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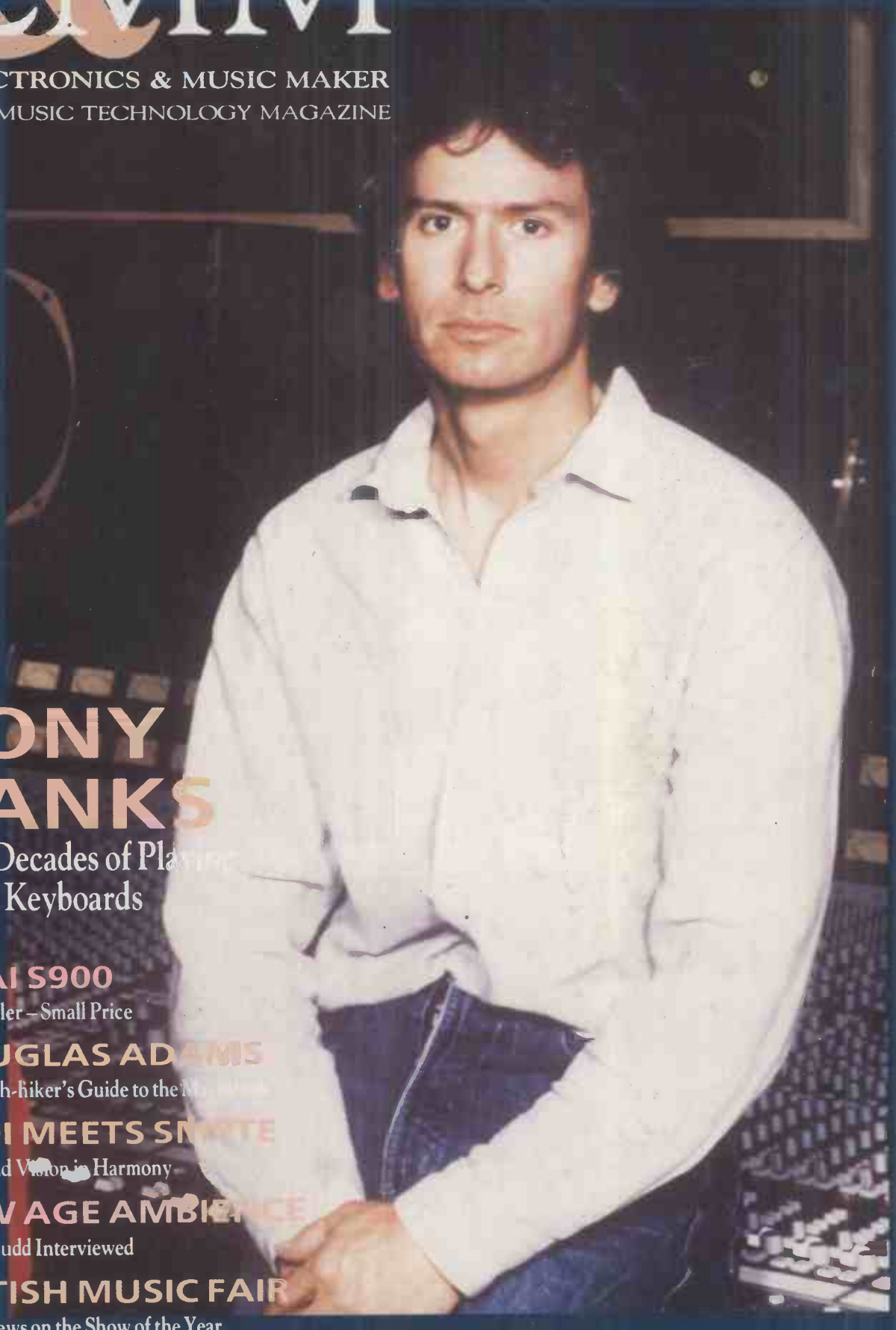
E&MM

ELECTRONICS & MUSIC MAKER
THE MUSIC TECHNOLOGY MAGAZINE



TONY BANKS
Two Decades of Pla[illegible]
Rock Keyboards

AKAI S900
Big Sampler – Small Price

DOUGLAS AD[illegible]MS
The Hitch-hiker's Guide to the [illegible]

MIDI MEETS SM[illegible]TE
Sound and V[illegible]ion in Harmony

NEW AGE AMBI[illegible]CE
Harold Budd Interviewed

BRITISH MUSIC FAIR
Latest News on the Show of the Year

ON TEST
Simmons SDS1000; Oberheim Matrix 6R;
Shadow Guitar-to-MIDI; Amiga Music System

THE KEYBOARDS OF THE YEAR WILL BE DELAYED — DIGITALLY

KORG POLY 800 AWARDED "BEST BUDGET SYNTH" BY M.R.A.* AND NOW UPDATED

KORG DW8000 VOTED 'KEYBOARD OF THE YEAR" BY MELODY MAKER

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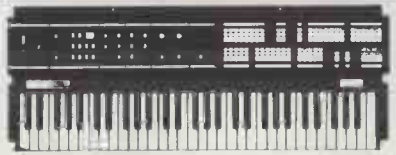

This dynamic, bitimbric stereo synthesizer with built-in sequencer is a revelation. The DK80 has 12 voices and is packed with excellent features such as double sound generation, fully dynamic touch sensitive keyboard, a 2 track polyphonic sequencer, user-definable split point and MIDI. An outstanding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

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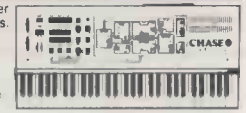

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Comment

ARRIVALS AND DEPARTURES

For all the surface similarities between the United Kingdom and the United States (same language, same social structure and so on), the two nations' modern music scenes are poles apart.

For instance, we Brits would probably consider ourselves ahead of the Yanks in terms of accepting new technology and adopting it to achieve new musical ends. The Americans, on the other hand, can rightly point to a greater acceptance of computer music systems and a greater preponderance of session synth players as evidence that *they* are the ones most likely to boldly go where no musician has gone before.

Whatever the ins and outs of the argument, there's no denying that American musicians are no longer the conservative, small-minded bunch of virtuoso snobs that British pre-conceptions suggest they should be. These days, you're just as likely to find a broad-minded application of new musical techniques in Cambridge, Massachusetts as you are in Cambridge, England.

With this in mind, the publishers of E&MM are launching a sister magazine in the States this summer. Taking its cue from this magazine's front-cover strap-line, it's called simply 'The Music Technology Magazine'. The official launch is at June's summer NAMM show in Chicago, which will have taken place by the time you read this. After that, America's modern musicians will have access to the kind of magazine their British counterparts have been enjoying for years – suitably adapted to suit Transatlantic tastes, of course.

For E&MM readers in this country, the impact of our American offshoot will be understandably small. But in an indirect yet very useful way, the setting-up of a Music Maker office in California (the full address is at the bottom of this leader) will mean E&MM gets news of American happenings well before any other British publication. And that will be particularly true of events in the sampling and software fields, where despite the ever-rising Yen, Silicon Valley still leads the way in innovation.

Look forward, then, to plenty of exclusive reports from our American correspondents (regular contributor Paul Wiffen among them) in forthcoming issues of E&MM. If it's happening Stateside, you'll read it here first.

MUSIC TECHNOLOGY

In publishing, as in many other fields of 20th Century human endeavour, there are some people who take all the glory when success comes to a magazine, and others who stay out of the spotlight. Yet very often, the staff behind the scenes are just as important as the names that grace the magazine's pages in big, bold print each month.

One man whose name rarely appears in big, bold print is that of Tony Halliday, E&MM's Advertisement Manager. Every month, Tony rings around this industry, offering to sell advertising space in the magazine to people who probably have a dozen more important things to do than talk to him. It's a thankless task, so Tony's main reward (apart from the money) lies in the knowledge that, since taking over space-selling on E&MM in September 1982, he's helped take the magazine from a humble pioneer to the successful flagship title in one of the most go-ahead publishing houses in the business.

This month, after nearly four years in the Ad Manager's hot-seat, Tony is leaving E&MM for pastures new (and more money), selling technology to the recording industry worldwide. He'll certainly be missed by the editorial staff, not to mention the hordes of music distributors and dealers who've had to put up with his perpetual phone calls over the years. Good luck, Tony. ■

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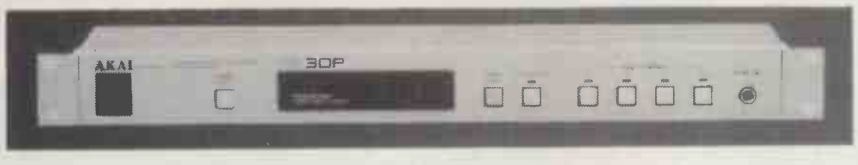

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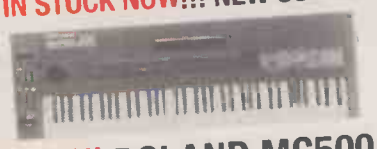

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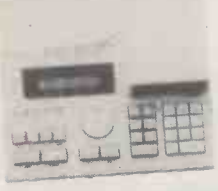

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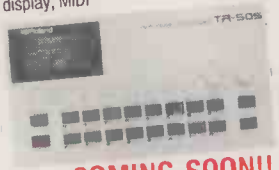

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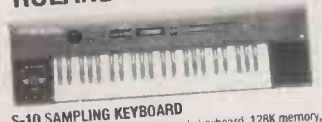

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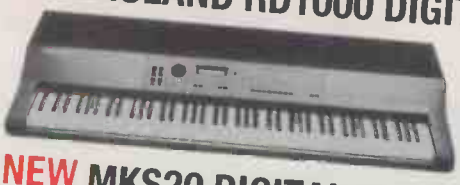

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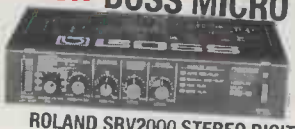

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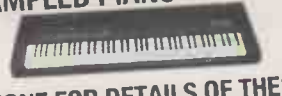

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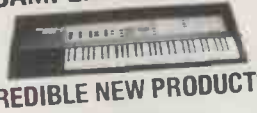

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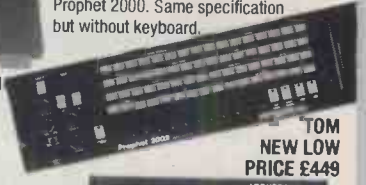

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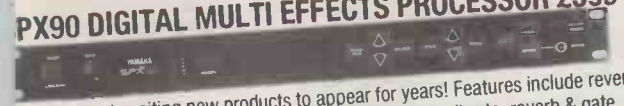
PX90 DIGITAL MULTI EFFECTS PROCESSOR £599



e of the most exciting new products to appear for years! Features include reverb, rly reflection, delay, echo, modulation control, autopan, vibrato, reverb & gate, ch change, freeze, ADR gate, compression, parametric EQ, flange, phase, MIDI. 7 remote controller available soon

NEW MT1X MULTITRACK CASSETTE RECORDER

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

HI-TECH EXCELLENCE!!!

DX21

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

QX1 MEGA SEQUENCER SUPER PRICE

Incredibly sophisticated state of the art data storage, the most powerful yet! 8 Polyphonic channels, built in disc drive with one megabyte storage (80,000 notes!) Extremely sophisticated editing. Best Yet!

DX100

DX100 battery operated FM Synth mini keys 129 voice ROM, 8 note polyphonic, 49 notes, ideal MIDI control synth.

KX88 MOTHER KEYBOARD

Yamaha invent the ultimate in MIDI remote keyboards! Light and portable yet full of features! 88 notes wood keys, beautiful feel! 19 different control effects, 192 parameter change possibilities. THE ULTIMATE.

RX21 DRUM MACHINE £249

TX7 FM TONE GENERATOR £499

REV 7 £999

Yamaha break the price performance barrier with the brand new REV-7! 19" rack mount unit with remote, simulates any reverb characteristics! New LSI chips give up to 15 early reflections and 99.9 milliseconds of initial delay, Parametric EQ, MIDI, 30 x presets, stereo, 60 user memories!!!

INCREDIBLE NEW YCAM PRICES

QX1	£1295
TX816	£2999
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All in stock and on demo now!

QX7 DIGITAL SEQUENCER RECORDER £299 MT44D Multitrack Recording Systems PHONE

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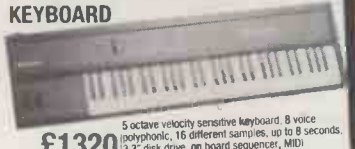
MIRAGE DIGITAL SAMPLING KEYBOARD



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

GITAL SEQUENCER SISER

0 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.

MIRAGE DIGITAL MULTI-SAMPLER (RACK MOUNT)

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

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FANTASTIC NEW

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tely digital, the Midiverb offers a ul range of 63 room programs in full Everything from small rooms to full halls. times from 0.2 to 20 seconds as well as nd reversed programs for special effects, IDI.

ck at all Future Music branches

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

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!

A FLOCK OF EMUS

E-mu have been busy preparing a new product line for launch at this Summer's NAMM convention, expanding the Emulator series of digital sampling keyboards in both price range and facilities.

The EMAX, a cheaper alternative to the Emulator II, is bound to attract many musicians previously unable to contemplate an Emulator in the past. Available in both keyboard and rack-mounting formats, the EMAX boasts the same high-quality sampling and 17 second sample time as the Emulator II, and has eight voices with separate audio outputs, programmable stereo panning per voice, velocity and pressure sensitivity and a built-in sequencer/arpeggiator. The EMAX's 16 sample channels allow cross-fading between samples (via keyboard velocity or keyboard position) without taking into use a second voice per note. Sample storage is on 3.5" floppy disks and an extensive sound library is to accompany EMAX's launch. (Availability and price to be announced.)

The Emulator II+ simply takes the successful Emulator II and doubles its memory capacity whilst retaining compatibility with the old Emulator II. The result is that two disks may be loaded at a time giving instant access to 198 presets and over 35 seconds of samples, and news has it that existing Emulator II owners will be able to have their machines updated for II+ capabilities.

The Emulator II+HD takes things one step further by equipping a II+ with one floppy disk drive and one 20Megabyte hard disk capable of storing the equivalent of 46 preset disks. Not content with that, it also cuts disk loading time to two seconds. The Emulator II+ will set you back £6320, and the II+HD £7470. More from Syco, 20 Conduit Place, London W2 1HS. ☎ 01-524 2451 ■ Tg

LIVERPOOL SCHOOL

August is due to see the opening of a Synthesiser School in Liverpool. Tuition will be given on a wide range of subjects from synths, samplers and drum machines to mighty MIDI itself. The emphasis is to be placed firmly on the 'hands-on' side and waffle kept to a tolerable minimum.

The school will run Mondays to Fridays between 9.30am and 5.00pm. Cost is expected to be £75. More from Ian Harrington, 134 Long Lane, Walton, Liverpool, L9 6AG. ■ Tg

MORE KURZWEIL

The new, improved (hold it up to the light and you'll see the difference) Kurzweil Version 3 boasts improved sequencer functions including a 12,000 note memory, a better piano voice as well as additional harpsichords and percussion voices. The Sound Modelling Program (SMP) will now handle a 50kHz sample rate giving ten seconds of sampling at a 20Hz-20kHz bandwidth, and if that's not enough, enhanced tuning and 97 internal keyboard setups help make the spec even more impressive. Those rich enough to be interested should contact Syco, Conduit Place, London W2. ☎ 01-724 2451 ■ Tg

MIDI STAR

A company calling themselves Syncom MIDI Research are attempting to bring National Grid technology to MIDI. Star distribution is at the heart of their MIDI splitter box allowing one MIDI In to be directed eight separate ways via MIDI Thrus. The unit costs £29.95 but requires a 7-12V power source which Syncom will provide for an additional £4.95. More from J Burch, Syncom MIDI Research Ltd, Unit C, Hill Farm, Gt Dunham, Kings Lynn, Norfolk, PE32 2LQ. ☎ (07605) 644/645 ■ Tg

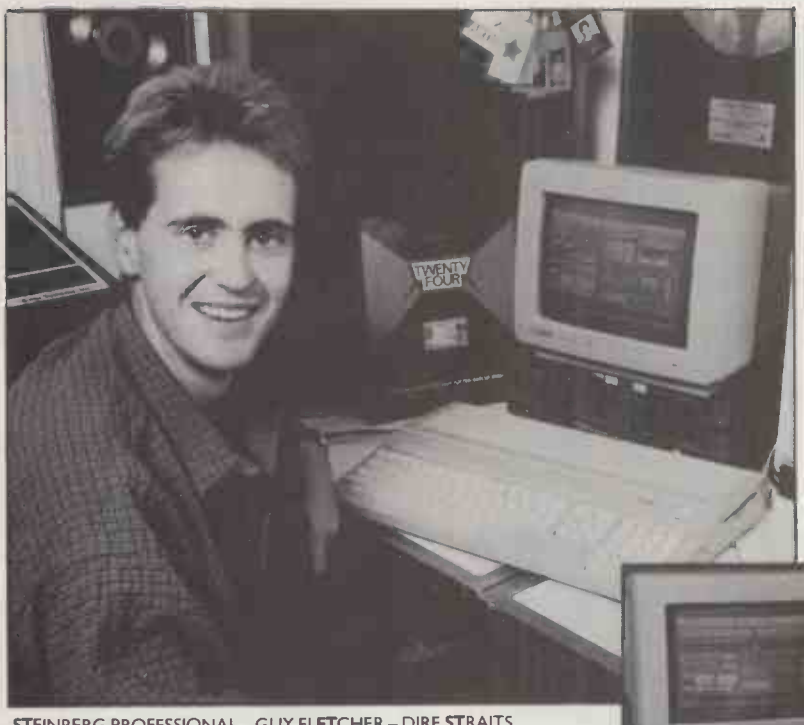
IBM GOES SOFT

Tape 'n Step is a software package for the IBM PC (and compatible machines) utilising the Roland MPU-401 computer-MIDI interface. It offers both step and real-time recording up to a possible maximum of 85,000 notes with the full 640K memory expansion.

The Tape 'n Step has comprehensive Edit functions including copy, delete, looping, punch in and out, and crescendo and diminuendo. There are also extensive synchronisation facilities, program changes and transposition features. More from The MIDI Connection, PO Box 282, Station D, Montreal, QC, Canada, H3K 3G5. ■ Tg

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 unparall ed 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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Also available from: Session Music – Belfast ● Eddie Moors – Bournemouth ● Rock City – Newcastle ● White Electric – Sunderland ● Future Music – Portsmouth ● Future Music – Southampton ● Guitar Workshop – Bristol

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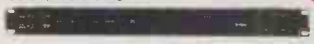

Effects include Reverb, Early reflection, Delay, Echo, Modulation, Auto Pan, Vibrato, Pitch change, Reverb and gate. Freeze, Compression, Parametric Eq.
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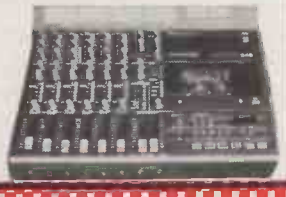

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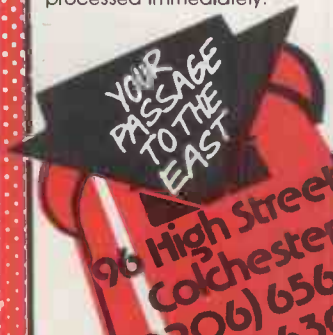

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FAIR DO'S

August's Music Fair returns to Olympia 2 with a host of new product launches. We give a rundown of some of the forthcoming attractions.

Last summer, you'll remember, saw the British Music Fair go public for the first time in its lengthy history. After three trade-only days of peace and quiet came three public days which saw nearly 14,000 of you descend on the multi-level Olympia 2 exhibition complex in West London. It was hectic, it was hot, it was crowded – but it proved (if any proof were needed) that an informal meeting of manufacturers and their public could only be a good thing. Nobody came away thinking that they hadn't gained something of value from the experience.

This year sees more than 100 exhibitors taking part with products ranging across the entire musical instrument spectrum. So if you want to hit some ethnic percussion, strum a few guitars or discover what's happening in the world of home keyboards, now's your chance.

On the other hand, it looks like you'll have your time cut out just taking in the latest hi-tech musical offerings. Akai, Casio, Korg, OSC, Pacifex/Syco, Roland, Simmons, Sound Technology, Technics and Yamaha represent

a healthy roll-call of hi-tech companies who have taken stands at this year's Fair.

Following on from last year's successful approach, the emphasis will be on giving musicians hands-on experience with the full range of equipment available – whether it costs £2000 or £200, it's there for you to play. No pressure, no sell, no obligation. So if you want to investigate the latest in electronic pianos, you'll be able to sit down at Technics' PX range, Roland's RD1000, Korg's SG1 and SG2, Yamaha's PF70 and PF80, Ensoniq's new piano and Casio's CPS2000. The latest in sampling will be represented by Akai's S900, Roland's S10 and S50 and Korg's DSS1, while Pacifex/Syco will hopefully be showing off Emu's new range of samplers and the Series III Fairlight. New synths are set to include Kawai's K3, Ensoniq's ESQ1 and Roland's JX10.

Casio will also be introducing their new flagship synth, the CZ1, along with the AZ1 remote keyboard controller and the DZ1 MIDI drum pads. The CZ1 is a five-octave synth which at last brings touch sensitivity to bear on the Phase Distortion process.

Akai's new product roster is set to include the AX73 synth, MX73 controller keyboard and VX90 expander, along with two new rack-mounting MIDI effect units, and a new rack-mounting 14-track cassette recorder. They'll also be introducing their new MIDI-compatible mixer, and not to be outdone TOA Electronics will be introducing theirs.

OSC will be waving the MIDI software flag with the full Steinberg product range, including the Pro16 and Pro24 sequencers for Commodore 64 and Atari 520/1040ST respectively. They'll also be demonstrating the first European example of a MIDI merge box, from German company Hi-Tec.

Sound Technology's stand will include C-Lab's SuperTrack sequencer for the Commodore 64 and the Oberheim Matrix range of instruments. The company will also be debuting the latest budget effects wonder from Alesis, makers of the MIDIverb. Advance reports suggest that the MIDIfex, as it's called, is a multi-effects unit along the lines of Yamaha's SPX90.

Yamaha themselves are taking up a large chunk of the second level with what they rather endearingly term the 'Yamaha Village', where they'll have the whole range of their products on show. Watch out for the SB01, which advance reports suggest is a cheap multi-timbral FM expander. And no doubt Messrs Bristow and Campbell will be loitering with intent to entertain us all.

But it will also be worthwhile straying beyond familiar territory to see what other members of your band might be getting up to. Simmons provided one of the most stunning demos at last year's Fair, showing to all and sundry just what could be achieved with the new generation of MIDI-compatible electronic kits. No doubt they'll be showing off their new SDS1000 kit this year. Meanwhile, if you want to see what your guitarist might be getting up to soon, you'd be well advised to visit the Barnes & Mullins stand and give their Shadow MIDI Guitar system a listen. And rumour has it that a very hush hush guitar synthesis system might be introduced at the show.

Rumour also has it that a company called Music Maker Publications will be very much in evidence. They've taken a stand on the first level as close to the bar as they could get, and their staff will be glad to converse informally with you over a drink or two (as long as you're buying). This is your chance to tell them first-hand what you think of their many magazines, one of which is called E&MM, I think. What's more, you can buy back issues of aforesaid magazines, together with sweatshirts and T-shirts which will allow you to proudly display to the world just which magazine you can't possibly do without.

So how do you get to Olympia? Well, there's no shortage of routes: by tube you can travel directly from Earl's Court to Kensington Olympia station, while buses 9, 27, 28, 33, 73 and 91 will all drop you off outside the front doors. Good news for anyone travelling from further afield is that British Rail have a new high-speed InterCity service travelling all the way from Liverpool or Manchester to Dover which stops at Kensington Olympia station (itself right next to the sprawling Olympia complex). And finally, if you're thinking of driving to the Fair, there's a 600-space multi-storey car park close by.

See you there. ■ St

Ticket prices £3 for adults, £1.50 for children under 14 and OAPs; MU members get a £1 discount. Tickets for the British Music Fair are available on the door, or in advance from the Box Office, Earls Court Exhibition Centre, Warwick Road, London SW5 9TA ☎ 01-373 8141.

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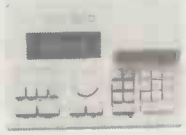

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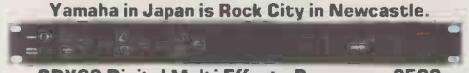

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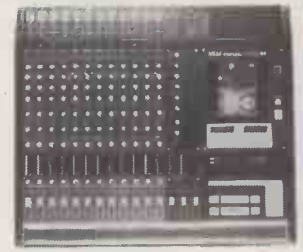

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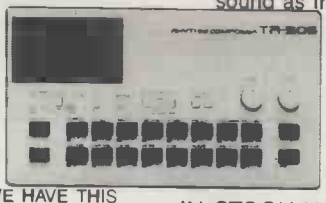

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Communiqué

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

Dear E&MM

Construction Time Again

With reference to Francesco Esposito's letter last month, I would not think that incorporating something like touch sensitivity or sampling into an instrument is anything like as cheap or easy as he would have us believe. I would be delighted to discover that I could add either of these facilities to any of my synths for as little money as he suggests.

I think it would be more realistic of Mr Esposito to recommend some way of doing the above. For that matter I have yet to see any projects for a MIDI-based modular system, having a controller keyboard and voice and sampling modules that the constructor could improve as finances allowed. It would be nice to build such a system and then be able to add touch sensitivity and sequencing at a later date.

■ Denis Vella
Malta

Dear E&MM

Lost In Music

I am fortunate enough to own a variety of synths including the currently very trendy MiniMoog, which I'll use to help make my point.

It's horrendous to use – unreliable tuning, no patch memories, awkward for live work (to say the least) – but it's all worth putting up with because of the noise it makes. Even non-musicians recognise the sound as being truly gorgeous. So just who is all this technology for? Hundreds of patch memories make life easy for a synth player. Reliability and robustness are a boon to musician and engineer alike. Keyboard splits, arpeggiators, sequencers, one-finger chords and their like are all useful technological innovations but they don't add anything to the intrinsic 'musicalness' of the synth. I'm not against all of this but some manufacturers appear more concerned with features than they are with sounds. What are the musicians concerned with? They appreciate the features but they don't buy a new synth so that they can brag to their friends about how many notes polyphonic it is (do they?).

The average punter never uses and hardly ever sees a synth outside of the concert hall. All they're concerned with is the music they produce. Of course the features on a synth can contribute to the quality of its sound but I suspect they're put there for other, less honourable, reasons.

My personal hope is that the technology explosion we are currently experiencing is just a passing phase. I hope designers will mature once technology settles down and stop thinking in terms of 'gimmicks per yen' and start thinking about music. After all, that's what it's all about. Isn't it?

■ Richard Hanby
Manchester

Dear E&MM

More Blank then Frank?

I wonder how many readers are aware of the proposed levy on blank recording tape. Although not yet law, the proposal is for a levy on cassette tapes over 29 minutes in length. The theory is that too many people are using blank cassettes to copy records and hence depriving the industry of its revenue. The intention is to avoid inconveniencing home computer users by exempting shorter tapes whilst stimulating music generally.

As an owner and user of a Teac 244 the implications seem to me to be these: I will have to stop buying C60 tapes as they are over 29 minutes long. The longest tape I can buy, therefore, is a C15. My Portastudio, being four-track, allows me to use only one side of a cassette – at double speed. Unless my CSE maths fail me this means that I will be getting three and three-quarter minutes of recording time per tape. That's just about single length – not even a 12" remix. Just where the hell does that leave my usual 10-15 minute compositions? Taxed, that's where.

■ Frank Adamson
Glasgow

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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 ***Could you please tell me how I can obtain copies of the Computer Music Journal. Thank you very much for your help.***
■ **N G Martin**
Christchurch

A *The CMJ is published quarterly by MIT Press in America. Single issues may be obtained for $7, while a one-year subscription costs $26. The address to write to is MIT Press Journals, 28 Carlton Street, Cambridge, MA 02142, USA. If you want to give them a ring, the phone number is 617-253-2889.* ■ **St**

Q ***I read with interest your reply to a letter from E Duval in the May issue of E&MM. I am only just getting involved with synthesisers, so please answer a query for me.***

If you record MIDI data onto a four-track sequencer (such as a Casio SZ1) and then play back the four tracks into either the same synth or an expander, could the synth/expander generate four different sounds (eg. bass drum, snare, bass and brass) at once or would you need a separate expander for each track?
■ **Chris Heywood**
London

A *Whether or not you need one or four instruments depends entirely on the ability of the instrument(s) in question ie. whether you have one instrument which can play four different sounds independently or four instruments which can each only play a single sound at a time. It's worth bearing in mind that an instrument which can only play a single sound from its keyboard needn't necessarily be so restricted when played from a MIDI sequencer.*

To understand this better let's consider how MIDI information is routed to different instruments. MIDI allows up to 16 separate channels of data, but these are not physical channels – all MIDI data is sent along the same cable. Instead, a channel number is 'tagged' to all data that is channel-specific – note data and associated performance data such as aftertouch and controllers. So when you assign a sequencer track to a specific MIDI channel, all the MIDI information on that track that is channel-specific is tagged with the assigned channel number.

Now let's look at the receiving instrument. When you set an instrument to receive on a particular MIDI channel, it ignores all data tagged with other channel numbers (this could be data associated with another sequencer track – remember, all MIDI data travels down the same cable). The instrument assigns its voices to data received on the selected channel according to its own internal voice-assignment algorithm.

Some instruments are capable of assigning each voice to a consecutive MIDI channel (this receive mode is known as MIDI Mono mode four) and of assigning a different sound to each voice. It follows from this that you can independently control different sounds on the same instrument from a MIDI sequencer. Examples of instruments with this multitimbral capability are Casio's CZ range of synths, Oberheim's Matrix range, the Rhodes Chroma and Sequential's Prophet 2000/2. If you haven't already done so, cast your eyes over the article 'Getting the most from Mono mode' in last month's E&MM.

But Mono mode isn't the only way to play more than one sound on the same instrument. If your instrument has split capability then you can obviously play two different sounds (within their pre-assigned ranges) from data on the same MIDI channel. If your instrument has dual capability and each sound can be assigned to receive data on a different MIDI channel, then from a sequencer you can independently control two sounds over their entire note range.

Hopefully it should be clear that the onus is on each instrument when it comes to how many sounds can be played at once and how many voices are assigned to each sound. A sequencer can't make your instrument more capable than it already is, though it can make use of features which aren't available directly from playing a keyboard. ■ **St**

Q ***Please can you help me. I'd like to buy the sheet music for Yazoo's 'Upstairs At Eric's' and 'You And Me Both' albums. Is there anywhere in the world I can get it?***

Also, do you know if there are any live recordings of Yazoo?
■ **David Feldman**
Harlow

A *I'm afraid that sheet music is ordinarily only printed for the 'A' side of successful singles. As such, you can obtain the music for 'Only You', 'Don't Go', 'The Other Side of Love' and 'Nobody's Diary'. These are all available from Music Sales at 78 Newman Street, London W1P 3LA.*

As far as live recordings go, officially there aren't any. That leaves us with bootlegs of live performances. These are illegal, so officially you shouldn't be interested in them. Apart from that they're quite freely available from record fairs and vary wildly in quality from quite acceptable to being indistinguishable from a recording of any amateur band playing in next door's bog. ■ **Tg**

Apologies are due to ESSP and the people who have recently been receiving some of their mail. This situation has been due to an incorrect box number given in their address in E&MM March. It should have read: ESSP, The Sound House, PO Box 37b, East Mosely, Surrey, KT8 9JB. A touch of dyslexia struck there, I'm afraid. ■ **Tg**

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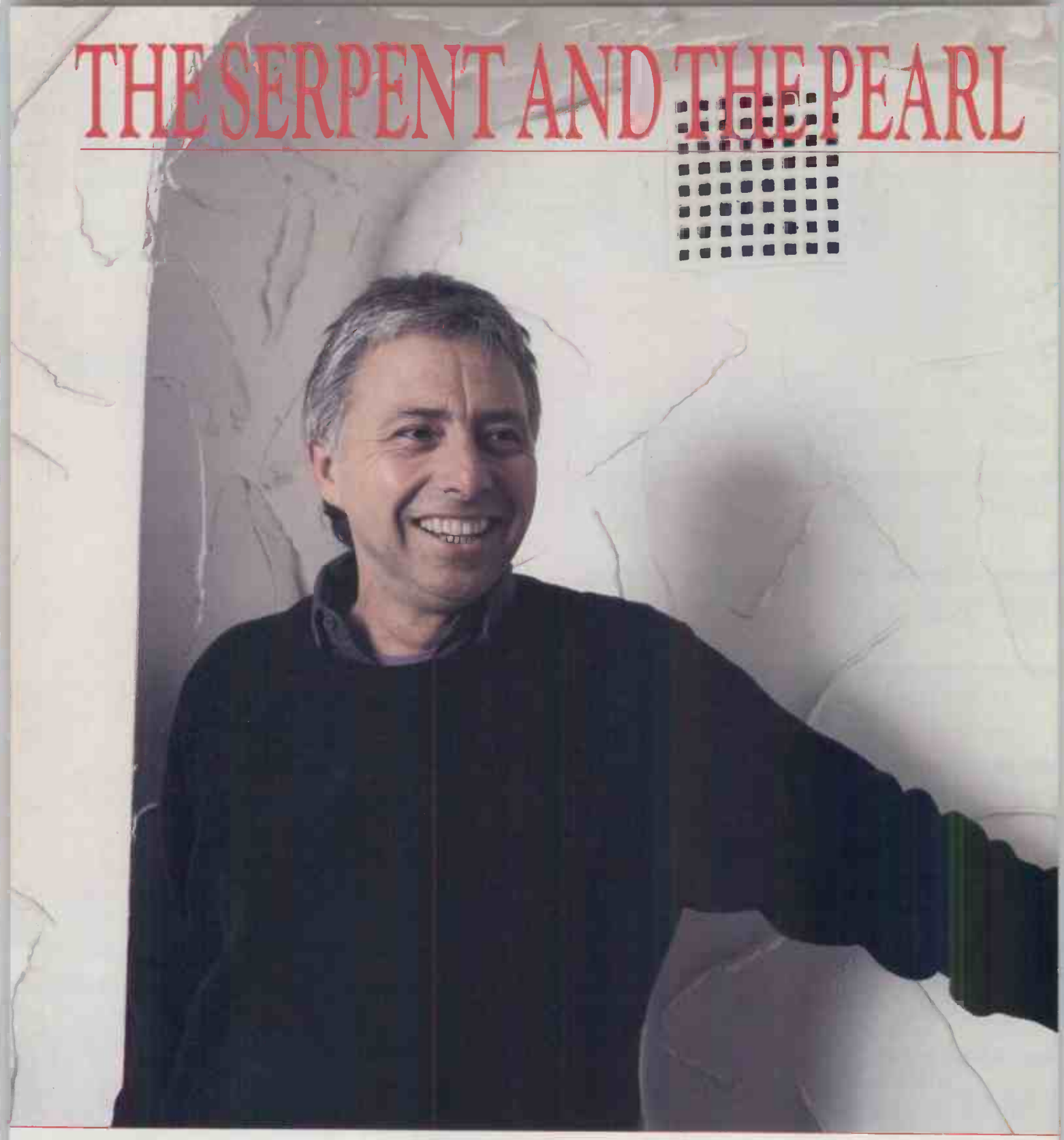

Harold Budd is more than just a leading light in contemporary American music. His work has a natural beauty which seduces the listener with tranquil progressions, delicate warmth, and skilful arrangements that use instruments as diverse as piano, marimba, and Synclavier II.

Interview *Dan Goldstein* Photography *Matthew Vosburgh*

I first heard Harold Budd's music when a classical guitarist friend lent me the American's (then) only recorded work, *The Pavilion of Dreams*. 'It's pretty classical, you won't like it', said the friend sceptically, but he was wrong. If I had to pick one disc to take on a desert island, *The Pavilion of Dreams* would stand a good chance of being chosen.

At the time (eight years ago, at a guess), the record's gentle harp, piano and marimba patterns provided an almost perfect backdrop for the breathy alto saxophone and sustained vocal harmonies that took the place of conventional 'solo' instruments. It was a fascinating combination, made more intriguing by the list of playing credits on the sleeve – Budd himself, Brian Eno, Michael Nyman, Gavin Bryars, and several of the other luminaries associated with the EG/Obscure series on which *Pavilion* appeared.

The album ended up being something of a cult hit, and continues to sell in reasonable quantities a full decade after

its initial release. But Harold Budd has never been too interested in the commerce of modern music, and resisted the temptation to make *Pavilion* the launch-pad for a 'recording career' in the conventional sense.

Even now, records seem to appear with Budd's name on them almost by accident. Two albums with Brian Eno (*The Plateaux of Mirror* in 1980 and *The Pearl* in '84, both on EG) and two solo (*The Serpent in Quicksilver* in 1981 and *Abandoned Cities* three years later, neither of which have been properly released in the UK) do not a steady output make.

Live performances by Harold Budd are equally rare, and press interviews have been very few and far between.

Yet despite (because of?) his low profile, Budd has continued to write compelling instrumental music, switching comfortably from treated acoustic piano to modern keyboard instruments of every level of sophistication – a Casio CT202, an Oberheim Matrix 12, and a Synclavier, to name but a few.

And although his compositions display obvious recurring themes – long, sustained chords; delicate reverb treatments; bright, percussive timbres – Budd is just as at home penning a two-minute cameo ('The Chill Air' from *Plateaux*) as he is improvising his way through an extended, side-long epic such as the title-track from *Abandoned Cities*.

Getting hold of an interview with Harold Budd turned out to be surprisingly easy. The LA-based composer visited London for a month earlier this year to embark on his latest recorded project, an album with the Cocteau Twins – Robin Guthrie, Liz Fraser and Simon Raymonde.

A day before he was due to return to the States, Budd sat in a penthouse apartment above the Townhouse Studios in West London, and began talking. His manner was as friendly as any musician I've ever interviewed, and the overwhelming impression gained after a meeting with him is that, more than most of his contemporaries, Harold Budd has a musical mind that's open to almost any idea, anytime, anywhere.

"My work with Eno has no specific mood – that's what makes it interesting...when you can pinpoint a happy piece and then a sad piece, things get too simple."

The Pavilion of Dreams was the first record you made. Before that, what was your background?

Well, I began composing for *The Pavilion of Dreams* in 1972. Prior to that time I'd been teaching Music Composition at California Institute of the Arts near LA, and before I actually became a college teacher – which I didn't until 1976 – I was an avant-garde composer of the sort of music that probably wouldn't be associated with me these days. I was very much influenced by John Cage and Morton Feldman, for example, and I wrote music of a very indeterminate nature. I wrote very quiet, spacy theatre pieces, some of the music was mere verbal directions about an activity which might take place.

That was rather my rôle as an artist up until 1970 or so, when I really minimalised myself out of a career. There was nothing more to do and I became disenchanted with the conceit of avant-garde music.

For two years, I knew what I *didn't* want to do as an artist, but I didn't know what I *wanted* to do directionally. I slipped back into discovering something that no-one else was doing, or was likely to do in the very near future. I divorced myself from modern music in a sense, and began to develop a language which I thought was honest to God *me*, and totally outside of competition with my fellow composers. It was freedom from all that.

I must admit that, looking back, I'm very fond of those pieces. I really think of myself as a composer starting from about 1972. Prior to that, I was the Harold Budd that I don't recognise today.

Were you looking for an outlet to release your music at that time?

I wasn't looking for an outlet because I was teaching in college, and there was always an outlet there. There were ensembles, and I tended to write music for the ensembles that were available, because I wanted to hear what it sounded like. And my music did get played a lot in modern music venues across the country, so I didn't have any problems in getting performances.

But in terms of a record, it never occurred to me. It didn't seem that it was an alternative that had the remotest possibility of happening.

I think secretly I rather had a hunch that it was just a matter of time, and that something would occur. But I didn't work to a plan and I didn't work toward a recording career, shall we say.

How did you eventually get to *The Pavilion of Dreams*, then?

As I recall things, I had quit my teaching position at college, with absolutely no idea in the world what I was going to do, and brimming with confidence that something was going to happen.

I got a call from Brian Eno in London. He said he'd heard 'Madrigals of the Rose Angel' (one of the works that made up *The Pavilion of Dreams*) and asked me if that was the kind of music I wrote generally. I said it was, and he asked me if I'd be interested in coming to London and recording these pieces. So that's how that started.

How do you feel about your two subsequent collaborations with Eno?

The two albums with Eno are very similar. The language, the timbres and sounds are very much the same. It's curious about *The Plateaux of Mirror*. It came so quickly and so easily that it was kind of a phantom, you thought you could do 30 more of those with the same *joie de vivre*, but it's not that way.

There was an idea that *The Pearl* would be similar even from the outset. The surprising thing to me is that it turned out as well as it did, because I'm extremely fond of the album. In many respects I like it more than I do *The Plateaux of Mirror*, even though that came so easily and so gracefully and without trial.

The Pearl is more of a unity than *Plateaux*. All the pieces seem to belong together more. ►

Eno's material tends to be melancholic, whereas yours sounds a bit more optimistic. The mix of the two was quite peculiar...

Yeah. I think that's one of the points that makes it interesting because it's not a specific mood. There's one there but it's very complicated. Sometimes it's a fusion of conflicting waves of emotion. I like that kind of artful confusion. I think pieces turn out not so interesting when they are so emotionally specific, when you can pinpoint a happy piece, then a sad piece. That's too simple.

That can happen very easily when people put lyrics on things.

Yeah, as soon as you have lyrics you're talking about something specific – unless it's an ironic sort of thing, surrealistic. The work that Eno and I have done together is, in a sense, not far removed from classical surrealism. It has an ambiguity of meaning which I think is an important aesthetic consideration for works that can't be placed inside of a fad or time.

How did your newest collaboration – with the Cocteau Twins – come about?

Well, I have to admit that I didn't know of the Cocteau Twins until one of the band members, Simon Raymonde, was using a piece of mine and Eno's as a cover on an album. The piece was 'Not Yet Remembered', and it was going to be the Twins themselves who were going to do it, or that's the story I heard. The publisher called me up and informed me about this, and said 'they're really a great group and I think you'd like hearing them', so I called up a record distributor friend of mine in Los Angeles and asked if he carried the Twins. He sent me a compilation cassette, so I don't know what the album itself was, or the names of the pieces. But in any case, I was really taken with it.

Then in November they came to Los Angeles. We met and got along famously for a very brief time, and we started swapping ideas on a collaboration of some kind. They asked if I'd be free to do it, and I said 'yeah, absolutely, anytime, just give me a shout and I'll be there'. And here I am in London!

Have you spent most of your time recording?

Yes, basically. Robin has a studio in North Acton. It's a 16-track studio and we do the basic tracking there daily, and then he'll take it to a 24-track studio for transferring and mixing.

The music has been very improvisational. It's working the way most people work anyway when left to their own devices. In this instance, everyone takes the blame and the credit equally, so it's kind of composition by committee. It's pretty apparent early on in a piece that something is happening and is ringing our bell. It's a constant creative process in the studio, because nothing is written out. Very, very little is planned beforehand: it's just a matter of laying some tracks down and seeing what works.

Some very strange pieces have come up, I can tell you. That's really the thing about collaboration that fascinates me so much – the notion that you come up with music that neither one of the collaborators would have dreamed up if they were left alone, it's something that's absolutely unique to the collaboration. Consequently it's not 'pure' in the sense that it's not Cocteau Twins, and it's not me: it's an odd combination peculiar to the mixture.

Do you prefer that style of working to composing on your own?

It really depends upon the nature of the music. There is some music where I absolutely must make all the decisions myself, because I have a sense about its structure, where it's going, and what I actually want it to sound like. I'm the only one who can make those basic decisions, and an input from a second party is kind of counter-productive.

But when you know it's going to be a collaboration from square one, you go in with a totally different attitude. And of course there are two ingredients. Number one is the people with whom you're collaborating; you must like them personally because it's terribly aggravating work. Number two is that you have to like what each other person's art is, with respect to their previous work, so that you just have a hunch that it's going to work out. That's the kind of trust that's impossible until you actually put it on the line.

> "The studio I work at in Los Angeles has both a Fairlight CMI and a Synclavier II – they're a million times more than I need, though I know they do a million things."

At the moment I take it that the music is purely instrumental. Will it have vocals on it?

Yes it will. I think Elizabeth Fraser's put vocals on one song so far. Apparently, her method of working – which I totally agree to – is to take the instrumental tracks home and then compose the words and melodies. She works up something that's comfortable to her and seems to work, and that's her way of working.

You're perfectly willing to accept that she will add another dimension to things that you may not agree with...

Yeah, sure. Because in a sense she's rather forced to accept what I'm doing as well. It all goes back to that trust I was talking about.

Who seems to be coming up with the initial melodies?

We have eight or nine songs – well, pieces – tracked. The interesting thing is that the ones which I come up with tend to be *pieces*, whereas the ones that Simon comes up with on the piano are definitely *songs* – they're structured that way. Mine frequently don't even change key once they begin, or even change chord for that matter (laughs). Robin's pieces tend to be somewhere in between the two, so I can't say, really.

For the first three or four days I laid down a whole bunch of stuff we had to work on, and then I took a break and Simon began some, then Robin began some and now we're back to the other way again. But it's just going to be raw tracking – I will leave an awful lot to them. We have to see how it works out. It's album length now, and it'll appear as an album.

What instruments have you been using to make these strange noises?

Well, it's somewhat restricted. I have a philosophy that one is obliged to use what's there. You don't need an awful lot of stuff, but you use fully everything that's there. What is there now, insofar as my own input is concerned, is a Yamaha electric grand piano and a Mirage sampling keyboard. Robin of course is the guitarist, and Simon the bass player, although he does occasionally play the piano, rather well too. And there's an awful lot of outboard equipment there which works very well. It's what gives them the Cocteau Twins sound – it's the stuff they use. Primarily it's the Yamaha SPX90, which is absolutely incredible...an amazing instrument.

Do you find, though, that machines like that sometimes offer you too many options?

That's a very very good point. The answer generally is yes. In this particular instance, since the style that's been developed really only uses a small fragment of the potential of the thing, it's perfectly clear that some sounds work and that all the others don't.

But yes, I feel that if you can do anything, then you're liable to end up with *everything*...or indeed nothing. It's kind of self-cancelling.

But where we've been recording, there is a limited amount of equipment and an even more limited amount of time. There really isn't room for very much finesse. You have to have a pretty good hunch that you're correct very early on, or else you have to abandon the idea and get on with one that's going to use the time more efficiently.

The Mirage and piano seem an odd combination: from something which is very close to a grand piano where you just lift up the lid and play, to something which you have to spend hours fiddling with to get a sound. How have you found working with something like that?

Well, I've worked with something similar before, or at least I've touched on it before. I'd say that 90% of the sounds are crap, and once you find that out, there are certain disks that you avoid, really. With the piano, I tend to work hearing a treatment with it anyway, so I improvise pretty roughly around what the sound is going to be on the tape.

So your composing is very influenced by the way things sound?

Yes. In many respects, the sort of

treatment you hear on the piano influences exactly the note-to-note process: the length of time between musical gestures, and the kind of taking advantage of the ringing timbres which I'm very fond of.

Have you done any sampling of your own?

No, I haven't, partly because I don't own a sampler myself. The studio that I work at in Los Angeles – Meta Music – has both a Fairlight CMI and Synclavier II. That's a million times more than I need, though I know it does a million things...it would go out to lunch if you knew how to program it, I suppose. But really, its capabilities are rather boring to me. What I do like are certain sounds which work for certain pieces. They're rather easy to come by, and the fact that they're on these mega machines is really totally irrelevant.

You don't find it rewarding to explore a machine to find out what it's capable of?

To some extent I do, yes, but not to the extent that the engineer would have to know it, because he would have to know what its capabilities were for situations that are totally unpredictable, depending on the client, for example. For my own purposes, I think it's useful to know as much about it as you can, but I don't see the point in knowing any machine inside-out at the moment.

In what areas has the Mirage been useful?

We've used strings, organ, and chorus sounds...generally things that sound nice when they are sustained for a while, using the instrument as a wash in the background. They don't form the primary sound source, because the guitar, being heavily reverbed, adds a great deal more to it. The guitar does all the glitter stuff much better than the Mirage.

What do you have lined up when you return to the States? Will there be another solo album?

Yes. It'll be a solo work on EG. Half of it is already done, and the other half I have to do this summer. I have a lot of work to do on it because I haven't got the foggiest idea what I'm going to do.

The first side is a full 20-minute piece. It was done in LA, using the Fairlight and Synclavier, and a general array of Oberheim keyboards including the Matrix 12. I use the Matrix in a very unsophisticated fashion, which is to say that although it's multitrack, everything is a live performance. I'm not even using the Synclavier to make the notes proper: it's me, what you hear is the way I'm hitting it.

The piece's working title is 'Gypsy Violin', because that's the name of one of the factory presets I used on the Synclavier. It's a gypsy violin sound and it's excellent.

I originally did the piece for an art gallery installation in Los Angeles last November. It was called 'Blue Room with Flowers and Gong' – which describes exactly what it is. It's an environment through which you walk, or just take a quick look and walk away and think 'this guy's crazy'. It was originally the length of one side of a C60 cassette, but that version went on a bit – the sustained notes and so on...

The sustaining note and long, sustaining chord are very much trademarks of yours...

That's true. I really like to find as much life as possible in the smallest amount of material. A very simple scale, a relationship of note against note, especially a sustained note; I milk everything for all it's worth.

For example, I first found this latest piece when I was messing around, and I had it kind of scrolled away in the back of my mind. The first time I sat down and played it, I had a Matrix right above me and I was sitting at the keyboard. I used a bit of reverb – not too sophisticated – and I sat and played for 90 minutes. I was enthralled with the piece and listened to everything, so I didn't have to do any multitracking to find out if it was really going to work or not; it just *happened*.

I'm generally confident that I can pull this stuff off at the first sitting and get the best version. Invariably I hear two or three versions, but the first is always honest and innocent with all the mistakes, it's more human somehow.

I take it your confidence in improvisation comes from a reasonable training and a reasonable musical ear...

Well, it's nice of you to say that, but in fact I have utterly no training as a performer. I got through college without knowing how to play the piano at all. I was a traditional note composer, and I couldn't play anything on a piano.

Music theory was my strength. It was a different world. I didn't start learning to play the piano until I had to out of self-defence. For the keyboard part of 'Madrigals of the Rose Angel', for instance, I would take out a note card and write the chord down without rhythm for the ensemble, and say 'well it's just got to fit in with the harp somehow', and it was always terrible. It dawned on me that I should be responsible for showing the ensemble how the chord sounded and how it fitted in.

I can now play what I do rather well, but I can play nothing else at all. If you're writing a string quartet, why should you have to play it on the piano? One of my composition teachers demanded real proficiency on the keyboard and a good ear, which I don't have at all; I don't have perfect pitch, or even good relative pitch, for that matter.

Have you done any film soundtracks or theatre pieces? It seems to be a popular American pastime...

Yeah, but I haven't really done it. The only thing remotely like that that I've done is something that just occurred prior to my coming to London. I did two 30-second ads for an ad agency who were working for Korean Airlines. Apparently, someone had said they could do with something like Harold Budd's music, and someone else had said 'Well, why not get Harold Budd?' They said I could do anything as long as it was 30 seconds long. The only limitation I had was that the music had to sound like me!

I saw the visuals, but I didn't have to work to a SMPTE track. I did anyway just to make sure that it would time out correctly, but I didn't have to. The commercial was very open anyway. It was fairly apt for my music.

Last winter I met the head of music production at Universal Studios. I didn't solicit the appointment, he called up and invited me over. He said he'd dearly love to use an original score of mine for a movie, and I said I'd dearly love to do it. But he said that, on the other hand, I must realise that they made 10 feature films a year, none of which are appropriate for the type of music I do, but if something came up would I do it, and would I do it in Europe, in London? I said yes to both questions.

What music do you listen to besides your own?

All kinds of things. I remember that in my high school days I was a great fan of bebop. If it didn't have Charlie Parker on it, I didn't want to know. What a snob I was!

Now I don't listen to all that much. I really rely on friends to turn me on to something that's interesting, or something I haven't heard for a long time. I remember that a student of mine came up to me at one time with the Monteverdi 1610 Vespers and said 'You absolutely must hear this' and it was just devastating. I still think it is, but I couldn't sit and listen to the whole thing.

So I generally play music off records when someone is over who I know is genuinely going to like it, and won't insist on everyone being quiet while it's being played.

You don't seem to play live too often. What's your view of live performance of the sort of music you compose?

Well, I'm not the world's greatest performer, and to make my music sound like I really think it should needs a lot of requirements – things you'd ordinarily find in a professional recording studio. I find soundchecks cumbersome and boring, and since I really don't have much of a clue about what I'd end up playing anyway, what if I have it all set up wrong for a particular piece? I do perform occasionally and I do enjoy it, but I don't see myself in that role.

I like the democracy of recorded music: once it's out there it's not yours any longer, people have the option of bouncing the needle, going here or there, and listening to as much or as little as they please. That's why I don't own a CD, incidentally, because once it's on you're a prisoner to it. I can pick up a ▶

"We've used the Mirage for strings, organ and chorus...things that sound nice when they are sustained for a while, as a wash in the background because the guitar does all the glitter stuff better."

favourite record and flip it over and say 'oh yeah, this is the side I like without knowing the name of the tune.

You feel vinyl is still the most immediate means of communication?

I think it's ingrained in our generation. It's going to be difficult to get rid of it. Technology does an awful lot of things, but what it doesn't do is really influence our behaviour – I think we influence the technology.

memory trigger. I often take reams of paper into the studio but I don't read off it – I just use it to jog my memory into an idea.

The engineer at Meta Music is Michael Hoenig, who used to be in Tangerine Dream. He's a good friend of mine so money really isn't a problem – he just tells me to come over when he's free.

I hate being in a studio with a strange engineer who spends most of the time trying to convince you that you're crazy, and doesn't understand what you're doing

"I got through the college without knowing how to play the piano at all. I was a traditional note composer...If you're writing a string quartet, why should you have to play it on the piano?"

I know a lot of people insist on CDs only, and everyone in America insists I'm wrong, but I think they'll take off for a short time and then be replaced by something easier to handle and less expensive.

Given that your musical ideas are very much based around studio work, would it be fair to say that you compose most of your music in the studio?

Yes, I use manuscript paper the way a lot of people use a cassette. I jot ideas down, and I use the manuscript paper as a kind of

anyway. I've worked with engineers who want to put the drum track down first, you know, and I can't work that way. I like working with someone sympathetic who knows what the scene is, a good friend. I rely on someone like that a great deal.

Do you have a recording facility of your own at home?

No. Nothing at all. Just a small Baldwin spinet piano gathering dust, and a little Casio 202 which I plug into my son's guitar chorus and piddle around with. I can get as much as I need down from that.

What's the first item on the agenda when you get back to the States?

Curiously enough, a small college in the Midwest commissioned me last year for a piece that had to be 8-10 minutes long, and had to be for any combination of musicians that they have in the ensemble there. They sent a huge list of what they had, and said they'd pay me a certain amount of money and that I could do anything I wanted, but that they had the right to the first performance.

It turned out that I wrote a piece 22 minutes long and it's for a huge choir of 20 people, with percussion and keyboards, and it's the first traditional note piece that I've composed in eight years. It was a lot of fun doing it. So I have to go to the Midwest for three of four days, and be at the first performance.

Looking further into the future, do you have any unfulfilled aspirations, in any field of music, that you'd like to pursue?

No. Maybe it's a personality defect, but I generally discover things as they come along. I don't have any long-range goals about things as a basic personal philosophy, except for the obvious mundane ones. In terms of 'is there a piece out there that I've always wanted to do?', the answer is no, I don't really operate along those lines.

I'm inspired often by a situation which arises, when there's a certain task in front of me, and if I agree to do it, it's generally because I'm going to like what's happening, without having an idea what the end result is going to be. No career decisions are made.

With that sort of open attitude, you could go in any direction...

Conceivably that's true. I'm the first person to admit that I'm willing to change my mind at the drop of a hat. But I think I would be a very poor commercial composer, for instance. I'll never do anything that I don't absolutely *want* to do. There may be some commercial success resulting from this latest collaboration. But I don't think I would do anything else if the focus was simply on the amount of units sold. ■

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360 Systems MIDI Patcher

Talk to anyone who uses more than a couple of MIDI instruments in conjunction with each other, and they'll soon tell you about the problems of constantly needing to change the way their system is configured. Add to this the fact that MIDI sockets almost invariably appear on instruments' back panels, and you soon realise that some form of automatic patching will earn its keep both in time saved and back problems avoided.

The MIDI Patcher is just such a unit, and features a memory capable of storing eight system setups. Each of these configurations routes one of the four MIDI inputs to each of the eight MIDI outputs.

Typically, you might need to drive a sequencer and one or two synths from one keyboard for recording purposes, while for playback, the sequencer may need to be driven by a drum machine. Different routings can easily be set up, and then switched between as required.

The MIDI Patcher manages to make setting-up flexible, without becoming too complex for easy operation. In fact, using the unit is fairly straightforward, and the front panel is uncluttered and clearly labelled. Eight switches, labelled 1-8, double as program selectors and input assignment controls for each output. Four multi-coloured LEDs above each of these indicate which input is assigned to the corresponding output. If no LED lights above a switch, then that output is not 'looking' at any of the inputs.

The remaining controls should be familiar to anyone with experience of programmable synths. To select a program, the Recall LED must be lit. Conversely, to edit the selected program, you have to switch Edit on. Simple enough, and as 360 Systems have chosen to give you individual Recall and Edit switches, there's unlikely to be any confusion in that area.

When the Edit LED is lit, the output switches step through the five possible input sources for the corresponding output. As a result, there's no way to select the disastrous combination of more than one input for any output (two MIDI data streams mixed without intelligent control just produce garbage). Programs are held in double EPROMs, so no battery is required for non-volatile memory.

We've all heard the old adage that the silence between musical notes is as important as the notes themselves. And while this may not be the thought that instantly springs to mind when notes start to drone because a note-off command has been lost, a quick way of ending such nuisances is preferable to having to run across a room to the synth in question, change modes, change programs, play half the keyboard with your forearm, or whatever it takes to silence the thing.

The MIDI Patcher takes no risks in this department, and sends an 'all notes off' command to all eight MIDI outputs each time a program is selected. This feature can be handy when changing the Patcher's programs while data is still being sent by any of the input sources.

The only inconvenience this may cause occurs in the rare instance where a program is selected during performance. In such cases, all sustained notes will shut off abruptly, except on instruments which don't understand the 'all notes off' command (the DX7 is one such machine). Again, the advantages of this feature in most common situations far outweigh the drawbacks you might experience in less commonplace situations.

The Patcher can also recognise program changes, but only if they appear at input 4 on MIDI channel 16. Only programs 0-7 are recognised, of course. Placing such restrictions on program changes is a reasonable way to avoid possible mishaps, but if re-routing your whole MIDI setup via one program-change from your MIDI controller is how you like to do things, then the Patcher can certainly accommodate you.

It's a fact of life that things don't always work out as you expect, and for the modern musician, MIDI is a part of life. For those instances where it's not obvious whether a MIDI problem is being caused by the 'master' or 'slave' instrument, the Patcher can send a note out of a selected output to check that the 'slave' instruments are correctly connected. If all is as it should be, any instrument connected to that output should play a note for a couple of seconds.

Overall, the MIDI Patcher certainly does its job thoroughly and is easy to program. And considering the cost of many non-programmable MIDI accessories, it offers good value, too. ■ *Rick Davies*

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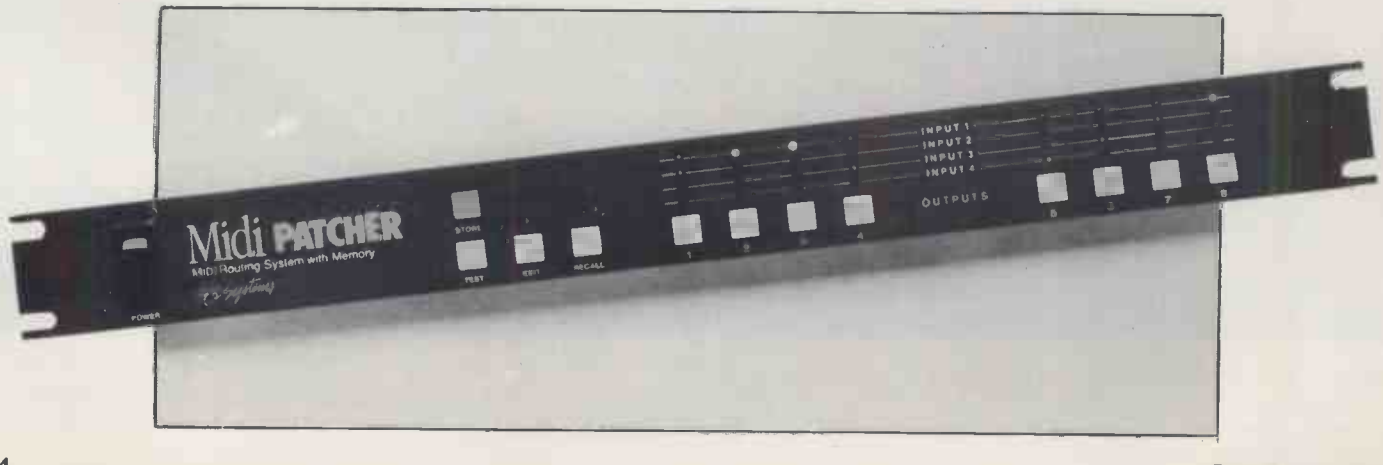

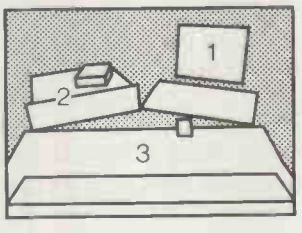

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Oberheim Matrix 6R Expander

While some manufacturers make a speciality out of bringing sound synthesis to the masses, Oberheim have been busy turning out instruments which are out of this world – but also out of most musicians' financial grasp. However, the introduction of the six-voice Matrix 6 polysynth (reviewed E&MM January) saw the company moving into a more affordable price range, though it retained many of the features which make Oberheim's version of the modern synthesiser so special. Now the company has brought out a rack-mounting version of the 6 which retails for less than £1000.

For the uninitiated, the Matrix 6 and 6R are cut-down versions of the Matrix 12 and Xpander (neither of which retail for less than £3000). What's surprising is how few economies have been made where it matters most: the noise the instrument makes.

Some voice components have been lessened in number (though there were so many in the first place, this may actually be an advantage), and the VCOs of the earlier instruments have been replaced by DCOs. But you've still got 99 voice parameters, 54 matrix modulation parameters, 56 master edit parameters, and eight split edit parameters to mess around with. The Matrix 6 handily lists these on its front panel, but of necessity, they're relegated to the top of the 6R – which is fine for tall people, so long as they don't stick another unit on top of the Oberheim in a rack.

Internally, each voice has two DCOs, a VCF, two VCAs, three five-stage Envelope Generators, one FM Modulator and one Tracking Generator, two Ramp Generators and a Portamento controller.

And if that doesn't leave you breathless, there's Oberheim's software-implemented Matrix Modulation system, which allows up to 20 sources to modulate up to 32 destinations – a total of 640 possible combinations. For each patch, you can select from 18 'hard-wired' modulations and create up to 10 of your own. Modulation sources include the three envelope generators, two LFOs, vibrato, the two ramp generators and the tracking generator. Destinations include DCO pitch and waveshape, the DCO1-DCO2 mix, VCF frequency and resonance, VCA volume and the ADSR parameters, plus overall amplitude of the envelope generators.

Along with internal modulations, it's in the Matrix Modulation section that you define the effects of keyboard dynamics (including release velocity – though few keyboards implement this) and controllers on your voices. Oberheim's approach gives you a degree of performance control over your sounds perhaps unmatched by any other synth. Such flexibility means you have to keep your aural wits about you when programming sounds – which is no bad thing.

The 6R allows you to store 100 single patches and 50 multipatches onboard. The latter are split and dual combinations of two patches which can also be partially overlapped. External storage is to cassette or over MIDI – though as always, you'll need a computer and appropriate software or something like the J L Cooper MIDIdisk to accomplish the latter.

Considering its abundant sonic resources, the Matrix 6 was given a rather uninspiring collection of factory presets when it first came out. Fortunately, the 6R's presets sound as though a lot more care has gone into constructing them. And the multipatch combinations are similarly more usable.

Oberheim have also put plenty of thought into the MIDI aspect of the Matrix 6R – not least in giving it the ability to receive in Mono Mode 4. Apart from the usefulness of this mode in sequencing, it also has an essential application in guitar synthesis – and with the increasing number of MIDI guitar systems now appearing, that's a powerful reason for its inclusion on voice expanders like the 6R.

The rack Matrix also has a 'patch mapping' facility, which allows you to assign patches to incoming patch numbers, removing the problem of aligning patches from different MIDI instruments which count their memories in different ways. You can also select another patch number to be sent by the 6R on its MIDI Out to a third instrument – a handy feature. The 6R's MIDI Out can act as a 'mix' output, combining data from your master instrument with MIDI data generated by the 6R. Along with patch changes, this can include controller information – the 6R has inputs for a footswitch and a footpedal, each of which can be set to any MIDI controller code.

The end result is a powerful and responsive instrument which sacrifices little in terms of voice quality over its more expensive predecessors. Well worth checking out. ■ *Simon Trask*

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Wersi MK1 Polysynth

Nowadays, the technology used in synthesisers and home keyboards is frequently one and the same. So it's perhaps not surprising that companies such as Wersi, Hammond and Hohner – well known in the organ and home keyboard markets – are trying their hand at producing pro synths, too.

Wersi's offering, the MK1, is aimed uncompromisingly at the upper end of the synth market. This preview is by way of an introduction to the instrument, with a full review to follow in due course.

The MK1 can be up to 20-note polyphonic, and is capable of layering up to four sounds, each with their own volume level. The 61-note touch-sensitive plastic keyboard can be split at any point, with dynamic allocation of notes to each side of the split.

For sound-generation, Wersi have opted for a combination of additive synthesis and analogue filtering, with effects such as flanging and chorus thrown in for good measure. Four sounds can be spread over the keyboard in preset ranges (the bottom two octaves and the remaining three octaves above), the principle being much the same as that behind multisampling. The lower two sounds can have up to 32 harmonics each, and the upper two 16 harmonics, with 12-bit resolution for the amplitude of each harmonic.

When creating or editing sounds, you can set the level of each harmonic using a combination of front-panel sliders and increment/decrement buttons (values are given in an LED display), and any adjustments made are immediately available on the keyboard.

The MK1 comes with 20 ROM sounds (referred to as DMS Instruments), 20 CV Instruments and 16 Total Instruments, more familiarly known as performance memories. ROM cartridges provide a further 20 DMS sounds, and RAM packs a further 10 CV Instruments and eight Total Instruments.

DMS Instruments can each consist of up to four layered sounds/voices. CV Instruments (which are variously called Computer Voices and Combined Voices in the manual) are the same as DMS Instruments, except that they're in RAM and therefore replaceable. But unlike the latter, each CV patch can only hold a maximum of two sounds; to layer four sounds, you have to link two CV patches together.

In addition to calling up CV patches, the Total Instrument memories store information on split-point, instrumentation, volume balance of voices, touch-sensitivity settings, footswitch and wheel settings and MIDI channel selections.

Among the sounds that come with the MK1 are strings, piano, bass, organ, vibes, guitar, bells and brass – a reasonable variety, but maybe Wersi should provide a bigger collection of sounds for people to start with. It's much easier to make adjustments to existing sounds than it is to start from scratch with the MK1's adopted system of synthesis, so programmers are going to need a fair range of voices to act as a foundation for further work.

Subjectively, the sounds fall somewhere between digital and analogue in quality, and are effective if not earth-shattering. The ability to layer several sounds greatly adds to the MK1's power, whether you're layering the same texture or mixing different sounds. What is slightly alarming, though, is that some of the sounds on the review model exhibited a surprising degree of noise.

Wersi have adopted a matrix selection system for parameter access (as used to good effect by Sequential and Korg on some of their instruments), but the MK1 has so many parameters that they've been organised on six 'levels', all of which are superimposed on the same front-panel matrix display. Straightforward it isn't.

But so that you don't get totally lost, Wersi have provided a six-page spiral-bound 'overlay' pad which slots over the matrix selectors. It's a clumsy and irritating device, bound (if you'll excuse the pun) to come to grief at the first rehearsal/gig/recording session you bring the MK1 along to.

The small 16-character LED display is generally uninformative, proffering little feedback to let you know what's going on inside the machine. Wersi would have been better advised to provide the sort of informative display found on the likes of Roland's JX10 polysynth reviewed last month.

Initial impressions, then, are of an instrument sophisticated in capability, but not quite so clever in the way it presents that capability to the user. Put simply, it comes across as a powerful but confusing instrument which requires some effort to uncover the full extent of its potential. We shall see what we shall see. ■ *Simon Trask*

Prices *MK1 8-voice £1653, 12-voice £1850, 20-voice £2337; ROM cartridge £49; RAM cartridge £45.50; all prices include VAT*

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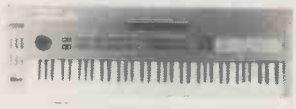

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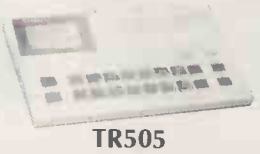

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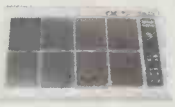

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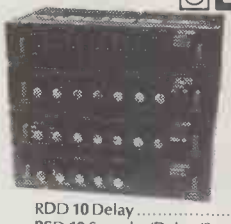

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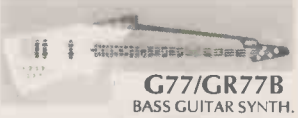

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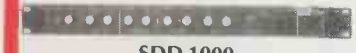

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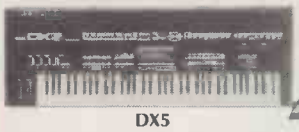

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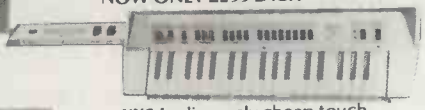

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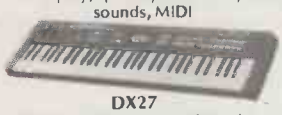

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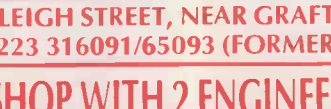

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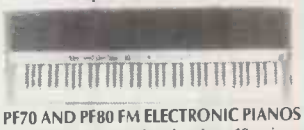

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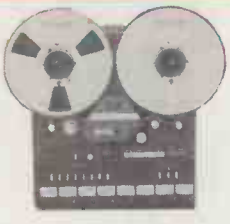

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FORCE TEN

The Sinclair Spectrum may no longer be the budget home computer to beat, but a Swedish company called 10 Systems have squeezed the last drop of computing power from Sir Clive's miniature micro, and come up with a package of real musical value. *Simon Trask*

In the early days of MIDI software (which means less than two years ago), the humble Sinclair Spectrum was the most popular budget computer for both sequencing and other MIDI applications. Since that time, its position has been usurped by the Commodore 64, leaving Spectrum owners with little to choose from while MIDI software has become increasingly sophisticated.

In a way that's surprising, because although the Spectrum isn't exactly the world's most powerful computer and its storage facilities aren't of the quickest, there's no denying the sheer number of Spectrums (Spectra?) in the world guarantees a healthy market for any enterprising software developer. And as XRI Systems have shown with their Micon sequencer (reviewed E&MM June '85), the Spectrum and good MIDI software can go hand in hand.

The appearance of a new 10-track sequencing package for the Spectrum from Sweden's 10 Systems confirms both the computer's international appeal, and its ability to support well-conceived MIDI software.

The sequencer is conceived around a single-screen display, with ten columns (alternating yellow and grey for visibility) corresponding to the ten sequencer tracks.

Recording is accomplished in units which 10 Systems call 'segments'. There are 128 of these available, each of which can be up to 255 bars long. Before you can play back a segment, you have to insert it into one of the 10 tracks. Each track can be up to 1000 bars long; bar numbers are given in a column to the left of the tracks, and these in conjunction with a dotted 'cursor line' across the tracks indicate your exact position (to a resolution of a 16th-note). Unfortunately, the display doesn't scroll during recording or playback.

In practice, it's best to insert some empty segments into your track(s) before recording, as this enables you to move between record and playback modes with the minimum of fuss. The sequencer's track format allows you to see which segments are on each of its 10 tracks at any given moment, which is undeniably useful.

Design *"The sequencer is conceived around a single-screen display, with ten columns corresponding to the ten sequencer tracks."*

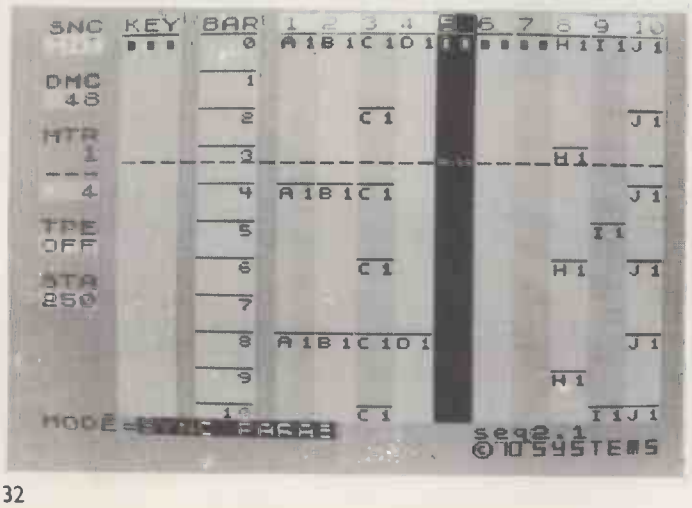
Recording and playback always begin from the current position of the track cursor. This means that when recording, you hear whichever other segments are coincident in the track table; you can control which tracks/segments are heard by turning individual tracks on or off. The segment you're recording is selected independently of the track table, however, so as mentioned, above the segment (more correctly, a pointer to the segment) has to be inserted into one of the tracks before you can hear it played back.

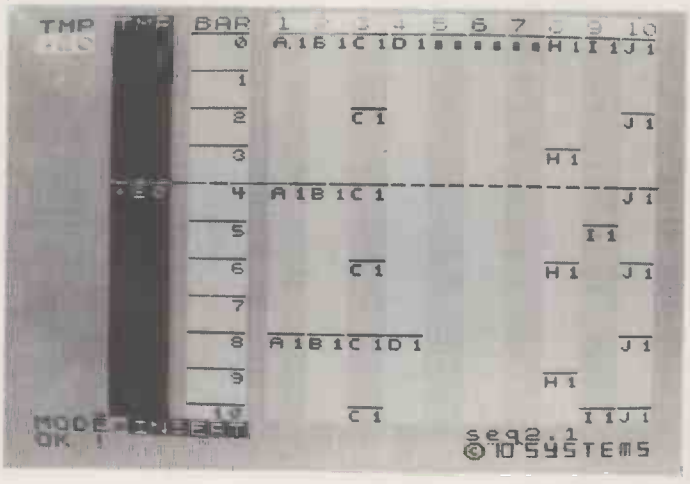
The time signature of each segment can be set to any value between 1/16 and 64/2. Now, not only does this allow you to work in all sorts of weird and wonderful times, but 255 bars of 64/2 gives you a commendably lengthy recording period, too. And because in the track table you can combine different segments which can also start at different points in time, it's possible to build up some complex compositions if that's your thing.

Your performance is recorded exactly as you play it, but can be quantised afterwards (to 4, 6, 8, 12, 16, 24, 32, 48 or 96th-note resolution). Quantisation is irreversible, so it's advisable to copy your performance into another segment first, before you subject it to modification by computer.

Control changes, program changes, aftertouch and pitch-bend can each be filtered out at the recording stage, and once you've recorded a segment, the sequencer allows you to erase all key, controller, pitch-bend, program change and aftertouch data. It's even possible to remove individual controllers (any controller number from 1-127) and to replace one MIDI control code with another.

As with any sequencer, you can add performance data in later by recording it ►





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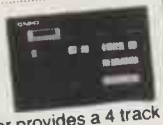

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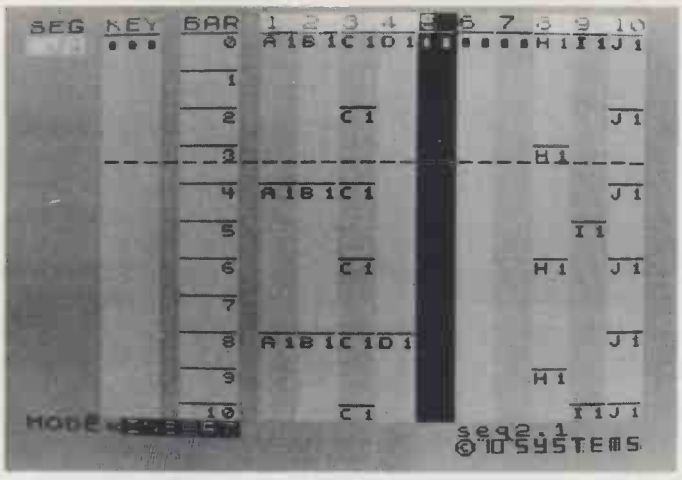

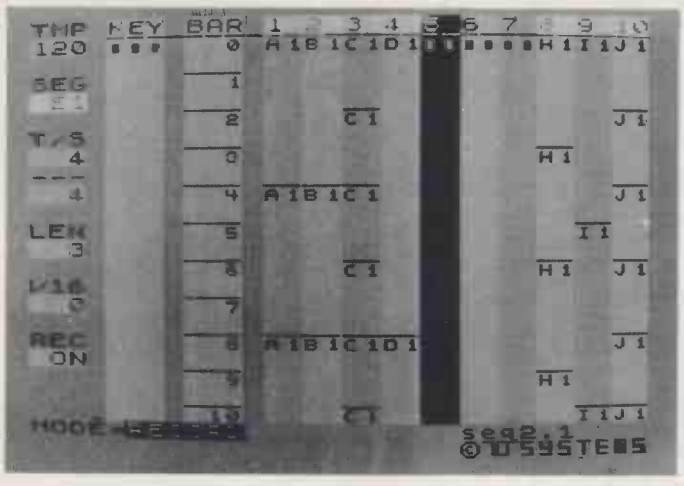

► into a separate segment and sending the two segments on the same MIDI channel – useful but not very economic, though 10 Systems' sequencer allows you to bounce down segments, which gets around this problem. Being able to bounce down segments is also useful if you're recording several percussion parts on a MIDI drum machine, or more than one keyboard part to be played on the same instrument; when you've finally got the parts as you want them, you can bounce them down if you need to free tracks for other parts.

Further segment editing functions allow you to transpose a segment up or down in semitone steps, increase or decrease the velocity information (which can be useful for balancing parts, or allowing for the varying velocity response of different instruments) and delete all data from a segment. You can also copy one segment to any other segment(s).

10 Systems have given their sequencer a useful range of track-based features as well. Segments can be inserted and deleted from a track at any point (to a 16th-note resolution), and where you want periods of silence on a track you can insert these without having to define them as blank segments. Tempo changes can be inserted at the beginning of any bar, and apply to all 10 tracks. For each track you can insert program changes (0-127) and key changes (±99 semitones) at the boundaries of a segment or in an empty position. These are displayed in a separate column, and can easily be inserted and deleted at any time.

The word processor approach to composition also allows you to search and replace any segment within a track with any other segment, and to copy any section of a track to anywhere in the same or another track.

The sequencer can converse with the outside world via two MIDI Outs, Roland's DIN sync, Clock In/Out (selectable to 24, 48 or 96ppqn in and out – making the sequencer compatible with non-MIDI drum machines from Roland, Korg and Oberheim) and Tape Sync In/Out. Shunning the Spectrum's pathetic internal beep, 10 Systems have included a metronome click on the Tape Sync Out socket.

MIDI song pointers are also supported, which, as you may know by now, allow you to slave the sequencer to a tape machine via a SMPTE/MIDI converter – a superior arrangement to standard tape sync, if you can afford it.

On the storage front, tracks and segments can be saved to either Sinclair Microdrive or cassette as a single file, and given a 10-character filename. You can also catalogue and erase files.

The accompanying manual is commendably thorough in some ways (you'll certainly be aware of *how much* the sequencer can do), but not so good on the mechanics of actually getting your music recorded and assembled onto the tracks. A step-by-step example or two would do no harm here.

The 10 Systems sequencer is a flexible, sensibly-designed package which should win a lot of friends – particularly when you consider how cheap a Spectrum is, and, for the quality of what you're getting, how cheap the hardware and software are, too. ■

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OUT OF THE SHADOWS

A great deal of research has recently gone into making the guitar synthesiser perfect, and the Shadow GTM6 Guitar-to-MIDI system is one of the first designs to make use of that research. Does it cure all the problems? *Geoff Twigg*

Over the last few years a number of successful guitar synth designs have appeared. Successful, that is, in the sense that some people have managed to use them to make music. Sales have never been great, so refinement has been slow. But there's been a steady improvement in the performance and capabilities of each new model. Latest in the line is a unit from Shadow Electronics, the West German pickup manufacturer; all in, it'll set you back about £1000.

For the sake of comparison, the Shadow system is a little cheaper than the Roland (even at its lowest price) and about the same price as the Ibanez. Both of these Japanese systems include a guitar; the Roland also has a built-in synth (basically a JX3P) but is less instant in its response than the newer Ibanez and Shadow. The Shadow is built into the guitar of your choice, and it has a built-in sequencer, but more of that later.

Now, a lot of 'traditional' music people, retailers and musicians alike, are reluctant even to try (let alone buy) a hi-tech instrument like this. It's partly fear of the unknown, partly fear of looking stupid, and partly lack of imagination.

To get over that level of market resistance, a guitar synth has to be a) instantly playable by any punter in any music shop, b) not too temperamental, c) fairly responsive to normal guitar technique, and d) based on a nice instrument to start with.

The Shadow MIDI system consists of a pickup and a 19" 2U rack-mounted unit, with a small three-pedal board. A variety of pickups can be fitted to any guitar of your choice, but for review purposes, I was provided with the system on a Squier Strat, which was a pleasant instrument to play. A Shadow locking tremolo system was fitted to the guitar, and the pickup sat beneath this; consequently there were two distinct audio output signals available, as well as the output to synth. This facility in itself makes the Shadow system attractive, with a range of extra tones available from the 'acoustic' pickup off the bridge, as well as the full range of Strat tones from the five-way selector on three single-coil pickups.

The guitar is connected to the unit by a stereo jack cord, which goes into the top left-hand corner of the front of the unit. Just below this is a five-pin DIN socket for the footpedal unit. Next along we come to the main control panel, which is also detachable for use as a remote control. This has a total of ►

► 13 pushbuttons and an LED display, which will be detailed later. Next along are six string sensitivity adjusters and an overall sensitivity pot, and an on/off switch.

The back panel has two output jack sockets, one for acoustic guitar transducer signals and one for electric guitar pickup signals. Beneath these are two MIDI Outs.

On powering up, the module is immediately ready for action. However, if you haven't used it before, the best way of beginning is to do a 'Cold Start'; this clears the memory and sets all the parameters at default levels. From here on, all manner of subtle adjustments can be made to suit your personal use of the system. I don't propose to discuss them in too much detail (I could write a book...), but a brief overview of what the unit does, and how it does it, may be useful.

First of all, it's necessary with any MIDI controller to establish contact with the synth you're controlling. The best way of doing this, according to Shadow, is to ask the built-in sequencer to punch out some music so that you can make sure the synth and amp are on, and then adjust the volume. The piece they've chosen is 'The Dwarf's Dance' by Grieg. I suppose any robotic music would have the same effect after the fifth or sixth hearing, but not only did I consciously avoid pressing 'Sequencer Play' at this stage, I also began having nightmares about the piece starting up at just the wrong moment. You know the problem: you go back to the unit to check your tuning, press the wrong button and suddenly the PA erupts with a *Jaws* rhythm and a tune like an elephant's mating dance.

To ensure that the unit interprets the guitar signals correctly, the first procedure you must go through is Tuning. This is an easily accomplished and remarkably user-friendly process. The left-hand column of buttons has two LEDs above it, one marked Play, the other Program. The top button selects between these two options.

Tuning is performed in the Program mode, by pressing the bottom button marked (logically enough) Tune. The display then shows two horizontal lines until you pluck a string, at which time one or other of the LEDs below the display indicates whether that string is flat or sharp, and the display indicates by how much.

Turning to performance, it's fair to say that all pitch-analysis systems produced so far introduce some kind of delay. The delay on the Shadow system is quoted as being 6 milliseconds or two cycles, whichever is longer. That's pretty short, and frankly you don't notice it too much above the pitch of the open D string. Below that, the delay is obtrusive, and (as on the other systems) you have to cover up the delay with guitar sound. However, with the *possible* exception of the Ibanez, the Shadow's is the best all-round triggering I've heard to date on this sort of system.

As already mentioned, a lot of guitar synth sales are lost by the fact that you can't just pick them up and play them. Systems that use a hex pickup need to be adjusted for sensitivity to suit each individual player. On some designs, this involves electronic programming or fine adjustment of small hidden screws – not the sort of task many musicians are capable of performing at short notice.

By contrast, the Shadow system is pretty much instantly playable. It's as well to be aware that your fingerpicking might be a little too light for the pickups, but to solve that, you need only to tweak one of the Sensitivity pots on the front panel. If the synth you're playing is velocity- or touch-sensitive, you can adjust the Dynamics control to use those parameters effectively.

On the MIDI side, the Shadow transmits only the following information: Key On, Key Off, Key Velocity, Pitch Bend, and Program Change. What this means in plain English is that you can control up to eight synths independent of each other; one for each string, one for the Sequencer and one using the Hold function. This is done by assigning each synth to a separate MIDI channel. You can also, of course, use the Shadow unit to change patches on your synths remotely.

Now, as MIDI is generally keyboard-oriented, each semitone on the keyboard is assigned a MIDI number. In order to get the subtle pitches in between these semitones, which guitarists take for granted when they bend a string, MIDI contains a parameter called Pitch Bend. However, on most keyboards, and therefore on most MIDI systems, there's only one pitch-bend. This

can cause problems if you bend more than one note at once on the guitar which is common practice, really), and with some guitar-synth configurations in the past, whole chords have been transposed when the player only bent one string.

The GTM6 responds to string-bending in one of three ways, each of which you may find useful.

In Trigger mode, every time you reach a semitone above or below the previous recognised pitch, a new note is started. That is, it starts the envelope again, as if you'd played a new note. As the handbook says, the result sounds as if a pianist were trying to imitate a guitarist.

In Quantize mode, the unit again responds only when a new semitone pitch is reached, but this time without starting a new envelope. The note is still dying away, but the pitch changes in semitone steps.

In Bend mode, the synth follows your bend exactly. Problems arise, as I've suggested, when you pluck two strings and bend one or both. If you're using one synth for each string it's fine, because each synth can respond to an individual pitch-bend command. But if you're only using one or two synths, the Shadow reverts to Trigger mode until you play monophonically again. The range for pitch-bending is four or eight semitones up and down.

More drastic changes of pitch are accommodated on the Shadow by transposition. It's possible to transpose any of the strings up or down by a maximum of three octaves, which opens up mind-boggling possibilities. The idea of using a variety of tunings is certainly appealing, and the opportunity of playing some of Stefan Grossman's rags on detuned steel-strung acoustic, with a honky-tonk piano sound on the synth, is very welcome. Well, it is to me anyway.

Three pedals are supplied with the system, and these are connected to the front panel with a standard MIDI lead, as it happens. The first (starting from the left) is called Rec-Play/On-Off, which as its designation suggests turns the synth sound on and off. This plays a key role in operating the sequencer, too.

The middle footpedal is Hold. You can use it in one of two ways; either a) to hold a chord on the synth sound while you solo over it with the guitar sound, or b) to switch between two synthesiser sounds.

The third pedal controls the Chain function. This allows you to step through a pre-programmed sequence of patches, to change the Bend, Quantize or Trigger options in each case, and even to store individual chains of presets for the Sequencer or Hold facilities as well.

The Sequencer is simultaneously an exciting and frustrating addition to the Shadow system's armoury. Frustrating because it's one of those that literally accepts the information it's given. That might sound stupid, but what it means is this. Having selected the Sequencer option on the main unit, you stamp on the Rec/Play pedal to start the recording. Play the sequence, and as soon as you've finished, press the pedal again. If you happen to stand on the pedal at just the right moment, the sequence will be perfectly in time. If, on the other hand, you get it slightly wrong, then your 16-bar blues sequence will turn out to be 15.9 or 16.1 bars long, and will go round and round with a permanent limp.

All in all, though, the Shadow system has a number of benefits to recommend it. To start with, you can have it fitted to any guitar of your choice; I've heard it on several different electric and acoustic guitars, and have as yet witnessed no 'glitching' problems (caused by the hex pickups responding to resonances in the body) at all. You can also use it with any MIDI synth, too, which could be handy if there's more than one keyboard in your band, for instance.

Technically, I reckon this is the fastest pitch-analysis system I've heard; it's a compact unit which is very easy to use, and it has a built-in sequencer which some may find useful, though it *is* difficult to get absolutely spot-on.

Also against the Shadow is the fact that there's still something of the delay that seems to characterise all these systems, and some guitar players will undoubtedly find that difficult to live with. ■

Price *GTM6 rack unit £899; pickups for a variety of guitars are available from £75 for a standard acoustic transducer, to £140 for the Shadow locking trem unit fitted to the review Strat*
More from *Barnes and Mullins, 155 Grays Inn Road, London WC1X 8UF. ☎ 01-278 4631*

MIXDOWN

As Commodore in America struggle through a financial crisis, a British company comes up with the Mixdown Music System, a comprehensive package for the new Amiga. We preview the software that could turn the world's most powerful home computer into a sophisticated musical instrument. *Chris Jenkins*

Without question, the concept of the 'home computer' has had to be redefined with the advent of Commodore's Amiga PC. With the advent of the Mixdown Music System for the Amiga, we may soon have to examine our definition of 'computer music', too.

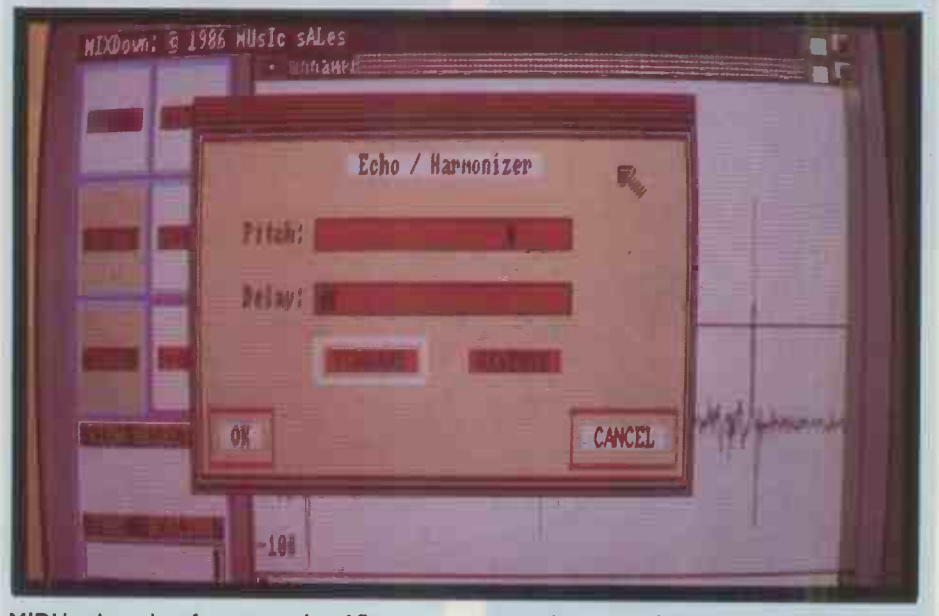
The Amiga, as most of you will know from previous E&MM features, is a high-end home/low-end business machine, recently launched in the UK at around £1500 for the basic system. This system consists of a central 512K processor unit with built-in disk drive, detachable keyboard, colour monitor and mouse. There's an £1800 version available with an extra disk drive.

The Amiga is not to be confused with the IBM PC lookalikes which it so closely resembles physically. Its central processor is the fast, powerful 68000, as used in the Apple Macintosh and Atari ST, and it has three special chips which handle data transfer, graphics and sound.

Although the data handling and graphics are stunning (ten times the speed of an IBM PC, 4096 colours, multi-tasking of eight simultaneous jobs, full window/icon/mouse interface and so on), it's what the Amiga sounds like that should interest musicians. Using Mixdown, the Amiga becomes more than a computerised musical box. It can be a complete sampling, FM synthesis and MIDI composition workstation, to use a popular phrase.

The Mixdown system owes a good deal to the Commodore Sound Sampler and FM Voice Module for the CBM64. Designed by the same developers, Music Sales, Mixdown takes the concept to limits which only the Amiga could allow. A July release is planned, and on the version we looked at, the software was 90% complete, with hardware finished save for a temporary case. The Mixdown hardware looks unimpressive: a flat case about 8"×6" featuring cable connectors for the Amiga's serial and parallel ports, and a number of MIDI In, Out and Thru sockets.

The Mixdown software allows four-note polyphonic sound-sampling at the limits of the Amiga's possible quality, full editing routines, and control of a built-in nine-voice digital sound synthesiser. The samples and synth sounds can be played either from a



MIDI keyboard, or from an optional five-octave Commodore keyboard which attaches to the Mixdown module. This keyboard is identical to the models available for the Commodore 64 music packages, and is of perfectly decent quality – though it lacks such 'pro' features as velocity or touch response, mod wheels and the like.

Using the Mixdown system, sound-sampling is performed through the interface, which has a Gain pot to adjust for either microphone or line inputs. The main control screen features six boxes, which in the final version will be labelled with icons, and five menus at the top.

The first menu is the standard project menu (options are New, Open, Save, Rename, and Quit). Most of the recommended Amiga operating system standards are adhered to in Mixdown, so that, for instance, Mixdown samples can be integrated with Electronic Arts Music and graphics programs. The project menu, then, allows you to name a sample, decide which of the four available sample windows it will be displayed in, and to define the sample time used. All the control options are carried out by moving the mouse pointer to the correct menu or option and clicking the mouse button – an incredibly fast and easy way to work.

The total sample time available on the 512K Amiga is eight seconds, at a reasonable sampling rate of 16kHz. Unfortunately, the Amiga's sound output filter cuts off any signal above a frequency of 7.5kHz, which limits the sound quality possible to well under that of, say, the Mirage or Emulator II. Pity.

Sampling is carried out by setting the input trigger level (displayed in the form of an LED bar), selecting the Record gadget, then simply playing the sound, at which the screen blanks to indicate that sampling is in progress. Anyone who's used computers of the Spectrum generation will be familiar with software that blanks the monitor screen during the most work-intensive tasks, but I'd have thought the Amiga had enough processing power to maintain some kind of graphics display during sampling. Maybe it isn't so clever after all...

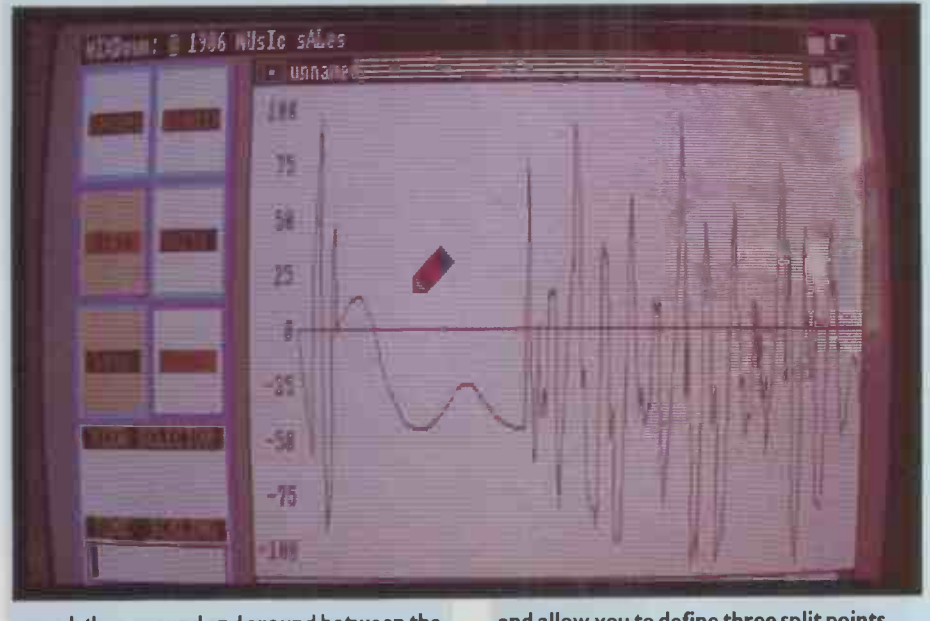
Once you've made your sample (or recalled one from a disk, which can store around eight full-length samples), the waveshape can be displayed in the appropriate sample window.

The x-axis (time) of the sample display can be rescaled to show the whole sample, where one pixel on the screen represents one six-thousandth of a second. Alternatively, the sample display can be compressed into a single window, or you can slide through the

whole sample display a piece at a time. All four sample windows can be resized, by 'dragging' the corners using the Amiga's mouse controller, and all have full auto rescaling.

After sampling, the pointer changes into a keyboard shape, and you can play back a monophonic sample at any pitch from either MIDI synth or Commodore keyboard. This mode is designed to allow you to edit the sample to your own requirements, before going into Multiplay (four-voice) mode to set various performance parameters.

One of the most important facilities is looping, by which two loop points can be defined and highlighted on the sample display. There are two forms of looping; either playing from the beginning of the sound, then around and around between the loop points; or, using the Truncate option, just looping around the loop points. Needless to say, the Amiga's graphics displays make this routine a joy, and a stark contrast to the pleasures of interpreting hexadecimal LED displays on the Mirage, which have driven many keyboard players to the verge of hysteria. Score one to the Amiga.



Should you have an unwelcome click on your sample, you can select the Draw option, and use the pencil pointer to redraw the unwanted part of the sample display. You can even use this option to create a whole new sound, but, as with more powerful systems like the Fairlight, it's almost impossible for a human operator to have any real control over the results – most efforts just sound like distorted sinewaves.

The Edit menu allows you to Cut out unwanted sections of the sample and close up the gap, or take sections and Copy them to new positions, or Paste sections into the middle. You can 'mix and match' sections cut from the four available samples, to create weird sounds such as the attack of a guitar with the sustain of an organ and the decay of a piano. Plenty of novelty value, if nothing else.

The next menu contains a Help section, and the following one a Digital Equalisation page. This allows you to create vibrato and tremolo effects using variable rates and depths of frequency and amplitude modulation. You can also define filter settings, with parameters for filter centre point, resonance, and low, middle or high pass filters. A six-stage filter envelope is provided, and the program recalculates the whole sample according to these filter characteristics. The results can be some extraordinarily 'unreal' sounds.

The Special Effects options can only be used on outside sound sources, not applied to the samples themselves. They include Echo, which gives a fixed-pitch forward or reverse repeat with variable delay, and Harmoniser, which allows you to produce double-tracking effects at any required musical interval.

Keyboard Mapping and Split options provide a display of a five-octave keyboard, and allow you to define three split points, assign any sample to any keyboard section, and define different MIDI control channels for each keyboard section. Using a MIDI sequencer, you can play three different instrument sounds from the Amiga, while adding a solo on a fourth sound played live on the keyboard. And you could, of course, use this option to produce more convincing multi-samples, too.

The MIDI section enables you to set up the Amiga to accept MIDI In signals on any channel, and to transmit MIDI data, should you want to use the Commodore music keyboard as a master controller (unlikely, but you never know).

Mixdown's capabilities don't stop there, since the hardware also includes a nine-voice polyphonic FM digital sound synthesiser. Based on chips licensed from Yamaha (the same ones responsible for the sounds of the DX series), the Mixdown FM chips work on the familiar system of sinewave operators which modulate each other according to complex algorithms. Sadly, the Mixdown package reserves much of the Amiga's memory for sample storage, so use of the FM chips is limited to a 'teaser' routine. You can select any one of 12 instrument icons, and play the FM sounds from the keyboard (or listen to demo tunes from the disk which also use Amiga sampled drum sounds). But you can't program your own FM sounds, or use them under MIDI control.

Much more complex FM software is in the pipeline, though. It's due to include a sound-editing package and a fully-blown composer program featuring 16-track MIDI composition using the Amiga's samples, the output of MIDI keyboards *and* the Mixdown FM sounds.

So what, exactly, do the Amiga and Mixdown offer the musician? First of all, if you're willing to invest £1800 in the computer, you'll be getting a machine which has a number of unique abilities not limited to the music field. The Amiga will accept a video input using a Genlock interface, and can manipulate video images. It's capable of high-speed three-dimensional colour animation. It can do your accounts, word-process, keep databases and link to communications systems, which is no more than most other computers can do. The difference is that the Amiga can do them all simultaneously.

It also has a built-in speech synthesis device, and the sound chip is capable of producing some pretty good synth noises, even if you're just programming it in Basic (or Pascal, or C, or Forth).

For the musician, the choice is harder. For £2000 – the cost of the Amiga plus Mixdown – you can get an Akai S612 MIDI sampler (which is six-voice polyphonic, velocity responsive and has fast disk storage), a Yamaha DX100 (which features the same FM synthesis as Mixdown, plus a keyboard), and a sequencer such as the Roland MSQ700, which is powerful enough for most musicians.

To the Amiga owner – and as yet there are but a handful of them in the UK, and not many more in the States – I'd recommend Mixdown unreservedly. To the musician, I'd say that unless you're convinced that the speed and ease of computer operation are what you need, and that you'd appreciate the Amiga's non-musical functions, it might be a rash move to commit yourself to a computer-based system. ■

DATAFILE

Amiga Mixdown

Hardware *1×MIDI In, 4×MIDI Out, serial and parallel connections, non-MIDI keyboard connector. Nine-voice FM module*
Software *Four-voice sampling*
Sample length *6 seconds at 16kHz*
Filter cutoff *7.5kHz*
Multisplit *3 definable split points*
Edit facilities *Loop from start, truncate, redraw, cut, combine, reverse, etc*
Filter *Low/med/high, cutoff, resonance*
Echo *Forward/reverse, harmonise, delay*
ADSR *Six-stage envelope*
Storage *Full load/save facilities, six full-length samples per disk*
FM *Demo routines only*
Price *£200 approx*
More from *Commodore UK, 1 Hunter's Road, Weldon North Industrial Estate, Corby, Northants. ☎ (0536) 205555*

THE HITCH-HIKER'S GUIDE TO THE MACINTOSH

Douglas Adams, author of the world's best known cult sci-fi spoof series, 'The Hitch-hiker's Guide to the Galaxy', is also a musician whose enthusiasm for high technology has made him an expert on the Apple Macintosh computer and its music software. Interview & photography *Matthew Vosburgh*.

Everyone, it seems, has their heroes. Favourite musicians, actors, photographers, writers...the list goes on. I've been lucky enough to meet a few of mine, and it's always an unnerving experience. One such hero is Douglas Adams, famous for writing 'The Hitch-hiker's Guide to the Galaxy', the hilarious sci-fi comedy that started as a radio series and then became a television series, a book, a record and a novelty beach towel.

But why an interview with an author in a musician's magazine? Because this one is currently working on several new projects, all of which involve the Apple Macintosh, while quite a few also involve MIDI, FM, and sampling keyboards.

Douglas Adams first got into real (as opposed to fictional) high technology when he bought a word-processor from ICL. This proved to be a disaster, not because there was anything wrong with the machine, but because ICL don't provide the best back-up in the world. At one point, Adams even considered writing a text adventure in which the aim would be to call up the ICL switchboard (fairly easy), try to get put through to the right department (much harder), and then try to get the information you need to make your system work properly (almost impossible).

'...Then I moved to Los Angeles for a while', he continues, 'and almost grudgingly went and got a computer there, which was a DEC Rainbow. That's an IBM type, but because DEC and IBM are old rivals, DEC didn't make it IBM-compatible. That meant I spent most of my time trying to find software that would run on it, and that drove me crazy.'

Luckily, help was just around the corner.

'When I got back to England I discovered the Apple Macintosh, and that was love at first sight. These days I've got huge amounts of Mac software of one kind or another, but the interesting thing about the music applications is this: each piece of other software that I've encountered enables you to do something better, more powerfully, more flexibly, or more quickly than you were able to do it before, but the music software actually enables you to do something you fundamentally couldn't *do* before. You see, although I can read music, I'm a really ham-fisted keyboard player; I can just about hack out 'Let It Be' and that's it.'

How good are you at notation?

'I can write music in much the same way that I can write French: very slowly, painfully and with a dictionary. I did sing in a choir and take music at school, so I'm fundamentally conversant with notation, but not fluent.

'I started using some software called Concertware Plus, and began to learn incredibly fast – much, much faster than you'd ever learn just by writing notation. If you're doing something in a complex rhythm, you may *think* that's the way it goes when you write it down, but you can't test it, because you're only going to play what you think you've written. But if you write something and you press a button and the computer plays it back to you, you can instantly see what's

"I can write music in much the same way that I can write French: very slowly, painfully and with a dictionary.

right and what's wrong. That was absolutely marvellous. I also found, for the first time, that it didn't matter if you could play an instrument or not; provided you could write the music, the computer would then play it for you.'

What did you have running with that first program?

'To begin with I just used the sound output from the Mac, which is sort of weedy and tinny. Then I decided to get some MIDI gear. I knew that there were one or two synthesisers that were multi-timbral, like the Casio CZ3000 and 5000; they seemed to have the spec I wanted, so I thought I'd go and get one of those.

'So I went to Rod Argent's and sat and played one for a bit. Then I heard somebody next to me playing a DX7, and I couldn't help but notice that there was a difference in the quality of sound. Everyone told me that the DX7 was very much the staple of the industry, but its MIDI spec is primitive, because it was one of the first out in the field. So the guy in the shop said: "Why don't you get a TX7 expander version and a Korg DW8000 to play it from? That way you get all the DX7's sounds, a very much better master keyboard, and the Korg's own sounds, all for very slightly more than the cost of a DX7." That turned out to be very sensible advice.'

Did the hardware additions force changes on the software side?

'Yes. Although Concertware Plus has been updated to run with MIDI, that package does have its limitations. In order to overcome those, I had to move up to another, more expensive sequencer, which I think is the best one I've come across: Performer, by Mark of the Unicorn. It's an extremely powerful, well thought-out, clean and precise program, that enables you to do an awful lot of stuff.

'For that, though, you have to be prepared to input from a MIDI keyboard, rather than writing the stuff out. It comes with a sister program called Professional Composer which supposedly allows you to write in musical notation and then transfer it to Performer, but that's the one part of their operation which so far isn't working that well – it's very difficult to use.'

Why do you find the notation side so important?

'I find that there are all sorts of things that you can think of to write, which don't necessarily occur to you to play, even were you able to play them. Not only that, but I find that actually seeing a piece of musical notation gives you ideas about the structure of the music that otherwise wouldn't occur to you. I sometimes go through a rather complicated process of writing something in one program, transferring it to the sequencer in the Emulator II, and then booting up the other program and transferring it back to the Macintosh.'

...Emulator II? Well, Douglas Adams has expanded his sound hardware well beyond the two keyboards already mentioned. But more of that later. It's typical of Adams' thoroughness that he's also checked out a rival program, Total Music, from Southworth Music Systems, whose MIDI interface he uses with Performer. What's the difference between the two?

'From my experience so far, I don't think Total Music is as clearly thought-out as Performer. It tries to do everything all at once, and it doesn't really do things as well. You always feel slightly at sea in it because nothing's ever quite precise. Performer has obviously tackled it stage by stage and done every bit absolutely right, and there will be other bits coming down the line. Total Music has tried too soon to be all things to all men.

'It does display notes on a stave, but in my experience, the program crashes if you try to use that part of it. That's the kind of program it is at the moment, but I don't want to do them down, because I know that it's in a fever of re-writing, and they keep on sending out newer and newer versions.

'Personally, I'm not sure that I approve of using paying customers as Beta test sites. You should actually get a program that does everything it's supposed to do, and does it well. Even if there are going to be later stages where new facilities are going to be added, they should get a version that actually works and doesn't crash, and sell that, and *then* start developing, rather than getting everything in the program working 75% of the time, and putting it out, hoping to raise the stability later.

'On the other hand, when I log on to PAN (the Performing Artists' Network – an American bulletin board accessed by modem), I read a lot of discussion about all the software that is available, and I have to report that although I'm not satisfied with Total Music, a lot of the people who call up PAN are wildly excited about it. The real fans of Total Music regard its many shortcomings and fudges as being all part of the excitement and the challenge of it. I've been through that with too many programs, so I particularly enjoy programs like Performer which just *work*.'

But just as more sophisticated hardware called for more powerful software, so the new software made Adams feel the need for more keyboards...

'Inevitably, the moment you start playing with this stuff, you realise that one of the great advantages of a MIDI setup is that you never have to commit yourself to tape. You can keep on editing and refining and putting in new layers and so on, but it means that you've actually got to have a few more sound sources if you want to hear it all at once.'

Adams' unremitting love for all things FM made some of the hardware purchases obvious: three more TX7s. Then, to add a bit of analogue warmth, he got himself a Korg EX800 (the expander version of the Poly 800), and also added a Yamaha drum machine for percussion.

'I got the Yamaha RX15, but I should have got the RX11. At the time I thought a little extra money wouldn't make much difference, but what I didn't realise was that the MIDI implementation of the RX11 is much better. You can up-load and down-load pattern data over MIDI on that, which is something you can't do on the RX15 – you have to use the cassette interface instead.'

"I got the Yamaha RX15, but I should have got the RX11. I thought the extra money wouldn't make much difference, but the MIDI implementation of the RX11 is much better."

A Roland Octapad makes Adams' rhythm programming easier, while an Alesis MIDIverb provides ambience for everything else. The whole system goes into a big Seck mixer, ending up at a Fostex 260 four-track cassette machine.

'I shouldn't have got that one. I should have got the smaller X15, because mine is so complicated it drives me spare. It's very good, but with this MIDI setup, I just need a machine that records and that's it. I don't need elaborate track-bouncing and all that. I do eventually intend to produce recordings using live instruments as well, but I've fought shy of doing that so far because I know it's just going to be a source of endless headaches.'

The one live instrument Adams particularly wants to incorporate is the guitar. It's the instrument with which he feels most at home; he has a Martin acoustic and a Strat, and has played guitar for quite a while. He also wants to bring the guitar into the electronic side of things.

'What I want is a proper guitar-to-MIDI interface. I've heard of all kinds of problems with the Roland ▶

► system. I think it's the sort of thing you should be patient with and wait another year, and then most of the problems will be solved. One of the major problems is simply the delay in the signal processing. The thing I would most like is to be able to put a MIDI interface onto an acoustic guitar.'

At this point, Adams picks up his beloved Martin (which has an Apple sticker on the scratchplate) and plays a few bars.

'One of the first things I did on this setup was transcribe things that I'd written on the guitar, using music notation. Actually, that's a very complicated thing to do, because the rhythmic patterns of what you play on guitar are extremely complex.'

That's why you can always tell a guitar synth on a record; a keyboard player just wouldn't *play* like that.

'Yes. The rhythms of fingerpicking style are very interesting when you put them onto other instruments. I transcribed this, for instance...'

(Adams fingerpicks a pretty, but rather ordinary, piece on the guitar.)

'...I transcribed that, using musical notation, straight onto the keyboard. I'll play you the result.'

The result, amazingly, was a beautiful piece of music, starting with a delightful music box/xylophone sound (a combination of at least one TX7 and the DW8000) playing the melody, with a touch of analogue strings in the background. Next came some FM tubular bells playing accompaniment, and gradually, the whole thing unfolded.

Encouraged by his success with this setup, Adams decided to move into sampling.

'Quite a long time ago, I got a letter from a guy at Syco who was a fan of 'Hitch-hiker'. He said: "Since you're obviously interested in sound, if you ever want to see any of our stuff, give me a call." So I went down there, and he showed me the Emulator II, and the Kurzweil and the Fairlight. I said: "Well, I'm interested to see this, but I don't really think that it's what I'm in the market for." It did niggle away at the back of my mind though, after I'd seen what they could do. Suddenly I had a sort of brainstorm, and when the Mirage I'd intended to buy didn't come in, I wandered off and got an Emulator instead.

'It's very interesting, using the Emulator, because it becomes apparent that computerised appliances tend to lag some way behind the development of computers *per se* in sophistication. The disk operating system and everything on the Emulator is really very primitive. When you're used to using something like the Macintosh, it's really like digging back into the stone age. Obviously there are rational reasons for that, but I never thought I'd have to handle 5¼" disks again. Of course, all of that is made much easier by the Digidesign Sound Designer software for the Macintosh.'

"Using the Emulator, it becomes apparent that computerised appliances lag some way behind computers *per se* in sophistication."

Are you keeping your Emulator sounds on the Mac now that you have that software?

'Well yes, but not much so far, simply because I'm waiting to bring the big hard disk in the next room on line. This hard disk (Adams points at the 20Meg drive his Mac sits on) is all but full with everything else, and sound files take up huge amounts of space. I can't really use the 100 Megabyte hard disk next door until I get the hierarchical filing system for it, which Apple claim is in the post.

'Going back to the Emulator, there were one or two things that I found terribly hard to work out to begin with. Like the manual is quite entertainingly written, but there are certain limitations in the machine that it doesn't tell you about. That means you spend ages hunting around, trying to find a way of doing something that you think should be obvious, until eventually, by reading between the lines, you work out that you can't do it.

'For instance, an Emulator preset has to be set to respond to control wheel information from either its own keyboard, or from MIDI. You have to choose either one or the other. This means that if you record something onto an external sequencer using the Emulator's own keyboard and you want to use the wheels, when you play the MIDI data back, the wheel information is ignored. You have to set all the presets to expect to receive control information from MIDI sources, and control the Emulator from another keyboard in the first place.

'The point I'm making is that nowhere in the manual does it actually tell you any of that, so you spend a lot of time thinking that you're just being stupid and missing something obvious, and that there *must* be a way of getting it to work.'

For the most part, however, Adams is delighted with the Emulator II.

'It was playing around with the Emulator that made me begin to think it might be fun to go back and do more 'Hitch-hiker' on the radio.

'I've been thinking that if we'd had stuff like this, even *remotely* like this, when we did the radio series initially, the stuff we could have done would have been just amazing. The leap forward in technology that's occurred in the last six years is unbelievable.'

If you did another radio or TV series, would you do your own music this time around?

'Well, I'm hesitating to say so, but yes! The reason I'm hesitating is I don't know how Paddy will react.'

By 'Paddy' Adams means Paddy Kingsland, the gifted BBC Radiophonic Workshop composer who did a lot of work on the music for 'The Hitch-hiker's Guide' originally. He's no longer with the Workshop these days, having left the BBC to set up his own studio. But Kingsland and Adams remain great friends, and being an Emulator owner, the former was another factor to influence the latter's decision to buy one of E-mu's flagship keyboards.

Suddenly the phone rings, and it's Infocom calling about something else altogether. Infocom are the company who put together the Computer Adventure version of 'Hitch-hiker', and they want Adams to come to Boston to work on another one. At the moment, though, Adams is supposed to be working on another book. It won't be anything to do with 'Hitch-hiker', so what *is* it about?

'I described it to my publisher as a ghost, horror, detective, whodunnit, time-travel, romantic-comedy epic!'

Can't wait to read that one, and the sequel is already on the way. What about the long term?

'Well, what I'm dreaming vaguely of doing, and it's a very ill-formulated thought at the moment, is doing something for record. It'd be something combining words and music in some form – part drama, part music – but much more music-oriented than something like 'Hitch-hiker' was. If that works, then I can justify getting something like a Fairlight!'

Just then, Adams' secretary runs in and says urgently: 'It's Alan Kay on the phone from California! Can you take it in the kitchen?'

It's clear Adams is terribly excited by the news. 'I'm going to have to go and take this call from California', he says. 'Alan Kay is the guy who actually *invented* the Macintosh!'

So even Douglas Adams has his heroes. ■

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AND THEN THERE WAS ONE...

Nearly 20 years of rock keyboard-playing have made Tony Banks a unique figure: a virtuoso musician whose enthusiasm for new sounds and new musical styles has never been dulled, and whose influence over fellow artists has been immense. As his 16th album with Genesis is released, Banks has plenty to say.

Interview *Tim Goodyer*

Songwriting, cult success, pop stardom and filmscoring have made Tony Banks' name one of the best-known and respected among rock keyboard players.

It all began in 1969, when an album titled *From Genesis to Revelation*, produced by Jonathan King, was unleashed on an unsuspecting and largely unappreciative record-buying public. The album contained the songwriting endeavours of five young hopefuls, among them Banks, Mike Rutherford and Peter Gabriel.

Since those humble beginnings, much has happened to both the music and the line-up of the band, but Genesis have enjoyed one of the most consistently successful careers of any in rock music. I spoke to Banks at Genesis' own Surrey studio on the eve of the release of their 16th album, *Invisible Touch*. It's perhaps the band's most overtly commercial offering to date, with many of its pieces sounding more like out-takes from a Phil Collins album than anything else. There are some surprises, though, notably the beautifully textured 'Tonight, Tonight, Tonight', and an avant-garde instrumental titled 'The Brazilian', which brings the disc to a close.

Coincidentally, Banks has a new solo offering, *Soundtracks*, in the record stores, too. It showcases Banks' most recent composing, programming and performing work, and abounds with the sort of hot-paced sequencer patterns so beloved of the film industry for chase scenes. With Banks at the controls, though, the music goes through a number of dramatic structural and melodic shifts, unexpected but never so contrived as to be unwelcome.

'All the stuff I did for the soundtracks album I'd actually done before the Genesis album', the keyboardist explains. 'People would say "what have you been doing while Phil's been making money and Mike's been doing so well?" so I just wanted to get these things out.

'There were a couple of films that I'd done the soundtracks for over the last two years. One of them, *Quicksilver*, came out in America and didn't go down very well over there, so they're not even bothering to release it here. It's a shame because I didn't think the film was that bad, though quite honestly, I thought the rest of the music for it was. I tend to be difficult to please but I felt that it was everybody's second best. So I thought I'd take my part out and put it together with the music I'd done for another film called *Lorca and the Outlaws*.'

Banks' own efforts at singing have taken a back seat to the talents of Toyah and Jim Diamond; Toyah's 'Lion of Symmetry' and Diamond's 'You Call This Victory' are both taken from *Lorca and the Outlaws*. But curiously,

it's Marillion's Fish that takes the lead in 'Shortcut to Somewhere', from *Quicksilver*. Marillion frequently stand accused of being no more than a poor man's Genesis, so the association is as intriguing as it is unlikely.

'The idea of a collaboration with Fish was like walking into the problem, which was quite nice', says Banks. 'It simply amused me, really, because they've always been compared with us. I like the approach of Marillion's music more than the result. There's no doubt that Fish's voice does bear an uncanny resemblance to Peter Gabriel's in the old days, but the way he gets to that kind of sound is completely different. There's no contrived way of doing it, it's just the way he ends up sounding.

'The song we've done together is quite strong, and if it gets a chance to be released as a single, it'll do quite well. But with a joint thing, the problem is always getting permission from the record companies to release it.'

In 1986, the output from an ageing Genesis consortium is prolific. Aside from Banks' *Soundtracks*, it's responsible for Rutherford's successful Mike & the Mechanics project, and for Phil Collins' even more successful solo work. In the light of all this activity, I wonder (needlessly, as it turns out) how 'Invisible Touch' the single will fare. My concern is anticipated by a perceptive Banks.

'There is a danger of saturating the market', he concedes. 'I'm a bit terrified, suddenly seeing the competition from our own buddies around like Peter's 'Sledgehammer', Mike & the Mechanics, and obviously Phil who doesn't stop selling. But, for me, Genesis is a combination of the three of us. I probably take it the furthest from the mainstream, and I suppose Phil brings it closest.

'I'm proud of every song on this album. I feel very strongly that all the songs are products of the combination of the three of us being in the same room at the same time. It's what I've had brought out of me when I'm working with Mike and vice versa, and I tend to make Phil do things that perhaps he wouldn't do on his own.

'I think it works better because we're doing different things on our own. When we get back together it's like friends getting together again, and things seem to happen a little bit differently. It's terribly difficult to find out *why* things work. It's worked for us for a long time whereas most other groups don't manage to stay together for any length of time.

'We're a fairly unique group in that we're all involved in the writing of the music. In every other band it's one or two people that look after the writing. When all of you are involved and one of you goes, it changes the whole.'

How does this three-way writing team work?

'It's improvisation, really, just like you'd do on your own, but with the three of us. When I'm writing a song I'll sit down and play the piano for hours and things will evolve that I'll try to develop. We do it the writing a song I'll sit down and play the piano for hours and things will evolve that I'll try to develop. We do it the same with the three of us. We've been playing together for so long and know each other so well that there are assumptions you can make. I don't think you can get just any three people, put them in the same room and expect them to come up with the right songs. A thing only works if you think the result works.'

This level of maturity obviously ►

► makes songwriting a civilised process, though it wasn't always that way, as Banks recalls.

'The three of us have actually been in the same group since 1969. In that time the emphasis has shifted around within the band quite a few times. Ever since we first became a five-piece, we've tried to maintain a situation where we'd all be writing together and trying to listen to each other. With the five of us there was a tendency at certain times for those who shouted the most to get their own way. I tended to be quite a loud shouter, as did Peter. We used to have quite a few arguments in those days and shedding the extra members made things a lot easier.'

A controlled amount of friction between songwriting partners can be a useful factor in bringing out the best ideas from those involved...

'I think friction is the wrong word because we all used to care a lot about everything. We'd argue about one bar or something and people would storm out of the room. I don't think it's an unhealthy thing, but I don't think it's essential either. I think it's something that can help, certainly, but we used to argue about the most stupid things. We argue much less now. We probably avoid the arguments because we know where they're going to come. I know that if I start using diminished chords I'll get "a look". That doesn't mean I can never use them again; I can slip them in without anyone noticing, but I know how hard to push and whether or not to really go for something.'

In 1974, the line-up that put Genesis on the back of a thousand denim jackets included guitarist Steve Hackett and frontman Peter Gabriel. To many, Genesis *was* Gabriel, and his departure marked the end of an era. Twelve years on, Banks reflects on the split.

'Peter and I were very close friends and we both felt very strongly about things. We got on very well and when he decided he wanted to go, I did try very hard to persuade him not to. I think it was a necessary thing and, as it's turned out, it's worked very well. We had to lose somebody and Peter was the only one who had any chance of a successful solo career. The rest of us had been completely in his shadow at that stage...but we had the self-confidence that if we lost one member, we could still produce music just as well, as long as we could get over the problem of who sang.'

Auditions were held to fill the post, yet it was Collins who subsequently stepped into the singing spotlight. But

Gabriel's departure deprived Genesis of more than just its voice.

'Peter's very good with sound – he always was. He was always the one that would like to do something that was a bit bizarre, even for the sake of it. At times I find that he almost goes too far that way, and I get a bit irritated by it. I love his last three albums in particular – I think they're tremendous. But with the fourth album, one month I thought I loved it and the next month I thought: no, this is too much, I can't take it. It was overworked. My favourite is definitely the third one – all those drum sounds and everything.'

Curiously, the percussion sounds that have marked one facet of Gabriel's innovation turn out to have their roots back in the Genesis days.

'It stemmed from the new technology combined with Peter's insistence to try not to use cymbals. But it's something we used to discuss in the old days: cymbals occupy an awful lot of the sound spectrum within a song. As soon as you stop using cymbals, you can start to use the resonance of the drums to a much greater extent because you can actually hear them. As soon as you've got that ambient quality back, you can start compressing them and lifting them up.

'A drummer will keep on hitting cymbals as he's going along, at rather random intervals. They get all these cymbals that are supposed to sound different but, to me, there are only three: little ones, big ones and dustbin lids, and the dustbin lids are the ones you've really got to avoid. If you use them as a sort of punctuation mark they add such a lot when they come in, but if they're there all the time, you can't add to them.

'As a keyboard player, when you're trying to produce nice wide sounds that have got sparkle to them, a cymbal will make it all appear dull. You lose all the top and the keyboard becomes mellow. And when you *do* want a mellow sound on a piece with cymbals, you've got to brighten it up so much that on its own it sounds so bright it'll still show through.'

Banks' reputation as a musician is based firmly in his classical background and use of the piano. Yet conversely, the Genesis sound we've come to know over the last decade relies heavily on synthesisers and sequencers. Have we seen the last of the piano and its disciplines?

'I don't actually practise piano at all now, but I still like playing it. One of the nicest things I recently acquired was a piano-to-MIDI interface. It means I can use my CP70 and play any other instrument from that. Unfortunately I was only able to use it on a couple of things on the album because it came so late, but I think it's the most exciting thing that's happened for a long time.

'I don't care what people do with all their keyboard touches and things, they just don't feel like a piano to me. I used to hate the feel of a Rhodes, for example, but I liked the sound, so I occasionally tried to play it. With the DX7 now, you can get that sound with a reasonable touch, but it will be even better to have the DX7 sounds played from an ordinary piano keyboard.

"It was depressing, having a Synclavier lying around useless for so long... The more expensive an instrument is, the more likely it is to go wrong."

'Most of my synthesiser sounds these days come from either the Emulator II or the DX7, but I use a lot of other things like Prophets, Synclavier and a Super Jupiter – anything that's lying around really.

'A lot of the sound qualities are created by using effects, though, particularly the Yamaha REV7 reverb. I find it better than the AMS for keyboards because you've got a wider variety of possibilities. It makes an instrument find its space. On its own the DX7 is a bit crude and naked, it needs something else and it responds to help better than almost anything else. The REV7's perfect for providing that.'

The sophistication of contemporary digital technology marks a far cry from Banks' early days, hunched over a grand piano, Hammond organ, Mellotron, and perhaps an ARP Pro Soloist preset synth. But even then, new sounds were a prime consideration.

'When I had the Hammond I tried to get as many sounds out of it as I possibly could', affirms Banks. 'With fuzz-boxes and things it sounded as if we had synthesisers before we actually did.

'Now you've really got to take time to explore instruments. Say you get something like a DX7, which is really a pretty simple instrument. There's no way you can begin to explore all its possibilities, there's just too much variety. And if you get into samplers, obviously the scope is even wider. Sometimes it's easier when you've got a more restricted format because you know where you stand. When you've got totally open possibilities, things can get a bit frightening.

'But you can just stumble across things. With the Emulator, in particular, a lot of the sounds I use are ones I've stumbled across. I find the Emulator a useful tool for composition, too. What I often do is switch it on while we're improvising, and I get 17 seconds of everybody doing their thing and not even listening to each other. Then I play through it and sometimes there's something there. You edit out a few seconds and you've got something you can work with. On the new Genesis album there's a number called 'The Brazilian' that's got what sounds like a sequence pattern going through, which was done like that.

'On 'That's All' on the last album I got the main riff that way. When I played two notes of one of these samples at the same time, this riff evolved out of nowhere that didn't seem to be in either note individually. It was played over an octave so the two parts were related by half-speed, but the effect was a riff.

'Another time I was trying to sample a cello sound off a disc and I sampled four notes. By playing them all together, they interweaved and I got this repeating pattern. You can use an Emulator in hundreds of ways, and I haven't *touched* the sequencer yet.'

"The greatest thing about the Pro Soloist was the touch-sensitivity. It was years before anyone came up with a system that improved on it."

The subject of sequencing is often a sore point with the classically trained, but Banks offers an objective view.

'With every instrument you buy these days, you're paying for so much guff that you're never going to need. Synthesisers all have sequencers built into them, but you can only use one of them at a time and it's often easier to have that as a piece of outboard gear anyhow. It wouldn't be that expensive when you consider you've paid for the thing ten times over already. I'd prefer to put more money into sample length or something.

'I've always hated sequencers but I've always been fond of using bass patterns so you can build up from there. The trouble is that they're so abused in pop music – that's what makes half of it so dull to me. You've got your rhythm machine, then you've got your bassline and the interplay between them is exciting for about ten seconds, then it goes on like that with an adequate voice and chords on top and that's it – that's your song. If you consider a drum machine to be a specialised sequencer, then I think it's got a lot to answer for. What was that album, *Oxygene*? That's a long time ago now, but I found it boring then.

'The secret of using sequencing well is incorporation. There's another track on the album called 'Land of Confusion' where I use a whole ▶

► sequenced bassline. Originally it was an addition to the song but it ended up being one of the major aspects of it. I find that quite exciting, I must admit.

'I'm not prejudiced against sequencers any more, but I think they're a dangerous tool.'

Strangely, for a musician with classical roots, one thing that's always characterised Banks' use of sounds is distortion. Even the FM trend of clinically-clean synth sounds gets its share of mistreatment this way.

'I've always liked fuzz-boxes. Get an expensive instrument and put it through a fuzz-box and it sounds as cheap as all the others. The advantage of fuzz is that it gives you a limit. A clean sound can get louder and louder and you never reach that point, whereas with something that gets to a distortion point, you know when you're hitting it. You just don't get that excitement with a clean sound.'

As Banks starts to recount the metamorphoses his keyboard setup has undergone over the years, he speaks quickly and with a rashness that belies his public-school education. At times he seems afraid there isn't enough time to say all he feels he has to, and his conversation flits from instrument to instrument with disconcerting ease. With a typical disregard for convention, Banks begins his tale with the old Pro Soloist.

'The greatest thing about the Pro Soloist was the touch-sensitivity on it. It was years before anyone else came up with a system that really improved on that. You had to replace the pressure pads every so often because they got compressed, but the fact that you could control the vibrato manually rather than using delayed vibrato was great. If you were playing an oboe part, you could bring it in when you wanted it. The Pro Soloist oboe sound with vibrato and echo would have fooled anybody at the time, I reckon.'

ARP's preset monophonic was followed by an ARP 2600 system and later a Quadra in Banks' ever multiplying array of gear. What was ARP's secret at the time?

'I think that was a matter of recognising the initials. It's a terribly arbitrary way a lot of people buy instruments – particularly now. I liked the Pro Soloist a lot and then David Hentschel, our producer at the time, had access to a 2500. Then he got a 2600 which I used a couple of times. I found the way of synthesising from basics quite easy to do, and I learnt about synthesisers using that machine.

'But poor old Quadra. He was great because he was MIDI before there was MIDI. It had four sections though I could only find a use for two – it was a combination of the poly with the lead. I used to like sending the poly through a fuzz-box and then playing lead with it, so you got the aggressiveness of the fuzz with the definition of the lead. On 'Abacab', which was all done using the Quadra, it gives a very positive sound.

'I also had a Prophet 5 which I switched to a Prophet 10 and still use. The 10 had the advantage that you could get big sounds out of it by combining four oscillators at the same time. You can get organ-type sounds. I know it's easier to use an organ, but I was trying to keep the number of instruments on stage to a minimum, and you could get organ sounds as well as big synthesiser sounds out of it.

'I like the Drone setting on it, too, something Sequential didn't put on the T8 for some reason. I used it on things like 'Mama', where you've got a bass note going all the way through. It meant you only had five notes for each chord. You have to be careful to take your hands off all the time, because if you touch a note in Drone the noise is so awful, or if you play too many notes at the same time, suddenly it'll just go mad on you.

'I find that a useful technique on MIDI too. On 'Tonight, Tonight, Tonight' it's all a MIDI thing with a marimba all the way through, but at the same time I was playing the Prophet 10 on Drone so the chord would float over from one part to the next – so you're never quite sure where one stops and another starts. It's so big, though, that's why I'm using the Super Jupiter a bit now.

'I've had a basic Synclavier system for a long time. I bought it instead of the Fairlight originally because it was promised that they would have the sampling section out in a couple of months, and I thought the basic synthesiser part was better than the Fairlight's. As it transpired, it didn't come out till about four years later and when it did you had to mortgage your house in order to put a down-payment on it, so I avoided it.

'At the same time E-mu brought out the Emulator I which was nice 'n' cheap by comparison and was pretty good. I had such trouble with the Synclavier – it was about two years before I could really use it properly. There was lots wrong with it and I couldn't get anything done about it. I got extremely angry: it was depressing, having an instrument that represented such an incredible outlay lying there useless. Since then, I've always thought that the more expensive a piece of equipment is, the more likely it is to go wrong.

'The Mellotron was bicycle chains and vacuum cleaners, but it produced a sound that was totally unlike anything else. They'd cornered the market for about ten years if only they'd realised it, and they never made the most of it. That instrument had the potential to be stunning. Yet even the basic sounds weren't good enough, apart from the strings and I suppose the choirs.

'You can still use a Mellotron in such a way that nobody knows what it is. It's very difficult to distinguish half these instruments these days. I think people will come back to using real choirs and I think there's a lot to be said for that, too.'

Banks closes with a considered word of warning: 'Keyboards are fascinating but one mustn't get too much into the technicalities of them. What's important is what you can *do* with these things.'

Hear, hear. ■

"I don't care what people do with keyboard touches, they don't feel like a piano. The DX7 has a reasonable touch, but it'll be better when you can play its sounds from a piano keyboard."

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A THOUSAND SOUNDS

The SDS1000 is the latest system from the company that just about invented electronic percussion. Our conclusion after playing it? The Simmons Sound is dead – long live the Simmons Sound. *Nigel Lord*

Forces are at work. If you haven't come face to face with a recent Simmons product recently, you may have to rethink some of your preconceptions. You see, the original, distinctive Simmons sound – so beloved of American TV cop-show soundtrack composers – has been consigned to a cupboard marked 'good ideas at the time'. And it's been put there by Simmons themselves. You may hear it fizzing from the output jacks of a dozen rival electronic drum systems, but the old 'sheep kicked in the gut' noise traditionally associated with the British hexagon has now been replaced by a hundred others on Simmons' own machines.

The SDS1000 is a new breed of Simmons kit. In many ways, the SDS800 (which the 1000 is designed to replace) justified its existence as an updated, cheaper version of the old SDS8. But the 1000 is the SDS8's *successor*.

Strictly speaking, the SDS1000 is a stripped down SDS9 rather than an upgrade of anything else, which would seem to preclude any really innovative design work. But given the right price tag, this needn't mean the kit has to be deficient in any way. In fact, considering the scepticism which many players reserve for kits even as moderately complex as the SDS9, the removal of some features should make the new system more appealing to some.

The kit comprises five drums – bass, snare and three toms. The choice of stands is yours, which is another way of saying you don't get any. You can either go for Simmons' (read Pearl's) own individual stands, or, given the now standard mounting brackets supplied with the kit, stands of your own choice. Alternatively there's the Black Rack pictured here, which lends the outfit an appearance every bit as menacing as its name suggests.

Personally, I reckon the rack-mounting systems now being developed for drums – be they electronic or acoustic – are a worthy and intriguing development. They provide an open-ended system of support for a bank of percussion instruments, which may be added to, or modified, simply and quickly. It's a more flexible approach than the restricting dedication of conventional stands, and it's a damn sight more sturdy, too.

The pads are standard Simmons issue, so we needn't dwell too long on them. According to Simmons, they're the result of a £100,000 development, with floating heads, special rubber covering, piston-loading, and a whole host of other stuff. As far as I'm concerned, they're as good as they need to be.

Unlike the SDS9, the SDS1000 has no rim trigger on its snare pad, for the good and

simple reason that there's no rim sound on the kit. But this does at least mean that, with the exception of the bass, all the pads are interchangeable. And though I'm in no way doubting Simmons' faith in the sturdiness of the pad design, the interchangeability does allow you to rotate the pads around the kit, so that the punishment inevitably handed out to the snare can be evenly distributed amongst the four potential candidates for the job.

Interconnection between pads and brain is provided by five jack-to-jacks, which enter the unit via sockets on the rear panel. Actually, if people are going to insist on calling the control unit a 'brain', that surely means the cabinet it's housed in should be referred to as a 'skull'. In which case, the SDS1000 comes complete with a 1U-high, 19" standard rack-mountable skull – with all the controls neatly mounted along the front panel (face?).

This represents something of a departure for Simmons, in that with the exception of the SDS7, previous housings for kit electronics have all been of the flat box, controls-on-top-panel variety. But given the position of a player behind the kit, this new format should prove popular. You can maintain access to the controls in all sorts of places you couldn't put an SDS9, for example. And being rack-mounting, the SDS1000 brain makes it much easier to position alongside effects units – most of which adopt the rack format these days.

It's good to see that separate outputs for each channel have been retained, as the facility to treat each instrument individually is essential for serious live and studio work. Restricting audio outs to a simple pair of jacks is a cost-cutting exercise which has ruined a number of otherwise excellent drum machine designs recently. But here, with the choice of individual, grouped stereo *and* grouped mono outputs to choose from, to say nothing of the headphone socket, I think it's safe to say Simmons have got all their exits covered.

The left-hand side of the unit is given over to the control of levels. The first five knobs are for the adjustment of pad trigger levels (ie. sensitivity), the next five for the setting of individual output levels, and the two remaining knobs for control of the grouped outputs.

The design of the sound-generating circuitry is largely derived from that of the SDS9, so it retains the same element of pragmatism which made its forebear such a classic. Simmons have wisely kept an eye on the past and the lessons it has taught them. Consequently, the SDS1000 presents the user with three types of circuitry for the generation of each of the three types of instrument – bass drum, snare and tom-toms.

As with the SDS9, the bass drum is digitally sythesised via software programming within the control unit. The snare sounds (of which there are four basic types) are samples of real drums encoded onto a chip, and replayed whenever triggered by the relevant pad. The tom-toms, always a Simmons strong point, owe their existence to good ol' analogue circuitry. This is because Simmons (and in truth, most other manufacturers) have yet to find a means of producing consistently better results, so have stuck to doing it the way they know best.

The basic sounds of all five drums are variable, the fruits of your labours being storable within five memory locations. Additionally, there are five factory preset kits permanently stored, giving you ten kit combinations, selectable either by a front-panel button marked (reasonably enough) Select, or by an optional footswitch.

Both methods of switching produce essentially the same results. The unit steps through preset kits 1 to 5, accompanied by the appropriate number making an appearance in the LED readout. Then it moves onto the five user-programmed kits, also numbered 1 to 5, but this time suffixed with a small dot to distinguish them from the factory presets. On reaching user program 5, a subsequent push on the switch brings us back round to factory preset number 1.

Simple enough. But I foresee a problem. By effectively combining the two sets of kits into a 'count to ten' system, the SDS1000 forces you to run through the factory presets to get back to the user programs. Working on the principle that for a particular song, players might wish to use all their own sounds, it would be more convenient to be able to stay within the realms of user programs, rather than having to jump past the factory presets by hitting the button or footswitch five times. It could slow a fast kit change down to the point where it became impractical within a song.

As with any limitation, I suppose you'd learn to work around it, but given that changing kits instantly is one of the principal advantages of an electronic kit, this could be rather frustrating for the creative player.

Aside from this (or maybe because of it), programming the kit really couldn't be simpler, the entire process being covered by six short steps in the instruction manual – which means I'm not going to run through the process here. Let's just say this is probably *the* simplest programming system you're ever likely to encounter, so if this is something that's been putting you off making the move towards electronic drums, the Simmons could well be the kit for you.

The parameters that are varied to provide control over each instrument work on a system of shared, multifunction controls. This simply means that the seven knobs only vary the sound of a particular drum, if that drum is first selected. Once you get the hang of this, you'll find the whole process quite straightforward – a fact that should be confirmed by a glance at the front-panel photograph.

Looking at this panel, the only controls which may require some explanation are the tom-tom Filter control, which in fact adjusts the *initial* brightness rather than the entire sound (thereby more accurately simulating a real drum); the snare Sample 1234 control, which uses each quarter of its travel to switch between the four snare samples; the 2nd Skin control, which introduces a degree of modulation to mimic the effect of adding the bottom skin to a single-headed tom-tom; and the Noise control, which balances the tone and noise components of the toms. As for Click, this is simply a simulation of a stick striking the head of a drum, and is responsible for much of the *attack* of a drum sound.

Providing the kit has been equipped with a wide enough range of basic sounds, the limitations of the programming system and absence of certain features needn't be too much of a problem.

So how does the SDS1000 sound? We'll look at, or rather listen to, the bass drum first. This is probably the simplest of the voices in terms of controllability, there being only the Pitch and Click Level parameters to worry about. And even here, it's difficult to move away radically from the solid, workmanlike punch of the basic sound, unless you remove all the click component, in which case you're left with much less definition, and the sort of bass drum found on recordings circa 1969.

The snare is an altogether more complex beast, primarily because you're given not one, but four basic sounds – Tight Snare, Rock Snare, Huge Ambient Snare and Electric Snare. The only problem is that Simmons have used the exact words for the names of the samples as I'd have used to describe them. Essentially, they *are* what they say they are. But given the variable parameters on the front panel, they're also quite a bit more besides. In fact, the combination of four samples, Pitch, Bend and Decay controls, offers a startling range of snare sounds, which should provide you with at least a handful you'll like and stick with.

The analogue design of the tom-toms gives them a more recognisably 'Simmons' sound than the other drums, but again, this is only part of the story. By keeping a watchful eye ▶

► on the decay control, a much more natural effect can be achieved, and unless you're into single-handedly reviving the disco boom of the early '80s, this is what I'd strongly recommend you to do. (You could always put the headphones on at three in the morning, bang the decay control up to max, and wallow in the power beneath your stick tips.) Overall, a good versatile sound, but I wish they'd retained the Copy Tom function (whereby the sound of one tom can be instantly copied onto the others at descending pitches) of the SDS9, because it really is a godsend during programming.

In terms of playability, the SDS1000 is, if anything, an improvement on the SDS9 – principally because there have been certain improvements made in the area of dynamics. Only trouble is, this is not something which is easily expressed on paper. All I can advise you to do is get down to your local music shop and check one out for yourself. If it's some time since you last played an electronic kit, I think you'll be impressed by the SDS1000.

By equipping their latest system with a fine range of basic sounds, Simmons have cleverly turned what might have been a deficiency into an advantage. That advantage is *simplicity*. A confident simplicity which should prove attractive to the wary convert to electronic drums. The facilities on the SDS9 stunned you into submission. The SDS1000's sheer straightforwardness entices you in quite a different way.

Ordinarily, I'd have had grave reservations about an electronic musical instrument which didn't possess a couple of the magic five-pin DIN sockets labelled 'MIDI', but given the parallel development of the TMI, a pad trigger-to-MIDI interface which can be simply added at a later date, Simmons have again pre-empted any criticism. The SDS1000's designers are effectively saying to the newcomer to electronic percussion: 'look, you're going to need to get to know and use MIDI in the future, but right now, just concentrate on learning to use what you've got'. Given the general level of understanding of things electronic, and of MIDI in particular, that's quite a convincing argument.

Similarly, the advent of the SDE expander for Simmons kits means that the onboard programming limitations needn't dog you for the rest of your (or the kit's) working life. When the time is right to increase your sonic range, the hardware is there to make it possible – with a Simmons logo on it.

It's beginning to look as though whatever you want (or are likely to want) later in the electronic percussion field, Simmons intend to supply it. That might not suit everyone – some musicians prefer to choose from the ranges of several manufacturers. But many will choose to stick with the same make – knowing that whatever they buy will work with whatever they've bought previously, and that the resulting system has all come out of the same design room.

Speaking of which, I've visited the Simmons factory on four occasions now. On every visit, as I've pulled into the car park in front of the R&D room, there, sat among the test meters and oscilloscopes, his hair seemingly some days away from its last encounter with a comb, has been Dave Simmons himself. Obviously, the years haven't dampened his enthusiasm for modern drum technology, or his eagerness to develop new generations of equipment. Personally, I can't think of a more convincing argument to stick with Simmons. ■

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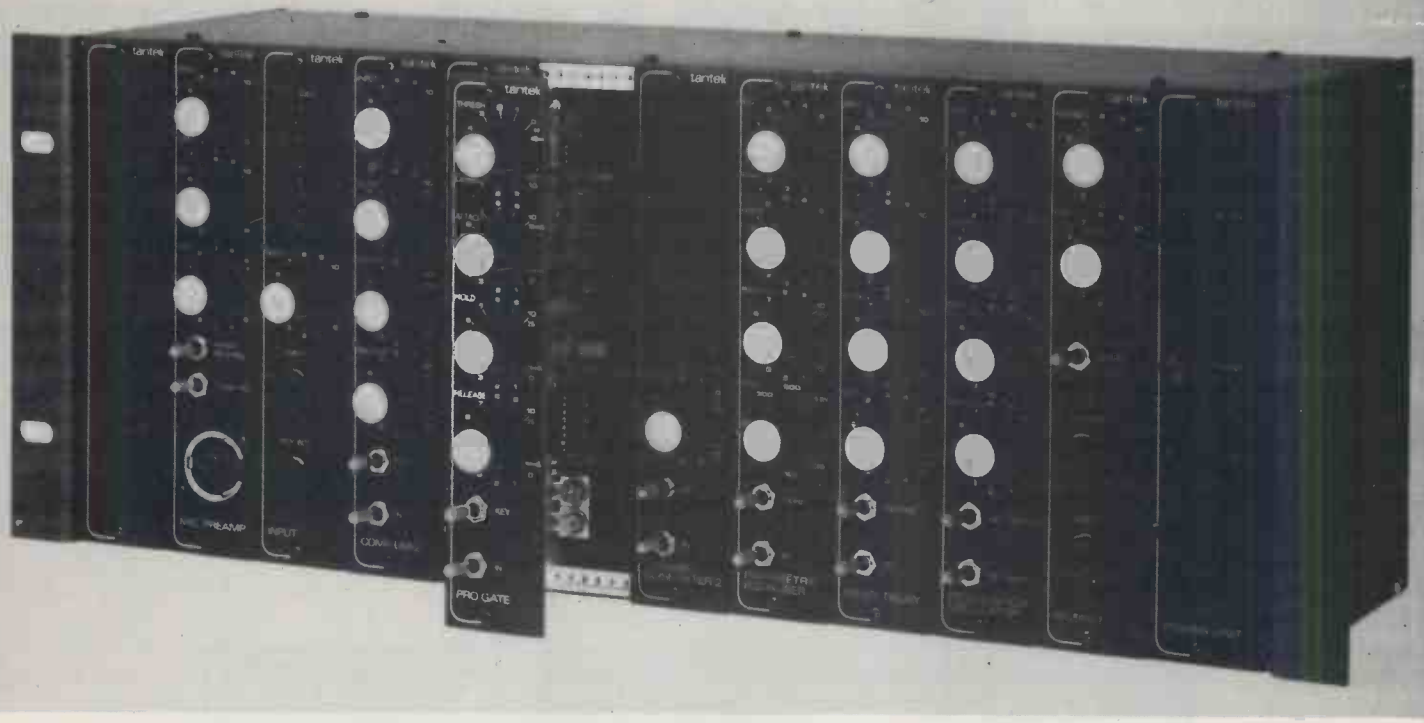

STACK IN A RACK

Tantek's Tanrak system offers a whole host of audio processing units in a convenient custom-built rack. In the first instalment of a two-part review, we examine some of the modules available, assess their usefulness, and find out if they're good value. *Ian Waugh*

So many women and so little time. Sorry! So many units and so little space. The mind does tend to wander at times. The problem is intrinsically the same, however: how to fit them all in. Less of the Waughle and down to business, I guess.

Tanrak is a 19-inch wide, 4U-high sub-rack which can house up to 11 plug-in modules plus a DC power supply. The rack is aluminium with a textured black stove finish. The modules themselves have anodised grained front panels with orange switches and lettering. When you're spending a few hundred pounds on your studio, it's nice to get something attractive as well as functional, and the Tanrak range certainly looks impressive. Very professional.

For those handy with a soldering iron, the modules are available in kit form at a saving of between 20 to 35 per cent. The kit parts are the same as those used in the finished modules, and they look very easy to build – though I speak as one who hasn't actually put soldering iron to PCB. If you do run into difficulties, Tantek will put right your mistakes for a standard charge of 20% of the kit price, which seems a very fair deal.

Just a few more words about the nature of the rack and the modules before plugging them in and working them out. The whole Tanrak system has been designed to be flexible. A bus on the back of the rack distributes power to the modules and interlinks the audio lines so you can rearrange the modules' positions while maintaining connections. Each module also has its own set of quarter-inch jack sockets at the back, and the rear PCB houses a Key bus. All modules have been optimised for operation at −10dBv but should operate just as well at 0dBm. It handled all my home studio equipment with ease.

The manual suggests five different ways of connecting the system:

1) Put a signal in the left-hand module, run it through the units and take the output from the right hand module. Individual modules can be switched out so the signal need not run through every one.

2) Using the optional Input and Output modules, perform option 1 from the front panel.

3) Use the rear sockets as a patchbay. While this is certainly feasible, you'd need easy access to the back of your rack. Difficult if it's tucked away neatly in a corner.

4) Extend the rear sockets to a patchbay. This obviously gives you ultimate control over the units but the smaller studio, particularly the one-man kind, will probably be able to manage quite well with option 1 or 2.

5) Use a Mixer module and run the outputs from certain modules onto the stereo virtual earth bus, extracting them with the Mixer, for example, to combine the outputs from several Mic Preamp modules. To do this in stereo, you'd need two Mixers. I never actually had the urge to do this during the review – apart from the fact that I wasn't supplied with a Mixer – but the option is there, and you may just find a problem or two which this method of combination and separation solves, especially if you want to work in stereo.

That's the introduction over. If you've scanned ahead to see how much the system costs, you'll want to know how Tanrak performs. Read on then, gentle reader.

Mic Preamp

Surrounded as we are by mountains of electronic instruments, it's easy to forget the human side of our music – the vocals. I plead guilty, too. As in life, nothing is easy and the best mics are the ones which need a little help to get up to line level. The Mic Preamp does this – and a little bit more.

The basic module provides a 12V power source which will suit most microphones, but it can be set to provide 24V or 48V via the Phantom Power module if necessary. It accepts a balanced XLR input and boosts it to line level. Unbalanced mics can be used, too, by making up an XLR-to-jack lead.

A Sensitivity control adjusts the gain, and an LED shows when it reaches 0dBm, but this is just a guide as you can crank the gain up further. If you do get headroom problems, ►

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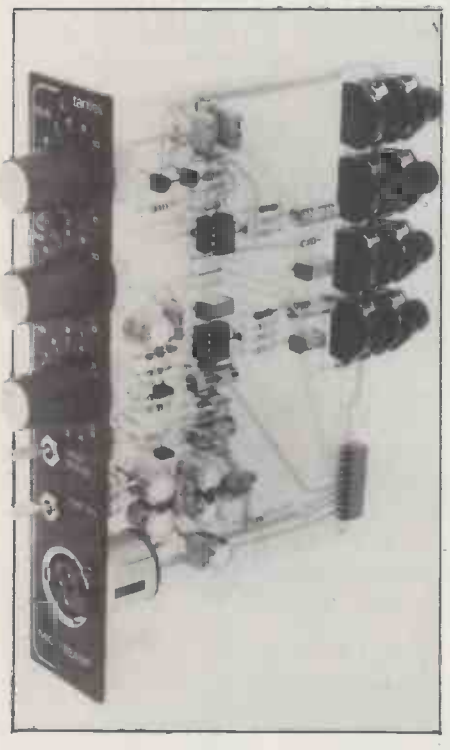
► the −20dB Pad can be switched in to help. Thoughtful stuff.

Up to nine Preamps can be used (eight if you use the Phantom Power module), and the outputs can be collected by two Mixer modules. The Mix control on the Preamps determines their level in the mix, while stereo position is set by the Pan control. The Phase Reverse switch ensures you don't have to spend hours re-wiring plugs because some wally (probably you) wired them up wrong in the first place. We've all done it.

The module also has an Effects Send and Return, so you can plug it in and out of anything else that might take your fancy. In a multi-mic setup, you could even give each Preamp its own EQ module. The permutations go on. And so must we.



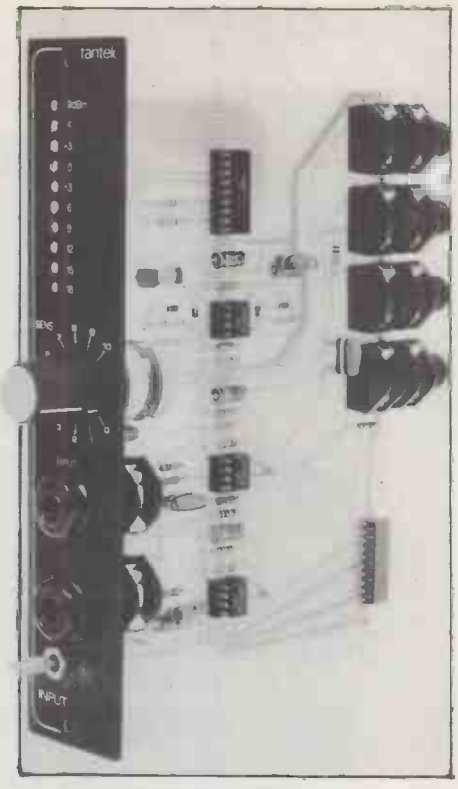
Input Module

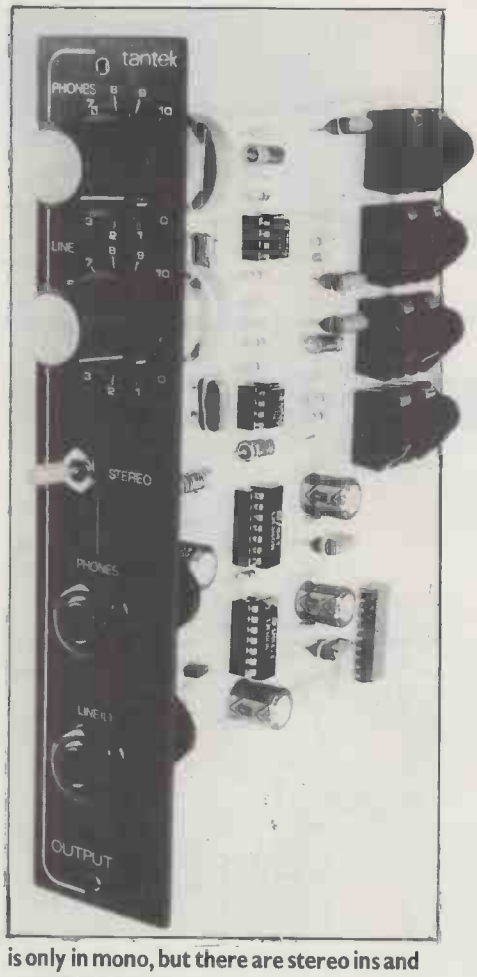
This gives you front-panel access to the rack. A stereo jack socket and a Key bus input save you messing around at the back of the unit, but all the inputs and outputs are there should you need them. Ten LEDs give a visual indication of the level, which can be boosted or cut. External inputs can be applied to the unit to check levels (now why didn't I think of that?). It really is a boon, being able to check and boost some bits of computer-related music paraphernalia. It's when you get to play with units like these that you realise how useful they are.

The input impedence is 1Mohm, so you can plug just about anything into it. I ran it through my gamut of input busters – and it didn't. Great for DI'ing a bass and other awkward instruments. As with the other modules, it passes its output to the module on the right, eventually ending up at the...

Output Module

This collects the signal from the module to the left of it and offers a handy output from the front of the rack along with stereo headphone monitoring. The line level output





is only in mono, but there are stereo ins and outs at the back as usual.

To compliment the Input module, this has a very low impedance (less than 0.5ohms). Impedance matching is rarely an insurmountable problem in the smaller studio, but these two units should be able to handle most eventualities.

The Input and Output modules are not essential to successful processing, but they do make it easy to route a signal through the rack. You could even patch them into your mixer's send and return.

Pro-Gate

This is in fact a noise gate, though Tantek's literature makes a point of not using that phrase in describing the module, mainly to stress its creative uses. Noise gates are often used to control the spurious noise (usually of the white variety) produced by every kind of electronic instrument, the sort of noise which lingers in the background when no notes are being played. You never notice it live, but in the studio, it can make it sound as though your gear's acting up.

A noise gate, if you want to be technical about it, is an amplifier whose gain is unity when the input level is above a pre-selected threshold level. In other words, it monitors the input signal and cuts it off if it falls below a certain level, effectively preventing low-level residual noise from reaching the output.

Applications include keeping an instrument's output silent when it's not playing, and preventing extraneous noises filtering in through microphones. These gates can be a godsend when miking drums, and are handy to have around when someone turns up with a noisy amp and refuses to be DI'd.

The Pro-Gate has been optimised for operating levels of −10dBv (the Input module can adjust levels, should it be necessary) and has variable Attack, Release and Hold controls. The Threshold ranges from 0 to −60dBm, and should be able to handle anything you throw at it.

In the creative department, you can switch in an input from the Key bus so, for example, you could make a bass track follow the bass drum for a tight sound. The controls need to be set carefully to avoid a glitch when the gate switches off abruptly, but that bit's up to you.

Having a gate 'in the system' means you can channel signals through it automatically, and it even helps cut out the noise on digital synths.

Compressor-Limiter 2

Another useful and at times indispensable unit. A compressor reduces the dynamic range of a signal by progressively attenuating the level as the signal gets louder. A limiter reduces over-the-top signals, too, and is frequently used to prevent the odd peak getting into the system where it might over-saturate a tape. It can be a great help when recording vocals, especially when they're performed by singers with little mic technique, and it will also control a signal (from a guitar, say) in which certain harmonics or notes tend to peak above the rest. Both help get 'more signal' onto tape.

Compression is normally in the range of 3:1, so that a 3dB increase at the input would result in a 1dB output level. Limiting, on the other hand, is commonly in the range of 20:1. In both cases, there's a threshold level below which no attenuation takes place.

The Tanrak's Comp-Lim 2 has an adjustable Slope control, giving compression or limiting from 2:1 to 20:1. An LED glows ►

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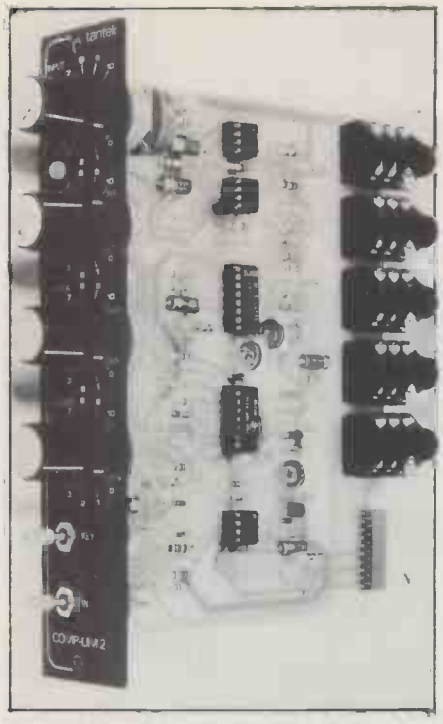


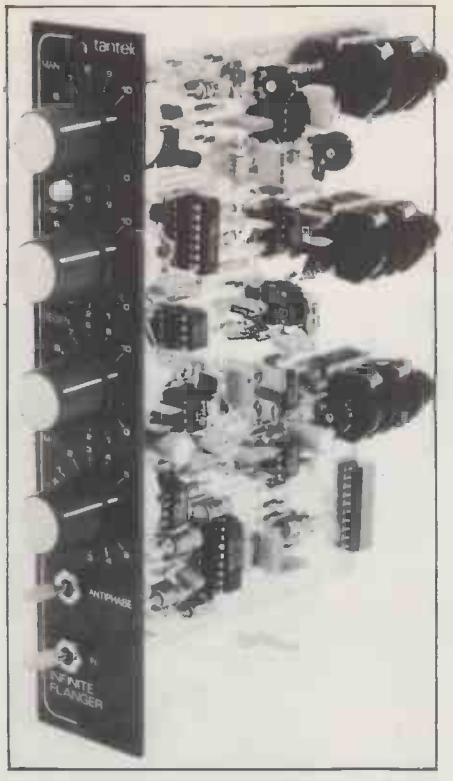
► from green to yellow to red to indicate the level of compression taking place. The unit has variable Attack and Release controls and a Key input.

Apart from the sort of merely practical applications discussed above, the unit can be used in an envelope-shaping capacity for creative effects, such as extending decay times and making sounds more percussive. It was easy to use and did its job well.

Infinite Flanger

I like effects units. Even with the almost infinite variety of sounds modern instruments can produce, there's still nothing like putting your latest creation through an effects unit. Flanging is an old effect now, and I hope most readers will know what it sounds like because, as it's impossible to describe, I'm not even going to try.

The Infinite Flanger takes its name from its (nearly) infinite flange ratio, ie. the ratio between the shortest and longest delay times. Clearly, a lot of thought has gone into the design of the module. The dynamic range is rated at 103dB, and the unit has two



Bucket Brigade Devices (BBD), one of which is set by a Shift control to produce an offset delay. The Regeneration control strengthens the flange effect, while Mix controls the mix between the original and the delayed signal. There's also an Antiphase function which hollows out the sound.

The flanger can be swept manually with the Man control, or you can plug in (at the back) the Modulation Oscillator or another CV source for automatic effects. I'd say an external modulation source is really essential to get the best from the unit, and you should consider the Modulation Oscillator (see below) as a more or less compulsory addition.

The Infinite Flanger kept me busy for ages. It produced everything from vibrato (used on pianos), phased vibrato (and phased vibrato with funny bits) to wild and whirling sweeps up and down the harmonic spectrum. As it doesn't have a utilitarian function in the sense that gates and compressors do, you tend to feel guilty playing with it for hours instead of doing something productive. Still, all in the cause of a review...

Modulation Oscillator

This produces a CV modulation (0 to 5V) which can be varied from a sinewave to a rising or falling ramp wave. It has two outputs with independent Depth control. It also has a switchable Key/CV input, which automatically adapts itself for either an AC key signal or a DC CV, permitting effects such as amplitude-dependent vibrato, or the creation of complex new waves by external CV modulation. A cycle can be triggered by a Key input such as that from a drum unit or a synth, and there's an Envelope Follower output, too.

The frequency range runs from 1 cycle every 30 seconds to 12Hz. On a dial ranging from 0 to 10, all the vibrato settings occur in the last sector, so tuning can be a little on the tight side.

The module can be used to control any CV device, but as I've said, it's a fine match for the Infinite Flanger just discussed.

Next month...

...I'll be looking at the rest of the Tanrak range, embracing such units as psychoacoustic enhancers and digital sampler-delays. See you then. ■

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THE UNHOLY

The SMPTE standard is now as important for the recording and film industries as MIDI is to the musical instrument field. As the two areas move closer together, communicating between them has become easier. We report on the latest proposals for a MIDI-SMPTE marriage. *Chris Meyer*

About a year ago, my brother Ron, who has been doing live audio and audio for video for longer than I can remember, gave me a call. He told me he had a client who wanted to use MIDI'd synthesisers for backing music and sweetening on some small video projects, and wanted to know if I could recommend anything. I honestly didn't know what to say.

About the same time, a marketing person at Sequential asked me if SMPTE timecode was going to become the next MIDI – nobody understood it, but everybody had to have it. That time I knew what to say: yes.

There are a lot of good reasons to combine the use of MIDI and SMPTE timecode. MIDI is basically a standard way to control musical instruments (and these days effects units, mixing boards, lighting units, and so on). SMPTE timecode is basically a standard way of knowing precisely what time it is, whether it be on film, video tape, or audio tape. As soon as you place the two ideas next to each other, it becomes desirable to control musical events based on what time it is (whether it's in conjunction with visual or other musical events). So that's what we're going to be discussing here – using SMPTE to synchronise MIDI with other musical events, and some recent advances and ideas that use MIDI to synchronise musical and non-musical events to film and video.

First, some history. Musicians have been synchronising musical events for ages – it's called playing together. If the musicians were not proficient enough to keep time with each other, then there was always the conductor, or at least a trusty metronome. When music started being recorded on tape, so did the metronome click, which became known as the 'click track'. The click told you where the quarter- or eighth-notes fell, and with luck, the musicians were good enough to listen to each other and figure out at least which bar and beat they were on (if not always which verse or chorus).

Then came machines. Drum machines and sequencers that wanted to play along too. Not being very good at listening to other musicians to see where they were, the musicians were forced either to follow the machines, or to let some warlock (known as a 'studio engineer' today) lay down a click track on tape for the machines to follow. Since the machines were also not good enough to figure out all the sub-divisions of time between quarter- or eighth-notes, they needed a special faster click track (ranging from 24 to some ridiculous number of clicks per quarter-note) to keep up.

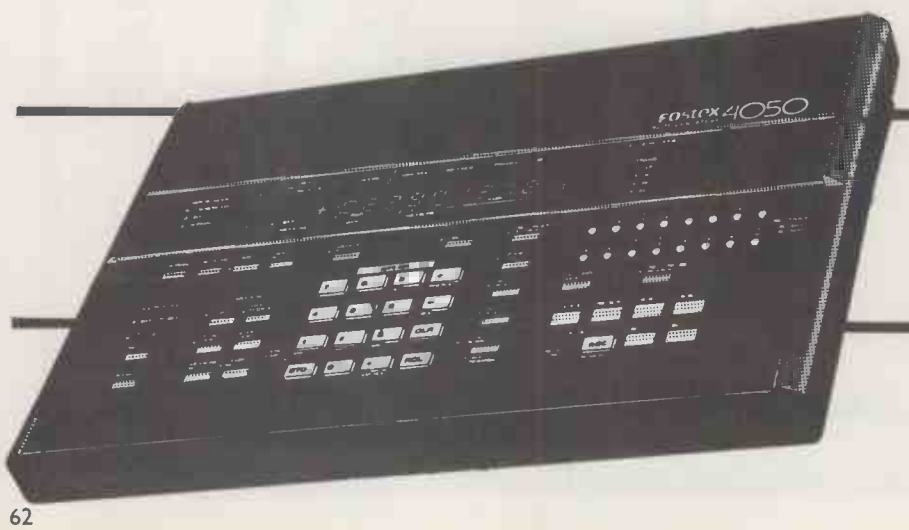
Suddenly, all in the garden was rosy. Machines could come in later and lay their parts down without other musicians around, just like real musicians. And just like real musicians, they could also do all sorts of crazy overdubs after the fact.

When MIDI came along, it contained, among other things, a special code that was the equivalent of a drum machine or sequencer's click (standardised at 24 pulses per quarter note). It was a relatively simple task to build boxes that converted from normal audible or electrical clicks to MIDI clicks (or 'clocks', as they were now called).

But there were still problems. Unlike real musicians, machines were (and for the most part still are) not able to listen to other musicians to tell which beat or bar everybody else was on. In many cases, they couldn't even listen to other machines to figure out where they were supposed to be. That meant they always had to be started from the very beginning of a piece, and from that point count quietly to themselves to keep track of where they were. So the song always had to be taken from the top – annoying for real musicians, and wasteful of expensive studio time. And real musicians still had to play to them, because they were incapable of following other musicians.

An improvement came when manufacturers started implementing what's known as the MIDI Song Position Pointer. Now, a machine could at least tell where other machines were within a song (resolving to the nearest sixteenth-note), but it still had no clue as to where the humans were.

Luckily, the warlocks (studio engineers) came to the rescue again. The practice of recording SMPTE timecode on one track of a multitrack's audio tape became a commonly used method of synchronising two tape machines together. From there, it took just a small leap of the imagination to start using SMPTE to synchronise musical machines to the tape as well – and thus to the real musicians recorded on it. At the very least, the click track was no longer needed, because boxes such as the Friend Chip SRC could translate from SMPTE to normal clicks or MIDI, at whichever constant tempo was desired. Timings could be offset slightly or drastically



MARRIAGE

by changing the SMPTE time that the machine considered to be the 'start'.

On a more intriguing level, machines could now pick up a song from the middle, too. Since each slice of SMPTE time is unique from any other (SMPTE timecode rolls over every 24 hours, which is long enough even for Philip Glass song cycles), each moment in a piece of music has a unique time. Combining this with the aforementioned MIDI Song Position Pointer, a box can look at what SMPTE time it is, calculate precisely how far into the song that time corresponds to, and forward the machines to that point.

Some manufacturers are starting to integrate this feature into their drum machines and sequencers. And some outboard machines, such as the Fostex 4050, promise to integrate this feature with the already accepted practice (known as 'autolocating') of forwarding and starting tape machines to specific points referenced to the SMPTE timecode on the tape. Now everybody – tape machines, sequencers, drum machines and humans – can know which beat, bar and (with the exception of some musicians) verse everybody is on.

But what about that last point of machines playing along with musicians, instead of musicians playing along with machines? That brings us along to a personal fave, the Roland SBX80 Sync Box. With this cute little toy, a bass player or drummer (even a sloppy one) can come in and lay down his or her parts first, and then have the studio engineer either use a constant rhythm track (eg. cowbell) or even hand tap the tempo along with the beat. Then, the SBX80 recreates a high-resolution MIDI click track internally to follow this rhythm, and can make all the other machines follow suit. It can also do all the other things mentioned above, along with changing the programmed tempo at any given measure.

So far, all we've talked about is audio. As audio started to get teamed up with video, it became important to synchronise audible events (such as orchestra strikes, car doors slamming, and dialogue) to visual events. You may not realise it, but well over 90% of the sounds you hear on pre-recorded programmes are recorded after the actual video or film. And all of these audible events have to be lined back up with their corresponding visual events.

Editing sound for programmes produced strictly on film is a real ordeal. Sound effects, dialogue and so on, must be recorded on magnetic tape stock with sprocket holes just like the film, and then synchronised mechanically. Sliding audio events against visual ones involves slipping the mag stock a couple of sprocket holes one way or the other.

Only in the last few years has the film industry been dragged (kicking and screaming, some would say, but I actually think they've embraced the technology quite easily) into the Electronic Age. The editing stage now tends to be in video, and videotape has no sprocket holes. You can't even see the images on it. Therefore, SMPTE (The Society of Motion Picture and Television Engineers) eventually standardised a timecode to mark videotape. Each SMPTE slice or 'word' defines the start of a specific video or film frame (think of a frame as a picture, screen, or snapshot). Having thus labelled each individual frame of a continuous video image, it becomes far easier to edit it electronically.

With this has come the use of multitrack tape locked to the video to construct, edit, and synchronise the audio elements. This is a definite improvement on what went before, but life still isn't all that easy – sound effects and dialogue must still be carefully matched to the video, with 'time' being slipped back and forth by triggering cartridge machines and other tape decks based on electronic cues and SMPTE times. In addition, the musician, band, or orchestra must still play at precisely the right tempo to match musical events with visual ones properly. If varying the tape speed won't rematch the tempo to the visuals, you have to cut out or add in individual frames of the film, and splice the thing back together to make it fit.

The same techniques mentioned earlier to match drum machines and sequencers to real musicians can also be used to match them to video or film. Once a piece of music is recorded on a sequencer, its tempo, along with where it starts, stops, speeds up, and slows down, can be manipulated to match the visuals. For example: what if a cymbal crash happens just after the car door slam it was supposed to be synchronised with? Simple. Just speed up the tempo by the right amount, and you won't have to add frames, or change the pitch of the piece by varying tape speed.

Beyond music comes the dropping of sound effects (and even dialogue) onto tape synchronised and triggered by SMPTE timecode. Synthesised and real sound effects can be recorded onto a sampler such as an Emulator, Prophet 2000, Fairlight, or whatever. This sample can then be recorded as the first note in a sequence. Next, a SMPTE/MIDI converter can be used to start the 'sequence' at the SMPTE time the effect is supposed to happen. It's a slightly roundabout way of doing things, but it works, and it's seeing more and more use.

Dedicated units, such as the Polyphonic FX System or customised CD players, are even starting to appear to perform as sound effects playback units. Storing sound effects as samples on disk has a couple of advantages over using cartridges to do the same job (broadcast 'carts' are little more than the eight-track cartridges of old). Paramount among these is that it's much more convenient and often sounds better. And the editing power of a Fairlight or Digidesign's Sound Designer package helps ►

► customise or edit sound effects and dialogue for each individual track.

So, what we have so far is a situation vastly improved over what engineers, composers and musicians have put up with in the past – but which isn't perfect yet.

To come right up to the present day, there's a new proposal currently being tossed about inside the MMA (MIDI Manufacturer's Association) and JMSC (Japanese MIDI Standards Committee) known as MSMPTE – for MIDI/SMPTE. Put simply, it's designed to bring the worlds of MIDI and SMPTE closer together. It contains essentially two separate proposals: one for the transmission of SMPTE timecode over MIDI, and one for the transmission of something called MSMPTE Set-Up Information.

Transmitting SMPTE timecode in the form of MIDI data carries several advantages. First, all the advantages of MIDI clocks over electrical clicks will be realised – hardware compatability (ie. no varying voltage levels, connector types, and so on), greater reliability (it's far easier to recognise a byte over MIDI than a signal off an analogue tape), and wider varispeed range (as tape slows down, a click's strength diminishes; as it speeds up the clicks start smearing into each other – over MIDI, the events merely happen further apart or closer together). Both hardware standards of SMPTE timecode (longitudinal and Vertical Interval) are converted to the same MSMPTE messages. What's more, the cost of the actual SMPTE-to-MIDI conversion is now carried by just one device – ideally the master audio or video tape deck itself, as the reliable reading of SMPTE timecode is notoriously finicky, and boxes such as the Friend Chip, Roland and Fostex all cost well over £500. Now, the tricks of sliding events against each other in time, fast-forwarding to a specified cue point and so on can be included (with luck, more easily) in the sequencer or drum machine itself, allowing closer integration of those tricks with the sequenced data.

The Set-Up Information goes beyond normal 'what time is it?' functions. As mentioned earlier, the current practices for lining up audio with video or film include: a) synchronising multiple cart and tape machines; b) chaining together a SMPTE-to-MIDI converter, sequencer and sampler; or c) slipping sprocket holes on mag tape stock relative to a piece of film. By contrast, the most basic use of the Set-Up Information will be to tell the slave units in advance when to trigger certain events. Then, when the machine receives the appropriate time, it performs the required action.

An immediately obvious application of this is to use this information to set up when samples of sound effects or dialogue should 'fire' (play back).

But the Set-up Information proposal goes further. It has provision for handling up to 127 separate machines, each of which can then have up to 16,384 punch-in and punch-out points, 16,384 event start and stop times, and 16,384 marked cue times, all with their own individual SMPTE times at which they're supposed to occur. The punch-in and punch-out times can refer to tape machines, sequencers, samples, effects, and even special effects and effects units. 'Cue' events could include the aforementioned triggering of carts and CD players, one-shot samples, changing effects programs or mixing configurations, even lighting flash pots – or for just the plain marking of edit points.

Hold your breath. This is the one I've been building up to. Since all the above happens on the same format over the same medium, *it can all be programmed from the same master unit.* Up until this point, even with SMPTE and MIDI, each device had to be programmed separately. The idea of controlling and orchestrating an entire studio from just one machine – be it a terminal, computer, or whatever – is, ahem, at least mildly interesting.

What's amusing to me is I've heard that SMPTE (the organisation, not the timecode) themselves had created a proposal for the Interconnection of Tributary Systems about the time that MIDI was being created, with at least as many hardware similarities (same baud rate and so on). Although I've not seen the document, I'm told that the proposal was several hundred pages long. To the best of my knowledge, though, it died on the vine. It's amusing because MIDI manufacturers have had to put up with occasional polite scoldings from members of ANSI standards committees for not going through the 'official' standardisation procedures with MIDI, and put up with the odd heretic/user who claims in screaming paranoia that manufacturers are purposely holding back advances from the users.

'Taint so, brothers and sisters. In the meantime, prepare for the time when audio and visual *really* get together. If you have only one tape deck, and all you want to make is perfect tempo music following machines, or with nothing but machines (or no machines at all), you don't need SMPTE. If you have ambitions beyond that, then SMPTE, or the combination of MIDI and SMPTE, is in your future – if not already in your present. ■

Further Reading

Throughout this feature, I've been purposely light on technical details and concentrated on the concepts themselves. Since MSMPTE itself is still just a proposal, it would not be of much value (and possibly even misleading or damaging) to publish details about it now. If and when it is adopted (optimistically, that could be later this summer or autumn), we'll be publishing a separate article on the subject. If you're after more technical information on MIDI and SMPTE themselves, here are some references.

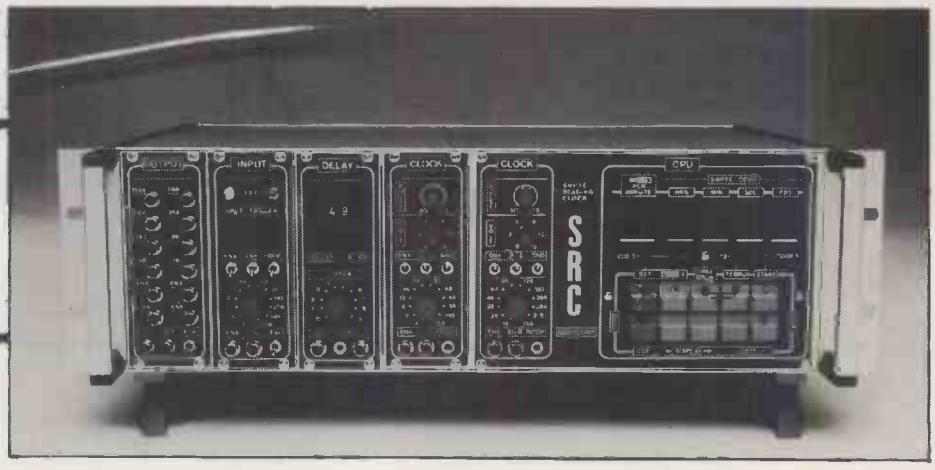
MIDI

There have been a number of articles published explaining MIDI; unfortunately, I don't really feel comfortable with any that I've read. Therefore, I suggest you get a copy of the MIDI 1.0 Detailed Explanation, written by the JMSC and MMA, and distributed by the IMA (International MIDI Association) at 11857 Hartsook St, North Hollywood, CA 91607, USA; ☎ (818) 505-8964. Cost is $30 to members and $35 to non-members.

SMPTE

The best article I've read explaining SMPTE is a 30-page pamphlet put out by EECO (a manufacturer of timecode equipment, and inventor of 'ON-TIME', the father of SMPTE timecode). An excellent layman's article (including both technical details and applications) is 'Everything But The Kitchen...' published in E&MM February 1985.

The official SMPTE document explaining timecode is SMPTE 12 (also known as ANSI V98.12M-1981). The SMPTE Tributary Systems proposal I referred to is known as T-14.10/7-651 (if anybody manages to get one, please send me a copy!). SMPTE's address is 862 Scarsdale Ave, Scarsdale, NY 10583, USA; ☎ (914) 472-6686.



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WARM MUSIC, COOL THOUGHTS

They may sound a little derivative, and they may not yet be a household name, but Australian duo Icehouse are making some stirring modern pop music, and they have a fair bit to say on the subject of technology, too.

Interview *Tim Goodyer*

Men of Ice *Bob Kretschmer and Iva Davies*

Mention the name Icehouse to a musician, and you'll probably get one of three responses: (a) 'Hey Little Girl', (b) 'Oh yeah, another Ferry/Bowie ripoff', or (c) 'How does an Aussie get a name as Welsh as Ivor Davies?'.

Well, for a start it's *Iva* Davies who's the driving force behind the Australian outfit that had a hit back in 1983 with the single 'Hey Little Girl'. And yes, his voice *does* bear more than a passing resemblance to those of Bryan Ferry and David Bowie.

It may seem that things have been a little quiet for Iva and Icehouse over the last couple of years, but the truth is that more promotional activity surrounds the export of lager from Australia than music, and if you don't have your finger on the pulse, you can lose track of what an Aussie act is up to *very* easily.

But far from being idle, the intervening three years have seen the release of Icehouse's third long-player, *Sidewalk*, ballet and film scores, and extensive touring that's included a support slot to none other than Bowie himself.

To bring the story well and truly up to date, Davies and fellow Iceman Bob Kretschmer recently took a couple of days out from an

American tour to talk to E&MM about album number four.

So it is, then, that I find myself in the foyer of London's classy Kensington Hilton Hotel, waiting for the two Australians to put in an appearance. And it's two Australians I get, except that one of them is manager John Woodroffe, Kretschmer arriving slightly later.

'We ran up a £300 bill last night at a Russian restaurant', Davies explains. 'And that was just the vodka!' The story is corroborated by Woodroffe and the interview begins – somewhat cautiously.

Although the LP *Measure For Measure* is only just available here in the UK, it's been climbing up the American album charts for a couple of months now. It's the first joint songwriting venture for Davies and Kretschmer, more than any previous Icehouse release, it displays a wide variety of styles and influences.

'Bob and I locked ourselves in a studio in Eastonville, which is a suburb of our city, for about three months. That was kind of falling down stairs into the studio each morning and longing for bed. We kept fairly civilised hours actually, but it was a bit like being on another planet. We had a lot of fun trying different methods of writing on each song. I don't think we've actually worked out how to write yet, because there hasn't been one process which has been the same for more than one song; it's been like starting from scratch every time.

'It seems like an incredible amount of time when you make an album: three months of recording and then whatever in the mixing, but it's probably not, in most people's terms. The two producers involved had both come out of projects that had lasted two years, so it must have been like a long weekend in comparison.'

Said two producers are Rhett Davies and David Lord, the former well-known for his work with Brian Eno and Bryan Ferry, the latter for his production assistance on Peter Gabriel's fourth album.

'They actually worked independently of each other, except for the mixing process', explains Davies. I think it was a bit of an education for them, both working on something like this, because we were spending three weeks with one of them and then moving over to the other for the next three weeks, and they have completely different workstyles. We did five songs with Rhett and five with David, but somewhere along the line they crossed over. I think both producers were intent on extracting the real essence of the style, concentrating on vocal performances and stuff like that.'

We are soon joined by the errant Kretschmer. Contrary to expectations, he is cheerful and coherent. Perhaps Russian vodka isn't all it's cracked up to be...

Both Davies and Kretschmer are primarily guitarists, so it's not surprising there's a lot of guitar in evidence on *Measure For Measure*. But both parties favour the unpredictability of composing on a less familiar instrument.

'It would be nice to be able to sit down with a guitar and a couple of lyrics and write a song', confesses Davies. 'I have done that on the odd occasion but generally it's a case of starting with some kind of sound. Quite often that sound will get ditched along the way, but more often than not, that's the best place to start.'

The vast compositional resources currently on offer to the synth player make the choice of keyboards as a songwriting aid an obvious one for Icehouse.

'Generally I start on keyboards because I find it's more visual and also very logical. I sometimes find myself falling into old habits on the guitar which I like to avoid. I like the fact that I make mistakes on a keyboard, and more often than not I keep these unintentional accidents. I guess I use the Fairlight mostly, but I like the Prophet 5 for harmonies. I use the Fairlight as a sort of sketchpad for arranging and editing.

'For this album, we set up our own oblique strategies to get random things to happen – these usually involved huge amounts of alcohol! In the end it deteriorated into being completely random, to the point where we were putting the Fairlight in Record, and then running around for 20 seconds to find something to bang or play.'

Kretschmer: 'Lyrically we got all these little bits together that I'd written down, and Iva would sing a line, and then I sang a line whilst glancing at this mess of lyrics. You should hear the extended version of that!'

Davies: 'The strange thing about doing things like that is that you think you're dealing with a random process when you're not. What you're dealing with is your method of selection at that point in time, which is dictated to by a certain frame of mind or whatever. The result is that even though the lyrics were scattered on the table, the selection made sense. It's an interesting way of doing things...one of the experiments that worked.

'There are many ways to write a song and we're not saying that we'd use one method exclusively, but if you start off with a guitar you'll get a completely different song than if you do it with this method.

'I always write onto tape, building up from there. We did all these songs in this way and ended up with 24-track demos, so we'd already spent quite a lot of time recording when we came to London. There had to be a good reason for doing it all again: we had to improve the arrangements and so on and particularly the sounds. Starting off with the sound that was on the demo, which functioned perfectly well, we looked hard at it to see if we could find anything better.'

It's easy to lose the essence of an idea through overworking it, but Davies is happy this hasn't been the case with *Measure For Measure*.

'That was probably my biggest fear, but I guess in some ways Bob, myself, David and Rhett were a kind of a foil for each other. It drove me crazy some of the time, not being able to see the necessity of doing all this. I always sat and watched, though – I had to remind myself what we were doing. On the other hand, the performance of the vocals and guitars were the counterbalances. That's why the album is called *Measure For Measure* because of this balance: two producers working in totally ▶

"Our writing became completely random, to the point where we were putting the Fairlight in Record, and then running around for 20 seconds to find something to play."

► different styles, and Bob and myself working so differently, too.'

As Australian music envoys, Davies and Kretschmer have perpetuated the national drinking myth with some panache. They've also set about promoting their second national export – the Fairlight CMI – with similar enthusiasm.

'I've been working with a Fairlight for two and a half years now', says Davies. 'They're built not very far away from where I live, so when they need to test out some software, I have a look at it and then ring them up and tell 'em it doesn't work. They're always de-bugging programs and they're going through this stage with the Series III at the moment, but I haven't actually got my hands on one of those – yet!

'The first time I used a Fairlight was to do the soundtrack to Russell Mulcahy's first feature film, *Razorback*, which is about a huge killer pig...

'There's a simple logic about the Fairlight, and I think that's a real Australian trademark – *not* the simplicity, but the fact that it's so very logical to use. It was designed by a couple of computer people in league with a keyboard player. He really was there the whole way going "well I don't understand this bit..." or "can you make it do this..?"

'There's still no other practical machine for people who aren't mechanically minded. It's really just like using four or five video games, it's not necessary to be a computer buff to understand it.

'I have a theory about instruments: there's only one real natural instrument, and that's your voice. A piano is just a box with strings in it. I don't use synthesisers any differently than I do those sorts of normal instruments. People often say they're sterile, but if you pick up a violin, which is considered to be a "human" instrument, you can choose to make it sound like a machine or not.'

Kretschmer: 'If you use a certain sort of sequencer, it's going to dictate what the song is going to be like. If you want to use that, you can, it's available. I like guitar bands where you don't *have* to use all this wonderful machinery. Iva and I both like good songs, and hi-tech has never impressed me as being the most desirable thing. But certainly, using the Fairlight as we did for the ballet and the album, we could not have got that amount of material together in the time we had, so they're great for that sort of thing, they're great tools.'

Davies: 'I like machines you can trick. Unless you can throw a spanner in the works and get the thing to hiccup, it doesn't really interest me. Quite a few times, what we ended up doing was setting up a situation where the Fairlight would fool itself. There are simple ways to do that: for example, creating a piece of music with a certain set of instruments and then loading a completely random set of instruments which have nothing to do with it. It's like writing a set of drum rhythms and then loading a set of violins instead of the drum voices – the pitch that the drums have is nothing to do with what is going to sound good harmonically with the new sounds. You don't know what harmony you're going to have. Sometimes you get a cacophony and sometimes you come up with something amazing.

Kretschmer: 'It's good and spontaneous because if you make a mistake you can end up saying "well, that sounds great". But then Iva's got a great knowledge of music. He's a trained musician, so he can sort out what's going on harmonically as well. You really have to know your music to get full use of all the instruments. In the hands of someone else, it's just not used properly.

'The other interesting thing about the Fairlight is it doesn't matter what you set up initially, as long as you have something going – even if it's a drone or a thump or a clang. So long as you can work with it, that's enough. With quite a lot of the songs that we wrote this time, we discarded what we'd originally set out with. 'Angel Street' had these incredible sitars and ended up with this kind of Beatles thing. We just removed what we started off with.'

"People say synths are sterile, but if you pick up a violin, which is considered to be a 'human' instrument, you can choose to make it sound like a machine if you want to."

It's curious that Davies quotes the human voice as the only 'natural' instrument, and yet leaves his own vocal style open to criticism of being derivative. It's obviously an argument he's encountered before, as his reply is as swift as it is considered.

'I've had this criticism of sounding like Ferry with 'Hey Little Girl', but I think my primary task is to extract the individuality out of the way I can sing. Having a lot of respect for Rhett and David, I followed their suggestions, and I think the result of that with this record is fairly obvious: I don't seem to sing as derivatively as I have done in the past.

'I guess there are a lot of people who don't sing these days. The people you spoke about are two singers, and perhaps to that extent there are unwritten similarities. I've been compared to Frank Sinatra, but he's a singer so what can I say...?

'It comes down to the nuts and bolts of singing really, because my voice has grown up a lot in five years, if only from the amount of live work we've done. It's interesting, going back over the earlier recordings and hearing how weak the voice was and how it's improved. When you talk about someone like Bowie, you talk about a very strong voice.

'I think you can apply vocal style to the kind of context it's in as well. The diversity of the album's material means that some of the songs are quite soft, and the requirement for that is not an overriding style. On the other hand, some of the songs are really powerful and the style changes depending on that context – that's always been my guideline. Variety is very important to me because I find it difficult to listen to a whole album of anybody. It's far easier for me to listen to the radio – I've got to have a bit of this and a bit of that.' ■

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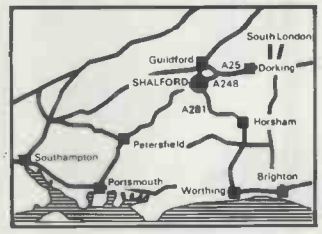

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UNDER 14
Let's make music

Roger Eno/ Michael Brook

Riverside Studios, London

In lieu of a projected tour that would have encompassed Japanese and Italian, as well as our own concert halls, Roger Eno put in three nights at London's Riverside Studios recently. He was accompanied and assisted by Canadian composer and guitarist extraordinaire, Michael Brook. Although the music uses Eno's piano and Brook's guitar in the creation and manipulation of moods and atmosphere, it is not to be confused with the *Ambient* creations of Roger's elder brother, Brian Eno.

Brook takes his guitar into the spotlight for the first half of the set, and proceeds to paint a series of mystic images over a gentle backwash of eastern textures. The sounds of ethnic percussion from an arsenal of FM generators, and a droning guitar betray Brook's studies of Arabian and Indian music. Like the music, the guitar is Brook's own creation, with its unique 'infinite sustain' circuitry. With it he conjures up images of the Middle East, rarely changing key but often bending notes in a curious adaptation of eastern and western tunings. Sound treatments proliferate; an AMS, SPX90 and numerous DDLs collaborate to produce a rich, slowly moving texture of sound.

The music is strangely lacking in volume for a live performance but the audience are silent throughout – the cough that would have destroyed the mood never happens. Brook finally frees them with a carefully constructed chord that is the result of many minutes painstaking work. They breathe again.

As Brook betrayed his influences so, in his turn, does Eno: the thoughtful silences of Satie permeating the performance. Unlike Satie though, Eno is able to call on modern, if subtle, electronic treatments to heighten the atmosphere of his performance. With Brook in command of an AMS, SPX90 and digital reverb, the pure tones of the piano assume lingering, almost synth-like voices in their decay. The space within the performance allowing the treatments to play a valid and valuable part in the creation of a delicate and moving atmosphere. Once again the audience are silent.

In keeping with the mood of the music, stagelighting is a simple but effective affair. Reminiscent of *Brian* Eno's light sculptures (the exhibition of which is just closing at Riverside at the time of these concerts), five light pillars stand about the stage displaying slowly changing colours. Although not actually in *sync* with the music these are completely in *sympathy*, and add another visual dimension to a delicate occasion.

For Eno and Brook, read Beautiful Music.

Michael Brook

Roger Eno

Vinyl T·A·K·E·S

Garry Hughes
Sacred Cities

AIC LP

The name Garry Hughes is a pretty forgettable one, so it seems particularly appropriate that his LP should be liberally sprinkled with memorable sounds and ideas. *Sacred Cities* takes the listener on a musical tour of the world's most intriguing cities as interpreted by Hughes' musical ingenuity.

Trendy trashing of Ford Cortinas (all in the cause of new and exciting percussion sounds, you understand) aside, Hughes has produced an album of intricately interwoven sequences and synth programs that artfully avoid the pitfalls of modern programming practices.

No less than five different sampling devices are listed on the sleeve, and lend themselves perfectly to Hughes' creation of foreign atmospheres and musical intrigue. A Drumtraks plays only a small part in creating complex and compelling rhythms that embrace ethnic and metallic sounds in their fascinating rhythmic contortions.

The music takes a healthy step away from Tangerine Dream's robotically repeated sequences and substitutes an almost commercial musical appeal. It is only the lack of final development that prevents *Sacred Cities* being a contemporary milestone, combining hi-tech equipment, electronic music and human emotions. *Sacred Cities* is just one pace short of stepping all the way from electronic repetition to inspiring music.

Emerson, Lake And Powell
Emerson, Lake And Powell

Polydor LP

Nobody can accuse ELP of being inconsistent: a new drummer, Cozy Powell; a new album, *Emerson Lake & Powell*, and they're still going strong.

The powerful GX1 brass patch that characterised 'Fanfare For The Common Man' and 'Pirates' on *Works Vol 1* is strongly in evidence here, as is the strident Hammond that helped Emerson make his name back in the Nice days. There's also some tasty jazz piano on the whimsical 'Step Aside' representing another facet of Emerson's colourful musical character.

Greg Lake's voice is still on form and, now free from collaborations with Pete Sinfield, his lyrics take us to lands peopled by dragons, plead for peace and reiterate his earlier welcome to "The show that never ends".

Powell's drumming is filled with ominous power in the epic seven minute 'The Miracle' where AMSs work overtime to let you revel in the dying moments of huge snare drums and frightening synthesiser chords. The *Pièce de resistance* is a rework of Holst's 'Mars, The Bringer of War', breaking down the barriers between rock and classical music yet further.

Only one thing puzzles me. With an impressive presentation like this, how come they've made a mistake with the date on the sleeve – it says 1986 *not* 1976.

A Certain Ratio
The Old and The New

Factory LP

Covering years 1978 to 1985, *The Old and The New* is a tribute to the achievements of an underrated band.

Reaching back to 1980 for the opening cut 'Flight', the album begins with the ill-ordered ideas of the fledgeling ACR. Heavy on industrial rhythms that have since become the band's trade mark, the album progresses through various blind alleys *en route* to the excellent last single 'Sounds Like Something Dirty'. Sounds never become predictable, anything vaguely recognisable being subjected to sufficient treatment to obscure its origins.

Production is minimal and raw throughout, the onus falling firmly on aggressively rhythmic instrumental applications and uncompromising vocal treatments for the music's strength.

Unfortunately for the less well-informed, sleevenotes are in decidedly short supply making a more detailed assessment of a certain history impossible. A sad oversight on an otherwise impressive album.

Demo T·A·K·E·S

Regardless of how well the general public have taken to the Art of Noise's interpretation of 'Peter Gunn', three young men from Hampshire are almost bound to detest it. These men are **Breathless**, and they had the idea first, though they didn't carry the Art's weight or have the Art's cheek, so they tried to hide the fact. The result is the 'Tommy Gun Theme', which constitutes one quarter of the band's demo. Fortunately for Messrs Symes, Summland and Polden, it's a long way from their best effort – though regrettably not their worst, either. At present the band are without a singer, so all their songs are of an instrumental nature. This is a shame, as the tunes are catchy but currently lack a direct line of access. Choruses seem to be Breathless' forté, and they deserve to be taken full advantage of. Critically, there's an overemphasis on predictable string patches, and too little attention being paid to song structure and arrangements. Room for improvement, then, but the inspiration is there.

The Dubious Brothers perpetrate their particular brand of musical confusion from Surrey. Nothing wrong with that, and at least this demo *looks* the part, even if the sound quality isn't so hot. The cassette is one of those professionally-produced affairs that come covered in little blue writing printed directly onto the cassette case.

The instrumentation, though, makes interesting reading – DX7s, Mirages, Poly 800s, numerous delays and reverbs, and a Tascam Porta One to record it all. After that, the music arrives as an initial disappointment. It's unremarkable in the extreme, with the unnamed singer doing his best to be another Paul King. Then 'Bible Stories' reaches the ears: a real treat with gentle acoustic bass meeting a sleazily programmed drum machine, and the most dynamic Mirage brass I've yet heard chipping neatly between the King singer's unlikely story. Definitely a strong point, that one.

In complete contrast, Leicester's lone **Rikky Cagney** has been putting his Greengate DS3 and OSCar to good use, with a little help from a Roland MC202. Between himself and the 202, Cagney has engineered one of the most startling song introductions I've heard in quite a while: using vocal samples from the song in place of the synthesised ones that follow the intro – brilliant! The two tracks that follow this overture are best described as formative. There's an awful lot of ingenious ideas here, but they need refining and putting into the context of better songs. Currently, Cagney's work stands midway between Yazoo and Madness (the band), with sampled sounds predominating over synths, and amongst them, plenty of topical samples stolen from TV and radio. The ideas are exciting, but they're hindered by the poor quality of their source and subsequent treatment.

'Legerdemain' is the (long) work of American artist **Keeler**. It was originally designed to be music for modern dance and written specifically for fellow American choreographer Shelley Shepherd H. In common with a lot of other musical forms that have been taken out of the context for which they were intended – film music, incidental music, and so on – it falters without the support of the missing medium. The music itself is commendably unconventional, and mixes unfamiliar sounds with unfamiliar rhythms. It *sounds* like modern dance music.

Yet even without its missing visual counterpart, 'Legerdemain' has its moments. Its strongest is a track entitled 'Wall Street Rhythm and Blues' which seems to pay no homage to its title at all and, instead, fuses a number of very simple ingredients – synth sounds, echo and straightforward rhythms – to create a whole considerably greater than the sum of its parts. It's unnervingly simple on first hearing, but quickly becomes mesmerising. ■ **Tg**

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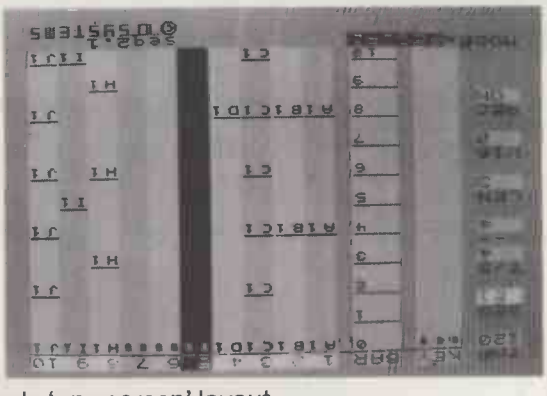

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SAMPLING MADE SIMPLE

Akai's new S900 looks set to take 'affordable' sound-sampling into new realms of quality and sophistication. And above all, it's incredibly easy to use. *Paul Wiffen*

Of all the new samplers announced at January's Winter NAMM and Frankfurt shows, the Akai S900 is the first one to hit the market. The same company's S612 sampler is the basis of this new design, but a great deal of hardware expansion and software writing has taken place since the 612 appeared, and the result is a machine that continues the Akai tradition of rack-mounting modules, but adds another degree of sophistication altogether to what has gone before. The S900 samples for longer (maximum 63 seconds at low bandwidth), has a greater maximum bandwidth (16kHz), offers a wider variety of looping and editing options, and has a far more flexible MIDI implementation than its cheaper predecessor.

There are no compromises on ins and outs, with mic, line and trigger inputs, and mono, stereo and eight individual audio outputs, not to mention MIDI, RS232, and Akai's exclusive Voice Out system for external synth processing.

Perhaps most significant of all is the sheer user-friendliness of the new unit. It's the first thing that strikes you when you sit down to work with the machine. From the size and clarity of its back-lit liquid crystal display (with contrast knob to adjust for a variety of lighting conditions), to the logical ordering of the various 'screens' within each main mode, everything about the S900 underlines how easy it is to use.

As is the case with most of the new breed of 'affordable' samplers, if there's a disk in the drive when the unit is powered up, then it's automatically loaded up. Otherwise, the unit loads up a simple program called 'tone', based on a sinewave, which at least allows you to check that the unit is correctly connected. To load a disk from this situation (and at any other point in the machine's operation), you press the Disk switch. This calls up the mode in which you can access all the various disk operations, the first of which is – very conveniently – 'Load entire disk', followed by a prompt to push Ent (enter).

Provided you have a disk in the drive, it then begins to load. The **LCD** tells you the sample and program names as they are being loaded in, so you know what's going on. If you're loading a full disk the process takes about 40 seconds, but if the disk is only partially filled, it takes proportionately less time to load, which is a real advantage live.

Provided you have a **MIDI** keyboard (or guitar, or drum pad, or whatever) connected to the Akai's **MIDI** In, you can start playing the first program as soon as the disk has finished loading. If you switch to Play mode, the programs on that disk are listed in the display, with the currently selected one shown by a flashing cursor.

You can now select any of the available programs by pressing the appropriate number button. When you do this, the display does a kind of visual gymnastic, and the program you've selected is displayed in the centre of the screen. Presumably, this is so you can instantly see which program you are currently using. If you want to see the listing of all the programs available without

actually calling them up (32 different programs are possible), then you can scroll through them all by using the rotary control knob; with a helpfulness that soon becomes par for the course, the display also tells you how to do this.

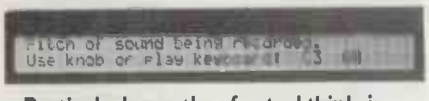
Pushing the numbered buttons isn't the only way of selecting programs. If it's easier (let's say the S900 is out of reach), you can use **MIDI** program changes instead. This means you simply select the patch number on your master keyboard or controlling synth, and this tells the S900 to select the program of that number. Again, this is especially handy for live use, but what worries me slightly is that there's no way you can switch off this response to program-change commands – so you need to be careful that patch changes on your **MIDI** controller don't conflict with what you want the S900 to be doing.

At this point, we'd better clear up exactly what the term 'program' means in Akai's book. It refers to a complete setup of the machine, usually containing several individual samples made up into one coherent 'instrument'. It's possible to have several different programs which share the same basic samples, but which are set up differently. This is particularly useful, as programs store not only samples and their arrangement, but also several other S900 functions – including **MIDI** and output assignments – independently for each program.

So, with just one program-change you can alter not only the samples being played, but also the **MIDI** channel(s) the S900 responds to and the audio outputs from which the samples emerge. We'll look more closely at the importance of this later on. By now, though, you're probably itching to know what sampling with the S900 is actually like.

As with all the functions, user-friendliness is the watchword in the **REC** (sampling) mode: the S900 guides you step by step through the sampling process. It does this by means of various pages which come up on the display. Seeing as sampling will probably be new to many Akai users, the S900 talks you through various stages of the process in great detail, stepping through a series of logically arranged pages that present the guidance you need in an easily accessible way. This is achieved by two buttons whose sole function is moving backwards and forwards through the pages. The pages are all numbered, and the key ones are listed on the Akai's front panel for quick reference.

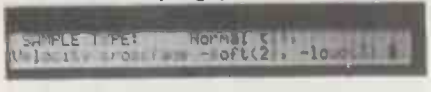
And nowhere is the suitability of the scheme more aptly demonstrated than in Record mode. The order the pages come in actually provides a beginner's guide to the sampling procedure, as it takes you through the naming, monitoring, bandwidth, length, pitching and triggering of your sample-to-be.



Particularly worthy of note, I think, is Akai's decision to avoid confusion with sample rates and kilobytes of memory. They've done this by referring to the fidelity and length of samples in terms of audio bandwidth (in hertz) and time (in milliseconds) respectively. This means you don't need to bone up on sampling theory and divide sample memory by sampling rate to know how long your sound will last. Everything is presented in terms you can understand, without reference to too much sampling jargonese or maths.

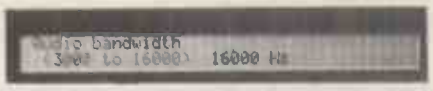
Further evidence of this is the fact that the S900 is internally configured to make velocity switching or crossfading of samples really easy to do. Before you make your sample, the machine asks you whether you want to define your imminent sample as 'loud' (played when the key is struck hard), 'soft' (used for a gentle key-strike) or 'normal' (where only one sample is to be used for both hard and gentle key-strikes).

Of all the sampling systems I've ever used



(across the whole price spectrum), this is the only one I'd confidently recommend to beginners in a hurry to make their own, sophisticated samples.

Guided by this idiot-proof sample set-up sequence, what results did I manage to come up with? I started with my usual acid test. Having set the audio bandwidth to maximum (16kHz) and sample time to the



longest available at this fidelity (11.878 seconds), I connected a **CD** player to the line input on the front and proceeded to play it some loud, nasty rock music. The display was transformed into a left-to-right level meter for setting optimum level (good to see a large hardwired pot clearly labelled Rec Level on the *front* of the machine), and I was able to start the sampling process by hitting any button at random. If I'd preferred, though, I could have used a footswitch or the audio

level to start the sampling. In the case of the latter option, the rotary control allows you to set a triggering threshold which the audio level has to pass before recording can start.

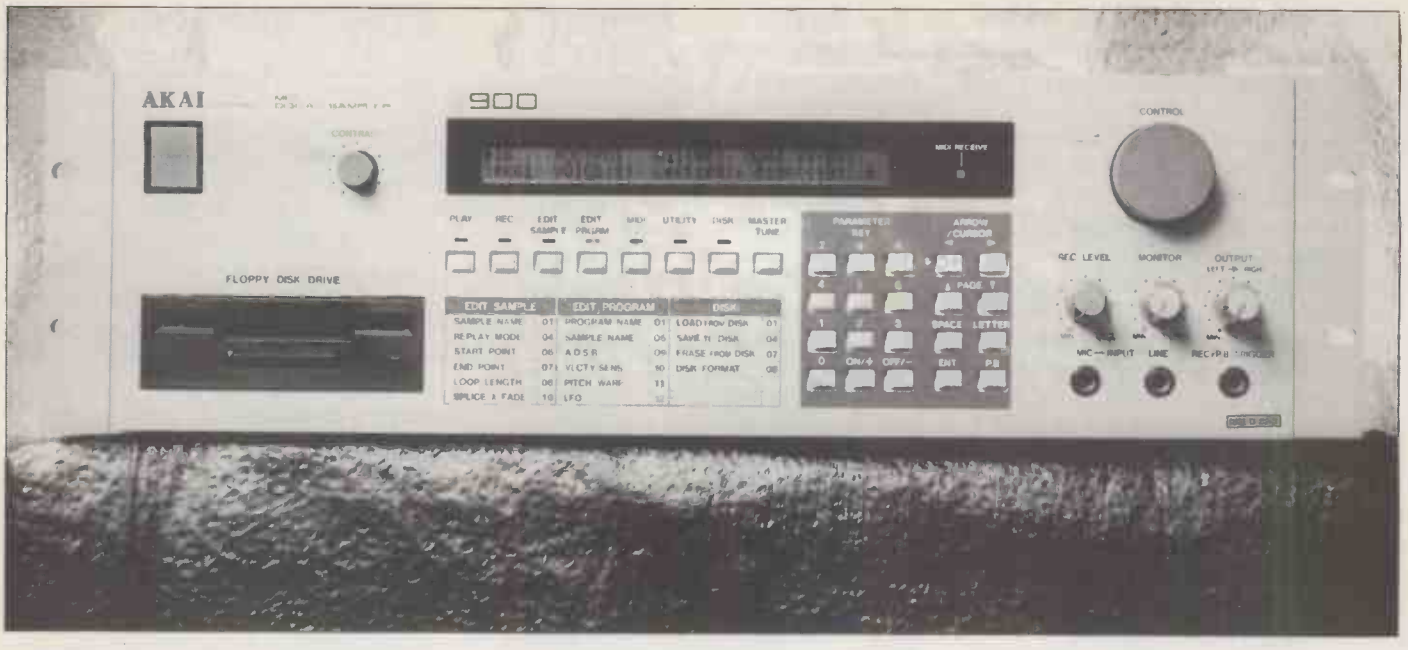
Once it had been recorded, all I had to do to hear it played back was hit Ent (as prompted by the display). Alternatively, pressing the Play button sounds the sample for as long as you hold it down. The 12 seconds' worth of music sounded more or less indistinguishable from its **CD** source to my ageing ears, and certainly the equal in fidelity of any other 12-bit system I have heard. In particular, transients (quick changes in level which often prove the most difficult thing for a sampler to cope with) were very faithfully reproduced.

So in sound quality terms, the S900 should satisfy the demands not only of musicians, but of studio engineers and producers, too. It may well find itself used for the type of production work that has until now been the exclusive territory of the likes of AMS machines: sampling drum sounds, backing vocals, orchestra hits, and other sonic mainstays of modern pop and rock music.

Going from the sublime to the ridiculous, I tried the longest possible sample that could be made by using the lowest available bandwidth (3kHz). The faster your sampling rate (which governs the fidelity), the quicker the available memory is used up and the shorter your sample has to be (you don't get anything for nothing in this world). However, while the minute-plus' worth of recording I could get at this rate wouldn't win any prizes for quality, speech was still clear and comprehensible, and sound effects were recognisable if somewhat dull-sounding. Music recorded at this bandwidth was, of course, rather lacking in top end, but on reflection, the quality was little worse than that which so many of us put up with from our TVs.

The fact of the matter, though, is that you're unlikely to need the lowest bandwidth available, as the S900 has enough memory to cover the multi-sampling of most instruments quite comfortably at much higher quality.

It's also possible to adjust the audio fidelity very precisely, so you can use the exact ►



►bandwidth necessary to capture any sound and not be forced to use lower or higher fidelity simply because your machine can only manage one or two sampling rates. By offering a continuously variable sampling rate, the S900 makes the most economical use of the generous memory available, so you get the best of both worlds.

In fact, I soon discovered that 13-14kHz bandwidth was more than enough for most sounds, though there will always be more 'difficult' instruments (cymbals, high piano notes and the like) which need all the headroom they can get. My only grumble in this department is that there's no way the more experienced sampler (the user, not the instrument) can get an exact measurement of the sampling rate being used. If there was, you could match the sample frequency to a multiple of the pitch of a musical note for optimum fidelity.

Now, once you've made your sample there are all the facilities of the Edit Sample mode to play around with. Again, these are arranged in a logical order to guide you through the process of knocking your sample into shape.

The first page that comes up covers Selecting, Copying, Renaming and Deleting your sample, should any of these seem like a good idea. The second deals with how you access the sample on the keyboard (via any of the available programs).

Page 3 covers sample loudness and tuning. This enables you to match various samples to each other if they're of different levels or out of tune – vital if you want to make good multi-sampled programs of individual instruments over their full range.

Next, you can decide via Page 4 whether you want the sample to just sound once, to loop or to play backwards and forwards alternately. The first of these is the default, so a sample will play back as recorded unless you change it here. Page 5 allows you to reverse the sample so that it plays backwards. Well, it's easier than turning the tape over.

Looping is the way to extend a sample artificially, allowing the note to be played for as long as is required. But if you simply switch the loop on here, chances are you'll get a decidedly unmusical result, with clicking or gaps spoiling the sustain effect. Akai's manual quite rightly states that looping is 'an art and a science' and requires practice and skill to master. However, the S900 gives you all the help a computer can. Pages 6, 7 and 8 are where this happens.

Page 6 sets the Start Point of the sample and Page 7 deals with fixing the End Point. This allows you to specify just what section of the original recording you want to hear on playback, and is particularly handy if you were over-generous with the sampling time as a later page (9) allows you to Discard the data before Start and after End. This, in turn, means that any memory you don't need can be put back into the 'pool' of memory still available for new samples.

Loop Length is set on Page 8, and the loop uses the same End Point as the sample itself (set on the previous page). At first I was slightly worried about this, as I prefer to have independent start and end points for the loop, but I soon found myself adapting to this alternative approach. As things turned out, I discovered that ideal loops are often of virtually the same length, and that once I'd found a good loop, it was often possible to move it forwards in the sample without changing its length, thereby saving memory. I managed to loop a lead guitar sample after only 0.3secs (when the original loop I found was around the two-second mark), all by shifting the sample End Point earlier.

On the negative side, though, it's not possible to have a sample stop looping and go through its natural release once you lift your finger off the connected keyboard. I guess each method of defining loops has its advantages, and until someone comes up with a system which combines the best of both worlds, it's a case of deciding which works best for you.

The Auto function on Page 8 offers computer assistance in fine-tuning your loops to get rid of clicking and glitching. As it seems to alter only the Loop Length rather than shifting the End Point, it can't work by finding zero crossings (ie. micro-seconds in the recording where no sound is present), and must therefore match points of equal sonic energy. Whatever the method, it worked as well as any other system I've tried, coming up with usable loops most of the time, producing the odd miracle here and there, and only occasionally failing to provide anything workable.

This, however, is the one area of sampling where you really do need visual editing for quick and completely glitch-free loops time after time. The Akai's RS232 port (which allows for faster sample transfer than MIDI can cope with) provides computer access to samples. Word has already reached us that Digidesign are at work converting their Macintosh Sound Designer package to run with the S900. We've also heard that Hybrid Arts are working on a sample editing package to run on the Atari STs, so it looks as though there'll be some choice available.

Once you've set your sample up, Page 9 allows you to Discard the portions of the sample you're not using, and also gives you the option of instantly Resampling at half-bandwidth. Whilst this lowers the fidelity, it also halves the amount of memory used, which may be critical in some circumstances. I found that, a lot of the time, you can get by with Resamples, though most musicians will no doubt prefer the higher fidelity whenever memory size allows.

The last three pages of Sample Edit mode deal with digital Splicing of samples. On the S900, this facility allows crossfade time and order to be specified or straight mixing to take place, and all this without losing your original pair of samples – just in case the ►

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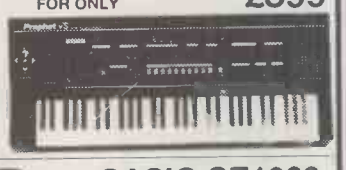

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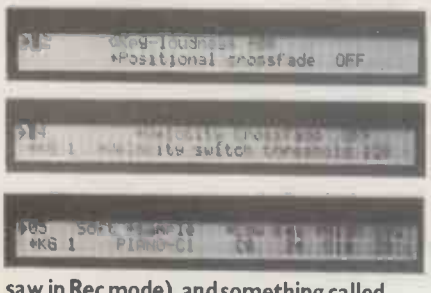
► splice doesn't come out as expected. However, it stands a better chance of being successful on the new Akai than on most machines, as crossfade gets around the glitching caused by matching the two adjoining levels. Quite why Akai didn't make this crossfade available for looping as well beats me, as the crossfade loops of something like the Sound Designer often allow you 'to loop the unloopable sample'.

Edit Preset is the largest of the S900's modes, with no fewer than 16 pages, most of which cope with an unlimited number of Keygroups (or keyboard splits) by giving a different display when each separate Keygroup is selected. Within this mode, you assign as many different splits as you need to spread your multisamples across the keyboard, and then edit their parameters either individually or all at once, whichever is more appropriate.

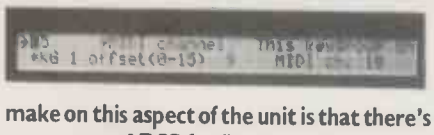
These include more complex functions like Positional and/or Velocity Crossfade and Switch (using the soft and loud samples we



saw in Rec mode), and something called Warp (nothing to do with the Starship Enterprise, this – it means automatic pitch-bend, and it's great for brass), as well as more regular features like Filter (with keyboard tracking to get rid of aliasing effects), LFO (for vibrato with mod wheel or aftertouch control), ADSR (to reshape the loudness of samples) and velocity control routable to just about all of the above. And that was meant to be just a brief list...

Drawing attention to the most remarkable aspects of the Edit Preset Mode, one of these has to be the ability (unrivalled, I believe) to assign numerous samples to each note – I got as far as six and gave up trying. Then there's the fact that each area of the keyboard (essentially each sample) can be assigned not only to one of the eight mono outputs, but also to its own MIDI channel.

The only negative comment I can find to



make on this aspect of the unit is that there's no separate ADSR for filtering, but then, you can always use that Voice Out socket to send samples to an Akai synth (the AX76, due out soon) for further analogue processing.

Moving to the MIDI section, we find that almost every eventuality has been covered, almost to the point of exhaustion.

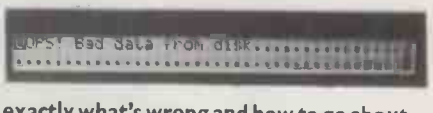
Apart from the Mono Mode assignment of channels, the MIDI Mode and Base Channel are altered on Page 1. You need to turn Omni Mode off here to get the Mono Mode reception set up, of course. Page 2 allows you to specify a MIDI note number – complete with channel number and velocity level – to be sent from the MIDI Out when you hit the PB (playback) button, and also to test the S900's response to that note. Useful if you don't have your master keyboard to hand.

In contrast, Page 3 tells you the last note number received by the S900 at the MIDI In socket (again complete with channel and velocity data), regardless of whether the S900 actually played anything. This helps you decide whether your MIDI cable is at fault, or whether you're just using the wrong MIDI channel.

The last of the currently available modes (the Utilities package should arrive with the first software update) is called Disk. I've already covered the use of the conveniently-placed first page when loading a disk, and all the other disk functions are equally well positioned. You can Load and Save Samples or Programs either individually or together, and even erase on the disk itself. Whenever you insert a new disk, the S900 automatically loads the catalogue of what's on it.

Particularly praiseworthy is the way the Akai tells you the implications of your actions at every turn. For example, 'Clear disk and save entire memory' tells you that saving everything to disk will wipe out whatever was previously on that disk. Many musicians simply don't realise such hard facts of life until it's too late, and get caught out.

Continuing in this vein, even the Error Messages reassure you, rather than freak you out. No cryptic numbers or abbreviations here. All the messages are prefaced by a nice friendly 'Oops', and each one tells you



exactly what's wrong and how to go about solving the problem. A good example of this is: 'Disk is write-protected. Take out of drive and close switch in bottom left-hand corner.'

While on the subject of disks, it's worth briefly mentioning the three (excluding the blank one) that S900s are being shipped with. The first of these, described as an Operation Guide, provides various standard synth waveforms sampled and looped, and then goes on to show various multi-sampling setups with velocity crossfades and the like, using sampled spoken words such as 'Soft', 'Loud' and '1-2-3' to illustrate what's happening. Complete beginners could quite easily build their programs up from some of these, while a die-hard synthesist will appreciate a few old favourites as starting points to explore the machine's post-sampling facilities.

And just in case you weren't previously aware, Akai plan to make a separate operating system available on disk which will turn the S900 into an additive synthesiser via the generation of harmonics.

The Piano disk is as good as any that the competition in this price range is supplying, but the S900 is capable of much more. As usual, a bit of detuning covers a multitude of sins, making a presentable Honky-Tonk. The Chopper Bass is better, though, with some gutsy low end in normal playing on its own in one program, and a sharp top end in the pull-offs which are neatly selected by hard key-strikes on a second program.

Like every other new sampler, though, the S900 may suffer initially from the relative scarcity of library disks available for it. Akai are doing everything they can to improve the availability of library sounds, and my advice would be not to let the current situation deter you from giving this sampler serious consideration. The future should bring the sort of library disks you're after, as well as several new software-based applications like the additive synthesiser mentioned above, and a real-time event recorder.

As far as the current sampling software goes, it's unrivalled in the areas of program setup, MIDI functions and user-friendliness. And subsequent updates (like the Utilities mode) can only make things better.

All in all, the S900 is a combination of great spec, relatively low price, and appealing ease of use. Those factors in isolation would make it worth taking a serious look at, but in combination, they form a package that is almost irresistible. ■

DATAFILE

Akai S900 MIDI Digital Sampler

Number of samples *32*
Number of programs *32*
Maximum sample rate *40kHz = 16kHz audio bandwidth, 11.878 secs max*
Minimum sample rate *7.5kHz = 3kHz audio bandwidth, 63.351 secs max*
Sample memory *512K*
Disk Drive *3½" double-sided*
Analogue control *(per voice) VCA with ADSR and VCF (both with velocity control), pitch mod via wheel, LFO (with de-sync) or warp*
Digital control *(edit sample) Start and End Points, Loop Length, Backwards, Splice (with crossfade); (edit program) Positional and Velocity Crossfade/Switch*
Interfacing *MIDI In, Out, Thru; Voice Out (exclusive); RS232 Standard Port*
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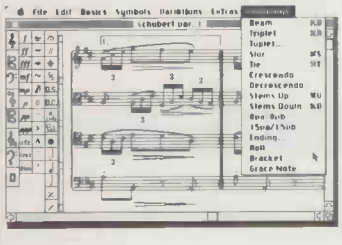

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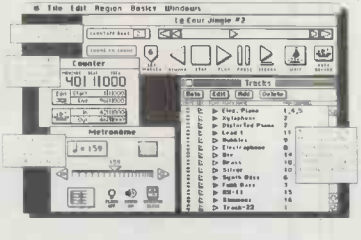

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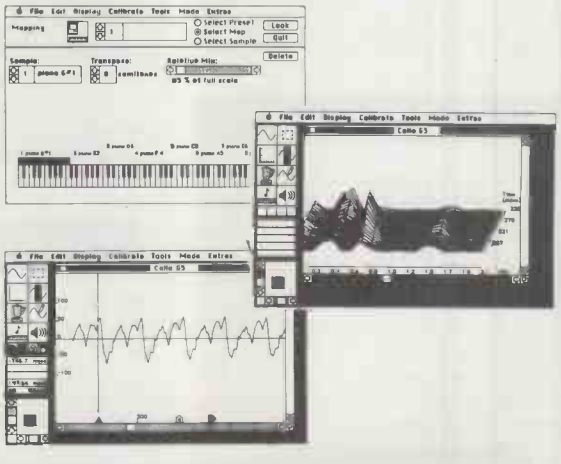

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Checklist

E&MM's buyers guide to end all buyer's guides, with a rundown of all sound sampling keyboards and devices currently available and soon to be unveiled.

As sound-sampling continues its runaway snowball success ever more manufacturers offer an ever greater variety of instruments to tempt you to part with your hard-earned cash. Casio and Yamaha currently lead the field in offering the cheapest user-sampling keyboards and, whilst obviously aimed in part at the domestic market, these represent a practical way of including genuine sampling in your sound arsenal.

Of course nobody's suggesting that these machines will offer Emulator quality reproduction or Fairlight manipulation facilities, but they are a commendable example of advances in technology enabling modern sound techniques to take their place in the amateur and semi-pro musicians' music.

On the eve of both the American NAMM show and our own BMF you can be sure that the other manufacturers will be swift in following the lead of Casio and Yamaha as well as introducing more pricey – though more upmarket – machines. None of which can be bad for anyone except, perhaps, our bank managers.

SAMPLING KEYBOARDS

CASIO

SK1 – £119 Eight-voice polyphonic sampling keyboard. ● *To be reviewed.*

E-MU SYSTEMS

EMAX – TBA Eight-voice, eight-bit sampling system, 17-second maximum sample time, 16 sound channels, crossfade facility, 3½" disk storage. ● *To be reviewed.*

Emulator II – £7250 Eight-voice, eight-bit sampling system; five-octave velocity-sensitive keyboard, split and layering facilities, analogue filtering and LFO, disk storage. + *Superlative sound quality, maximum 17-second sample length, onboard sequencer, MIDI compatibility, ease of use in all areas especially looping;* − *long loading times, poor keyboard;* − *great improvement on original Emulator, shielded from obsolescence by continued updating on E-mu's part.* ● *Reviewed November '84.*

Emulator II+ – £6320 Specification as for Emulator II but with twice the sound memory capacity, divided into two banks. Compatible with Emulator II disks, and available with either one or two disk drives.

Emulator II+HD – £7470 Specification as for Emulator II+ but with 20Megabyte hard disk as well as floppy disk storage. Hard disk stores equivalent of 46 preset disks with retrieval time of around two seconds.

ENSONIQ

Mirage – £1295 Eight-note polyphonic sound-sampling keyboard; built-in 3.5" disk drive, sequencer and analogue sound-modifying section, five-octave touch-sensitive keyboard with split options, full MIDI compatibility. + *Superb sampling sound quality, good range of sound-modifying options, user-friendly control layout, European version has better (than US equivalent) keyboard and disk drive;* − *lack of step-time facilities limits sequencer's usefulness, demand outstrips supply in some areas, complex multisampling procedure;* − *wonderful sampling machine with a (recently reduced) price that helps bring the technique within the reach of vast numbers of people for the first time, now with user-formatting and advanced software built in as part of the package.* ● *Reviewed July '85.*

KORG

DSS1 – £TBA Eight-note polyphonic sampling keyboard; built-in disk drive, split/layer options, analogue sound-manipulation section including LCD-assisted waveform editing system. ● *To be reviewed.*

KURZWEIL

250 – £10,995-£18,035 Twelve-voice, disk-based sampling system; 88-note velocity-sensitive weighted keyboard, split facility. + *Excellent sound quality thanks to unique 'Contoured Sound Modelling' system, comprehensive interfacing, onboard sequencer and chorus, 12 channel outputs;* − *user-sampling requires (expensive) addition of Apple Macintosh computer;* − *after all the press-release hype, the Kurzweil delivers the goods, but elements of its design could be a lot more cost-effective.* ● *Reviewed December '84.*

ROLAND

S10 – £TBA Eight-voice, four octave sound-sampling keyboard; 12-bit sampling, four-second maximum sample time at 32kHz bandwidth, built-in 2.8" quick-disk storage. ● *To be reviewed.*

S50 – £TBA 16-voice, five-octave sound-sampling keyboard; 12-bit sampling, built-in 3.5" disk drive, dual and split facilities, 17.5-second sample time at 32kHz bandwidth. ● *To be reviewed.*

SEQUENTIAL

Prophet 2000 Sampling Keyboard – £1995 Eight-note polyphonic sound-sampling keyboard; built-in 3.5" disk drive, analogue synth section and arpeggiator; five-octave, touch-sensitive keyboard with split/layer options, full MIDI compatibility. + *Incredible sound quality for price, looping and editing facilities are comprehensive and user-friendly, unsurpassed MIDI spec includes transfer of samples;* − *synth section doesn't exactly live*

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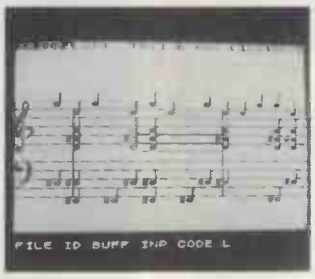

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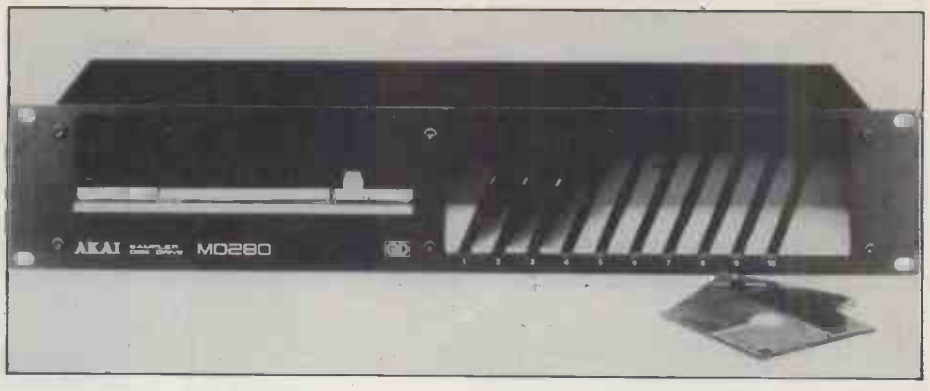
▶ *up to Prophet ancestry, though it's still useful, arpeggiator is waste of space;* ▬ *a welcome addition to the world of low-cost sampling machines, sets the standard for all of them, and like Emulator, has a whole host of updates soon to be unveiled by manufacturer to maintain its competitiveness.* ● *Reviewed December '85.*

YAMAHA

VSS100 – £210 Budget keyboard with monophonic user sampling section with four-octave, miniature keyboard; eight second sample length, choice of multi-sampling or four two-second simultaneously available samples. ✚ *Ridiculously cheap;* ▬ *quality predictably leaves something to be desired, as does omission of data dump facility;* ▬ *ideal introduction to the world of sound sampling.*



SAMPLING MODULES

AKAI

S612 – £749; MD280 disk drive – £199 Six-voice, 12-bit rack-mounting polyphonic sampler; velocity-sensitive over MIDI. ✚ *Excellent sound quality for the money, ease of use, unique 'alternating' mode provides successful alternative to conventional looping;* ▬ *requires MD280 disk drive (at additional cost) to make it useful, only one sample per side of disk;* ▬ *a fine introduction to sampling, the first machine without a built-in keyboard to save you money if you already have a MIDI controlling instrument.* **S900 –1599** Eight-voice, 12-bit rack-mounting sampler; velocity-sensitive over MIDI, built-in 3.5" disk drive, six-octave range, multi-sampling, maximum 48-second sample time, extra facilities include software for eight-voice harmonic sound-generation. ● *See review this issue.*

BIT

Sampling Module – £TBA Twelve-bit polyphonic sampler, eight-second maximum sample time, velocity-sensitive over MIDI, built-in analogue filtering section and VCA. ● *To be reviewed.*

WEAR IT WELL

At last, E&MM's distinctive new logo is available on top-quality sweatshirts and T-shirts, direct from us at the editorial address. Don't mistake this for inferior promotional clothing; these shirts are beautifully made and superbly printed. There's a choice of colours and you can even decide whether you want the E&MM lettering printed large in the middle of your shirt, or smaller in the top right-hand corner.

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E-MU SYSTEMS

EMAX – TBA Modular version of keyboard EMAX with same specification. ● *To be reviewed.*

ENSONIQ

Sampling Expander – £TBA Modular version of Mirage, details as above. ● *To be reviewed.*

SEQUENTIAL

Prophet 2002 Expander – £1795 Modular version of Prophet 2000, details as above. ● *To be reviewed.*

SAMPLING DELAYS

BEL

BD240 – £TBA Monophonic sampling delay; maximum 24-second sample time with four six-second cards (optional) at 18kHz bandwidth. ● *To be reviewed.*

BOSS

RSD10 – £200 Monophonic sampling delay; maximum two-second sample time, auto-triggering and layering facilities. + *Very cheap, pitch-tracking system means you're not confined to 1V/octave synths (even a digital poly should do the trick), sound quality reasonable;* – *tape interface permits audio – not digital – storage of samples;* – *a fitting complement to Boss' Micro Rack series, and probably the system's best unit yet: four-octave pitch range is widest in its class.* ● *Reviewed March '86.*

KORG

SDD2000 Sampling Delay – £699 Digital delay with MIDI control over monophonic sound sample; one-octave range at full frequency response, three octaves at reduced bandwidth. + *The cheapest MIDI sampler around, decent sound quality, added bonus of versatile delay section;* – *limited editing facilities betray machine's DDL origins, no sample storage;* – *still unbeatable almost a year after it was unveiled, sampling on its own would be reason enough to fork out the money, but MIDI and DDL put icing on the cake.* ● *Reviewed July '85.*

VESTA KOZO

DIG420 – £330 Monophonic sampling delay; maximum delay time one second, three-octave range. + *Controllable from any CV/Gate synthesiser, reasonable sound quality, cheap;* – *again, no sample storage, lack of editing facilities compared to machines designed to be samplers above all else;* – *a worthy contender from a company with a growing reputation for delivering facility-laden outboard gear at near-give-away prices.* ● *Reviewed November '85* ■

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ARP PIANO (Piano, Rhodes, Vibes, Harpsichord), touch response, £495 ono. Axxe monosynth £125. ☎ Guildford (0483) 234224.

ARP QUADRA vgc, f/cased, 16 memories polysynth. Mike ☎ Blrmingham 021-543020.

BIT 01 synth module, used once, £400 or exchange for 4-track cassette or reel-to-reel. ☎ 01-837 4542.

BIT ONE immaculate, ungigged, Chase the competition away, flying urge forces sale, £500 ono. Marc ☎ 01-560 2253 after 6pm.

CASIO 403 full-size keyboard, 20 sounds, rhythm, autochord, £80. Dave ☎ 01-402 2833 after 7pm.

CASIO 403 four-octave full-size keyboard, with stand, 25 presets, 16 rhythms, excellent condition, £135 ono. ☎ (0525) 60548.

CASIO CT1000P with drum sync; plus TR606 Drumatix, boxed with leads, adaptor, manuals, vgc, £300 ono. Ideal for beginners. ☎ 01-679 3114.

CASIO 1000P preset/program, sequencer, arpeggio, vgc, £165 ono. Rob ☎ Leeds (0532) 780120.

CASIO 7000 features Include multitrack memory, mint condition, £275 ono. ☎ Oxford (0865) 891063.

CASIO CZ101 mint condition, boxed, manuals, etc, £225 ono. ☎ High Wycombe (0494) 32112.

CASIO CZ101 mint condition with soft f/case, mains adaptor and instruction manuals, £225 ovno. ☎ (0246) 434081.

CASIO CZ101 mint condition, manuals plus a book, power supply, £235. Simon ☎ Peterboro (0778) 424803, after 7pm.

CASIO CZ5000 digital synth with built-in sequencer, four months old, mint condition, £650. ☎ Rickmansworth (0923) 779842.

CASIO MT70 polyphonic keyboard, 20 sounds, memory, Casio chords, drums with bar code reader and all leads, £110. ☎ (0279) 441794.

CRUMAR PERFORMER strings and brass keyboard, good condition with case, £85 ono. ☎ (0926) 842741.

CRUMAR strings/brass synth £140. Roland RS09 string machine £60. ☎ Clitheroe (0200) 24513.

DIGISOUND MODULES 80-15D1 Keyboard Logic Controller, 80-15D2 Digital-to-Analogue Converter, £25 or exchange for ZX81. Chris ☎ (0204) 35796.

DIGISOUND 80 MODULAR synth, 16 modules with full keyboard, working, will deliver, £325 ono. Keith ☎ Richmond, N. Yorks (0748) 833395.

ELKA X605 superb portable organ with Yamaha rotary cabinet, little used, £950 or exchange DX7. ☎ (0253) 726905.

E&MM SPECTRUM monosynth, complete but not totally working, makes some sounds, in wooden case, £59. David ☎ (0622) 26861.

FENDER RHODES Stage 73, MkII, excellent condition, flat top, £295 ono. ☎ 01-599 1436.

FENDER RHODES Stage 54, one owner, no fluffy dice, only driven at weekends by elderly gent, £200. ☎ 01-360 0412.

JEN SX1000 ideal beginner's monosynth, good condition, £60. Roland TR606, vgc, manuals, case etc, £90. David ☎ (0788) 810090.

KORG BX3 ORGAN Hammond sound, double manual, chorus, Leslie effect, £500. Hohner Pianet £115. John ☎ Hereford (0432) 54460.

KORG DW6000 £450. Korg Poly 800 £310. Both never gigged, both with hard cases. Dean ☎ Toddington (05255) 4068 (Bedfordshire).

KORG DW6000 immaculate with f/case + excellent programs, 9 months old, £600. Yamaha PF15 + f/case, £625. ☎ 061-301 4145.

KORG MS20 vgc, boxed, instructions. Vox AC30 amp, vgc, home use only, £200 ono, or swap Casio CZ101. Karl ☎ (0279) 36838.

KORG MS20 and SQ10 analogue sequencer, perfect working order, offers? Maurice ☎ Forfar (0307) 63184 after 6pm.

KORG MONO/POLY £260. Yamaha CS5 £90. Roland Drumatix £100. Perfect condition. Barry, 61 School Street, Barrow-in-Furness, Cumbria.

KORG POLY 800 £320 ono, Firstman SQ10, £110 ono; both perfect (Korg has new sounds). ☎ (0783) 844141.

MEMORY MOOG with case, excellent condition, £1000 ono. Micky ☎ 01-379 6690.

MOOG PRODIGY £130. Roland SH101 £130. Both home use only. ☎ 01-552 2951.

MOOG PRODIGY good mono analogue sound and condition, £90 ono. Martin ☎ (0296) 84750, eves.

OBERHEIM OB1 great bass/lead sounds, eight memories, f/case, in top ten in Keyfax Keyboard Guide, £325. ☎ 01-281 1918.

ROLAND JUNO 6 with hard case, £250. Adrian ☎ (089 26) 4441, eves after 7pm.

ROLAND JUNO 6 + f/case, vgc, £300. Stew ☎ (0922) 56298 after 7pm.

ROLAND JUNO 6 boxed, with foot pedal, as new, £280. Also Drumatix plus power supply, £100. ☎ 01-949 5819, eves.

ROLAND JUNO 60 £495, TR808 drum machine £295, MC202 £110. All perfect and boxed. John ☎ (0782) 657584.

ROLAND JUNO 106 perfect, instruction, leads, etc, £475 ono. Yamaha CX5, large keyboard, perfect, + DMS software, boxed, £330 ono. ☎ (0635) 200295.

ROLAND JUNO 106 excellent condition, plus stand, unused, guaranteed, boxed, as new, £465. ☎ (0223) 61614.

ROLAND JUNO 106 with sustain pedal, £490, occasional home use only. Flightcase available. David ☎ 01-866 5396, or 01-861 4556 (office).

ROLAND JUPITER 6 excellent condition with f/case and stand, £725. MC202 £100. ☎ Andover (0264) 53923.

ROLAND JX3P as new, £800. Micky ☎ 01-379 6690.

ROLAND JX3P excellent condition, serious offers around £400. Dave ☎ 01-531 9824 (Walthamstow).

ROLAND MKB1000 MIDI keyboard controller, KS1000 stand, piano seat, all immaculate, bargain at £825 ono. ☎ 01-866 2491, eves.

ROLAND PLANET S module, with cartridge and PG200 programmer, excellent condition, home use only, £525. Jo ☎ 01-241 5344.

ROLAND SH101 monosynth, excellent condition, boxed, £170 ono. ☎ 021-552 1049.

ROLAND SH101 excellent condition, boxed, as new with manual and power supply, £120. Ian ☎ Manchester 061-432 5705.

ROLAND SH101 as new, case, PSU, home use only, £135. Martin ☎ 01-855 2520, eves.

ROLAND SH101 MGS1 case, £155 or CZ101. Boss DR110 + Feldstein manuals, £70. Jen SX1000 £55. ☎ (02051) 61173.

ROLAND SH101 plus adaptor £120, or swap plus cash for Casio CZ101. Adam ☎ 01-304 4930.

ROLAND SH101 monosynth, £120 ono, excellent condition. ☎ Brighton (0273) 777938.

ROLAND SH2 classic 2VCO monosynth, £140. 100W amp built from module with 85W speaker, £60. ☎ (0483) 572705.

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ROLAND SYSTEM 100M 181, 191, 112, 121, 130, 140, 150, £500. JX3P, PG200, boxed, manuals, £500. Mik ☎ 01-807 5935.

ROLAND SYSTEM 100M modular synth, 15 modules, keyboard, MC4, etc, home use only, any offers? ☎ Romsey (Hants) 514890.

ROLAND VOCODER PLUS home use only, excellent condition, super sound, scarce model, £475. Jack ☎ (0563) 32840.

SCI PRO ONE £199, includes f/case and stand. Roland Drumatix, separate outputs, £99. MPC Sync Track £20. All excellent. ☎ 01-500 1400.

SCI PROPHET 5 Rev 3, £800 ono. Micky ☎ 01-379 6690.

SCI PROPHET 600 Immaculate £595. Yamaha CS70M, perfect condition, Korg MS20 immaculate, £495 and £95. ☎ Staffs (0782) 513072.

SCI PROPHET 600 with f/case, £700, or swap CZ5000, Yamaha DX21, JX8P or DW8000. Chris ☎ 01-995 3381 after 7pm.

SCI SIXTRAK 7 months old, home use only, boxed. Powertran MCS1, boxed. Both with manuals, £275 each or both for £500. ☎ 01-582 8548.

SWAP MY DX21 for £495. Nine months old, boxed, home use, perfect. ☎ (07462) 2971 (Midlands).

SWAP POLY 800 + CBM64 + software, for Yamaha DX9 in any condition. Matthew ☎ Buckley (0244) 542924 any time.

TRANSCENDENT 2000 monosynth, complete with manual. Keyboard contacts need attention, hence £50 ono. Chris ☎ Poole (0202) 600682.

VOX ELECTRIC PIANO harpsichord, bass, tremolo effects. Stand and carrying case inc, £100. ☎ (0480) 891037.

WANT A BARGAIN? Buy my Korg Polysix for the giveaway price of £299. Roy ☎ 01-882 0517.

YAMAHA CP30 electric piano, wooden keys, weighted action, inc stand and f/case, £399. ☎ 01-720 0451.

YAMAHA CS15D monosynth, £115 or swap for cheap (Akai 4000DS etc) tape recorder. ☎ Penarth (0222) 706187.

YAMAHA DX7 VOICES 900+ sounds on disk or cassette, £20. ☎ 01-552 2951.

YAMAHA DX7 f/case, pedals, b/control; RX15 drum m/c; Carlsbro Keyboard 90 amp; All hardly used, £1700, will split. ☎ (0625) 75707.

YAMAHA DX9 excellent condition, home use only, £450. ☎ 01-254 8764.

YAMAHA DX100 including PSU, excellent, bought new in May. Cash crisis forces sale, hence £295. Steve ☎ Blackburn (0254) 774554.

YAMAHA MK100 home keyboard, synth section, programmable drum patterns, tune memory, hardly used, £175. Andrew ☎ Stevenage (0438) 721642.

YAMAHA PS55 immaculate, excellent stereo sounds, drum recording section, more. With stand, adaptor, boxed. ☎ Saffron Walden 26383.

YAMAHA YC45D organ, dual manuals, bass pedals, studio use only, excellent condition, £295. ☎ Maidstone (0622) 685866.

Sampling

ENSONIQ MIRAGE module, rackmount, brand new in box, unwanted gift, £900. Also as above keyboard £1180. ☎ (08675) 6472.

GREENGATE DS:3 sampler, latest software, looping, trillions of sounds, computer screen, disk drive, £1100 ono. Darren ☎ 01-441 1722, daytime.

MDB WINDOW RECORDER 12 seconds digital sampling, 16-bit edit, overdub, keyboard control, MIDI/CV, new £2760. ☎ 01-209 1384.

MICROVOX MIDI sampler for Commodore 64. Eprom + disk versions, as new, £200. ☎ (0923) 26020.

POWERTRAN MCS1 sampler/delay, £330 ono. Roland Juno 6, offers; Westone Thunder 1A active bass, offers (inc cases). ☎ (0602) 830382.

POWERTRAN MCS1 sampler DDL, 4sec sample time, chorus, flange, phase, etc, MIDI controllable, boxed, home use only, £300 ono. ☎ 01-582 8548.

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SCI PROPHET 2000 sampler, £1495 ono. Three months old, unused, financial difficulties. ☎ 01-703 5150 or 01-888 4997.

SOUND SAMPLES 100 unusual sounds on metal C90 tape. Send £3 cheque/PO, 30 Mulso Road, Finedon, Northants, NN9 5DP.

YAMAHA VSS100 sampler keyboard, little used. Mains + PSU included. £140 ono. ☎ (0405) 61872 eves.

Sequencers

ROLAND MSQ700 digital sequencer, excellent condition, can deliver, £395 ono. ☎ 01-467 4603

ROLAND TB303 Bassline, £75. Synsonics drum m/c £30. Laney practice amp £25. Boss CE3 Chorus pedal £30. All unused. ☎ 061-336 0366.

YAMAHA QX7 MIDI sequencer, boxed, as new, £199. Jerry ☎ 01-690 4848 during work hours.

Drums

BOSS DR55 drum m/c, vgc, boxed, instructions, £30 inc P&P. Steve ☎ (07373) 53690.

BOSS DR55 boxed, as new, manual, three program voices, 16 memories, clock outs, £40 ono. ☎ 01-942 3063.

BOSS DR110 drum m/c, new, with adaptor, bargain £80. ☎ Colwyn Bay (0492) 518832.

BOSS DR110 excellent condition + manuals, £80. Jen SX1000 £70. ☎ (0205) 61173.

BOSS DR110, still boxed £80. Wasp synth £60 ono. David Nelson ☎ (0443) 451069 after 5.30pm.

BOSS DR110, good condition, includes case and manual, £55 ono. Yamaha CS5 monosynth, £70 ono. Hywel ☎ (0222) 383997 eves.

BOSS DR110, boxed with manual, home use only, £70. Paul ☎ (02216) 5523 eves/weekends.

BOSS DR110, perfect condition, only 3 months old, £80. Nik ☎ (0203) 343473.

BOSS DR110, mint condition, boxed with manual, leads, etc, £80. Jon ☎ 01-609 2309.

BOSS DR110 mint rhythm unit, £70 ono. Tom ☎ Ashtead (Surrey) (037 22) 73213 after 4pm.

CACTUS KIT + claps and synth, £550 ono. KPR77 drum machine £110 ono. lead guitar £90 ono. All as new. ☎ Worthing (0903) 40509.

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E&MM SYNDROMS digital drum samples (bass and snare). Tunable and punchy, ideal for TR606/TR808, £50. Steve ☎ (0222) 21802 or 01-350 0340.

E-MU DRUMULATOR 64 song with crash chip, sync to Roland DIN, £375. Downland ☎ (07375) 56110 (Croydon area).

KORG DDM110 £130. Roland MC202 £90, or £195 the pair. Both boxed, home use only. Yohannes ☎ 01-387 2756.

KORG DDM110 digital drum m/c, £160. Can you give it a good home? Philip Coombe ☎ Plymouth (0752) 668939.

KORG DDM110 £95. Drumulator (separate outputs), £240. Yamaha RX11 £535. All in absolutely immaculate condition. Kevin ☎ (06284) 74752.

KORG DDM110 digital drums, £125. Boss DR55 £30. Both boxed, perfect. Also Accessit Compressor £40 ono. Martin ☎ 01-855 2520 eves.

KORG DDM110 programmable digital drum m/c, £120. Fender Bullet (USA), cream, M/N, case, immaculate, £135. Phil ☎ 01-462 8206.

KORG DDM220 Latin percussion, boxed, mint condition, £100. ☎ 091-266 3433.

KORG DDM220 never used, boxed £120. Fender Rhodes £270. Both £340 or p/x for JP8, DX7 or 8-track recorder. ☎ 01-360 5620.

KORG DDM220 latin percussion, hardly used, £90. Korg KPR77 £80. Tim ☎ Stebbing (0532) 444616, office hours.

KORG KPR77 drum m/c, stereo outputs, plus separate snare and clap output, £130 ono. ☎ Henley (0491) 576317.

KORG PSS50 Super Section, mint £250. DX7 ROMs 1&2, offers. John ☎ 051-677 3691 (Merseyside).

LINN DRUM Mk3, £1495. Roland MSQ700 £460. MXR 01A digital reverb £795. Fostex 250 Portastudio, £450. Inc. VAT. ☎ 01-467 4603.

LINN DRUM Mk3 software fitted, fully serviced, immaculate condition, flightcased, £1175. ☎ 061-928 5037.

MFB 512 digital drums, nine voices, Individual and stereo outputs, leads inc, £180. Andy ☎ Yeovil (0935) 76441.

PEARL DLX 7-piece drum kit in wine red, many excellent extras, only 9mths old. ☎ (0279) 32228.

ROLAND TR606 Drumatix, hardly used, still in box, £90. Ibanez stereo chorus £40. Mustapha ☎ 061-224 6563 after 6pm.

ROLAND TR606 Drumatix, broken output, but headphone output OK, £75. ☎ Westerham 64682.

ROLAND TR606 Drumatix, £90. ☎ 01-886 4040.

ROLAND TR606 Drumatix, still boxed £90. Roland TB303 Bassline (bass sequencer), £60. ☎ 051-259 3274.

ROLAND TR606 Drumatix, good condition, boxed with manuals, little used, suitable power supply £120. Dave ☎ Southampton (0703) 557496

ROLAND TR606 mint, with separate outputs, £85. Casio MT40 polyphonic kbd, £30. Wanted! OSCar monosynth (MIDI). John ☎ 01-699 4979.

ROLAND TR606 & TB303 Bassline. £80 each, ono. Fender Mustang bass, any offers? Strictly kosher (my life). Mike ☎ 01-212 5722, work.

ROLAND TR606, realistic stereo disco mixer, Jen SX1000, all vgc, £95, £35, £75 respectively. Pete ☎ (0382) 738089, after 6pm.

ROLAND TR606 as new, with 6-way power supply and usual accessories, £95 or sensible offers. ☎ 01-586 7307.

ROLAND TR606 plus TB303, with cases, home use only, excellent condition, £130. John ☎ (0443) 791159, South Wales.

ROLAND TR606 mint condition, as new, with original batteries, £80. Hardly used. Christian ☎ (0924) 279637 eves.

ROLAND TR606 individual outputs, home studio use only, £90. Steve ☎ (0222) 21802 or 01-350 0340.

ROLAND TR606, good condition, boxed, manual etc, £65. Paul ☎ Washington (Tyne and Wear) 091-416 4269.

ROLAND TR606 and Roland Bassline bass sequencer with power supplies, £150 complete. Sam Small ☎ (0243) 692095.

ROLAND TR808 £200. Space Echo RE150, £150. 100M System + CSQ 100, £400. ☎ 01-237 0837.

ROLAND TR808 vgc, manuals, £225 ono. Also Roland MC202, mint, boxed, manuals, tapes etc, £110 ono. ☎ 01-840 0118 eves.

ROLAND TR909 MIDI, tunable sounds, huge memory, perfect condition, £320 ono. ☎ (0923) 53728/42574.

ROLAND TR909 drum m/c, as new, boxed, £neg. Paul ☎ (0277) 217294.

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SIMMONS SDS8 with 4 Paiste cymbals, incl China stands, cases, all as new, £495. Ian ☎ Cheltenham (0242) 577192.

SIMMONS SDS9 Brain, two pads and set of triggers for acoustic kit, £600 ono. ☎ (0407) 810619.

SP12 TURBO SAMPLE DISKS 50 disks of sounds available, drumkits, percussion, effects. £8 per disk (full). ☎ Belgium 02-344 0110 (Brussels).

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YAMAHA RX15 £250. Yamaha QX7 £200. Both mint condition. ☎ 01-959 4571.

YAMAHA RX15 digital drum computer, £275 ono, still boxed. Alan ☎ (0323) 764191.

YAMAHA RX21 drum m/c, absolutely perfect condition, £200 ono. Mike ☎ 031-445 5440.

YAMAHA RX21 drum m/c, hardly used, boxed, guarantee £200. Korg PSS50 Super Section, mint, £250. ☎ 051-677 3691, Merseyside.

Computing

ACORN MUSIC 500 ATPL keyboard, leads, manuals and all software mint condition, £200. Swap Poly 800 £75. Simon ☎ Cheshire (0625) 523845.

ATARI 400 48K + BASIC and Assembler cartridges, program recorder, lightpen, joystick, manuals, books, software, £100 ono. ☎ Corby (0536) 200038.

ATARI COMPUTER 64K, all equipment, software, etc. Swap for SH101, CS10 or similar. Any condition considered. Simon ☎ (0246) 822244.

BBC B computer with plug-in musical keyboard, graphics ROM and tons of software. Worth £450, £300 ono. ☎ 01-541 3820.

COMMODORE 64 + disk, cassette, over £200 software + 2 joysticks, worth over £700, accept £300 ono. ☎ 01-304 1186, eves.

COMMODORE 64 disk drive, printer, cassette, CTV, large amount software, £480 or exchange for Yamaha DX21. ☎ (0243) 773940.

COMMODORE 64 cassette, Electrosound and music system software, books, games, joystick, everything boxed and mint. £170. Kev ☎ West Coker (093 586) 2573.

COMMODORE 64 disk drive, data cassette, and accessories. All excellent condition, still boxed, £220 ono. ☎ Sheffield (0909) 567628.

144 CX5M VOICES on good quality tape, excellent sounds, only £5. Dave Roe ☎ (0246) 451166 after 6pm.

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CX5M USERS 144 great new sounds, immediate delivery, send £10 to Neil Scott, 29 Selworthy Close, Billericay, Essex.

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EMR BBC: interface, + Performer, Composer, Editor disks. £110, offers. Korg KPR77 £100. The lot £190. Bill ☎ Knowle (056 45) 78488.

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YAMAHA CX5M large kbd, and ROM £300 ono. Twin reverb Combo £140. Korg DDM110 £80. Consider swaps. ☎ (0255) 552143.

YAMAHA CX5M large kbd, FM voicing and composer cartridges, £300 ono. ☎ Guildford (0483) 69845.

YAMAHA CX5M large keyboard, with Voicing and Composer ROMs, excellent condition, £299. ☎ 01-866 2491 eves.

YAMAHA CX5M large keyboard, ROMs (3), boxed manuals, mint condition, £299 ono. Matt ☎ (0252) 721264.

YAMAHA CX5M 48 drum and synth sounds on data cassette, £5 inc post. Mark Rigler, 50 Esplanade, Poole, Dorset.

Recording

AKAI GX77 4-track stereo tape deck, as new £200. HH K80 amp £200. Lis Jones ☎ (0222) 396061 (Dyfed).

BOSS RDD10 digital delay, mint condition, boxed, hardly used, £100. Anita ☎ 051-644 9201 (Wirral).

DRUM TRACKS 28×30-second jingle patterns, chrome cassette, £2.75 inc. Andrew Price, 76 Friars Avenue, London, SW15 3D2.

DYNACORD DIGITAL REVERB £300. Roland Modular 100 (101, 102 exp), £200. TR606 £70. TB303 £70. Bruce ☎ (0482) 703168.

POWERTRAN DIGITAL DELAY 1.2 secs, £120. Park 100W valve amp and 4×12 cab, £160. Gary ☎ Cambridge 313865 weekends.

REVOX A77 3¾"/7½", Dolby, excellent condition, lots of accessories, £360 ono. ☎ High Wycombe (0494) 32112.

REVOX B77 MkII, 2T(HS), boxed, varispeed, manual, little used, £500 ono. Peter ☎ 0-399 3990.

REVOX B77 boxed, little used, £390, no offers, inc NAB adaptors. ☎ 01-866 2491, eves.

ROLAND SRV200 REVERB new, £900 ono. Micky ☎ 01-379 6690.

SONY TC270 reel-to-reel with SOS and detachable speakers, £75. Boss DM3 Delay, immaculate, £50. ☎ 01-671 9208.

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E&MM TRANSPOSER assembled kit, but no display, offers. Also CEM BBD ICs for sale. ☎ 021-523 6752, eves.
60 FABULOUS CZ SOUNDS guitars, effects, synth leads. £5 to Jeremy Wells, 82 Erpingham Road, Putney, London, SW15.
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FOSTEX A80 plus mixer, monitors, Yamaha SPX90, Reverb, £40 per day ×4 weekly. South Yorks. ☎ (0226) 756512.
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GUITAR Aquarius electric, hard case and amp, excellent condition, £180 ono. Nicky ☎ 01-668 1450, eves.
HONDO PRO GUITAR swap or p/ex 4000DS or similar SOS tape echo, CT202 Micro Preset, Drumatix. ☎ 021-788 1182.
KORG EX800 EXPANDER 2 weeks old, £165. Ibanez AD202 rack-mounted delay/chorus/flanger, £110. ☎ 051-924 5006.
KORG KMS30 boxed, hardly used, syncs 24/48ppqn to MIDI and tape. David, John ☎ 01-402 4222 ext 2591.
MIDI THRU BOX Korg KMT60, boxed unused, £40. ☎ 01-935 6611 ext 2334, day; 01-328 0244, eves.
MPC PROGRAMMER EIGHT, Commodore version, new, £45. Teac 144 Portastudio £295, or swap Powertran MCS1. Bill ☎ Knowle 78488.
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