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Music Technology

THE WORLD'S PREMIER HI-TECH MUSIC MAGAZINE

August 1990

£1.60



ROLAND D70
super LA synthesiser

Coldcut



sampling the future

ON TEST

*Twelve Tone
Sound Globes
PC Software*

*MIDITest
MIDITest 5*

*Dr T's Copyist
Amiga Software*

*Hybrid Arts
SMPTETrack
Update*

*Cheetah SX16
Sampler*

*ART
Multiverb III
Multi-fx*

*Roland S770
Sampler*

CHICK COREA
*technology
an' all that jazz*

WIN
*a tascam 644
midistudio*



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THE SHOCK IN 3U

The sound of the 90's has been cut down to size.

What promises to be the most popular synth of the decade, the ground breaking SY77, is now available in 19" rack-mount form taking just 3U of precious rack space.

TG77 has all the tone generating wizardry that put the SY77 where it is today. AFM (Advanced Frequency Modulation) and AWM2 (second-generation Advanced Wave Memory). And that means crystal clear samples combined with state-of-the-art FM synthesis.

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For further information on the TG77 and SY77, please complete this coupon and send to: Yamaha-Kemble Music (UK) Ltd., MI & Pro Audio Division, Mount Avenue, Bletchley, Milton Keynes, MK1 1JE.

Name _____

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MT8

MUSIC TECHNOLOGY & TSC



PROPHET 5 RACKMOUNT

The Studio Electronics range of classic synths have proved to be some of our best sellers. New to the range which includes the **Midimoog**, **Obierack** and **Harvey 808** is the **P5**, a rebuild of the original prophet five into an 19" rackmount with extensive midi capabilities. If you already have a rev 2.3 or higher Prophet 5 we can send this to America for rebuilding alternatively a limited quantity of units will be available from June on a first come first served basis. We already have a waiting list for these units, so if you are interested please contact our sales department.



ROLAND S770

4 years in development the S770 sets a new standard in sampling quality. The bottom end is unreal from this 24 voice 16 bit digital sampler with 20 bit D/A converters. The S770 comes as standard with an internal 40 m/b hard drive, digital and SCSI interfaces, output to mono and RGB monitors and is expandable to 16 m/b of waveform ram. An extensive library already exists on both Optical, removeable 45 m/b cartridge and CD rom.



KORG WAVESTATION

Co-designed by Dave Smith of Sequential Circuits fame it would take pages to describe how this synth works. It is suffice to say that it sounds absolutely brilliant. First shipments are due in May and the price will be £1575.00 inc vat.

- KEY DEALS**
1. Roland SBX10 sync box was £200.00 we have limited stocks at £29.00 first come first served.
 2. S/H Emax HD keybd £1295.00 + vat
 3. S/H Emax HD Racks £1295.00 + vat.
 4. Casio VZ10M synth £199.00
 5. S/H AKAI S1000 £1650.00
 6. Casio DA1 ex demo £450 + vat
 7. Apple Mac plus & EZ vision £999.00
 8. Emu Proteus plus **FREE** editor
 9. Soundtracs Midi PC's from £3200.00
 10. S/H Fostex B16 £1495.00.



SOUNDTOOLS FOR ATARI

For all you Atari owners who don't want to invest in a Mac system. Digidesign have announced the release of the Soundtools direct to disk recording and editing system for the Atari Mega 4. Offering most of the features of the Mac system Soundtools ST will sell for £1995

1. Roland S770 stereo sampler
2. Waldorf Microwave synthesizer
3. Yamaha SY22 synthesizer
4. ZOOM 9002 gtr effects processor
5. Apple Mac Portable computer
6. Midimoog synthesizer
7. Akai S1000 sampler
8. Russian Dragon timing display
9. Diki Devices RMCD removeable hard disk/cd rom combo
10. Roland D70 Synthesizer
11. Opcode Vision mac
12. Emu Proteus



CASIO DA2

We have a large selection of portable and rackmount DAT machines prices start from as little as £450.00 + VAT.

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The latest in portable dat, digital I/O. Limited quantity in stock

- EXCLUSIVES**
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 2. EMS VOCODERS
 3. Miditemp PMM 88 midi matrix
 4. Atari DMA/SCSI converters
 5. S1000 memory from £130/meg
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 7. Acoustic Energy speakers
 8. Optical drives frpm £2995.00 + vat
 9. Diki Devices 760 meg drives
 10. CD ROMS from £260.00 +vat

- MICROWAVE
YAMAHA SY22
EMU PROTEUS
ROLAND D70
KORG T SERIES
AKAI S1100**

We are the UK's largest supplier of Synthesizers, Computers and personal Studio Equipment to the professional market.

We manufacture a number of key products ourselves from \$1000 memory boards to the Diki Devices range of Hard disks and peripherals and our buying power allows us to offer you terrific deals sometimes well below trade prices.

Value for Money

Not only can you see and audition the very latest products in three air conditioned studios in the heart of central London. Our experienced sales team are their to help you put together the

package that best suits your requirements (Steve Chris, Bernie, Dave, Jonathan and Mike). But unlike regular stores we have a team of product specialists to help you become familiar with the products

(Laurence, Adam, Dario). These chaps are fully trained by all the major suppliers Roland Yamaha Korg Akai Emu Apple MCM and are fully versed in digital technology. On site is our dedicated service and installation personnel

(Peter, Ian 1 and Ian 2.) TSC is an Authorised apple service center and is Emu's main service point in the UK, an extended warranty is available on all products which includes on site maintenance. TSC is open six days a week Monday through Saturday from 9am to 7pm (5pm Sat), We accept all major credit cards and can offer a wide range of leasing and financing schemes for major purchases.

HITLIST

THE SYNTHESIZER COMPANY LTD

9 HATTON STREET LONDON NW8 9PR TELEPHONE 071 258 3454 FAX 071 262 8215

DIRTY CASH

AS THE BMF descends upon us once again, and halls full of fatally attractive hi-tech gear call the faithful to worship, the full impact of the sophistication of today's musical instruments is likely to be brought home to us in no uncertain terms. The electronic instruments and ancillary equipment that have become an integral part of making popular (and some not-so popular) music is rumoured to be second in complexity only to that used in modern warfare. It seems strange, then, that so much technology should be invested in producing music that, to a large extent, will be consumed through the medium of cheap transistor radios and cassette players. Is it really justifiable - using Fairlights and Synclaviers to make pocket-money music, most of which will pass unappreciated and is destined to be forgotten almost as soon as it is released?

Let's try to trace the flow of money that makes the development and purchase of these instruments and draw some conclusions. Let's say we've already made a single - in a studio equipped with all the latest gear and charging accordingly. The record's cost a fortune, but it sounds good on transistor radio and it's selling well. We've cleared the advance and we - the musicians - are making money. That means the record company are making money and can afford to put up the cash for the follow-up single.

We take another advance and make the follow up. We spend money on more studio time (same studio), hiring a producer, programmer and engineer, and getting the new single mastered. Then there's the sleeve design, distribution and promotion. Once

again we score a direct hit; Radio 1 playlist it from its release and it goes to No. 1 the week after its release. The advance is cleared and we're making money again (as are the record company).

In the course of our success we've put work the way of the producer and engineer. We've also enlisted the services of the design company that produced the sleeve, the record distributors and promoters and the recording studio - the studio that originally spent a lot of cash on hi-tech equipment.

As long as we (and other popular artists) continue to support this kind of studio, they can continue to buy state-of-the-art gear. And while they're doing that, the companies that invest their resources in pioneering music technology can continue to do so. It's here that the first spin-off appears: the advances made in building state-of-the-art instruments invariably allow cheaper instruments to be built that make use of those advances. Let's call this a technological benefit.

The second spin-off arises from our support of the recording studio: while we're spending cash generated through high-volume pop sales with them, they can offer the same facilities to more "serious" and less wealthy areas of music. We'll call this a cultural benefit.

This is, of course, a simplified account of what happens in real life, but the next time a show like the BMF threatens to overshadow your music with its technology, or you wish a Top 40 placing carried the death penalty, it might be a fairy story worth remembering. **Tg**

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Roland
D-70
SUPER LA
SYNTHESIZER

SYNTHESIS IS IT'S ALL IN THE MIND

Roland
D-70
SUPER LA
SYNTHESIZER

When it comes to creating sounds on the D-70 the only limit is your creativity. If it's standard sounds you want, you'll find the internal ROM contains tones from multi-sampled pianos, choirs and strings to synths and drums; and you'll find traditional synthesis techniques like filters and LFOs.

But the D-70 will appeal to those who want to break new ground. The raw elements of invention are there, not just in the form of basic waveforms and noise spectra among the 128 RS-PCM tones, but through innovative technology like Differential Loop Modulation. The unique DLM process can be used to truncate a waveform and process it with loop modulation, enabling the creation of thousands of new, distinctive waveforms from the original PCM wave. All you have to do is let your imagination run riot.

Performance features in the 30-voice D-70 include real-time editing, on-board effects and full MIDI controller facilities. And in addition to velocity and aftertouch you'll even be able to control release time from the 76-note keyboard.

As for the sound - we'll leave that to your imagination...

To: Roland (UK) Ltd., West Cross Centre, Brentford, Middx TW8 9EZ
Fax: 081-847 1528 Telephone: 081-568 1247

Name

Address

£18.90

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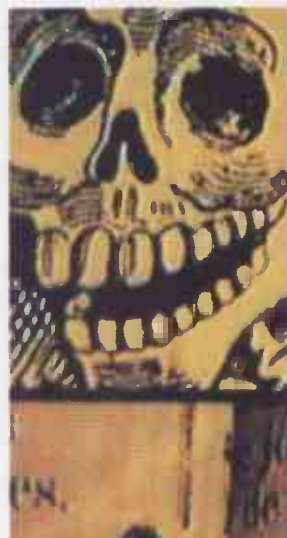
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Software upgrades mean there can never be a definitive review of a program. David Bradwell keeps track of the latest Hybrid Arts' SMPTETrack updates.

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ROLAND D70

The latest addition to Roland's D-series synths is its new flagship - the D70. Simon Trask puts the "Super LA" synth through its paces and discovers its new Analogue Feel facility.

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Dr T's programmers probably sleep as often as rust. Ian Waugh boots up the latest version of the successful Copyist scorewriting program - and finds that it's running on his Amiga.

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Back from a well-earned holiday in Beirut, resident readers' tapes reviewer Skum is refreshed and ready for anything the MT readership can commit to tape.

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After much pre-publicity, Cheetah's first venture into the world of samplers is here. It's 16-bit stereo, reads S900 disks and is reviewed by Vic Lennard.

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COLDCUT

Responsible for establishing artists like Yaz and Lisa Stansfield, Coldcut also have a reputation for being one of the most innovative production teams around. Tim Goodyer learns about their new LP and the future of computer graphics.

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TWELVE TONE SYSTEMS SOUND GLOBS

Somewhere between human composers and sci-fi music systems of the future are the algorithmic composition programs of the present. One of the few such programs for the IBM PC finds favour with Ian Waugh.

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CHICK COREA

Chick Corea has helped pioneer the use of electronic instruments in jazz music. Now 49 LPs down the line, he believes there's still more ground to cover. Scott Wilkinson talks to a musical legend.

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ART MULTIVERB III

As even the most modest MIDI studio becomes a powerful tool for the creation and recording of music, sound processing becomes a more essential part of it. Tim Goodyer checks out ART's latest multi-processor.

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ON THE BEAT

Traditionally the musicians' worst nightmare, the drum solo is now all but extinct (except in heavy metal circles, of course). Nigel Lord re-examines the lost art with modern technology in mind.

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PROPHET 600

While Sequential's Prophet 5 will always be regarded as a milestone in synthesiser technology, their Prophet 600 is almost forgotten already. Gordon Reid attempts to correct the history books.

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PATCHWORK

With so many disappointing sounds currently being sold as the work of "professional" programmers, it's reassuring to find a selection as good as Valhala's International Gold cards for the Korg M1.

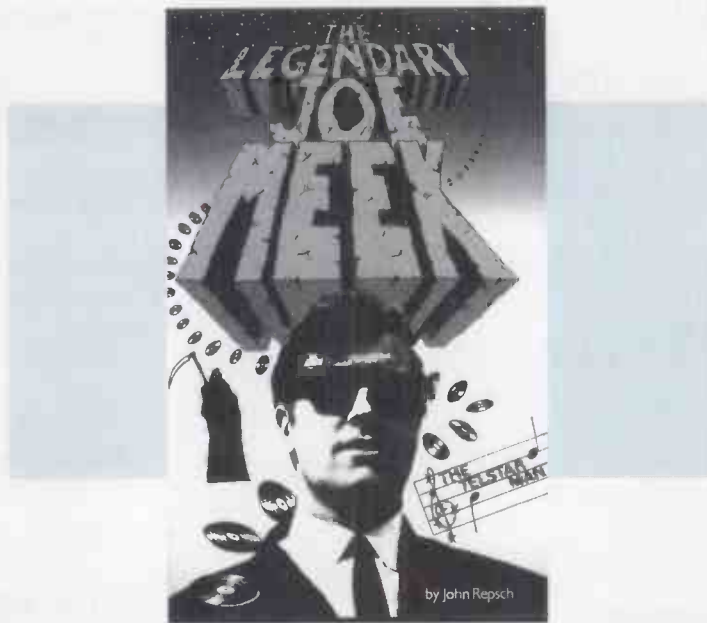
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THE TELSTAR MAN

Even if your earliest memories of popular music are of T-Rex or the Bay City Rollers, you're likely to have heard of 'Telstar' - though you probably won't remember The Tornados, who performed it, or indeed Joe Meek, who wrote and produced it, and who was the presiding 'genius' behind a spate of pop acts during the early '60s - the Pete Waterman of the pre-Beatles era?

But perhaps this assessment does the Legendary Joe an injustice; John Repsch's meticulously researched (and independently produced) book, *The Legendary Joe Meek - The Telstar man*, delves deep into the life and history of Joe Meek, and



reveals a surprisingly interesting and innovative engineer/producer, handicapped by an unfortunately stormy personal life.

If you thought musical and audio innovation was confined to the hi-tech '80s and '90s, think again; in an era dominated by sugary

harmonies and conventional instrumentation, Joe Meek's productions stood out as bizarre and different, influenced in no small part by his highly secret dabblings in formative audio and musical technology.

The Legendary Joe Meek provides not only a fascinating insight into an embryonic (and somewhat unsavoury) music industry, but also the oddly compulsive story of a man who started out as a TV repair engineer and ended up at No. 1. Well worth a read.

The Legendary Joe Meek (ISBN 0 9514738 0 8) is published by Woodford House Publishing Ltd, 110 Chertsey Court, Clifford Avenue, London SW14 7BX at £6.95 and is available from most good bookshops. Also available direct from Woodford House Publishing at £7.50 including p&p. **Dp**

STUDIO STARS

If you've ever been in the market for a good-quality, flexible mixing desk, you'll almost certainly have encountered the name of Studiomaster, whose Session Mix, Proline and Mixdown ranges cover almost all recording eventualities and situations.

This year's British Music Fair will see the showing of the upgraded versions of these ranges, all of whom have acquired the suffix "Gold". All models feature new high-spec pots and faders, custom-designed knobs, standard XLR pin wiring and extensive RF suppression. These are just some of the many changes that have been made, with all Session Mix gold desks having phantom power, phono tape In/Out connections and mid-sweep EQ, Proline Gold having EQ cut,

extra line inputs and talkback mic on some models, and Mixdown Gold having talkback mic, group inserts and an option for MIDI-controlled muting.

Also on show for the first time to the UK public will be the UFEX range of 1U-high 19" rackmounting effects units. There are five models in the range, namely Digital Delay (with modulation) (£339), Stereo Digital Reverb (£327), Dual Stereo Compressor, Dual Parametric Equaliser and Dual Stereo Gate (£195 each). All prices include VAT. More info on any of the above can be obtained from Studiomaster at stand B26 at the British Music Fair, or from Studiomaster plc, Studiomaster House, Chaul End Lane, Luton, Beds LU4 8EZ. Tel: (0582) 570370. **Dp**

MONEY BACK MUSIC

The cautious PC dabblers amongst you will be relieved to hear that Digital Music are so confident in their range of PC software that they are offering a money-back guarantee on their Midipak 1, which consists of the Prism PC sequencer and the Music Quest PC MIDI card. In addition, they are also offering free membership to

The Music Network, worth £45.

Other PC products exclusively imported by Digital Music are also available with a money-back guarantee.

For further details, contact Digital Music at 27 Leven Close, Chandlers Ford, Hants SO5 3SH. Tel: (0703) 252131. **Dp**

JOIN THE Q

Q-Logic are pleased to announce the release of the MIDI Metro. No, it's not a car, the new Metro is based on the MIDI Metro XPS, a digital metronome which enables drummers and other musicians who use click tracks to play along with sequencers by using a visual display instead of an audio click.

The introduction of the MIDI Metro is a result of requests for a unit with an internal power supply received at Q-Logic's APRS debut and is now the standard model at a cost of £239 plus VAT.

Contact Q-Logic at East Haugh, Pitlochry, Perthshire, Scotland PH16 5JS. Tel: (0796) 2001. **Dp**

New GAJITS

In the wake of their budget Sequencer One Atari ST sequencer, British software house Gajits have announced the release of CMpanion.

Those of you familiar with Roland's "CM" range of modules will already have guessed that CMpanion is an editor and librarian program for use with the CM32L LA module, CM32P sampler replay

module and CM64 LA/Sample replay module.

The program is to be distributed by Roland and will be available for both the Atari ST and Commodore Amiga computers. Gajits reckon that CMpanion will cost less than a ton (£100 to you). If all this isn't enough, CMpanion also includes 64 sounds - free. **Tg**

Total Ecstasy

To make the already extensive Masterbits CD sample collection even more comprehensive, distributors AMG have announced the availability of the *Climax Collection* CDs.

This collection is not, as you would be forgiven for assuming, samples of assorted creatures caught in the act of copulation, but 600-plus vocal samples designed to add a "human touch" to your music. Samples include all the usual "oohs" and "ahhs", samples called "black power" and "rock lady", vocal percussion samples

along the lines of "doo-dap" and even operatic and yodelling samples. If all this isn't enough, there are also "over 100 samples specifically selected for voice sequencing".

AMG reckon this is just Volume 1 of the collection (costing £45), so what is to follow in subsequent volumes is anybody's guess. If Masterbits have got it right, these disks could be essential sampling. Watch out for MT reviews soon. More from AMG, Hurst Farm Barns, Hurst Lane, Privett, Nr Alton, Hants GU34 3PL. Tel: (073088) 383. **Tg**

FLAUNTING IT

New company Intrinsic Technology, born, if we can believe the hype, over a Tandoori Tikka Massala, are announcing their new equipment range and a competition which is to run in conjunction with the new launches.

First up is the MixIT, a handy 4 into 1 passive mixer with sliding faders, housed in a compact steel case. It features minimal signal degradation without the hassle of batteries or external power supplies. Applications range from increasing the number of inputs and effects returns to creating auxiliary sends. The price? A piffling 35 quid.

Joining the MixIT is the CableIT, a complete range of audio and MIDI cables. In addition to the standard range of cables, a professional series is also available using lower capacitance and metal connectors. Prices are from £3.

And finally, TestIT, the MIDI tool kit, is "an indispensable item for any MIDI setup", providing a visual check of MIDI data. The kit also contains a MIDI lead, lead ident

labels, an adaptor to join MIDI leads and a MIDI guide, all for £10. IT have another 12 new products imminent - we wait with bated breath, chaps.

IT are also running a competition, the prize for which is a £50 voucher against IT products. Questions are as follows:

1. What does the IT in MixIT stand for?
2. How many Indian meals have the directors had since the company was formed?
3. What would you consider as the most useful musical accessory (hardware or software) that you do NOT own?

Entries should be sent to Dept WinIT (Music Technology), Intrinsic Technology Ltd, IT HQ, 4 Auckland Court, London SE27 9PE. The closing date of the competition for Music Technology readers is 31st August.

IT products are available from music and computer dealers nationwide or mail order from IT HQ, telephone 081-761 0178. **Dp**

HIGH VAULTAGE

Attention owners of Korg's M1, M1R, T1, T2 and T3 synths, because it is for you that The Voice Vault has been conceived.

Representing a new and ingenious approach to marketing sounds for synthesisers, The Voice Vault offer the following service: for one year's subscription (claimed to be less than the price of one ROM card) you will receive a guaranteed minimum of 800 voices for your chosen instrument. The sounds will be created by "professional programmers using feedback from Voice Vault members" (an M1 parameter the reviewers all overlooked?), and are promised to

be of a very high standard.

Another interesting aspect of the Voice Vault project is that membership remains with the synth rather than the owner, so enhancing its secondhand value - that's the theory, anyway.

There are also plans to make the Vault responsive to the requirements of its members; if the demand is there for a Bank of sounds made up purely of drum kits, it will be made available. It all sounds good in theory, but it'll need your support to succeed. More information can be obtained from The Voice Vault, 128 Boyce Road, Stanford-le-Hope, Essex SS17 8RJ. **Tg**

POST PRODUCTION ENO

Brian Eno, occupied increasingly over the last few years with production work for such artists as U2 and with the presentation of a series of unorthodox audio-visual installations around the world, is shortly to release his first solo album since 1985's *Thursday Afternoon*. Hot on the heels of this September release - which promises to be a very definite move away from Eno's hallmark ambient sound - will be a Brian Eno/John Cale collaboration featuring Eno's first songs in 13 years, due for release on Land Records in early October.

Eno's recent ventures include

two exhibitions this summer in London. The first, *Contemporary Data Lounge*, features hi-tech geometric video sculptures emitting continually-shifting washes of light, accompanied by waves of sound from a combination of signals including short-wave radio, and an original Eno piece. The second exhibition, the *Tropical Rainforest Sound Installation*, forms part of the *Friends of the Earth Rainforest Festival*, and combines natural sounds from the Columbian Amazon and Cameroon rainforests with Eno's own original music.

Look out for the albums - we will. **Dp**

WINNING WAYS

Good news for five MT readers is that they have been chosen as winners of our "Testing 1, 2..." competition.

For those of you with short memories, the competition prizes were five Studiomaster MA36 MIDI Analysers. The questions were pretty easy (it seems) but the tie breaker question asking for suggested names of the MA36 produced some surprising responses. One entrant wanted to call it Sam - Studiomaster Analyser of MIDI - (neat idea, but making something like Brunhilde fit the bill would have been more

likely to make it a prize winner), another suggestion was The MIDI Mischief Micro Mole (is this your first time on drugs RL Pearson of Marlborough?)

The winners were Jen Allen of Blackstone, Henfield; Gareth Edwards of St Albans; David Campbell of Dumbarton, Scotland; Rob Shaw of Tyldesley and T Karaman Of Maidstone, Kent. And not a multiple entry from any of them.

Prizes are in the post as this news item goes together. Thanks to all entrants and to Studiomaster. **Tg**

Firing on



From (recent) modest beginnings as a sampling house, The Engine Factory has expanded its sphere of operations to cover a number of MIDI/recording requirements. TEF's first volume of samples has proved "enormously successful" with users of Akai S1000s and Syquest removable hard drives. Two further volumes of samples are to follow: *Orchestral* and *Sounds of the World*. Each will cost £170 + VAT. Users of Ensoniq EPS/EP5m and Cheetah SX16 systems will also be able to avail themselves of these samples, and TEF reckon to be able to accommodate you with their specialist sampling services. (Satisfied customers to date include Jean Michel Jarre, Paul McCartney, Hans Zimmer and Dave Stewart.)

TEF have recently opened a MIDI pre-production suite. This facility houses "all the major synths, samplers and effects processors",

and offers a choice of computer systems to work with it. The Lone Wolf fibre optic MIDI networking system is also installed, as are direct to disk and DAT recording systems, making it "arguably the most comprehensive MIDI recording facility in the country". (TEF are a system house for Lone Wolf, Lynnet and the ADAC direct to disk systems.)

Another service will cost you £150 (+ VAT) and get your MIDI sequence (from a disk supplied by you) arranged, produced and recorded onto tape. This could then form the basis of further recording or as a demo in its own right.

Training services are another in-factory service and a range of instructional videos are in the pipeline.

For more information The Engine Factory would be pleased to hear from you on 081-650 1033. **Tg**

THE GOOD, THE BAD & THE UNI

Two bits of news from Uni Sound: one good, one not quite so good. Firstly, Uni Sound are pleased to announce that they are shortly to open a hi-tech rock 'n' roll store at 69 Chatterton Road, Bromley, Kent, telephone 081-313 1161. The shop will be fully operational by mid-July and will be in addition to Uni Sound's other branches at Kilburn, NW6 and Chatham, Kent.

Not so good is the news that Uni Sound recently had a Fostex R8 8-track reel-to-reel recorder, serial number 0700976, stolen from their Kilburn branch. If you happen to come across said machine going cheap, or have access to any info that might help recover it, it would be much appreciated if you'd call Uni Sound on 071-624 3900. **Dp**

MIDIHELPFUL

Vic Lennard's MIDIHelp service is now able to offer data recovery at lower rates for users of Steinberg and Hybrid Arts software. The costs for these are now 50p per 1K of file for the first 150K, followed by 10p per 1K after this, per disk. All other data is at a cost of 50p per 1K of file. Hard drive

recovery is negotiable and costs for all recoveries are quoted before recovery commences. MIDIHelp are able to recover data from IBM or Atari ST files.

For more information, contact Vic Lennard on 081-368 3667 or Eric Northwood on (0733) 322311. **Dp**

ALESIS UBER ALLES

Alesis are announcing a spate of new products and upgrades to their existing range, including the new Microverb III, enhanced SQ software for the Datadisk and a software upgrade for the Quadverb.

The Microverb III offers 256 all new 16-bit reverb, delay and special effects, stereo input/output and 15kHz bandwidth, all with the promise of the same user-friendliness and instant accessibility which won the original Microverb many devotees. In addition, the Microverb III allows you to fine-tune programs by using EQ before the signal is effected, and it's now 19" rackmountable.

The useful Alesis Datadisk will have the benefit of a major software upgrade making it even more useful. Datadisk will now be Datadisk SQ - and will be capable of recording and playing back MIDI

performance data (not just SysEx data) in real time. This allows you to record a MIDI sequence from a sequencer and play it back live from disk at a gig. You can also play your MIDI keyboard or other controller directly into your Datadisk, then download the data into your sequencer for editing. This major enhancement to Datadisk is available in the form of a replacement chip at minimal cost for existing owners.

Last but not least is the software upgrade to the Quadverb, making it the Quadverb Plus. Features added include the ability to use the Quadverb's 1.5 seconds of delay memory for sampling any audio source. The sample can be looped, its start and end points edited, and it can also be triggered over MIDI. When triggered in this way, the sample's pitch will follow incoming MIDI

notes for a range of two octaves - one up and one down. Multi-tap delays can now be created and combined with chorus and 5-band parametric EQ. Each tap of the delay has independently adjustable delay time, volume, feedback and panning, allowing a wide variety of spatial effects. Programmable panning can now be used in conjunction with reverb, chorus or flange, delay and 3-band parametric EQ for a total of five different effects simultaneously.

A new ring modulator configuration allows ring modulation to be combined with digital delay and reverb.

Finally, a new resonator configuration combines multiple resonators with digital delay and reverb. The resonator causes a user-defined frequency to be heavily emphasised. These frequencies can then be controlled

polyphonically (5 voices) via MIDI, allowing vocoder-type emphasis to be placed on any input signal. Once again, this major upgrade comes on a user-installable chip for very little cash. Good on yer, Alesis, tomorrow the world?

As MT was going to press the first rumours of a major upgrade to C-Lab's Creator/Notator were coming through. Version 3 of these industry-standard sequencing and notation programs will come in the form of a complete new package - including a rewritten manual which will replace the existing one. The Notator upgrade also includes a new font disk. More details will follow as soon as they become available.

Details of any of the above can be obtained from Sound Technology, 15 Letchworth Point, Letchworth, Herts SG6 1ND. Tel: (0462) 480000. **Dp**



For thousands of successful musicians, arrangers and producers C-Lab is the heart of their system, providing the ultimate in 64-track MIDI recording and music-scoring software for the Atari ST computer. Whether you choose Creator or Notator you can start recording, arranging and editing your music immediately. C-Lab software and its great hardware peripherals, allow you the total control and creative freedom which is so important in making great music.

Simple to use but with the power to run up to 96 different MIDI channels on up to 6 separate outputs, you will never be limited by the C-Lab System and, with the high recording resolution of 1/1536th notes, Creator and Notator will always faithfully reproduce your performance.

Notator provides all the features of Creator plus realtime notation editing and professional score writing – all in one program.

C-Lab's famous Priority Multitasking now extends to include Softlink, an environment which can allow up to 8 other programs of virtually any make to run interactively with Creator or Notator.

Unitor is a SMPTE box with a difference. Designed specifically for locking Creator and Notator to tape, Unitor locks the internal computer clock direct to SMPTE, making for great accuracy and instantaneous

lock up. An almost unlimited number of tempo changes and other important information can be automatically stored along with song data. With two extra MIDI Ins and two extra MIDI Outs, each with its own independently addressable 16 channels, Unitor is the only choice.

Human Touch is an audio trigger module for Unitor, allowing control of tempo from up to four different audio sources, with C-Lab you can even synchronise to old recordings without timecode.

C-Lab evolves with you, exciting new versions are regularly produced and with the additional facilities of the other superb hardware peripherals such as Export and Combiner, C-Lab offer a music production system which is simply the best.

IT'S NOT SIMPLY THE OUTSTANDING SOFTWARE THAT MAKES THE C-LAB SYSTEM SO SUCCESSFUL



Sound Technology plc

15 Letchworth Point, Letchworth, Herts SG6 1ND
Tel: 0462 480000 Fax: 0462 480800

what's in the house?

I wish to start making and recording house music on a budget of £1500. I already have the Roland TR808 or TR909 drum machines in mind, could you suggest a keyboard I might use? Also, what sort of recording machine should I be looking for?

J Rose
Brighton

If you're going to make house music the TR909's the boy - the 808 is strictly hip hop. But then if you're on a budget, the 909 could be a luxury. You're rather vague about what you're looking for so we'll make a few assumptions. On your £1500 budget, let's go for a keyboard/sampler, mixer, cassette multitracker and microphone.

A secondhand Akai X7000 sampler should cost you around £500 and would give you the ability to work with everything from drum loops to "conventional" piano samples - that way you can leave the drum machine until later. The Sansui MR6 recorder is currently changing hands for around £600 (new), that will give you six tracks on which to build up your music. To mix and EQ the sounds (and to allow for future expansion) an Alesis 1622 mixer would be useful, and will set you back about £600. Running total: £1500; add a Beyer M300 mic and you're up and running just over your target. You'd have to monitor and master your recording on your hi-fi (use That's EMX tapes without noise reduction), but you're making music.

From this setup you could consider adding that TR909 for around £300 - or a new Roland DR550 (£199) if money's tight. If you want to get into MIDI sequencing then an Alesis MMT8 sequencer (£250 new) would be a cheaper alternative to an Atari ST and sequencing software.

To get away from your hi-fi and into more accurate monitoring you might

no mt, no comment

After reading your latest editorial, I felt that it was time I sent you a brief note to compliment you on your ability to cover many of the thoughts and ideas that cross my own subconscious whilst using some of the latest hi-tech gear. You are, without doubt, continuing your usual very high standard of thought-provoking and very relevant comment.

Many of the editorials in magazines in the music and computer field that I read every month (five other magazines) seem to be written almost as a formality - however, yours is the exception. Keep up the good work, as they say.

A de Findlow
Norwich
Norfolk

Another thing they say is that you can judge the quality of a magazine (or newspaper) by the quality of its editorial. Where would The Times, for example, be without its comment?

Some magazines do regard their editorial column as a formality and then don't really know how to fill it. Others use it as a platform for fatuous self-congratulation, constantly telling you what they want you to believe about the publication itself rather than crediting you with the intelligence to draw your own conclusions (a neat way of distracting you from conclusions they'd rather not have you draw, incidentally). Neither of these approaches actually benefits the readership.

In MT's Comment I attempt to cover topics that concern music, technology and the people involved in using one to make the other. I don't ask that you unconditionally agree with what I have to say - in fact I welcome your response to help me further my own thoughts and understanding of what is going on and where we're going wrong.

Ultimately MT is your magazine. Thank you for your praise but whatever you have to say, let's hear it. Tg

consider a pair of JBL Control 1s (about £150) and a reasonable amp (Les Adams uses a Rotel). A better alternative would be JBL TLX9s at £240 per pair. Having got that far, you'd certainly find an effects unit handy - the ART Multiverb LT sounds pretty good and will give you 192 preset treatments for your £249. Total: around £2600.

I would suggest you check out the available gear for yourself before spending your cash - but the above setup will give you access to the sorts of sounds you've indicated reasonably cheaply. Tg

akai - the new

There I was, thumbing through the June issue of (I quote) "the world's premier hi-tech music magazine" - a

claim with which I have no quibble - and there it was: page 23, the Akai ad. Oh dear, not to put too fine a point on it, what has a male model with hair sprouting gleefully from every available orifice got to do with the S950? Are Akai trying to imply that if you buy an S950, you get a naked-from-the-waist-up, gelled to the gills muscular male in with the deal (if so, is Soho Soundhouse the best place to buy it)? How do they think this will influence our decision to buy an S950?

In the ads for the XR10, there is a similar person doing circus tricks with a pair of skin bashers. At least here there's some musical connection with the product. As far as I could see, there's no connection between a sampler and a naked man inspecting his genitals. As a final touch, the

message "for more information, contact. . ." printed surreptitiously underneath the model's left armpit could lead to some interesting misunderstandings.

I suppose I should have spoken to Akai on this matter, but what the hell. Do you want to see MT turn into the MI's answer to *Penthouse*? Answers on a sex aid please. . .

Mark Harrison
Manchester

Akai's Dave Caulfield replies:

The first priority when planning an advertisement campaign is to get people to notice it, so the visual styling is very important. You have not only noticed the ads, but have formed some kind of attraction for the model (!).

The message in this case is that nothing comes as close as the Akai S950, and the model is holding it at arm's length to complete a fairly striking picture (the XR10 concept is similar). We can then get on with the job of telling you more about the product in the text - known in advertising circles as "copy". At Akai we normally have adverts running in "campaigns", in other words, a series of ads in a similar style so that the company image is presented in a familiar manner.

Normally we brief our advertising agency on which products we want to feature and when, and they come back to us with concepts that are then discussed. The final result is what you see. Some companies opt for the grainy black and white, award-winning style ads, whilst others prefer the street trader approach. All kinds of approaches work up to a point, but what we are all seeking is to find a style which sells our products, combined with an acceptable company image.

You're quite right about the staff at Soho Soundhouse; they're always in great demand for aftershave and jeans commercials, and it's all the shop manager can do to make them keep their shirts on in the shop!

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In short, it's a simple and inexpensive method of buying selected items. Simply divide the price of any article by 12 and there you have the monthly payment. Through mail order it is even more attractive; without leaving home it can all be done the same way! It must be said that the mail order system is designed to help people geographically "in the sticks" as regards good music shops, and is not intended to "steal" business away from any local store . . . as long as the local store supplies exceedingly good cakes like ROLAND yummy!, E-Mu (scrummy), ENSONIQ (slaver, slaver) etc. . . get the drift? PHONE THE BAKERY on 0606-783629 for friendly recipes and advice!

MIDITEST 5

RECENTLY, I WAS called to a studio to help sort out a problem. The MIDI equipment had been going haywire for ten hours, the in-house engineer was baffled. The problem was one faulty MIDI lead.

We take MIDI cables for granted - after all, what can be complicated about a length of cable and a couple of 5-pin DIN plugs? Consequently we tend to buy whatever the local music store has in stock. Is there any reason for spending £12 on a professional three-metre MIDI lead when you can pick up a hi-fi lead for £2?

The actual pin configuration of a MIDI plug, viewed from the plug end, is as follows: pins 1 and 3 are not connected, pin 2 is used for the screen, pin 4 carries 5v DC and pin 5 the MIDI signal.

The MIDI specification states that MIDI cables "shall have a maximum length of 50 feet" and that "the cable shall be a shielded twisted pair, with the screen connected to pin 2 at both ends". Precise enough - time for a little explanation.

Cables exceeding 50 feet are likely to be too capacitive and could cause serious degradation of the MIDI signal. This will lead to MIDI information being lost. Symptoms could be hung notes, due to the loss of a MIDI note off, or even loss of note triggering. The twisted pair is intended to protect the signal lead from external electrical fields. The screen serves a similar purpose, but it's better to be safe than sorry.

So what do you get for your £12? Probably Klotz, or some other high-grade, microphone cable - which is, indeed, a twisted pair - and something like Neutrik plugs with pins 1 and 3 removed. The cheap alternative is likely to be a 5-pin DIN cable with moulded plugs at each end and five-core cable, each core being individually screened.

A couple of years ago a company, who shall remain nameless, decided to use two-core screened cable and solder one lead across pins 1 and 4 and the other across pins 3 and 5 (I suppose it is easier to slop a lump of solder between two pins rather than aim it carefully at one). They then had the audacity to print MIDI on the side of the cable. This shouldn't really have caused any problems but Atari had used pins 1 and 3 on the ST MIDI Out socket as a MIDI Thru (to save on a third socket). The result when using one of these leads with an ST was chaos.

There are various ways to check MIDI leads.

The first is to look at the connections by taking the cover off the DIN plugs. Unfortunately, many manufacturers now use moulded plugs. . . Secondly, you could use a resistance meter to see whether pins are soldered together. The problem here is that it's rather awkward to hold the probes to the pins without shorting against the metal casing of the plug. The third option is the MIDITest 5.

MIDITest are a new, East London-based company, and the MIDITest 5 is their first venture into music technology. The unit allows you to check the precise connections within a MIDI lead. The MIDITest 5 consists of a small black plastic case with two MIDI sockets at one end and two sets of LEDs (one green, the other red) each in a semi-circular arrangement. These resemble the pin layout of a MIDI plug - with one extra yellow LED in the centre of the arrangement. A rotary switch with its six positions labelled, corresponding to the MIDI plug pins, completes the arrangement. Power comes from a PP3 battery, accessible from the back of the box.

The only instructions necessary for use are to plug in a MIDI lead and start turning the switch. The LEDs from each pin layout light up showing which pin is connected to which other. The central yellow LED checks for any connection between a pin and the casing of the plug. Bona fide MIDI leads will only have the pairs of LEDs for pins 2, 4 and 5 lighting up. Five-pin DIN cables that are suitable for MIDI applications will light up all five pairs of LED's.

The tester immediately picks up on the four most common faults: the mirror-image lead used by some audio equipment where the LEDs in one set will rotate in the opposite direction from the switch; the incorrectly-soldered leads mentioned above (selecting pin 1 will have pins 1 and 4 lighting up on one of the sets of LEDs); a broken connection will only light up one of a pair of LED's; and a pin touching the casing lights the yellow LED (this will cause problems because most MIDI equipment has the socket casing earthed). It's difficult to see how the operation could be made simpler or easier to perform.

And at an RRP of £14.50, this little device is a necessity for anyone with a burgeoning collection of MIDI leads - it'll put you one up in the battle against the lost or hanging MIDI note. ■ **Vic Lennard**

Price £14.50 (mail order) plus £1 p&p.

More from MIDITest, 176 Burges Road, East Ham, London E6 2BS.

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SX16

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However what sets this machine aside is it's unique ability to play disks from the Akai S1000 library. - And as you know it's quite a library. Call for a demo today!!

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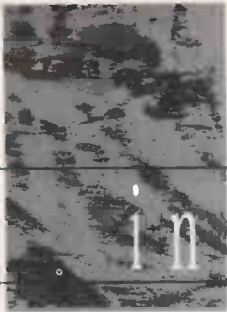
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It looks typical with it's 3.5" drive and 16 voice table synthesis plus built in sequencer and digital multi effects but this new innovation from Peavey is anything but. Apart from having fresh new sounds and a snap of a user interface, what makes this unique synth so special is that it's totally software based. ie changes to the synthesis method, the loading of new wave samples and hopefully any future synthesizing techniques should be available as software floppy disk upgrades.
Will it stop the cycle of obsolescence?

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HYBRID ARTS SMPTETRACK II V5.09

THE PROBLEM WITH choosing a software sequencer package is that it takes so long to get to know one program well enough to fall in love with it, that you rarely have the chance to make a fully informed choice. On top of that, there are now so many sequencers on the market which offer "incredible" facilities that it's easy to overlook the small points which make working with a computer enjoyable. Equally as important is the ability of the manufacturing company to continually offer upgrades to keep their program as up to date and as powerful as possible.

One company making quite a habit of just this kind of support is Hybrid Arts, who have now just released version 5.09 of their flagship SMPTETrack sequencer. It's so far advanced from the first version (released in 1986) and its subsequent upgrades, that it's now referred to as SMPTETrack II. Its hardware-free, and therefore SMPTE-less, counterpart EditTrack has been re-named EditTrack II, and production of its FSK-sync'ed sister, SyncTrack, has been suspended, if you excuse the alliteration. Version 5.09 contains the same features as its immediate predecessor (v5.0, released last year), but works approximately three times as fast.

The most obvious apparent difference between SMPTETrack and SMPTETrack II is the Control Column which runs like a gash through the middle of the main screen. This works in conjunction with the fader (also new) to make changes to controllers in real time. Like most of the other improvements, this is designed to make the job of programming songs even easier and quicker than it was before. The whole program is designed with responsiveness in mind, so you can spend more time being creative and less worrying about the boring technicalities that can stifle inspiration.

The Control Column allows you to view the activity of controllers 0-120, patch changes and pitchbends on up to 16 different MIDI channels simultaneously. Clicking on the value for any channel brings up the fader at the bottom right-hand corner of the screen. Any changes made here are saved to the keep buffer and can in turn be saved into any track location just like other forms of keyboard data.

In this way it's possible to perform and record MIDI automated mixes in real time with exceptional ease and flexibility. Once you've worked with the Control Column for any length of time you come to depend on it more than you would ever first imagine.

The same can be said of other SMPTETrack features, such as the Graphic Screen. Interaction between Graphic and Text editing modes has been simplified with the

addition of a Flip box in both to toggle between the two. Clicking both mouse buttons on any track number automatically takes you into either edit mode, depending on which one you have chosen in the new User Preferences section.

Other new features, which are fairly self explanatory, include auto-quantise, aka Quantized Record, and Cycle (or loop) Recording, both of which clear up areas which were lacking in previous versions of SMPTETrack. There are new choices for visual indication of track activity, and the track scroll bar shows used tracks offscreen. Delete Track deletes all related information such as MIDI channel and output port. Clicking the Keep Box not only saves what was in the buffer memory, but automatically assigns the correct channel and output, and unmutes muted tracks.

If you feel the urge, you can construct complete Sets and then perform them - in other words instruct the computer which songs to play and in what order. All of the songs need to be on the same disk, but if you have a hard disk you can produce a whole live show at the touch of one button.

Unmixing tracks by channel or key zones has been vastly improved and simplified. Tracks can be transposed and given timing offsets in real time, or have their timespans altered. Optimize Every thins out controllers to save memory, while Record Filtering allows you to either record all events, notes only, or absolutely nothing in Rehearsal Mode.

These are just some of the new or enhanced features which reassert SMPTETrack's challenge to the Cubase/Notator throne. There is a shortage of space to do sufficient justice to its SMPTE sync facilities, the possibility of 64 discrete MIDI channels with Hybrid Arts' Midiplexer or all of the other features which make working with the program a joy. Planned revisions for the next update include Group Track Editing, to edit multiple tracks simultaneously, 192-tick resolution, a completely enhanced Graphic Screen and sequencer transport control from a MIDI keyboard. If Stefan Daystrom and his workmates keep true to form, there will be a host of surprises on top of these that leave you wondering what they could possibly think of next.

The only thing lacking, apart from these, I can imagine, is a MIDI effects section, to create delay or other effects via MIDI note commands (including automated grooves). Apart from this, SMPTETrack has to be one of the best-specified, and easiest to use software sequencers on the market. It's quick, flexible, intuitive, inspirational and not even slightly boring. A round of applause for Stefan please, will somebody buy that man a pint. ■ **David Bradwell**

Price SMPTETrack II, £499; EditTrack II, £79. Both prices include VAT.

More from Hybrid Arts UK, 24-26 Avenue Mews, Muswell Hill, London N10 3NP. Tel: 081-883 1335.

WOW! SANSUI MR6 SIX TRACK RECORDER - £399 PLUS VAT!

Yes - it's true! Due to a special bulk purchase, the amazing Sansui MR6 rackmount 6 track recorder is now available at less than the price of most portastudios! If you already own a mixer, it's ideal (why buy a portastudio and pay extra for a mixer you don't need?) If you do need a mixer we can supply the 8-2 Nomad Reddimix for £153 + VAT, or a full feature Sansui 12/6 console for the same price as the recorder - £399 + VAT. Another £99 + VAT buys you a synchroniser which locks 2 machines together, interfaces with a computer or sequencer and acts as a full remote control. Amazed? You should be!

NEW STOCK

Whilst we do not pretend to carry EVERY item from EVERY manufacturer, (as some shops seem to - ever tried putting it to the test?), all new equipment is tested in one of our three working studios, and if we like it, our buying power can usually ensure that we have it in stock at all times (even when your local dealer might have run dry!). In addition, if we recommend an item, we will REFUND YOUR MONEY if you do not agree with us.

In fact we are the largest pro audio dealers in Britain for Alesis, Korg, Drawmer, Casio, Fostex, Seck, Yamaha, TOA, Tascam, Studiomastrer, Allen & Heath, C-Lab and a good many more! (Last year we sold nearly 700 new 8 & 16 track packages and around 300 s/h machines!). It's always worth ringing us for a quote on new equipment and if you're still unconvinced, ask yourself why we became the biggest in such a short time (or better still ask the rest!).

If you are bewildered by the vast amount of multitrack recording products currently on offer, Thatched Cottage fax packs should make the job of choosing the right equipment that much easier. There are 5 in the series; P.A. - Portastudios - 8 Track - Financial advice and MIDI. To obtain any of our fax packs just phone or write.

24 TRACK OFFERS

Studiomastrer Trackmix 24:12:24 (their brand new 24-track MIDI console) plus Tascam TSR24 (revolutionary 1" 24-track) inc plugs/cable package price **£9499 + VAT**
 Allen & Heath Saber 24:16:24 (Britain's best selling small professional console) plus Tascam TSR24 inc plugs/cable. Package price **£13999 + VAT**



When it comes to new equipment you may have noticed that we don't say 'phone for the best deal, POA, or "lowest price guarantee" (Ha! Ha! if the prices are so great why don't they just print them and amaze us all). Our bulk buying policy can usually guarantee that a telephone call to us will not be wasted and in any case we can throw in those "hidden" extras - cables with multitracks, patchbays with desks, (By the way, next time a dealer "guarantees" the lowest price and then can't deliver, try reporting them to the local Office of Fair Trading - it will teach them not to).

To be honest though, if you spend all afternoon on the telephone the chances are you might find someone somewhere who will undercut us by a pound or two. The difference at THATCHED COTTAGE is if your E16 breaks down on a Sunday morning or your Drum Machine blows up on a Bank Holiday Monday you CAN ring us, we'll be here and we WILL do something about it - 365 days a year. Have you ever needed help and advice outside shop hours? If you are serious about your music you will know that it is quality of service that makes the difference and at THATCHED COTTAGE it's only a phone call away!

16 and 8-TRACK DEALS

Tascam 238 cassette 8-track + Reddimix	£925 + VAT
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Fostex R8 + RSD Pro-line 16:4:8	£1775 + VAT
Fostex R8 + Seck 18:8:2	£1899 + VAT
Fostex R8 + RSD Proline 16"8"16	£1899 + VAT
Fostex R8 + Mixdown 16:4:8	£2099 + VAT
Tascam TSR8 + Seck 12:8:2	£2249 + VAT
Tascam TSR8 + RSD Proline 16"4"8	£2425 + VAT
Tascam TSR8 + Seck 18:8:2	£2475 + VAT
Tascam TSR8 + RSD Mixdown 16:4:8	£2549 + VAT
Tascam MSR16 plus RSD Proline 16/8/16	£4275 + VAT
Tascam MSR16 plus Seck 18/8/2	£4099

All packages include plugs & cable

MUSIC & TECHNOLOGY SCHOOL

We have expanded our prospectus to take on two new MIDI courses. Each course is held on site, in our purpose built teaching studios with a maximum class of eight. Basic accommodation is usually available.

Course 1 (one week) Running a small studio (8, 16 & 24 track - practical + business)	£200 + VAT inc accommodation.
Course 2 (one day) MIDI - basic	£55 + VAT
Course 3 (one day) MIDI - advanced	£55 + VAT

(Both courses are on consecutive days and may be taken as a single unit for £100 + VAT.)

THATCHED COTTAGE DIGITAL (T.C.D)

In order to cater for the increased demand for advanced multitrack systems we have just opened a new division - Thatched Cottage Digital. Housed in a brand new purpose designed building, it handles 24-track analogue (including the new Tascam MSR24) and all digital and leading edge installations (such as the new Yamaha digital Multitrack).

If you are considering any kind of professional set-up and feel that the legendary T.C.A. service value is of interest, contact us on (0223) 208110 or ring the normal T.C.A. number for full details of what we can offer (including our second-hand and ex-demo list)

STOP PRESS - TCA TRAVEL!

In case you didn't know, our fully equipped, ABTA/IATA Thatched Cottage Travel Agency has been up & running for some time expanding our high standards of service and great value into the travel industry. Whether you are organising a tour, visiting a trade show or simply booking a holiday, just give us a call - what have you got to lose? Contact Gill Scott or Nicki Brazier on 0223 314577 or 0860 450499 (mobile) ABTA no. 89156

SOME SECONDHAND AND EX-DEMO BARGAINS

Alesis Midiverb II reverb/echo	£150
Tascam AC65 (autolocate for MS16)	£499
Tascam RC65 (remote control for MS16)	£299
Symetrix 511A single ended noise reduction	£375
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Teac AX75 (2w x 75 watt amp)	£139
Teac 3440 4 track - excellent condition	£399
TC2290 - the ultimate processor	£999
TC1210 - spallal expander/chorus	£399
Korg M1R (racked M1)	£699
Akai MX73 mother keyboard	£399
Roland D110 expander	£375
Akai S900 Sampler	£799
TOA MR8A (8 track routing box) for MR6T	£99
Fostex 3180 reverb	£50
Fostex 2016 line mixer (16:2)	£150
Fostex X-30 portastudio	£150
Digitech chorus/delay (rack)	£125
Yamaha MT2X portastudio (6 input)	£249
Bel BD80S stereo sampler (8 sec)	£499
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Fostex 4011 character generator VTSE unit	£399
Fostex 4020 events controller	£399
RSD Mixdown 16:4:8	£1199
Atari 1040 plus Steinberg Pro 12 Sequencer & Monitor	£399
Alesis HR16B	£289
Oberheim DPX1 sample player	£299
Yamaha S100 monitors	£89
Sony DTC1000 ES DAT	£999
Yamaha FX500 multi effects processor	£250
Aphex Type C Exciter	£199
Seck 12:8:2 Mixer, Mint	£699
Fostex R8 8-track (demo)	£875
XRI X300 SMPTE Generator	£160
Drawmer LX20 compressor gate	£199
Alesis HR16	£175
Alesis MMT8	£175
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Roland D50	£599
Korg M1	£899
Yamaha GSP100 guitar processor	£115
Roland U110	£399
Alesis Midiverb III	£199
Roland D5	£435
Yamaha MT3X 6 input portastudio	£399
Tascam 103 (3 head mastering cassette) dem	£175
Yamaha OX21 2-track sequencer	£75
Art Multiverb II (four effects at once)	£225
Korg M3R	£525
Tascam 38 + full noise reduction	£1099
Roland TR808 drum machine	£299
Allen & Heath 16-4-8 inc flight case	£599
Yamaha TG55 sample player (used)	£499
RSD 16/6/2	£999
Seck 18/2 (demo)	£500
Revox B77	£650
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Roland D550	£599
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Fostex 160 portastudio demo	£275
Alesis Microverb II (as new)	£99
Akai PEQ6 programmable EQ	£99

This list represents only a fraction of our current secondhand and demonstration stock. Call us for a full listing - All prices exclude VAT

SPECIAL OFFERS (ALL NEW)

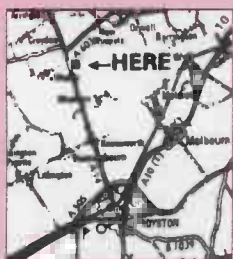
FOSTEX - 4050 remote/autolocate SMPTE for E16 (RRP £899)	£399 + VAT
TANNOY DC100 monitors (per pair)	£120 + VAT
AKAI S950 32 meg memory expansion boards	£125 + VAT
KORG P3 Combo kit card (sax, bass & drums etc)	£15 + VAT
RAUCH DVT25 100 + 100 watt amp	£199 + VAT
SECK 18:2	£525 + VAT
AIWA DAT recorder inc digital in/out, A/D+ D/A module + full remote + free tape	£649 + VAT
ATARI 1040STE + monitor + C-lab creator	£625 + VAT
ACCESSIT 2x15 watt amp (ideal for small monitors/headphone systems)	£25 + VAT
REVOX B77	£999 + VAT
JL COOPER miximate automated 8 track mixing via insert points	£225 + VAT
CASIO DA2	£540 + VAT

THATCHED COTTAGE SERVICE

At our fully equipped in-house service centre we can service all types of equipment (esp. 8-16 tracks) Every reputable dealer should have one on site (don't let anyone tell you any different). Believe it or not, some retailers actually sell complex electronic equipment from their front room or garage (nothing wrong with that of course - we all had to start somewhere - when you are successful though, you outgrow it pretty quickly!). It does though tend to suggest a lack of back up facilities. So if your multitrack needs a service or the heads looking at, give us a call before it's too late.

For those of you who are seriously considering starting a commercial studio we've come up with three packages, each containing everything you will need for your first paying session, from the Multi-track Machine right through to DI Boxes and Cables. The price of the 8 Track System is £4,599 + VAT, the 16 Track is £7,800 + VAT and the 24 Track is £15,750 + VAT. At Thatched Cottage we proved it could be done, and we have helped many new studios to open and start making money - our experience could help you. Give me a ring and have a chat - what have you got to lose? Plus: FREE Thatched Cottage Recording School Course to package buyers!

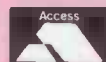
The third issue of FOLDBACK, our free magazine is now available. Write or telephone for your copy.



Thatched Cottage Audio

Telephone (0223) 207979 Fax (0223) 207952

Thatched Cottage Audio, North Road, Wendy, Near Royston, Herts.





competition

FUTURE SHOCK

IT'S QUICKLY BECOMING a tired line, but when the MIDI standard was first proposed few, if any people regarded it as anything more than a comfortable means by which one keyboard could be made to control another - or at the very most, a standard by which one manufacturer's sequencer could control another manufacturer's synth. Since then MIDI has evolved as a pretty sophisticated control protocol that has given birth to graphic editing, patch librarianship, mix automation and so on. Most recently we're seeing MIDI-controlled lighting systems starting to appear.

And while a "modular" approach to MIDI allows you to construct a completely personal system, an "integrated" MIDI recording system would offer a tidy, easy to operate, but immensely powerful direction to take. And it's just this philosophy Tascam have taken with their MIDISTUDIO series. When the 644 MIDISTUDIO was reviewed in July's issue of MT, Nigel Lord said "it's a machine of immense importance" - and there's no hype in an MT review.

Briefly, the Tascam 644 is a four-track cassette multitracker with built-in mixer and MIDI/FSK sync facilities. Each of the eight main mixer channels possesses three-band equalisation and two independent auxiliary sends. Signal routing is programmable (with 99 internal "Scene" memories) and uses an LCD matrix to graphically display what routings are set up in each Scene. Also contained in each Scene are details of the mixer channel mutes. The 644 also boasts a video editor-style shuttle control that makes locating any part of a recording very quick and easy.

The list of the 644's facilities is long, and to exhaust it here wouldn't leave any questions for the competition. So here we go. . .

Q1

Does the sync code used by the 644 support MIDI Song Position Pointer?

Q2

How many audio input channels does the 644 offer (excluding effects returns)?

Q3

What piece of Tascam equipment does the 15-pin serial port allow connection to?

They're not the easiest of questions, you'll agree, but you've already had the first clue to where the answers lie. For those of you attending the British Music Fair, the Tascam stand could also prove an invaluable source of information, as could any Tascam dealer. Come to that, you could ring Tascam HQ and ask a few well-chosen questions. However you choose to find the answers, the 644's £1000 (well, almost) asking price ensures your efforts will not be wasted. You never know, you might even find one of the latest MIDI/recording units a useful addition to your setup. . .

ENTRIES SHOULD BE sent on a postcard only, please, to arrive no later than second post on **Tuesday 14th August**. The address to which to send your entry is **"Future Shock", Music Technology, Alexander House, Forehill, Ely, Cambridgeshire CB7 4AF**.

As there have been no multiple entries to any MT competitions for some considerable time now, it would greatly assist judging if all correct entries were submitted on plain white postcards, and all incorrect entries on coloured or picture cards. Thank you.

Many thanks to Bob Thomas at Teac (UK) who put up a fine struggle before donating this month's prize - it was worth the wait.



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YAMAHA SPX900 Multi FX	£599
YAMAHA Rev 7 digital reverb	£499

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STUDIOMASTER Studio FEX full range	
ROLAND R880 pro digital reverb	£2100
ROLAND G8 remote for the R880	£545
ROLAND E660 Pro digital parametric EQ	£1299
DYNACORD DRP20 Pro reverb	£999
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TWO NEW MUSIC COMPLEXES IN LONDON

S770



We end this three-part review by looking at the heart of the S770 - its sampling facilities - and at how it presents itself to the user. Review by Simon Trask.

PART ONE OF this review provided an overview of the S770, while in part two we focussed on the sampler's Performance, Patch and Partial levels - which leaves this concluding part to consider the final level of the hierarchy: the Sample level. If the S770 was a restaurant, its menu would offer up to 64 meals, each meal would consist of up to 32 courses, each course would consist of up to 88 dishes, each dish would consist of up to four ingredients chosen from a possible total of 512 - and all the ingredients would be assembled and prepared at the Sample level. So without further ado, let's head off to the kitchen. . .

SAMPLING

FIRST OF ALL, an update: Roland are now making the RAS770 memory board for the S770 available free, but in the process they've removed the 2Mb of memory which came with the board when it was going to retail for £899. Now, as you may recall from part one of this review, the S770 can accept standard SIMM chips,

which come considerably cheaper than Roland's own OMS770 memory upgrades. For this reason the company have decided not to stock the OMS770 upgrades, but instead recommend a source of SIMM chips in the UK. Currently this source is MacWarehouse, who are selling SIMMs at a very reasonable £59 per Megabyte; consequently, upgrading the S770 to its full 16Mb sample memory capacity will cost you £826 - considerably less than it would have cost if you'd had to buy the OMS770 upgrades.

The Sampling level on the S770 is accessible via the Edit Sample option on the Sound menu, or via the Loop, Sample and Sampling keywords on the Index page (see below). There are five pages at this level: Sampling, Loop, Truncate, Smooth and Normalise.

You can select either analogue or digital sampling, and in the case of the latter adjust the Digital Attenuator parameter if the input signal is distorting. Also, for digital sampling the sampling frequency must be either the same as or half of the the frequency of the incoming digital signal - so for CD sampling via the optical input on the S770's rear panel you can sample at 44.1 or 22.05kHz.

With analogue sampling the S770 allows you to freely select from four sample rates: 22.05kHz, 24kHz, 44.1kHz and 48kHz. Sampling can be in either mono or stereo, and is of course 16-bit linear (while D/A conversion is 20-bit and internal processing 24-bit linear). Unlike Roland's previous samplers, which split their memory in half for sampling purposes, the S770 allows you to sample freely into its entire memory.

You have to give each sample a name of up to 12 characters before you can go ahead and sample, and no two samples can be given the same name. To name a sample (or any other item of S770 data) you first click on the Name field. This calls up the ASCII Keyboard window, which as its name suggests allows you to click on numbers and letters which are organised in a typewriter keyboard layout, complete with spacebar, backspace and carriage return functions. It's a neat idea which works well in practice.

In addition to selecting mono or stereo sampling, input type and sampling frequency, you can select an Original Key for sample playback (adjustable at any time), a sample time, a pre-trigger time for catching those sharp attack transients, sampling type (auto, manual, previous or one-way), trigger type (level, MIDI Note On message or footpedal) and - where relevant - the trigger input level. Additionally, with Monitor enabled the S770 will pass the incoming analogue signal on to its stereo and headphone outs (in contrast, digital input signals will only be passed to the digital outs).

Auto sampling waits for the specified trigger, while Manual starts whenever you click on Start; however, both incorporate the pre-trigger time. Presumably the S770 continuously samples for the pre-trigger duration, then goes into the main sample when sampling is activated. Previous sampling is an extension of this principle, in that it allows you to capture the sample input for the specified sample duration *before* you click on Start. Previous sampling can come in handy when you're sampling off tape, vinyl or CD, as long as you're prepared to be generous with the sample time and then Truncate the sample down afterwards. Finally, One-way sampling is like Manual, except that it ignores the pre-trigger time - but then it doesn't introduce any waiting time between sampling and being able to play the sample back.

The S770 provides you with an onscreen level indicator (stereo or mono accordingly) which goes into the red when the input signal hits distortion level. You can adjust the L/R record level and the overall input sensitivity from front-panel knobs. Once sampling has finished, the S770 switches to a graphic display of the sample waveform and offers you six choices: Next, Retry, End, Loop, Truncate and Norm. At this point you can play the sample on the keyboard, or if you don't have a keyboard hooked up, you can trigger it from the front-panel Sound Play button (the playback note and velocity can be set from System PRM Page 1). If the sample hasn't worked out, clicking on Retry deletes it and returns you to the Sample page and the same parameter settings. Next sets you up for the

next sample, End takes you to the Sound menu, and the other three options take you to the relevant pages.

The other pages at the Sample level all provide you with the same sample graphic in the lower half of the screen, but the Loop page additionally provides X and Y Zoom parameters which allow you to progressively zero in on selected areas of the sample for editing purposes. However, the S770 has no facility for editing the actual sample data, which can be singularly frustrating if you want to remove a click from a sample taken off vinyl - not to mention the fact that the absence of sample data editing removes a whole area of experimentation.

What the S770 does allow you to do is alter the start and end points of the sample and define both a Loop Start point and Release Loop Start and End points. Additionally you can select interpolated Loop Start and Release Loop Start sample points for finer control of looping, and adjust the tuning of each loop ± 50 if it needs bringing into line with the pitch before the loop. There are two ways to adjust the sample start, loop and end points: by incrementing and decrementing the numeric parameter values, or by "dragging" horizontal bars and lines immediately above the sample graphic using the mouse; generally speaking, numeric editing is best for fine adjustments while "dragging" is greatly preferable for making speedy coarse adjustments. The S770 can update the loop points in real time while a sample is playing, so you can instantly hear the results of your edits.

X Zoom offers x1 (no zoom), x4, x16, x64 and Max magnification on the x-axis of the sample graphic, while Y Zoom offers the same amounts on the y-axis. The X Zoom amount affects the resolution of numeric scrolling; at Max, scrolling is at individual sample-point resolution, while the resolution at other amounts depends on the length of the sample and on the sample rate; the clarity of the sample graphic varies for the same reasons.

At greater than x1 magnification the graphic divides into two halves separated by a vertical bar. If you select Point display, the graphic will display the sample either side of the currently-selected position parameter; if you select Loop, it will "dovetail" sample segments before the Loop or Release Loop End point and after the Loop or Release Loop Start point in the graphic. The idea of the Loop display is that you can see graphically how the sample "flows" from the end of the loop back into the beginning, and therefore more readily locate suitable looping points. The graphic can help you to find suitable zero crossing points and waveform matches, which is a good thing because the S770 has no auto-finding routines.

Roland's sampler has five types of looping: Forward, Forward + Release, Forward + One, Alt and Rev; additionally, you can select OneShot or Reverse ►

“As well as providing many samples of familiar percussion instruments, Roland have also included examples of the less familiar, such as pandero, surdo and dumbek.”

► OneShot for no looping. With Forward selected, the main Loop applies even after you release a note, while Forward + Release kicks in the Release Loop when you release a note and Forward + One plays through the Release Loop data once when you release a note. Alt, as its name suggests, alternates between forward and reverse playing of the main Loop data, while Reverse reads from the Loop End point to the Start point and then repeatedly reads from the Loop Start point to the Start point - so a reverse loop requires different settings to those of a forward loop.

The Loop page includes a particularly neat feature in the form of Loop Lock. With this turned on you can slide the Loop around within the sample by scrolling the End point, which makes it very easy, once you've satisfactorily looped one or more beats of a sampled rhythm, to experiment with looping different parts of the rhythm. Smart.

Another aspect of the S770 which could lead to some interesting experimentation comes into play with stereo samples. Remember that a stereo sample is actually two samples which are phase-locked together and require two voices to play. Now, you can separately loop, truncate, smooth and normalise the two "sides" of a stereo sample, which means, for instance, that you can experiment with forward looping one side and reverse looping the other side - someone's bound to use it on a record soon. You can also experiment with combining different loops from within the same rhythm sample; loops don't have to be the same length, either. You can use the Set Stereo command to combine any pair of mono samples into a stereo pair (and conversely split a stereo sample into two mono samples), the only proviso being that they must be of the same length - which needn't be a problem, with forward planning.

The Truncate page allows you to lop portions off a sample outside From and To points (these default to the Start and Loop End values), with a Fade Length parameter allowing the sample to be faded in and out over a specified range to avoid unseemly popping sounds at the truncated points. You can get the S770 to make a backup of the original sample, which is effectively the only way that you can extract more than one sample from a longer sample ie. by successively truncating different parts of the original.

The Normalise page can come in useful where a sample's recorded level is too low, as it expands the sample data over the full 16-bit range, effectively making it louder. Again, you can make a backup of the original if you wish.

Finally, the Smooth page is actually our old friend crossfade looping. This can be applied separately to the main Loop and Release Loop, and to each side of

a stereo sample, and allows you to adjust the length of the crossfade. The crossfaded sample is saved as a new file with an "N" suffix. In practice crossfading needs to be applied judiciously, and can result in a noticeable fluctuation in amplitude if overapplied, thereby accentuating rather than smoothing the loop - a fact which makes me suspect this isn't the most sophisticated crossfade implementation around. Ensoniq's much cheaper EPS sampler has much more to offer in the crossfading department - and the S770 should have, too. While we're on the subject of shortcomings, there's no ready way on the S770 of pasting samples together to create a new combination sample.

One advantage of having an onboard disk drive is that the S770 is able to come with a healthy complement of samples as standard. These are divided into Piano & Harp, Strings, Acoustic Guitar, Bases, Voices, Mallets, Drum Kits, TR808 Kit and Percussion categories. Wot, no TR909? Shame on you, Roland.

In fact, out of some 300 samples in total, just over half are drum and percussion samples. Percussion is the biggest single category, both in terms of sample time and number of samples; as well as providing many samples of familiar instruments (eight cowbells, 15 congas and 13 bongos), Roland have also included examples of the less familiar, such as pandero, surdo and dumbek. With the S770 being able to reproduce drum and percussion sounds with such crispness, clarity and punch, it's good to see that Roland have provided such a large collection of sounds to get you started.

At the same time, if it's panoramic pad sounds you're after, the Voices category has its fair share of luxurious, spacious, breathy stereo vocal samples - the kind that sound so heavily produced they'd make even the average bedroom Portastudio production job sound like it was done in a top-flight pro studio (well, maybe not). Among these, 'Spacy Voxs' is the *crème de la crème* (otherwise known as "creamy"). In fact, listening to the clarity of the vocal samples, it's all the more surprising to discover that they were sampled at 24K.

OPERATION

IT'S HARD TO underestimate the importance of how an instrument presents itself to the user. Just think, FM programming might never have acquired the stigma of intellectual complexity that it did if Yamaha had made all those obscure parameters more readily available - allowing you to manipulate them interactively in real time from front-panel knobs 'n' sliders, for instance.

In the world of computer software, the WIMP environment has revolutionised not only the way in which software presents itself to the user, but also the way in which the user can interact with it - as anyone who uses sequencing software will know. Roland have been providing their samplers with a mouse and (optional) monitor, and utilising a WIMP-type environment, ever since the S50 - and the S770 isn't about to prove the exception to the rule. In fact, ►

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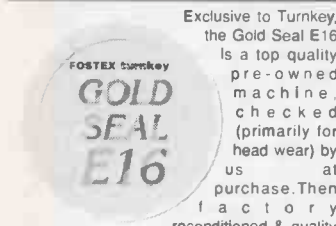
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“It's not just a mouse and a colour monitor to work with that makes the S770 so user-friendly - the ease with which you can navigate the software pages is just as important.”

► by allowing you to move the mouse anywhere around the screen the S770 improves on its predecessors, which force you to step sequentially through their parameters.

For everyday use, a colour monitor in preference to the S770's monochrome monitor option and its LCD makes a lot of sense, not least because then you can take advantage of the colour coding which Roland employ in their displays. If your preferred method of working is with the mouse and a monitor, you can get the mouse to track and the screen to update more quickly if you disable the LCD (by setting a System parameter rather than putting a brick through the screen).

But it's not just the fact of having a mouse and a colour monitor to work with that makes the S770 the user-friendly beast that it is - the ease with which

you can navigate its world of software pages is just as important. There are four options available to you: Mode, Index, Jump and Command. Mode takes you via the Mode Change menu to the Perform, Sound and System menus, from which you can select options which each have between 1-5 software pages associated with them - for instance, the Disk Tools option on the System menu has Load, Save, Copy, Delete and Util pages associated with it. You select which page to display by clicking with the mouse on the page names listed on the bottom row of the display, or by pressing the relevant front-panel Function

button (the sampler defaults initially to the page you were on when you last left each option). Clicking on Exit or pressing the Exit button takes you back to the menu from which your choice was made, while clicking on Mode takes you back to the Mode Change menu - or you can select any mode directly by pressing the Perform, Sound and System front-panel buttons.

An alternative way of negotiating the S770's software pages is offered by the Index window, which is accessed logically enough by clicking on Index or by pressing the Index button. This window provides a list of 32 keywords which are ordered alphabetically within three categories: Sound, MIDI and System. Clicking on these can take you directly to selected S770 pages, windows and parameters - in the case of parameters, sometimes via a sub-menu which lists the various pages on which the parameter occurs. Index is useful when you're learning to find your way around the sampler's world, and when you want to undertake a specific function, but its flexibility is (unnecessarily, to my mind) limited in several ways: the only way out of a page is back to the Index window, you can't Mark a page for the Jump function, and - perhaps most importantly of all - you can't select a page's Command menu (a menu which offers context-sensitive commands such as

Copy and Delete).

Thirdly, there is a Jump function, which is becoming an increasingly common feature on Roland instruments. This allows you to select, or Mark, five software pages which you can then Jump to from any other page in the system; pages which are Jumped to aren't subject to the restrictions of the Index path.

To Mark a page you call it up via the Mode path, click on Mark or press the Mark button to call up the Mark menu, then click on one of the existing entries in the menu to replace it with the new page. With this method you can readily alter the list at any time to suit your current working situation. To Jump to a page, you first call up the list of Jump pages by either clicking with the right mouse button on the bottom row of the screen or pressing the Jump button, then click on the relevant name or press the relevant Function button to activate the Jump.

Finally, the Command menus provide a quick way of climbing up and dropping down through the Patch, Partial and Sample levels. Starting at the Patch level, selecting Partial from the Command menu drops you to the Partial level, where you can then select Sample from the Command menu to drop you to the Sample level. Then to retrace your steps back up through the levels you just keep clicking on Exit.

The various paths and shortcuts that I've just described allow you to move around the S770's many software pages and windows with great speed, while comprehension is greatly aided by logical page organisation and clear page layout - the latter above all with a colour monitor. Which isn't to say that there isn't room for improvement. For instance, if you get tired of running through certain sets of operational actions repeatedly (as I did), why not be able to "record" them as sequences which could then be run through automatically by the S770 when you selected them? You could build up a library of operational sequences on disk, and perhaps swap sequences with other S770 users. A version of such a feature already exists on Roland's R8 drum machine as the User Function.

FINALE

IF THIS REVIEW WAS AN OPERA it would probably have been written by Wagner. Come to think of it, *The S770 Cycle* has a certain ring to it. There again, Wagner probably wouldn't have given you the conclusion at the end of the second act. Woe is me.

As it is, while the S770 might cost almost as much as it does to get into Covent Garden these days, it is an extremely professional production, offering plenty of power, scope and versatility and showing every sign of lasting for more than a few acts. In fact, you could say that it'll be some while before it meets its *Götterdämmerung*. ■

Prices S770, £4860; M07 Magnetic Optical Disk Unit, £5225; CD5 CD-ROM drive, £1340; RC100 Remote Controller, £250; all prices include VAT.

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ON THE BEAT TAXI

**THE DRUM SOLO - THE
DRUMMER'S ULTIMATE REVENGE
ON THE REST OF SOCIETY. CAN A
DRUM MACHINE MEET THE DRUM
TECHNICIAN ON HIS OWN TURF?
COULD IT EVEN BETTER HIM?
TEXT BY NIGEL LORD.**



THERE'S A SOMEWHAT different flavour to On The Beat this month - a move away from the more structured themes of recent articles and into the realms of greater experimentation. But before those of you who like to be spoonfed a handful of new patterns each month start turning the page, let me just say that you can, if you wish, copy this month's examples verbatim and stick rigidly to the instrumentation I've outlined. However, you might find some of

the rhythmic ideas I've touched on rather limited in application if this is the approach you choose. Why limit your options just for the sake of another few minutes of programming time?

The idea behind this month's article came about as a result of the very definite opinions I have had occasion to air on the subject of drum solos (in my time as editor of MT's sister mag, *Rhythm*). As a member of MT's rather erudite readership, I'm sure MUSIC TECHNOLOGY AUGUST 1990



ILLUSTRATION: CLIVE GOODYER

the subject of drum solos has rarely crossed your mind. You probably believe the days of the 15-minute extended drum break while the rest of the band went off for a fag are but a dim memory of the excesses of the '70s. But believe me, there is an alarming number of people for whom this sort of unfettered indulgence is still an acceptable form of entertainment.

While editing *Rhythm*, I was keen to exact swift and damning retribution on
MUSIC TECHNOLOGY AUGUST 1990

anyone who even came near to claiming that the drum solo had any entertainment value whatsoever. The problem was, the demands of courtesy (and circulation figures) meant that I was forced into offering sound philosophical arguments to support my rejection of drum solos and those who sought to perpetuate them. Pre-eminent amongst these was the fact that in all the hours of drum soloing I had been subjected to over the years, none of

the players ever took it upon themselves to actually play a coherent rhythm - you know, the sort of thing you could tap a foot to or (perish the thought), perhaps even dance to.

All I ever came across was drummers - often with incredible skill and technique - playing one tricky exercise after another. The only thing that seemed to separate a "good" solo from a "bad" one was how well each of these exercises was welded onto the next. What's wrong, I argued, with the idea of a drum solo where the drummer actually starts with a good solid rhythm and then develops various themes within it, moving, perhaps, into related areas, but always maintaining a basic groove which audiences could respond to?

And that, dear (patient) reader, was the thinking behind this month's article. You could wait a lifetime for a drummer to come up with this idea themselves (I never managed to sell it to them), so why not entrust it to our old friend the beatbox? But hang on - if you think this is my cue to introduce a half dozen extended rhythmic compositions for drum machine, forget it. We haven't got the space and they don't pay me enough money. What I have included is a handful of quite individual patterns which are not intended to provide a well-defined beat, as is the case with most contemporary rhythm, and which aren't simply technical exercises designed to show off your programming technique.

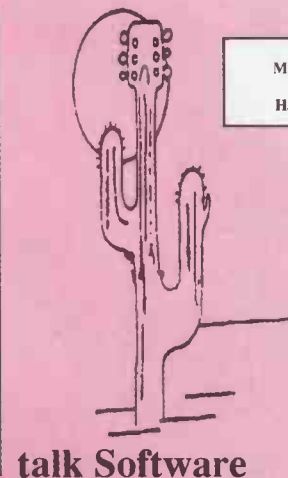
Instead we find patterns in which the bass drum can play fast rolling figures throughout the bar and where cymbal sounds can be layered to create interesting textures. Snare drums lose their pivotal role of providing the pattern's rhythmic pulse and are used simply to accent and colour the overall sound. Once underway, the beginning and end points of each pattern often become obscured and the rhythm is given a more cyclical feel from which it may be developed into all sorts of interesting areas. But that, in case you haven't already guessed, is where you come in. Where each one of ▶

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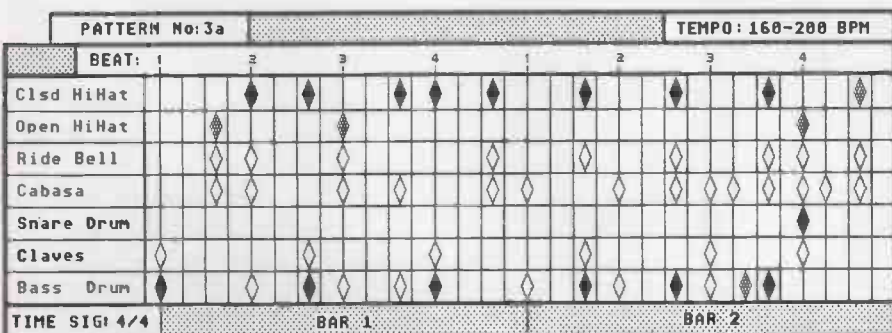
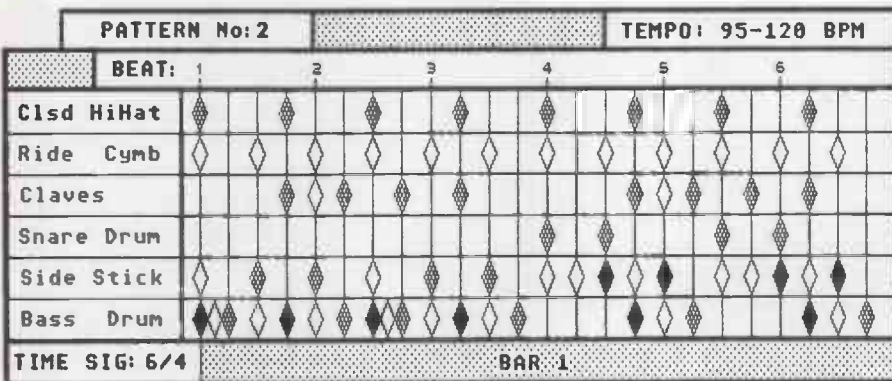
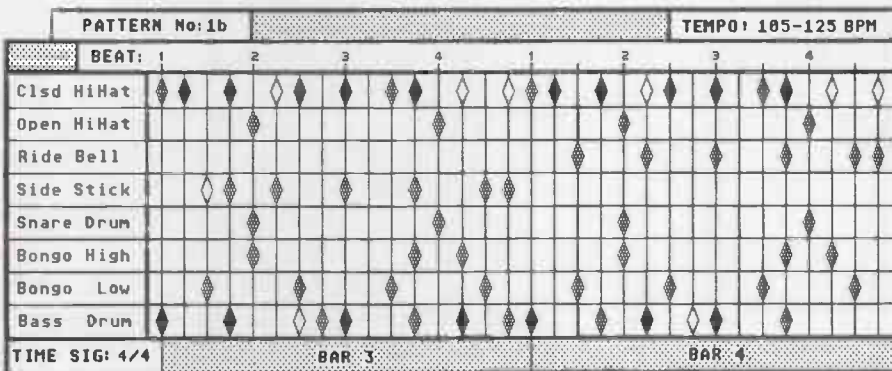
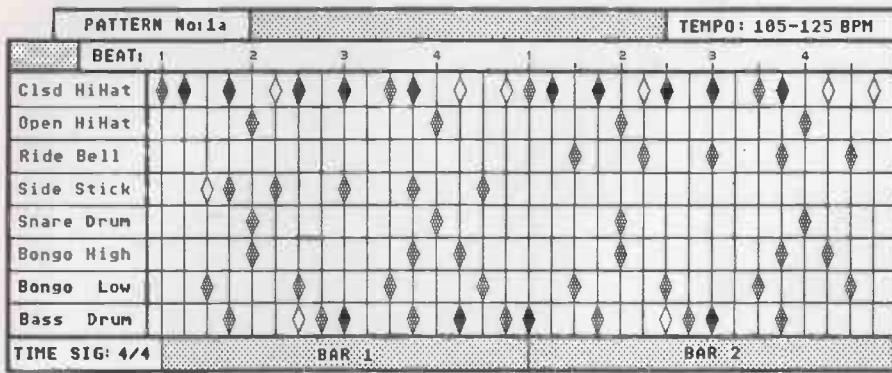
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► these examples is eventually taken is very much up to you. Program them in, take out the bits you don't like, extend the bits you do. Chop them in half, splice them together, try layering the parts from two or three different patterns - the possibilities are enormous.

Above all, try experimenting with the instrumentation. With most modern machines (and, of course, sequencer-based systems) it's MUSIC TECHNOLOGY AUGUST 1990

simplicity itself to program in the notes and then select the instrument to which they are applied. I have assigned some of the parts from these patterns to instruments as disparate as heavy ambient bass drums to fast stroke cabasas and got excellent results from both. Clearly, there's no way I could list all the possibilities or the range of combinations for each example. All I can say is that these ►



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PATTERN No: 3b					TEMPO: 160-200 BPM			
BEAT:	1	2	3	4	1	2	3	4
Clsd HiHat		◆	◆	◆	◆	◆	◆	◆
Open HiHat	◆	◆	◆	◆	◆	◆	◆	◆
Ride Bell	◆	◆	◆	◆	◆	◆	◆	◆
Cabasa	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum								
Claves	◆	◆	◆	◆	◆	◆	◆	◆
Bass Drum	◆	◆	◆	◆	◆	◆	◆	◆
TIME SIG: 4/4	BAR 3				BAR 4			

PATTERN No: 4a					TEMPO: 150-190 BPM			
BEAT:	1	2	3	4	1	2	3	4
Ride Bell		◆	◆	◆	◆	◆	◆	◆
Ride Cymb	◆	◆	◆	◆	◆	◆	◆	◆
Bongo	◆	◆	◆	◆	◆	◆	◆	◆
Side Stick		◆	◆	◆	◆	◆	◆	◆
Hi Tom Tom								
Mid Tom Tom								
Lo Tom Tom								
Bass Drum	◆	◆	◆	◆	◆	◆	◆	◆
TIME SIG: 4/4	BAR 1				BAR 2			

PATTERN No: 4b					TEMPO: 150-190 BPM			
BEAT:	1	2	3	4	1	2	3	4
Ride Bell		◆	◆	◆	◆	◆	◆	◆
Ride Cymb	◆	◆	◆	◆	◆	◆	◆	◆
Bongo	◆	◆	◆	◆	◆	◆	◆	◆
Side Stick		◆	◆	◆	◆	◆	◆	◆
Hi Tom Tom								
Mid Tom Tom								
Lo Tom Tom								
Bass Drum	◆	◆	◆	◆	◆	◆	◆	◆
TIME SIG: 4/4	BAR 3				BAR 4			

PATTERN No: 5a					TEMPO: 150-190 BPM			
BEAT:	1	2	3	4	1	2	3	4
Clsd HiHat	◆	◆	◆	◆	◆	◆	◆	◆
Open HiHat								
Ride Bell	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum								
Side Stick		◆	◆	◆	◆	◆	◆	◆
Bass Drum	◆	◆	◆	◆	◆	◆	◆	◆
TIME SIG: 4/4	BAR 1				BAR 2			

PATTERN No: 5b					TEMPO: 150-190 BPM			
BEAT:	1	2	3	4	1	2	3	4
Clsd HiHat		◆	◆	◆	◆	◆	◆	◆
Open HiHat								
Ride Bell	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum								
Side Stick		◆	◆	◆	◆	◆	◆	◆
Bass Drum	◆	◆	◆	◆	◆	◆	◆	◆
TIME SIG: 4/4	BAR 3				BAR 4			

► patterns, more than any I have included in this series so far, warrant the time and effort involved in choosing the right instruments.

Enough said, let's get down to Pattern 1. An interesting pattern, it features a rather distinctive "call and response" figure provided by the side stick and ride bell parts. (Just to recap, this is the domed central area of the cymbal which produces a cleaner, more penetrating sound which is less intrusive on the hi-hat parts than the conventional ride.)

Contrary to my remarks earlier, the snare does appear to play a fairly conventional role in this example, but as you'll see if you take it out, the pattern is perfectly capable of standing up without it. Perhaps the most obvious instrument to change would be the bongos, which could be substituted for virtually any tuned instrument(s) such as a cowbell or agogos.

Pattern 2 is rather more unconventional and is written in 6/4 time. This gives it a pleasantly insistent feel which is emphasised by the rolling bass drum figures in the early part of the bar. This part is a prime candidate for experimentation, and there are comparatively few instruments which couldn't at least be tried in its role (sorry). It would also be worth sifting through a few different snare sounds, as these can have a dramatic effect on the overall pattern - particularly as the instrument is cast in such an unconventional role here.

Rhythmic interest in Pattern 3 is again provided by the bass drum, but the combined effect of the hi-hat, cymbal and cabasa voices produces a very distinctive layered effect which also works well in the context of this rhythm. If, after programming, you decide the bass/snare figure at the end of bar four sounds a little odd, don't worry, it's supposed to. In fact, if you run it slow enough you'll hear that it doesn't quite fit. But at the normal tempo it's quite an effective way of bringing the bar to a close. Drummers do it all the time, but of course you can't slow them down to see how well it fits.

Speaking of which, the pattern is capable of running at an exceptionally wide tempo range, though I prefer a fairly brisk pace. See what you think.

In Patterns 4 and 5 we come across our old friend the triplet once again - though each pattern has its own quite distinctive feel. Pattern 4 with its subtle tom tom parts and its rippling bongos, has a decidedly jazzy flavour to it, punctuated rather nicely by the ride bell. Pattern 5, on the other hand, has a more up-front feel which should make it useful in a variety of situations. Though the snare is quite prominent and marks the beat throughout the pattern, the ride bell is probably the more important instrument and

► should certainly be given its head in the mix. You could try losing the snare part altogether if you prefer a slightly lighter feel.

Finally we come to the pattern which represents my personal favourite for this month. A robust, full-blooded rhythm, this one rolls along beautifully with some really effective accenting courtesy of the toms and a neat foot closing hi-hat marking time throughout. Actually, I suspect this instrument might prove a problem for some machines (I know the HR16 has one), but this is one occasion where there is no obvious substitute. As in Pattern 1, the bongos could be swapped for any tuned instrument - aim towards something like a third (three semitones) spacing between the two voices.

As you can see, most of this month's examples have been spread across double grid lengths. This is simply to make things more legible, particularly for instruments like the bass drum and hi-hat which require some quite detailed programming. Your best guide in terms of beats to the bar and relative tempos are the small figures over the main grid in each pattern. These also make it easier to see what's going on in the triplet-based patterns.

Next month, we'll return to specific rhythmic styles, so stay tuned. ■

PATTERN No: 6a		TEMPO: 100-125 BPM											
BEAT:		1			2			3			4		
Clsd HiHat		◇			◇			◇			◇		
Foot HiHat			◇			◇			◇			◇	
Side Stick													
Bongo High													
Bongo Low		◇			◇			◇			◇		
Snare Drum													
Hi Tom Tom													
Lo Tom Tom													
Bass Drum		◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
TIME SIG: 4/4		BAR 1						BAR 2					

PATTERN No: 6b		TEMPO: 100-125 BPM											
BEAT:		1			2			3			4		
Clsd HiHat		◇			◇			◇			◇		
Foot HiHat			◇			◇			◇			◇	
Side Stick													
Bongo High													
Bongo Low		◇			◇			◇			◇		
Snare Drum													
Hi Tom Tom													
Lo Tom Tom													
Bass Drum		◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
TIME SIG: 4/4		BAR 3						BAR 4					

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WHAT'S THAT



They helped to start the sampling revolution; they've helped to launch several musical careers; now they're predicting an explosion of "video sampling". Ignore Coldcut at your own peril. Interview by Tim Goodyer.

FOR A PARTNERSHIP THAT HAS ENJOYED so much chart success over the last two years, Coldcut have maintained a remarkably low profile. In spite of the exposure Yazz and, more recently, Lisa Stansfield have received, only 1988's collaboration with Junior Reid, 'Stop This Crazy Thing' directly carried the Coldcut name. But it was Coldcut's production of Yazz' 'The Only Way is Up' and Stansfield's 'People Hold On' that put both artists on the map. These and many other collaborations with artists as wide ranging as Eric B & Rakim (whose 'Paid in Full' launched Ofra Haza in Britain) and The Fall's Mark E Smith, firmly establish Coldcut as one of the most (healthily) influential forces currently operating in the dance/pop arena.

Now, with two albums already under their belt (the '88 compilation *Out to Lunch With Ahead of Our Time* and '89's *What's That Noise*), Coldcut are about to

release LP number three: *Some Like it Cold*. Again it's a disparate collection of excellent music, featuring the current Queen Latifah single, 'Find a Way', some strong house cuts, like 'Bass 4 Love', and the latest chapter in the reworkings of Ash-Ra's 'E2-E4' in 'Mi Sueno'. At a point in their career where many bands using "conventional" instrumental lineups face their first crisis (the popularly termed *difficult third album syndrome*), DJs Matt Black and Jonathan More, and their computer and sampler are as resourceful and refreshing as ever. Catching them mid-session with Youssou N'Dour and Daniel Lanois in Studio 1 at London's Townhouse studio complex - for their second conversation with MT (see MT, November '88) - I put it to them that the constantly changing lineup was one of the factors helping to keep them young.

"There are very few people who can go on being fresh and re-inventing themselves on a day-to-day basis", says Black, "but I'd like to think that Jon and I have got the strength and the background to be able to keep changing. It is a fairly deliberate policy. We see our place in Coldcut as being the men who do the beats, and there's usually some other face there fronting it - Lisa or Yazz or someone."

"I think it gives other people an opportunity, which is a healthy thing", adds More.

"But we didn't make Lisa Stansfield", asserts Black, "her mum and dad made her. And Ian and Andy, her two partners, worked long and hard with much heartbreak - first in Blue Zone, then to do 'People Hold On' - to launch her. Now Lisa looks like being the first major white soul artist in quite a long time, which I'm reasonably proud of. But it wasn't that much

NEWS

to our surprise, really, because we knew she was very talented. She deserved the success, she just needed a little education in the laws of dance."

Dancing lessons over, isn't there a danger that a production team turning out strings of hits fronted by different faces could become the next Stock, Aitken & Waterman - filling the charts with records that all sound the same and give little to the artist or their audience?

"I suppose on the surface it might seem that it's all us", replies Black, "but we know differently. We don't suffer from the profusion of material which is The Shit Factory. Every song, each project has been lovingly crafted, with blood, sweat and tears.

"We're not a sort of incredibly well-oiled machine turning out identical songs. I think that saves us. We have to have that communication with the artist, otherwise we're not going to get something that's worth sweating for."

More claims that the artist's input is essential, but a difficult thing to quantify.

"We rely on the artist's input quite a lot, but not in the way the artist might expect", Black elaborates. "Junior might be singing along to a track with something he thinks is really good, and then ad lib one bit. And Jon and I will both light up and say 'can you do that bit again', because it's struck some particular chord."

More: "We handle a lot of the direction and stuff, and we can be quite tough sometimes - if we don't want something in, and it's unanimous between the two of us we'll fight pretty hard."

Black: "I guess that's us in the traditional producer's role. We're working on a new song with a guy called Roots at the moment - it's one of our major projects. He can sing and chant reggae style, which very few people can do with any degree of skill. He came up with this new song and it was obvious to us that the verse was the chorus and the chorus was the verse. It was a very simple change-around, but it took him a while to accept that that was the way it was going to be."

ALONGSIDE THE KNOWLEDGE OF THE technology that makes their music possible, Black and More rely heavily on their knowledge of recorded music. It shouldn't be a surprise as both began their musical careers as DJs, but the extent of the Coldcut record collection is frightening: currently something over 10,000 records, and increasing daily.

"We feel that all music is there for us to party with", begins Black in explanation. "I don't know if we can make each party a national hit, but as long as we're having a good time, that's the main thing. There are plenty of pastures new. We're moving into reggae at the moment, having subliminally soaked up certain tapes that we've got - old favourite reggae tapes we've collected over the years. Now we're trying to work out a few ideas in that direction. Tip of the week: doing a decent-sounding dub reggae track is almost as easy as doing a house tune. Suddenly you're a 'scientist', which is a great feeling."

"I don't think there are any boundaries to where you can look", continues More, "when you hear what you're looking for, you know it. We tend not to sample

the obvious, we leave that to somebody else to do. Quite often we sample ourselves - we use a bit of one of our other records. But I don't think there's any uncharted territory in terms of records. I'm a big fan of all sorts of music - although heavy metal really does me up, and German *slag* music can be a bit heavy sometimes."

It seems that even the classics aren't safe from the Coldcut Akai S1000.

"Beats + Pieces' had Vivaldi's Four Seasons on it", reveals More. "We've messed around with some ideas for doing other classical stuff, and there are a couple of TV advertising themes that I quite fancy slurping. And I like stuff like the stabs from News at Ten. All those sorts of things we use. With Eric B and Rakim, a lot of the stuff we used I just taped off the radio - I've no idea really where they came from, I just snatched them."

Having the vinyl resource is one thing - cataloguing it and using it successfully is quite another. The secret, according to Black, is "knowing one's music", but the sheer quantity of music can still make life hard.

More: "It's very difficult when there's such a range of stuff to go through - what you're looking for might be on some '60s trash LP or Led Zeppelin, whatever. Let's face it, ploughing through heavy metal records isn't the most enjoyable experience.

"But either something in the track will make you think 'oh yeah, *that* will fit' or you preview loads of stuff until something drops in. We tend to pull it out, stick it on the turntable, sample it off and try it."

"It's actually quite fascinating the way one makes those musical connections", comments Black. "It's like finding a keyboard part really, except that keyboard parts are better mapped out. If you were down a club last week and you heard this old reggae tune, then you might remember *that* for a tune that you're working on at the moment."

Necessarily, the process of finding an excerpt of music perfectly suited to some new setting involves listening to a lot of music that wouldn't ordinarily find its way onto your turntable.

"I do spend quite a good percentage of the time listening to stuff I don't like", agrees More, "but there's always something there. It's amazing where you can get ideas from - I did some DJing recently in Covent Garden and one of the other DJs played some old tunes that I haven't heard for years and there were two little bits that I thought 'yeah...' and they've locked in there now until there's something of ours to make sense of them. It can be pretty hard work, particularly when you're spending a lot of time on the drum programming, keyboard programming and all the other bits and pieces that we still like to do ourselves."

And then there's the problem of keeping track of what you've taken from where, and who it belonged to originally - for more reasons than just paying the copyright due.

"Quite often we can't remember where things have come from, because it's done in the heat of the moment", says More. "It's all very well saying you're going to write it all down and keep data sheets on everything you do, but who wants to do that when you've got a good idea going down? We do do it quite a bit, we've got quite a lot of records, or we go back

“There are more possibilities in the world of samples and their possible combinations, that there are in the combination of 12 notes.”

► and try to do it when we've finished, because it is good to know who you've sampled. I know Norman Cook never keeps anything - he's got a multitrack, and that's it - that's great in a way, but it's a different attitude to Matt and me.

“When we were doing this last LP we did an eight-track recording with a lot of scratches on that we wanted to transfer to 24-track; we were recording stuff and it was all pretty hectic, and somehow we managed to wipe some of the SMPTE code. We managed to repair that, so that was one nightmare over, and then we loaded up the sample disks and they'd gone. Then we loaded up the sequences and the hired gear trashed the sequence disk. So we'd lost it all. But we'd kept a library and a data file of all the samples, and I'd actually been messing around with the song a couple of weeks earlier and made another song from it - and saved it as the other song with a lot of the original data in. By using that and the library we were able to re-establish what we had and get it recorded in two days. If we hadn't kept that data and I hadn't kept a record of the fact that the other song was derived from this one we'd have been fucked. So it does pay off.”

Coldcut's recent acquisition of a Syquest hard drive for their S1000 has enabled them to pre-prepare samples on a large scale and have them readily accessible to the S1000. Although this hasn't replaced the approach of searching for samples to suit specific applications, it has raised another important question.

“I've recently started to ask myself how many samples you actually need”, Black reveals. “Certainly, of loops there is no end, but how many kick drums do you need? A drummer doesn't change his kit every time he plays a different song. You *can* say this is a different song, I'm going to use different drum sounds, but do you *want* to say that?”

“I don't think there's any value in having more sounds than you can get your head around. KRS1 said that for the *Criminal Minded* samples he went through loads of old funk records and stuff and derived a kit and used that for his whole LP and a lot of other productions. It's like a drummer having a basic kit - if you've got your basic kit you can then say ‘I'm going to put an electro clap on the snare and change the feel of it.’”

“On the Youssou track we're doing at the moment Daniel's got the bass player from his band, Darryl, playing drums. Although every time he hits the snare drum is very slightly different, the sound is so good that you don't have to do what we often have to do, which is spend a lot of time sculpting sounds together. These already fit together because they're ‘real’. Sometimes having different sounds from different sources makes sense *because* it's weird, but sometimes it doesn't make sense because a real kit isn't like that.”

“It's getting the right balance between the sampler and the real thing”, observes More.

When MT spoke to one of the instigators of the Detroit techno movement, Kevin Saunderson (MT, September '88), he warned that the increasing use of samples was going to inhibit musical development. “What's going to be the music of the future if people keep on sampling all this stuff from the past?” he questioned. As original pioneers of the sampling

movement, I put the question to the Coldcut duo.

“Theoretically, if you only sampled, things could get a bit sterile” Black concedes. “But actually the amount of recorded music that you could sample is so great that the number of possible permutations is infinite. But that isn't going to happen because people are still playing their own sounds as well.

“There are more possibilities in the world of samples and their possible combinations, than there are in the combination of 12 notes. many of the combinations have already been covered - jazz is all about that. It's variations on a theme. Does that mean that the whole of jazz is valueless and can be reduced to the original riffs it's all derived from? Bollocks.

“Kevin's got a point, but as long as one spreads one's net far and wide, with an intent to try any fish one might catch, no matter how weird-looking they are, one will make an interesting fish finger.”

WHEN CONFRONTED BY THE BREADTH OF knowledge of music possessed by More and Black, it's easy to forget that they are also extremely capable of handling the hi-tech equipment that makes their activities possible. It's worth restating that Black is an Oxford science graduate as well as having spent time as a computer programmer with Logica. He is also rumoured to have learned the Atari ST/C-Lab Creator sequencing system still used by Coldcut in a single evening. Perhaps it is because he has a better understanding of what he thinks he can expect from technology that Black is never short of a story in which the gear has failed to deliver. Where other musicians may accept the situation, both Black and More are ready to criticise.

Using hired equipment seems to be one major source of trouble. In the last MT interview, a hired SRC Friendship had given them syncing problems and a Nomad synchroniser had wreaked havoc with their Creator sequences. This time a hired S1000 has trashed the contents of their hard drive.

Perhaps most worrying of all is their discovery of a major failing in samplers in general, as Black reveals: “We were listening to a reggae track one day and we sampled it into the Casio FZ1, played it back and the bass had disappeared. We thought it couldn't be right so we A/B'd it with the record and yes, the bass had disappeared. So we thought ‘Casio, you've served us well, but it's the end of the line. We're big boys now, we're going to get an S1000. We got the S1000, sampled the same record, A/B'd it and the bass had all disappeared.

“So samplers don't really work very well with bass. I couldn't believe it - I must be so naive even after all my years with computers. I thought samplers were supposed to record sound, but they don't really record much bass.”

But the news is not all bad - the TR909 has given way to a new Roland R8 with a full complement of sound cards and something called a Dynamic (“a cross between a harmoniser and a sex aid”) has provided them with a lot of entertainment.

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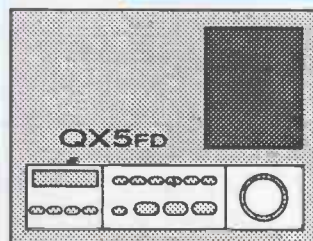
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► and a sax and it's for kids to make noises like spacemen really - but you can get some of the most outrageous sounds out of it."

Black's preoccupation with computers led him to use computer-synthesised speech on 'Ride The Pressure', off *Some Like it Cold*, in the absence of a suitable vocalist. It has also taken him into the realms of computer graphics.

Late last year Coldcut released a video collaboration with a team called Hardwire. Entitled *Coldcut's Christmas Break*, all the images in the sequence had been generated using an Atari ST, Commodore Amiga, Acorn Archimedes and Apple Macintosh instead of more usual professional computer imaging equipment like the Quantel Paintbox. As More steps back into the session in Studio 1, Black explains about his venture into computer graphics.

"I've got an Amiga 200 and quite a few toys for it - I got that rather than a Mac so that my four grand budget would stretch to quite a lot of software and a frame grabber, Genlock, a black and white camera and things like that. The Hardwire guys we've been working with, Miles and Rob, use Mac and Archimedes, and each of the computers has its strength.

"I see what's happening with graphics as being totally analogous to what's happened with music. You're as likely to come up with something wild and imaginative sitting at home as someone sitting on a Quantel Paintbox at £16 an hour. I've been waiting 15 years - literally - for computer graphics to get down to this kind of level so that I can afford to get in there. I've got a bit more money than I had a few years ago, so I've leapt in there and got going. I know not many kids are going to have £4000, but one reason I got the Amiga is because it's what a lot of kids have got. A lot of kids have Amiga 500s with memory expansions, and a lot of those kids spend all their time doing demos and computer graphics. It's an underground culture - I don't think many people realise how big computers are with kids.

"I see the whole computer graphics thing as being analogous to the dance revolution - which is where a lot of the effort in sampling and a lot of the technology has gone. For various reasons dance forms a parallel to graphics - I'm now sampling pictures off video or using the camera from a book, or of me or my girlfriend or whatever. I'm grabbing those things in and mashing them together. I can take them into Deluxe Paintbox and mess about with them - change the colours, erase the original drawing and just leave an outline. . . That's analogous to sampling and scratching. Then there's also an 'acid' thing where you can just draw abstract patterns and let them cycle, colour cycle, strobe. . .

"All the Stakker stuff (see MT, March '90) is done on the Fairlight CVI, and people in the know tell me that those things are what the CVI basically does. When that sort of tech gets into the hands of kids, they're going to start doing some pretty weird shit. It isn't quite there yet; it's going to need another year or two years to really, really get going, but in the next year it'll start moving. And we're going to see more people getting involved in it."

Fine, so we've got the technology and the manpower (kidpower?) to produce a video sampling revolution.

But sampled music had a ready-made market in nightclub culture, where does Black see the outlet for sampled video?

"Obviously there's TV and video. We're going to release our next album on CDV - just to make a statement, really. I don't know if that's the medium of the future, but it stands as good a chance as any of them at the moment. What it really needs is a new way of projecting computer images, and we think Hardwire have invented a way of doing it. I can't say any more about it now, but it's a cheap, rather clever, simple way of projecting video and computer images big. We're working on that with them.

"Aesthetically I think audio and video go together anyway, so it must work. I don't see why people in a couple of years, instead of putting out house records on their own dodgy white labels, shouldn't be putting out a video of half-hour mad, chaos cut-up images and some beats that they've done as well. And they can be doing it on an Amiga or on a Mac. They're doing the music, they're going to be doing the fucking visuals.

"Maybe I'm just a freak, but I've always been into both things. There are so many analogies between the way the two areas are developing, and the way you can get in there and hack, and the way that you can sample. You can grab a Picasso head in, draw over it and you've made it yours! I spend whole evenings doing this sort of shit. I just sit in front of the TV, flick through the channels, record onto videotape and sample 50 frames off it. Once you're playing it at seven frames-per-second it's almost subliminal. There's no way you can say 'that's from. . .'. Or maybe you will, who knows? The legal aspect is pretty serious. I'm sure it's going to cause some problems, but it's going to be the old argument. Theft is nothing new. Picasso got his style off some Cretan sculptor or something, know what I mean?

"Also, it's much more easy to hide your sources in graphics than it is with samples. If you play a James Brown sample backwards it doesn't really sound so good any more. But if I flip a picture from side-to-side it's just as effective. If I take a picture I've sampled in, draw over it in loving detail and then erase the original, what are you saying now?"

When it comes to trying to condense Coldcut's short career into a few pages in a magazine, the task is harder than is the case with many longer-established, more readily recognised artists. That Coldcut's catalogue of music is so varied and resourceful is a tribute to their understanding of what makes good listening. And the fact that they fit so badly into any convenient category themselves further underlines this.

"We're crossfield" says Black, when asked to define Coldcut. "We're our normal, schizophrenic selves. We think we've got a license - we think everyone's got a license - to do any kind of music they want. Everyone. If they want to stick to one thing because it's what they think sells, or it's all they can do, or that's all their fans want them to do, that's fine. But we like to have a little dabble here and a dabble there - you've got to pick a pocket or two. We pick the lot."

"It's a triumph of the distiller's art", quotes More, reappearing to drag Black back to work in Studio 1. As I leave the Townhouse I can't help but feel I'm missing out on something very good indeed. ■

"OK Norman, so the sounds are great. But what about the Image?"



Usually you wouldn't take much notice of Norman's opinions but his choice of sounds for his Korg M1 is spot on. Recently an International Musician review proclaimed that the Valhala International Gold Card was 'a killer batch of sounds' that 'knocked the parameters off the standard library cards'. Whilst Sounds suggested 'If you have an M1 and want to see how it should be done...buy them and weep' so Norman is not exactly sticking his neck out. So whether you own a synth or a sampler, AMG have a range of peripherals that will allow you to enhance your creative possibilities without having to break the bank. By supplying you directly from the manufacturer AMG is able to bring you the highest quality products at only a fraction of the cost of what you would normally expect to pay.

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software

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The disks have been arranged to make best use of the available storage space, so the combinations of programs on any disk are a result of this attempt to make the service as friendly and cheap as possible, not for any other reason. Please note that not all the programs will be accessible to the 520ST due to the nature of its disk drive, but the disks will run on all other STs. If you're using a 520ST we will supply each "Disk" on two single-sided disks, thus ensuring all programs are accessible to you.

DISK 1

Vkiller, TDM Prodigy, Mididrummer.

The original virus killing program by George Woodside (written in May '89 and able to cope with almost all viruses currently in circulation). Also includes demos of TDM **Prodigy** (reviewed MT, April '89) and **Mididrummer** (reviewed MT, June '89) with only save routines disabled.

DISK 2

Flu, Hybrid Arts Ludwig.

Flu (written by George Woodside) is a simple program which demonstrates some of the less-harmful screen symptoms of viruses currently circulating. **Ludwig** (reviewed MT, April '89) is Hybrid Arts' powerful algorithmic composition program.

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DISK 3

Gajits Sequencer One, Keynote Chameleon, Dr T's Proteus Editor.

All recent software: **Sequencer One** (reviewed MT, March '90) is a comprehensive entry-level sequencer, **Chameleon** (reviewed MT, Dec '89) is a new-style generic patch librarian that will run as a desktop accessory and **Proteus Editor** (reviewed MT, March '89) is Dr T's editor for E-mu's popular sample reader.

DISK 4

Intelligent Music Realtime, Dr T's X-Or.

IM's **Realtime** (reviewed MT, April '89) is an "artificially intelligent" sequencing program which is designed to encourage the gentle art of experimentation; **X-Or** (reviewed MT, November '89) is Dr T's powerful generic patch editor.

DISK 5

Hybrid Arts EZ Track Plus, Quinsoft Trax studio accessories.

EZ Track Plus (reviewed MT, Dec '88) is a budget sequencer which retains the feel of Hybrid's upmarket Edit and SMPTE Track packages; **Trax** is a new nest of studio management programs: track sheet, cuesheet, cassette labelling, address book (including industry contacts), invoicing forms. . .

DISK 6

Hollis Trackman, Quinsoft FB01 & 4-Op FM librarians.

Trackman (reviewed MT, March & Dec '89) is Hollis Research's friendly, cost-effective 32-track sequencer (demo includes fully-working D50 librarian and 500 6-Op FM patches). **Quinsoft's Price is Right** librarians for Yamaha FB01 and 4-Op FM synths (reviewed MT, Feb & March '90 respectively) includes fully-working MIDI channel and controller accessory.

DISK 7

Penicillin, Passport Mastertracks Junior.

Penicillin is a virus killing utility written by George Woodside - it specialises in cleaning the boot sector of infected disks - use with care! **Mastertracks Junior** (reviewed MT, June '88) is a 64-track budget sequencer which retains many Pro features.

Disks cost £5 each (please add a further £1.50 if you want software supplied on two single-sided disks).

NB: This is the library available at the time of writing. More disks will be added to the list as soon as they are ready - keep an eye open for free synth sounds soon to come. This service is to help you try out software before you buy - we will continue to run it as long as you support it. This is not a profit-making venture on behalf of MT.

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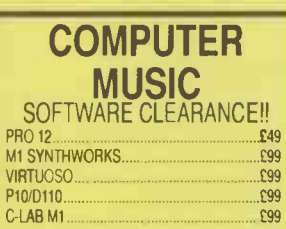
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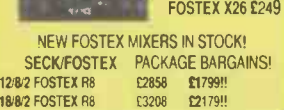
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Review by
Simon Trask.

MANUFACTURERS SEEM TO take it in turns to have their moment of glory - that wonderful moment when they produce one synth which stands out from the rest. Think of Sequential with the Prophet 5, Yamaha with the DX7, Roland with the D50, Korg with the M1. . . all instruments which set a standard for their time and achieved a degree of success which was the envy of other manufacturers.

So, is 1990 shaping up to be the year in which one manufacturer will take the lead over all the others? On the evidence so far, it seems unlikely - everyone seems to be attempting to trick a new variation out of the same level of technology. But it takes more than a technological edge to create a great leap forward: a conceptual edge is just as important, if not more so, in deciding who the winner will be. For example, it was the Americans who invented the transistor but the Japanese who saw what could be done with it - and look where they are now.

In a sense, technology is just so much worthless junk until someone comes up with a concept that will

give it life. Looked at another way, technology is a time bomb waiting to be exploded by the ingenuity of the human mind.

But there is a third component in the equation: cost. New technology has to meet not only right concept but also right cost - a cost which can be absorbed, ultimately, by the market for which the application of that technology is being produced. Here the equation runs into a tricky variable or two, because, even if the cost is right in absolute terms, what the market will absorb depends on what else is available to it - not to mention how sponge-like you and I are feeling at the time.

At the moment the £1500-2000 price bracket isn't exactly sparsely populated when it comes to synths. There's Yamaha's SY77, Peavey's DPM3, Ensoniq's VFX SD, Korg's Wavestation. . . With the exception of the Wavestation (which is the cheapest of the lot, anyway), all these synths could be said to fall into the workstation category, with the requisite onboard sequencer and 3.5" disk drive combining with a mix of sampling and synthesis, multitimbrality, a drumkit section and digital effects processing.

And now along come Roland with the D70, a synth without workstation pretensions (in other words, no onboard sequencer and disk drive) but with the other elements I've just mentioned. Initial impressions of the D70 have suggested that Roland are merely catching up with what the other manufacturers have been doing. There again, with a multitimbral implementation which runs to five Synth Parts and one Rhythm Part, and a distinctly modest collection of digital effects in comparison to the competition (what's more, one which if anything appears to offer less than the D50), are Roland really catching up at all? Or are they, perhaps, not so much trying to catch up as heading off in another direction which might turn out to be more rewarding?

THE BEGINNING

FIRST IMPRESSIONS ARE always important but not always right. Unfortunately, spending a bit of time with an instrument can't always give you a proper perspective on it - some things just need to develop gradually. I must say that the D70 did not make a good impression on me when I first got hold of it for review, but after spending more time with it and developing a much more favourable attitude towards it, I wonder why that was the case. Perhaps it was because the factory sounds give the impression that the D70 is catching up with the times rather than setting new directions, while hopes of user-friendliness raised by the D70's sizeable backlit LCD and its four front-panel edit sliders and buttons are seemingly dashed by screen layouts which confuse rather than clarify, and by sliders which take on more functions than Heinz have varieties.

In truth, the D70 includes a new development which allows you to step outside the familiar sonic boundaries of LA synthesis into all manner of weirdness. As far as the screen layouts are concerned, familiarity breeds clarity, and as far as the sliders are concerned you end up making their assignability work in your favour.

The D70's 76-note keyboard will, no doubt, prove to be a more immediate attraction for keyboard players who value a bit of extra reach over the usual 61 notes (in fact, eight notes below and seven above the usual C-C range). It's sensitive to attack and release velocity and channel aftertouch, and has a synth rather than a piano action. It does, however, avoid being too lightweight through having just a bit of resistance in the key depression, while a slightly bouncy release makes it a little disconcerting to play at first. It's not the sort of keyboard you feel you can dig into, but then how many synth keyboards are?

OVERVIEW

THE SONIC BASIS of the D70 is provided by 114 Original Tones - a mixture of PCM single and multi-sampled PCM-encoded sounds, short PCM loops and waveforms - which are held internally in ROM. These are divided into three categories: Acoustic (42), Synthesiser (44) and Percussion (28). Internal Original Tones can be augmented by further samples

off new PCM ROM cards developed especially for the D70 and existing SN-U110 series cards, which can be plugged into two ROM card slots on the rear panel of the D70.

An Internal or Card Original Tone is used as the sound source for a Tone, which is the oscillator-filter-amplifier configuration we all know and love. There are 128 of these in internal memory, with a further 128 accessible off RAM card.

The next organisational layer is the Patch, which contains within it a Tone Palette, or collection of four Tones, plus parameters which apply to the Patch as a whole. The Tone Palette not only allows you to select four Tones, it also lets you make adjustments to selected Tone parameters in the form of \pm adjustments to the values programmed into the Tone. What this gives you in practice is a simplified form of sound programming at the Patch level - a neat idea.

A Patch is the unit of sound which you play on the keyboard; there are 128 of these internally and a further 128 on card. The four Tones which make up a Patch are labelled Lower 1 & 2 and Upper 1 & 2, referring to which side of the programmable keyboard splitpoint they fall on when you select Split mode for a Patch. Alternatively you can select Layer mode (all four Tones are layered across the keyboard) or Zone mode (each Tone can be given its own independent note range). It's also possible to define how (or if) velocity will affect the balance of each pair of Tones: you can switch or mix between the Tones, with the switch or mix point determined by a threshold sensitivity parameter. Additionally, you can set Key Assign for each pair to poly or mono, and if mono you have the option of specifying legato and using portamento.

At the point I should mention that the D70 is 30-voice polyphonic, which gives you seven notes to play with if you're layering four Tones.

Alongside the Tones and Patches is the Rhythm Setup, a drumkit-style assignment of Original Tones across the keyboard. In stark contrast to the profusion of drumkit memories on Ensoniq's SQ1, the D70 has only one internal and one card Rhythm Setup. A Setup can draw on any Original Tones, not just the Percussion ones - and equally a Tone can draw on Percussion as well as Acoustic and Synthesiser Original Tones.

As mentioned in the introduction, the D70 has five Synth Parts (or Synthe Parts as Roland call them) and one Rhythm Part. Each Synthe Part can be assigned one Patch, while the Rhythm Part is assigned a Rhythm Setup. The means of organising these Parts is the Performance, of which there are 64 held internally and a further 64 on card. Each Performance allows you to program a different multitimbral configuration of Patches plus Rhythm Setup, along with MIDI receive settings for each Part and settings for the D70's effects processor and MIDI Palette. This Palette is akin to the Tone Palette in that it allows you to make MIDI Out settings for each of the four Tones within a Patch, only instead of being programmed for each Patch it applies to whatever Patch is assigned to the keyboard within the ►

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► current Performance. Using the MIDI Palette you can have each Tone transmitting on a different MIDI channel, within its own MIDI note range and with its own MIDI transposition (± 24 semitones). Additionally, you can use the MIDI Palette to transmit a MIDI volume command and MIDI patch change per Tone when a Performance is selected. A quick way to have one set of MIDI Palette parameter values apply to all Performances is to set the System parameter MIDI Link to off - this tells the D70 not to call up new MIDI Palette values when a new Performance is selected.

Incidentally, while patch changes received on each Part's MIDI channel can be used to select new Patches within individual Parts, you can also set aside a particular MIDI channel as a Control channel for selecting Performances.

In addition to being able to select Performances from the D70's front panel using the Bank and Number buttons, the synth provides what Roland call User Sets. There are ten of these in internal memory and a further ten on card. Each User Set allows you to assign any five Performances to the five function buttons located below the LCD window, with their names being displayed in the window above each button. The idea, of course, is that you can group related Performances into a User Set for easy selection. The D70 powers up at this level, though if you press the front-panel Performance button you can select Performances from the eight Bank and eight Number buttons. Similarly, if you press the Patch button you can use the Bank and Number buttons to call up Patches, with the A/B button allowing you to switch between the two groups of 64 internal Patches.

In practice the D70 is in Performance mode all the time. While a multitimbral sequence is playing on the synth, from the front panel you can edit the Tone Palette parameters and Tone parameters of the Patch selected for whichever Part is currently assigned to the keyboard - all without disturbing sequence playback in any way. What's more, writing Patches and Tones to memory doesn't interrupt sequence playback either - even if the Patch or Tone you're writing is playing as you write.

Unfortunately, the D70's copybook isn't entirely blot-free in this area. When you select a new Patch, call a new Tone onto the Tone Palette or select a new Original Tone within a Tone, notes in all the Parts (including the keyboard - currently-selected Part) which are active at the moment of selection are cut dead. The effect of this can range from a glitch if the notes are short to a dropout if the notes are long. Selecting Edit mode from Play mode has the same effect. So if you're playing out live with the D70 and using a combination of sequenced backing and a live keyboard part, you can't select new Patches from the keyboard while a sequence is playing. You also need to be careful in changing from one Performance to another, whether from the front panel or via MIDI, because active notes can't overlap a Performance change, nor is the changeover instantaneous.

You'll perhaps gather from this unfortunate state of affairs that the D70 doesn't have the ability to

overlap sounds when you change Patches (something which American synths from the likes of Ensoniq have been able to do for years, and which Korg and Yamaha have started doing with the Wavestation and the SY22).

MIDI patch changes are transmitted for each Tone within the MIDI Palette when a new Performance is selected (and if MIDI Link is enabled) and when you select a new Patch. But you can also transmit a MIDI patch change from the synth at any time, on the MIDI transmit channel of any one of the four Tones, by means of a process which seems a bit tortuous at first but which becomes quite quick with practice. For some reason, though, you're not able to transmit MIDI patch changes in this way when the D70 is set to local off mode.

IMMEDIACY

FOR BETTER OR worse, musicians associate Yamaha with convoluted digital parameter access while recalling that Roland once made accessible, friendly synths with knobs and sliders on them. Roland aren't the only surviving manufacturer from the old analogue days to have done this once, but the undying popularity of their early analogue monosynths and polysynths means that the focus tends to be on them whenever the subject of user-friendliness comes up.

With the D70 they're clearly trying to make sound programming easier and more interactive than it has been for a while, through a combination of buttons, sliders and assignability. To the left of the LCD are four sliders and four on/off buttons. The buttons control Tone on/off for the four Tones of the current Patch in both Play and Edit modes, with a pinpoint LED on each button giving you clear indication of which Tones are on and which are off.

In Play mode the four sliders, which control the four Tones, can be assigned any one of nine parameters: Level, Pan, Tuning, Cutoff, Resonance, Attack, Release, Solo and Portamento. These assignments can be instantly changed using the buttons to the left of the sliders, with pinpoint LEDs giving ready indication of the currently-selected parameter. So one moment you can be balancing the levels of the four Tones, then in an instant you can be editing their filter cutoff points, and in another instant you can be editing their resonance amounts. This is what you could call a positive development.

Once you enter Edit mode, you can assign the sliders to edit four parameters *within each screen display* at the Patch and Tone levels. (Re)assigning a slider is so easy and fast (select the relevant parameter using the cursor buttons, then hold down the slider's Tone button and press User) that you can make frequent changes without feeling that it's a chore to do so.

What's a bit more of a pain is the method Roland have used to indicate the four selected parameters within each screen display: one dot for slider one, two vertical dots for slider two, three for slider three and four for slider four. It can be difficult enough picking out the four selected parameters in the LCD, let alone deciding which is two and which is three, ►

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► or which is three and which is four. Still, once you start to figure out your own preferred assignments, things start to fall into place - and the benefits are worthwhile. Take the Tone Palette: you could be editing the currently-selected Tone's filter cutoff on slider one, resonance on slider two, envelope attack on slider three and envelope release on slider four.

Something you have to get used to when using the sliders is that parameter values have absolute slider positions, and when a parameter and its value are called onto a slider you have to run the slider across the relevant position before you can use it to edit the parameter. This can be a little disconcerting at first, not to mention annoying, though to be fair it's hard to see how else you combine programmable parameters with sliders and don't get jumps in value as soon as you move the slider.

The Tone Palette is itself a user-friendly feature. In addition to the parameters I've just mentioned, you can make \pm adjustments to the programmed values for level, key shift, fine tune, output assign, pan and Zone (key range). These adjustments, which are stored as part of the Patch, don't alter the parameter values stored as part of the Tone. This means that you can start editing not from the Original Tone but from a complete synthesised sound - a much quicker process - and create different versions of the same Tone. You just have to bear in mind that making changes to a Tone will affect all the Patches which use various versions of that Tone via Tone Palette edits.

Other user-friendly features include the Exit button, which steps you back up through the levels to the User Sets; the Function buttons, which allow for quick selection of related screen displays; the familiar Jump function, which allows you to assign five displays to the Function buttons and then Jump to them via the User and Function buttons; and the Tone Display, MIDI Out, Effect/Control and Part buttons to the left of the LCD which provide immediate access at the Play level to those aspects of the D70.

A modest array of performance controllers can be found to the left of the keyboard. The familiar bend/mod lever gives you greater flexibility than you might expect, with two parameters controllable for each axis (for example, pitchbend + TVF cutoff point on the "x" axis, TVA level + LFO TVF on the "y" axis) and each parameter separately routable to Upper, Lower or Both. The volume slider is joined by two more sliders: a dedicated brightness controller (gold star time, Roland) and a controller which can be programmed to control two parameters from the same TVF, TVA and LFO selection as the pitch/mod lever, with the addition of portamento time - and similarly route each one to Upper, Lower or Both. The expression pedal input on the D70's rear panel automatically adopts the same parameter(s) and associated settings as the slider, functioning as an alternative controller for when you don't have a hand free. The slider/pedal is particularly useful for controlling the filter cutoff point, allowing you to make rapid adjustments to the character of a Patch. Finally, aftertouch can be used to control two parameters from the same selection, with the same

choice of routings, while the sustain pedal input is only routed to sustain but can control (yes, you guessed) Upper, Lower or Both.

TONE PARAMETERS

A D70 TONE consists of a Wave Generator, a Time Variant Filter and a Time Variant Amplifier - each of which has its own five-stage Envelope Generator - together with a single LFO which is common to all three stages, but which has separately-definable modulation amounts for each stage. Now, there's nothing which is particularly original about this, though as far as LA synthesis is concerned it's worth noting that the old distinction between sampled and synthesised sounds (whereby a sampled sound couldn't be filtered) is not part of the D70's world, a positive step forward. At the same time the D70 does lose two LFOs compared to its flagship predecessor, the D50.

The D70 offers a choice of low-pass, band-pass and high-pass filtering, with resonance included along with cutoff point, filter envelope and various associated parameters such as envelope depth, key follow, Time velocity and Time release velocity. Resonance is not something which every manufacturer is offering, yet to my mind it's a valuable resource for creative programming, and its inclusion on the D70 scores Roland a significant number of brownie points. The D70's filtering is essentially the same as that on Roland's S770 sampler, and is probably the best digital filtering available at the moment.

The TVA offers essentially the same parameters applied to amplitude, while the LFO offers a choice of triangle, sine, square, sawtooth and random waveforms together with rate, delay, rise time, offset and mod depth parameters.

There's good news for anyone interested in expanding the range of drum and percussion sounds beyond the samples supplied by Roland. As well as being able to incorporate any instrumental Original Tones into the D70's Rhythm Setup, tune Rhythm Tones over a two-octave range and give them a simple pitch envelope (attack time and depth), you can route each Rhythm Tone through its own TVF and TVA. The TVF is particularly effective for creating new drum and percussion sounds out of existing ones - again, judicious application of resonance can lead to some interesting results. Other Rhythm Setup parameters include Mute (which allows one Rhythm Tone to be muted by another), Pan (one of 15 positions) and Output Assign (Reverb, Chorus, Dry or Direct). Incidentally, Tone pan and output assignment settings are programmed at the Tone Palette level, so they're independent of the Tone itself.

The 28 samples in the Percussion category of the D70's Original Tones provide four kicks, five snares, two toms, hi-hat, china and crash cymbals, ride bell, side stick, sticks, cabasa, claps, cowbell, elec tom, click, agogo, orch hit and several TR808 sounds (snare, hi-hat, tom and claves). Having finally cottoned on to the fact that people want 808 samples, Roland are now throwing in various ►

► numbers of them at every possible opportunity. And why not? But what about those 909 samples, Roland?

EFFECTS

IT WAS ROLAND'S inclusion of digital chorus, delay and - above all - reverb on the D50 which set the ball rolling for digital effects processing on synths. Subsequently they've been somewhat eclipsed in this area by Korg and Ensoniq, so the D70 might have been seen by the company as an opportunity to make an effective comeback, so to speak. As it is, they've given the D70 less effects than the D50, and made the implementation in some ways less flexible.

The D70 allows you to choose one effect from six reverbs (Room 1-3, Hall 1 & 2 and Gated), delay and cross-delay, and one effect from Chorus 1 & 2, FB-Chorus, Flanger and Short Delay in another effect. The latter can be placed either before or after the reverb/delay effect. There are just three reverb/delay parameters: reverb/delay time and level and delay feedback (number of repeats). Chorus/flanger allows you to set level, delay, rate, depth and feedback. The quality and feel of the effects is good, but no-one's going to say they're comprehensive.

What's more, because the D70 is effectively always in Performance mode you can't program effects for individual Patches. So if you're selecting new Patches at the Patch level rather than through calling up a new Performance, you may find, for instance, that the reverb is too boomy on one Patch but just right on another. Still, at least you can readily get to the effects parameters by pressing the Effect/Control button, and from there make quick adjustments to the relevant parameter(s).

ANALOGUE FEEL

OK, BY VIRTUE of its provocative name the D70's Analogue Feel parameter should be rather important. But in practice it's not a technological magic wand able to turn the D70 into a carbon (or should that be silicon?) copy of a Jupiter 8 - or of any other analogue synth, for that matter.

According to Roland, this parameter is intended to simulate the pitch fluctuations which are associated with analogue oscillators but which, of course, have had no place in the rock-solid world of digital oscillators - until now, that is. Only, where analogue oscillators handled a very limited number of waveforms, today's digital oscillators typically handle a great diversity of sonic material.

It's also worth bearing in mind that the original effect arose, and was constrained by, the characteristics of the system in which it operated. No such constraints operate (or, seemingly, have been recreated) within the software-defined world of the D70, and so it becomes a parameter which takes on a reality of its own. It's also worth noting that the parameter is programmed per Part at the Performance level, which means that (a) one setting applies to all the active Tones in the selected Patch, when of course it might not be appropriate for all of

them, and (b) if you're selecting different Patches within the Part, a Feel setting might work well for one Patch but not for another. On the other hand, it might be an interesting meeting. . .

Subtle touches applied to the right sound(s) can have a pleasing effect, but Analogue Feel is no automatic passport to analogue heaven.

DLM

DIFFERENTIAL LOOP MODULATION scoops the award for most interesting development on the D70 as far as sound creation is concerned. This is because it allows you to create sounds which step beyond the boundaries of LA synthesis into a less familiar world, and, with only three parameters to handle, it's dead easy to program.

When activated, DLM becomes an integral part of a Tone. Basically, it comes at the oscillator stage of the synthesis chain and replaces straight PCM sample readout with something more bizarre. You can select DLM mode (A or B), and set the start point from which the PCM sample will be read (0-127) and the length which will be looped (1-128). That's all. Three parameters. The diversity of sounds you can extract from DLM seems all the more amazing when you consider the straightforwardness of its presentation, but then it does more than simply loop around a section of a sample. Where ordinary PCM sample playback pays attention to the numeric value recorded for each sample point, DLM ignores this value in favour of another, namely the one which describes the difference between two successive sample points. Say your loop consisted of four sample points with values of 46, 40, 38 and 39 respectively. DLM would describe that loop with values of -6, -2 and +1 - the differences between the successive sample points. Starting with the original sample-point values, each time round the loop the DLM process works out new sample-point values on the basis of the difference values, so that the second time round the loop the actual sample-point values would be 33, 31 and 32, while on the third pass they'd be 26, 24 and 25. Obviously there comes a point where a minimum value is reached, and at this point the DLM process "wraps around" the maximum possible value and continues its descent; if the difference series described a rising waveshape, then the DLM would "wrap around" from maximum to minimum.

The above description of the DLM process is derived from the explanatory diagram found in the D70's manual (page 75), rather than from any text - because what little text there is is incorrectly worded (surprise surprise). Two things should be clear, though, namely how it is that DLM arrives at a completely different sound from that of the source PCM sample, and how making even a slight change to the Start or Length value can result in a completely different sound. Well, that's the convenient theory - in practice, sometimes many changes to the Start and Length values result in very little difference in the resulting sounds, other times a single change can produce a striking difference. Switching between A ►

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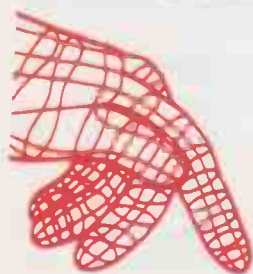
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“The D70's Analogue Feel parameter is intended to simulate the pitch fluctuations which are associated with analogue oscillators.”

► and B Modes results in different sounds from the same Start and Length settings, so it seems quite possible that there's something else going on with DLM that I haven't explained - because Roland haven't seen fit to provide any explanation of what the two Modes signify.

I don't suppose the above rather lengthy discourse on DLM really tells you what DLM-produced sounds are like, but perhaps it will remove some of the mystery from the process if not from the results. DLM isn't an automatic passport to brilliant sounds. In fact, at times it can seem more like an automatic passport to farting helicopters, constipated geese and worse. But then suddenly a particular setting will call forth a great sound which you couldn't have got by filtering a sample. Don't forget, DLM comes at the oscillator stage, which means that you can take your weird sound and make it weirder - with a filter envelope and resonance, for instance.

DLM isn't only about the weird and unfamiliar, though. For instance, there's the reasonably acceptable bass sound, complete with a touch of resonance, which metamorphoses into an altogether fatter, punchier, funkier bass sound the moment DLM is switched in.

There's more than an element of “poke 'n' hope” to DLM, but the point is that you've got three parameters and you can edit them very easily - which is probably a good idea, seeing as they can provide you with 32,768 different combinations of parameter values. Experimentation is the name of this particular game.

SOUNDS

THE D70 IS well capable of being the most sophisticated-sounding synth on the block, bringing forth full, luscious, heavily-produced sounds. It can provide a very effective, not to mention affective, mixture of smoothness, breathiness, warmth and clarity, and in general has a vibrant sound full of presence. Make no mistake, the D70 can sound very pretty - very Enya. At the same time it can sound quite rude, though I'm not sure about ugly, nor dirty. Japanese synths have a tendency to sound pure rather than dirty.

Let's consider a few of the Patches on the D70 as a means of seeing what it has to offer. 'Fflute' layers Pan Pipes and Flute but gives them velocity sensing and velocity curve values which cause the former to be mixed in with the latter only when you hit the keys hard - the effect being to introduce a breathy “chiff” on more forceful notes. 'Calliopead' combines Calliope, Pan Pipes and Shaku to create, well, just the sort of breathy sound you'd expect. Roland seem determined to show that the D70 can do this sort of sound as well as any other synth, and indeed it does.

'Ghost Vox 1' is a breathy, ethereal sound with a bell-like sonority mixed in, produced from Syn Vox 2 and Fanta Bell. 'GrandPf Switch' is a well-rounded, full-sounding acoustic piano, very satisfying to play, which is made up of A. Piano 4 and EP Wave. 'NiteSprite', meanwhile, is a muted strings/voice/metallic-bell pad sound, while 'Sweep Str' is a mix of Digi Bell and

Strings 1, with a deep bass end on the strings and a raspy upward filter sweep on the bell, with DLM applied to the bell sound to give it a deeper, more brassy quality.

'Strings', which combines JP Strings with 2xStrings 1, is an endearing mixture of classical string orchestra and silky synth strings. 'Vibes + Bass' is one of my favourites, a split texture with Fretless and Acoustic Bass layered in the lower half and a sensitive use of velocity sensing in the upper half to give a dark electric piano on soft notes and chunky vibes on loud notes. 'Big Guitar' layers Slap 2, Distorted 5ths and 2xHeavy EG for a distorted electric guitar sound. With the distortion as part of the samples, there are no worries about lack of flexibility in digital effects routing - but give me the Compression + Distortion effect on Ensoniq's SQ1 any day.

VERDICT

THE D70 REPRESENTS a significant step forward for LA synthesis, certainly, though not such a significant step forward in the wider world of synths. Existing LA synth owners can look to such things as the new breadth of source sounds, including the ability to access further samples on two ROM cards at a time; a cleaner sound quality; no restrictions on filtering, plus the advent of a superior digital filter.

The D70 has a reasonable selection of acoustic instruments in among its internal samples, but its ability to read SN-U110 sample cards should open this aspect up pretty quickly (beware, however, that there are a couple of drum and percussion cards which the D70 won't read). Its 76-note keyboard is another point in its favour for keyboard players, as is the keyboard's channel (re)introduction of aftertouch and of release velocity responsiveness.

You do need to familiarise yourself with the D70 operationally, but once you've done this, programming it is not difficult - especially if you're working at the Tone Palette level. DLM processing is a significant addition to the more familiar sound programming tools, and should help to point people in the D70's direction. The other important new aspect of the D70 is, of course, its attempts to provide faster editing control, and here the sliders and buttons come into their own once you've got past the initial lack of familiarity with the synth.

But there are disappointments. A more sophisticated multitimbral implementation and a greater variety of digital effects wouldn't have gone amiss. I would also like to have seen the D70 implement patch overlapping (then, perhaps, some of the nonsense which happens with notes being cut dead in multitimbral performance wouldn't have happened).

Overall, though, the D70 is a worthy new flagship synth for Roland, and an instrument which I can see a lot of performers being attracted to. ■

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MULTIVERB III

Like *Dr Who*, ART's Multiverb is back after another successful regeneration - it looks the same, but how does it perform? Review by Tim Goodyer.

THE NOVELTY OF budget studio signal processors has now definitely worn off. In place of the wonder of being able to get reverb that *doesn't* sound as if it's been produced with the latest in stainless steel bucket technology at a fraction of the price the pros were used to paying for "professional" reverb units, is a high level of expectation of performance and facilities. In other words, we take modern reverb units for granted. But it's worse than this; we now expect digital signal processors to give us a wide range of effects, access to more than one effect at a time and luxuries such as MIDI control - for well under a grand. Where the pro used to keep a rack full of units to cover a variety of applications, modern musicians can turn to a single unit to meet most, if not all, of our needs.

With the market spotted and the technology available, the R&D teams went to work. Yamaha, Roland, Alesis and ART have all delivered a range of attractive and cost-effective multi-fx processors. Of these, New York-based ART are perhaps the least readily recognised in the UK. Yamaha's SPX90 quickly established itself as an industry-standard unit. Roland's DEP series attracted a faithful following. And, as usual, Alesis got the costings down far enough to make them the heroes of the day. ART, meanwhile, produced a line of quality, moderate-cost units that gained approval wherever they appeared.

As its name implies, the new Multiverb III has two predecessors - evidence of ART's policy of continual improvement. The 'III is part of a range of effects processors intended to offer something for everyone - the budget Multiverb LT (192 presets and choice of three simultaneous processes) and the pro DR-X (with its gates and excitement processes, and the capacity to handle ten simultaneous treatments) complete the line of "reverb" units. The Multiverb III offers four simultaneous processes, 53 families of signal processing, 200 programmable memories and MIDI performance control.

THE BOX

A DETAILED SURVEY of the Multiverb III reveals that it retains many of the Multiverb II's characteristics (see MT November '89). The panel layouts are identical, the display format still uses a seven-segment LED to indicate memory locations and operation mode (Keypad, Edit or MIDI) and a two-line LCD to show the name and effect configuration of a memory location.

Ten buttons handle all the operational functions -

everything from selection of effects to naming treatments committed to memory - two more scroll you through the machine's memories, one steps you through the three operation modes and one more allows you to bypass the process.

Three sliders complete the front panel. These control the audio input level, audio output level and the effects mix - used when you patch the unit into the insert points on a mixing desk and need both the processed and dry signal to appear at the outputs. When used in conjunction with aux send and returns, the processor is only required to output the treated signal.

Placing the Multiverb alongside the LT and DR-X reveals that the panels are identical - an indication of streamlined production and marketing strategy.

The rear panel houses MIDI In and Out sockets, and the quarter-inch jacks necessary to accommodate stereo audio processing - the Multiverb III accepts a stereo input signal as well as producing a stereo output. There's also a Remote jack that can be programmed to bypass the unit, step (upwards) through the memories or trigger the sampling facility.

There's still no sign of a mains switch on either panel - but then who really uses them?

OPEN THE BOX

THE HEART OF the Multiverb III is still the tidy, 20-bit processing that gave the Multiverb II its warm sound and low noise floor.

ART's promo literature claims a better than 90dB S/N ratio, and that the unit possesses some 53 different effects. It depends on how you categorise your effects, of course, (they also claim the unit to be "all new" and "the ultimate refinement in digital signal processing" - in which case they wouldn't have released the DR-X). That the unit is very quiet in operation is indisputable, and the list of available treatments is long, as you will now see.

There are 24 reverb algorithms: Hall 1-3, Room 1-3, Plate 1-3, Vocal 1-3, Gated Slope 1-3, Gated Flat 1-3, Gated Reverse 1A-3B. Digital delays take eight forms: Mono DDL Short (0-1600ms), Mono DDL Long (0-1800ms), Tapped DDL Short (0-1600ms), Tapped DDL Long (0-1800ms, 18 algorithms), Regenerated DDL Short (0-1600ms), Regenerated DDL Long (0-1800ms), Stereo DDL Short (0-1800ms, different increments on left and right channels), Stereo DDL Long (0-2s). The Equaliser offers simple rolling-off of the top end (13 steps 665Hz-15kHz), while the Flanger and Chorus (two algorithms each) can be set either "post" or "pre" other treatments. The

remaining effects: Sampler, Pitch Transposer and Sampler + Pitch Transposer are more complicated.

Reverb processes include control over decay, HF damping, position (within the reverb environment) and level, while Gated reverbs offer control over decay, diffusion and level. Delays contain similarly relevant parameters (regeneration, number of taps in a tapped delay line, and so on, while the panner has the only required modulation (depth) and speed controls. Flanging and chorusing - related effects - share width and speed parameters, but where the Flanger uses regeneration, the Chorus has a delay control.

The Multiverb III's sampler represents a significant new addition to the machine and takes two forms - Sampler Short (up to 1.7 seconds) and Sampler Long (up to 2.0 seconds); both use full audio bandwidth. Recording can be triggered automatically (when the Multiverb detects an incoming signal), manually (front panel or footswitch) upon receipt of an incoming MIDI note on. A start delay of up to 100ms can be pre set; this parameter, along with the sampling time, can then be used to edit sample start and end points. Playback may be initiated from the front panel as either single or looped play, or over MIDI (single play only). Note that the sample will not track incoming MIDI note numbers, it just triggers to the message.

The Pitch Transposer comes in three flavours: smooth, normal and quick, and shifts signals up to an octave sharp or flat. As a straightforward transpose, this can be used to create vocal or instrumental harmonies - I also used it successfully on recorded programs (CDs). The effect is least detectable when the shift is small, but the three different types of shift work best in different circumstances - experiment.

The Sampler + Pitch Transposer is a useful combination of processes that allows you to play back a sample with a pitch shift. This works well with anything from bass notes to drum loops - as long as you don't need more sampling time than the Multiverb offers.

Due to the finite processing power of the Multiverb, certain combinations of effects are illegal. Other combinations are only permissible with the effects in a specific order. This is restricting by definition, but whether these limitations will affect the usefulness of the unit depends on your specific requirements. Certainly, if you're using the unit in conjunction with another signal processor, you'll find it a very capable unit. If it's your only effects unit your music will largely dictate what you require of it - but there are "rules" that hold good across most sound processes (after all, it's still sound), and the Multiverb has been designed in a pleasingly musical way.

Life is made easy for you by virtue of the fact that the Multiverb will only offer you legal combinations of effects based on those you've chosen already. The manual advises you, therefore, to make the most musically important selection of effects first - and it's a system that works well in use.

Memory locations 1-110 contain factory presets and are locked when the unit arrives. These can be unlocked, however, for editing or overwriting. If all instruments' presets offered us this option, I suspect

there would be a perceptible fall in the general level of "studio stress". In practice this makes any piece of gear significantly more useable.

PERFORMANCE

ONE OF THE most powerful aspects of the Multiverb III is Performance MIDI. More than MIDI patch changing, this allows simultaneous control of up to eight parameters using MIDI messages - reverb decay could be controlled with a synth's mod wheel, say.



PHOTOGRAPHY: JON SHRIMPTON

Although ART have chosen to refer to this as Performance MIDI, it also opens up the possibility of recording MIDI control information in a MIDI sequencer and having the Multiverb respond to it on playback. In this way quite sophisticated use can be made of a single signal processor. When used in conjunction with a mixing desk equipped with MIDI muting (Tascam's MM1 or one of the Studiomaster desks, for example), you can perform treatments that would otherwise involve a small mountain of outboard equipment. (For more information on this topic see *Using MIDI Controllers*, MT, October '89 & *Effective Action*, MT, June '90).

VERDICT

THE MULTIVERB III'S closest competition currently takes the form of Alesis' Quadraverb - both are stereo multi-fx units offering four simultaneous processes and real-time MIDI parameter control. Where the Quadraverb scores is in the sophistication of its equaliser section - three-, five- or 11-band graphic over the Multiverb's high-frequency roll-off - and in its price. Where the Quadraverb retails at £449, the ART unit weighs in around £90 heavier.

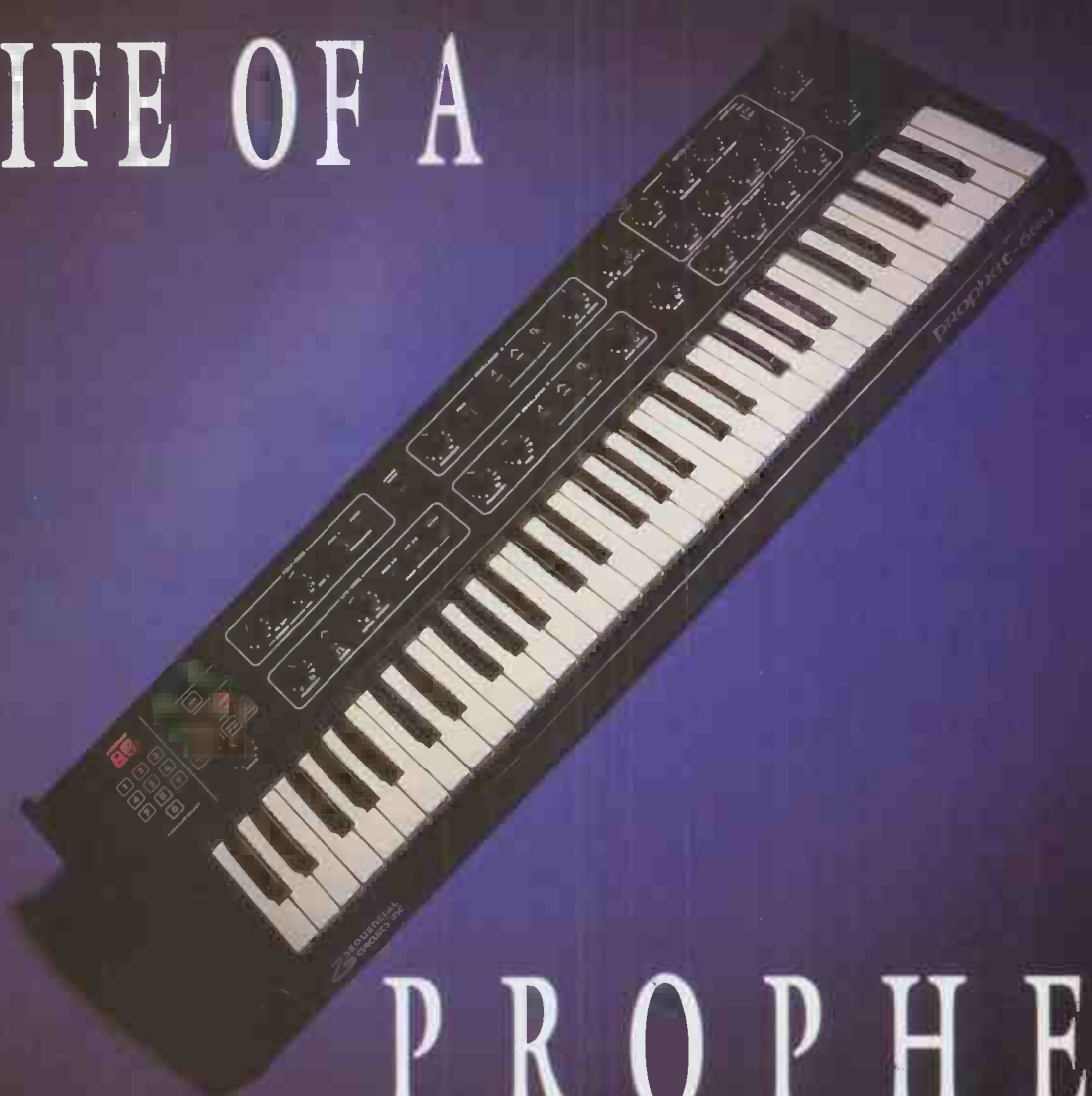
What you get on the Multiverb for your extra cash is a pitch transposer that will shift an octave either way instead of around a meagre half semitone, and a sampler. The sample isn't going to give a dedicated sampler any competition, but it's there if you need it, and the ability to "sample and shift" a sound into your mix could be a considerable headache solver. The pitch shifter too could become indispensable - apart from pulling vocal harmonies out of thin air you could find yourself using it for anything from correction of an out-of-tune instrument to helping time-correct drum loops.

Unreservedly a hit. ■

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LIFE OF A



PROPHET

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THIS IS THE STORY OF THE
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TEXT BY GORDON REID.**

THERE ARE MANY ways to classify keyboards - polyphonic, analogue, FM, LA. . . Try these: "classic", "a dog", "overlooked". Few keyboards fit the last category as, on the whole, musicians are able to ferret out new instruments of value. But occasionally something slips through the net - maybe because a competitor

launched a superior machine at the same moment, possibly because the synth didn't subscribe to the current fashion, or perhaps it was simply too expensive. Instruments like the Roland JX8P, the Korg Trident II, the OSCar, and the subject of this article - Sequential Circuits' Prophet 600 - come readily to mind.

HISTORY

THE SEQUENTIAL STORY is one of the saddest in synthesis. You may not realise it, but if you own any MIDI device, multitimbral keyboard or expander, you owe a great deal to Sequential Circuits. We all know of the Prophet 5 - it's nearly impossible to read an issue of MT without somebody extolling its virtues - but do you know what the world's first MIDI keyboard was? What the first Mode 4 (multitimbral) instrument was? They were the Prophet 600, and the Sequential SixTrak. And a

company with such foresight and technological expertise must become enormously successful, with a wide product range and penetration into all areas of music making, right? History tells us that the innovators spend all their money on development, take the risks, make the mistakes alongside the successes, and then go out of business. Consider the fates of Sequential, Moog, ARP, and Oberheim. (All of which were, incidentally, American.) None exist today.

So, what went so badly wrong that the most respected synthesiser company in the world in 1980 went out of business only seven years later? Just as Moog never equalled the Minimoog, or ARP the Odyssey, Sequential never managed to follow the Prophet 5. Flagship synths, the Prophets 10 and t8, though conceived in grand fashion, rapidly bit the commercial dust, and the Prophet 600 was probably the last chance that Sequential had to ►
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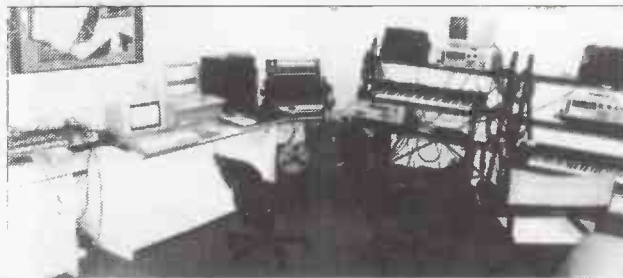
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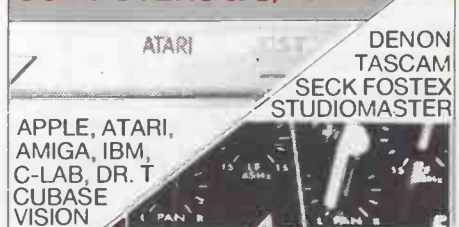
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► remain a mainstream synth manufacturer. The next series of machines they produced were well designed, innovative, contained hosts of useful features not found on competitors' keyboards, and were commercial disasters.

SCI eventually lost the imagination of the public during the period of the SixTrak, MultiTrak and Max. Most of Sequential's later dabblings in the market were disasters: low-end synths, rhythm units, even computer-based sequencers. The marvellous Prophet t8, and the less marvellous but more easily obtained VS synth and 2000/2002 samplers weren't enough to save the company. With no cash, no product, and no steady customer base to help it through the bad times, Sequential folded in Autumn 1987. And that's a shame, because we need the SCIs of this world to ensure that we don't all end up playing the presets on the latest Japanese megasynth.

The Prophet 600 had been discontinued for some time when Sequential folded. Never a commercial success, it caused a bit of a stir as a curiosity when it was launched in '82, but was discontinued amid total consumer apathy in '85. Two reasons account for this. Firstly, the original recommended price of the 600 was £1650, although the street price was usually £1395. In fact, in '82, Prophet 600s were more expensive than Prophet 5s - clearly ludicrous because, with the exception of MIDI, the 600 is a cut-down (and cut-cost) 5. Secondly, the years '83-'85 were almost the sole preserve of Yamaha's DX-series synths. At £1395 the 600 competed directly with the DX7, and that was a fight it couldn't hope to win.

Over-priced, designed around unfashionable technology, it started off life misunderstood and ended up an underpowered anachronism (lousy MIDI spec, unstable, no cartridge slot, no software). But the asking price of secondhand 600s is now creeping upwards as more players begin to realise its value.

TECHNOLOGY

THE 600 IS not a particularly large synth, the width being defined by its five-octave keyboard (which is neither velocity nor pressure sensitive and has no split facility), and a three-inch wide controller panel with Moog-style pitch and modulation control wheels on the left hand side of the keyboard. The steel case (finished with solid wood end-pieces) is quite shallow, and you're certainly not going to break your back carrying one around with you. All programming controls are on the top panel, and retain the general layout of the Prophet

"THERE WAS A TIME WHEN YOU COULD PICK UP A PROPHET 600 FOR ABOUT £250, BUT THE PRICE TODAY IS CLOSER TO £400 - AND THAT'S NOTHING TO DO WITH INFLATION."

5, although the so-called Bang and Olufsen quality switches had been replaced as part of the cost-saving exercise. The control layout reads as follows. The synth has 100 memories (00-99), selected by typing the number required on a nasty touch-membrane keypad. Although they've never given me any serious problems on stage, the touch-keys are liable to double-enter numbers. Above the pad is the screen - just two seven-segment displays I'm afraid, and par for the course in 1982. With 100 patches, no naming facility and no patch bank/number arrangement, how's *your* memory? Next along the panel is a second bank of touch-switches which control saving and restoring of voices from tape (totally reliable in my experience), tune request, a button to switch from presets to panel control, patch save to memory, and sequencer and arpeggiator controls. Don't get too excited - the sequencer is limited to real-time entry, has only two tracks, and no facility to sync to external devices. Mercifully, the speed of both the arpeggiator and the sequencers is controlled by a panel knob rather than by the LFO.

The remaining controls are definitely analogue, definitively Prophet, and sleek and laid out in exactly the way that digital synths aren't. There are six sound-building sections, each contained in its own "box" on the panel: Poly-Mod, LFO-Mod, Oscillators 1 & 2, Filter, and Amplifier. What could be simpler?

The 600 is six-note poly with two oscillators per voice. Both oscillators offer a choice of sawtooth, triangle and square waves, with independent pulse-width modulation. Unusually, the oscillators are not constrained to one waveform at a time, so all three waves may be selected on both oscillators simultaneously. Observing the oscillators and filters on an oscilloscope shows that the waveforms are remarkably faithful to the ideal. This wasn't a common quality in 1982 - you only found really square squares on synths like the Moog and the ARP 2600. But Sequential understood that the better defined the waveform, the truer the harmonic content, and the more flexible the synth - another reason for the power of the Prophets.

Osc B has both coarse (four octave) and fine tuning knobs, whereas Osc A has coarse tuning and a sync switch to lock the oscillators together. The philosophy of this is identical to that of the OBX and Jupiter 8 - no chorus, but controlled detuning of two fat analogue oscillators. The oscillators, which are mixed using a single knob (100% A through to 100% B) may be further fattened using the modulation sections. Poly-mod was a favourite feature on the

Prophet 5, and had been retained in a more limited form on the 600. The filter envelope and oscillator B can be independently tapped (control knob for each) and sent to either or both of Osc A (two-operator analogue FM synthesis?) and the filter (modulating the cutoff).

Finally we come to the LFO, which offers triangle and square waves. Frequency is controlled by another knob and an Initial Amount control sets the minimum modulation even when the mod-wheel is set to zero. There are three possible destinations for the LFO - the frequencies of oscillators A and B, the pulse width of A and B, and the filter cutoff.

The 600 also offers polyphonic portamento (the speed of which is controlled by yet another knob, this time situated between the oscillators and the envelopes) and Unison. This has two modes: chord latching and 12-oscillator unison. In the former case, if you hold down a chord and then switch on Unison, the synth will latch onto the lowest note in the chord, and track the whole set of intervals around as you play a solo line. But for frustrated would-be Minimoog owners the real interest lies in Unison. Switch it on and mind the windows.

With so many sound creation options even before filtering and enveloping, the 600 shares an important quality with other classic analogue synths such as the Odyssey - it can sound fat just using the oscillators.

The filter section is par for the analogue course - low-pass cutoff frequency control, resonance, and envelope "amount"; keyboard tracking options (off, half, and on), and an ADSR envelope. The filters are 24dB/octave, will self-oscillate, and have the characteristic warmth associated with the Minimoog and Prophet 5. This isn't all that suprising because it was the idea of a polyphonic Minimoog that motivated Dave Smith to design the '5, and the 600 is son of '5.

The early 600s were primitive by today's MIDI standards - but what do you expect from the first MIDI device in the world? Initially blessed with only one mode and no way to distinguish between channels, MIDI could easily have become just a system to enable Prophets to communicate with each other. (Much like Oberheim's ill-fated OCI, or Roland's DCB.) However, by the time that the 600 was discontinued in 1985 it boasted Modes 1 and 3, 16 channels, program, dump, and mod wheel data. Updates are possible for early models (serial numbers pre-424 and possibly somewhat after) but I've never seen them advertised in the UK. ►

BIOLOGY

THE PROPHET 600 was one of the world's first hybrid digital and analogue synths. This means that, unlike in otherwise similar instruments such as the Prophet 5 and the OBX, the Z80 microprocessor is not only acting as a control device (storing patches, driving MIDI. . .) but it is also involved directly in the act of synthesis.

Most significantly, there are no separate analogue envelope generators in this Prophet. Instead, the envelopes are calculated by the computer and are then converted, via sample & hold devices, to dynamic voltages. There's no physical LFO either - the LFO is computed by the Z80, as are the outputs of the pitch and modulation wheels. The modulation that you hear is created by summing the outputs from the envelope generators, oscillators, and wheels.

It works something like this. Every 200th of a second the Z80 calculates the values of the envelope generators, calculates the LFO and the effect of Glide, refreshes the LEDs on the top panel, looks at either the pitch or the mod wheel, refreshes all the S&H control voltages, and finally checks one (and only one) top panel control knob. Once it's done all this it looks at the keyboard and, if you've played a note in that period, works out the voice assignments. You can detect the consequences of this digitisation by trying to adjust some of the control knobs by very small amounts. Listen carefully and the effect on the sound jumps from value to value.

The majority of the circuitry in the 600 is digital, but the sound created is unmistakably analogue. This was yet another innovation which has helped the synthesisers of today be what they are - although, like their other developments, it didn't help SCI very much. The analogue sound is created in the output stages of the synth where all the digital calculations are returned to good old analogue voltages. The oscillators themselves (two per voice) are Curtis chips (as found on later Prophet 5s) and the filters, amplifiers, and mixers are also to be found on a single Curtis chip (per voice), yet another Sequential innovation. Finally, the output is analogue filtered to get rid of digital quantisation noise!

POLITICS

MUCH HAS BEEN written about the pros and cons of oscillator instability (not to be confused with tuning instability). On no synth is this debate more pertinent than

the Prophet 600. Despite all the Sequential developments in digital control, the Curtis oscillators can be wild. Now, if you want each note to be an exact copy of the last one you're not going to like the 600. But this is an age where we are being bombarded with adverts for "humanisers", random pitch variations (see the Roland D70 launched later this month), and every digital effect under the sun to liven up the sound. If you play one note on a 600 using one oscillator only, and one waveform only, you get the result you would expect from an analogue synth - a steady tone. But the moment you use the second oscillator (even tuned to the same pitch) you get chorusing. Or rather, the movement within the sound that chorusing sets out to achieve. Unison mode also achieves this. If you're feeling curious, and have the facilities, set up a single note on a DX7 and a Prophet 600 - let's say, a two-oscillator sawtooth with no modulation or envelope, then listen. . .

Shortcomings? Well, the down-side to this is the extent of the uncertainty you have to endure just before you start playing. Oscillator movement is one thing, but the 600 takes the whole thing a stage further. Changes in temperature, humidity, or the rising price of beer are all likely to send the tuning wandering off into the stranger realms of Far Eastern atonal music. Worse than that, if it gets really excited, a Prophet 600 will jump out of its patch altogether and leave you in some decidedly wierd sonic landscapes. Luckily, all is returned to normal by pressing the Preset button a couple of times - but if you don't have a hand free things can get mighty embarrassing up on stage. If things get really out of hand, oscillator re-scaling is possible, but only if you're confident about performing minor surgery on your synths. Otherwise, have the machine serviced professionally.

MUSIC

THE 600 IS an unusual synth, but few people are going to buy one for that reason alone. Some keyboards and expanders are purchased because they ooze facilities - effects units, splits, layers, multitimbrality, drum sections, sequencers - and I wouldn't be without these devices either. But, the bottom line with any keyboard has to be "how does it sound?". There's a good reason why synths such as the OBX and the Super Jupiter are so sought-after: their sound. Does the Prophet 600 live up to its Sequential pedigree, or was it "first of the dogs"?

The 600 is an enigma. Sometimes there's nothing to touch it, and you wouldn't separate me from mine with a crowbar. At other times I'm tempted to convert it into an ashtray. Firstly, its strengths. You want luscious, deep string-type sounds? Get a secondhand 600. This synth stands side-by-side with the Prophet 5 and OBX, and head and shoulders above most other analogue keyboards (which is strange considering its hybrid nature). You want lead and bass lines that send Minimoog owners diving for cover? This is your synthesiser. I've never come across a synth that sounded so much like a Moog, which is also surprising, since its architecture is far more reminiscent of an ARP Odyssey. Fast rise times, filter distortion, tortured resonance - it'll do most things a Moog will do, provided that you don't want three audio oscillators. The 600 Hammond impersonations can also be very interesting. The final strength of the 600 is sound effects. Although it's not the most configurable synth in the world, it will oblige you with a wide range of malicious graunches and thapwangs. You'll also find the 600 quite useful for brass sounds - from solo trumpet to polybrass stabs - although you'll need a reverb unit to make them listenable. Other groups of sounds which benefit from a generous helping of reverb are flutes and (synthetic) percussion.

The 600's weaknesses? Just about everything else; it doesn't take kindly to being asked to go (sonically) where no Prophet has successfully gone before.

THE EXAMINATION

SO, SHOULD YOU be interested in a 600, and how much should you pay for one if you are? Powerful as synths like the D50, M1 and VFX are, they produce "characteristic" sounds. A Prophet 600 could be just the synth to add that little bit of extra interest to your sound.

How much? There was a time when you could pick up a 600 for about £250, but the typical price today is closer to £400. That's got nothing to do with inflation - we, the keyboard playing public, have simply realised the value of the synth. And that's fair enough. If you're looking for an OBX, Prophet 5, or perhaps even a Memorymoog or Jupiter 8, check out the little Prophet 600. You never know, you might be pleasantly surprised and save yourself a bob or two in the process. ■

Thanks to Argents in Denmark Street, London for technical information.

MUSIC TECHNOLOGY AUGUST 1990

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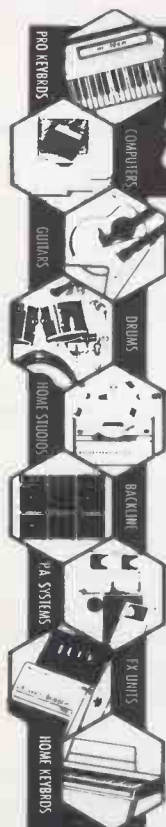
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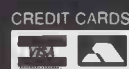
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PRICE MATCH

SX16



PHOTOGRAPHY: JON SHRIMPTON

Noted for producing the sort of gear musicians want for the sort of money most musicians have, Cheetah have just unveiled their first sampler - no less than 16 bits for no more than £800. Review by Vic Lennard.

AFTER A SHAKY start, Cheetah are starting to build a strong reputation for producing workmanlike equipment at very attractive prices. Their MS6 analogue synth expander, MD16 drum machine and MQ8 sequencer were never intended to be the last word in hi-tech sophistication. Instead they were intended to make essential pieces of equipment available to those of us on a tight budget - a job they all do admirably.

With the SX16, Cheetah are venturing into the sampler market. The advance of technology has led to a decrease in price of the analogue-to-digital converters (ADC) and their output, digital-to-analogue (DAC) counterparts and given Cheetah the opportunity

to produce a 16-bit stereo sampler for just under £800. No, it's not April.

The SX16 is a stereo, 16-bit sampler with a maximum sampling frequency of 48kHz and 512 KBytes onboard memory (expandable to 2Meg). The basic unit will give a sampling time of 2.7 seconds at maximum frequency. Up to eight voices can be played back simultaneously and it will respond to note data on any MIDI channel. There are eight individual, polyphonic outputs and up to 16 samples can be held in memory at any one time.

The sampler is a 19-inch, 1U-high rack-mounting module in industry-standard black. The front panel has four main attributes; a 2 x 16 character, backlit LCD; a double-sided, double-density disk drive as standard; 23 push buttons which are used for both selecting/setting parameters and naming samples and a 9-pin joystick port and phono modulator output for direct connection to a television. Not to mention a mains switch.

The rear panel has the relevant quarter-inch jack sockets (two input, eight output) and MIDI In, Out and Thru ports. An RS232 port is provided for future expansion and a 6-pin DIN socket handles the power - this reduces the need for internal screening and almost eliminates internal heating.

Unfortunately, the cable connecting the psu to the SX16 is only one metre long, which means that you

can't place the unit very high in a rack. A contrast control on the LCD would also have been useful as you can only see clearly head-on to the display. Bearing in mind the length of the PSU cable, this could cause problems.

TAKING A SAMPLE

ON POWER UP, the SX16 checks its disk drive before coming up with a Ready prompt on screen. The Operating System is in internal ROM, not disk-loaded. This means that updates will probably require the replacement of ROMs, but reduces the boot-up time.

There are various ways that manufacturers have used to call up parameters for editing - Akai have push-button menus and a control wheel while Casio use a slider. Cheetah have gone for a parameter number system. You type in the number of the relevant parameter that you wish to edit, type the new value and press Enter. To this end, all letters (upper case), numbers and necessary symbols are available from the front panel buttons. These are split into two sets in red and blue with the Sample button doubling as a shift button to select one set or the other.

To select a parameter, either press Parameter followed by the required number, or key in the number. A list of all parameters is provided in the manual and in keeping with the simplicity of design, this list is currently pretty short; 16 sampling and 19 global parameters.

There are three methods of altering parameters: the single arrow keys increase or decrease the value by one and scroll if you hold them down; the double arrow keys jump in steps proportional to the time between each press; use BS (backspace) to clear the current value and enter your own. Some neat ideas here. Too many manufacturers forget about the fact that humans are basically impatient and don't want to wait 20 seconds while a display motors from 1 to 1,000.

Certain parameters have specific default values. Sampling Frequency (Parameter 3) always defaults to 48kHz, although there are seven options available; 48kHz, 32kHz, 24kHz, 16kHz, 12kHz, 8kHz and 6kHz. Output defaults to socket 1, MIDI Channel to 1 and so on. These cannot be changed - you don't get the option to save a default set of values to disk.

Taking a sample is very straightforward. Hit Select followed by one of the two New options (for Mono or Stereo), type in the name of the new sample and set the length. This is in millisecond units and defaults to the maximum available from the unused memory. Hitting Sample now tells you which input(s) are being used (1 for Mono, 1&2 for Stereo) and displays the level of the incoming signal as a 15-segment horizontal bar. Without any kind of gain control, there's no way of adjusting the incoming audio level to the SX16. Cheetah have taken this option to cut down on a pre-amp stage, so keeping cost down and reducing input noise. This means that the accuracy of the meter has to be relied upon for lack of distortion in the sampled signal. Although the manual doesn't say so, it appears to be OK to go up to the 12th segment of the meter on a continuous signal, but not beyond. Dynamic sounds can even peak as high as the 14th

segment. Apart from the slight increase in background hiss on playback, the fidelity of the monitored sound is very good, making it easy to take good samples. Anyone with a Casio FZ sampler will appreciate what happens when this is not the case (see review MT, March 1990).

While the input cannot be adjusted, the monitor output can. Parameter 24 allows you to set a value which is a percentage of the output. So setting 50% will give you half of the nominal volume.

To sample, you press any button. The SX16 goes into trigger mode and starts sampling as soon as the trigger threshold is exceeded. This can be adjusted by parameter 23 from 0% which will start sampling immediately a button is pressed, to 100% which will need the peak of an explosion to set it off. A value around 2% or 3% picks up the attack of a bass drum but the degree of noise at the input will dictate how low you can go. The display tells you that you are "Sampling" and returns you to the display showing the name of the sample at the end of the sampling time. Press Play to hear the result. I have to admit that in my experience with samplers, it is difficult to think of any which are as easy to use as the SX16 in terms of the basic taking of a sample.

With the first sample in memory, pressing Clear removes it from playback but not from memory. This lets you take the next sample by following the previous procedure again. Let's say that you want to delete one of the samples: "Select" that sample by scrolling through the names and press Clear. The screen then asks you whether you want to "1:Rename 2:Delete 3:Cancel" on the top line. How can this be shown within 16 characters? The display scrolls. Excellent idea.

If your first sample was titled Gorby then selecting option 2 asks you "Are you sure you want to delete Gorby? - 1:OK 2:Cancel". This is close to being idiot-proof. The single- and double-arrow keys can again be used to scroll through faster or move immediately to the end of the message (useful once you know your way around the machine).

The SX16 has a unique method for managing its memory. Imagine that your naming procedure has not been all it should have been and that you delete the wrong sample. The SX16 doesn't clear that sample from memory until you re-use the sampling space. Consequently you can go through the process of naming a new sample and setting the length and your previous sample will re-appear. If the length you set is different from the original then you either get hiss at the end or a cut-down version.

LOOPING SAMPLES

SAMPLERS CAN BE used for a variety of purposes, one of which is to emulate a natural instrument. As the memory space of any sampler is restricted, looping is used where a portion of the sample is played over and over again to give the aural illusion of a continual sound.

Selecting parameter 11 puts the SX16 into loop mode and the sound starts to continuously play back. The single/double arrows are then used for ►

"Cheetah have realised that Mirage users will be likely purchasers of SX16s and have incorporated the software for a Mirage MIDI sample dump - a welcome first."

“In my experience of samplers, it is difficult to think of any which are as easy to use as the SX16 in terms of the basic taking of a sample.”

- fine/coarse alterations to the start and end points of the loop depending on whether you press the Strt or End buttons. The screen changes to “Loop set: Start/End” although no numbers are displayed on screen to show you where you are. This means that you have to rely solely on your ears (could be another first if you’re an A&R man).

Most samplers use crossfade looping to create glitch-free loops. This takes a small portion of the sample before the start of the loop, copies it and mixes it into the sample before the end of the loop. The length of the portion is usually variable, with small portions being used for the removal of slight glitches. The lack of this option on the SX16 will make smooth loops difficult to obtain. Akai’s S700 had a “preset” version which worked at the twist of a knob and the difference was quite stunning in terms of loop continuity. I’d have liked Cheetah to have offered a basic version such as this on the SX16.

A process called truncation is used to cut away unwanted bits from a sample. Parameter 12 sets the sample into looping mode and the start and end points are adjusted, after which Enter permanently deletes the parts of the sample outside of what is being heard. This is a little awkward when working with short samples such as bass drums, where it’s difficult to decide whether there is a gap or part of the end of the sample is being cut off. You can always exit truncate mode, listen to the sample and re-enter for any fine adjustments.

OTHER SAMPLE EDITS

LET’S SAY THAT you’ve sampled a snare drum with plenty of reverb. There’s every chance that you’ll want to change the dynamics of the sound. Gating the reverb is no problem - simply truncate the sample. But what happens if you want to shorten the sample and still have it sounding natural? Parameter 1 affects the release time; a value of 0 will give no release time, 1 plays the entire sample while 2 up to 200 places a release time on the sample, with higher values releasing quicker. This parameter is independent per sample, but affects both halves of a stereo sample.

You can change the playback pitch of a sound by altering parameter 2. This sets the original pitch and gives you a numerical as well as a note value - for instance, 60 (C4). The numbering system is the same as Roland’s.

The response of a connected MIDI keyboard is an unknown quantity and so Cheetah have offered seven different velocity response curves for each sample; fixed velocity where no matter how hard you press the key, the velocity is taken to be 64; linear velocity where the sound volume is directly proportional to the key velocity; reverse linear so that higher velocity gives lower volume and vice versa; exponential curve; reverse exponential; logarithmic and reverse logarithmic. The effect of these is explained quite well in the manual and should let you create any feel that you want. The three pairings of normal and reverse curves are also useful for velocity crossfading samples. As you can select any two samples to make

a stereo pair, and the velocity sensitivity acts separately on each of them, you can create one sample fading in as the other fades out. A similar facility is offered for aftertouch response.

A low-frequency oscillator (LFO) is also available. Depth as a percentage figure of the maximum and Modulation rate from 1 to 400 (0.1Hz-40Hz) can be set for each sample using parameters 13 and 14.

KEYBOARD SPLITS

WITH UP TO 16 samples in memory, the next step is to place them across the keyboard. You may have a selection of drum sounds or a set of multisamples to assign to different notes. It’s here that a degree of confusion is likely to creep in.

Parameter 6 selects the MIDI channel you wish to assign to a sample. Any note on this channel will play this sample. Parameter 27 is the Global MIDI channel and will play all samples assigned to splits, on this channel. The global MIDI channel, or that for any sample, can be set to zero, removing any sample or the splits from MIDI control. This effectively means that you can only have one program of keysplits in memory at any one time.

Parameter 26 puts the SX16 into split keyboard mode. The display shows “Split: choose 1”, at which point you select one of the samples in memory. Pressing a key on a connected MIDI keyboard (say, C5) will then show “Set on C5” - play a second note while holding down the first (say, F5) and this changes to “Set on C5-F5” for a range of notes. You then have the option of assigning either the second half of a stereo pair to the same split or another sample altogether. This may have been given a reverse velocity sensitivity as mentioned before. If one of the splits which you set up overlaps a previous one, it will steal that part of the range from the other split. So, any note on a keyboard can play back a maximum of two samples.

While assigning samples to splits, you also have the option to transpose the pitch of the samples so that they play back correctly within that split. This doesn’t affect any transpose value that you may have set under parameter 10 for individual samples.

Although the outputs are polyphonic, playing a note a second time before the sample assigned to this note has died out will silence the first note. There are a variety of times when this is not an advantage, like when a ride cymbal is being played. Parameter 37 lets the first note continue its natural course and will continue to add notes up to the limit of the polyphony setting.

DISK FUNCTIONS

AS EITHER A DD or HD (quad density) disk drive can be fitted to the SX16, the formatting procedure takes this into account and asks you which type of formatting is in order. Don’t try to cheat and format a disk to quad density when the drive is only a double density version - the SX16 will have none of it. Each disk can be named and given a sequence number. This is because the entire memory from an expanded ►

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“Having got used to the response of the Akai S900/950, I was most surprised to find that SX16 samples were still clear one or two octaves down.”

- ▶ SX16 won't fit onto a single disk. The sequence number will tell you whether disks are being loaded back in the right order.

You can either save the entire internal memory including all samples and parameters (ALL) or individual mono samples with their own parameters, by selection. The screen displays how much is to be saved and how far through the process it is, in Kbytes for the entire memory and milliseconds for individual samples. This means that if you save the entire memory, you can no longer load individual samples from within the block. When loading, “*” before the name signifies an ALL file.

Cheetah have realised that the most popular family of samplers to date is Akai's S900/950/1000 and have implemented the necessary software to read the disks (again paying attention to the disk density in the case of the S1000). The SX16 scans the disk and reports on everything that is found including the “fixups” protection file and programs, which it cannot load. All samples are then shown along with their size in Kbytes.

Disk loading on the review model SX16 was very slow – a 4.5 second S1000 sample disk took over five minutes to load. Happily, Cheetah acknowledged the problem from the start and have since released improved software that significantly reduces loading times. They reckon this brings the SX16 in line with other samplers currently on the market. Unfortunately I wasn't able to put their claims to the test, but as the company themselves were never happy with the performance of the disk drive, it suggests they will have dealt with the problem properly.

Failure to correct this problem shouldn't present studio users with any insurmountable problems, but it is going to make changing disks for live work rather impractical. As it stands, however, any improvement over the performance of the review model will be most welcome.

FEEL THE QUALITY

SO MUCH FOR facilities, what does the SX16 sound like?

To make 16-bit technology available at this kind of price, shortcuts have to be taken. One shortcut Cheetah have made is to cut the number of DACs. Instead of one per voice, several voices share a DAC, using a technique called time slicing. The result is that the precision of playback is not as good as it would be with one DAC per voice.

The SX16 offers a variety of playback modes; 8-voice, 4-voice, 4-voice filtered and 2-voice filtered. The lower the polyphony, the better the playback characteristics. The filtered modes take some of the harshness away from the top end. At 48kHz, the playback accuracy is pretty good but by the time you get to 32kHz, top end loss is quite noticeable. Sampling rates below this are of limited use. Indeed, even the bass samples on the factory disk are recorded at 48kHz.

Loading samples from an S900 disk and comparing playback with an S900 (a 12-bit sampler), shows this lack of definition clearly. Downloading the samples

from both machines into Genwave (a sample editor) and comparing the frequency/time graphs of the waveforms showed them to be identical - which puts the deterioration down to the output stage of the SX16. A similar result occurred when identical samples were taken on both machines. Why compare with the S900? Because the RRP of the SX16 puts it at the same position in the market as a secondhand S900.

This isn't a criticism - to be honest, the SX16's quality was higher than I'd expected, and in the context of four-track recording, would be quite acceptable.

However, this isn't the end of the story. One feature which impressed me was the clarity of samples when played back below their sampled note. Having got used to the response of the Akai S900/950, I was most surprised to find that samples were still clear one or two octaves down. You can also change the playback frequency to any value between 1kHz-99kHz to fine tune the pitch of a sample, although the length changes proportionately. This differs from the Transpose option (parameter 10) which works via MIDI. The SX16 accurately reproduces stereo samples image-wise - no mean feat.

MIDI FEATURES

THE SX16 WILL respond to MIDI messages in all MIDI modes including mode 4 (for use with guitar synths and sequencers). It will also recognise MIDI patch changes for selection of the individual samples in memory, pitchbend, MIDI volume and sustain pedal. However, for some inexplicable reason, it won't respond to MIDI modulation wheel messages. This defeats much of the benefit of having an LFO controllable in this manner.

Cheetah have also realised that many Ensoniq Mirage users will be likely purchasers of SX16s. To this end, they have incorporated the software for a Mirage MIDI sample dump - a welcome first to my knowledge. If the sample being obtained from the Mirage is too long to fit into memory, then it's truncated; if it's too short, the rest of the space is left unfilled. A message informs you which of these has occurred.

The MIDI sample dump standard facilitates transfer of samples between suitably-specified samplers. Unfortunately, the SX16 will not respond to a sample dump request. This makes life tricky when dumping to software of a similarly limited nature. It is possible, but the timing required in pressing the button on the SX16 and the mouse button for the computer is tight. The SX16 will receive samples from other samplers by the same method.

Apart from being able to play a sample forwards using the Play button, you can also play it backwards by pressing the left-hand single arrow button. When you press the right-hand arrow button it puts the SX16 into Scratch mode - where you can play a sample forwards by moving the pitchbend wheel on a connected MIDI keyboard to the right and backwards by moving it to the left. The further you move the wheel, the faster the sample plays. The result is as

close to scratching a record as is possible without using a turntable. Perhaps this gives an idea as to which market the SX16 is aimed at.

ADD-ON EXTRAS

WITH 512K MEMORY as standard, the sampling time on the SX16 is short. Cheetah are selling a 2 Megabyte version for £1399 - £600 for an extra 1.5 Meg of memory, which seems pretty steep. Third party 2Meg upgrades for the Akai S1000 are currently around £300.

The disk drive can be replaced by a high-density version, which will save twice as much data per disk, for £150 plus £15 fitting charge.

Finally all editing, including sample waveforms, can be displayed on a TV and altered using a joystick. The internal card costs about £150 and a joystick a further £25. I couldn't test this out, but my comments regarding the lack of info on the display could be solved by using this.

VERDICT

YOU'VE PROBABLY NOTICED that no comparison at all has been made between the SX16 and any other 16-bit sampler. Such comparisons would be pointless bearing in mind that at the price, the SX16 is not intended to be a competitor to the likes of the Akai S1000.

Many of the features on the SX16 have, however,

been very carefully thought out. In use, the buttons and the scrolling display are very user-friendly, and the average musician should only need the manual to check the parameter numbers. Looping samples for hip hop and house music is easy and the various velocity curves make cross-fading of one sound to another simple to implement.

Stereo sampling can allow you to achieve results which you will only have dreamed of with a mono sampler. Polyphonic outputs and access to most other samplers either by disk reading or sample dumping - there are many very good aspects to this unit.

On the down side, the SX16's sound quality is poor when used in 8-voice mode - Cheetah obviously appreciate this, however, as the SX16 defaults to four-voice filtered mode. Running in four-voice mode restricts you to either four mono or two stereo samples simultaneously. In other words, the combination of sound quality and polyphony works against you.

A little bit of me can't help but wonder what an extra £100 on the asking price would have done to the sound quality. Still, if you're a first-time buyer or considering upgrading from a Mirage or one of the samplers using quickdisks, the SX16 is well worth a listen - be prepared to place your order, pay your deposit and join the queue.

Price £799.95 including VAT.

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**Chick Corea has
said all he can
say. But
Inside Out re-
establishes him
as an innovative
composer and
performer.**

**Interview by
Scott Wilkinson.**



MAD HATTER STUDIO IS NESTLED IN A secluded corner of Silverlake, a suburb of Hollywood, California. From the outside, you can pass it by without realising that much musical history has been made there. On the inside, however, the warm wood-panelled walls are adorned with album covers and artwork representing a career that spans over two decades.

An entire organisation occupies the building, primarily dedicated to the music of one man - Anthony Armando (Chick) Corea. His prodigious musical output is born of compositional, performance and improvisational skills that seem almost too good to be true (as evidenced by his seven Grammy awards and 26 nominations). He has also remained a pioneer in the use of music technology, playing and programming the most sophisticated devices available throughout his long tenure as one of the most celebrated composers and keyboard players of our time.

His latest album, *Inside Out*, represents a culmination of Corea's artistic vision for his quintet, the Elektric Band. "Each record has gained in group-playing richness", he says with understandable satisfaction. "And this one has a particular group-playing impact to it.

When I wrote the music, I knew that the group was going to gel like this, because it had been feeling really good, even though it had been a year since we played. I knew that the band was going to be ready to cook."

Corea was right about that - the playing on the album is incredible. Not only is the ensemble tighter than ever, each member of the Elektric Band - Corea on keyboards, John Patitucci on bass, Dave Weckl on drums, Frank Gambale on guitar, and Eric Marienthal on sax - is a monster soloist in his own right.

In addition to *Inside Out*, the Elektric Band has three studio albums and one live album under its collective belt. The playing and writing on all of these recordings spans tight grooves and exotic harmonies and melodies with equal ease. A wonderful trio also lurks within the band, bringing Corea, Patitucci and Weckl together to perform and record as the Akoustic Band.

One very interesting aspect of *Inside Out* is the manner in which it was conceived and produced, as Corea is keen to explain. "This one started without any kind of image references, verbal concepts or physical concepts of space and time, no poetic images or whatever. I approached the composition as an

improvisation. Once I started composing I composed the whole record in about six days, because it was a flow and I just kept going with it. Then the music flowed as an interaction of the emotions of the musicians.

"After the recording was finished (a week later), we started looking at illustrations and trying to work out a way to ground the music in some kind of concept or imagery, and that's how we developed the list of titles and the cover. For a long time, the pieces were known as 'Comp 1', 'Comp 2', 'Comp 3', 'Comp 4', 'Comp 5', and 'Comp 6'. When we were first listening to the music, some of the thoughts were toward grandiose and classical titles, like 'Fantasy' and 'Symphony', but I thought 'I don't want to stick it into a formalised classical atmosphere', even though some of it might remind you of classical music. So we came up with these titles that are more in keeping with the spirit of the tracks."

Many parts of the album reflect an aura of chamber music while others seem symphonic in their scope. His comments led me to think (and ask) about musical categories. How would Corea categorise his own music?

"It depends on with whom I'm communicating. I might use the word 'jazz' with some people, but not with other people because of what they think jazz is. Of course, it degrades a work of art to try to say what it is, because the actuality of it is itself. So, the way to describe music is to put it on and listen to it, and that is the music."

But aren't categories important and useful in some cases?

"That's a very interesting question", he ponders. "Life and commerce would tend to lead us to the answer that they're indispensable for problems like which bin to put the record in. But from my viewpoint as an artist, all that categorising does is label a creation that has already been created and define how it gets associated with other creations. The function of art and creation is to make something new, and you have the choice of drawing upon old forms or not. It's possible to make something that doesn't come from an association with something else. But if someone else looks at it, they may say, 'Yeah, that looks like a tree to me'. So, for me, the usefulness of categorisation is practically nil."

"I like to talk about music in terms of its emotions", he continues. "For instance, I might describe an intense piece of music, or music that moves slowly, or music that makes me feel incredibly serene, or music that makes me feel like dancing. These are the kind of descriptions and categorisations that mean something to me. Even so, it's such an individual thing that what would make me dance might not make the next guy dance."

THE LEVEL OF TECHNOLOGICAL SOPHISTICATION on *Inside Out* is no less astounding than on previous Elektric Band albums. This time, however, Corea took a slightly different approach.

"I put together a certain number of synth sounds that I played from the Yamaha MIDI Grand during the basic tracks, and I had a pedal that would bring in these sounds. I could have just the acoustic piano when the pedal was off, or I could bring in these additional textures with the pedal."

"I recorded the complete piano performance of each

basic track directly into the Synclavier sequencer, which was locked to tape by SMPTE. After the basic tracks were done, I revised all of the synth sounds in the sequences and orchestrated my piano part. I could take those MIDI performances and then turn them into synth tracks. It turned out to be a very interesting way to get the initial feel of the basic track performance, along with later thoughts of orchestration.

"I often have thoughts about how particular phrases would sound better with this sound or that sound after I hear my basic track performance. Sometimes I've attempted to replace the original performances with synth overdubs. But this way, I retain the original performance."

"The other thing that was somewhat unusual for me, although I've done it a little bit before, was that I worked with a programmer, Jay Oliver. The way in which we interacted was interesting: I gave him an idea of how I wanted certain patches to feel and respond, rather than how I wanted them to sound. We came up with some very interesting programming, especially on the TX816."

Concurrent with the release of *Inside Out* is an extended tour of the US, Europe and Japan. The American leg of the tour is already underway, and the band should be in Europe between 18th September and 9th November before heading out to the Far East.

As you might imagine, touring with so much technology poses its own set of problems. "The better we get at it, the simpler we make things", Corea reports. "One of the things that makes it difficult to use synthesisers live is the amount of gear that gets put together. It was getting so heavy that it was becoming impractical to tour with so much equipment, requiring more setup time, road assistance, technical assistance, and so forth."

"What we had to do was rethink our whole touring system. Dave's setup at the drums and my keyboard setup are the most complex. Patitucci doesn't use any synths, and neither does Eric. Gambale uses some stuff occasionally. So it's really the keyboards and the drums. Dave and I simplified our setups this past year, carved the weight of the whole thing in half while maintaining the level of sound sophistication."

"Unfortunately, one of the things that I had to do was eliminate the Synclavier from my touring outfit. The delicacy and size of the instrument demanded a lot of care and setup. I was mainly using the Synclavier for sequences, so one of the things we did was record our sequences on DAT - although I won't be using many sequences this year. As far as sounds are concerned, I eliminated certain synths and did some sampling on the Kurzweil 250."

WORDS FROM A MAN WHO'S BEEN THERE and back. But surely technology has made a greater impact on Corea's music than simply giving his roadies hernias.

"Synthesisers, sequencers and samplers have been in my area of music for a long time. I enjoy them because there is a bubbling of creation that happens. But it takes a commitment and an investment of time to learn a new piece of technology. And I've also discovered that the degree to which I understand the workings of a piece of ▶

"I've also discovered that the degree to which I understand the workings of a piece of gear is directly proportional to how well I use it."

- gear is directly proportional to how well I use it. It's possible for me to hire Jay Oliver and say 'I want a blues sound here and I want a trumpet sound here', select the sounds, and then just overdub them. However, it's another level entirely when I actually go into the instrument myself and learn something about programming it and how I can elicit sounds.

"Whenever I've spent time programming, I've always come up with sounds and ways of music that are an expansion for me. So, that's my key. I can use sounds built by others and that's totally valid - I do that all the time - but when I get into it myself, my own music definitely expands."

How much influence, then, does the musician have on the development of technology? In Corea's position as a Yamaha endorsee, I imagined they would ask him what he thinks of a new instrument idea, or what he'd like to see in a new instrument, but this - curiously - is not the case.

"It's more or less after the fact that I'm asked to have a look at an instrument, and those considerations are then used for the next product. I think that's pretty much how it goes. Unfortunately, I've never gotten too close up in the development of an instrument, although I continue to think that it's a really good idea. I guess it's just time-consuming and it would cost a lot of money for the companies to really get deeply involved in doing that."

But feedback from musicians is a valuable thing when designing a musical instrument, isn't it?

"Yeah, I think so", he agrees. "On the other hand, if you put yourself in the instrument builder's place, you'll notice the variety of different ways in which musicians use and approach instruments. I think that the manufacturers basically try to see what would make an instrument with the biggest attraction. I know that some of the things I like about certain instruments is not necessarily what someone else wants."

"I'll give you an example. I don't particularly like keyboard controllers with weighted keys, with the exception of a real piano like the Yamaha MIDI Grand, because they're kind of a crutch. There's a weight on each key, but the weight is only there to make you feel like it's a piano. But when you play an organ keyboard like the DX7 type of keyboard, it's fulfilling its purpose, which is that of a trigger. All it needs is a velocity and points at which it's on and off. I like synth keyboards with a very loose, on/off action, but that's personal to me. I think the consensus is that players like to have a weighted keyboard."

COREA EXPRESSES HIS GRATITUDE TO L Ron Hubbard in the liner notes of many of his albums. "Hubbard's been a big influence on my life since 1968 in a lot of different ways", he says forthrightly. "Aside from developing Dianetics and Scientology, he's also an incredible writer of action, adventure and science fiction. But it's his artistic sense and human sense that are constantly inspiring to me. He found an ability to reach out to so many people with very sophisticated ideas that it set a standard for me."

Corea illustrates his point, recalling his own background.

"My musical background is in jazz and improvisation. When I was in school, most of my schoolmates were listening to Elvis Presley, and later the Beatles and so forth. Meanwhile, I was studying the music of Bud Powell and Charlie Parker, and then Miles Davis and John Coltrane. When I began to perform in front of audiences, I found that there was a certain way in which I could communicate and reach people based on this style. But it left out, I don't know, 95% of the populace. So, I became quite interested in what art has to do with communication."

"Hubbard set a fine example for me with his own writings and some of the writings that's he's done on art. For instance, he wrote a series of essays called the *Art Series*, which is a magnificent statement of the basics of art. He includes the human factor in his philosophy about what music is. He defines 'art' as a word that summarises the quality of communication, not so much as some kind of a technical thing. And to me, that's actually what it is; music is a communication, even if it's only a communication to me or those who like jazz, it's still a communication. It's sharing an idea and a feeling between one person and another. My study of Hubbard's works keeps me learning new ways and paths, and ideas about how to expand myself spiritually as a musician as well."

"If I'm able to come to an understanding of my intentions as a musician and how I want to communicate and how I want to make people feel, I think it puts my attention on what is actually occurring. This makes technique a servant to communication, rather than the other way around. It takes an edge off of me trying to be such a perfectionist as a technician, which results in me playing the piano technically better."

"You can watch any great skilled artist - dancer, pianist, whatever - and you go 'wow!'. But how much attention do they have on their bodies? None. Look at Baryshnikov throwing his body around the stage. Is he thinking about which way his hand moves? God, no. He's communicating this wonderful emotion through the movement of his body, you see. So, that kind of thing is clearer to me thanks to Hubbard. It's basically what I needed to become a more well-rounded musician, because I grew up in the pursuit of technique."

COREA'S CHOSEN TOOLS WITH WHICH TO communicate his musical ideas, at least in the context of the Elektric Band, are the synths, samplers and sequencers that have become so sophisticated. But what does he see in the future of these instruments?

"I like the trend of new ideas. I think it's great when a guy in a company has a new idea for a piece of software or hardware, or a new instrument or whatever. The world keeps getting filled with these things, which doesn't bother me at all. On the other hand, I don't like planned obsolescence. If I had a company building instruments, I would want to plan an infinite existence into them. For instance, New England Digital have created the Synclavier and they keep on refining it, but the basic instrument is still the same. You can rely on it being there. I like that aspect of it."

"If any electronic guys are listening out there who are developing these ideas, one thing that I would like to

"I can use sounds built by others and that's totally valid - I do that all the time - but when I get into it myself, my own music definitely expands."

see happen is a simplicity of use, fewer wires - fibre optics is a great new direction - and a simplicity in the user interface. You can't expect all users to understand the fine intricacies required to put new devices together. There should be a department in these companies that considers the user *before* a product is designed. The product can then be made comfortable to use. It's a weak area, I feel."

Then what of the trend towards controls such as "brightness" that are appearing on some instruments? Such controls alter several individual parameters within the instrument simultaneously while allowing the user to manipulate a musically significant aspect of the sound with a single control - technology is simplifying instruments as it evolves.

"There will always be lots of levels and types of instruments - some that are easier, some that are more difficult. It depends on how deeply someone wants to get into it. For instance, I don't know that I would be completely content with a knob that said 'brightness' without the ability to go in and tweak the six parameters that it controls. It would be nice to have an instrument with both options available.

"There is one thing I'd like to see", he continues hopefully. "I recently purchased a Macintosh Portable computer, which has helped me stay productive on planes and in airports where I spend a lot of the year. So, now I've got music notation software and a couple of sequencers. But in order for me to use the laptop as a sequencer, I would have to attach a MIDI interface, an external synthesiser, and so forth. Can you see me in my plane seat trying to get all of this stuff together? But it's

possible to put all that in the computer itself. That's what I'd like to see. I'd like to be able to plug my headphones directly into the laptop, take the alpha-numeric keyboard out, replace it with a little two-octave music keyboard, and sequence with a set of sounds on the hard disk. I could actually do some composing and sequencing while I'm on the plane without having to carry around a bunch of additional gear. Now, I don't know how big a market there is for that kind of a setup, but that's something I would like to see for the musicians on the road."

And what about Corea's own future?

"1990 is going to be a year of performance for us with *Inside Out*, and some new Akoustic Band repertoire. In fact, we're going to try to include a few trio pieces in the Elektric Band concert, since the three of us are there anyway.

"Compositionally, I'm working on a piece for Eric Marienthal's new record, which I'm also going to play on with him. I'm also working on a piece for Dave Weckl's new record. It's a special track that he's invited Steve Gadd to play on. So it will be the two of them, plus Anthony Jackson on bass and Jay Oliver playing synths. I'm going to carve a piece out for that ensemble, which should be a lot of fun."

Corea was eager to get home and get to work on these projects after our conversation. But he was scheduled to give another interview over the phone to a Japanese magazine. As he was leaving an hour later, he told me that the interviewer had said the new album is so perfect, he was afraid the band would break up. I was as pleased as the Japanese to hear this wasn't likely - somehow, it just wouldn't be jazz without Chick. ■

EQUIPMENT USED ON *Inside Out*:

Chick Corea:
Korg M1R
Kurzweil 250
Kurzweil PX1000, GX1000, SX1000, HX1000
Mac SE computer
Roland D550
Roland Super Jupiter
Studiomaster Mixing Console
Synclavier
Tannoy SRM-10B Monitors
Yamaha MIDI Grand Piano
Yamaha TX816s (2 racks)

Dave Weckl:
Akai S900 Sampler (2)
Barcus Berry 2MC Signal Processors (2)
Hill Multimix 16-channel Mixer
Simmons SDS5 & MX1

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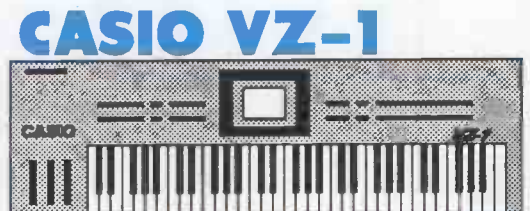
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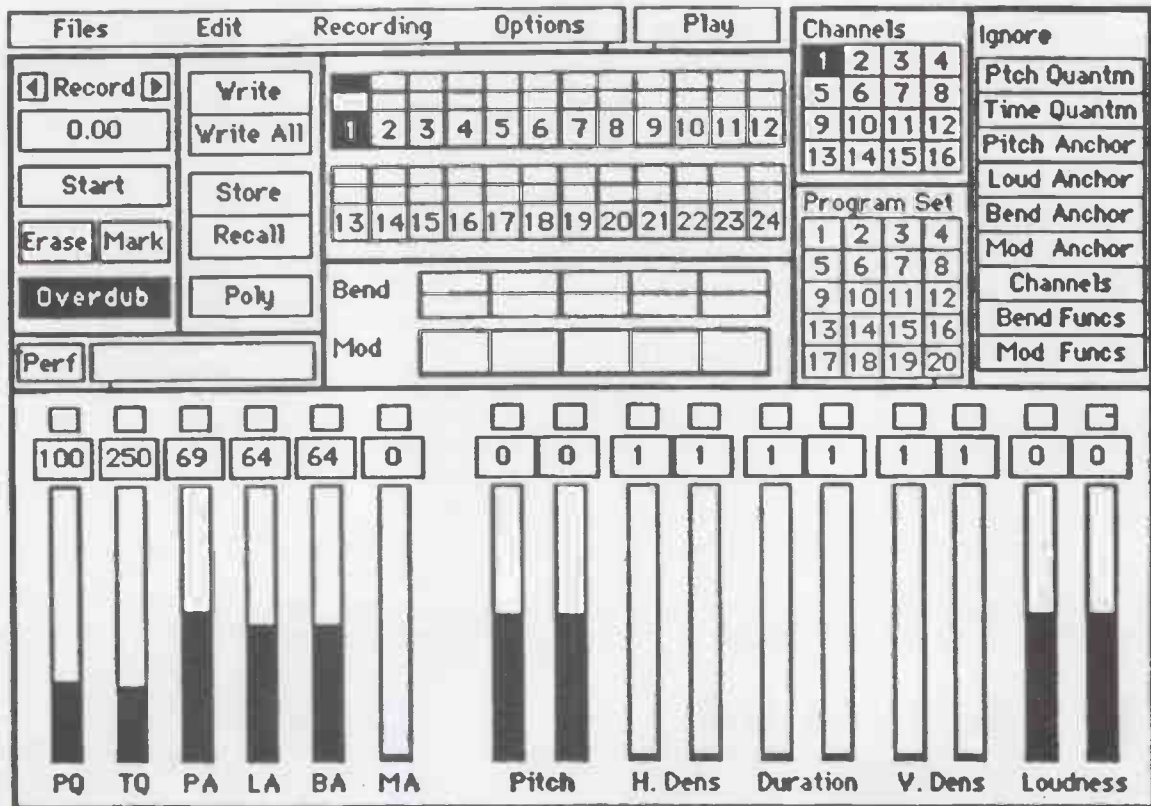
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SOUND GLOBS



Sound Globbs is a new PC composition program that's already been used to compose a horror movie score - is it really frighteningly powerful?

Review by Ian Waugh.

LIKE THE NAME; Sound Globbs has a certain ring to it, don't you think? But what is it? Well, if you were to go from the blurb on the back of the manual I think you'd be hard pressed to tell: "Move beyond the world of sequencers and melody to the world of interactive textures. . . free-form exploration. . . create a Performance Recording of your improvisations. . . develop your ear for sound textures as you work and play with Sound Globbs. . ."

What Twelve Tone are actually trying to say is that Sound Globbs is an algorithmic composition program - one of the very few for the PC.

Sound Globbs requires an IBM PC or compatible, a

MPU401 MIDI interface (or compatible) and 560K of free RAM (it can't use extended or expanded memory). It supports Hercules, EGA, VGA and CGA graphic cards, although not with the low resolution of 320 x 200. A hard disk is an advantage, as with most things PC.

There are two main screens - the Edit Page in which you create Textures - the music - and the Performance Page in which you control the music in real time. Operation is with the mouse and parameters are changed by clicking on an area and typing in a new value. Easy. As with most sequencer-type programs, a multitimbral sound source is best although not essential.

TEST YOUR TEXTURES

TEXTURES ARE CREATED in the Edit Page from a range of parameters which control various aspects of the music. You can create up to 24 different Textures which are selected by clicking on one of the 24 boxes in the Texture panel.

The twiddly bits are on the left of the screen. On

the bottom left is the Parameter Ranges box which controls the basic functions of pitch, duration, loudness and polyphony.

Begin by clicking on Play. With the default values (those on booting up), the program will repeat a single pitch (A above Middle C) at average loudness (MIDI value 64) at a speed of, er, we'll come to that in a moment.

To change the range of pitches, we alter the values in the Pitch minimum and maximum boxes. Leaving the minimum at 0 and setting the maximum to 1 will cause the pitch to vary between the base pitch (A) and a semitone above (B flat). Setting it to 12 will produce notes over an octave range.

A helpful feature is the Sample Graph in the upper middle of the screen. Click in this area and you get a statistically representative sample of the selected pitches. Each line in the graph represents a note and you can alter the time period over which the sample is taken.

Below the Pitch is Horizontal Density. This determines how often the notes sound in relation to the program's pulse or Time Quanta (coming up soon). With both minimum and maximum set to 1, a note occurs on every pulse. Set both to 2 and the notes sound on every other pulse. With minimum at 1 and maximum at 2, the occurrence of notes will vary randomly between one and two pulses, as a click in the Sample Graph will confirm.

Note, however, that this is not the same as Duration. Duration is set in the next box down and, as you would expect, determines the length of the notes. If notes are occurring on every pulse and the duration is longer than one pulse, notes will overlap - providing your sound source is polyphonic. Again, you can see the overlaps in the Sample Graph.

Vertical Density determines how many notes sound at once - the polyphony of the piece - and if you need Loudness explaining you're going to find the rest of this review pretty hard going.

Textures can be copied from one to another so it's easy to make progressive changes to a piece.

OUT OF TIME

ABOVE THE PARAMETER Ranges box is the Constants area which sets the base values of various music parameters. We'll look at the top one, Pitch Quantum, in a moment (because it's a little more complex than your average parameter).

Next is the Time Quantum which determines the length of the "pulse" which is measured in 1/1000ths of a second. It defaults to 250, which will play four notes per second ($1000/250 = 4$). Halving this to 125 will double the speed ($1000/125 = 8$ notes per second). This, effectively, is the tempo control although you can see it bears a more mathematical relationship to the music than traditional bpm.

If you play a Texture with a Time Quantum of 125 and want to create a triplet feel you have to do some sums. You need a Time Quantum which is two-thirds of the current one, that is: $125 \times 3/2 = 187.5$. To help with calculations such as these there's a

calculator at the bottom of the screen. If nothing is highlighted elsewhere, any figures entered on the keyboard go into the calculator.

ANCHORS AWAY

BELOW THE TIME Quantum are the Pitch, Loudness, Pitch Bend and Modulation Anchors. These simply set the base values of the relative parameters. Altering Pitch to 60, for example, will change the base note from A to Middle C (MIDI note number 60). The Sample Graph shows the position of the Pitch Anchor so you can see the range of notes above and below it which are likely to be selected.

A SENSE OF REFINEMENT

WHAT WE'VE GOT so far will probably sound like a couple of cats chasing a drunken frog over a keyboard. With a minimum Pitch value of 0 and a Maximum Pitch value of 24, the pitches fall into a two-octave range. It's not particularly tuneful but we can refine it. To do this we use the Probability Distribution graph in the lower middle of the screen. This can contain up to 50 rectangles known as breakpoints (similar to the breakpoints on envelopes).

Separate Probability Distribution graphs can be selected for each of the parameters in the Parameter Ranges box by clicking on a little square to the right of the parameter. The left of the Probability chart represents the minimum value of the parameter and the right side represents the maximum value. The breakpoints determine the probability of an event occurring across the range of parameter values. With me?

For example, to make the program select only high and low notes and none in the middle range, you raise the breakpoints on the left and right sides of the graph and lower those in the middle. The breakpoints are altered by clicking and dragging - a fairly simple procedure. The Sample Graph shows all.

Now, is there a way to use the Probability graph to produce only selected pitches, say a major scale? Yes, but it's a little involved. The obvious solution would seem to be to set the maximum Pitch range to 12, set the number of breakpoints to 13 (to include the top note of the scale), raise the breakpoints of the pitches we require and lower those of the ones we don't.

This almost works but the thing is, the program bases the probability of selection on the ratio of the area under the breakpoint lines (don't you wish you'd studied calculus?) and using 13 breakpoints leaves a ►

“With Sound Globes I managed to conjure up ethnic drum patterns, meandering pentatonic, oriental gamelan music, atmospheric mood music as well as a manic out-of-tune orchestra.”

► small area below unwanted pitches so they are occasionally selected.

To completely overcome this we must use 25 breakpoints per octave and allocate two per note, setting them both to 0 on unwanted notes so there is no area under the graph at these points. It's explained quite well in the manual along with several diagrams and although the principle is easy to follow you can see that a considerable amount of work has to be done if you want to work within a particular harmonic framework.

And this is a good time to look at Pitch Quantum. This value is used to divide the octave into a number of intervals. It defaults to 100, the number of cents in a semitone. From this you can deduce that there are 1200 cents in an octave.

Setting the Pitch Quantum to 150, for example, will divide the octave into eight equal intervals ($1200/150 = 8$). Set it to 200 and it skips every other pitch - the semitones - resulting in a whole tone scale. Set it to a value such as 110 and you get a decidedly out-of-tune selection of notes. The program makes use of pitchbend to produce these changes so your gear must respond to this in order for it to work.

DRUM AND CHANNELS

THAT COVERS THE basic operation of the program but not its full potential by any means. The Channels box selects the MIDI channels the notes are transmitted on. If more than one channel is selected, the notes cycle through them. This can be very effective texturally when using instrumental sounds and it can produce very interesting patterns if linked to a drum kit.

If you can assign each drum to a different MIDI channel, you can control the order in which the drums play. Many multitimbral instruments have a dedicated drum channel (Roland instruments use channel 10) and assign drums to individual notes. In this case the drums you hear will depend on the notes the program selects and you may need to tackle the Probability Distribution graph with a firm hand.

BEND AND MOD

THE BEND AND Mod(ulation) areas on the bottom right of the Edit Page are used to determine the amount and type of pitchbend and modulation which is applied to a Texture. Collectively they are known as Functions and five types of pitchbend and modulation are supplied on disk.

The Functions are displayed graphically and you can draw your own in the Function Edit screen. Each Function can use up to 100 points, although the

manual is kind enough to point out that if the processing gets heavy the program could lock you out. In practice this should never be a problem, as you should be able to create most effects using 30-50 points.

THE PERFORMANCE PAGE

SELECTING THE PERFORMANCE Page calls up a new screen. When you access it, a copy of the Textures are transferred to it from the Edit Page. This allows you to work with them without destroying the originals. When leaving the Page you can overwrite the settings if you wish.

This is where things start to get interesting because the Performance Page is poly-textural - it lets you play more than one Texture at once. If this sounds like a recipe for cacophony - you're right. But the secret is to use it with care and restraint.

The lower half of the Performance Page contains faders which can change parameter values in real time. They work really well. If you position the pointer in the slider and move it, a new value is shown at the top but it only comes into effect if you click the mouse. Clicking and dragging will continuously alter the value and you can type a number directly into the slider's box as usual. The sliders can be divided into up to four groups, in which case altering one will alter all the sliders in that group.

There are nine Ignore buttons in the top right of the screen. Highlighting these will make any Texture ignore its own values and use those of the current Texture instead.

You can create up to 20 Program Sets which can send a different program change number on each of the 16 MIDI channels. This is fine until you come across something like Yamaha's new SY77 which, under certain circumstances, requires *two* program change messages to select a voice (the first is used to select one of its four banks). Yamaha's approach may generally be regarded as a "good thing" but it is decidedly non-standard, and while most dedicated sequencers are flexible enough to handle it, programs such as Sound Globs aren't.

In this instance I can't lay any blame at all at Sound Globs' door but if Yamaha (and possibly the other big musical instrument manufacturers) are going to take liberties with the interpretation of the MIDI spec, it means software developers may have to build extra flexibility into their software.

From the Edit Parameter Limits menu you can stipulate the range of values the various parameters can take - for each Texture. In practice, I reckon the defaults will suffice for even the most bizarre application but the facility is there. Parameters such as the Anchors are restricted to values between 0 and 127, the recognised range of MIDI values.

MIDI CONTROL

THE MIDI CONTROL menu lets you map external MIDI controller input onto various functions. For example, ►

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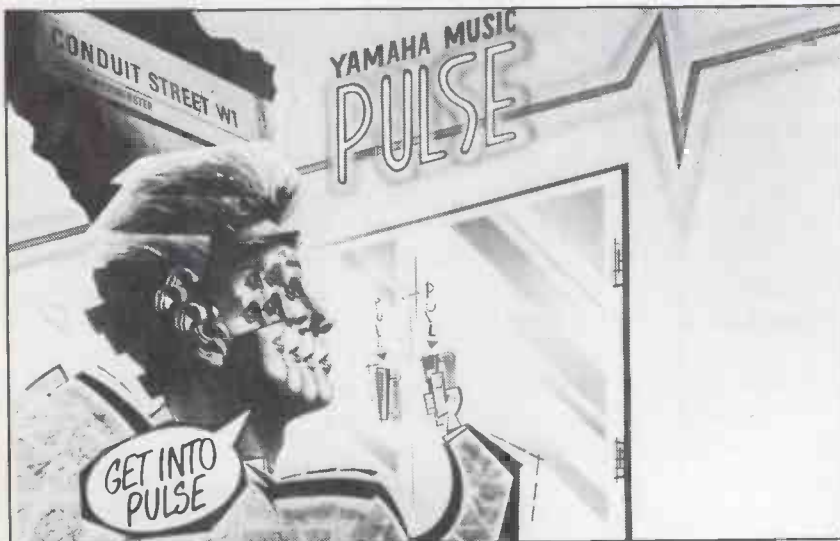
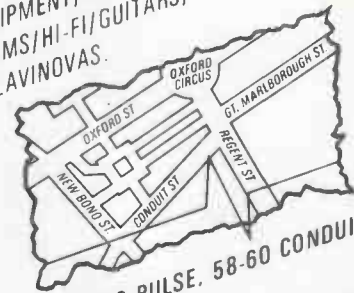
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- ▶ you can use a key press on a MIDI keyboard to change the Pitch Anchor, the velocity to change the Loudness Anchor and so on. Program changes can be used to select new Textures, MIDI channels and Program Sets. MIDI controllers can be used to change the Anchors, the Pitch and Time Quantum values and the parameters in the Parameter Ranges box.

It's nothing if not comprehensive. However, putting all this together to produce meaningful results is another matter. A general rule of thumb I've discovered when working with algorithmic composers is that little and fine is best, especially if you don't want to stray too far away from some semblance of tonality.

FOR THE RECORD

THE SESSION RECORDER will save to disk details of the parameters in the Edit Page. You can view and print the record with a word processor. It can be a useful way of backtracking if you lose some incredible setting but you may find you have a lot of data to wade through.

You can save a Performance in standard MIDI File format for loading into a more conventional sequencer. It works on a "what you hear is what you get" basis and records all mode functions and program changes.

WHAT A PERFORMANCE

AS IF THIS were not enough, Sound Globes also boasts a Performance Language. At a low level it can be used "in command mode" to select a new Texture or alter the value of one of the parameters. It can also be used to "hold" any changes in order to execute them all at once - you can't do this with a mouse.

You can enter Performance instructions in the Performance Score, rather like writing a mini computer program. You can enter delays in order to make carefully timed changes to the piece. This is probably the smoothest and most controlled way to create a score.

You can overdub events onto a Performance Score by starting the score running and making further adjustment as it plays. Changes will be incorporated on subsequent playbacks.

SHOCKER

AS WITH ALL music programs, you get out of it what you put in. Nowhere is this more true than when working with an algorithmic composition program. This is confirmed by a recent Digital Music press release which reveals that Sound Globes was instrumental (my abysmal choice of words, not theirs) in the production of the music for the new Wes Craven (Nightmare on Elm Street) film, *Shocker*. I haven't seen the film so I can't comment on the music, but I do know there are several musicians/composers/producers who find nothing of value in algorithmic composition programs so it's

reassuring to all (those who write 'em and those, like me, who enjoy using 'em) to learn that they do have a place in the commercial world of music out there.

The Manual is particularly good with an excellent tutorial section which works you through the basic procedures in some detail.

Included in the package is a Cakewalk utility which converts the MIDI files created by Sound Globes into Cakewalk workfiles. You also get a Sound Globes Librarian program which helps swap Textures and Functions between banks.

VERDICT

I MUST ADMIT that on first acquaintance with Sound Globes I was a little less than enthusiastic about its mathematical - as opposed to musical - approach to composition. The main thing to bear in mind, however, is that it is not, I believe, primarily intended to produce stylised melodic output. Although this can be achieved by judicious twiddling of the Probability Distribution graph, it could have been made even more accessible by the inclusion of a "tonally biased" graph. Given that the vast majority of musicians will be primarily interested in creating music with some sort of tonal centre, it would have widened the program's appeal.

However, during my time with Sound Globes I managed to conjure up some effective ethnic drum patterns (great fun, this!); some meandering pentatonic, oriental gamelan music; some slow, heavy, atmospheric mood music (lots of strings); as well as something sounding like a manic out-of-tune orchestra but with just enough order in it to make the piece sound composed - if you allow for a little artistic licence. Sound Globes' forte is, as the blurb says, the creation of textures, and I can well imagine its atonal output being used for a horror movie score.

The program is incredibly powerful. It gives you a rare amount of control over the musical building blocks along with an incredibly high degree of user-interaction. But I do wish that some textures had been included on the disk so you could see what the developers can do with their own program.

Finally, although pricing, to an extent, is subjective, PC owners have always had to pay rather more for their software than owners of other "lesser" computers. The most well-known algorithmic composition program, M, has recently seen a price hike to £150 (although it'll cost you £185 if you have a Mac), so Globes' asking price isn't extortionate. You pay your money. . .

If you like what you've read so far - or if you're wondering what I've been rabbiting on about for the last three pages - I can strongly recommend you send for the Sound Globes demonstration disk (fully functioning except for save) which includes a 45-page manual. Yours for £8, refundable against a purchase of the full program. ■

Price £175 including VAT.

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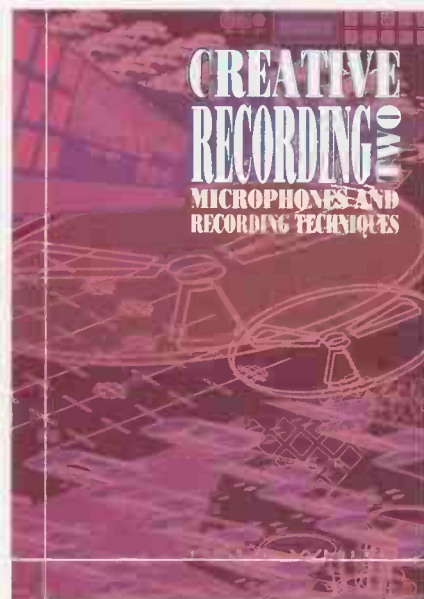
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demo takes

It's that time of year, and I've just got back from my annual sojourn somewhere incredible. I'm not going to tell you lot where in case you decide shell craters and war-torn buildings are your idea of fun too. I'm relaxed and in a better mood than you've any right to expect, so which lucky bugger is out of the demo box first?

It looks like **Ron Barnes and Peter Cook** (*the Peter Cook?*) are the lucky bugger(s) in question. Courtesy of the exceedingly polite letter, I discover the tangled web behind their musical history; from 1982 to 1986 they were part of an ensemble entitled Pack of Three, who played, quote, "mainly in front rooms with very dodgy equipment and consuming large quantities of lager and wine". Eventually the boys recovered from their drunken stupor, played a few gigs and recorded some tracks at a local 16-track. And the first three tracks of the tape in question are none other than those tracks. So why are Ron and Pete after my opinion several years after the demise of the band? It seems a reunion and reformation might be on the cards, and it looks to me as though they're seeking reassurance. . .

Barnes and Cook freely admit their musical influences - classical, folk, rock - but to be brutally honest, I didn't really need telling. The first three tracks (their older material) carry the tell-tale signs, not of '82, but of '72; though the songs are perfectly adequate of their type (early-ish Genesis, Floyd, King Crimson, Yes, need I go on?), I find myself asking what exactly the point of this band was; I should think they were OK playing the local pubs, and they probably went down a storm at the local folk festival, but they obviously weren't aiming for chart success with this material, and if their only reason for re-forming is to play the local pubs again, they certainly don't need my say so.

On to the next few tracks, which are recent material, and for which there is no other word but Diabolical. At least the early material had the dubious virtue of being an honest throwback to the '70s; the only value in much of this material is *kitsch* value - I quote again, "Let's take a trip to Tierra Del Fuego, you don't have to be a Dago". The musical direction in evidence is confused to say the least - I suspect the boys are still in the habit of imbibing rather too much of the amber nectar in the search for inspiration - although I can pick up traces of Police-like overtones, only ten years or so late.

Collective equipment includes Fender Telecaster, Fender Precision Bass, Yamaha RX17, Yamaha CX5M, Korg Poly 800, Casio CZ101,

Alesis Microverb, Alesis Micro enhancer, Fostex X30, and Sony TC377 reel-to-reel. The use of the above is pretty pedestrian on the whole (special judgement reserved for 'Street Lights', a widdly synthesiser extemporisation sequenced and played on the CX5M - only one word for it; garbage). Recording quality suffers from dullness, probably a consequence of limited track width.

What more can I say? Hold on to your day jobs. (How *do* I sleep at night?)

Back to the Future with **Captain Black and Friends**, and an untitled two-track house/dance tape which almost took me by surprise. The first track, 'This is Techno-pop', kicks off with a slightly weak groove from the Captain's TR909, which is beefed up considerably by the entrance of a bouncing bassline and sampled, distorted sustained guitar power chords. These promising ingredients are joined by a rapper pronouncing an unintelligible rap with very little in the way of presence or power. However, the house-style piano riff helps take your mind off the rap for a few seconds, and there's good use of samples and synth patches, not to mention the very competent and interesting rhythm programming. It's nothing new in this day and age, but at least it's a step in the right direction (and if Adamski can do it?).

The Captain is using a near-classic blend of current equipment to produce this very danceable music; Atari 1040 ST, C-Lab Creator, Akai S900 and Ensoniq ESQ1 samplers, Roland D110 synth module, and Roland TR909 drum machine. Recording is onto a Tascam Porta Two cassette multitrack, with mastering to a Sony Pro Walkman, and sounds surprisingly good, except where vocals come in, when there is a definite boxiness and lack of any depth. However, this is to be expected on a Portastudio, especially bearing in mind that the only mic being used is a Sony ECM909, which is unlikely to have a good enough frequency response to accurately reproduce the human voice. A decent mic and a psychoacoustic enhancer would go a long way towards preventing the Captain's raps from sounding so thin and lightweight. A bit more of the Alesis Midiverb on the vocals wouldn't go amiss either.

The second track, 'Unleash the Fury', is a much heavier, rap-influenced groove, and though it initially didn't work as well for me as the first track, I found myself being quite carried along by the unrelenting beat and imaginative use of short samples. The Captain certainly seems to know what he's doing. I might stress here that dance

music isn't my favourite type of music (and I'm not telling you what is). Put my (almost) unqualified approval down to simply knowing good music when I hear it - whatever the style.

Time now for a brief mention of some old friends; devoted readers of Demotakes will no doubt remember the less than glowing review we gave The Officer's Club some few months ago. Well they're back - in the guise of **A Band Called Twenty**, but still composed of Mike Day, Tony Gaeta and Vince Riccardi, and showing - I have to admit it - an improvement in both songwriting and arrangements. Congrats lads, I really didn't expect it of you - and by the way, did you really think I wouldn't notice it was you?

Having said this, all is not completely rosy in the boys' backyard (where it seems the publicity shot was taken); though they seem to have abandoned the aggressively clubby early '80s disco style demonstrated in the last tape, in favour of an altogether more interesting off-beat dance style, they still have things to learn. Though the lead vocalist has improved almost beyond recognition in confidence, projection and style, I'd suggest they take a close look at some of their backing vocals (especially, chaps in the second track 'Secret Fields' - nix the wailing behind the chorus), since they're a bit on the corny side unless done very slickly and professionally.

On the instrumentation side, likewise I detect a great improvement in quality - some very nice touches in arrangements, like laid-back sampled strings overlaid with reverby synth piano, and on the third track, an interestingly moody analogue bassline accompanied by sustained analogue-style strings, joined by well-considered latin percussion. This conspires to make me feel very optimistic about the future of the band, but once again, the dodgy backing vocals in the chorus spoil things somewhat - whoever is singing, please don't attempt vocal lines which are too high for you; there's nothing worse for making people (including me) cringe.

I find myself wondering whether the boys are doing much in the way of *gigging*, since I'm sure this would do a lot for their performance, especially the vocalist. However, they seem to be making much better use of their gear (Akai S1000/700, Ensoniq SQ80, Tascam TSR8, Alesis Quadverb, Roland DEP3 and Steinberg Cubase) than they were only a few months ago.

And all this just goes to show that a critical panning in Demotakes should not mean the end of the line for your musical aspirations: when the going gets tough. . . **Skum**

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THE KITS

Each kit consists of all parts to complete the modification. All are internal updates requiring some soldering. Step by step instructions.

MIDI LIGHTING

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MIDI GATE

This controller is aimed at acts that already have a lighting desk. The control has 6 output triggers with 0-10 Volt outputs. This permits the brightness of lamps to be controlled from velocity and allows gate on time to illuminate the lamp for a time representative of note on/off data. The unit is 1U rackmounting and can be set to receive on any MIDI channel and be set to receive any MIDI notes. Ultimate control over MIDI for existing light desks:-

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SOUND MODULES

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The STINGER is a 4U 19" Rackmount unit incorporating independent synth modules. Each synth is based on the EDP WASP and each is under its own MIDI control. 2 oscillators per synth means 4 oscillators per unit if both are set to receive on the same MIDI channel, for that truly large analogue sound. Extensive MIDI control, new features and loads of user control makes this a synth to be reckoned with.....

M303+

A 1U 19" rackmount module featuring a dual channel MIDI to CV converter built in, and a voice module based on the TB303 Bassline fixed to one of the CV channels. All the usual control with filter under MIDI control, makes this module both quick and easy to use. Both CV and Gate outputs can also be used with any other suitable monosynths. CHECK IT OUT.....

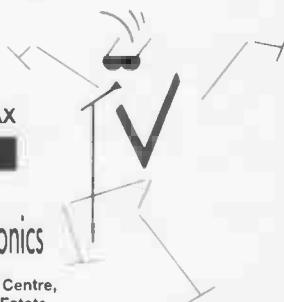
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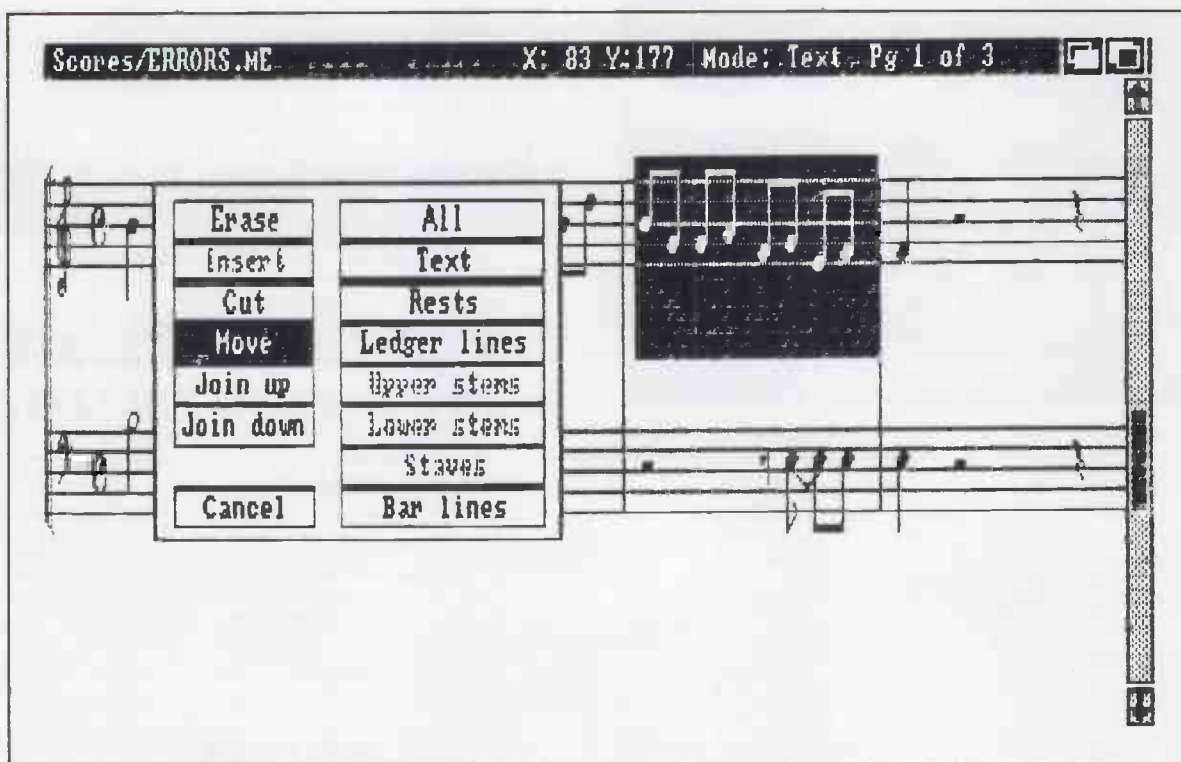
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COPYIST APPRENTICE



Since its inception as Dr T's Copyist I, II and III, this scorewriting program has undergone many improvements - now it's available for the Commodore Amiga. Review by Ian Waugh.

DR T'S COPYIST SCOREWRITING program has been around for quite a while now. It began life on the Atari ST and IBM computers and was available in three versions - imaginatively christened Copyist I, II and III. Coming up to date, these have been updated, had a change of name to Copyist Apprentice, Copyist Professional and Copyist DTP and are now being ported to the Amiga. Copyist Apprentice (review version 1.62) is

the baby of the bunch and although it doesn't cost an arm and a leg, it is still a feature-packed program.

Copyist Apprentice will run on an Amiga 500/1000/2000 but requires 1Meg of RAM. In common with most Amiga applications - as all Amiga owners know - you really need two disk drives, too.

SORCERER'S APPRENTICE

APPRENTICE IS A music transcription and score editing program and does not support MIDI messages directly. It handles seven different file types (music files, backup files, print data files, font files, MIDI format files and various Dr T's sequencer files) and makes extensive use of disks for storing temporary workfiles as well as program modules. It does a conversion process on KCS (Dr T's Keyboard ►

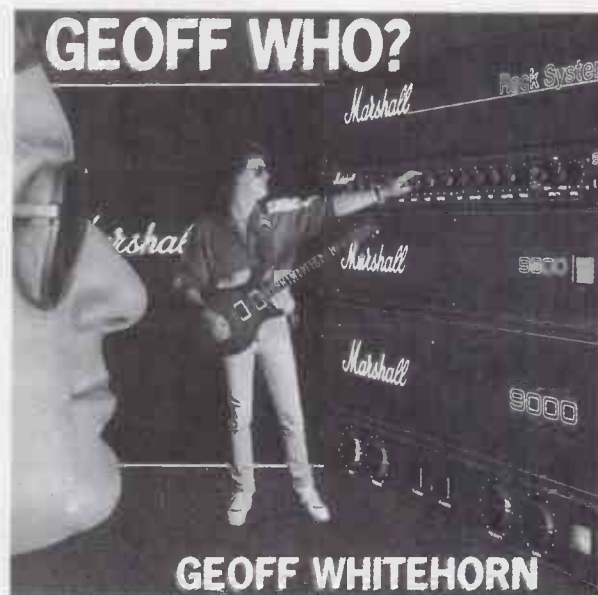
GEOFF WHITEHORN - GEOFF WHO?

In these days of all too often mindless fretboard frenzy, Geoff Whitehorn is a rare commodity – a player of supreme touch and taste. Although no slowcoach when it comes to technique, Whitehorn is revered by his peers for an ability to milk absolute feel from every note. Combine this with perfect tone and a sense of harmony which draws from blues, rock and the best of British pop and you'll be surprised that they're asking "Geoff Who?"

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**MUSIC
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► Controlled Sequencer) and MRS (Dr T's MIDI Recording Studio) files (to create a halfway-house stream file) and it can handle standard MIDI files and SMUS files. One-drive setups are for saints only.

On booting up you can specify the drive to be used for work files. (Be sensible and choose a RAM Disk.) You can also select the screen resolution. Medium is 640 x 200 and high is 640 x 400 pixels. You get to see more of the score in hi-res but it shook my Commodore 1084 monitor to bits. Practically it's unusable except for a very brief global picture although, helpfully, you can flip between resolutions from within the program. At least it made me quit drinking for a while.

CURSORS

THE MAIN SCREEN represents a blank sheet of paper onto which you write your score. It is arranged in a series of pages and each page can hold between 16 and 20 staves, although a sheet of 8" x 11" printer paper can only hold about two thirds of this number. Apprentice can only store a maximum of five pages (Copyist Professional can store 50 and DTP 100) which is probably quite enough for your latest single, if not for the 12-inch version.

There are two cursors: one is controlled by the mouse, the other is the edit cursor which is controlled by the cursor and function keys. It will jump to the position of the mouse cursor with a left click. The centre of the edit cursor is where most symbols appear. The top line of the screen gives an X-Y readout of the cursor position so you always know exactly where it is.

Drop down menus control many of the program's operations. Three symbol menus are used to select notes, rests, clefs, ornaments and so on - 47 symbols in all. These are placed on screen at the position of the edit cursor.

THE SWINGING SYMBOL

OTHER SIGNS AND symbols are placed using the Amiga's keyboard. For example, bar lines are inserted with three key presses: the first to tell the

system you want to enter a bar line, the second to describe the line (brackets, regular, curly, end bar line and so on) and the third to say how many staves it crosses. Ties also require several key presses.

I can't really believe that it wouldn't be easier to use the mouse - many other scorewriters do - although I dare say this method was easier to program. (A full list of symbols was supposed to be in the appendix but these pages were blank. They didn't have "This page intentionally left blank" written on them, so I assume gremlins are to blame.)

As most symbols appear in the centre of the edit cursor, you'd imagine that clicking the mouse cursor exactly on a line or space would place the centre of the edit cursor on that point. But it doesn't. The centre appears a line or space higher. Still, you can adjust. Notes are usually entered in three stages - first the head, then the direction of the stem followed by the duration - although there are special entry modes to speed this up.

BOOK OF SPELLS

THE MANUAL CONTAINS a tutorial section which explains how to enter a simple three-bar phrase. It's clear and easy to follow, but musically it's grammatically incorrect. For example, the first note in a bar (including whole notes which last for the entire bar) should be placed near the beginning of the bar, not in the centre as the manual shows and directs. It also tells you to join eight quarter notes with a single beam. This is in 4/4 time and very non-standard. At best they would be beamed in two sets of four. An odd start for a notation program.

MODES

APPRENTICE USES FOUR modes for entering different symbols. In Standard mode, notes and symbols are entered at the cursor as described.

In Text mode, a variety of fonts are available, although these may not print the way they appear on screen (which slightly defeats the object of the exercise). You need to take care using different fonts if you want lyrics and notes to align. ►

FRANK GAMBALE

Brave New Guitar

A Present For The Future

Live

A former pupil and then teacher at the Guitar Institute of Technology in Los Angeles, Frank Gambale has been hailed as one of the world's most technically accomplished guitarists. After spells with both Jeff Berlin and Jean Luc Ponty he joined Chick Corea's Electric Band.

Music Maker Records have available Frank's two solo albums and now his specially priced *Live* double album, which in Frank's words is "...unabashed, unabridged, total blasting...".

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RICHARD BAILEY

Fire Dance

Born in Trinidad, Richard Bailey's inimitable playing style has established him as one of Britain's most respected drummers and percussionists. He has worked with a wide variety of artists, from Bob Marley to Billy Ocean, and is well known on the jazz scene for his involvement with The Breakfast Band.

Firedance, his eagerly awaited debut album, is certain to attract major interest from all drummers, yet its range, combining rock, funk, jazz and Afro/Indian rhythms with '80s drum patterns ensures it will reach a far wider audience.

An album for those who appreciate great music.

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GORDON GILTRAP

Guitarist

Gordon Giltrap is acclaimed as one of the finest acoustic guitarists this country has ever produced. This album is a personal selection of tracks, some previously unreleased, which over the years have proved to be firm favourites with guitar players.

From the memorable single 'Heartsong', through beautiful emotive pieces such as 'Elegy' to the sheer unadulterated chops of 'Lucifer's Cage', *Guitarist* is sheer musicianship.

To listen to tracks from *Guitarist* and order it on Access/Visa just dial 0898 666122.

JERRY DONAHUE

Telecasting

An outstanding virtuoso of the electric guitar, Jerry Donahue created a buzz amongst British guitarists after his memorable appearance on Channel 4's *Equinox* programme. From the legendary Fairport Convention, he's joined the likes of Gerry Rafferty and Chris Rea on record and on tour. This solo album is a showcase for his highly developed technique.

To listen to tracks from *Telecasting* and to order it on Access/Visa just dial 0898 666120.

PHIL HILBORNE

Are You Serious?

Phil Hilborne needs no introduction to *Guitarist* readers or to the multitude who've heard him play - but we'll admit he's not high on the Radio 1 play list! Now's your chance to change all that - and to let your friends know just what they've been missing.

These two original, instrumental tracks, 'Are You Serious' and 'Duck And Dive', both produced by Geoff Whiteham will leave you in no doubt that Phil is a master in the art of rock guitar.

GEOFF WHITEHORN

Geoff Who? Geoff Whitehorn

In these days of all too often mindless fretboard frenzy, Geoff Whitehorn is a rare commodity - a player of supreme touch and taste. Although no slowcoach when it comes to technique, Whitehorn is revered by his peers for an ability to milk absolute feel from every note. Combine this with perfect tone and a sense of harmony which draws from blues, rock and the best of British pop and you'll be surprised that they're asking "Geoff Who?"

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“Apprentice isn't the most helpful of programs, but then many more-expensive notation programs could do with a few lessons in user friendliness too.”

► In Keyboard mode, note heads are placed on the staff with the QWERTY keys and the cursor steps on after each entry. Chords can be entered by pressing two keys simultaneously or by pressing two keys in quick succession (so what if you want to think about it?). You can enter half notes (hollow heads) by pressing shift but the cursor doesn't step on two spaces, you have to do that yourself.

A stem can be attached to the current note head by pressing a direction key (“+” or “-” on the numeric keypad) followed by a duration key (a numeric key on the QWERTY keyboard). The manual has this order the wrong way around.

Join mode is similar to Keyboard mode, but it has additional commands for joining stems and adding dots and flags. These aren't shown immediately but when the notes are finally beamed. Accidentals must be added in Standard mode. Beaming throughout, however, is very flexible with a choice of up or down stems and sloping or straight beams.

There are a number of block edit commands including insert, erase, move, join stems and cut and paste. A target area is highlighted by dragging a box around the screen and a pop up box appears with the options.

FOR THE CONVERTED

AS WELL AS a stand-alone score creator, Apprentice should be of interest to anyone looking for score-writing facilities for their sequencer.

The conversion of a sequencer file to an Apprentice music file is a two-stage process - the sequencer file is converted to a stream file which is loaded into the program where it can be edited and saved as a music file.

The manual runs through an example using a KCS file. A conversions options window lists the tracks in the file (up to a maximum of 12 tracks) and is used to select one or two staves and their types for each track. You can adjust the key signature, the time signature and the number of bars per line and staves per page.

Next, you import the stream file and up pops a transcription options window which lets you decide whether or not to use rests, page and bar numbers, stems and beams, joined stems and so on. You can also set note start and note duration quantise values.

The demo piece turned out perfect in practice. Very impressive indeed. But if you examine the source file in KCS you'll find that it's a perfect piece of music. For example, all notes are *exactly* where they're supposed to; there are no spurious rests and no double notes. It's been entered in step time.

But musicians aren't perfect (at least none of the musicians I know) and therein lies the rub. You need a note-perfect recording (or one pretty close to it) in order to get a note-perfect score. If your timing is particularly sloppy you could have a major rewrite job on your hands. It all depends on how accurate - and complex - your original sequence is.

As the program is graphic-based rather than

music-based, you can't perform “musical” alterations on the score. For example, if a music line changes clef the score doesn't change with it - it uses leger lines, lots of 'em. There is no transpose function and inserting a new clef does simply that - it does not transpose the notes following it.

You can transcribe drum parts, although the notes are expected to conform to the assignment used by Apprentice and you may have to make alterations in the sequencer file. The moral of this story simply reflects the old computer adage - garbage in equals garbage out. The accuracy of the score you get out depends on the accuracy of the data you put in. This applies to any sequencer-to-notation conversion program, not just Apprentice. If you want sequencing and scorewriting facilities, you really can't beat an all-in-one system which contains both the MIDI data and the score (such as C-Lab's Notator, and Steinberg's Cubase on the ST). On the Amiga, a notation module is promised soon for Music-X, and for the muso on a budget, Dr T's Tiger Cub with score edit facilities is due for release on the Amiga soon.

No, I don't reckon I'm being picky. If you want a scorewriter to transcribe your sequencer files you must be aware of the problems you could face (there's more about this in the printout section). But having said that, Apprentice probably handles the vagaries of sequencer file conversion as well as they can be handled.

PRINTOUT

THREE PRINTER DRIVERS are supplied - one for printers supported directly by the Amiga, one for 9-pin Epsoms and one for the HP Deskjet printer - and executed from the workbench. The generic Amiga driver doesn't support alternative text fonts, and the other drivers use special music characters.

It took about 15 minutes to print a page on an Epson FX80 but the printout is neat and dense and altogether very impressive. However, some of the notes in the demo file (the one converted from a KCS file) printed rather too close together (using the manual's parameters). You can stipulate how many bars there will be on each line during conversion and decreasing this value spaces out the notes rather more, but you can't alter this once the score is in the machine. Really dense passages, however, still may not space out satisfactorily even with only two bars per line. Also, if busy and quiet passages occur in the same part, some “wide” bars may only have a couple of notes in them.

This demonstrates the desirability of a more flexible system of note spacing both for converted files and for pieces entered manually. As each note won't always be entered with its duration (it's generally easier to enter note heads as a group and then beam them), an auto spacing facility would be useful. A facility to expand or compress a run of notes into a given area could be an asset, too. It's all very well being able to place symbols anywhere on the page but, generally, you'll want the notes spaced proportionally according to their duration. This is an

area which could be improved on many graphic-based notation programs.

VERDICT

IN OPERATION, APPRENTICE requires use of both the mouse and the Amiga's keyboard. To help with the keyboard commands an overlay is supplied which, after cutting bits out, fits over the keyboard. It reminded me of the controls for a flight simulator. A pop up help facility is also available within the program.

Sorry, but I'm going to moan again. Mice and WIMP environments have been around long enough now for designers, surely, to produce relatively intuitive programs without the need for such an *aide-memoire*. You might expect this for a PC program, but not for one which runs on a computer which comes with a mouse and graphic environment as standard. But then Dr T's programs do have something of a reputation for "numeracy" (although new programs and updates are becoming more graphical and icon-based).

I may be a bit of a philistine, but I don't really want to learn a list of keystroke commands. At the very least, during multiple key entries the program should let you know what key you've pressed and what further key(s) it is expecting.

I must also report that the program crashed several times, usually when I was working from the Workbench, but I'm quite prepared to concede that this is probably more a result of the Amiga's "fragile" operating system than the program.

OK, Copyist and I have our differences of opinion but it's still a powerful piece of software. If you want a program to convert your sequencer files to notation, Apprentice will do the job - just remember the caveat (and again, I make it clear this applies to any file conversion program with no inherent MIDI facilities or music intelligence of its own).

As a stand-alone music entry system Apprentice fares very well, and even though I think it could be more helpful, it's not alone in eliciting this opinion from me - I reckon many more-expensive notation programs could do with a few lessons in user friendliness.

But then we come to the price. Apprentice is certainly one of the cheapest notation programs for any micro, and you have to do a balancing act between price and performance. Once upon a time all programs were command-driven - it just requires a little time to become familiar with them. Perhaps we've all been spoiled by mice.

If you have the time and you're on a budget - fine, it's well worth looking at. But if you've really become addicted to your mouse and reckon it should earn its cheese, and you want something a bit more plug-in-and-go, you may find Apprentice has too long a learning curve to satisfy your demand for instant gratification. ■

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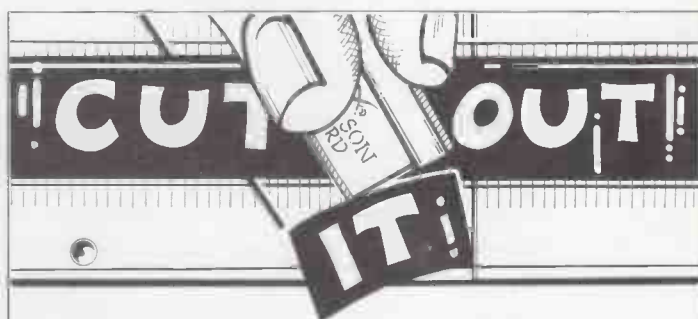
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The sounds under the microscope here are the Valhala International Gold B101 and B102 cards. In common with other manufacturers' cards, these come in the now obligatory small plastic wallet but, suprisingly, no patch list was supplied. Still, that made discovering the patches contained all the more intriguing.

Firstly then, B101. Primarily, this contains a fantastic range of floaty, ethereal textures. Names such as 'Graveyard', 'Supersense', 'WatchingMe', 'Creepy', 'MovieMaker', and 'ImageMaker' give some idea of the underlying theme of the card. These are all classic sounds, and will undoubtedly show up pretty soon on television adverts the world over. There is also a great selection of warm pads, and delicate timbres - 'Emulator3', 'JMjv.2.0', 'Angelsong', 'Quireboys', 'MisterE2Me', 'MirrorRoom'... Fat analogue timbres are also in evidence using overdoses of reverb to hide the basic sterility of the digital sound. It's all enough to make you want to re-record *Oxygene* using just your M1 and a bit of imagination. There is also a smattering of strings, bass patches, and an excellent rock organ. Sound effects are well catered for, and are a lot more useful (and a fair bit more scary) than your average monosynth filter sweep or modulated white noise. All in all, very dramatic, very uplifting, very exciting.

The second card, B102, is no weaker than the first, although the emphasis is markedly different. Whereas B101 majors on textures and moody atmospherics, B102 adds pianos, strings, percussion, flutes, ('GalwayFlut' - die for it), brasses ('Sax+Trumpet' - very bright), lead guitars, and some further sound effects. The lead sounds are particularly well represented. Ever wondered what a dead guitarist might sound like through an echo unit and a rusty phaser? Try 'CutterLead' for size. 'LeadGuitar', 'Feedback', and 'OSCarLead' are pretty self-explanatory, and 'Backwards' enables you to play those reversed

George Harrison guitar licks that you've always loved (haven't you?). That isn't to say that there are no typically M1 atmospherics on this card. Try 'Enya', 'JmJ's Pad', 'Religious', 'Dreamy', and 'AtmosFeriK' - there's something here for everyone. Power playing is also well catered for with 'AlbumStart', 'BigMovie', 'BiggestM1', and many others supplying the business. Also, by way of fun, there are a small number of D50 rip-offs - similar name, same sound. And why not? Finally, the card also contains a number of timbres clearly inspired by other types of synth - analogue, PD, and FM.

Experimenting with both cards sends song ideas leaping unbidden into yer head. The sounds just reek of SMPTE and £1m recording studios, and will undoubtedly find their way on to countless soundtracks, AV jingles, and videos. Perhaps the best way to differentiate between these programs and other synths' patches (and even other manufacturers' M1 sounds) is that the Valhala patches sound like Combinations in their own right - rich, textural, loadsa movement. The last time that you heard sounds of this quality emanating from a single keyboard you were probably listening to an Emulator or a Fairlight.

If I had to find one criticism of the collection it would be that there are a few too many atmospheric textures. But I won't. With 200 almost uniformly excellent patches to choose from, you really shouldn't mind a little self-indulgence by the programmers. Speaking of the creators of the collection, it's good to see that programmers can have a sense of humour (B101 patch 69, 'Love Chord'). The dedication of the programming team seems to come across every time you experiment with the cards. Even using the moody or eerie sounds, you get the impression that the people who were working on them were actually enjoying themselves.

In conclusion, these cards contain some of the most satisfying patches that I have heard in a long, long time. The jaded ears of this MT reviewer have now been titillated by timbres and effects that show just how powerful a synth the M1 still is - even in 1990. At only £45 per card (not cheap perhaps, but excellent value for money) these patches will tempt you to make an M1 the major keyboard in your rig. If they don't, I honestly don't know what will. Now I'm off back to my M1R to have some more fun. I suggest that you do the same. **Gordon Reid.**

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ROLAND JUNO60, £330; DX9, £200; TR505, £110; MR30, £100; Nady wireless mic, £150; 100W PA, £175. Nigel, Tel: (0727) 54447/38044.

ROLAND JUNO60, 50W Casio amp, reverb, stand, £350 ono. Tel: 051-722 8210, after 6pm.

ROLAND JUNO 106, mint, ungigged, stand, pedal, manuals, £270. Tel: (0272) 734591/(0749) 342955.

ROLAND JUPITER 6 MIDI synth, £450, or swap for Moog Prodigy and £300. Mark, Tel: Tyneside 254672.

ROLAND JUPITER 8A, immac, original manual, RX5, mint, boxed, cartridge. Steve, Tel: (0909) 771581, eves.

ROLAND JX3P, excellent cond,

vibrato pedal, excellent edited programmes, £300. Tel: (0276) 22946.

ROLAND JX3P polysynth, stand, £295 ono. Lloyd, Tel: (0255) 435636.

ROLAND JX8P, perfect cond, new, flightcase, so fat won't fit bedroom, £600. Dave, Tel: (0925) 814385.

ROLAND JX10, plus programmable PG800, 3 ROMs, 2 RAMs, all boxed, as new, rich and deep, lovely sound, £850. Steve, Tel: (0254) 774554.

ROLAND MKS20, £450; Korg M1, £1035; E-mu Emax, £1400; Yamaha DX7, £460, all ono. Tel: 081-462 6261.

ROLAND MT32, manual, £250; TR626, boxed, manuals, as new, £200. Chris, Tel: (0563) 33965.

ROLAND MT32, plus editor, £220 ono. Tel: Worthing 831346.

ROLAND MT32, vgc, boxed, PSU, £270. Tel: (0268) 794755.

ROLAND MT32, fine cond, with Leister sounds, £270. Robert, Tel: 091-388 6000, after 3pm.

ROLAND MT32, immac, boxed, manuals, home use only, £240 ono. Tel: 081-994 1811.

ROLAND SH2, £85; TB303, manual, boxed, £70; Moog Prodigy, manual, boxed, £85; Opus-3, £100. Tel: (0623) 651565.

ROLAND SH101, mint, £90; MC202, £90, will deliver in surrounding area. Tel: (0836) 359998, days/(0977) 511156, eves.

ROLAND SUPER JX10, vgc, 6-octave, touch sensitive power synth, manuals, cartridges, case, £750. Tel: 081-361 0421.

SMPTE XR300, £140; Juno 60, MIDI, £340; CZ101, £120; SH101, £120, as new, manuals. Tel: 071-584 0770.

SWAP my SH101 for Midiverb II or any reverb in rack, I will add £30. Tel: 071-704 9744.

2 x MEMORY expander for Ensoniq EPS for swap or sale, perfect cond, £130. Seamus, Tel: Ireland 095-35885.

WURLITZER EP200, Korg DS8, Yamaha CP30, Casio CZ101, Teac 144, £1000, will split. Tel: (0226) 756131.

YAMAHA DSR2000 keyboard adaptor, carrying case, music stand, manual, boxed, as new, £375 ono. Tel: (09274) 26932.

YAMAHA DSR2000, built-in drum machine sequencer, stand extra, £550; TX81Z, £150. Tel: (0843) 603033, eves.

YAMAHA DX7, mint, 5 ROMs, hard case, £500. Graham, Tel: (0234) 45920.

YAMAHA DX7 II, FD, excellent cond, dust cover, case, books, manual, £950. Chris, Tel: 071-361 0920.

YAMAHA DX7 II, FD, immac, home use only, £850 ono; REX50 effects, £150 ono; Porta One, £200. Chas, Tel: (0582) 699239.

YAMAHA DX7S, boxed, manual, never gigged, 3000+ pro sounds on Atari ST disks, only £750. Tel: (0273) 594197.

YAMAHA DX9, 16-note polyphonic, MIDI, voice tape, book, manual, £305. Tel: 071-385 1394.

YAMAHA DX9, Simmons SDE expander, must sell! Offers around £350 for pair. James, Tel: (0609) 772631.

YAMAHA DX11, RAM cartridge, hard case, £375. Tel: (03543) 5239

YAMAHA DX21, manuals, split/layer, excellent cond, home use only, £250. Tel: 081-423 6726.

YAMAHA DX21, as new, manuals, box, plenty extra sounds, £280 ono. Derrick, Tel: 081-670 1514.

YAMAHA DX27, perfect cond, home use only, manuals, £225 ono. Tel: Manea 511.

YAMAHA DX27, excellent cond, manuals plus programming book, £200. Chris, Tel: (0904) 690326.

YAMAHA DX100, mint, £150; Casio CZ230S, £100, both boxed, manuals. Tel: (0625) 34220.

YAMAHA DX100, excellent cond, only £175. Niall, Tel: 061-456 9587, after 6pm.

YAMAHA DX100, flightcase, as new, £120. Tel: (0202) 304491.

YAMAHA FB01 synth module, £130, offers. Richard, Tel: (0536) 746113.

YAMAHA FB01, 8-voice, £100; Roland TR505 drum machine, £115 inc PSU. Tel: 061-480 3656.

YAMAHA FE50, if nobody buys it this time I'll cry! Perfect cond, only £895. Tel: (0440) 85721, please?

YAMAHA SY77, boxed, as new, £1495 ono, can deliver. Andy, Tel: 061-439 5190.

YAMAHA SY77, mint, £1595. Dave Smith, Tel: (0602) 209394, 9am-5pm.

YAMAHA TX7, £175. Tel: (0272) 632465, eves.

YAMAHA TX81Z, £200; Casio MG500 MIDI guitar, £150; Yamaha PSS680, 100 sounds, orchestrations, £75. Tel: 021-358

7612.

YAMAHA TX81Z, boxed, mint, 352 sounds, £230; Roland TR505, mint, £125. Mike, Tel: 021-354 8377.

YAMAHA TX81Z, with Steinberg editor, £275; Alesis Midiverb II, £110; Roland MC202, offers? Tel: 091-284 8115, eves.

YAMAHA V50 workstation, boxed, as new, disks, £800; Alesis MMT8 MIDI sequencer, £150. Tel: (0304) 205932.

SAMPLING

AKAI S900, v2 software, many disks, £750. Tel: (0629) 583550.

AKAI X7000 sampling keyboard, boxed, mint, never used, best offer secures. Tel: (0222) 701070.

AKAI X7000, excellent cond, memory card, all leads, inc X-stand, £450. Tel: (0992) 28173.

AKAI X7000 sampling keyboard, memory expansion, £450; Ensoniq Mirage, DSK1 plus library, manuals, £400. Tel: (0304) 205932.

EMAX SE+ keyboard, boxed, immac, £1300. Tel: (0225) 319662.

EMULATOR II+, twin drives, SMPTE 8-track sequencer etc, the business! £2000. Tony, Tel: (0706) 78141.

ENSONIQ MIRAGE rackmount sampler, MASOS, custom disks, excellent cond, £380. Steve Payne, Tel: (0202) 429343.

ENSONIQ MIRAGE, disks (30), manual, excellent cond, £400 ovno. Tel: (0202) 295786 or (0264) 66517.

EPS sampler keyboard, stand, disks, home use only, mint, £950 ono. Tel: (0373) 812762.

MEMORY BOARD for Akai S1000 (2Meg), unused, £190. Tel: (0904) 628358.

PPG Wave 2.3, Waveterm B, large library, spare circuit boards, immac, £3000. Tel: (0225) 319662.

PROPHET 2000, mint, flightcase, library, £495. Tel: (0254) 247199.

ROLAND MKS100, disks, OIR, £275; Yamaha TX81Z module, OIR, £175. Mark, Tel: (0706) 830000.

ROLAND MKS100, £275; Roland S220, £425, both excellent cond, boxed, manuals. Nick, Tel: (0376) 551830.

ROLAND S10, hardcase, disks, excellent cond, £400 ono. Steve, Tel: 081-658 6209.

ROLAND S10, flightcase, disks, good cond, £500. Tel: (0277)

652931.

ROLAND S10 sampling keyboard, sample disks, £350 ono. Tel: (0734) 584934.

ROLAND S10, plus disks, unrigged, £400 ono. Harry, Tel: (0223) 420018, days/(0799) 40622, eves.

ROLAND S50 plus library, £750; D110, £350; MC500 plus Super-MRC, £450, offers. Andy Powell, Tel: (0527) 61992, days; 021-778 3154, eves.

ROLAND U110 sample player, boxed, £400; Eros Les Paul copy, £100; EPS owners wanted to collaborate. Tel: (0909) 566695.

ROLAND U110, perfect, £450; Yamaha DX7s, case, cartridges, £650. Tel: 021-523 7727.

SAMPLER CDs, many orchestral, drum percussion and GTR samples, Prosonus, McGill, Sonic Images, £20-30 each. Tel: 071-323 9218.

SWAP my D110/ESQ1 for FZ1 (10M), S330, S50 cash difference, buy MKS100 cheap. Marlon, Tel: (0493) 843859.

SEQUENCERS

ALESIS MMT8 sequencer, as new, £140. Bob, Tel: (0707) 55594.

CASIO SZ1 sequencer, £50; Alesis Microverb, £80; Microvox sampler for Commodore, £30. Tel: 071-485 5440.

CHEETAH MQ8 sequencer, boxed, as new, £99. Tel: 091-284 8686.

KORG SQD1 sequencer and disks, only £140. Wow! What a groovy price! Steve, Tel: (0202) 429 343.

PHILIPS MC100 microcomposer, 100 sounds, real/step-time rec, tape, manuals, £100; Roland Juno6, Groove MIDI, great analogue sounds, £325 or swap, both ono and mint. Tel: (0344) 56509.

ROLAND MC202 sequencer, £100 ono; CZ1000 synth, £170 ono; CS5 monosynth, £50 ono; Alesis HR16 drum machine, £250 no offers. Craig, Tel: (0742) 750419.

ROLAND MC202, £90 ono; Korg SQ10 analogue sequencer, £100 ono, both as new, buyer collects. Tel: 051-625 6742.

ROLAND PR100, 4-track sequencer, with disks and application book, £195. Tony, Tel: (0222) 236036.

ROLAND W30, 16-track sequencer workstation, hardly used, mint, £1250 ono. Lee, Tel: (0594) 24902.

ROLAND W30, 16-track sequencer, 6 months old, hardly used, guaranteed, sound library, £1350

ono. Nick, Tel: 081-568 6106.

YAMAHA QX5, superb sequencer, hardly used, £165. Patrick, Tel: (0604) 26984.

DRUMS

ALESIS drum machine, new, unused, boxed, great bargain, £220 ono. Tel: 081-808 2344.

ALESIS HR16 drums, perfect cond, £200. Tony, Tel: (0480) 66346.

ALESIS HR16, vgc, manuals, £220 ono; Tascam Porta 05, vgc, manuals, £220 ono. Tim, Tel: (0229) 53746.

CASIO RZ1 drum machine and M&M, fully flightcased, 8:2 PA mixer, £150 each. Del, Tel: 081-347 1567.

KORG DDD1 rhythm box, outstanding sounds, inc 2 extra cards, £290; Roland MC202, £150. Tel: 071-937 2271.

ROLAND OCTAPAD II (Pad80), stand, manuals, £400 ono; Korg SQD8, £200 ono. David, Tel: (04022) 29961.

ROLAND R5, immac, £310 ono; Kawai K1M, RAM card, £250; Dr T's KCS 1.7, Atari seq, £100. Tel: (0737) 351794.

ROLAND R8, mint, boxed, manual, £420. Tel: (0865) 53720.

ROLAND RHYTHM 77, preset drum machine, 10 latin, 8 ordinary patterns, £30. Tel: Brighton 304030.

ROLAND TR505, separate outs, £90; Yamaha QX7 sequencer, £80, together £150. Tel: (0332) 701289.

ROLAND TR505, manuals, home use only, £100 ono. Tel: (0501) 32848.

ROLAND TR505, boxed, manuals, £100; Trace Elliot 200W, 4x10 cab, £260, no offers. Colin, Tel: (0908) 312187.

ROLAND TR626, mint, home use only, bargain, £130. Tel: (0282) 74167, late eves.

ROLAND TR707 drum machine, as new, £170 ono. Tel: (0734) 584934.

ROLAND TR707 plus TR727 latin percussion unit, mint, £250. Tel: 051-260 6675.

ROLAND TR707 and TR727, both expanded (M64C), mint, boxed, manuals, £125 each. Tel: (0279) 418510.

ROLAND TR909, exchange for Roland MT32 plus £50 or sell for £300. Tel: (0904) 625657.

SIMMONS MTM analogue/MIDI interface, large memory, many

effects, perfect cond, manuals, £250. Tel: 071-232 2682.

SIMMONS SDS7, c/w stands, leads etc, great sounds, £325; Premier kit c/w cymbals etc, £295. Tel: (0342) 323094.

SIMMONS SDS8, 5-piece electronic drum kit, ideal for sequencer programming, reconditioned, £400. Tel: (0822) 853730.

YAMAHA DD10, 100 rhythms, MIDI, £65; Roland SH101 synth, £85. Tel: (0656) 720321.

YAMAHA RX5, flagship drum machine, perfect cond, £350 ono. Tel: 081-500 6958.

YAMAHA RX7, 100 great drum samples, £375 or exchange for Roland TR808. Tim, Tel: (0564) 778839.

YAMAHA RX21, £120, will swap for Casio CZ101 or CZ1000. Tel: (0767) 601454.

YAMAHA RX21, boxed, manuals, £90; ZX Spectrum with MIDI interface and software, £45. Philip, Tel: (0284) 754789.

COMPUTING

AMIGA A500, 1084, 1Meg, sampler, MIDI, frame grabber, games, £500. Martin, Tel: 081-543 2211, days; (0276) 71125, eves.

ATARI MEGA 2ST, and mono monitor, plus external floppy drive, excellent cond, £650 ono. Tel: (0484) 651061.

ATARI MEGA 4ST, SM124 monitor, as new, home use, "PC Speed" hardware-based PC emulator worth £300, software worth over £2000, £1149 the lot. Tel: (0603) 698355, days; 611144, eves.

ATARI 520, half-meg drive, SM124 monitor, Pro24, all boxed, manuals etc, £250. Tel: (0203) 220373.

ATARI 1040, high res mono monitor, vgc, £400 ono. Tel: (0525) 370514.

ATARI 1040ST, SM124 mono monitor, £395; C-Lab Notator, £300, other software available. David, Tel: (0283) 790842.

ATARI 1040ST, mono monitor, 520ST (double-sided drive), Cubase, Pro24, offers? May p/x. Tel: (0706) 50897.

ATARI 1040STF, mono monitor, Hybrid Arts Synctrack + Genpatch, £600. Tel: (0629) 583550.

ATARI 1040STFM, Creator, Unitor, monitor, other software, complete package, amazing, £960. Tel: (0353) 740 690.

BBC UMI 3S, 16-channel sequencing ROM, plus interface and manual, £100. Nick, Tel:

(0702) 333258.

COMMODORE 64, 1541 drive, datacassette, C-Lab ScoreTrack, 16-track MIDI sequencer with Scorewriter plus MIDI interface, the complete package for only £250. Tel: 061-872 5200.

CUBASE sequencer program, unused, £250, any offer considered. Ashley, Tel: (0604) 34946.

FOR Spectrum, EMR interface, Performer, DX7 librarian, XRI interface, multitacker, FB01 editor, £180 ono. Tel: (0203) 402521.

HYBRID ARTS SMPTETrack II, 60-track Atari sequencer, powerful graphic editing, sync's to SMPTE, c/w MIDIPlexer for 64 channels, £400 ono. Delivery possible. Tel: (0353) 663580.

JAMBOX MIDI interface/SMPTE reader, generator for Mac computer, £220. Tel: (0225) 319662.

PASSPORT Mastertracks Junior for Atari ST, original disk and manual brilliant! Cheap! £45! Tel: (0928) 563458.

REPLAY PRO sampler for Atari ST, unused, still boxed, £100. Tel: (0734) 785536.

RGB colour monitor, suits Roland S50/330/W30 samplers, vgc, £95. Tel: (07048) 74903.

STACY 4, 4Meg RAM, 40Meg hard disk, Spectre GCR MAC emulator, £2200. Tony, Tel: 081-690 7106.

STEINBERG DX/TX plus M1 editor/lib, £129 each; Yamaha QX5 8-track sequencer, £150. Anthony, Tel: 071-274 0822.

STEINBERG PRO24, v3.0, with dongle and manual, (Atari), any offers, swaps? Tel: (0263) 768936.

STEINBERG PRO24, v3.0, boxed, original, manual, dongle, receipt available, £95. Mike, Tel: (0494) 30077.

VOYETRA Sequencer Plus, MkIII, v3 software for IBM PC and compatibles, £240. Tel: 031-667 8613.

YAMAHA CX5, (no keyboard), DX7 editing, real-time sequencer, and other software, £60. Tel: Brighton 304030.

YAMAHA CX5, voicing, composing, software keyboard, £100; C-Lab Creator, £150 ono. David, Tel: 071-328 0825.

YAMAHA DX5M/SFG05 MSX, use as expander, good cond, £95 ono. Frank, Tel: (04027) 53873.

YAMAHA DX7, TX7, DX9 editor, plus hundreds of voices for

Commodore 64, £30. Tel: 061-998 3494.

RECORDING

AKAI ME20A MIDI sequence arpeggiator, rackmount arpeggios - programmable patterns, up and down, variable gate and dynamics, £80 inc delivery. Marcus, Tel: 081-852 6662.

ALESIS MIDIVERB, the original, boxed, preset list, PSU. Good cond, unique sound, £125. Tel: (03543) 5239.

AMDEK 6-channel stereo mixer, £50; Yamaha drumbox, £25; Wem mixer, £15. Offers! Mark, Tel: (0782) 411589.

BEL BD80, 2-sec delay (expandable to 8 secs), £230; Nomad Axxeman, £165. Tel: (0562) 67666.

BRENELL 1" 8-track, £900; AHB 1616 mixer, £800; REV7 reverb, £700, much more available. Tel: (0753) 693240 for details.

CMS2 desk automation for Soundtracks CM4400 console, package cost £2500, sell £1000. Tel: Reading (0734) 584934.

DRAWMER DL221 dual comp/lim, £200; MTR dual noise gate, rackmount, £130, both mint cond. Tel: 081-688 0723.

EIGHT-TRACK recording studio equipment, inc Tascam 38, Tascam 32, Ram 16:4:2, JBLs, excellent cond, no split, £2270. Tel: 061-792 0563.

FOSTEX A4 four-track open reel, 7.5/15ips, little use since recent overhaul, including service manual, good condition, £340 ono. Tel: (03543) 5239.

FOSTEX, 8-track, £700; Casio CZ101, £100; Roland TR505, £100. £800 the lot! Tel: (0522) 793564.

FOSTEX A8 multitrack plus remote, £625; Fostex 350 mixer, £225; UMI sequencer, BBC master, 40/80 drive, £475, or £1175 package. Tel: 081-367 5060.

FOSTEX A8 plus 350 mixer, boxed with manuals and leads, £795. Tel: 081-898 9012.

FOSTEX M80, almost unused, 8 hrs recording, only £1000; Yamaha TX7, mint, £200. Tel: 081-968 5403.

FOSTEX MODEL 20, excellent cond, hardly used, £800 (centre track time code). Seamus, Tel: Ireland 095-35885.

FOSTEX X26, 4-track, excellent cond, used primarily as mixer, £200. Martin, Tel: 081-543 2211,

days; (0276) 71125, eves.

FOSTEX 160, 4-track recorder/mixer, boxed, mint, £299. Tel: (0733) 210358.

HILL K.SERIES mixer, 32 x 24, Penny & Giles faders, full GPO patchbay, extremely impressive, £3500. Tel: (0757) 638106.

PRO-AUDIO stereo 10-band graphic equaliser, £100 ono. Tel: (0734) 584934.

REVOX B77 HS, 20 hrs use, rare syml/sync facility, unique opportunity, £685. Tel: Bolton 47321, eves.

ROLAND Space Echo, RE501, £160 ono. John, Tel: (0273) 558647.

ROSS 8:2 mixing desk, full spec, home use only, as new, £210; Ibanez DM1000 digital delay, £85. Tony, Tel: 051-339 2686.

SECK 6:2 mixer, hardly used, road case, must sell, £240 ono. Dave, Tel: 071-263 5343.

SIMMONS mixers (2), SPM8:2 rackmount programmable MIDI controlled, 64 patches, £175 ono each. Chris, Tel: (0272) 775747.

STUDIOMASTER PROLINE 18:4:8:2 mixing desk, boxed, mint cond, less than 1yr old, loads of inputs on mixdown, compact, powerful, EQ, phantom power, four aux, £1100 ono. Tel: (03543) 5239.

TASCAM A3440, r/r 4-track, RX9 dbx, new heads, £450. Gary, Tel: (0353) 723320, eves.

TASCAM 80-8, remote, varispeed, leads, tapes, £695 ono; MM 16:2 mixer, flightcase, £175 ono; Vocoder, £150. Tel: (0342) 323094.

TASCAM PORTA 05, £220; Alesis HR16, £220, or swap HR16 for Roland TR626. Tim, Tel: (0229) 53746.

TASCAM PORTA 05, 4-track, two Boss RCL10 comp/gates, excellent cond, £300, may split, p/x. Tel: (0706) 50897.

TEAC 80-8, DX8 dbx, half-inch tapes, 64-way patch panel, wiring looms, £800. Tel: (0629) 583550.

TEAC 85-16B, dbx, £2995; Soundtracs 16:8:16, £980; Q-play, £70; JX3P, £245; M64C, £30. Tel: (0462) 421485.

3M-M79 24-track tape recorder w/XT24 locator, vgc, £7000. Tel: (0734) 584934.

VESTA FIRE RIX digital reverb pedal, boxed, PSU, £65; Yamaha PSS580 keyboard, £110. Tel: (0273) 493659.

YAMAHA AM802, near new, must

sell, fantastic cond, £230 ono. Tel: 051-548 5829.

YAMAHA AM802 mixer, 6 mic/line, 2 stereo line inputs, 3 mono auxiliary sends, 3 stereo returns, vgc, £200 ono. Tel: 081-554 2691.

YAMAHA MT1X portastudio, normal speed, dbx, £210 ono; Akai ME25-5, 19", turns synth into master, £50. Tel: 091-271 6403.

YAMAHA MT3X multitrack cassette recorder, 6-channel, 4-track, EQ, dbx etc, 3 months old, pristine, offers. Kevin, Tel: (0708) 747740.

YAMAHA SPX90II, home use only, boxed, mint, £350 ono. Pete, Tel: (0454) 413217.

AMPS

CARLSBRO COBRA keyboard 90 combo, immac cond, bargain, £195 ono. Dec, Tel: (0254) 885723, after 6pm.

H/H Professional VX200 mos/fet rack amp, £190. Tel: (0924) 274039.

MARSHAL 30W, 2x12 combo, dual inputs, £100. Tel: (0734) 584934.

PEAVEY TNT150 bass combo, mint cond, £230, no offers. Mike, Tel: (0372) 378788 X218, work.

ROLAND JC120 Jazz chorus, perfect cond, home use only, £400. Tel: (0245) 268544.

YAMAHA A100 amp, Q100 graphic, brand new, never used, £200, no offers. Dave, Tel: (0702) 347373.

PERSONNEL

BRILLIANT vocalist wanted for upcoming house track. Must have energy/commitment. Pete, Tel: 071-700 0632.

DANCE PRODUCER with 16-track studio, track record and latest technology seeks new project. Tel: (0831) 243474.

F.A.B. require keyboard player, varied influences, into sampling and sequencing, loads of gear not necessary. Tel: 021-474 4417.

FEMALE vocalist wanted for House project. Tel: (0223) 276311.

ITALIAN sound engineer, 25, seeks proposals for European tours. For detailed documentation send to: Marco Trincherio, V.Piria 12, 10144, Torino, Italy.

LYRICIST needs good melody writer, country, pop, ballads, interests in Germany already. Tel: (0243) 574456.

VOCALIST, soulful M/F voice wanted for chart/dance music. Paul, Tel: 071-708 4833, 7-11 eves.

YOUNG TRAINEE seeks work in London recording studio, 4-track experience, very eager. Ricky, Tel: (04024) 51088.

MISC

ALTO saxophone carton, stand and case, £350; Laney 100W, £130; Tantek PSU plus 3 units, £40. Tel: Bath (0225) 310788.

CASIO DA1 DAT, home use only, as new, ideal for mastering, £649 ono. Tel: (0603) 698355, days; 611144, eves.

DIGISOUND pitchtracker, real expressive control of your CV synth/modules using your voice(?), £95. Tel: (02576) 2609.

ELECTRONIC music network tapes. Send SAE to Penga, 85 Silver Street, Kings Heath, Birmingham B14 7QT. Tel: 021-444 0298.

HÖHNER THE JACK electric headless, stand and case, £195; Gibson/Epiphone acoustic, £80. Tel: (0225) 310788.

MIDI tape sync unit, locks sequencers, drums (inc DIN sync) to tape, £65. Tel: (0761) 221632.

NEUMANN KM84I mic, £180; AKG C451E, £100, both in perfect cond. Tel: 071-435 7598.

ROLAND GR77b, MIDI bass and controller, excellent cond, £650; Casio Horn, as new, £50. Tel: (0545) 560164.

ROLAND GR700/G707, c/w case, RAM cartridge. Want: FB01/MT32, 19" rack expander or similar, or decent guitar plus cash or £435 ono. Ian, Tel: (0266) 46828.

ROLAND SVC350 vocoder, 11 filters, very rare, exceptional cond, bargain, £450. Tel: (0603) 698355, days; 611144, eves.

SHADOW SH075 guitar synth attachment, £175; Yamaha FB01 plus voices and editor, 125. Tel: (0925) 813185.

SHURE SM12A headset mic, £100 ono; Roland Dimension C, £80 ono. Tel: (0788) 817221, after 6pm.

SINGLE BEAM oscilloscope, fully working, £100. Andrzej, Tel: (023 065) 473, after 5pm.

SIMMONS SDE expander, £95; Bit1 rack expander, £150, manuals. Tel: (0924) 274039.

SOUTHWORTH MIDI interface for Mac computer, £95. Tel: (0225) 319662.

STUDIO for sale: Atari, C-Lab, Fostex M80, Seck 18:8:2, Korg M1, Roland S330, Alesis HR16, lots more, £6000. Tel: (0225) 310788.

SWAP 2 x JVC CR4400E portable video U-matic recorders and PZs etc for music

equipment/computer, **WHY**. Tel: (0349) 830839.

TANGS, JARRE, ASHRA,

SCHULZE, Sakamoto, Sylvian and Kitaro all appear on compilation LP. Part of rare German import collection. 19 LPs (2 doubles) on Innovative Communication label. Also includes Peter Mergener, Michael Weissner, Peter Seiler, etc. Collectors items. Offers over £120. Tel: (0223) 327216.

TEN YEARS of E&MM/MT, over 100 issues plus original E&MM cassettes, offers. Steve, Tel: (0403) 68292.

12U flightcase, with compartment in top for sequencer/mixer, £95; Shure SM10A headset/mic, £95. Tel: (06333) 65758.

34U rack unit in 64" high metal cabinet with doors, £150. Tel: (0629) 583550.

VESTA FIRE MR30, £65; CX5M w/SFG05 etc, £100 ono. Gordon, Tel: (0786) 824158, after 7pm weekdays.

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ROLAND P330 piano module wanted, top price given. Tel: 051-260 6675.

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WANTED: Roland MKS70, Yamaha PF80/PF85, Yamaha TX802, Alesis Quadraverb. Eddie, Tel: St Ives (0736) 796805.

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YAMAHA CX5M software MIDI recorder, SFG05 music input pad. Douglas, Tel: (0292) 79136, after 6pm.

YAMAHA DX7 Mki RAM and ROM cartridges. Tel: 021-455 0566, eves.

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