functions the like of which certainly *won't* turn up on any other MSX micro.

Pioneer's PX7 isn't an MSX II machine – let's get that clear right from the start. It has a perfectly standard Mkl operating system, but it does have one advantage: Gen-Lock circuitry that allows the computer's video signal to be synchronised to that of any other steady video source, be it from videotape, camera or off-air.

To facilitate the video links necessary to take advantage of this, the computer itself is in a hi-fi style unit (almost suitable for a 19" rack, too) while the keyboard is on a long trailing lead. On the front of the computer unit are connectors for two joysticks, headphones and cartridge, volume and mixing level controls, on/off switch and video normal-or-through switch.

The real panel positively bristles with interfaces – audio in and out in stereo, video in and out, RF out, RGB out multipin, System Control in and out for LaserDisc players, data recorder multipin, printer out and an expansion port.

Three cryptically-labelled switches on the front of the Pioneer control the video mode – Video Only, Computer Only, and Superimpose. In the third of these modes, the computer's graphic output is superimposed over any video input you've connected to the rear sockets – no mean feat considering the expense of a Gen-Lock unit to accomplish this any other way.

What can you do with the Pioneer once audio and video are all linked up? Well, any graphics package suitable for MSX computers is available to you, but Pioneer themselves offer a useful £99 graphics tablet, the PX-TB7, which comes with a cartridge called Video Art. A basic palette of functions is available, including line, square and circle drawing, coloured fills, erase, large characters and background colouring. It's also possible to create sprites using a 16×16 matrix, and to make the sprites move across the screen and cycle from one to another to create animated action.

All functions are controlled from a scribe with a push-switch which connects into the graphics tablet, and the package can come up with some wonderful backgrounds, decent captions and basic moving effects. Each effect can be wiped across the screen in any one of a number of ways: across, up or down, centre-out, explosion and so on – budding *Tube* producers please take note.

You can, of course, write your own MSX

routines for caption generation or other effects, and as long as you choose the start-up option of Pioneer Basic (P-Basic) which takes up virtually no additional memory, the video-lock functions should come into operation reliably.

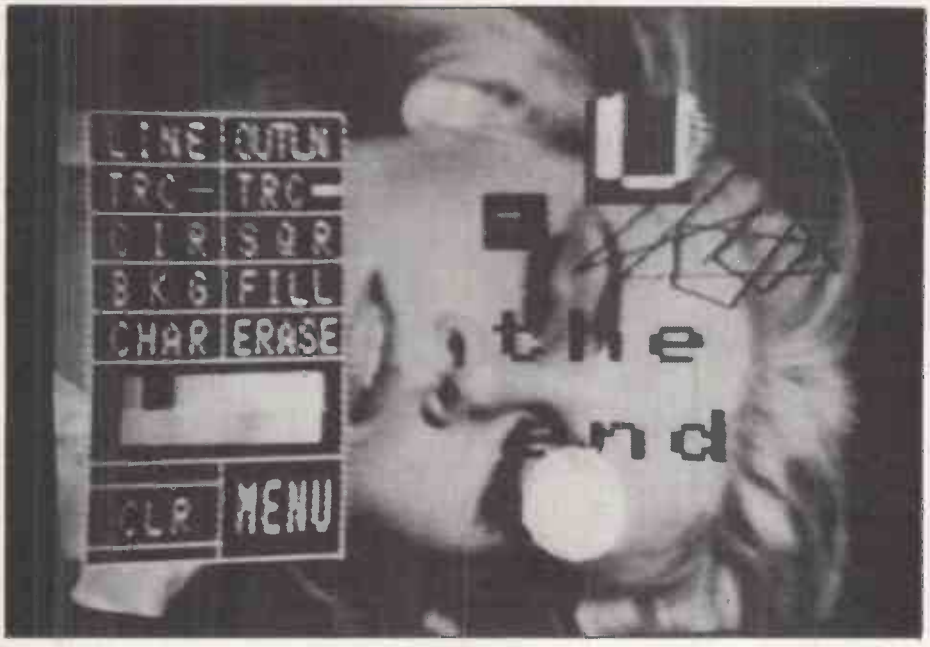
The Toshiba music package runs perfectly well on the Pioneer machine, and with a suitable interface lead, so would the Yamaha CX5 software using the new SGF05 tone module with MIDI In and Out. At £299 the Pioneer computer isn't too expensive a proposition, and its stereo audio/video mixing facilities, though originally designed for use with a LaserDisc player, could come in massively useful for musicians interested in video, or computer music, or both.

All in all, the latest batch of MSX developments leaves plenty of options open for musicians. You could go for the cheap computer, the Toshiba HX10 (assuming you can still find one in the shops), and either a Toshiba keyboard or a Yamaha keyboard and tone module (for MIDI use) with a suitable connecting lead. Apparently, these leads aren't too difficult to make up: it's just a question of soldering on the correct kind of connector to go from the Yamaha tone module to the first 20 or so pins of the computer's expansion port. JVC's MIDI Composer package and interface should also work nicely on either computer.

Alternatively, you could go for the Pioneer computer with Gen-Lock, mix all your audio and video outputs through it, and add either the Yamaha or Toshiba music systems. Mount the Pioneer in your 19" rack, let the keyboard sit on your mixing desk, and potentially you have a powerful music synthesiser/MIDI sequencer/video graphics generator/audio-video mixer/ wordprocessor at your beck and call. mixer/wordprocessor at your beck and call.

Obviously this kind of mix-and-match purchasing demands a little care, but with the home computer market in its present – highly volatile – state, it should be possible to put together some exciting packages at what can only be seen as minimal expense.

MSX is the closest the computer industry has got to a standard like MIDI, and for that alone, it deserves to be supported. There are some novel developments going on here, and on the evidence of the Toshiba and Pioneer systems, computer-wise musicians on a budget should certainly re-consider MSX as the potential centre of their studio setup – right now. ■



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YAMAHA DX7 £900 Inc f/case, stand. Fostex X15 £180. Cutec 12:2 Mixer £150. Edward ☎ 021-559 6559, eves only.

YAMAHA DX7 boxed as new, £900, or swap Esoniq Mirage, DS:3? C. Bird, 41 Windsor Road, Boscombe, Bournemouth.

YAMAHA DX7 two weeks old, cost £1250, sell for £1000 ono. James ☎ (0792) 202027 after 6.30pm.

YAMAHA DX9 £425, or swap for Korg DW6000. Write to John, 4 Alma House, Ashton Road, Lancaster, Lancs.

YAMAHA DX9 manual, tape, box, home use only, £395. Roland Dr Rhythm 110, as new, boxed, £70. ☎ Medway 404050.

YAMAHA DX21/CASIO CZ101 Swap for DX7, or consider cash offer for both. Allan ☎ Luton 418405, eves/weekends.

YAMAHA DX100 brand new, unopened, unwanted gift, £280 ono. Gerry ☎ 01-883 6753, evenings.

YAMAHA DX100 brand new, unopened, unwanted gift, £260 ono. Gerry ☎ 01-883 6753, eves.

YAMAHA MK100 Sounds, bassline, drum m/c, all programmable, tape dump; performance recorder, stereo chorus, boxed, £160. ☎ Grantham (0476) 77165.

YAMAHA PF10 good condition, with case, £360 ono. ☎ (0742) 589068.

YAMAHA PS35 keyboard, excellent condition, PCM drums, stereo, £225 ono. ☎ Worthampton (0604) 60317.

YAMAHA PS6100 home use, unmarked, £600 ono. ☎ 01-769 6425.

YAMAHA PS6100 PCM/FM rhythms, volces. Few months as new, with stand, cost £1000, accept £650. ☎ Nott'm 655851.

YAMAHA PS6100 complete with stand, multi-purpose footswitch, MIDI compatible, touch sensitive, £575. Graham ☎ Billinghurst (040 381) 3294.

Sampling

AKAI SAMPLER + disk drive + over £50 worth of disk, £575 ono. Lee ☎ 01-949 6331.

GREENGATE DS:3 looping, Syn.1, + delay software, Apple II, twin disks, green monitor, samples, £1050. ☎ (0255) 436932, after 6pm.

GREENGATE DS:3 OWNER'S CLUB More members required. Swap your samples, etc. Sae for details: 31 Arundel Road, Luton, Beds LU4 3DY.

GREENGATE DS:3 sampler, latest software, trillions of sounds, etc. Darren ☎ 01-441 1722 daytime, 01-445 4429 eves. (North London).

PLAY FAIRLIGHT/LINNDRUM sounds on your sampler! Studio quality. Details: TMS, 152 Victoria Rd, Scarborough, Yorkshire. ☎ (0723) 370093 or 583899.

POWERTRAN MCS1 sampler/DDL with MIDI and software, £350 ono. Clive ☎ (0992) 28173.

SAMPLER for sale, features phasing, flanging, double tracking, harmonising, up to 12 samples can be used, easy to use sequencer and group editor. Offers. ☎ (0926) 36668.

SAMPLES! Pair TDK HXS60 or MA-R60; £20 and £30. Hundreds of sounds, Ell etc, real time, Dolbyless. Al ☎ 01-451 5787.

SOUND SAMPLES 100 brilliant samples on cassette. Orchestras, Choirs, Effects. £5 cheque/PO: 21 Riddy Lane, Luton, Beds, LU3 2AD.

Sequencers

KORG SQD1 as new, £460. Paul ☎ Guildford 67882.

ROLAND BASSLINE £65. Graphic 12-band £45. Roland Hand-clap £25. Large rack-mount case, £20. ☎ (0782) 262286.

ROLAND MC202 MicroComposer, 1600-note memory plus built-in SH101 synth, £95. Torque reverb £40. Kevin ☎ (0353) 87498.

ROLAND MC202 digital sequencer, good condition, £110. Casio MT40, £50 ono. Adam ☎ (0703) 583680, 7pm eves.

ROLAND MSQ700 boxed as new, 8-track MIDI sequencer, the musician's tool, £499. ☎ 01-354 5528.

ROLAND TR606, Korg KMS30 MIDI Synchroniser, Korg DDM220 Latin Percussion, all three for £225 ono. Mark ☎ (073 73) 50302.

YAMAHA QX7 mint, boxed, £165. Roland MIDI-to-CV Interface, £110. Gordon ☎ (02214) 4887.

Drums

BOSS DR110 immaculate £55. Paul ☎ Guildford 67882.

BOSS DR RHYTHM drum m/c, few hours use, quick sale, £65. Paul ☎ 01-889 5975 (Wood Green).

DMX DRUM MACHINE including f/case, immaculate condition, £895. Patrick ☎ (0733) 45868.

DRUMULATOR perfect, £425 ono. Will swap for DK600 Opera 6, Juno 106, WHY. Casio CZ101, £240. Nick ☎ Southport (Merseyside) (0704) 67478.

E-MU DRUMULATOR 2 (64-song memory), £300 ono, must go. ☎ 01-609 9507.

KORG DDM110 excellent condition, £140 ono. Tony ☎ Coventry 552611 (day), Atherstone 3736 (eves).

KORG DDM110 nine good kit samples, easy programming, mint £110. MC202, mint £110. ☎ Batley (0924) 474408.

KORG DDM110 programmable, digital drum machine with power supply, boxed, etc, £130. ☎ Bristol (0454) 31696.

KORG DDM110 as new, boxed, £110 ono. Eko bass pedal board, immaculate, £115 ono. ☎ Rotherham (0709) 553219.

KORG KPR77 home use only, immaculate and still boxed, £90 ovno. Andy ☎ Deepcut (0252) 836087.

KORG KPR77 drum m/c, two trigger outs, DIN sync (48), and cassette interface, £100. Moog MG-1 monosynth, £100. ☎ 041-637 0806.

ROLAND TR606 Drumatix, £100. Pedals: Boss Noise Gate £25, Arion Phaser £40, Amdek Compressor (bullt) £10. Lee ☎ 01-517 3521.

ROLAND TR707 Song Data Cassette, £6.50. Cheque/PO to Robert Williams, 43 Newick Road, Clapton, London, E5 0RP.

ROLAND TR727 digital latin percussion, £250. Yamaha QX7 MIDI sequencer, £150. ☎ (0322) 64498.

ROLAND TR808 classic drum m/c, £160. Elka sidekick 32, £125. Both excellent. ☎ (0255) 426672 (Essex).

ROLAND TR808 Rhythm Composer, excellent condition, home use only, £200. Steve ☎ Paignton (Torbay, Devon) (0803) 557702.

SEQUENTIAL TOM digital drum machine, sound reverse, tuning and programmable dynamics, new condition, boxed, £400 ono. ☎ 01-648 7968.

SEQUENTIAL TOM three hours use, £295 ono, or swap for **TX7**, DX21. ☎ 01-888 4997.

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Fill in the form to a maximum of 18 words (one in each box), and send it to: *E&MM Free Ads, Music Maker Publications, Alexander House, 1 Milton Road, Cambridge CB4 1UY.* Please print clearly in BLOCK CAPITALS. The ad must reach us on or before **Tuesday, August 12** for inclusion in the September '86 issue of E&MM – late arrivals will be printed in the next available issue.

Please include this ad in the ..... *section.*

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YAMAHA CX5M sound-pack: 144 excellent sounds (cassette), + data sheets, immediate delivery. Ch/PO £10: N Fawcett, 10 Cressex Rd, High Wycombe, Bucks. ☎ (0494) 23886.
YAMAHA CX5M small keyboard voicing program, manuals, very good condition, £225 ono. Mark ☎ (0446) 742702.
YAMAHA SFG01 module, £35. DX7 Voicing program, £20. DMS 8-track recorder, £45. Small kbd, £35. ☎ 01-977 9531.

Recording

CUTEC MR402 4-track cassette £280. Casio SZ1 MIDI sequencer, £170. PX above for Fostex 350 mixer. Bill ☎ (04302) 3204.
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FOSTEX X15 Multitracker, only nine months old, with PSU, £200. Dynamix 6:2 mixer, £120. Both perfect. Kevin ☎ (0353) 87498.
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FOSTEX 250 Multitracker, £395. PEP800 8:8 mixer, pre- + post-faders, stereo monitoring, £250. ☎ (0707) 872436.
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REVOX A77 MkIV, 3¾/7½ ips, ¼ track Dolby, excellent conditior, £325. Pat ☎ 01-318 2340.
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ROLAND SRV2000 REVERB new, £900 ono. Micky ☎ (02407) 5478.
TASCAM 144 Portastudio, good condition, £300 ono. ☎ Carterton (nr Oxford) (0993) 841586.
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TASCAM 244 Portastudio, vgc, six months light use only, with manual, £500 ono. Steve Dracup ☎ 01-743 9313, daytime.
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YAMAHA MT44D multitrack recorder, hardly touched, 3 months old, best condition, £325. ☎ 01-300 0827.
YAMAHA R1000 digital reverb, absolutely mint condition, boxed £295 ono. CX5 large ROMs £200 ono. Matt ☎ Farnham (0252) 721264.
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Personnel

JON ANDERSON/YES music appreciator seeks like-minded penfriends. Tizzie Hay, 1st House, Margery Lane, Lower Kingswood, Tadworth, Surrey.
FELLOW ELECTRO MUSICIANS sought for collaborations. Likes Numan, Cabaret Voltaire. Richard ☎ Crowborough 63838, after 5pm.
FEMALE VOCALIST sought by amateur guitarist (21). Original melodious songs need lyrics. (Tzuke, Bush, Genesis). Tony ☎ (0562) 884045.
KEYBOARD PLAYER wanted for original commercial material. Wisbech/Chatteris area. Eric ☎ Wisbech 64034.
KEYBOARD PLAYER seeks band or anyone interested in forming a band. ☎ Darlington (0325) 468315.
KEYBOARDIST/RECORDING ENGINEER looking for work, paid or unpaid in Somerset area/Devon. Ray, 12 Whitby Road, Luton.
LOOKING FOR COLLABORATORS any instrument. Write: Christopher Dean, 25 Cragg Terrace, Great Horton, Bradford BD7 4HD. ☎ 501579.
MUSICIANS EXPERIMENTING with electro-acoustic composition (tape or live) interested in collaboration, performance, exchanging tapes/scores. Steven ☎ (0442) 51430.
SYNTHESIST/BASSIST and drummer seek any locals into improvised performance. Heldon, Schulze, Voltaire, Frohmader. Chris ☎ (0274) 501579.
VOCALIST/LYRICIST WANTED by songwriter with excellent contacts and own studio set-up. Image and professional approach essential. ☎ 01-731 2115.

Amps

PEAVEY BANDIT 65W combo, mint, £135. Pioneer cassette deck, tuner/amp, Celestion speakers, bargain £155 complete. ☎ (0926) 613625.
PEAVEY KB100 keyboard combo, immaculate condition. Reverb, four-band EQ, £250+ new, bargain £150. Scott ☎ 01-349 2667.
SESSION 75W amp, w/expensive Gauss speaker, £250 ono. USA-Anvil f/case, nice and rugged, fits Stratocaster or DX7 perfectly, £95. Ron ☎ 01-731 2115.
TANNOT CHEVIOTS speakers, pair. £225. Micky ☎ (02407) 5478.
TECHNICS KEYBOARD AMP model SY-T10, 25W approx, 3 inputs, built-in phaser, £65 ono. ☎ St Albans (0727) 37258.
TRAYNOR PS600 power amp, built-in, f/case, fan cooled, good condition, £375. Patrick ☎ (0733) 45868.
FOSTEX FX300 300W, excellent condition, £325. Pat ☎ 01-318 2340.

Misc

ABC TO ZNR ALBUMS for sale. Sae: Christopher Dean, 25 Cragg Terrace, Great Horton, Bradford, BD7 4HD.
ACCESSIT STEREO REVERB £140 ono. Ibanez 2000 DDL £335 ono, excellent condition. Tony ☎ Coventry 552611 (day), Atherstone 3736 (eves).
ACCESSIT STEREO SPRING REVERB boxed, mint, but no PSU, £75. Jon ☎ 01-734 4257/8 days, 01-603 4907 eves.
ANTORIA CUSTOM FRETLESS bass, £65 ono. Boss DR55, £45 ono. Swaps considered, all alive. Dave ☎ 061-633 5855.
BOSS RDD10 micro rack digital delay, £115. Korg DDM110, digital drum m/c, £120. Both excellent condition. ☎ 01-462 8206.
E&MM BACK ISSUES April 1982 to August 1985. Will split. Offers? Mike ☎ (0299) 250006 (Worcester area).
E&MM BACK ISSUES 80p each. ☎ (0233) 812250.
JONATHAN RUSH the new cassette 'Dividing Line', Cro2, £3.20 from 3 Scotch Horn Way, Nailson, Bristol, Avon BS19 2AG.
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KORG MEMORY EXPANDER for DW8000, Poly 800, etc, mint condition, £120 ono. Korg Super Section (mint), £200 ono. ☎ 051-677 3691.
MIDI SWITCHERS splitters and cables. Sae for full details to: Steve

Moorby, 20 Gregory Close, Reading, Berks, RG2 4JJ.

MIDI SWITCHER and splitter kits. Full details, sae to: Mark Spavin, 4 Upper Coombe, Linslade, Leighton, Buzzard.

POWERTRAN VOCODER assembled kit, £100 ono. E&MM Transpozer assembled, kit (but no display), £80 ono. CEM, BBD ICs for sale. ☎ 021-523 6752.

ROLAND GUITAR SYNTH and controller, GR700, G707, PG200 programmer + additional cartridge, £1350 ono. ☎ (023 986) 636.

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SIEL EXPANDER (12 DCOs) + Editor program (CBM64), £150 ono. JMS 12-track Studio + interface, £48 ono. DX7 Editor £15. Charlie ☎ 01-985 7799.

SCI SIXTRAK OWNERS 85 new sounds, disk or written patch sheet. Sae for details: Simon, 3 Beverley Road, London E4 9PL.

SYNTHESISER EUROROCK LPS for sale. Some rarities, sae for lists: 21 Riddy Lane, Luton, Beds, LU3 2AD.

TASCAM PE20 4-ch EQ, £40. Amdek RMK100 programmable drums/trigger outputs, £25. Eric ☎ 01-847 0468, eves.

TOKAI FRETLESS jazz bass, lovely, £325 ono. 12:2 mixer, 4 EQ, 3 sends, PFL, balanced, I/P unused, £260. Steve ☎ 061-764 0753.

VARIOUS GEAR for sale or swap: UP K2 drums, Korg DDM220, Simmons SDS4, GBS stereo. For details ☎ (0342) 23094.

WESTONE SPECTRUM 5T white guitar, immaculate, £100. Volume Booster, £5. Broken Spider sequencer, £10. ☎ Sheffield (0742) 553169.

Wanted

CAN and related solo bootlegs/rarities. David Kellett, 33 High Street, Gravely, Hitchin, Herts, SG4 7LA. Swaps? ☎ (0438) 352175.

CZ101/1000 voice books (3), 32 pro sounds each, £1.25 each. Cheque/PO, G Leighton, 57 Eleanor St, Cullercoats, Tyne & Wear, NE30 4PG.

CZ101/DX100 or Poly 800. Cash waiting. Also any recording gear or effects. ☎ (0904) 39048.

EDP WASP £40, must be fully working. Contact Graham High, 342 Kitts Green Road, B'ham B33 0DN.

E&MM TRANSPOZER and Boss RCL10 compressor limiter, £75 each if in good working order. Kevin ☎ (0353) 87498.

EMS SYNTHI AKS wanted, any condition. ☎ (0726) 883265.

EXCHANGE RECORDS, tapes, typical instruments, books, other Brazilian articles. Angelo Salles, Rua Euclasio 357/503, Belo, Horizonte, Brazil.

FAIR PRICES PAID for any broken old synths, recording equipment, etc. Firmin, 32 Alma St, Wellingborough, Northants.

FOSTEX A80 £900 and waiting. Mixer also needed to fit with A80. Package would be appreciated. ☎ Coventry (0203) 504607.

HAGSTROM GLITTER GUITAR early sixties, cash waiting. Rok Star ☎ (0484) 546062.

HELP! ARP SOLUS circuit diagrams needed for sick synth. Can anybody help? ☎ 061-434 4352.

I'M IN SEARCH of live recordings of Depeche Mode. Do you have any? Please write to: Jorgen Rydberg, Oldarevagen 70, S-24021, Loddekopinge, Sweden.

JSQ60 SEQUENCER DX7, or PPG 2.2 or 2.3. As new only! Neil ☎ (0482) 782966, after 6pm.

JSQ60 SEQUENCER/DX7 must be as new. Neil ☎ (0482) 782966, after 6pm.

KORG KMS30 MIDI sync box. Tony ☎ Doncaster (0302) 770420, eves.

KORG KMS30 Synchronizer, Yamaha DX100. Phone with sensible prices. Trevor ☎ (0268) 43815, after 7pm.

KORG MS50 up to £75 paid for a good specimen with patchcords. Dave ☎ Shrewsbury (0743) 54829.

KORG POLY 61 must be vgc. Ian ☎ Coventry (0203) 362497, after 6pm.

KORG POLY 800 instruction manual wanted by frustrated owner (photocopy would do): Pete, 4 Cunningham Close, Donghoughton, Northumberland.

KORG SQD1 Fostex 250 Multitracker, Roland TR707 rhythm composer: PO Box 92333, Norwood 2117, S Africa, or ☎ (011) 640 2924.

LESLIE 860 for cash. ☎ (0255) 426672 (Essex).

MAGMA Art Zoyd, K Schulze, Tangerine Dream. Bootlegs for exhange, Lukas Mottura Produktion, via Filadelfia 29, 10134 Torino, Italy.

MINIMOOG MANUAL and/or advice. Sounds for SCI Prophet 5 and Roland JP6. ☎ 061-256 1964.

MPC SYNC TRACK GBS Mk3, Vestafire RV2, MM 8:2 mixer or input modules (MP180 series). Adrian ☎ 061-881 6252.

NEW AGE/AMBIENT ARTISTS for collective albums. Tapes, sae to Hwyl Records, 2 The Square, Yapham, York.

£20 PAID for Yamaha small registration RAM packs RP1. Send or contact Edwards, 53 Deneside Crescent, Hazel Grove, Stockport, Cheshire.

POLYMOOG KEYBOARD or Korg Poly 800, around £250 to £300. Martin ☎ (0753 68) 4820, after 6pm.

PROPHET T8 Adrian ☎ Tonbridge 364881, after 6pm weekdays.

SEND ME £2.50 and I'll send you 1000 band name suggestions. M Barthel, 13 Capel Street, Calverley, Pudsey, LS28 5NU.

SWAP SPECTRUM, Interface one, microdrive, cartridges and software for Roland SH101. Frank ☎ (0475) 704571.

TANGERINE DREAM or Kraftwerk videos, good quality please. Ian ☎ (0922) 648959, after 5pm.

ULTRAVOX any bootlegs, raritles, programmes, posters, photos, picture discs, signatures, etc, urgently needed. Andrew ☎ Preston (0772) 727253.

WURLITZER PIANO ☎(0385) 40754, eves, after 1st August.

YAMAHA CS70M data cards, blank or preset, good price paid. Dave ☎ Southampton 433871.

YAMAHA CS80 Good price offered. Adrian ☎ Tonbridge 364881, after 6pm weekdays.

YAMAHA DX9 PATCHES required. Also CZ101 and power supply, good condition, £170. L Fenn, 84 St Georges Road, Aldershot, Hants GU12 4LJ. ■

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