

# Music Technology

May 1990

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*earliest show  
report*



SMPTE  
SOLUTIONS  
*troubleshooters'  
guide*

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to me

WIN

*gajits sequencer  
one software*

### ON TEST

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Drum Machine



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Icon  
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Dr T's  
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MIDI  
Programming  
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DMA  
Classical  
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Music  
Sequences



RHODES

660 & 760

*the players' synths*



# A NEW AGE - A NEW CONCEPT

It is now over ten years since TASCAM gave the world – cassette multi-track recording with the introduction of the 144 PORTASTUDIO.

Since that time TASCAM's commitment to the musician has resulted in the development of the outstanding MINISTUDIO and PORTASTUDIO ranges, staying in front of the increasing sophistication of multi-track cassette recording.

Although there have been times when digital sequencers and synthesizers have threatened to completely overshadow multi-track recording, the warmth and vitality of acoustic sound has never lost its appeal.

The current trend in music production shows a demand to combine the best elements of digital and acoustic origination.

This need requires a wholly new approach to Multi-Track Recording.

The new age MTR must be capable of synchronisation and control via MIDI; provide sound quality & editing control versatility that is as close as possible to that of digital equipment and provide a greater number of mixer channels to handle an increased range of analogue and digital sources.

TASCAM have created such a machine – a totally new concept in recording – the MIDISTUDIO.

The unique eight track TASCAM MIDISTUDIO 688 which along with its little brother – the 4 track MIDISTUDIO 644 – gives the recordist access to a level of versatility and control unprecedented in cassette multi-track recording.

The 688 features a 10 channel mixer

section which gives access to a total of 20 inputs via a special on-line multi-function Dual Mix System.

The DMS can function as a monitor mixer, auxiliary input channels or as a stereo effect mix/send system.

A powerful MIDI tape synchronizer is built-in enabling modern MIDI-based sequencers to lock to tape from any point within a recording. The totally new TASCAM Scene Display is a comprehensive graphic display of all mute, input and assignment configurations. Up to 99 different scenes can be stored in the internal memory for instant recall via the panel controls or from external MIDI patch change.

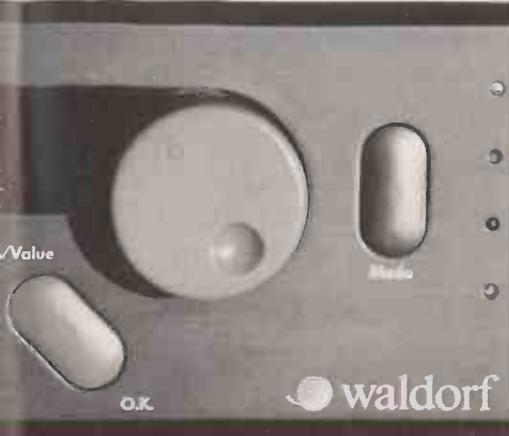
Channel muting can also be controlled in real time via MIDI note information. The 644 and 688 MIDISTUDIOS are directly compatible with the TASCAM MTS-1000 MIDIIZER giving the capability of synchronising to other tape and video recorders.

Both MIDISTUDIOS share many of the advanced transport features first introduced on the TASCAM 238, including gapless auto punch in/out, 3 point auto locate and the unique shuttle control.

TEAC as a company has a 35 year long history of innovation in the fields of audio, video and digital recording, not forgetting our expertise in computer disc drive manufacture. This vast store of knowledge puts us in a unique position to respond to the changing requirements of the audio industry.

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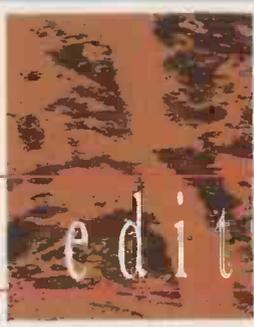
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# editorial

## ON THE NETWORK

IF YOU'RE A born computer hater, stop reading here. Not because I'm about to further extol the virtues of our electronic friends, but because we're going to discuss their unused potential.

Let's begin by looking at what our computer is, and what it's currently doing for (most of) us. Computers aren't smart, they just work very quickly. This feature alone allows them to perform a wide variety of complex tasks with apparent ease. The skill involved in getting a computer to do what you require of it lies in its programming. And that's why we spend so much money on other peoples' programs.

In music, these programs allow us to use computers as sequencers more than anything else. But once you've crashed your cash it makes sense to get the most out of a computer. And so we find our electronic buddies handling a variety of music-related jobs including patch and sample editing, patch librarianship, score transcriptions, and so on.

So, a self-contained computer/MIDI music setup is a powerful and, to many, attractive approach to making music - whether it's for your own entertainment or as a full-time occupation. But a computer's benefits don't end there. . .

Once you're using programs that are compatible with the programs that other musicians or facilities are using (one of the likely benefits of *not* writing your own software), you're able to interact with them. You might take your sequence disk into a recording studio instead of your computer, because there's an identical computer/software setup there. If the studio has some or all of the MIDI instruments you use, then you can take your patches with you on disk, and leave more of your gear behind. Similarly you can buy professionally-produced patches for your synthesisers on disk. It's all rather convenient, isn't it. And does it end there? Well, no - and yes.

It needn't end there because, instead of buying patch

disks in a shop, or more likely, by mail order, you *could* just transfer them from the vendor's computer to your own over a telephone line. You can even download free software from some bulletin boards. And synth patches aren't the only kind of data that can usefully be passed from computer to computer. For example, exchanging sequencer files with a songwriting partner over a communications network would allow you to interact with each other (rather like the way in which cassette recordings have been exchanged for years - but without postal delays). Networking has been common business computer practice for years, but how do we make it a part of our working music environment and why hasn't it taken off already? All you need is a modem, some (more) software and a phone, but. . .

In the States, music networking has been off the ground for years, and networks such as GENie and PAN (the music-dedicated Performing Artists' Network) both have something to offer computer-equipped musicians. In fact they've both been used by MT in coordinating operations between the US and UK offices for the past four years. In the UK too, "networking" to other musicians is a reality. So why the low profile?

In America local phone calls are often free (and there's a higher general level of disposable income); in the UK, however, phone and network subscription fees may be too high for the returns. For those of you having already incurred parental displeasure for organising your love lives over the phone, it's sure to be a non-starter.

There's probably an image problem too - at present the whole idea of spending hours hooked into a computer network is more likely to be associated with the trivial pursuits of computer bores than musicians. It's hardly rock 'n' roll, is it?

Consequently, it seems likely that musical networking is to remain a minority interest for the foreseeable future. And that's a shame for us all, because there's musical potential there that's going unrealised. *Tg*

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One reader wants to begin a Lynex Sampler users' group, another wants to discuss apathy in the music business - and reckoned we wouldn't be bothered to print his letter.

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There's only so far you can go in print - even with MT's software reviews - so demonstration versions of some of the programs are now available as *MT Software* for the Atari ST.

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Everybody wants to be someone, and every piece of software wants to be No. 1 - Gajits' Sequencer One certainly does. MT has not one, but five copies of Sequencer One as this month's competition prizes.

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Synths and samplers, software and hardware, musicians and positions. . . We're currently expecting vacant Tory MPs seats to put in an appearance in the world's most popular free classifieds.

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Classical music on computer sequencers has been on the cards (disks?) for years - now it's happened, but does it work? Ian Waugh boots up Bach, Handel, Mozart. . .

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Responding to the demand for accessible synthesisers, Roland's Rhodes division has come up with the first of a series of "playable" instruments. Simon Trask checks their performance.

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# 66

The latest in Boss' Dr Rhythm series drum machines sees affordability crossed with the sort of quality reserved for Roland's R8 flagship. Simon Trask asks if you can beat it.

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From artistic oppression under Stalin to contributing to Stanley Kubrick's *2001: A Space Odyssey*, György Ligeti has remained a true music pioneer. Simon Trask talks to a musical legend.



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Until now writing MIDI software has been the preserve of a few dedicated individuals, but T-Basic offers to make MIDI programming accessible to the masses. Ian Waugh gets online.

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When Norman Cook walked away from The Housemartins he walked into hi-tech record production and remixing; now he's topped the charts with Beats International. Tim Goodyer talks to a computer convert.

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### Studio

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# 60

Whether you're running a commercial studio or a "bedroom recording suite", a programmable MIDI Patchbay could revolutionise your working methods. Nigel Lord is on the patch.

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### Technology

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Part 10 of this rhythm programming series covers a selection of fascinating rhythms indigenous to the exotic countries of South America. Nigel Lord gets a studio tan...

## CLOCKING IN

# 32

The pro-standard SMPTE sync code is now working itself down to many semi-pro and amateur studios - but even the best systems bring their problems. Vic Lennard presents a SMPTE troubleshooters' guide.

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### Music

## FRANKFURT REPORT

# 48

Trade shows often make the best stage for unveiling new equipment - did this year's Frankfurt show witness any revolutions? Simon Trask brings the news from Germany.

# SONIC IMAGES



Executive Audio have announced the arrival from Berlin of the second compact disc in the Sonic Images sound library.

*Percussion Special* contains 290 digitally recorded samples of ethnic percussion instruments from Asia, Latin America and Africa. These include waterdrum, surdo, bourgarabou, Tibetan crotales, Chinese opera gong and

(as they say in the worst ads) many more. Methinks this CD might prove an excellent source of those outlandish percussive instruments required to do justice to Nigel Lord's *On the Beat* series in *MT*.

'Earthbeat', the first track, is a sequenced compilation of instruments featured elsewhere on the CD and makes checking out the

sounds a quick and easy procedure.

*Sonic Images Volume 2 - Percussion Special* has a recommended retail price of £39.95 and is available from music shops and direct from Executive Audio Ltd, at 159 Park Road, Kingston Upon Thames, Surrey KT2 6DQ. Tel: 01-541 5789. *Jm*

# BOMBS AWAY

Bearing an uncanny resemblance to its deadly US military aircraft namesake comes the Stealth keyboard stand from Ultimate Support Systems.

Stealth is constructed from a strong, lightweight resin and weighs in at only 8lbs. The stand can reputedly support over six times its own bodyweight and incorporates "cord control channels" (little slots to hide mains, audio and MIDI leads in) to improve on-stage appearance. It consists of two hinged sections which can be easily folded for transportation.

The Stealth retails for £64.95 (including VAT) and is distributed in the UK by The Synthesizer Company at 9 Hatton Street, London NW8 9PR. Tel: 01-258 3454. *Jm*

# ATARI TOOLS

Following the success of the Macintosh Sound Tools digital hard disk editing system, Digidesign have announced a version for the Atari ST Mega 4.

Like the Macintosh version, the Atari Sound Tools can accept analogue audio, and a 16-bit A/D converter is supplied as part of the basic system. Users wishing to keep signals in the digital domain throughout can use the existing Digidesign DAT I/O unit which interfaces directly with digital inputs and outputs of DAT and AES/EBU digital recording machines. Sample rates of 32kHz, 44.1kHz and 48kHz are supported as well as a full sample rate conversion facility.

Material can be non-destructively edited to form "seam-free" extended mixes or simply cleaned up and "gapped" for album

mastering. Typically 10Meg yields one minute of stereo recording and, depending on the hard drive, a complete CD worth of material can be compiled and edited.

The system also includes digital parametric and graphic equalisation, time compression and expansion, and the ability to cut, paste or even re-draw sections of sound down to waveform level for removing clicks and pops.

To communicate with other recording devices, Sound Tools AT syncs to SMPTE via MIDI time code, allowing the sound file on a hard drive to lock to any SMPTE position.

Expect to pay around £2000, inclusive of VAT.

More info on availability from Sound Technology plc, 15 Letchworth Point, Letchworth, Herts SG6 1ND. Tel: (0462) 480000. *Jm*

# ISLINGTON INSPIRATION

Although news of their latest courses reached us too late for inclusion in the April issue of *MT*, readers may be interested in the work of the Islington Music Workshop (IMW).

As described in their colourful brochure, the IMW, incorporating the IMW record label, aim to give community access to the facilities used by the professionals. Past courses have included 24-Track Recording, Women's 24-Track Recording, Sampling/Sequencing/MIDI, Backing Vocals, plus Computer Sequencing and Remix weekends.

The IMW's 24-track studio is equipped with a Trident console, MCI 2-inch multitrack, SMPTE and digital mastering, while outboard includes

Yamaha SPX1000, Lexicon PCM70 and Alesis Quadraverb.

There is also a well-stocked pre-production suite with the popular Atari/C-Lab sequencing setup, a 24-channel desk, Akai S950 sampler, Roland R8 and TR808 drum machines, Yamaha SPX90 multi-effects, and Yamaha DX7, Roland JX8P, Juno 106 and D110 synthesisers. This is available for writing and demo work with a programmer for the reasonable hourly rate of £5 (unwaged).

All courses, packages and hires are available at community rates and concessions.

The Islington Music Workshop can be contacted at 44 Peartree Street, London EC4 3SB. Tel: 01-608 0231. *Jm*

## GOING CLUBBING?

This month sees the launch of three new user groups for Roland's MC500/MC500 Mk II and MC300 Micro Composers, incorporating the Super-MRC/P Sequencing Software, and D110 together with related products.

The groups are run by musicians with experience dating back to the pre-MIDI (patchcords and faith) era, and are intended to act as vehicles for sharing information between members.

Each group offers a range of benefits for their members, including free sounds and pre-programmed songs from the group's library, product support, tutorials and

regular newsletters. Members are also entitled to discounts on over 400 chart songs which are available in a variety of formats, including Atari ST. The groups are linked to the established Parker Adams group (a large US user group who have also produced books on the instruments in question) and can draw from their resources.

Three years membership for the MC500/MC300 group costs £35, and £45 for the D110 and Super MCR/P groups.

For further details contact Stage One, 26, Soper Grove, Basingstoke, Hants. RG21 2PU. Tel: (0256) 50259. *Jm*

## READ THE NEWS?

In keeping with other dealers, Project Music have started their own newsletter - aptly titled Project Newsletter.

Their aim is to keep customers informed of the shop's activities, what's happening at The Project Music Club (mainly giving local bands somewhere to play), advance details of special promotions, sale items and information concerning the local music scene.

The monthly newsletter is free of

charge, with Project Music customers being automatically added onto their mailing list. The first issue is out now and features articles on Dr T's Tiger Cub sequencing software, the Yamaha SY77 and a 40Mb hard disk system for Roland's sampler-based W30 workstation.

Contact: Project Music, 71 Salisbury Road, Hounslow, Middlesex TW4 7NW. Tel: 01-570 4444. *Jm*

## WORKSHOPPING 2

Good news for sample-conscious musicians, producers and recording studios has arrived in the form of Tom McLaughlin and Susannah Walters' London Sample Workshop (LSW), as featured in last month's newdesk.

Possibly the world's first "sample label", the LSW are taking the creation of sound samples as seriously as most composers regard making music. In keeping with this concept, LSW technicians and sampled musicians will receive royalties directly from disk sales. When not dealing with their own purpose-recorded material, the LSW will have received permission from the relevant copyright holder. Initially creating sound samples for the current breed of affordable 16-bit hardware, the LSW will digitally transfer samples to popular 12- and 8-bit machines if there is sufficient demand from users.

Syco Systems have been appointed as the LSW's first MUSIC TECHNOLOGY MAY 1990

authorised dealer. Their initial series of sample disks - for Akai's S1000 and S950 - will be the 10Meg Poolside Drums (which used to be distributed by the Audio FX sample library) and is already available. The LSW are currently recording fresh material, including vocals, so expect some new disks from them soon.

The London Sample Workshop are also on the lookout for samplers with 100% original sample material for possible release, as well as skilled and imaginative musicians, vocalists, recording engineers, producers and recording venues interested in assisting them in creating sound samples of the highest quality.

If you would like to be on the LSW's mailing list, know more about becoming an authorised dealer, or simply feel you have something special to offer, then write to London Sample Workshop Ltd, PO Box 1929, London NW10 4SW. *Jm*

## WEST END BOYS

As from the 28th February 1990, CBS United Kingdom and The Hit Factory New York entered into a joint venture concerning CBS' West End Whitfield Street Studios. The Studios are now known as The Hit Factory London.

The CBS Whitfield Studios were unique in being the only purpose-built recording studios in London's West End. Opened in July 1972, the studios are able to offer recording facilities to incorporate soundtrack and orchestral work, all genres of contemporary music as well as "the best mastering facilities in Europe".

Since its opening in 1975, The Hit Factory New York has been host to many of the world's top artists and musicians, including Michael Jackson, David Bowie, The Rolling Stones, John Lennon, Stevie Wonder, Bruce Springsteen and Madonna, in addition to handling many film soundtracks.

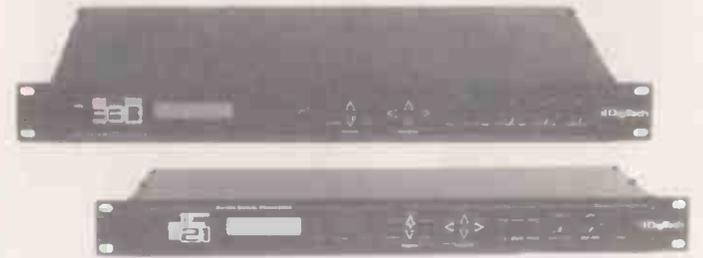
The CBS Studios recently underwent partial renovation work. The Rooftop Studio was totally overhauled and has been in constant use since its official re-opening in July 1988. Several million dollars will be invested in extensive modernisation to The Soundstage and The Workroom Studios and the mastering facilities. Work is expected to be completed in a matter of months.

Ed Germano, founder and owner of The Hit Factory, said "I have wanted to expand The Hit Factory New York's base of operations for quite some time now and this particular location, with its central facilities, suits our needs perfectly. I have exciting plans for London". And we thought it was quite exciting enough. . .

For further information contact Jonathan Morrish on 01-734 8181.

*Jm*

## DIGISHIFTING



DOD Electronics continue their assault on the digital signal processing market with the introduction of two new 1U-high, 19" rack-mounting units, the DigiTech IPS33B Super Smart Shift and the DigiTech GSP21 Guitar Signal Processor.

The IPS33B harmoniser creates two- and three-note harmonies from a single note, utilising 24-bit resolution to generate intelligent harmonies in no less than 41 scales. It features MIDI auto-transposition in addition to stereo pitch detune chorus, and up to 1.5 seconds of delay, both of which can be used simultaneously with any harmony that is generated.

Other features include MIDI-controllable key changes, 128 user-programmable memory locations, and continuous MIDI control of all programs and parameters. The IPS33B is supplied with a studio remote control unit and has a 20kHz

bandwidth.

The GSP21 multi-effects processor offers up to ten effects simultaneously from a choice of 21, whilst at the same time providing control and access to all programs, patches and parameters from a foot controller. Twenty-bit processing is employed and, like the IPS33B, there are 128 memory locations, continuous MIDI control of all programs and parameters, individual LED indicators and a large display.

GSP21 effects include stereo pitch detune, compression, distortions, multi-tap and slapback delays, reverbs, flanging, graphic and parametric EQ, and many more (there it is again).

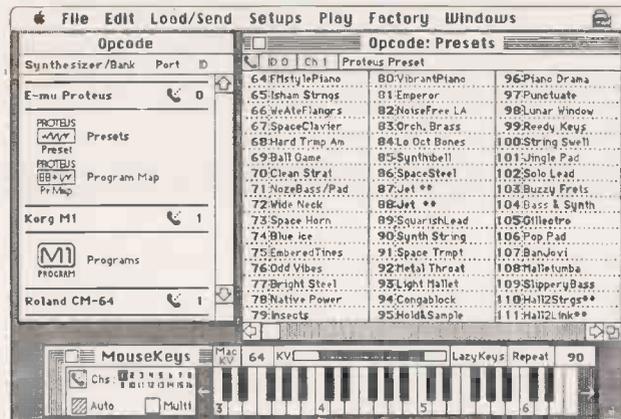
The new units retail for £899 and £769 (including VAT) for the IPS33B and GSP21 respectively.

More info from UK distributor, John Hornby Skewes at Salem House, Garforth, Leeds LS25 1PX. Tel: (0532) 865381. *Jm*

Opcode Systems unveiled a special edition of their Vision sequencing software at the 1990 Winter NAMM show in Los Angeles, which expands its graphic power and ease of use to include digital recording and playback. It is the first fruit of a newly-formed alliance between Opcode and Digidesign, which combines their respective technologies to bring users the best of both worlds. The companies plan to collaborate on other projects in the near future.

The new program uses Digidesign's Sound Tools system to record and play back 16-bit, CD quality sound. The software contains all the features of Opcode's Vision and adds the ability to record two independent tracks of digital audio along with MIDI sequence information. It applies Vision's fast, non-destructive graphic editing to the digitally-recorded tracks, using its faders and other mix controls to

# DIGITAL VISIONS



bring automated mixing to them.

The system is designed for the Apple Macintosh SE and Mac II series. The new program is upgradeable from Vision, the cost to be announced on release, which is currently set for April 1990. Sound Tools owners will also be able to upgrade.

Also unveiled at NAMM was Galaxy - a universal programmable patch librarian for the Mac which supports over 70 devices. This retails for £229, including VAT.

Vision itself has been updated to v1.1. Improvements include moving faders, scrolling edit windows, ability to play notes

forward or backward and names to be automatically passed between Galaxy and Vision. Vision v1.1 costs £399 (including VAT) and the update is free of charge to current users.

Cue, another new addition, is a film scoring tool capable of importing and exporting text and MIDI files, placing accents, searching for tempi (points caught, points almost caught and points missed), automatically calculating downbeats, and more. Price to be announced.

Finally, Opcode have ported their E-mu Proteus Editor/Librarian over to the Atari ST, retaining its clear graphics and user interface metaphors. The ST version of the Editor/Librarian costs £129, and £179 for the original Mac, both inclusive of VAT.

More information on the above from UK distributors MCMXCIX at 9, Hatton Street, London NW8 9PR. Tel: 01-724 4104/01-258 3454. *Jm*

## IS VIC THERE?

MT contributor and MIDIend Vic Lennard has announced the formation of the United Kingdom MIDI Association (UKMA), a public organisation dedicated to MIDI on these shores.

The UKMA will be the official MIDI association for the United Kingdom and is being set up with the blessing of the International MIDI Association (IMA), based in the United States. It will run "hand in hand" with the IMA.

The primary aim of the UKMA is to be an independent, unbiased public information network. It will advise members on all MIDI-related matters. The UKMA will also be responsible for the distribution of the MIDI file spec in the UK.

The UKMA will be solely funded by membership dues. A monthly newsletter will be published which will include articles on all aspects of MIDI, hints and tips for MIDI equipment, letters, news from manufacturers and of events/courses. The UKMA will also distribute the System Exclusive

data for new equipment and provide a copy of their mailing list with six-monthly updates.

There are three levels of membership: End User, whereby members will receive a copy of the newsletter and will be entitled to free advice and support on all matters relating to MIDI. Group Membership is intended for retailers, colleges, publications and recording studios. They will receive five copies of the newsletter. Finally, Manufacturers and Distributors will also receive five copies of the newsletter together with a free copy of the original MIDI and MIDI file spec.

Fees are £30, £60 and £120 per annum (excluding VAT) for the End User, Group and Manufacturer/Distributor memberships respectively. The price of the MIDI file/spec has yet to be confirmed.

The UKMA can be contacted at 26, Brunswick Park Gardens, New Southgate, London N11 1EJ. Tel: 01-368 3667. Fax: 01-368 7918. *Jm*

## ON THE CARDS

The Advanced Media Group have been appointed the exclusive official UK distributor for Valhala Music's ROM and RAM cards.

The current range of ROMs includes four Korg M1/M1R cards, seven cards for Roland's D50/D550, four for Korg's T-series of Music Workstations and a further four for the Korg M3R, as well as RAM cards for Korg and Roland equipment.

Valhala have additionally licensed ROM cards, created in the UK by Hit Music Productions, that have just been released as the International Gold Series. These include two M1/M1R cards, an M3R card, two D50/D550 cards, and two for Roland's D5/10/20 with versions for

their D110. Further cards are currently under development for Korg's T-series and M3R as well as the Ensoniq VFX. These should be appearing during the next few months.

Prices, including VAT and delivery, are as follows: £45 and £65 for the Korg ROM and RAM cards respectively, and £40 and £55 for the Roland ROM and RAM cards respectively.

AMG are also operating a Credit Card Hotline on (0730) 88383. Alternatively they have a Mail Order service and can be contacted at AMG, Hurst Farm Barns, Hurst Lane, Privett, Near Alton, Hants. GU34 3PL. *Jm*

## FUN WITH PRISMS

Magnetic Music, developers of Roger Powell's Texture sequencing software (released in 1984 and one of the original and leading MIDI sequencers available for the IBM) are pleased to announce the UK release of their latest software, Prism, a month after its successful debut in the States.

Prism is a mouse-driven, pattern-based, 16-track sequencer for IBM PC compatibles, including the Yamaha C1 Music Computer. It is aimed at the MIDI novice, although this does not detract in any way from

its many powerful features, including graphic editing.

Prism supports Standard MIDI files and with a list price of £99 (inc VAT) looks to be a worthwhile investment for PC users. UK distributors, Digital Music, are also offering a special package deal consisting of Prism plus Music Quest PC MIDI Card (MPU401 compatible) for £169, inclusive of VAT.

More information from Digital Music, 27 Leven Close, Chandlers Ford, Hants. Tel: (0703) 268145. *Jm*

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## ROLAND U220

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TWO NEW MUSIC COMPLEXES IN LONDON

## in the club

Thanks for a wonderful magazine, it has become better and better over the years (I have been with you since the first issue). Could you run the following note?

I bought a Lynex sampler a year ago. I run it with a special version of Steinberg's Pro24 v3. It has many beautiful abilities and is almost nice. The problems, though, are serious: it has an annoying click at the start of each sample and at each loop point (this makes every loop click), and it produces weird noises when not playing notes.

The company has gone out of business, but quite a few machines were sold (although only four in Norway). Could the owners pool their interests and form a users' club with the main aim of getting someone to write a software update rectifying the problems mentioned? If not, could this users' club exchange information and samples?

I am prepared to stick my head out and say if you own a Lynex sampler, write to me and send me details of your problems and possible solutions. I will pool the information and see what can be done.

**Kristian Sommerfelt**  
**Sollien 11**  
**5030 Landas**  
**Norway**

*Good luck, Mr Kristian. Tg*

## musicians' affliction?

Apathy. What is it? I'll tell you - it's a disease that strikes ordinary members of the public as soon as they pick up a musical instrument and decide to learn to play it. Yes, I'm talking about musicians.

I've never come across a single

letter or article written on this subject, which is rather surprising as it is the most striking thing I've noticed since opening my own recording studio some time ago. Here's a brief summary of just some of the attitudes I've come across:

1. Clients arriving late or not turning up at all for recording sessions. This week alone I've had four bands not turn up for their appointments. Did any of them ring to apologise or cancel? When, on the rare occasion, an artist does arrive on time, I'm practically reaching for the valium bottle with the shock.

2. People phone for details, tell me my studio sounds perfect for their needs and that they'll definitely be in touch in the near future to book an appointment. The near future becomes the distant past, and not a word. . .

3. Bands tell me the record companies are going to be climbing over one another when they receive the demo, but they can only muster enough enthusiasm to spend half-a-day at a time recording it, once every six months or so. I kid you not, I have bands using my studio who are going to take over two years to complete a three-song cassette.

4. Musicians ask to borrow music magazines from my collection "just for a few days mate". Months later they still have not returned them.

5. When recording at night I often get the distinct impression that the band are more concerned with getting down to the local in time for last orders than they are about whether or not the sampled dog bark clashes with the jews harp solo.

How many of you reading this can put your hand on your heart and say that you're not guilty of any of the above? Have you even bothered reading this far or have your eyes

started to drift to the next letter?

So the next time you start complaining about the A&R people not caring that you're going to be the next Jean Michel Jarre, ask yourself "could I be accused of suffering from the 'so what?' syndrome?"

And speaking of apathy, I wish I could bring myself to not really care that in the March edition of MT, your demo reviewer, Skum, gave my songs the most critical slating I've ever received in all the years I've been involved in the music business. Still, he did say that my arrangements were "smoothly executed" (I'd like to make the suggestion that he should be).

Anyway, that's enough bitching for now, thanks for listening.

**Tim Donovan**  
**Beverley**  
**North Humberside**

PS. Forgive my scepticism, but I'm not really expecting this letter to be printed due to what I've been talking about.

*Apathy eh, who needs it? Did you ever hear from the guy who called the MT office trying to get in touch with you just after your demo review appeared in print? He said he was interested in your working methods - having read the review. Mind you, you are a long way from his London base - perhaps he couldn't be bothered to make the journey. I wonder if you'd have been prepared to go to him? Tg*

## in the picture

I'm a keen collector of synths and related equipment, and have a substantial collection of modern and older keyboards.

One of my most treasured possessions is an Oberheim OBX, but this recently decided that it no longer wished to work. I have tried everything to repair it - replacing the Z80, the RAM, various support chips, even socketing half the ICs

to eliminate dry joints. All this, however, has been to no avail - it stubbornly refuses to boot up.

I've now reached the point where I can go no further without a circuit diagram or (at the very least) a system description. I've contacted the UK importers and their service sub-contractors but these documents just don't seem to exist any more. I've also faxed and written to Oberheim in the States, but they seem to have ceased trading.

Could you please help me? I really am desperate to have the OBX in full working condition, and perhaps one of your readers may have the plans I need.

Thank you in advance for this cry for help.

**Gordon Reid**  
**Cambridge**

*Come come, Gordon, there's no need to be shy. You're none other than Gordon Reid, the some-time MT contributor, aren't you? And of course we'll try to help.*

Fortunately, one of the people closely associated with MT's American sister mag, Chris Meyer, is currently working for Marion Systems along with Tom Oberheim himself. We faxed him on your behalf and secured full service documentation for the OBXa. Chris is confident that the two synths have enough in common for you to be able to work "backwards" from this.

So there you have it - if there's anyone else in trouble with an OBX or OBXa, MT may have the only service documentation in Britain. Get in touch. Tg

## rumbled!

Re: *Music of the Spheres*, MT April '90 - bullshit.

**Keir Nathan Thomas**  
**Chorlton-cum-Hardy**  
**Manchester**

IN THE BEGINNING was Vkiller - a friendly little program that also happened to offer an effective means of defence against the growing problems of computer viruses. We at MT thought you in readerland would appreciate being able to get hold of a copy in the interests of protecting your work and stopping the spread of this sci-fi epidemic.

From there it was a small step to extending the idea of a software service to include demo versions of some of the software we've reviewed. Using these demos you can get a better idea of how well suited a program is to your needs before you buy. We've also been provided with further "virus combatting" software by George Woodside - writer of Vkiller - with promises of further updates to follow in good time.

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 all programs are accessible 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.

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. This service is for you, to help you try out software before you buy - we will continue to run it as long as the interest is there to support it. This is not a profit-making venture on behalf of MT.

Please send me the following disks for which I enclose a cheque/postal order for £.....

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Send to **MT Software, Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF.** Please allow 28 days for delivery.

## DISK 1

### *Vkiller, TDM Prodigy demo, Mididrummer demo.*

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 fully working 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 demo.*

**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.

## 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.*

**Realtime** (reviewed MT, April '89) is an "artificially intelligent" sequencing program which is designed to encourage 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 essential feel of Hybrid's more upmarket Edit and SMPTE Track packages, **Trax** is a new nest of studio management programs which includes a pull-down track sheet, a cuesheet, mixdown list, cassette labelling, address book, 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 a fully-working D50 librarian and 500 6-op FM synth patches). **Quinsoft** have adopted a similar *Price is Right* philosophy to librarians for Yamaha's FB01 and 4-Op FM synths (reviewed MT, Feb & March '90 respectively).

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## DIGITAL MUSIC ARCHIVES

### CLASSICAL COLLECTION

IT SOUNDS LIKE a great idea, whichever way you look at it. How would you like full arrangements of famous pieces of music ready to load into your sequencer to play and generally experiment with? The thought must be an attractive one to many sequencer-users: a few readers may have toyed with the idea themselves.

Well, Digital Music Archives, alias Richard Gonski and Francis Monkman, have made several transcriptions of classical music available. A package includes sequencer files on disk in a variety of formats (see end of article) plus an audio cassette of the music and an Operating Manual. Implementation charts show the track numbers, MIDI channel numbers and instrument names. Details of tempo, tempo changes and where they occur are also included.

As the manual explains, the idea of using a computer to reproduce a musical work has long been considered, but it has only recently become a practical and financially viable idea with the advent of affordable multitimbral synthesisers and sophisticated sequencers. The object has been to produce a "perfect" performance played in absolute time and tempo and DMA's long-term aim is to create a comprehensive library of the Classical repertoire.

But turning these aspirations into reality has not been without its problems. Classical music is very exacting and most - virtually all - sequencers were designed primarily for the world of pop music. The transcription of fully notated and complex scores has not generally been a priority in software development although C-Lab's Notator probably comes closest to being able to handle the demands of classical scoring. In fact, the pieces were recorded with Notator and the review copies supplied in Notator format.

There were a few inconsistencies, however, due more to the nature of music notation than to either the program or the recording. All notes have been quantised to sit exactly on the beat (with the exception of grace notes and appoggiaturas). But traditional notation isn't specific about note durations (what's the difference between a quaver followed by a quaver rest, and a dotted crotchet?) and in some places the display does not correspond exactly to the original score. The manual is careful to point this out, however, so the purists know where they stand.

But - and this *is* for the purists - the scores have been adhered to as closely as possible and the result is a "score perfect" performance without the vagaries of "human interpretation". This idea opens up a whole can of worms so we'll transfer further discussion to the pages of *Communique*.

The purists may also be wondering about one of MIDI's major deficiencies - the lack of a slur command. Keyboards can't handle slurs (OK, the odd clever one can) and most keyboard players probably won't miss it, but it's a vital part of virtually all non-keyboard music. DMA are well aware of this but feel that the end result more than compensates for this lack.

The manual refers to yet another problem, one relating to synthesiser hardware and the quality of the sounds it produces. The problem is greatest when it comes to reproducing authentic orchestral sounds - the majority of instruments are designed primarily with modern music in mind, and are unable to cope with the demands of a classical score. The manual suggests using a combination of sampled and synthesised sounds. The cassette recordings, however, are a tribute to modern synthesis - and DMA - although they do have a "synthetic" edge. It would have been useful, I think, to have a list of instruments and the sounds used.

Although this whole idea is incredibly appealing, you may be wondering what the point of it all is. I half suspect that the project was tackled mainly to see if it could be done.

Apart from allowing you an insight into the music that no score or recording could possibly do, the pieces allow you to take an active part in the realisation of the music as orchestrator, conductor or participant. If you're a keyboard player or an instrumentalist, one obvious use is to mute your instrument's part and play along with your own orchestra. The pieces must attract a great deal of educational interest.

I enjoyed looking at the pieces, listening to them and generally playing orchestrator. I confess my major source of amusement came from trying various parts with different sounds. The Mozart and Bach pieces sent for review are a touch too straight for the Tomita treatment but substituting funky clav for piano, slapbass for bass viol and a few synthy sounds and choirs for brass and strings can make an unbelievable difference. Irrelevant perhaps, but fun.

At less than the price of most ST games I reckon you should have at least one in your collection. Now, once again from the top gentlemen, and a little more tutti from the horns, please...

At the time of writing, DMA have nine pieces in their library:

**JS Bach:** Concerto for Keyboard and Strings in D Minor BWV 1052, Brandenburg Concerto No 5 in D Major BWV 1050, five Organ Concertos Nos 1-5 BWV 592-596.

**Beethoven:** Concerto for Violin and Orchestra in D Major Opus 61, Symphony No 8 in F Major Opus 93.

**Handel:** Two Organ Concertos Opus Nos 3 and 4 in Bb and D.

**Mozart:** Piano Concerto No 24 in C Minor K491, Eine Kleine Nachtmusik - Serenade in G Major K525.

Three Works for Mechanical Organ - two by Mozart K594 and K608 in F and one by Beethoven W0331/1 in F.

Soon to be released are Mozart's Symphonies Nos 29 and 35 and Beethoven's Symphony No 3 (Eroica) and Piano Concerto No 5 (the Emperor).

All pieces are available in the following formats: Atari ST: Creator/Notator, Cubase 1.5, Pro24 version III, MIDI files. IBM and compatibles: Voyetra Sequencer Plus Version III, MIDI files. Amiga: MIDI files.

Support for the Archimedes is also being considered. Contact DMA for new additions and formats. ■ **Ian Waugh**

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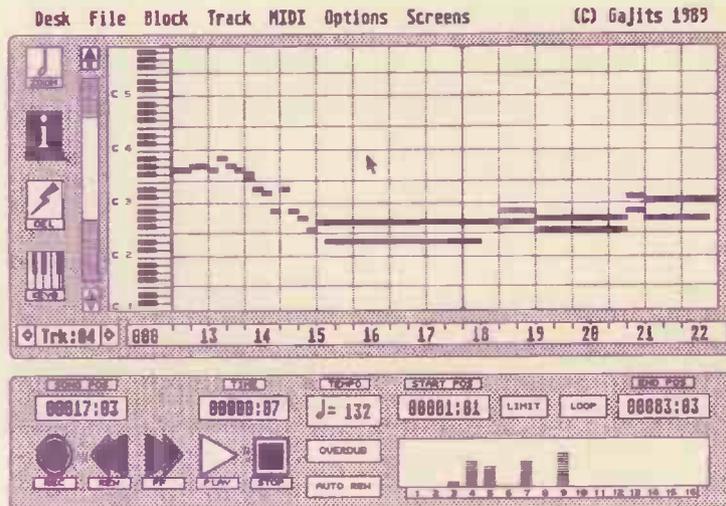
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# competition

## TAKE 5



YOU MAY BE considering moving into software sequencing (a lot of people are) or you may have been there for some time - and be using some quite outdated software by now as a result. In either case, what would be the ideal prize to win in an exclusive MT competition? OK, short of a computer, software and a shedfull of samplers, expanders, drum machines and effects units, what would be the ideal prize to win? Yes, you've got it (and if you haven't, you could be in trouble with the competition questions), a neat software sequencing package - like Gajits Sequencer One, for example. So much like Gajits Sequencer One, in fact, that we've procured no less than five of the beasties to give away. Brings a lump to your throat, doesn't it?

To refresh your collective memory, Sequencer One is a 32-track MIDI sequencer with 192ppqn resolution, 40,000-note capacity on a 520ST and MIDI File support to ensure you can move your songs in and out of the program for maximum flexibility (see the review in March's MT for further details).

And what do you have to do in order to win a copy of Sequencer One? Well, if you haven't inspected the questions before reading the small print (don't we all?), it's a simple matter of supplying the answers to five questions - hence the title of the competition. So without further ado, here they are:

### 1.

Who recorded an LP entitled *One of a Kind*?

### 2.

Who recorded a single entitled 'Say I'm Your Number One'?

### 3.

Who is U.N.C.L.E.'s No. 1?

### 4.

Who was *Going For The One*?

### 5.

What is the world's No. 1 hi-tech music magazine?

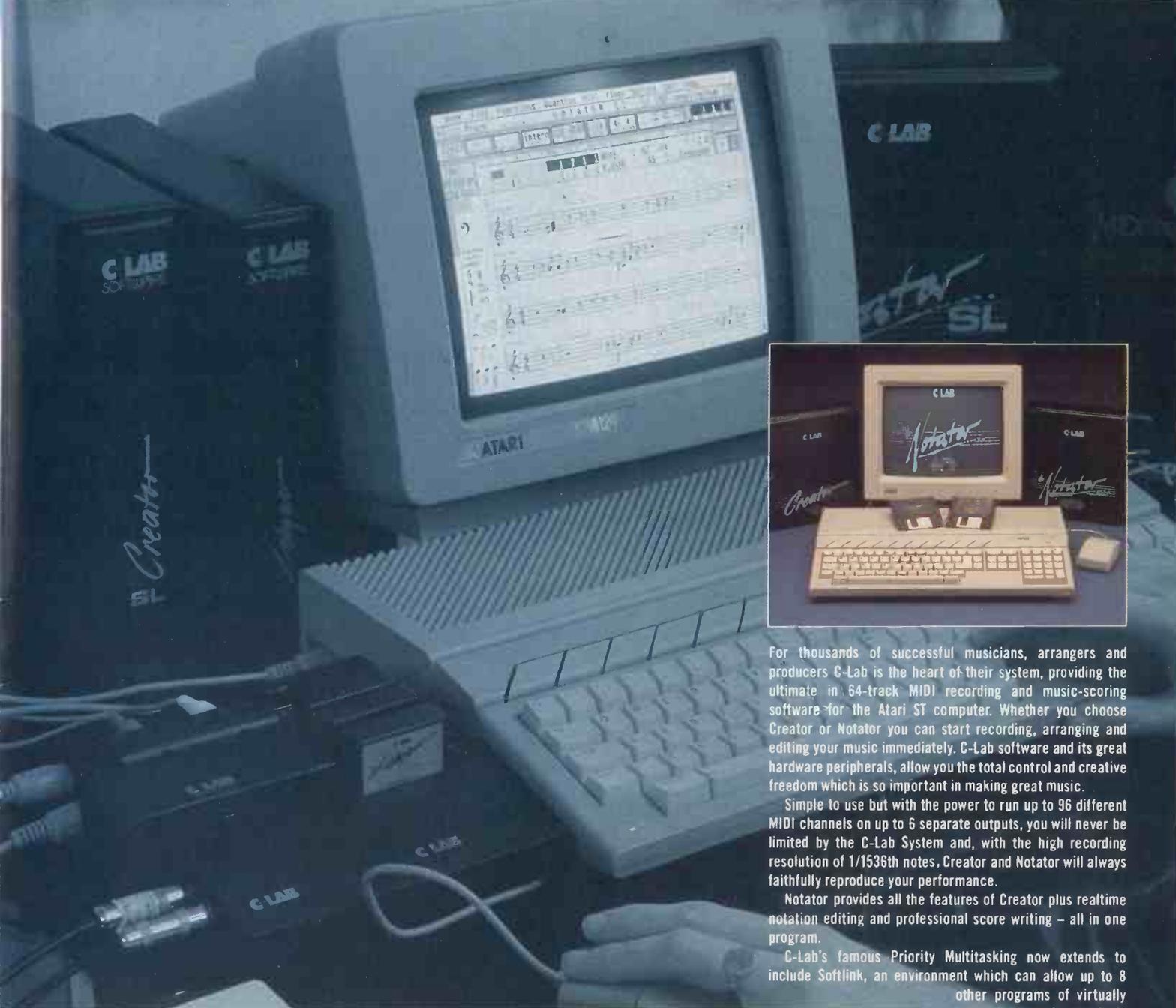
Finally, as you've become so good at answering even the most demanding and ridiculous of competition questions, suggest an answer to the following tie-break question:

Why is the cow lilac?

YOUR ANSWERS SHOULD be sent to **"Take 5", Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF**. Entries should arrive no later than second post on **Monday, 21st May**. Please include your name, address and a daytime telephone number, on which you can be contacted, and a brief listing of the MIDI equipment you are using, with your entry.

Due to some pre-production software, the GPAMEDAR detector unit installed last month to screen out multiple entries has been withdrawn from use and a victim of the government's YOP scheme has been brought in to sort them out manually. Unfortunately, his performance so far hasn't been too impressive, so if you could mark all multiple entries "Multiple Entry" in the top left-hand corner it would be appreciated. Good luck and may the best wo/man/musician win.

Thanks to Gajits software for providing this month's prizes.



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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.



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# ON THE

# LAST LEG

**PART 10**  
**ALL ABOARD FOR THE LAST LEG**  
**OF THE SOUTH AMERICAN**  
**RHYTHM TOUR, CALLING AT**  
**TRINIDAD, PUERTO RICO,**  
**VENEZUELA AND THE DOMINICAN**  
**REPUBLIC. THE ONLY LUGGAGE**  
**NECESSARY IS A DRUM**  
**MACHINE AND A SAMPLER. . .**  
**TEXT BY NIGEL LORD.**



WHILST THERE CAN be no doubt as to the domination of Latin American music by the rhythmic giants of Cuba and Brazil, no examination of the music of this immense region could be considered complete without at least a glance at a handful of rhythms indigenous to other countries which share a South American identity. And, of course, it is but a small step from here to tackling some of the fascinating crossover styles of Afro-Cuban, Salsa, Latin-jazz - and maybe even a few hybrids thrown in for good measure.

Now, you may be thinking this sounds like a tall order for a single article - and you'd be right. So this month I'll be keeping the preamble

to a minimum and launching straight into the examples. Hopefully, the more emotive dissertations of the last couple of months will be enough to sustain interest through this final article on Latin rhythmic form (there could easily have been a dozen more). But if not, well, next month I promise we'll be returning to something a little more mainstream.

Right, to business. And we're starting off with a rhythm which takes us beyond the South American mainland to an island which has long been saddled with the kind of "paradise in the sun" imagery which takes no account of the hardship of everyday life and the relative poverty of the country. The fact remains, however, that



ILLUSTRATION: CLIVE GOODYER

Trinidad and that most joyous of musics, calypso, are inextricably linked in the public consciousness, and the sheer infectiousness of the rhythm is unlikely to dispel that image.

Somewhat akin to the Cuban Rumba in its rhythmic feel (and its position within Trinidadian society), the Calypso is played at all tempi, though most commonly at a medium to fast pace. The claves figure quite prominently in most calypso rhythms, but unlike Cuban music do not preserve their strict 3-2 (or 2-3) structure. As you will see from Pattern 1, the first bar is repeated throughout the pattern, as indeed, it is for the other instruments.

Just to recap on a couple of the instruments encountered here: the

tumba is the larger (and therefore lower-pitched) of the conga pair, and is easily simulated by detuning a standard conga voice by about a fifth. In the absence of a tuning facility, you could try using an open-sounding tom-tom, and this applies to the conga itself. Having a slapped conga voice for the third of this group of instruments would make life much easier, but again, you could try experimenting with tom sounds - or even a tom sound mixed with the open conga voice.

As I explained in the Cuban article a couple of months ago, Paila is the name given to the striking of a drumstick on the shell of a timbale, and in the almost certain absence of this from your machine, could be simulated by a sidestick or rimshot

with perhaps just a little of the conventional timbale sound mixed in to give it a slight ring. Those of you with samplers (but without timbales) might try scouring the kitchen for suitable metallic objects to hit, or failing that, any kind of large(ish) steel container will probably make a passable substitute.

Unlike the previous two articles, the bass/snare drum parts I've come up with this month have been included with the rhythm proper. However, this isn't intended to imply they have to be programmed along with the rest of the pattern, or that you shouldn't try adding your own parts if these prove unsuitable in any way. The change in the bass/snare part in bar four, for example, might be quite inappropriate in many settings and could easily be replaced by something less pronounced.

Also, though I have previously pointed out that determining overall the level for each instrument has to be left to the individual programmer, you can take it that the dynamics for groups of instruments are interrelated. In other words, within the conga group, for example, a medium dynamic slap conga needs to be louder than a low dynamic open conga or open tumba. And the same is true of the bongos or the timbale and tamborim pairs we'll encounter in later examples.

We move next to Puerto Rico and an interesting little rhythm known as Plena. In Pattern 2 we see the return of the 3-2 Cuban clave structure and the reappearance of the tamborim from last month's Brazilian feature. As you may remember, this hand-held drum looks rather like a tamborine without the jingles, and is played with a stick in one hand while the fingers of the other are used to dampen the sound on certain strokes. The two sounds it produces - open and closed strokes - are fairly easy to replicate using double- and single-headed tom sounds, for example, but these will need to be tuned fairly high to achieve the rather dry "poppy" sound of the real instrument.

None of the other instruments used here should provide much of a problem; most of them have become standard issue on the better machines in recent years, and those using samplers should find little trouble tracking down any instruments they don't already have

PATTERN No: 1													TEMPO: 170-195 BPM									
BEAT: 1 2 3 4 1 2 3 4 1 2 3 4																						
Bass Drum	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum			◆	◆			◆	◆			◆	◆			◆	◆			◆	◆		
Maracas	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Claves	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Slap Conga			◆				◆				◆				◆				◆			
Open Conga	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
Open Tumba			◆				◆				◆				◆				◆			
Hi Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Lo Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cowbell	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Paila	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
TIME SIG: 4/4	BAR 1				BAR 2				BAR 3				BAR 4									

PATTERN No: 2													TEMPO: 130-150 BPM									
BEAT: 1 2 3 4 1 2 3 4 1 2 3 4																						
Bass Drum	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cld HiHat	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Open HiHat																						
Maracas	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Claves	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Open Conga			◆				◆				◆				◆				◆			
Open Tumba	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
Hi Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Lo Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cld Tamborin	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Opn Tamborin			◆				◆				◆				◆				◆			
Hi Timbale	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
Lo Timbale	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
TIME SIG: 4/4	BAR 1				BAR 2				BAR 3				BAR 4									

PATTERN No: 3													TEMPO: 145-170 BPM									
BEAT: 1 2 3 4 1 2 3 4 1 2 3 4																						
Bass Drum	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum			◆	◆			◆	◆			◆	◆			◆	◆			◆	◆		
Maracas	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cabasa	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Claves	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Slap Conga			◆				◆				◆				◆				◆			
Open Conga			◆				◆				◆				◆				◆			
Open Tumba	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
Hi Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cowbell Small	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cowbell Large	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Guiro Short			◆				◆				◆				◆				◆			
Guiro Long			◆				◆				◆				◆				◆			
TIME SIG: 4/4	BAR 1				BAR 2				BAR 3				BAR 4									

PATTERN No: 4													TEMPO: 190-215 BPM									
BEAT: 1 2 3 4 1 2 3 4 1 2 3 4																						
Bass Drum	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum			◆	◆			◆	◆			◆	◆			◆	◆			◆	◆		
Cabasa	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Claves	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Slap Conga			◆				◆				◆				◆				◆			
Open Conga			◆				◆				◆				◆				◆			
Open Tumba	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
Hi Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Lo Bongo	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cld Tamborin	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Opn Tamborin			◆				◆				◆				◆				◆			
Guiro Short			◆				◆				◆				◆				◆			
Guiro Long			◆				◆				◆				◆				◆			
Cowbell	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Hi Timbale	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
Lo Timbale	◆		◆		◆		◆		◆		◆		◆		◆		◆		◆		◆	
TIME SIG: 4/4	BAR 1				BAR 2				BAR 3				BAR 4									

on disk. In case it isn't clear, the closely spaced notes in bars two and four of the high bongo line should be programmed as 32nds as should those in the closed hi-hat at the start of bar four.

And speaking of the hi-hat part: programming the closed hi-hat on the off-beat throughout the pattern really does add an extra dimension to the rhythm without intruding too much on the basic structure. Feel quite free, however, to leave it out if you wish, along with the open hi-hat.

The Bomba rhythm in Pattern 3 is also indigenous to Puerto Rico and, again, shares the standard 3-2 clave structure of Cuban music. This pattern has a rather jazzier feel to it, however, which could be developed further with the right bass/snare part and perhaps a ride cymbal line. The bass/snare part I've included does steer it away from that direction somewhat, but gives it a quite distinctive feel nevertheless.

Again, there's nothing too esoteric in the instrument line-up: the two cowbells simply require a pitch change of a few semitones, which shouldn't be a problem for most machines. And though there are two guiro sounds - short and long - these could, at a pinch, be replaced by high and low dynamic sounds respectively.

The Dominican Republic, to the West of Puerto Rico, is home to our next rhythm, the Merengue (Pattern 4), which once again betrays its Cuban associations through its 3-2 clave structure. Such a compelling rhythm is this, I'm afraid I got a little carried away with the instrumentation (as you can see), but it could be slimmed to more compact proportions if you wish. Though I say it myself, the bass/snare part is particularly well suited to this rhythm and as simple as it is, I think you'd be hard put to come up with anything more appropriate.

Though a fairly evenly structured rhythm, dynamically, the bongo part should be allowed to weave its way through the pattern, riding on top of the other instruments without becoming overbearing. Care should also be taken to ensure the rather penetrating sound of the timbales isn't allowed to become too obtrusive.

Pattern 5 comes without the benefit of a title (or an exotic country of origin), for the good and simple reason it is entirely of my



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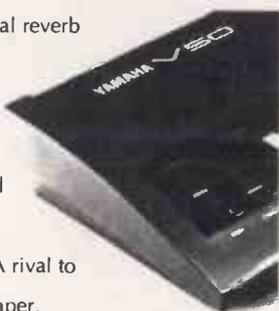
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# ABC music

PATTERN No: 5													TEMPO: 190-220 BPM			
BEAT:																
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Bass Drum	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Snare Drum		◆		◆		◆		◆		◆		◆		◆		◆
Clsd HiHat	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Open HiHat	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Side Stick	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Slap Conga		◆	◆	◆		◆	◆	◆		◆	◆	◆		◆	◆	◆
Clsd Conga				◆	◆							◆	◆			
Hi Agogo	◆			◆	◆				◆	◆				◆	◆	
Lo Agogo		◆				◆				◆					◆	
Cld Tamborin				◆	◆							◆	◆			
Opn Tamborin				◆	◆							◆	◆			
Hi Timbale				◆	◆							◆	◆			
Lo Timbale				◆	◆							◆	◆			
TIME SIG: 4/4	BAR 1				BAR 2				BAR 3				BAR 4			

PATTERN No: 6												TEMPO: 160-180 BPM		
BEAT:														
	1	2	3	1	2	3	1	2	3	1	2	3		
Bass Drum		◆	◆		◆	◆		◆	◆		◆	◆		
Snare Drum	◆			◆			◆			◆				
Maracas	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
Clsd Conga		◆		◆		◆		◆		◆		◆		
Slap Conga		◆		◆		◆		◆		◆		◆		
Open Conga				◆			◆			◆				
Open Tumba				◆			◆			◆				
Cowbell		◆		◆		◆		◆		◆		◆		
TIME SIG: 3/4	BAR 1			BAR 2			BAR 3			BAR 4				

PATTERN No: 7												TEMPO: 160-180 BPM		
BEAT:														
	1	2	3	1	2	3	1	2	3	1	2	3		
Bass Drum	◆	◆	◆				◆	◆	◆					
Snare Drum				◆			◆			◆				
Maracas	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
Cabasa	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
Clsd Conga		◆		◆		◆		◆		◆		◆		
Slap Conga		◆		◆		◆		◆		◆		◆		
Open Conga				◆			◆			◆				
Open Tumba				◆			◆			◆				
Hi Bongo				◆			◆			◆				
Lo Bongo				◆			◆			◆				
Cld Tamborin				◆			◆			◆				
Opn Tamborin				◆			◆			◆				
Cowbell Small				◆			◆			◆				
Cowbell Large				◆			◆			◆				
TIME SIG: 3/4	BAR 1			BAR 2			BAR 3			BAR 4				

PATTERN No: 8												TEMPO: 160-180 BPM		
BEAT:														
	1	2	3	1	2	3	1	2	3	1	2	3		
Bass Drum	◆	◆	◆				◆	◆	◆					
Snare Drum				◆			◆			◆				
Maracas	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
Clsd Conga		◆		◆		◆		◆		◆		◆		
Slap Conga	◆			◆			◆			◆				
Open Conga				◆			◆			◆				
Open Tumba				◆			◆			◆				
Clsd Tumba				◆			◆			◆				
Hi Bongo				◆			◆			◆				
Lo Bongo				◆			◆			◆				
Cowbell				◆			◆			◆				
TIME SIG: 3/4	BAR 1			BAR 2			BAR 3			BAR 4				

own devising. Having said that, it was intended as a 50/50 distillation of Cuban and Brazilian rhythmic forms packaged in a way which would make it useable in a conventional dancefloor setting. Whether it achieves any of these objectives I'll leave to your judgment, but I have to say it is a pattern I have grown rather fond of over the months.

The only programming details worth mentioning are the 32nd notes in the slap conga line and the 64th note flams associated with the open tamborin. Where possible these should be at a lower dynamic level than the notes they lead in to (though in the case of the high bongo it should be programmed as two low dynamic notes followed by a medium dynamic). The closed conga part might add to the problems of those already pressed to find both open and slapped sounds, but could be simulated using a detuned bongo, or simply combined with the slap conga line at a lower dynamic level.

The 3/4 time signature of Pattern 6, the Nueva Onda, is likely to make it somewhat less of a draw on the dance floor, but gives it an intriguing rhythmic slant nonetheless. A pattern associated primarily with Venezuela, it also has strong African connections which probably account for its three-to-the-bar structure (it could just as easily be transcribed in 6/8). By displacing a couple of the snare beats, I've attempted to exaggerate its slightly off-centre feel, but not to the point where it simply becomes a rhythmic oddity. Try it and see what you think.

Having moved into the area of Afro-Latin crossovers, we come to the last of this month's examples. Patterns 7 and 8 are a couple of Afro-Cuban rhythms in 6/8 (though transcribed in 3/4 to keep them in the same tempo range). Rather more conventional than the last example, I see no reason for either of these rhythms not to get the feet moving. The bass drum part in both patterns is pretty distinctive and the snare occurs on a predictable beat in each bar so there should be no difficulty finding the right setting for either of these patterns.

It would also prove interesting to see how easily 6/8 rhythms merge with 4/4 song structures. Provided the two are given enough time (number of bars) to resolve themselves into a rhythmic cycle,

some fascinating results can be produced.

Like many of the patterns I've included in this series, most of this month's examples have some kind of distinguishing rhythmic feature built into them - usually in the final bar. In some cases this is a bongo or a hi-hat figure, in others it is simply a rearrangement of the bass/snare drum part (as in the Calypso rhythm). But in every case it can be programmed to occur at a musically useful part of the song (the end of a verse or chorus, for example). Just because I've written it here as occurring every fourth bar or whatever, doesn't mean that's where it has to stay. Move it where you will - or delete it altogether. Even if you're happy to copy the patterns verbatim, you should at least try to tailor them to your needs rather than just hitting the play button and letting them run.

Now, the more observant of you might have realised that one of the promised areas of investigation in this month's article - Salsa - has failed to materialise. The reason for this is that having listened long and hard to a wide cross-section of music which could be categorised as Salsa (emanating predominantly from New York), I have heard nothing rhythmically which distinguishes it from Cuban music in general - and Rumba in particular.

I am aware that this may sound a little contentious (if the study of rhythmic form could ever aspire to being contentious), and I'm also aware of the immense differences in broader musical terms which exist between Cuban music and Salsa (not to mention the social implications). But in purely rhythmic terms, the pulse behind Salsa is unequivocally Cuban, both in structure and feel.

This, of course, means that if you are engaged in the writing or playing of Salsa, or have ever considered using it as a perfect up-tempo dance rhythm (which it is), the article on Cuban rhythm in the March issue should provide you with most of what you need to know.

Looking back on all three articles, you may have noticed that Latin American rhythm, once broken down into its component parts, is anything but complicated. The parts associated with each instrument are often straightforward to the point of being obvious. And there are frequently considerable areas of overlap where two or more instruments play broadly similar parts. But, as I've stated before, it is its cumulative effect which distinguishes much Latin rhythm and its capacity for repetition over sustained

periods without ever losing its drive or urgency. Which, if you think about it makes it just about the perfect dance rhythm.

So if, like me, you feel all the best funk tracks have already been written, or that house and hip hop have become something of a rhythmic straitjacket, why not give these patterns a try. The key to programming is to enter every part, spend a little time adjusting levels and listening to them for a few minutes before deciding whether you like them or not. The bass and snare lines, though obviously detracting from the authentic flavour of the rhythms, will nevertheless make them that much more acceptable to a listening public, and there's always plenty more going on beneath the surface should you choose to listen.

The inclusion of these more familiar instruments also illustrates just how adaptable Latin rhythm is, and how acceptable it is to Western ears. As much as I love African and Eastern music, there's an inherently alien feel to it which makes it that much more difficult to assimilate to the majority of people (though this is precisely what attracts a great many other people to it). This manifests itself in melodic terms too, but it's usually the rather off-centre rhythmic feel of the music that makes most people feel out of their depth. This is perhaps why every significant crossover venture (from the Brian Eno/David Byrne collaboration *My Life In The Bush of Ghosts* onward) has attempted to marry Eastern melodic forms with (essentially) Western rhythm, rather than the other way round.

In conclusion, it may seem that three articles dedicated to Latin American rhythm (and only one each to subjects such as funk, reggae and so on), is approaching overkill - or at least, some form of bias on my part. But if you examine the sheer breadth of music emanating from that part of the world, you'll realise that this is by no means disproportionate. With the obvious exception of Africa (which we're hoping to "visit" soon), South America is probably the most rhythmically prolific area in the world, and I've simply tried to reflect that in this series.

I firmly believe that in rhythmic terms, western dance music has reached a critical point, which can only be overcome with an injection of new ideas and new thinking. It has always seemed odd to me, given the unselfconsciously plagiaristic attitude of most contemporary writers and musicians, that we have been so slow to tap into such a lucrative vein. Perhaps now is the time. ■

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# MODEL 660 & MODEL 760

As with the MK60 and MK80 electronic pianos, these new instruments from Roland's Rhodes division have been devised around a philosophy of performer-friendliness. Have the company got their priorities right? Review by Simon Trask.



**W**HAT DO YOU want from an electronic keyboard instrument these days? Maximised sonic flexibility coupled with in-depth programming facilities and a certain lack of operational simplicity, or a more-or-less predefined set of sounds coupled with minimal programming facilities and an emphasis on operational immediacy? You may say, of course, that you'd rather have the sonic flexibility *and* the operational immediacy, but in practice this seems to be a balance which manufacturers have found it hard, if not impossible, to achieve ever since the advent of the digital and the digitally-controlled

synth led to an explosion of capabilities and an implosion of front-panel controls.

You could say this apparent dichotomy is just one more sign of the increasingly complex times in which we live. Ah, life seemed so straightforward and simple once - and so did musical instruments. There's not much you have to learn about an acoustic piano except how to play it. OK, it needs tuning every now and then, but you can get someone else to do that. Now there's something which modern electronic keyboard instruments *have* made simpler. Not only do you not have to worry about your synth or sampler staying in tune, but you can globally alter its tuning at the swish of a slider,

while on some instruments you can select a completely new microtuning at the flick of a button.

MT readers who are, shall we say, more mature(d) will remember first-hand the classic Fender Rhodes electric piano, in many ways an ideal example of simplicity. Instant tuning wasn't one of its fortés, but it didn't ensnare you in operational and programming complexities either. When Roland set about recreating the fabled Rhodes sound

digitally, and incorporating the result into an instrument modelled on the digital electronic piano format of recent years, they retained the Rhodes marque for the finished products - the MK60 and MK80 (the latter of which was reviewed in MT, November '89). As it turns out, this represents more than an acknowledgement of sonic ancestry.

The Fender Rhodes was very much a performer's instrument, in that there was nothing about it to divert you from playing it; everything about it was upfront and immediate, and to get the most out of it all you had to do was, er, perform on it. It could be said that in the days of the Fender Rhodes all musicians were first and foremost performers, whereas nowadays the definition of a musician has become necessarily far more diverse as a result of the way in which musical technology and the applications of that technology have developed.

Roland have perceived that, among the wide range of electronic musical instruments that they produce, there is a niche for instruments which are aimed at the musician who is first and foremost a performer.

Consequently, the name Rhodes no longer signifies only an electr(onic) piano but a separate instrument division within Roland which aims to establish its own identity with instruments which concentrate on filling this niche.

Cue the Model 660 and Model 760, both of which have been designed to complement the MK electronic pianos not only sonically but also in terms of operational accessibility and simplicity. Where the MKs concentrate on fulfilling a specific sonic role, the 660 and 760 concentrate on making readily available a wide range of sampled - more specifically ReSynthesised PCM - instrumental sounds. If RS-PCM rings a bell with you, so to

speaking, then you're probably a Roland U20 owner. In fact, the 660 and 760 are closely modelled on the U20 (reviewed MT, August '89), which is perhaps why they've been given the name Model. Or perhaps not.

## OVERVIEW

ESSENTIALLY WHAT ROLAND (or should I say Rhodes?) have done is take the U20 and reorganise not only its front-panel presentation but the way in which you can combine and store its sounds. Along the way they've also made other changes, though it's arguable whether some of these are more appropriate to the nature of the 660 and 760, or just a consequence of marketing decisions. To begin with, the new instruments are one multitimbral Part down, with the U20's six Parts and a Rhythm Part becoming six Parts, any one or more of which can be a Rhythm Part. Secondly, where the U20 has two stereo audio output pairs, one dry and one effected, the 660 and 760 have only an effected pair. Staying on the rear panel for a moment, while all three instruments have two slots for PCM sample cards, the 660 and 760 lose the U20's RAM data card slot for patch storage, while players who find a volume pedal useful in performance will be disappointed to learn that the new instruments also lose the U20's programmable control pedal input.

Another indication of the difference in approach between the 660/760 and the U20 is that, where the latter has two sliders which can be set to edit internal sound and effect parameters and/or transmit MIDI controller data, the new Rhodes instruments have a Brilliance slider instead. How many times have you been recording in the studio/playing live on stage/comatose in the pub and been asked to come up with a sound that's just a bit brighter or just a bit darker than the one you've selected? And how many times have you said "I wish my electronic keyboard instrument had a brilliance slider"? Well, with a 660 or a 760 in front of you, you've got it.

Where the 660 has a five-octave synth-style keyboard (like the U20), the 760 weighs in with a 76-note keyboard which has a more substantial (but not cumbersome) feel. Both keyboards are sensitive to attack and release velocity and to channel aftertouch, while the instruments can respond to polyphonic aftertouch via MIDI. Of the two Models and the U20, the 760 has the most generous backlit LCD window (2 x 40-character) while the 660 has the least (2 x 16-character compared to the U20's 2 x 24-character). As a result the 760 can make information more readily available to you (for instance, in one screen it can tell you the Tones assigned to all six Parts). The two Models also have a slightly different provision of front-panel buttons, in the 760's favour.

The 660 and 760 have the same 128 internal ►

**“The name Rhodes no longer signifies only an electric piano but a separate instrument division within Roland producing instruments for the performing musician.”**

PHOTOGRAPHY: JAMES CUMPOSTY





► Tones (resynthesised samples) as the U20. These consist of 127 Melodic Tones and one Drums Tone (No. 128) which in fact consists of 37 drum and percussion samples. Like the U20, the Models can access further Tones from Roland's growing library of PCM sample cards via their two rear-panel card slots. This library includes Pipe Organ and Harpsichord, Ethnic Sounds, Electric Grand Piano, Orchestral Strings, Orchestral Winds, Rock Drums and Sound Effects.

On the U20 you assign an internal or card Tone to a Timbre and give it associated pitch, vibrato and level parameter settings (the parameter values are part of the Timbre, not the Tone). On the 660 and 760, pitch, vibrato and level parameter values are associated directly with each internal Tone, and Timbres don't exist. When you edit the parameters associated with a particular Tone the new values are stored automatically in memory, so you don't have to remember to Write them. As well as the 128 internal "Tone modify" memories, the 660 and 760 also have 128 such memories for each of the two PCM card slots. The cards which you can plug into these slots contain the Tones only, not the associated pitch, vibrato and level parameters, which means that, for instance, sound 24 on PCM card four plugged into card slot one will be given the same parameter settings as sound 24 on any other PCM card plugged into the same slot. Not an ideal situation, you might say, but with no RAM data card slot(s) to tie in Tone settings with card Tones, it's hard to see what else could have been done when pitch, vibrato and level settings are tied in directly with the Tones.

In fact there is a way of programming more than one set of values for the same internal Tone (or same card Tone number). The 660 and 760 both include User Patches, of which there are eight on the 660 and 24 (organised as three groups of eight) on the 760. Each of these User Patches allows you to assign an internal or card Tone to each of the six Parts, giving you a six-Part multitimbral configuration. Individual Parts within each User Patch can be assigned their own pitch, vibrato and level parameter settings, so that when you assign a Tone to a Part it will be affected by the settings for that Part.

For each Part within a User Patch you can also specify chorus on/off, reverb on/off, level and panning (one of 15 positions, or random). When you select the Drums Tone, you can set reverb on/off and panning for each note. One reverb and one chorus effect can be programmed for each User Patch, along with settings for Chase and Arpeggio key effects, key transpose, keyboard splitting and layering, hold mode (hold pedal on for Upper, Lower or neither sections on the keyboard), and a 16-character Patch name; these are

**"If you want an acoustic piano sound, you press the Acoustic Piano button in the Tone Select section; if you want a slap bass sound, you press the Slap Bass button. . . "**

collectively known as Performance parameters.

Once you've programmed a User Patch you have to store it in memory, which you do by holding down the Write button and selecting the relevant User Patch.

## PANEL MODE & MIDI

THE 660 AND 760 score highly in the way they bring so many functions to "surface level" through dedicated front-panel buttons. For instance, there are various categories of Tone on the Models, as there are on the U20, but on the Rhodes instruments these categories are made immediately accessible on the front panel. If you want an acoustic piano sound then you press the Acoustic Piano button in the Tone Select section; if you want a slap bass sound then you press the Slap Bass button. You can then step through the maximum of 12 sounds per button using the Variation  $\pm$  buttons. This system falls down a bit when it comes to card Tones, as you have to press the Card1 or Card2 button and then use the Variation buttons to step through up to 128 Tones; there again, if you select a card Tone for a Part within a User Patch, it's available immediately you select that Patch.

Other front-panel buttons allow you to switch reverb/delay and chorus effects and Harmony, Chase and Arpeggio key mode effects in/out, transpose the keyboard pitch and select the keyboard texture. A number of these buttons have pinpoint LEDs, so you can readily see when they're switched in.

If you want to edit any of the 660/760's parameters, hold down the Edit button and press the relevant function button (Chase, Reverb or Tone, say), then use the Parameter buttons and the Value buttons and slider to select and edit the parameters. To return to Play mode you just press the Edit button again.

There are differences between the 660 and 760 when it comes to keyboard textures and MIDI performance. You can set MIDI transmit on the 660 to either a specific MIDI channel (1-16) or to Part, in which case it transmits on the MIDI channel(s) of the Part(s) assigned to the keyboard. The 660 and 760 both have Upper and Lower sections, and allow you to select Split or Layer arrangements of these sections (with programmable splitpoint). But where the 660 allows you to assign any one Part to each section, the 760 allows you to assign up to all six Parts. It also allows you to set a MIDI transmit/receive channel for each section which is independent of the Part receive channel settings. These are all programmable per User Patch.

You can then set MIDI receive mode to Part, Upper/Lower or Both. The Both setting means that the 760 can receive on up to eight MIDI channels, which *doesn't* mean that you can play up to eight different sounds at once. What it does allow you to do is sequence Parts individually as ►

► well as in their keyboard combination. So for instance you could have a split keyboard texture with acoustic bass in the Lower section and acoustic piano layered with strings in the Upper Section, but also sequence the piano and strings Parts individually on their own MIDI channels. In contrast the 660 can receive on a maximum of six MIDI channels, with each Part receiving on its globally assigned MIDI channel.

The one thing you can't do with the 760's keyboard textures is alter the combination of Tones in the Upper or Lower sections via MIDI patch changes, because all the Tones within each section are receiving on one MIDI channel; so the number of combinations selectable via MIDI (as opposed to from the front panel) is limited to the number of User Patches.

To select Parts for each section on the 760, hold down the Upper or Lower button and then press the relevant Part buttons; pinpoint LEDs for each Part button light when they're active, giving you a ready indication of what Parts are assigned to each section. When in Play mode you can also use the Parameter buttons to step to a screen display which tells you which Tone is assigned to which Part, and whether each Part is active for Upper, Lower or both sections.

Other MIDI parameters on the 660 and 760 allow you to set a Control channel (for transmission and reception of User Patch changes; Tone changes are received on the Part and Upper/Lower MIDI channels), local on/off, and patch change, aftertouch, volume and SysEx transmit/receive on/off (individually). For anyone who might conceivably be using more than one 660/760 in a MIDI system, each instrument can be given its own Unit number (17-32) for SysEx transmit/receive purposes. Incoming MIDI breath-control messages can be assigned to affect volume, modulation (vibrato depth) and aftertouch individually or in any combination.

Onboard digital effects consist of chorusing and a modest selection of reverbs and delays, which fall into the quality category of, well, adequate for most purposes. You can set chorus rate, depth and level (in comparison the U20 offers a bit extra, with a feedback control and several chorus types including flanging), while for reverb/delay you can select one of rooms 1-3, halls 1-2, gated reverb, or delays 1-2 (the second delay automatically pans its reflected sounds left and right), together with reverb/delay time and level (both 0-100) and delay feedback amount (0-100) parameters. There are no combined reverb and delay effects, but Chase can be used to create delay-type effects.

## TONES

LIKE THE U20, the 660 and 760 are 30-voice polyphonic, with the actual polyphony depending on the Tone type - and, of course, how much Tone layering you do in the Upper and Lower keyboard sections. Single and velocity-switch Tone types clearly require only one voice per note, while velocity-mix, dual and detune require two voices

(and a quick spot of number-crunching will tell you that a two-voice Tone brings the polyphony down to a still reasonable 15 voices). A ready reference for the Tone type of, and the number of voices required by, each of the 128 internal Tones is provided by Tone List towards the back of the manual (from which you can glean that 54 Tones require two voices per note, so 74 require one).

The Models' 128 internal Tones are divided into 16 instrumental categories: Acoustic Piano, Electric Piano, Acoustic Guitar (seemingly steel-strung rather than nylon), Electric Guitar (muted, unmuted and distorted), Strings, Choir, Brass, Trumpet/Trombone, Electric Organ, Mallets (including vibes and marimba), D-sounds, Synth Wave, Slap Bass, Bass (one acoustic, two fretless, two fingered, two picked and eight synth), Winds (five saxes, flute, two shakuhachis and breath), and Drums. All the Tones are distinguished by a great clarity and presence.

While these are all sampled sounds (multisampled where necessary), and for the most part concentrate on reproducing "real instruments" both acoustic and electric, Roland have taken care to include samples of synthesised sounds too. The most obvious examples of this occur in the D-Sounds category, which consists of sounds sampled, presumably, off the D50 (so you'll find the likes of 'Native Dance', 'Fantasia', 'Bell Pad', 'Synth Harp' and 'Calliope'), and the Synth Wave category (three pulses and two sawtooths). But you'll also find a few examples of synthesised strings, brass and voices alongside the acoustic variety.

The underlying idea of such categories as Acoustic and Electric Pianos, Electric Organs, Bases and Slap Bases is to provide a healthy number of variations on the basic sound, so that instead of having to tinker around with edit parameters, you can flip through the Tones from the front panel and find the one that's nearest to what you want (the brilliance slider can also help you out here). And in practice it works very well.

The Tone edit parameters are concerned with overall control of a Tone rather than with sound creation. You can alter the coarse (semitone) and fine pitch of a Tone, the pitchbend range of the bend/mod lever, the maximum depth of effect on the Tone's pitch from aftertouch (-36, -24, -12...+12), the rate, depth, mod lever sensitivity and aftertouch sensitivity for vibrato, and an overall level setting together with velocity and aftertouch sensitivity (from -10...+10, allowing you to velocity crossfade any combination of Tones) and ADSR ± settings which allow you to alter the amplitude envelope of a Tone relative to its existing envelope.

Editing of the Drums Tone is limited to reverb on/off and pan setting for each of the 37 drum and ►

**“You could have acoustic bass in the Lower section and acoustic piano layered with strings in the Upper, and also sequence the piano and strings Parts individually.”**

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► percussion samples. The Rhythm section facilities of the 660 and 760 are less sophisticated than those of the U20. For one thing, where you can program four Rhythm Setups on the U20 which can draw on any combination of internal and card Tones (not just the actual Drums Tones), the 660 and 760 restrict you to one internal, one card1 and one card2 pre-programmed setup (all held in the Models' internal memory), each of which only draws on Drums Tones. Also, a large number of parameters which can be programmed for each note/Tone in a U20 Rhythm Setup (see U20 review) have been dropped altogether on the 660 and 760. What that leaves you with is a standard but workable range of bass and snare drums, cymbals and toms, though you can expand this collection with the Latin & FX Percussion PCM card.

## PERFORMANCE

THE U20, 660 and 760 all have keyboard effects which can be switched in/out from the front panel. Arpeggio is common to all three instruments, but the U20's Chord Play 1 & 2 have been replaced by Harmony and Chase. Where Chord Play allows you to program a chord of up to eight notes for each note within the octave (reproduced over all octaves), giving you a sophisticated form of one-finger chord accompaniment, Harmony uses the chord you play in the Lower section of the keyboard (which doesn't itself sound) to harmonise the melody you play in the Upper section, with each melody note as the top note of the chord. So if you play a C major seventh chord in the Lower section and the note G in the Upper, the G will be harmonised as G major seven. Change the chord and the harmonisation will change; change the melody note only, for instance from G to F, and the harmonisation will change in parallel (G major seven to F major seven).

Arpeggio has programmable direction (up, down, up & down, or random), rate (0-100), aftertouch sensitivity (-5...+5) and style (staccato, portato or legato). Aftertouch can be used to alter the arpeggiation speed (slower or faster depending on the  $\pm$  setting), which I suppose will prove essential to someone somewhere. When the keyboard is Split, arpeggiation only functions in the Lower section, which seems a bit of daft limitation to me. If you have the hold pedal enabled for the Lower section, you can latch the arpeggio (or the chord in the case of Harmony).

Chase produces an echo effect by triggering the instruments' voices. You can set chase mode (single, repeat or alternate), chase rate (0-100), chase shift (-12...+12 semitone steps) and chase level attenuation (0-100). Chase differs from echo in the audio domain in that pitch can change in fixed intervals (a tone would give a whole-tone scale, for instance), and the repeat notes can alternate between Upper and Lower sounds. You can also adjust the chase rate in real time using the Value slider and buttons. When the

keyboard is Split, Chase is only active for notes in the Upper section.

The Chase and Arpeggio effects must each be assigned to one of the six Parts. Notes generated by all three key effects are transmitted via MIDI, but you can't trigger these effects from incoming MIDI notes (so you can't include them as part of a sequence), and nor can the arpeggio or chase rate be synced to incoming MIDI clocks. The U20 isn't any better in this respect, nor are earlier Roland instruments with the same or similar performance features. Surely it's not asking too much to be able to trigger a Part from notes received on a selectable MIDI channel, or to sync the effects to incoming MIDI clocks where applicable (particularly as the Groove feature on Roland's new R8M drum module is, out of necessity, syncable to incoming MIDI clocks). The arpeggio function on Cheetah's Master Series 7P controller keyboard is syncable to incoming MIDI clocks, a fact which makes it a much more effective feature.

## VERDICT

ON INITIAL ACQUAINTANCE, the similarities between the U20 and the 660/760 are more striking than the differences, a fact which might give Roland/Rhodes some identity problems in the shops. Having had what some might consider the luxury of spending more time with the new instruments and being able also to investigate more thoroughly the differences between them and the U20, I've modified my initially sceptical viewpoint.

The 660 and 760 are like a second attempt at the "preset sampler" ethos underlying the U20, and their presentation of that ethos strikes me as being entirely more appropriate and effective. Roland have also done well to hive the 660 and 760 off into the Rhodes division, where they sit more comfortably with the Rhodes philosophy of performer-friendliness through accessibility. Most keyboard players love Roland best for their *synths*, in which respect the forthcoming D70 looks very promising.

If you want a healthy number and variety of high-quality sampled instrumental sounds which you can combine and above all *play* with the minimum of fuss, I'd recommend you investigate the 660 and 760. In the main body of this review you'll find a lot of detail on the differences between the U20 and the Models (as well as between the two Models themselves), so I'll just say that on balance I'd go for one of the Rhodes instruments rather than the U20, while of the two Models I'd consider the 760 worth spending the extra couple of hundred quid for. ■

**Prices** Model 660, £999; Model 760 £1199. Both prices include VAT.

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SMPTE SYNC CODE - the Society of Motion Picture and Television Engineers' synchronisation code - is, presently, the most useful and most widely used sync code available. It is used for everything from assembling the soundtracks of multi-million dollar film epics to the those of ten-second TV adverts. It sounds like the last word in synchronisation, but it brings with it its own problems - especially if you want to use it in conjunction with a MIDI music setup.

Where our humble MIDI clock is just a string of pulses that start at one end of a

piece of music and finish at the other, SMPTE marks every point in the piece with a unique identity. In this way you can do anything from locating the cue point for a gunshot to running a multitrack tape from any point in a song and having your drum machines and sequencers lock in accordingly.

## CONVERTERS

ALTHOUGH SMPTE HAS been incorporated into "upmarket" software sequencers (programs like Creator/Notator and Cubase), it will not work without additional

hardware and it's useless to your drum machine without some form of SMPTE-to-MIDI conversion. In a nutshell, a converter ensures that a sequencer or drum machine will stay in sync with material already recorded on multitrack tape by reading the SMPTE code and generating MIDI clocks.

As SMPTE is a measure of absolute time, and so is independent of musical tempo, the time code can be recorded onto tape without the sequencer playing at the same time. (One of the edge tape tracks is normally used for this to prevent the code spilling over onto more than one adjacent tape track.) The SMPTE start time for each song is noted, as is the tempo.

When the tape machine plays back the code, a MIDI Start command is sent by the converter to the sequencer, followed by MIDI clock pulses. MIDI Clock is a continuous stream of timing pulses sent 24 times each quarter note (24ppqn). As it is note related, any change in tempo changes the gaps between notes and so varies the rate at which MIDI clocks are generated. Most modern MIDI devices ▶

It's a pity that more retailers don't copy our ideas (instead of just our ads), free courses with packages, faulty goods replaced and money refunded are all part of a service to which customers are entitled. It is a shame that more retailers do not realise this. By the way, have you noticed how some shops are incapable of giving you a price on the telephone? (Frustrating, huh?) Next time a shop respond with "How much have you been quoted already?" say "Why - are you too thick to think of a price yourself?" They'll soon learn!

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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.

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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 waste your time!)

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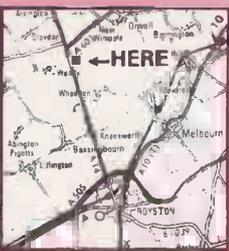
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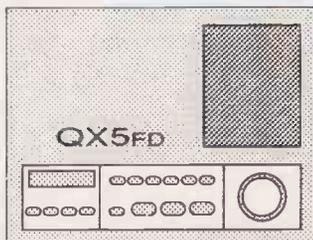


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▶ also generate MIDI Song Position Pointers (SPP) which keep a count of how many blocks of six MIDI clocks have occurred since the beginning of a song. This means that when you start the tape machine in the middle of a song, the sequencer knows where to jump to and then picks up the MIDI clocks to remain in sync.

## PROBLEMS: TAKE 1

SOMEONE WALKS INTO your studio with a multitrack tape on which he wants to replace the drum track. The tape has SMPTE time code recorded onto one of the tracks. This musician (either sex) also has the track sheets giving you the starting time of the song. All you need now is a sampler and some method of turning the SMPTE code into triggers for it - say a converter and a drum machine. You set up the program on the sampler so that the keynotes from the drum machine trigger the correct samples. You connect the MIDI Out from your SMPTE-to-MIDI converter to the MIDI In on the drum machine. Off rolls the multitrack, the drum machine kicks in, and to your horror the sampled drums start to drift in and out of time with the bassline on tape.

The problem is likely to stem from the fact that a different make of SMPTE converter is being used for playback than was used to initially record the code onto tape.

Let's run through a typical session working with tape sync and

assume that the tape has been striped with SMPTE. Depending on the number of MIDI devices available, a lot of recording can be done on the sequencer alone and you won't need to go to tape until you want to use a non-multitimbral synth more than once. At this point the audio from that synth is run onto tape so that the synth is free for its next line. The sequencer must now be put into "external sync" mode so that the sequencer will run in sync with the tape machine while the sound is being recorded onto tape. From then on you'll need to use the tape as the "master" device as it will control the sequencer and allow you to hear what you've recorded simultaneously.

We've now reached the point of no return; if anything happens to upset the synchronisation of the sequencer and tape machine, there's little that can be done to reunite the sequenced parts with those dedicated to tape.

What could upset our arrangement? Well, because SMPTE is independent of tempo, the initial tempo has to be entered into the SMPTE-to-MIDI converter. For the sake of argument, let's say that this is 120 beats per minute. How accurate this figure of 120 is will depend on the SMPTE-to-MIDI converter. Some work to one decimal place, some to two and so on. Let's say that the figure is accurate to the nearest whole number. This means that the tempo could be between 119.5000bpm and 120.4999bpm - both of these will be rounded off to 120bpm. If you use the same converter on playback, the rounding will be the same, but a different make of converter will probably have a different level of accuracy.

Returning to our example, imagine that on playback the converter used is accurate to one decimal place. The initial tempo would not be read as 120 but somewhere between the above two figures. At worst, the track could be over one second out in the course of a four-minute song.

## PROBLEMS: TAKE 2

THE POINT OF using MIDI clock and Song Position Pointer is to enable us to sync up a tape machine to a sequencer. SMPTE code is the obvious choice of master code as it is more reliable than FSK coding (see *Time Exposure*, MT June '89 for more information on sync codes) and is universally standard. But the SMPTE-to-MIDI converter is not the only variable in the system: we now have to look at the device responding to MIDI sync - the sequencer.

Let's imagine a situation where audio tracks have been recorded onto tape and the multitrack is playing back. Putting the multitrack into play mode sends SMPTE code to the converter and a Song Position Pointer is sent out to set the sequencer to the right place (followed by MIDI clocks to keep it there). If you now want to record MIDI information into the sequencer, how do you do it? Most converters have a MIDI In to which a keyboard can be connected - this merges any incoming data with the MIDI clocks being generated, giving the clocks top priority. The merged signal then appears at the MIDI Out port and is sent to the sequencer's MIDI In.

How much MIDI clocks clog up the MIDI buss depends on the tempo of the piece of music. A MIDI clock is a one-byte message (F8 hexadecimal) and is sent 24 times per quarter note, so at a tempo of 132 beats per minute (= 455 milliseconds per beat), one MIDI clock message will occupy the MIDI buss for 7.68 milliseconds - less than 2% of the total time.

If a drum machine is being synced to a sequencer by echoing the MIDI clock received from the converter to the MIDI Out of the sequencer, the situation is far worse. Most sequencers give priority to certain types of data on playback. Take the example of C-Lab's Creator. Under "Play Algorithm", top priority is given to notes on, followed by MIDI controllers. Somewhere further down the list comes our MIDI clock. Consequently, if a lot of note and controller data is being used, the MIDI clocks could be significantly delayed. Part of this problem comes from the fact that we quantise most note information so that it plays on the beat - which is where the clock pulses appear. For example, ten MIDI Notes On are due to appear on the beat: this delays the MIDI clock by 9.6 milliseconds (excluding any use of mod wheel, pitchbend and so on). At 132bpm, MIDI clocks appear about every 19 milliseconds, so this delay will probably give an audible change in tempo. Some converters have more than one MIDI Out for the generated MIDI clock. If this is the case, it's advisable to use one of these for the drum machine.

Then there's clock interpolation to consider. What's the point of having an internal sequencer resolution of 384ppqn - as is the case with many sequencer software packages - if you're restricted to a playback resolution of 24ppqn under MIDI clock? To get around this, the program places its own timing clocks between those being received. The problem here is that, if a tempo change is

occurring, successive MIDI clocks will either be moving further apart or closer together, making it impossible to predict when the next clock will be received. Gradual tempo changes are not likely to cause major problems but if, for example, you're building the tempo as a chorus approaches, the change might not be quite as dramatic as you intend it to be.

## SOLUTIONS

THE ORIGINAL PROBLEM we identified was one of using different SMPTE-to-MIDI converters on playback and record. It's far safer to stick with one model - even if this means buying more than one converter for different studios in a complex (should you be running one). On the other hand, if the studio you use doesn't have the converter you've been using for your pre-production work, take your own in with you.

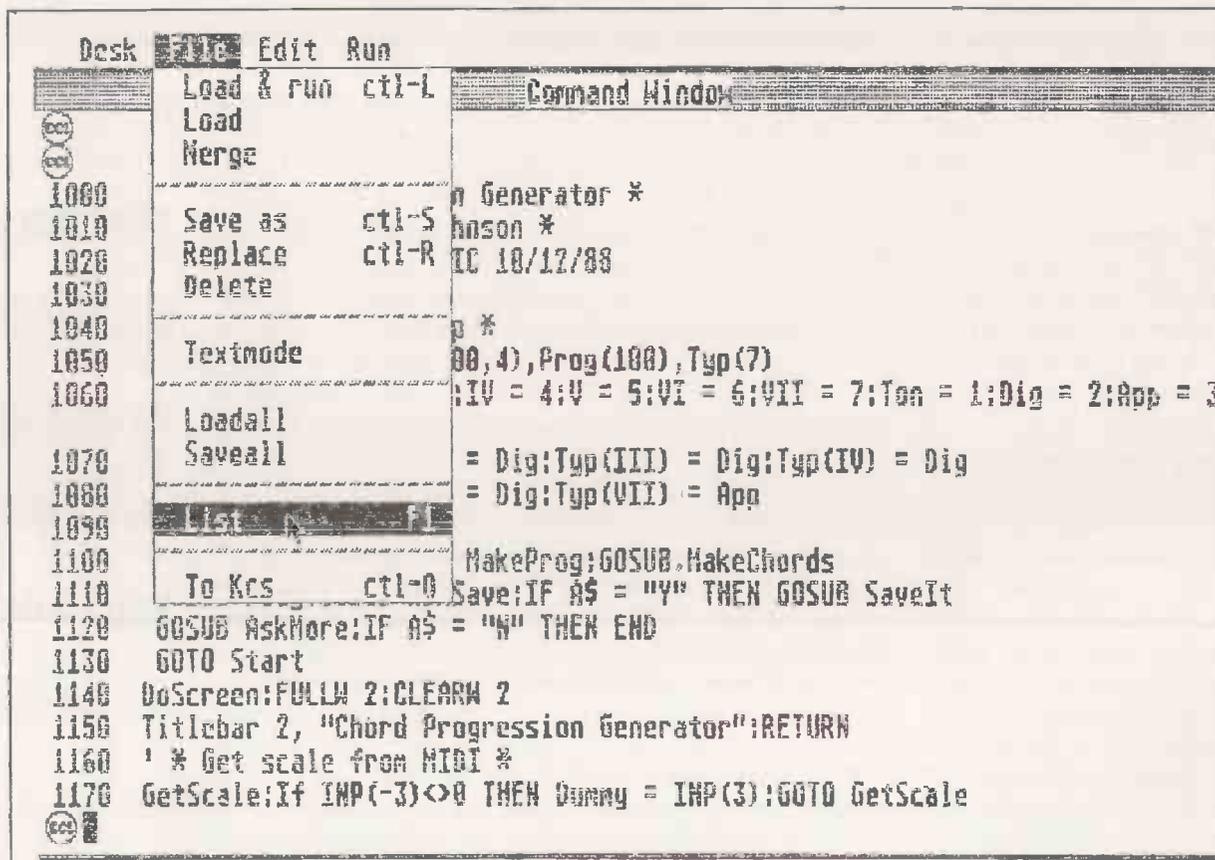
Most software companies now have their own hardware to accompany sequencers that support SMPTE - but these will only work with the software they were designed to complement. It is possible to transfer a song recorded on one software system to another using either MIDI Files or by using MIDI connections from one computer to another. Be warned, though, the latter method, though attractive in principle, is fraught with difficulties.

Then there is the question of MIDI Time Code (see *Adrift On An MTC*, MT, March '89 for an explanation of MTC). Nearly all MIDI devices respond to MIDI clock information but not all implement MTC. Given the choice, MTC is a desirable option, so check out whether your sequencer recognises it or is likely to do so in the near future.

Finally, some of you will be able to perceive changes in tempo caused by MIDI clock delay more readily than others. It all depends on how acutely trained your ear has become - so it's worth remembering that not everybody spends their days listening for timing errors in recording studios, some people just like to listen to the music. ■

**"OFF ROLLS THE  
MULTITRACK, THE  
DRUM MACHINE  
KICKS IN, AND TO  
YOUR HORROR,  
THE SAMPLED  
DRUMS START TO  
DRIFT IN AND OUT  
OF TIME WITH  
THE BASSLINE ON  
TAPE."**

# T-BASIC



Main Screen showing File menu

While writing your own programs might seem a daunting task, there's no doubt that creating MIDI software to suit your own needs would be cheap and convenient. T-Basic is a MIDI programming language that may bring MIDI programming within your reach.

Review by Ian Waugh.

**I**T'S A FACT, isn't it - whichever music software program you buy, there'll be just one function missing which you'd really like to have. It may be velocity or tempo scaling, it may be a selective note offset routine, a channel splitter to put data in each MIDI channel onto separate tracks, or it may be something as simple as a clock to tell you how long a piece runs for.

You're probably way ahead of me - putting the first paragraph and the item under review together you reckon I'm going to suggest you write your own

routines. Well, that's one solution, but of course it's not as simple as that. For one thing, you'd require some programming skills and for another, you'd want to interface with your existing music program.

If that sounds pretty serious I won't lull you into a false sense of security by pretending it isn't. But if you haven't already turned the page, and if you have some programming skills and a sense of adventure, then you could find the rest of this review very interesting indeed. And if you have turned the page turn back immediately because there are still benefits to be gained from the program even if you are not a programmer. But let's start at the beginning.

## MIND YOUR LANGUAGE

MOST COMMERCIAL MUSIC programs are probably written in a language called C, with the odd one or two being written in machine code (Virtuoso, for example). Some are even written in BASIC with the driver routines in assembler (or not) but this still involves a lot of work - and hard work at that.

A few variations of BASIC designed for music production have appeared over the years (notably Altech System's MIDI BASIC for the Mac) and I believe there's a musical version of LISP available for

the IBM PC. I must also mention AMPLE (Advance Music Programming Language and Environment) which runs on the BBC micro with the Hybrid Music System. The system can interface with MIDI equipment and has a number of easy-to-use front-end editors for music entry and the AMPLE language permits an extraordinary degree of control over the music (if you're into music programming it's well worth exploring).

But unless you've studied programming or are a computer whizz kid, BASIC - Beginners All-purpose Symbolic Instruction Code - is probably the easiest computer language to learn. T-Basic (review version 1.0) combines the (relative) simplicity of BASIC with the power of a dedicated sequencer and Dr T's KCS (Keyboard Controlled Sequencer) in particular. KCS Level II supports Dr T's MPE (Multi Program Environment) which allows up to eight other program modules to be loaded into KCS, extending its capabilities to combine sequencing with scoring, algorithmic composition and so on.

While T-Basic can be used to produce stand-alone programs it is probably far more useful when run from within the MPE. Hooks are provided to allow T-Basic programs to store any sequences they generate in KCS, and to allow access to and modification of sequences already in KCS. This is very convenient indeed as it allows you to concentrate on the manipulation or creation of data which can then be accessed, edited and played using all the functions of the sequencer.

## INTERPRETATION

T-BASIC IS AN interpreted language, which means that each instruction is executed as the program comes to it. High level languages like BASIC are generally interpreted languages and programs are (relatively) easy to write and develop. The trade-off is a lack of speed. However, in T-Basic each line is compiled into object code so in execution programs run much faster.

In format it is modelled on ST BASIC although the programmers call it an extension of REAL BASIC. The programming environment will be familiar to anyone who has dabbled with any form of BASIC.

When the language has loaded you are left with a command window and Desk, File, Edit and Run menus - yes, like the new generation of Dr T's programs this is GEM-based. The menus are mainly there for convenience as their functions can be duplicated by function key presses and/or T-Basic keywords.

Programs and instructions are entered at the command line prompt in the command window. Programs are given line numbers although they can be saved without any. When they are loaded, the interpreter automatically assigns a number to each line making it easy to merge programs.

A single line can be up to 510 characters in length (I just hope I'm not asked to debug it) and the language supports GOTO and GOSUB commands, although if you use subroutines you should really use labels - far more structured, anyway.

Variables can be up to 32 characters long (don't

you dare) and T-Basic makes no distinction between upper and lower case. There are three variable types - integer, single precision floating point (also known as real numbers) and string variables.

Like most BASICs you can define your own functions which will return a value from supplied parameters and you can create procedures that accept and return multiple arguments using local variables.

As well as standard BASIC language functions, T-Basic has five special two-dimensional arrays for dealing with the KCS and manipulating sequence data within it. They correspond to the five elements in a KCS event: TIME, TYPE, PITCH, VEL and DUR. If you're feeling brave you can PEEK and POKE areas of the ST's memory although if you're operating in the MPE, T-Basic restricts the locations you can access to prevent interference with KCS.

## DOWN TO BASICS

THE MANUAL GETS you started by explaining how to load and run some of the demo programs supplied. These include a MIDI data analyser which translates MIDI events such as key presses, program changes and so on, into English (very useful for troubleshooting) and a program called T-Keys which uses the mouse to create simple music sequences (it's actually a simplified version of KEYS!, a budget-priced, step-time music entry program which itself was written in BASIC).

The next chapter runs through a few quick and dirty programming functions (its words, not mine) from within the MPE. The quick and dirty method wasn't quite as quick as I had hoped and, in fact, KCS Level II (v1.7) decided to crash a few times, especially when I tried to access the Edit function from the menu just to prove how dirty this method was (although KCS is not under review here). After donning my kid gloves, however, I managed to get things running but not without the sneaking suspicion that the manual/instructions and demo programs didn't quite tie up.

The first program, a mere four lines in length, took a sequence and transposed all notes in it with a velocity greater than 64 up an octave. Here it is so you can get a flavour of the language:

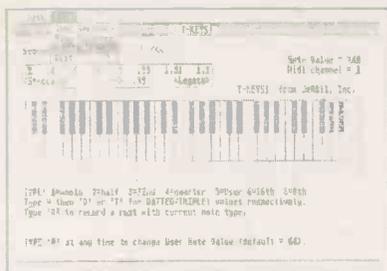
```
10 for i = 1 to lastevent(1)
20 ifthen type(1,i) > 127 and type(1,i) †2 64
30 pitch(1,i) = pitch(1,i)+12
40 endif: next
```

I won't attempt to dissect it but even if you're not a programmer, I'm sure you'll recognise the instruction to raise the pitch an octave. The "1"s in brackets refer to the events in sequence 1 and the type array (previously mentioned) is looking for note events.

Three other "starter" programs (five or six lines long) perform selective transpositions, add accents (increase the velocity level) selectively and randomise the pitch and duration of a list of notes.

Next you are invited to load and run some of the more complex programs. The first produces an output similar to the sample and hold effects common on ►

**“Despite the fact that T-Basic is probably the most numerate and difficult program to use yet released by Dr T's, I found the total package quite accessible.”**



**“If you want your sequencer to do something but lack programming expertise, it shouldn't take an experienced BASIC programmer long to write a T-Basic application.”**

► analogue synthesisers. The second generates various “curves” (sine, triangle, ramp, exponential) which can be applied to different types of event such as pitchbend, volume and even notes. Whacky.

## PROGRAMMING

THE PROGRAMMING ENVIRONMENT is quite friendly and better, in my opinion, than that offered by ST BASIC.

In edit mode you can scroll backwards and forwards through the program with the cursor keys and edit the program lines using insert or replace mode. You can move around the program quickly using the cursor keys with Shift and Control, and the function keys take you quickly to the start and end of the program.

When a program is running, a Debug menu becomes available. This houses Break, Trace and Single step options (Trace and Single Step can also be selected from the Run menu). Trace displays the current line number as it is executed, and Single Step pauses after each statement and shows the line on screen. These are excellent debugging tools.

T-Basic has a full complement of commands for creating graphics, including keywords for drawing boxes, for manipulating the ST's colour palette and for switching screens. It also has several functions for creating some of the simpler elements of the GEM interface. For example, ALERT and DIALOG let you create your own alert and dialogue boxes, and menu bars are also supported. In addition, T-Basic provides access to other levels of GEM through AES, VDI, BIOS and XBIOS keywords although the manual (sensibly, in my opinion) directs would-be users to dedicated books on the use of GEM.

The error handling allows either automatic error handling or error handling under program control.

## PROGS & LIBRARIES

SEVERAL T-BASIC PROGRAMS are supplied and to give you an idea of some of the things they can do, here are details of a few:

SYSEXDMP can capture up to 32767 bytes of SysEx data and store it in KCS from where it can be saved as a SEQ file.

PBPLOT and VOLPLOT plot a pitchbend or volume curve on the screen from data within KCS. Not terribly useful, perhaps, but interesting, fun and possibly educational.

CHORD1 creates simple chord progressions based on some “rules” of harmonic progression. It asks you to play an eight-note scale from which it produces the chord sequence which can be saved into KCS.

BUILDSET and KCSSLIVE are tools for performing automated disk loads and playback within KCS, primarily for live performance (got your STacy yet?).

LISTING and FILELIST list the contents of a sequence much like KCS' edit screen but this list can be modified to filter out events you don't want to see.

TRACKER is a partially finished program with two working functions. One puts each MIDI channel on a separate track and the other calculates the duration in minutes, seconds and hundredths of a second of any measure and step in the piece.

GOGOIZE makes all 16th notes one step later for “that hip gogo sound”. Painful in explanation, perhaps, but practical in concept.

You can create a default program which will load and execute automatically when you load T-Basic.

The demo disk also includes several library routines written in T-Basic which can be used in your own programs. These include a variety of sequence manipulation functions such as creating events and reading and storing certain KCS variables. There are procedures and subroutines used to play sequences and create tailored random number distributions and other items of use to those interested in computer-assisted composition.

There are routines to help with file handling, additional maths functions not found in T-Basic (heavy), several GEM-aid utilities and routines for working with the MIDI interface.

There are also several demos which just show off the BASIC. Some show how easy it is to produce alert and dialogue boxes and menu options. One produces a psychedelic pop-art moving screen display (an amazing graphics demo written in just one line) another draws a rotating 3D cube (showing T-Basic's high speed). Another plays a Bach Invention using the ST's sound chip. There are some games, too including a fast version of John Conway's game of *Life* and a breakout game.

## MANUAL

WHEREAS A GOOD manual is a help when learning to use new software, when you're trying to use a new language it's essential. The T-Basic manual was written by Dr T's favourite author, Jim Johnson (I haven't quite forgiven him yet for Finger's Invisible Arithmetic Icons) and I confess to being pleasantly surprised.

The manual does not profess to be a BASIC primer (it would be unrealistic for it to attempt this) but it explains the main functions and operations quite well. Jargon is kept to a minimum (although when discussing a computer language there is inevitably a surfeit of jargon anyway) and the introductory tutorials are generally quite helpful if a little short.

The majority of the manual is given over to a reference guide of T-Basic keywords which are organised by category (editing, environment, operators, program flow, functions and so on) rather than alphabetically, although there is a keyword reference index, too (there are well over 200 keywords).

The appendix contains information about the data structures used by KCS along with the formats of SEQ, TRK, SNG and ALL sequencer files to enable you to access this data, although if you use the library routines for adding events to sequences you won't normally need to deal with this information.

The manual also contains a list of reference books and it's interesting to note that while the authors recommend the Abacus books on ST BASIC and ST Internals they make a special point of *not* recommending the Abacus book on MIDI programming (just shows publishers can't get it right every time).

## VERDICT

ALTHOUGH DR T'S NEW generation of programs use GEM (which, in my opinion, makes them a considerable improvement over earlier non-GEM programs), they still, to a degree, have a numeric bent. While this inherently gives them a great deal of power and flexibility (a line of numbers is worth a thousand icons) it does so at the expense of accessibility. In the main I believe Dr T's programs appeal more to the computer musician and the music hacker than the musician who just happens to use a computer. (Comments directed to *Communique* welcome.)

Despite the fact that T-Basic is probably the most numerate and difficult program to use yet released by Dr T's, I found the total package quite accessible. It goes without saying that to make the fullest use of it will require not only a knowledge of BASIC but also of MIDI and its codes, conventions and idiosyncrasies.

But it's not essential to be a programmer as the programs themselves are quite easy to load, run and use. This could give rise to a whole new sub-market of designer routines. If you want your sequencer to do something but lack the programming expertise, it shouldn't take an experienced BASIC programmer long to write a T-Basic application. The authors express the hope that American bulletin boards will soon be filled with T-Basic routines, and if that happens it won't be long before they find their way to our shores.

There's no doubt that in expert hands T-Basic is

capable of an enormous number of applications (I'm almost tempted to say, "limited only by your imagination") but the practicalities of programming will mean that only the most dedicated will ever get around to writing that pseudo-random bass line generator and auto-brass funk fill routine that you reckon should be *de facto* standard on all sequencers. If musicians had to write their own programs before recording a bit of music there'd be a darn sight less of them.

Finally, although T-Basic can be used as a stand-alone language, its integration into KCS' MPE is superb and I'd hesitate to suggest you use T-Basic without it. However, that's a decision which individual users can make. If the thought of writing your own music routines gets the adrenalin pumping through your veins and the saliva dribbling down your chin then this is for you.

Music hackers will have a great time with T-Basic. Anyone interested in computer-assisted composition - algorithmic, aleatoric and so on - and with some programming skills will be able to create composition routines of their own. The programs listed above will give you some idea of the range of applications to which the language can be put.

It will be interesting indeed to see what T-Basic programs surface in the months to come. ■

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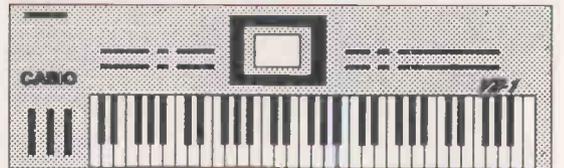


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# INTERNATIONAL RESCUE



PHOTOGRAPH BY: TIM GOODYER

***For many musicians the music business offers success on its own terms, but Norman Cook's success - with The Housemartins and now Beats International - hasn't tempered his attitudes to innovation and technology. Interview by Tim Goodyer.***

IT IS NOW SOME 20 MONTHS SINCE MT'S last (and first) interview with Norman Cook. Then the talk was of his involvement with The Housemartins, and his remixing of artists such as James Brown, Eric B & Rakim and Stetsasonic. He talked of his experiences as a hip Brighton DJ, of his contempt for Stock, Aitken & Waterman, and of the technology that made it possible for the bass player of a polite white pop band to become involved in remixing and production work for some of the hottest acts in town. But quite a lot has changed in those 20 months - young Norman's got married, moved house and bought himself a new car - oh, and at the time of writing he's currently holding the No. 1 slot in the British charts with his band Beats International and a cover of the SOS Band's 'Just Be Good To Me'.

The list of "credible" artists for whom Cook can claim to have performed remix or production duties now includes such artists as Fine Young Cannibals, Mahlatini and the Mahotella Queens (who guested on the Art of Noise's single 'Yebo' last year), Digital Underground and Silver Bullet. Meanwhile the remix of Stetsasonic's 'A.F.R.I.C.A.' that had so excited the band but had been withheld from release because of the use of the chorus of Jerry Dammers' 'Free Nelson Mandela' has seen a significantly more timely release in 1990 and is scheduled for inclusion on Stet's forthcoming LP. Be in no doubt, a lot has changed in those 20 months.

It's a sunny day in Brighton when we meet in Cook's new home studio to discuss what's happened to his fortunes, his gear and his attitudes. And reassuringly, the latter have remained very much intact - with one notable exception which we'll come to later. But let's begin with his fortune, and Beats International. . .

The original plan was for Cook to make the traditional "solo" album (the same one we're all going to make), but he found himself working in loose collaboration with so many people that the only option was to give them a collective name - and Beats International were born.

Their LP debut (which should be available by the time you read this) embraces a refreshing variety of musical styles, from the obvious dance appeal of 'Dub Be Good To Me' through the '70s soul of 'Dance to the Drummer's Beat' to the eccentricity of 'Tribute to King Tubby'.

The outfit that you've probably seen on one or other of the pop TV programmes consists of singer and ex-*Grange Hill* schoolgirl Lindy Layton, keyboard player Andy Boucher, indie soulster Lester (who was once part of a band called Grab Grab The Haddock alongside MT illustrator Andrew Kingham) and enigmatic percussionist Luke Creswell (the man behind Pookiesnackenberg and The Yes No People). At

the time of the interview their dub rework of 'Just Be Good To Me' is hovering at No. 2, with the new Gallup chart to be announced in two days. Will it make No. 1? Our conversation is frequently interrupted by calls from friends and biz people alike - will he do this show, can he appear at a charity gig, *will the single make No. 1?*

Dragging him away from the phone for a moment we try to establish just what Norman Cook currently is: bass player, remixer, producer even? After a long pause Cook admits to having "a producer's hat".

"I suppose I like to think of myself as a producer really, even when I'm remixing. The idea of remixers was that they didn't know anything about music, but they knew how things worked on a dancefloor. But now we've reached a stage where better remixers are rewriting tunes and basslines, and trying to change the chords and the melody around. I suppose I'm a producer-stroke-programmer because I do so much of my stuff on the computer."

It seems somehow appropriate, then, that at least part of Cook's success as a post-Housemartin artist should have come with a heavy rework of a classic song. But hasn't this business of "covers" gone on long enough? Wouldn't he rather have been able to take credit for the writing as well as the arrangement, production and so on?

"Yeah, definitely. But I'm a crap songwriter." The admission comes easily to the modest Cook. "Given that I'm calling myself a producer/programmer rather than a 'musician', it's kind of an acknowledgement of what I do - I produced it and put it together, rather than wrote it or performed anything on it. It would have been nicest if I'd written it, sung it and produced it, but I'll settle for one out of three because you have to recognise your own limitations and I don't think I'd have a No. 2 single with anything I could have written."

Nor, I presume, a No. 1. . . And Cook's sincerity regarding the role of the remixer in the '90s is further demonstrated by the title of his single: 'Dub Be Good To Me' - almost the original, but unique enough for the purposes of collecting royalties. Still, we'd both be living in a strange world if we didn't recognise that there are a good many musicians and punters who'd rather the remixers left other peoples' songs well alone. What does Cook have to say to critics of his work?

"Wake up, we're in the 20th century for God's sake! A song is a song, yes, but people do different versions of songs - Elvis sang 'My Way' slightly differently to the way Sid Vicious sang it. In dance music there is the opportunity to come up with endless remixes - if you've just got one thing binding them together. It's like that Art of Noise track that came out under about four different names and, in the end, it turned out as a completely different track. It started as 'Beatbox' then it was 'Beatbox Version 1', then it was 'Close To The Edit'. Finally, apart from one snare drum, it was a completely different tune, because every time they

remixed it they took a little bit more of the original away.

"Obviously, it depends on the type of music. Drum machine-based dance music and sample-based dance music is open to as many different interpretations as possible as far as I'm concerned. Obviously if you've got a classic recording of a classic track you shouldn't go back and butcher it. I'm not in favour of taking a Bill Withers song, bunging a drum machine all over it and re-releasing it.

"I think there are songs that need to be remixed, there are songs that it would be interesting to remix and songs that should be left alone. There are those that should be left alone, but only on the grounds of taste, not the politics of it. Having said that, it's got to be up to the artist. People say 'what if the artist doesn't like it and it still gets released?'. Well, if an artist is stupid enough to sign a contract whereupon the record company can get someone to do a completely different version of a song and release it without their approval, then they're beyond help. The artist must reserve the right of approval over everything that comes out with their name on it. If someone doesn't like a remix I've done, it won't get released - it's happened before. The Stone Roses got A Guy Called Gerald to remix 'Fool's Gold' and then said 'sorry, we don't like it, don't release it', and it never got released.

"To me, it's a question of taste. If a song is a classic recording that has a really good atmosphere to it and someone ruined it, that would be wrong. If you take a brilliant, heartfelt soul song and indiscriminately bung a drum machine on it, it's a hangable offence - on the grounds of taste, not because things *shouldn't* be altered or mucked about. You know those double-groove records like Monty Python's *Matching Tie and Hanky*? What I'd like to do is get a 20-groove version of one of those and fill it with different versions of a song, so that you never knew what you were going to get. It could be a wildly different version or it could just have a different ending. . ."

But not all styles of remixing draw this sort of enthusiasm from the ex-Martin.

"I must say I'm not in favour of the sort of 'creative' remixing that's used to keep songs in the charts", he proclaims. "I try to do my remixes from an artistic point of view, but some people do it from the point of view of just *needing* another version. If I had my way, all the remixes of a song would come out together. With 'Dub Be Good To Me' we put four different mixes of the same track on the same record - and then another three on the remix. I'd have preferred to put all seven on one double 12-inch in the first place because I think that, when you buy a song, you should be given all the different interpretations in the first place. An idea like that is perfect for CD - they could give you every version including the demo if they wanted. It would be like someone doing eight different versions of a song on the same album, where the only thing that was the same would be the title or the ►

***"It would have been nicest if I'd written, sung and produced 'Dub Be Good To Me', but I'll settle for two out of three - you have to recognise your own limitations."***



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***“It would be like someone doing eight different versions of a song on the same album, where only the words were the same - I suppose it's the ultimate concept album.”***

► words. I suppose it's the ultimate concept album. If I had a killer song, I'd love to do that.”

An intriguing idea - and not without its merits. It's obviously an area to which Cook has given considerable thought: “If I had tons of money, I'd pay lots of people, from Holger Czukay to Malcolm McLaren, to remix my stuff just to hear what their interpretations of it would be - not to release it. I'd just like to hear how other people would treat something I'd done. There are tons of remixers who I rate, people who are really inventive, people like Coldcut, Smith and Mighty, Blacksmith, Dave Dorrell, CJ Macintosh. . .

But describing any song as a “classic”, and therefore exempt from the attentions of the ill-intentioned remixer, brings its own problems. Just what makes any record a “classic”? The question bounces between us. I suggest a classic song must have stood the test of time - retained the elements that made it a success after the era in which it was written has passed.

“I accept that”, concedes Cook. “I suppose the fact that we covered ‘Just Be Good To Me’ helps make that

a classic, but I'm wary of people being precious about old songs. When The Housemartins covered ‘Caravan of Love’ there was one journalist who said ‘of course, I loved the original when I was a kid’, and he said in print that it wasn't as good as the original, but the original version had only come out eight months earlier - and totally stifled. How could he have danced to it as a kid? Why didn't he review it when it came out?

“I wouldn't argue that it's a classic, and I actually prefer the original, but these people suddenly start revering originals that they know nothing about as soon as somebody releases a cover.

“It's like people who aren't respected until they're dead. Everyone regards Otis Redding as a brilliant singer 'cos he's died; Sam and Dave were much better but because they didn't have the decency to die young, they're not recognised by these people. To them, a song doesn't become a classic until someone else has covered it so they can say ‘it's not as good as the original’.

“Our version of ‘Caravan of Love’ didn't get much airplay in this country, but suddenly there were Radio ►

► I DJs playing 'that classic Isley Brothers song'. But it wasn't the Isley Brothers, it was Isley, Jasper and Isley who were the sons of the Isley Brothers, and eight months earlier some plugger was desperately trying to get you to play it on your show and you wouldn't touch it.

"I'm not saying 'Dub Be Good To Me' is a brilliant record, but I've put a lot of time into it and it's been done for the right reasons. It's so easy to be snobby about music, and I'd love to take some of these people out and say 'tell me about it. . .'"

BACK IN SEPTEMBER OF 1988, COMPUTERS did not feature highly in the working environment of Norman Cook. With characteristic honesty he admitted to being "really 'anti' too much technology", and harboured a fear that these machines were secretly engaged in a long-term plan for world domination. Today an Atari 1040 running C-Lab's Creator sequencing software is the nerve centre of his home setup and the 24-track he frequents in Brighton.

"You see, I had a fear of computers because I'd never touched one. We never had them at school or anything; kids today get taught about computers at school. When I was at school computers were these big things in James Bond films with whirring tapes going around. So I was very wary.

"I'd always been wary of them", he continues, "because, to me, they were things that baffled engineers pored over while you were bored in the studio, or they were things that people played games on instead of making music. But I'd never really recognised what they could do. If you know how to use them they make things easier, but I've worked with so many engineers who only half knew what they were doing that it would have been quicker to do it on my old Roland MSQ700. That was until I met an engineer who could do things quicker with his Atari than I could with the MSQ700. We used to have races: me with the sequencer and him with the computer - and he always used to beat me.

"When I was working at home I was using the sequencer, but in the studio he'd be using the computer. It wasn't until Simon was out of the room one day and I thought 'I know he does *that* next', that I had a go - and it all worked. So I've got into it now. Having said that, all I've done is to get a Creator program and learned how to use it. I've made a conscious effort not to buy any games so I don't go off and play *Dungeons and Dragons* all day and I'm not really into the latest updates and all that."

So why is it that hi-tech innovations like synthesisers, samplers and drum machines can find their way into the hearts of most musicians, and yet computers suffer such bad press?

"I think it was the image for me and my generation", ventures Cook. "Computers were something that only 'boffins' dealt with, and I had a fear of pressing the wrong button and blowing up the

world - or erasing everything I'd ever recorded. It's the way computers were portrayed by the media when they were first brought out. The fact that they can all be linked up by telephone and talk to each other made you think 'Jeez, if I press the wrong button, I can empty the Bank of England. . .'. It was the idea that the computer wasn't just a slave - that did things for you, but that it might be more intelligent than you. Or that the computer held this mass of information and that you didn't want to find the button that wiped it all.

"I honestly think it's the snobbery of computer heads who love having their own jargon and everything and take the piss out of anyone who doesn't know step one about computers - they're the same as train spotters really. Whenever you talk to anyone about computers they start talking 'K' and hard disks - I wanted people to explain it to me in English. It took me three months to work out the difference between software and hardware.

"Those people propagate the snobbery of computers, where, if you've just got a few buttons to press on a machine, it's easy. If you see a drum machine that's got play, record and hi-hat written on it, you know where you are, but when you look at something that's got insert, delete, shift and tons of buttons that you don't recognise you sort of think 'where do I start?'.

"No-one has ever stressed to Joe Public the difference between computer programming and computer operating. It's only the programmers that are the boffins and have to talk the jargon. I don't think that Computer Incorporated PR department have ever impressed on people like me that a computer is a tool and it depends on the software what you can do with it: if the software is written for a child of five or your average stupid musician - me - then we can all use it. I've had no problems with Creator except that it doesn't have much of a sense of humour. An SSL desk has a lot of nice little messages for you - there's a series of messages that go 'you can't do that, please try again', then if you do this again it goes 'I've told you once. . .', and if you do it again 'listen, knob-head, this is the third time'. And the guy that's written it had taken the time to write ten insults that ended up like 'listen, penis-breath, your mother sucks cocks in hell'. . . Creator could do with a little bit more flair in there."

Er, if you say so, Norman. But on to things of more import. The art of sampling has had a lot of bad press - not just recently, but ever since the term "sampling" was adopted by the tabloid press as a synonym for stealing. Yet sampling has been going on since the *avant-garde* began splicing together pieces of recording tape and calling it music. How much is the advance in technology to blame for the falling credibility of the technique?

"Sampling can be copying", concedes Cook readily, "but it can be more than that. Every 12-bar blues band ►

**"You could have someone write a really average song, and then someone else who is good musically could turn it into a brilliant single - whose credit is that?"**

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enough songs  
randomly, you'd  
write a good  
one, but which  
one - work it  
out on a  
computer: what  
are the chances  
of coming up  
with a good  
tune out of 12  
notes?”**

is ripping off somebody else. A sampler *is* just another instrument, and it's an instrument that will make far more varied and interesting sounds than an electric guitar. Some people love hearing Eric Clapton play guitar, but it's all been done now. There are only six strings and 12 notes. . . It's pretty obvious which side of the fence I come down on.

“I'd say if you take a James Brown grunt and put it in a different context you're ripping off James Brown less than the Rolling Stones ripped off Howling Wolf, because they copied everything about him. With 'Just Be Good To Me' we're crediting the songwriters and saying it's a cover version, whereas the Rolling Stones used to nick peoples' songs, change one word of the title and call them their own songs - Eric Clapton used to do that as well - and I don't think they should now be turning round and looking at DJs now who're trying to do something innovative. James Brown is now sampling himself, Janet Jackson's *Control* album was done by arguably the two best dance producers of the moment - they could have got the best session musicians and songwriters in, and yet they used samplers.”

Cook has great respect for the people he regards as musical innovators - those people who bring something genuinely new to music. He also recognises that such artists are rarely recognised for their contributions. Genuine innovations are usually regarded as being too much of a risk by the record industry, and are usually passed over in favour of a safe, potentially money-making act. Often it is another artist that recognises the commercial potential of fresh ideas and incorporates them into their own work. Artists eager to further a musical cause rather than cash in on it are fewer and farther between.

“If you look at the charts they're full of the obvious thing,” observes Cook in support of his case. “One of the reasons I'm proud of this single is that I didn't copy the sound that everyone else is making. Say you took the Technotronic/Black Box sound to a record company at the moment you'd get a record contract. We walked into record companies with 'Dub Be Good To Me' and they said 'can't you do something a bit more current sounding?’.

“If you keep innovating you can't stay on line. Big Audio Dynamite I consider very big innovators - sometimes they get it hopelessly wrong and sometimes they're brilliant. But they're always interesting. Innovators are never the big sellers, the big sellers are Technotronic who are just doing the sum total of what the innovators *mere* doing. They've picked the things that have worked out of the innovation in dance music of the last two years. Because of that they've picked the most obvious bits, and because of that the music is ultimately boring. Going back to computers, if you look at the early machines today you'd say they're shit, but if it wasn't for them we wouldn't have today's computers. Prototypes can seem good at the time and bad later, or, like the early synths, they can be seen to

have something very good about them later.”

So what of this technology: musical asset or musical catastrophe? Alongside Cook's Atari are Roland's TR909 and TR808 drum machines and an Alpha Juno 2, yet none of these are the heart of Cook's music. Instead, music itself is the starting point.

“Most of my stuff is based on samples rather than actual instruments”, he explains. “To be honest I walk into the studio with a box of records most days.

“I think technology has made songwriting a hell of a lot easier. Before you had to be able to be able to play the piano or guitar. I like the idea that The 45 King sold so many singles with 'The 900 Number' when he didn't actually write or play it - it was just his idea. But I think it's the ideas that should be credited. Whoever wrote that riff wrote it in the context of another song but to come up with the offbeat idea of finding a loop so appealing that two years later I still love it, is brilliant. It's songwriting credit without the songwriting; it's *ideas* credit. Maybe it's a bad thing that there's so much emphasis on PRS and the songwriting side of the business because you could have someone write a really average song and then someone else who is good musically could turn it into a brilliant single. Whose credit is that? I don't mind personally, because I'm not really interested in money, but there is a problem.

“I put together loads of ideas that don't get used and I'm sure Elvis Costello writes loads of songs he throws away - because they're boring. The secret is being able to recognise the corkers. That is the genius of songwriting. If you wrote enough songs randomly, you'd write a good one, but it's a question of knowing which one it is. Work it out on a computer: what are the chances of coming up with a good tune out of 12 notes?”

If music is the stuff of which Cook's dreams are made, then the money that puts the “biz” in music biz is the stuff of his nightmares.

“The whole distribution of dosh in the music business is heading in some very strange directions”, he says disparagingly. “You've still got innovators starving and you've still got some very talentless gits who are very rich. All the time we've got that situation innovators will not be encouraged to innovate, and airheads will be encouraged to be airheads. If all the money is in doing the obvious thing, why should anyone do anything different?”

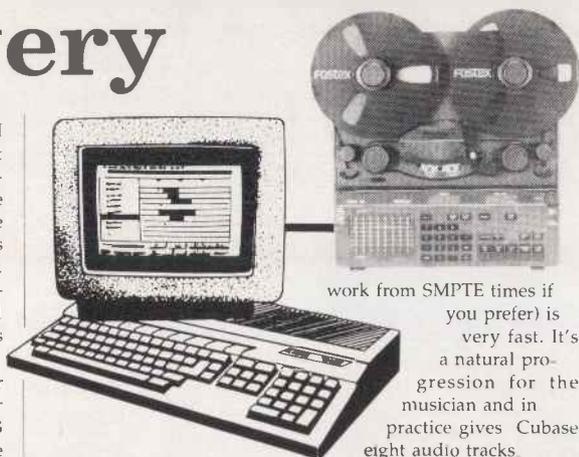
Why indeed. But without an answer to this question, the old arguments about the charts and their integrity will rage forever. Cook appears to be one of a few seeking not to ignore them, but to bring what innovation he believes he can to talent-starved popular music. And he's relying on technology as much as his love of music to help him. It's certainly not a task for a humble bass player: “I was miming the bass on the video for 'Dub Be Good To Me', and I got blisters on my fingers because I hadn't touched it for two years. . .” ■

# Atari Freed From Slavery

Up to now, syncing MIDI gear to tape has meant that your sequencer basically follows a code striped onto one of the tape tracks. But more and more recording set ups are based around a computer.

The new, remarkably inexpensive FOSTEX MTC-1 MIDI time code processor is a response to this shift in emphasis and means that for the first time a computer sequencer, STEINBERG'S 'CUBASE', will control the transport of a multitrack machine the FOSTEX R8.

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work from SMPTE times if you prefer) is very fast. It's a natural progression for the musician and in practice gives Cubase eight audio tracks.

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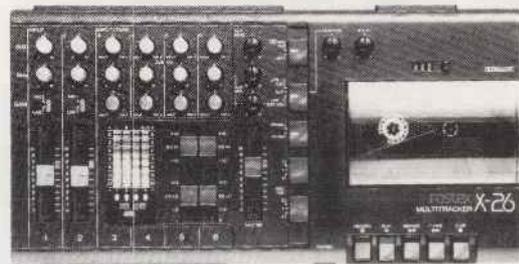
FICTION? The Aiwa HDX mini DAT isn't quite at the price promised, isn't quite here yet, and isn't imported

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FACT Tascam's new DA-30 professional 19" rack DAT has AES/EBU digital I/O's (which ignore copy prohibit code) as well as coaxial consumer digital I/O's, 44.1 and 48 kHz recording, standby facility, 3 cue/review and 9 search functions, plus a remote. At £1179 this unit will be very popular indeed -

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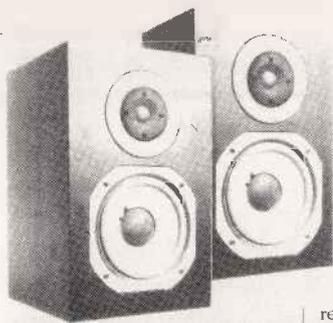
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## The New Reference Monitor?



Accurate monitoring of music makes enormous demands of a loudspeaker. The prolonged use of full bandwidth samplers and uncompressed bass guitars, for example, calls for substantial power handling and the most ruggedly constructed drivers.

After more than ten years, supplying small studio installations we were acutely aware of the lack of an affordable unit properly suited to recording. The available budget 'Studio Monitors' are patently relabelled Hi-Fi speakers that lack the accuracy necessary to ensure that your music sounds as you intended.

The GS115 Studio Reference Monitor has been developed by JBL exclusively for Turnkey to cater for the smaller studio.

The most common complaint of the various brands on offer is the lack of low end response on the smaller monitors and the inability of the medium/large units to reproduce low frequencies at low volume. The options are near field monitoring that ignores much of the bass drum and bass synth parts, or main monitoring at high levels associated with rapid fatigue.

With this in mind we selected the U.S. made JBL 115 bass driver. The voice coil diameter and magnet mass are exceptionally large for a unit of this size. They are resonance matched to a very high density ported enclosure resulting in accurate, punchy bass at high AND low volume levels, which we feel is absolutely unique.

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We feel that the GS115's out-perform anything for at least twice the price, because, fundamentally they are more expensive than our offer price would indicate, and represent a purpose built studio monitor constructed around U.S. made, JBL Professional drivers.

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NOBODY WHO ATTENDS the annual Frankfurt Music Fair can doubt how big an event it is, not only in terms of its size but also its importance to the musical instrument industry. At this year's Fair, held towards the end of March, there was a record total of 1077 exhibitors (an increase of 130 on last year) showing their wares on 80,000 square metres of exhibition space. Bearing in mind the momentous changes which have been taking place in Eastern Europe recently, 20 of those 1077 exhibitors were from

eastern bloc countries. That Frankfurt is an event of international importance is clear from the fact that a total of 597 companies from 36 countries abroad were exhibiting, while, on the first trade day alone, visitors from 70 countries registered - almost double last year's figure.

Enough of the statistics - what about the gear? New synths from Roland, Korg, Peavey and Ensoniq were making their European debut. Anyone who played them can hardly have failed to notice that

synths are sounding more and more alike these days. Or maybe it's just the presets which give that impression.

Peavey finally launched their DPM3 synth in Europe (it's been available in the States for a while) with a suggested selling price of £1899. DPM stands for Digital Phase Modulation, but don't let that put you off. In practice the DPM3 is modelled on a traditional subtractive synthesis architecture, with two oscillators, two DCAs and a filter, an LFO, a dedicated amplitude envelope and three assignable envelopes - all accessible from dedicated front-panel buttons. As has become the norm since the D50 and then the M1 came on the scene, it's the breadth of source samples available for the oscillators which provides the basis for the synth's sonic versatility.

The DPM3 has a 61-note velocity- and channel aftertouch-sensitive keyboard and is 16-voice polyphonic, 16-part multitimbral with dynamic voice allocation across the parts, and has 16-bit sample quality. Its front panel looks very chic but at the same time has been designed with accessibility and ease of use in mind. In addition to its synthesis capabilities the synth has all the paraphernalia of the workstation - onboard nine-track sequencer with 20,000-note capacity, programmable drumkits, built-in 3.5" floppy disk drive, and sophisticated digital effects with 24-bit processing and up to four simultaneous effects - but Peavey have opted for the description "Composition Centre" instead. A notable feature of the DPM3 is its onboard 64K sample RAM (expandable to 512K) which allows new waveforms to be loaded off disk or via MIDI; the RAM is battery-backed, which means that your samples don't disappear when you switch the DPM3 off.

Peavey are keen to point out that the DPM3 is totally software-based, by which they mean that it implements all its sound generation in software using DSP chips, rather than making use of specially-developed chips tailored to a specific synthesis system. Consequently, the argument goes, the DPM3 brings to the synthesiser the same concept of software upgradability which we take for granted with computer-based sequencers these days. The company claim that they could, for instance, introduce FM synthesis alongside the DPM3's existing synthesis capabilities. But for the moment the existing DPM3 offers plenty to be going on with, thank you very much.

Roland's new flagship synth, the D70 Super LA Synthesiser (£1799), builds on ▶

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► the D50 concept by introducing multisampled "complete" sounds alongside the attack samples and loops, and two ROM card slots which provide access to a further library of samples - new dedicated cards and U110 series cards. The D70 is 30-voice polyphonic and six-part multitimbral, and includes a drumkit section which can be played as part six, while the inevitable signal processing offers a range of reverb, delay, chorus and flanging effects.

D70 patches utilise up to four Tones, each of which is routed through a TVF and TVA after being mangled by Roland's new Differential Loop Modulation processing, which allows you to define the start point

of which can be routed through its own filter and amplifier and modified by two assignable LFOs and an envelope. Each oscillator can draw on one of 365 internal waves or further waves on a plug-in ROM card. Alternatively an oscillator can be assigned one of 32 preset or 96 user-programmable wave sequences of up to 256 steps; each step can be assigned pitch and duration values, allowing you to create melodies and rhythms, while crossfades between steps allow you to move smoothly from one waveform to another. Wave sequences can be referenced to an incoming MIDI clock.

The four sounds per Patch can then be mixed dynamically in time using a front-panel joystick or a four-point mix envelope, a feature which has its roots in the vector synthesis of Sequential's Prophet VS synth; this is hardly surprising, as some of the old Sequential design team were responsible for the WaveStation.

Up to eight Patches can be combined to create a Performance. Each Patch has its own key and velocity range settings, allowing you to create all manner of keyboard textures; additionally, as each Patch can be set to transmit on its own MIDI channel, you can "echo" the WS

texture on external MIDI instruments, making the WS a sophisticated MIDI controller keyboard.

The WS also introduces matrix modulation-type facilities, with 13 modulation sources assignable to five destinations (amp level, filter cutoff, oscillator pitch and mixer x-axis and y-axis), while the built-in stereo digital multi-effects can now have selected parameters controlled in real time from a further 12 modulation sources. All in all, the WS looks as if it has plenty of potential to offer to the adventurous programmer.

Frankfurt also witnessed the debut, at last, of Korg's 16-bit S3 Rhythm Machine (£899), which has several interesting aspects to it. For a start, the attack and decay components of the drum and percussion sounds have been stored as separate data, which means that not only can you combine the attack of one instrument with the decay of another, you can also tune the decay portion of a sound but not its attack portion, which can give a more natural response.

The sequencer song section (8,000 notes internal, 16,000 notes with the addition of a RAM card, 96ppqn resolution) has eight tracks: four pattern-

based and four continuous, making it easy to overdub extended percussion workouts over pattern-based accompaniments. The S3 is also equipped with SMPTE in/out, making an additional synchroniser unnecessary when syncing to tape or video, and can interface with MIDI Time Code. Unusually for a drum machine, the S3 has two built-in stereo multi-effects units, which can be used in serial or parallel configurations. The rear panel offers MIDI In and two MIDI Outs, plus L/R stereo audio outputs and four individual polyphonic outs.

**Ensoniq** have a new synth in the form of the SQ1 (£1189) which fits into the workstation category. Basically it simplifies the VFX's synth section and front panel while retaining much of the onboard sequencing sophistication of the VFX SD; it doesn't have the SD's onboard disk drive, but patches and sequences can be saved to a RAM card. The SQ1 has built-in digital effects and an increased selection of drum and percussion sounds, while its 61-note keyboard is velocity- but not aftertouch-sensitive (channel and polyphonic aftertouch are responsive over MIDI, however). The onboard sequencer doesn't restrict you to recording single-patch musical parts: for instance, with bass and piano sounds assigned to tracks one and two and given appropriate keyboard ranges, you can quickly summon up a bass/piano split and record two musical parts together by clicking and double-clicking on the relevant dedicated Track buttons in familiar Ensoniq fashion.

Meanwhile, the VFX and VFX SD are getting the software update treatment with the addition of a distortion effect algorithm and, for the SD's sequencer, multiple track recording and step entry of mixdown information.

The new Yamaha synth range - SY77, SY55, SY22 and TG55 - has already been covered in MT, and there were no additions at Frankfurt. Neither Kawai or Casio had anything new in the way of synths, samplers or drum machines, both companies seemingly concentrating their efforts on the home keyboard market. However, **Kawai** did reveal that this year's BMF would see the launch of a synth called the KL1, which will cost around £400 and have a 61-note velocity-sensitive keyboard, 16-bit sound quality, editable sounds, built-in rhythms and plug-in sound cards, and will represent a step on from the K1 technology. The company will also be launching a new drum machine to replace the R50E, though no further details were available.

Frankfurt did see the launch of three



Cheetah SX16K

and loop length of the sample and then process it with loop modulation. By allowing you to substantially alter a sample before you reach the filtering stage, the D70 introduces a new degree of flexibility into the traditional subtractive synthesis model.

The D70 has a 76-note weighted synth keyboard which provides attack and release velocity and channel aftertouch (the synth can also respond to poly aftertouch via MIDI). Roland have taken an encouraging step in the direction of old-style synth front panels with the inclusion of four sliders and associated buttons. These allow you to balance the levels of the four Tones and to switch them in/out when you're in play mode, while in edit mode they provide equal editing access to all four Tones for the currently-selected parameter.

**Korg's** new synth, the 32-voice polyphonic WaveStation (£1575), ditches such workstation accoutrements as the onboard sequencer and dedicated drumkit section, and sees the company getting back to the idea of a synth as an instrument which allows you to be creative rather than re-creative with sound. Each Patch can have up to four oscillators, each

new audio units from Kawai, the EQ8 1U-high 19" rack-mount eight-channel parametric equaliser (£199) with level and frequency range and slope settings for each channel, the PM802 2 x 10 watt powered speakers (£139) complete with mixer offering two music and two hi-fi inputs, and the compact MX16 16:2 mixer (£599) which offers three effects sends/returns (mono/stereo) with separately adjustable return levels, separate master and record outs, built-in dynamic noise reduction, and switchable mic/line input gain, treble and bass, pan and three effect send level controls per input channel.

Kawai are also trying their hand at budget computer music in the form of the FunLab system. In fact this is a three-way collaboration between Kawai, Commodore and Steinberg, providing an integrated system of Amiga 500 computer, Steinberg software and Kawai keyboard and a MIDI interface (In, Thru and two Outs) and accessory speakers. The software gives you a five-track sequencer, a synth editor, a "jukebox" for playing pre-recorded contemporary and classical music, real-time graphic indication of played notes, and computer-aided programming of various keyboard functions.

Back in the early '80s **Roland** were involved in computer-based music systems through their Amdek range. More recently as part of their Desk Top Music System they've developed the CM range of computer music sound modules and peripherals, and now they've introduced Tentrax, their own Atari ST-based ten-track sequencing software which has been optimised for playing and controlling the CM range; the 49-key, velocity-sensitive PC200 MIDI Keyboard Controller for use in conjunction with the modules via the ST and Tentrax; and the CP40 Pitch-to-MIDI converter.

Other new items from Roland include the M12E 12-channel rack-mount mixer, U220 rack-mount version of the U20 sample player, SN550 Digital Noise Eliminator, MC50 MicroComposer, MV30 Studio M (a combined sequencer and multitimbral sound source), and SPD8 Total Percussion Pad (£399).

At the other end of the price scale, the company were finally showing their answer to Akai's S1000 sampler, the S770 linear 16-bit stereo sampler. The S770 has 16-bit ADCs, 20-bit DACs and 24-bit internal processing, comes with 2Mb of sample RAM fitted as standard, upgradable to 16Mb, and offers a choice of 22.05kHz, 24kHz, 44.1kHz and 48kHz sample rates; the standard memory offers 22.5 seconds

of mono sampling time at 44.1kHz, while with the fully-expanded memory this increases to 181.8 seconds. A built-in 40Mb hard disk allows 2Mb of data to be loaded in 3.5 seconds; a 3.5" floppy disk drive has also been included. Monochrome and digital RGB monitor outputs can be utilised as an alternative to the onboard LCD screen.

Sample data can be transferred via MIDI in Sample Dump Standard format. Coaxial and optical digital audio connections conforming to the AES/EBU standard allow direct digital transfer of audio data between the S770 and a DAT machine, direct digital sampling off CD, and signal output to effects units with digital I/O connections, such as Roland's R880 digital reverb and E660 digital EQ. Analogue audio connections are catered for by L/R stereo outs and six individual polyphonic outs, while a SCSI connection allows you to hook up further hard disks, Roland's CD5 CD ROM player and their new M07 Magnetic Optical Disk Unit.

The S770 is 24-voice polyphonic, 32-part multitimbral and responds on 16 MIDI channels at once. Digital TVF, TVA and LFO processing is included, and a re-sampling function which combines two samples into one of six selected algorithms to create a new sample; these algorithms include TVF, TVA and a Ring Modulator for added synthesis capabilities.

Sophisticated high-end samplers like the S770 and the S1000 are blurring the distinctions between musical instrument and digital recorder. In fact, Roland will be entering the digital recording market with the DM80 four-track hard disk-based recording system, which wasn't on public show at the Fair.

Not to be outdone, **Korg** announced their intention to enter this potentially highly lucrative market by displaying the Digital Audio Workstation, an eight-track hard-disk recorder packaged in a dedicated mixing desk format. I say "intention to enter" because the recorder wasn't so much as winking an LED at passers-by, nor were Korg saying when it might pass the intentional stage and become actual.

One hard-disk recording system which is very much actual - in fact, already well-established - is **Hybrid Arts'** stereo ADAP II for the Mega 4 ST. The system has been available since May '89, and Hybrid Arts have sold over 300 worldwide. It's being used by major film companies such as Todd AO/Glen Glenn, Twentieth Century Fox and Paramount to edit music, design and spot sound effects, and edit dialogue, and was most recently used for post-

production work on *Honey, I Shrunk The Kids* and *Born on the Fourth of July*.

ADAP II comes in four rack-mounting modules: Analogue Audio, CPU, DSP and Hard Disk, but allows you to hook up a maximum of seven drives, each of which can have a capacity of from 170Mb to 760Mb, giving you from approximately 12 minutes to 48 minutes per disk at 44.1kHz. New ADAP II features include an extended Play List with manual and MIDI triggering of events, crossfade editing with user-programmable length and type, scrub editing (which simulates tape reel-rocking to ease location of editing points), a MIDI performance page which allows you to play samples via MIDI using four stereo or eight mono voices, optical connectors supporting AES/EBU and S/PDIF formats at rates up to 48kHz, and an erasable optical disk drive option for archiving. The company have also recently announced the release of the TIME Page, a software program for ADAP II which performs time compression and expansion  $\pm 50\%$  on recordings.

At the other end of the price scale, Hybrid Arts have developed software which allows you to play and edit the sounds of the budget FM Melody Maker cartridge for the Atari ST (reviewed MT, December '89) from within their EZTrack Plus entry-level sequencer; the Melmak software comes free with the sequencer. Meanwhile, the company's GenEdit generic patch editor/librarian software for the ST has been given M.ROS and Softlink compatibility, allowing it to run with Steinberg and C-Lab software respectively. GenEdit is also now available for the Mac.

A new British company, **Lynett Systems Ltd** of Cambridge, are entering the digital recording fray with ADAC-SE, a £499 sampling card which allows the Mac SE with at least 1Mb of memory to be used for 16-bit stereo direct-to-disk recording and playback. Utilising a 25MHz DSP with 32-bit processing, 16-bit ADCs with variable sampling rate up to 48kHz and eight 16-bit audio outputs, ADAC-SE allows non-destructive editing of recordings, graphic editing with X and Y direction zoom, waveform drawing and amplitude enveloping. The ADAC-SE software (which effectively comes free with the board) also allows you to assemble cue lists of hard disk files which can be synced to an external time source via MIDI Time Code if required; sensible software allows inserting and deleting of cue sheet events with automatic time adjustment of subsequent events. ADAC-SE can also be used as a multitimbral MIDI sampler (16-part) with dynamic voice allocation, ►

- ▶ velocity and aftertouch responsiveness, pitch wheel control and keyboard splits.

Steinberg unveiled TOPAZ, their hard disk-based digital recording system for the Mac II range, together with the Mac version of Cubase, while Cubase on the ST has now reached v2.0 and includes the intriguing Interactive Phrase Synthesiser page, which processes notes rather than sounds through a synthesiser-like architecture, along with enhanced score-writing features. The new Cubeat appears to be a scaled-down version of Cubase, not dedicated rhythm-programming



Korg 33

software as its name might lead you to think. The program is compatible with M.ROS and with Cubase, Pro24 and Standard MIDI Files sequences, and comes with a free universal SysEx desk accessory, Satellite, which allows macro editing of Synthworks sound banks. Cubeat runs on any ST with at least 1Mb of RAM.

Amiga owners who've been feeling left out in the cold will soon be able to check out Pro24 Amiga, which is more than just a straightforward adaptation of Pro24 III on the ST; and can take advantage of Steinberg's own Amiga MIDI interface. The company's impressive Synthworks range

of patch editors is augmented with an editor for Yamaha's SY77 flagship synth which includes the ability to convert DX7 patches into SY77 equivalents. Users of Avalon, Steinberg's generic sample editing software, will be pleased to know that the company have developed a 16-bit D/A board which allows you to listen to samples edited in the computer before transferring them out to your sampler(s). Finally, Cubase owners who require more MIDI Ins and Outs but don't want to buy an SMP24 for the privilege can now invest in MIDEX or MIDEX+ instead. MIDEX combines four MIDI Outs and two MIDI Ins with a key expander offering four slots, while MIDEX+ adds SMPTE/EBU timecode synchronisation facilities.

The integration of hard-disk recording and MIDI sequencing looks set to be one of the most significant developments of the early '90s.

Digidesign, developers of the Sound Tools stereo hard disk-based recording system for the Mac SE30 and II, have decided to go the route of co-operating with established sequencer developers. They've got together with fellow US software house Opcode Systems to produce Sound Tools + Digital AudioVision, an integrated MIDI sequencing and digital audio recording system which combines Sound Tools with Opcode's Vision sequencing software for the Mac. Expected to be available in May, the system will allow independent recording, editing and playback of two digital audio tracks, simultaneous editing of MIDI and digital audio data, non-destructive graphic-based editing, and automated mixing with dynamic control over volume and panning.

Atari owners needn't feel left out, as Digidesign have also developed an Atari version of Sound Tools (though you'll need a Mega 2 or Mega 4 to run it) and are currently in discussion with C-Lab about integrating Sound Tools and Creator/Notator.

C-Lab introduced new software for the Atari ST in the form of The Education System, a collection of three software programs: Notator Alpha (which concentrates on the notation aspect of Notator), Aura (ear-training and rhythm-training software) and MIDIA (MIDI education and analysing software). All three programs can operate simultaneously under C-Lab's Softlink multitasking operating system, providing you have a Mega 2 or Mega 4, or a

1040ST upgraded to 2MB.

Polyframe is the name C-Lab have given to a new modular system which allows patch editor/librarian software to co-exist in an integrated environment; programs so far available for the Polyframe environment are PM-SY, PM-VFX, PM-T (the latter for Korg's T Series synths).

Cheetah introduced the Master Series 770 (£849.95), a polyphonic aftertouch keyboard version of the Series 7P which retains the latter's well-balanced feel; the MD16 drum machine and a rack-mount version, the MD16R (still not quite finished, but tantalisingly near; £299.95 and £349.95); expander and five-octave keyboard versions of the SX16 sampler (ditto, £799.95 and £1199.95); and the three-piece Pod electronic drum kit (£159.95).

The most interesting new development from Akai, technologically speaking anyway, is the DD1000 optical disk recorder (estimated cost under £10,000), the first digital system to record to and play back from optical disk rather than use it for archiving. The S1100 sampler (around £3499) is essentially an enhanced version of the S1000, offering improved s/n and dynamic range, real-time digital effects, SMPTE reader/generator and cue list programming, and RAM expandability up to 32Mb.

Other new items from Akai are the EW13000 electric woodwind instrument and EW13000M sound module (£699 together), the DIF1200 AES/EBU Digital Interface (£1399 excluding VAT), Klotz AFC1, 12 Format Converter (£1499 excl VAT), the PG55 digital piano (£3750) and the XR10 16-bit digital drum machine (£369).

Last but not least, the name that was on many people's lips: the enigmatic Zoom Corporation who, as sub-contractors, have had a hand in some of Japan's most successful musical equipment. Now they're stepping out in their own right with two digital effects units, the Walkman-sized 9002 (£349) multi-effects processor which offers 11 16-bit guitar effects yet can fasten to your belt or a guitar strap. The 1U-high 19" 9010 (£1299) offers 22 16-bit effects and the option to access more off ROM card, and provides four effects configurations including four truly parallel effects. TSC have picked up the UK distribution. The company are planning to follow up the 9010 and 9002 with a couple of synthesisers. Zoom are going to make a splash, for sure.

And that's all folks - until the British Music Fair, at least. . . ■

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Chick Corea - Electric Band	£11.95
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The Yamaha DX7 I/II/IFD	£ 8.95

## Ferro Music Technology

MIDI Resource Book	£11.95
The Secrets of Analogue and Digital Synthesis (inc. 120 minute VHS video)	£ 54
The MIDI System	Exclusive Book £ 19

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Roland D20	£1067
Roland U20	£895
Roland Juno 6	£199
Roland Jupiter 6	£499
Korg Poly 800 Mk I	£299
Korg Poly 800 Mk II	£184
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JHS Microphone mixer	£ 49

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C-Lab Notator 'SL'	£499
C-Lab Unitor-Notator pack	£834
C-Lab Unitor-Creator pack	£648
C-Lab Creator to Notator upgrade	£200
C-Lab Creator to Unitor C upgrade	£349
C-Lab Notator to Unitor N upgrade	£349
<b>C-Lab Editors</b>	
C-Lab Explorer MT32	£110
C-Lab Explorer 1000	£ 89
C-Lab Explorer M1	£110
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**HI-TECH EQUIPMENT**

# THE PIONEER

**In a career that  
has spanned  
over 30 years,  
György Ligeti  
has helped  
pioneer  
electronic  
music, braved  
Russian tanks in  
order to listen  
to Stockhausen,  
and contributed  
to Kubrick's  
classic 2001.  
Interview by  
Simon Trask.**

"I HAVE TOO MANY INTERESTS AND therefore not enough time to compose!", György Ligeti jokes as we sit in the lounge of the Waldorf Hotel in the Strand. The 66-year old composer is in London for *Ligeti by György Ligeti*, a series of concerts of his own and other composers' music, chosen and scheduled by him, which is being held at the South Bank arts complex. We meet towards the end of the series, and it's clear that the hectic schedule of rehearsals and concerts has been tiring for him.

Ligeti's career as a composer of "serious" music spans some 33 years, in which time he has written around 40-50 compositions. He's still active in his chosen profession, and judging by the consistently well-attended concerts at the South Bank, he still has a strong following, too - a far cry from the often ephemeral world of popular music.

The composer's music is perhaps best known through the (unauthorised) use of extracts from three of his compositions - *Atmospheres*, *Requiem* and *Lux Aeterna* - in Stanley Kubrick's classic sci-fi film *2001: a Space Odyssey* from 1968. In fact, his music worked so well in this filmic context that he could have gone into a lucrative career writing film music. Yet, despite the fact that he was barely eking out a living from his music at the time, he chose to avoid the easy option, feeling that the requirements of writing for film would inevitably have a corrupting effect on his approach to composition.

Ligeti's own musical tastes are wide-ranging. Anyone who can devise a musical evening which begins with mediaeval vocal music in the form of Guillaume de Machaut's *Messe de Notre Dame* and ends with close-harmony versions of songs by the Beatles and U2 (all performed by The King's Singers) can hardly be accused of having restricted taste.

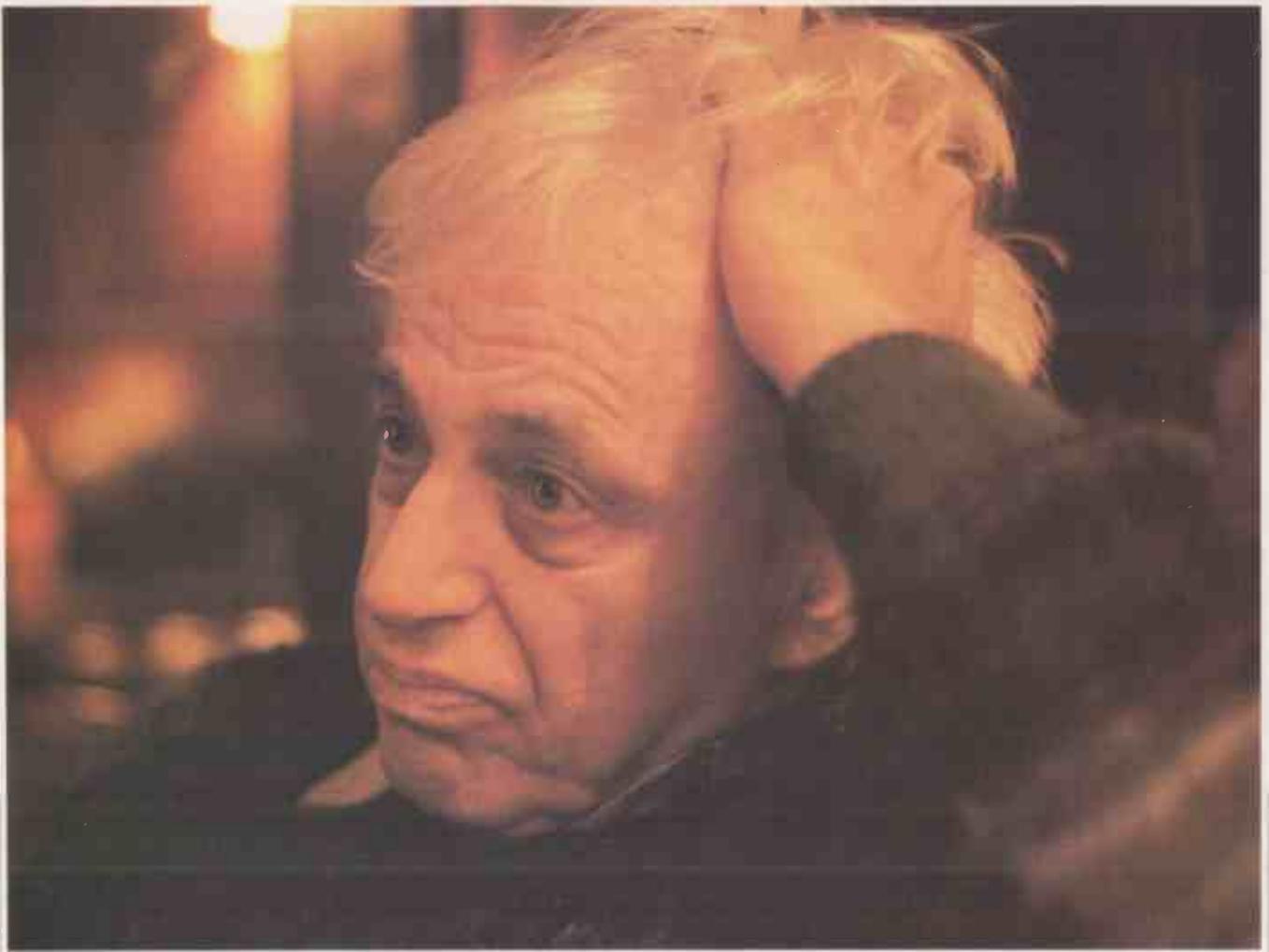
"I don't want to maintain a rigid division between so-called serious and non-serious music", Ligeti



confirms. "I have a son who is a percussionist and composer, and who works in the no-man's land between serious and popular cultures, and I think it's a very important and interesting area."

Although Ligeti first came to prominence in the West as part of the post-war generation of European *avant-garde* composers which included Stockhausen and Boulez, he was already 33 years old when he fled from Hungary to West Germany in 1956 following the Russian suppression of the Hungarian uprising. He had grown up in Rumania and Hungary and, as a Jew, had spent part of the Second World War in a labour camp, narrowly avoiding being sent to Auschwitz and certain death (his father and brother weren't so lucky). Following the war he studied at the Academy of Music in Budapest, and then from '48-'53 experienced the life of a composer under Stalin's totalitarian regime, where all composers had to be a member of the composer's union in order to get manuscript paper, and had to submit their music to a committee if they wanted it performed or published. Music had to be populist, which meant tuneful and diatonic, or it was rejected; Ligeti recalls having some songs rejected because they contained dissonances.

Coming from such a society, he had developed a dislike of what he has referred to as "slick phrases, attractive philosophical systems" and a disinclination to become a member of a *clique*, preferring instead to follow the star of his own intellectual curiosity. Consequently he rejected the increasing refinement of melody, harmony and rhythm sought by the total



PHOTOGRAPHY: ADAM JONES

serialists with their abstruse arithmetic calculations, yet at the same time he was not prepared to adopt the abandonment of compositional control sought by the aleatoric, or “chance music”, composers - which isn't to say that he wasn't influenced by the new generation of composers.

“Stockhausen had a deep influence on me”, he affirms. “Pieces like *Gesang der Jünglinge* and *Gruppen* are among my favourite pieces of the '50s. Also Boulez's *Le Marteau sans Maître* was a model piece for me. These works had a very strong impact on me. Not so much Cage's music, though; with him it was more the attitude, a philosophical thing.”

Ligeti had decided from the beginning of the 1950s that he had to write a radically new music for his own benefit, while at the same time making arrangements of Hungarian folk songs for performance and publishing under the Stalinist regime. This meant moving beyond the music of Bartok and Stravinsky, his previous models, as he began formulating ideas for a “static” music in which melody, harmony and rhythm would no longer be formal elements, and in which there would be separate musical parts without being discernable as such. All of which meant there would no longer be any tunes. This music would have a “neutralised” sound, somewhere between music and noise, and would change through a process of gradual transformation. Around 1950, Ligeti could hear this music in his head, but he couldn't figure out a technique for notating its metre and rhythm.

The composer first heard about electronic music through a radio program in the early '50s, though he

didn't actually hear any until 1956. In fact, getting to hear any of the new music that was being made in the West was almost impossible, as the authorities in Hungary were jamming foreign radio broadcasts up until the time of the Hungarian uprising in 1956. Ligeti recalls that on 17th November that year, when Russian tanks were putting down the uprising and bombs and bullets were flying everywhere, he left the safety of his cellar in order to be able to hear the first radio broadcast of Stockhausen's *Gesang der Jünglinge*.

“I had heard about electronic music, and the idea interested me that the composer could do everything, starting from sine tones and putting them together through Fourier synthesis to make a totally new music”, recalls the composer. “So from '52-'53 it was my dream to go to Cologne. There were two electronic music studios at that time, one in Cologne and one in Paris; soon after there were also studios in New York and Tokyo, we learned. My idea was to go to Cologne and work in the studio there, but it was not possible to travel out of Hungary. However, this was not the main reason I left Hungary after the revolution in 1956; it was not for electronic music but because I hated the political situation.”

Ligeti had already been corresponding with Stockhausen and Herbert Eimert, the directors of the Cologne studio, and following a hair-raising escape to the West (which he relates in Paul Griffiths' book about him) he gained a scholarship, with their help, which allowed him to work at the studio. He ended up working there for two years, from '57 to '58. ▶

**“Long before I knew about fractal geometry I had in my music this phenomena of turbulences, of order transforming into chaotic structures.”**

► “That period at Cologne had an absolutely crucial influence on my musical thinking, even after I stopped producing electronic music”, Ligeti acknowledges. “The studio was deep underground because it was an atomic bomb shelter for the radio station. If there was a war then the station would continue broadcasting from this studio, but until that time it was a place where none of the radio people wanted to go.

“For us it was a very exciting and a very cordial atmosphere. Everybody had the feeling that we were real pioneers, the real *avant-garde*, and that this was the real new music that we were making. We felt that we were doing the right thing, and we felt very important. We had three tape recorders, so it was possible to put two tape recorders together to synthesise something and record onto the third. We also had some very simple measuring equipment which was not designed for the studio, like sine-tone generators, and filters to take white noise out of a signal. But our main instrument was the anti-magnetic scissors, because we had tens of thousands of small bits of tape to put together. It was all very primitive if you think what is possible today with computers and synthesisers.”

While at the studio, he studied phonetics and psychoacoustics and produced two pieces of electronic music on tape during his time at the Cologne studio, *Glissandi* and *Artikulation*. However, ultimately the technology of the day was just too primitive to allow him to achieve the results he wanted, a fact which he discovered when he tried to realise the score of a third piece.

“I wrote the score on millimetre paper and it was composed of sine tones”, he explains. “I wanted to go into a very high-level complexity, because I was interested in producing difference tones and combination tones. The music was made of 48 different layers with changing harmonic spectra. I had to start two tapes on two tape recorders and record onto a third, and then I could take that tape and another tape and record them onto the third tape recorder; in that way I could build up the layers. But ultimately it didn't work, because we had no means of synchronisation; even though we had very stable power supplies, after half a minute the two tape recorders would not stay together, which meant that I couldn't get the very delicate, exact changes in harmonic spectra that I wanted. This was one problem: the poor technology. We could only use existing machines that the radio station lent us, we had no money. The studio was official, but it had no real financial support.

“Another thing was the quality of sound. With so many layers there was always a lot of noise. We had the possibility to filter noise, but even so the final sound was noisy and ugly. Also I got bored with electronic sound, with the sound always coming from loudspeakers.”

But working at the studio gave him a new way of thinking which allowed him to achieve with acoustic instruments the music he had been thinking about since the early '50s.

“I was very much into the imagination of sound, and in *Apparitions* and *Atmospheres*, my orchestral pieces which followed, I went into the composition of sound. Although the harmonic spectra of instruments in the orchestra are more complex than a sine tone, I used the instruments as if they were sine tones, making a complex sound from elements.”

The result is a floating, almost ethereal music with a constantly shifting overall timbre in which rhythm has been,

to use Ligeti's term, “neutralised” and individual instrumental parts are not discernable to the ear. In *Atmospheres* there are at first 48, and then later 56, instrumental parts - echoing the 48 layers of sine waves he attempted to create in the electronic studio - unfolding a dense canonic structure, yet what you hear is an impenetrable texture of sound. Ligeti gave this kind of densely-woven polyphony, which you can see on paper but not perceive aurally, the name “micropolyphony”.

He had learnt from his study of psychoacoustics that we cannot tell in what order consecutive notes of less than 50 milliseconds duration follow one another, with the result that consecutive pitches are actually heard as a continuous chord, and rhythm is created by changes in pitch. He recalls watching composer Gottfried Michael Koenig splicing together small bits of tape in such a way that the duration of several notes was less than 1/20th of a second, with the result that a six-note tune, say, became a six-note chord; through countless edits he was able to produce both an impression of polyphony and what Ligeti refers to as “a strangely blurred tune” through a gradually changing pattern of sound.

He sought to apply to instrumental music what he had learned from Koenig, as a means of “creating transformations in the ‘molecular state’ of sound”. But as he couldn't expect any instrumentalist to play upwards of 20 notes a second, he built the rhythmic shifts into the music by having, say, 24 violinists playing almost identical figurations with a slight time-lag between each one.

In this strange music Ligeti effectively “dissolved” the functionality of harmony into a complex chromaticism made up of diatonic individual lines. In subsequent compositions he developed the idea of using fluctuations in intervallic and harmonic simplicity and complexity - so-called “interval signals” - as a means of generating “form”, and by the time of his orchestral piece *Melodien* in 1971, he was using bold, wide-ranging melodic lines, even if they were still buried in a dense polyphony.

**TODAY LIGETI'S INTERESTS EXTEND BEYOND** music to subjects which he regards as having an analogous relationship to the techniques he uses in his own music. As he explains:

“There are styles of music or writing or science which interest me because in my music I order the work in this direction. For instance, in science I am interested in deterministic chaos, fractal geometry; I read all the books I can on this. Long before I knew about fractal geometry I had in my music this phenomena of turbulences, of order transforming into chaotic structures. It's not fractal music; it would be pretentious of me to say that I did fractal music before fractal geometry was developed. But it's an analogous way of thinking on this question of order so complex that it makes a jump into turbulence.

“I'm also very much interested in the visual arts, and in new technological advances like holograms. I feel very close to this because, like anybody who has a scientific orientation, I'm interested in the visual art of Escher, in the quality of imagination in his work. Also I am interested in visual complexity because this is an analogy to the kind of polyphonic music which I write, and so I like ornamental art such as mediaeval Irish art and also Islamic art.”

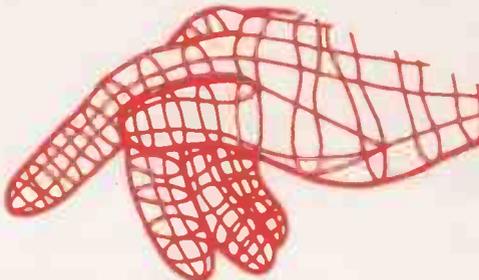
In the past eight to ten years Ligeti has become ►

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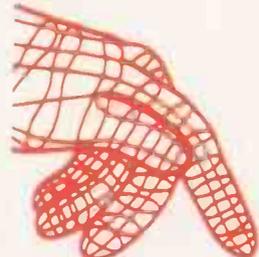
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**IN TOUCH WITH TIME**



**“Whether we want it or not, the existence of the computer has changed everything in our lives, and all the arts are more and more deeply affected by technology.”**

► increasingly interested in what he terms the “high polyphonic cultures” of Africa and Indonesia. These he regards as being more sophisticated rhythmically than the contrapuntal music of JS Bach. His own music has been moving steadily in the direction of complex polyrhythms, and he is keen to destroy Euro-centric attitudes to music. As part of the *Ligeti by György Ligeti* series, the composer has chosen to include a lecture concert entitled *Rhythmics and Polyrythms in Africa* in which Paris-based Israeli musicologist Simha Arom, accompanied by three African drummers, delivers a fascinating and revealing musical analysis of the rhythmic complexity of traditional African music.

“I like very naively the Latin American popular commercial music, such as Brazilian samba, Cuban rumba and also salsa, which is of course the music of New York”, Ligeti explains. “My interest in this music led me to Africa; I’ve never been there, but through recordings and books I became an aficionado of African music south of the Sahara. Another area which has interested me for a long time is Balinese and Javanese gamelan music. My own music is based on complex polyphony, so I’m interested in African and Indonesian music because I’m interested in other cultures which use other kinds of complex polyphony. New Guinea and the Melanesian islands also have very interesting and very different polyphonic music, and I also have an interest in the polyphonic culture of the music of Soviet Georgia - it’s not very well known music, and I only by chance heard two recordings of this music.”

For Ligeti, part of the excitement of discovering these polyphonic musical cultures lay in their use of similar musical techniques to those he had already used in his own music.

“In my harpsichord piece *Continuum* from 1968, the notes are played at high speed but very evenly, and after a while you forget that it’s a uniform high-speed pulsation, and you hear melodic and rhythmic structures behind it which are illusory - which depend on the recognition of certain pitches. I found later in African music a very similar result, though I had no knowledge of this music when I wrote *Continuum*. In the mid-’80s I heard South Bugandian music for the first time, Amadinda and Akadinda xylophone music with six players. They had this very even pulsation, with over ten pulses per second, but the ears hear illusory patterns, like the visual effect a stroboscope has. Then I found pieces of music in many other areas of Africa which were so close to what I did, and I became more and more interested in this technique.”

The impetus for *Continuum* came from Ligeti’s interest in developing a hard, mechanical music, which came about as a reaction to what he has referred to as the “soft” music of earlier pieces such as *Apparitions* and *Atmospheres*, in which he “neutralised” the rhythmic side of his music. The composer also puts the origins of his fascination with “mechanico-type” music down to a story he read when he was five years old, about a widow who lived in a house full of clocks, and to Charlie Chaplin’s film *Modern Times*, which he recalls as being one of the great movie experiences of his childhood. He has been quoted as saying that “recalcitrant machinery, unmanageable automata have always fascinated me”.

Ligeti had already discovered from his time at the Cologne music studio that mechanical devices (in this case tape recorders) which should theoretically run at the same

speed don’t actually stay in sync with one another. In 1962 he “composed”, no doubt with a mischievous twinkle in his eye, a piece called *Poeme Symphonique* for 100 metronomes, which required ten operators to set 100 metronomes ticking and then leave them to their own devices (sic), until their clockwork mechanisms ran down. The cacophony of tickings as the metronomes moved steadily in and out of sync with one another produced a madcap mechanical music which, nonetheless, gave Ligeti ideas about developing a new kind of rhythmic music. Sadly, three years later a planned tape collage piece, *Les Horloges Bienveillantes*, which would have replaced the tickings of the metronomes with snatches of music including Bach motets and French military marches, was frustrated by legal constraints.

Around the time of *Continuum* Ligeti met Terry Riley, and when in 1972 he went to the States, he heard Steve Reich’s music. His music does have certain affinities with Riley’s repeating phrases and Reich’s phase-shifting technique, but any similarities arise from a common interest in process as a structuring principle in music.

“I feel in my thinking closer to a static thinking than to the idea of thinking of time as closed, as an object” Ligeti explains. “If the particular Haydn, Beethoven and Wagner techniques of developing themes - taking motives and parts of motives is a typical Beethoven technique - is development, then the music of Debussy, Stravinsky, Steve Reich, Boulez and Stockhausen is not development. If you take a piece like *In C* by Terry Riley, or some of Steve Reich’s pieces, they are not really developments, they are a slow process through time. You can follow this process very clearly, but it has nothing to do with the 19th century concept of development. It’s also not progress, it’s just changing, metamorphosis. And if you take Cage’s *4’ 33”*, it’s neither development nor process, it just is - it’s just there.

“One of my model pieces is Debussy’s *Jeux*. People kept speaking about this piece when I was at Cologne. In *Jeux* you have not real themes but kind of ghosts of themes, or the allusion to melodic ideas. The effect of *Jeux* is like you are in a ship at sea and very smoothly the landscape changes. Similarly in my music there are many many pieces, like for instance *Melodien* for orchestra, from 1971, where something changes but nothing suddenly.”

What Ligeti was hearing in Debussy’s music was the influence of a much older music which he had yet to hear, namely Javanese gamelan music. But Ligeti’s fascination with polyphonic music has its origins in the European heritage of Renaissance vocal music, which he discovered through his counterpoint studies at the music academy in Budapest. In fact, he has stated that he would never have been able to work out the dense polyphonic textures of his micropolyphony if it wasn’t for his schooling in Renaissance counterpoint techniques.

“Doing Palestrina-style counterpoint for two years at the music academy in Budapest in the mid-1940s, I became very bored”, he recalls, “so then I was attracted to the non-Palestrina style of the composers before him. We had scores of Ockeghem’s music in the library of the academy. I think Ockeghem is one of the great composers. What I found really interesting about his music was the continuity of it, the fact that there was never the possibility for one single voice to be prominent. This influenced very much my thinking in pieces like *Requiem* from the mid-1960s, where there is very complex polyphony.”

**THE EIGHTIES HAVE SEEN LIGETI FOCUS ON THE** rhythmic aspect of his music, drawing on the inspiration provided by his exposure to traditional African and Indonesian music and, in 1980, to the mechanical player-piano music of the American composer Conlon Nancarrow with its fiendish rhythmic complexities.

From tendencies which his music had displayed in the two-piano pieces *Monument* and *Self-portrait with Reich and Riley* in 1976, Ligeti has, in the *Trio for Violin, Horn and Piano* of 1982 and the *Piano Etudes* of 1985 and 1989, developed a music which uses superimpositions of different rhythms, metres and tempi. The *Trio*, for instance, includes superimpositions of 4/4, 12/8 and 20/8 times, and plays with a variety of subdivisions of an eight-beat pulse over various ostinatos. In the *Etudes* he combines two distinct rhythmic processes, the fast, even pulse of African drumming and the rhythmic ambiguity of the hemiola (a measure of six beats which can be divided into three groups of two or two groups of three). In the *Etudes* a single player is able to introduce the illusion of several layers of different tempi: "our perception can be outwitted by imposing a 'European' accent pattern upon the non-accentuated 'African' pulsation", Ligeti observes.

Mention of the player-piano, a sort of precursor of the MIDI sequencer, in connection with Nancarrow calls to mind the sophisticated musical technology which we are able to call on today. Had Ligeti, as someone who had experienced both the excitement and the frustration of working with the earliest musical technology in the '50s, not felt a desire to explore the creative possibilities of today's technology?

"I have many times thought about this", he replies, "and especially in '72 when I was for half a year at Stanford University in California working with John Chowning. It was the time when he had just

finished developing the FM technique which Yamaha then bought, so I saw the possibilities of computer sound production. Through John Chowning and also through Jean-Claude Risset, who is a very good friend, I am always in contact with new developments in computer science and artificial intelligence. But I don't use it. I have so much experience working with vocal sound and with acoustic instruments that I decided I had to remain in this area. I like to have the material in my hands, and the material which I know, which is acoustic instruments. So I think I have to stay in this area. Maybe if I was 27 years younger I would feel differently. . ."

However, while choosing to remain with what he knows best, Ligeti is very aware that the young composers of today have to deal with the technology of today, while not neglecting the products of pre-electronic technology:

"We don't know how the future will be, but the music of computers and synthesisers is the present not the future. Whether we want it or not, the existence of the computer has changed everything in our lives, and all the arts are more and more deeply affected by technology. That doesn't mean there won't still be acoustic instruments in music. Film hasn't killed theatre. So I think acoustic and electronic instruments will exist together and there will always be fruitful cross-influences."

György Ligeti's place as one of the most original and fascinating composers of the 20th century is assured. His insistence on following his own unique musical path through the years has seen him labelled both a musical conservative and a musical revolutionary. Yet the diversity of his musical output is not the product of someone who flits from one musical fashion to another, but of someone with an endlessly inquiring mind who isn't afraid to draw inspiration from a wide variety of sources, both musical and non-musical. ■

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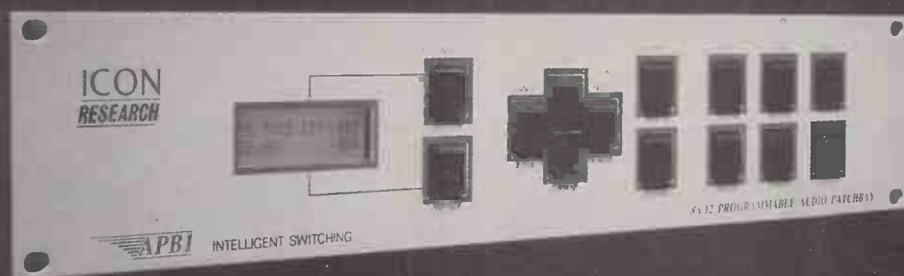
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# APB1



PHOTOGRAPHY: JAMES CUMPSTY

Audio patching is one of the most tedious yet important aspects of any hi-tech music system. Icon's APB1 brings MIDI and accessibility to patching. Review by Nigel Lord.

ONE OF THE more rewarding aspects of the advance in MIDI technology over the last few years has been to give a creative edge to what would otherwise be quite mundane pieces of utility equipment. In many cases, this has elevated the gear to the status of something you actually want rather than something you simply need, and helped close the gap which has always existed between this and the synth/sampler/drum machine end of the market.

It has also, I'm pleased to say, eased the pressure on the weary techno-scribe struggling to maintain the interest of his audience. . . Were I, for example, to tell you that the APB1 was simply an 8-in/12-out 2U-high rackmount patchbay, I think I'd probably be lucky to hold your attention for anything more than the first couple of paragraphs. Mention the three all-important 5-pin DIN sockets on the rear panel, however, and not only do we have a much more desirable piece of

equipment on our hands, but we are also given the opportunity of evaluating it as a creative tool rather than an unavoidable necessity of studio life.

So what is the argument for MIDifying patchbays? Well, anyone who's had experience of the first couple of hours of an (expensive) studio session taken up with patching in the relevant gear to the desk will testify to the tedium of this particular aspect of the recording process. So there's an obvious market for the APB1 in this setting - especially given its impressive signal-to-noise ratio (+122dB) and excellent distortion and crosstalk spec (THD: 0.0005%, Crosstalk: -93dB). But how easy is it to justify this level of control over patching in the kind of setups common amongst *MT* readers?

This, of course, is where cost enters the equation, and I suppose I'd better say from the outset that the APB1 doesn't come cheap. In fact at £499 (for the unbalanced version), I suspect it approaches the sort of price many people would hope to get away with ►

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**“If you've ever considered the advantages of MIDI-controlled patching, you'll probably have realised that a unit like this actually offers a form of automated mixing.”**

► spending on a desk itself. But if you've ever sat down and considered the advantages of MIDI-controlled patching, you'll probably have realised that strategically placed, a unit like this could actually offer a limited form of automation over the mixing process - both for recording and live work. And despite the considerable advances made in this area over the past couple of years, this kind of technology still doesn't come cheap.

Another determining factor could well be the frequency with which you need to change the signal routing of your system. To a large extent, this will be tied in with the facilities offered by your mixer: a limited number of effects loops and insert points and so on, might well demand regular patch changes. And there can be no doubt as to the huge savings in time and effort involved with full electronic switching of signal lines. Reliability also has to be taken into account; an immense amount of time can be lost in the studio trying to trace bad connections and faulty leads associated with manual patching. And once again, where time is money,

this has to be a consideration (as does the exorbitant price of good-quality plugs, sockets and cable these days).

For the musician working alone, we need also to consider the creative dividend of being able to instantly put ideas into practice. I don't know about you, but there's nothing quite like the thought of spending half an hour around the back of an effects rack re-routing signal leads to convince me that adding a panned delay effect to the synth line in verse two might not be just what the song needed after all. . .

Finally, there's MIDI. MIDI stands for Musical Instrument Digital Interfa. . . Oh you knew that? Well, the APB1's got one, and the rear panel has In, Out and Thru sockets to prove it. OK?

So there, in a nutshell, you have the argument for automated patching - and the APB1. It is, of course, inconceivable in this day and age that control should be effected by any other means than MIDI, but interestingly, Icon Research have also included an RS232 serial port to allow direct control from a computer should this be required. (This is also used for syncing two or more patchbays together, printing patch information and for remote control of the unit).

Front panel layout comprises a simple yet rather striking arrangement of fourteen large black push buttons and the LCD. Though backlit and capable of squeezing an impressive amount of information into its 2 x 16-character display, this really is no competition for the full monitor display, as facilitated by the monitor connection on the rear panel - this has to be one of the APB's strongest points. It must be

pointed out though, that only the patching process itself can be displayed on screen - all other functions must be carried out using the LCD. This isn't the disadvantage it may at first seem, however, as it means you can leave the overall patch setup displayed on the monitor for all to see (another particularly useful studio feature), whilst carrying on with any other editing or programming on the unit itself.

In addition to the trio of MIDI sockets, RS232 and monitor connection (capable of supporting most computer-style monitors with no additional software), the rear panel sports the necessary power connections and the jack field for all the audio connections. It's functional, if not an area of particular aesthetic importance.

In terms of use, though not a particularly complex piece of apparatus, it does have its more sophisticated side - and its more esoteric functions. However, thanks to some clever design work on behalf of Icon Research, this facet of the APB's "personality" can be kept out of the way until called for. Thus, it is quite possible to use it as a conventional patchbay using internal routing rather than the customary plug and socket method. (The non-volatile memory ensures the patch combinations set up for a previous session are reinstated when the unit is next switched on.)

As convenient as this is, however, I cannot imagine anyone shelling out five hundred sovs simply to watch connections being made on the LCD (or monitor) rather than by hand. Clearly, the APB1 has much more to offer.

## MAKING CONNECTIONS

THE MAIN PATCH connecting/disconnecting functions are carried out quite straightforwardly by selecting the desired input and output(s) from a numerical list you scroll through using the Up/Down buttons. If you find dealing with numerical titles somewhat less than edifying (patching Input 3 to Output 8, and so on), all Inputs and Outputs may be given names of up to 12 letters each and then entered into an alternative alphabetic list. This, unquestionably makes the patching process much simpler and more intuitive, and is particularly useful where other people are likely to be using the setup. (Ever tried to decipher someone else's scribbles with a chinagraph pencil on the front of a patchbay?)

After selecting the input and output(s) you require, the connection (or disconnection) is made using the appropriate button, and the current status is indicated by a symbol immediately after the output number. Closed and open arrows indicate (respectively) a connection or no connection, whilst a skull and crossbones alerts you to the fact that the output in question has already been connected to an input. A press on the Enter or Cancel buttons confirms or deletes the action and returns you to the Viewing Connections display on the LCD.

Once a complete patch has been established, it can be named and stored in the APB's non-volatile memory (along with a further 149 of its fellows), and ►

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**“In a live situation, the APB1 could prove immensely useful in re-configuring an instrument/effects unit system in ways most of us would never dream of attempting.”**

► instantly reinstated using the Recall button. It can also be replicated, if required, using the Copy button immediately above this, or modified further using the Edit button to its right. All connections may be muted apart from the one currently displayed in the LCD (or highlighted on the monitor) by pressing the self-latching Solo button (replete with status LED); to mute connections *including* the one currently displayed, the Clear button (again self-latching with its own status LED) is depressed.

As you might have gathered, the on/off action of this latter button means that the patch is not actually cleared at all, and a further press will recall it instantly. It does,

however, serve a very useful secondary purpose as a “panic” button which allows you to quickly switch out an entire patch should some erroneous connection be made which sets up a speaker-threatening feedback loop.

## UTILITIES

FUNCTIONS BEYOND THOSE connected with the setting up, editing and copying of patches and so on, come under the general title of “utilities”, and, as such, are accessed by repeatedly pressing the button labelled. . . yes, you guessed it, Utilities. Included here are the APB1's fairly generous complement of MIDI functions which include the setting of receive and transmit channels (including receive “off”), the setting up of MIDI program change tables (for assigning program change numbers to each patch), and the enabling of a Transmit MIDI Patch Number function which automatically sends a program change number each time a patch is recalled. This isn't user-definable and corresponds strictly to the number of the patch (ie, patch number 17 transmits program number 17) - up to the MIDI data limit of 127. Beyond this (up to 150), no program numbers are transmitted.

A further utility accessed here is the sequence table which can store a series of patches in any order you wish, and step through them on receiving trigger signals from the front panel Enter key or note-on or program change messages via MIDI. I say sequence table, but there are actually 50 such tables available on the APB and each may be comprised of up to 50 patches.

Finally, we have the Print Patch utility, which, as its name suggests, allows you to execute screen dumps of patch setups via the RS232 port on the rear panel. I have to say I didn't get round to using this particular function during my time with the APB, but it's the sort of facility which again is likely to be put to good use in the studio where such information could be filed along track listings for future reference.

## INS & OUTS

WHAT HAS TO be remembered about the APB is that the eight inputs may be connected to any *or all* of the 12 outputs, and this clearly makes it far more versatile than the kind of straightforward 16+16 patchbay most of us are familiar with. However, considering that you often see such units in banks of two, three and even four, you're forced to consider whether the APB's 8-in/12-out system is likely to fall short of most people's requirements.

The obvious solution, I suppose, would be to opt for a dual system incorporating both the APB and a manual patchbay (or two). In most setups there are a significant number of connections which, though you wouldn't want them hard wired, seldom need to be rerouted, and these could be fed to the manual patchbay in the normal way. I think I'd have to say I'd find this rather galling after parting with five hundred pounds for the APB1, but it would certainly be a viable and very flexible system.

For those who can afford to go all the way, two or more APB's can, as mentioned earlier, be synced together in a master/slave(s) configuration. However, as in all such cases, I cannot help but feel there would be an awful lot of hardware being duplicated unnecessarily. Surely, the obvious solution where the precise number of in/outs required by each user is likely to vary considerably would be to produce an *expander* for the APB which operated as a true slave unit?

Having said that, I could well imagine two APB's being used as a stereo pair, especially in a studio environment where the outlay could be more easily justified. I'm not, however, sure whether this would necessitate the use of a second monitor - the preliminary instructions which came with the unit seemed a little sketchy on this point - but I shall assume it wouldn't.

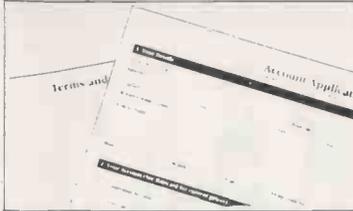
## VERDICT

FOR THE MUSICIAN who simply wishes to bring one more facet of his or her setup under MIDI control, I see no problems at all. In a live situation, the APB1 could prove immensely useful in re-configuring a system in ways most of us would never dream of attempting. And in the studio too, it should certainly help maximise the potential of limited outboard gear. As alluded to at the beginning of this article, it wouldn't take long to devise ways of using the APB1 as an integral part of the mixdown process, and thereby automate a significant part of the operation. Running alongside one of the current generation of software sequencing packages, the creative potential of the APB1 is vast, and this has to be taken into consideration when considering its fairly hefty price tag. Indeed, beyond its inherently limited 8/12 format, I could offer no significant criticism of the APB1 whatsoever. ■

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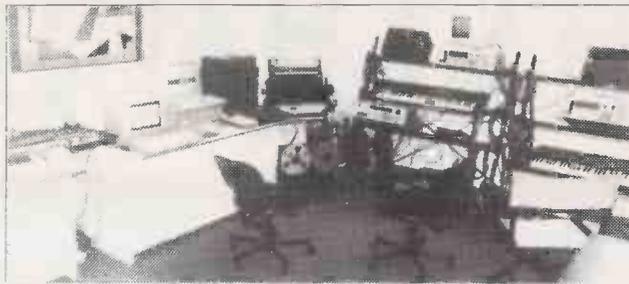
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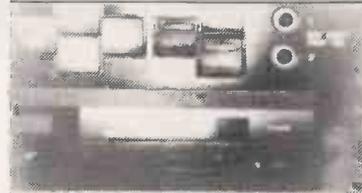
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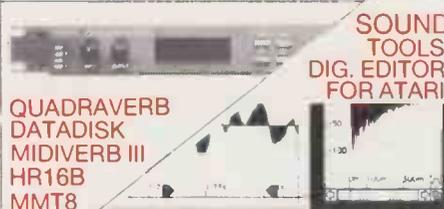


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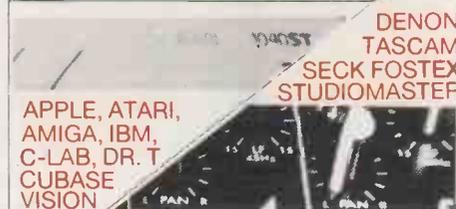


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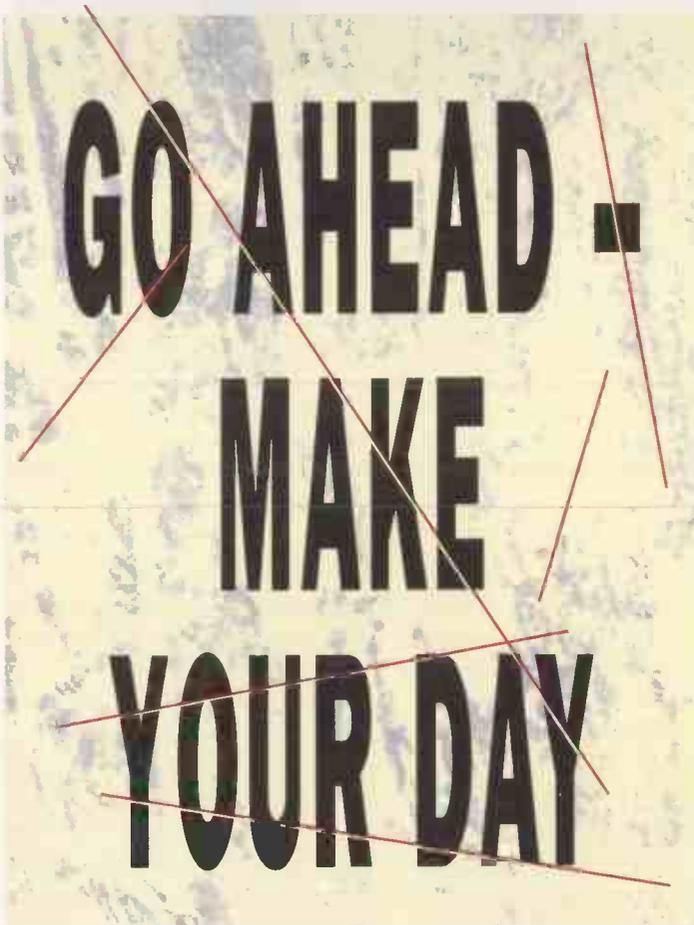
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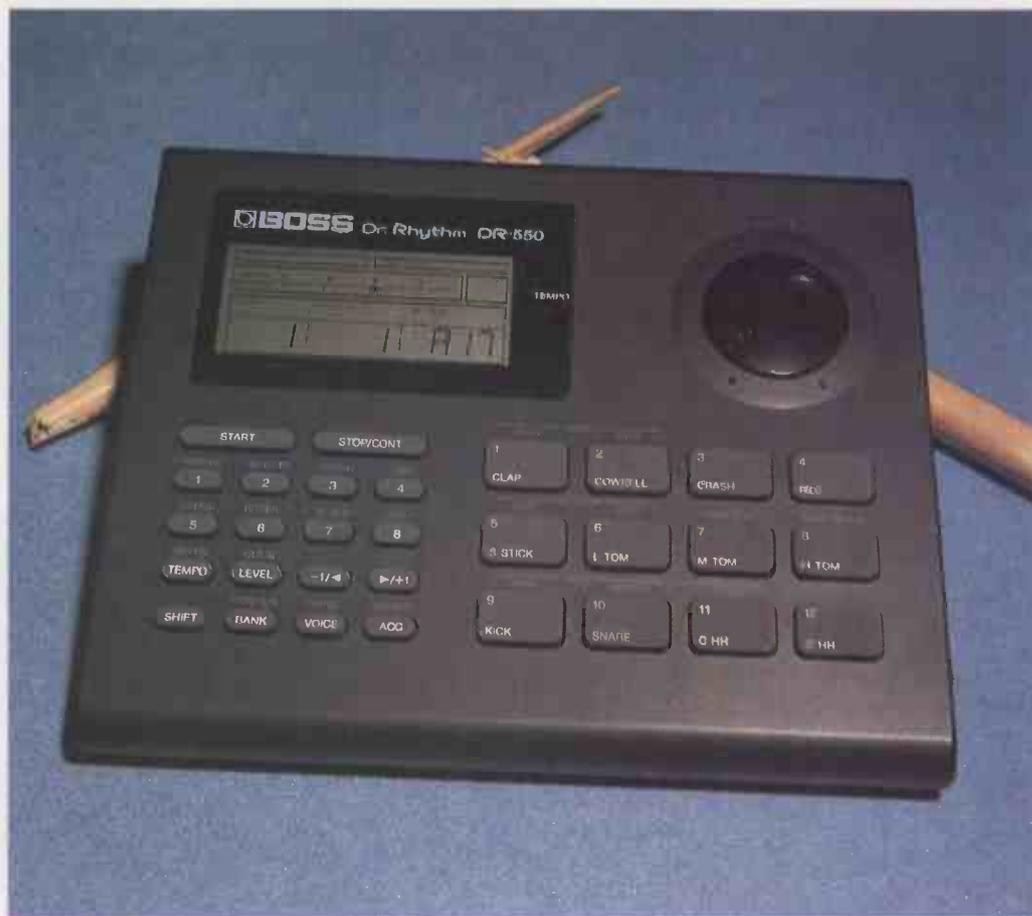
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# DR RHYTHM DR550



PHOTOGRAPHY: ADAM JONES

The DR550 combines quality samples and programming sophistication into its compact frame, yet is easy to use and attractively priced. The ideal budget drum machine? Review by Simon Trask.

**R**OLAND'S BOSS DIVISION have a fine tradition of producing dinky little drum machines. From the DR55 through the DR110 to the DR220A and DR220E, the emphasis has been on compact, lightweight machines which avoid burning a hole in your pocket - if anything, they're more likely to fit in it. Measuring a modest 7 3/8" (W) x 6 3/16" (D) x 1 5/8" (H) and weighing a mere 1lb 2oz including batteries, the DR550 - the latest offspring of the Boss division - does its predecessors proud. It also preserves the Dr Rhythm tradition of being kind to your wallet - by weighing in, so to speak, at a healthy £199.

However, proving that beauty is more than skin deep and size isn't everything, the most attractive aspect of the DR550 is that it earns its extra nought by packing a fair amount of sophistication into its compact frame. Most importantly, the new DR's drum and percussion samples match those of Roland's R5, R8 and R8M in quality - in fact, a number of them have their origins in the R-series' library. At the same time, Boss have kept the 550's complement of sounds to a very creditable 48 (the R machines have

64 each), which is a good deal more than have appeared on previous Boss drum machines (for instance, the DR55 had four sounds and the DR110 six). However, before your ardour gets too aroused, I should point out that, unlike the R8 and R8M (but like the R5), the 550 can't play further sounds via plug-in PCM sample cards. Quite sensibly, Boss have opted for a solid collection of standard kit sounds leavened by a workable if not extensive selection of Latin percussion instruments. The 550 is 12-voice polyphonic, which means that up to 12 instruments can sound at the same time.

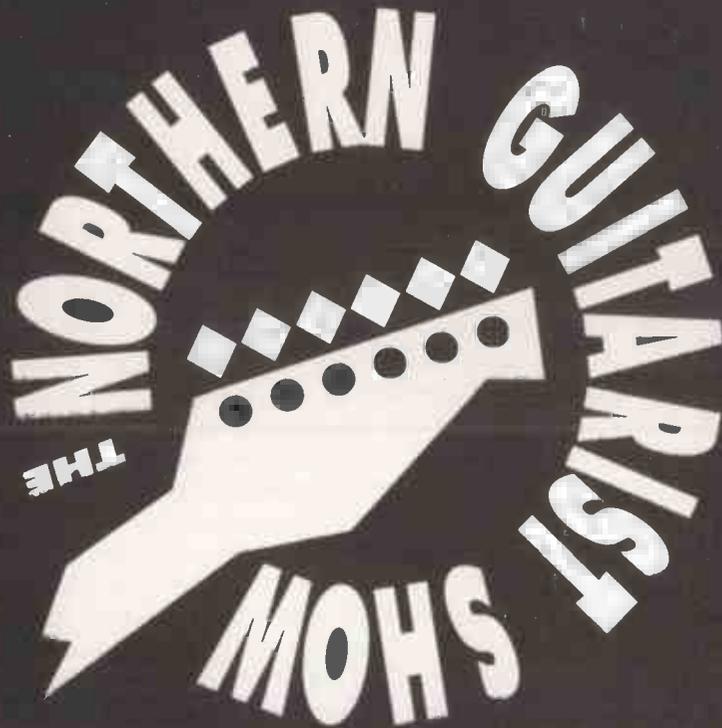
The latest Dr Rhythm has 64 preset and 64 programmable one-bar pattern memories, and allows you to construct up to eight songs, each of up to 160 bars, by chaining these patterns together (longer songs can be created by linking DR550 Songs together, up to a maximum of 1280 bars for one "composite" song). Being limited to one-bar patterns does seem a bit of a relic from an earlier age, and doesn't exactly encourage musicians to think in terms of longer "phrases". This one-bar limit seems to be a consequence of the way the 550 records rhythm patterns into its memory (see below), so ►

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► given this limitation it would perhaps have been useful to be able to record "across" several consecutive one-bar patterns (say, specify a record range of patterns 51-54).

The 550 brings the DR range into the MIDI age belatedly if not wholeheartedly: equipped only with a MIDI In, it can be slaved to a MIDI sequencer and have its sounds played from a MIDI keyboard or percussion controller, but obviously you can't transfer pattern and song data via MIDI SysEx for remote storage. However, you can bulk dump the 550's pattern and song data, along with pad assignments, MIDI settings and even the metronome click level, to cassette tape via the Tape Save/Load mini-jack connection on the drum machine's rear panel. Time to dust down the trusty Elftone Compucorder and press it into service once again. . .

Once you've selected Tape mode, Save, Verify and Load functions can be activated by pressing the Start button; the Tempo LED flashes for the duration of the operation, and Verify and Load operations are concluded with a message telling you whether or not they've been successful - which in practice they were every time I used them. Each operation takes a little under 90 seconds, which is bearable, I suppose.

The latest DR can be powered from an optional Boss PSA Series power supply unit or from six AA-type batteries; the latter give a quoted lifespan, under continuous use, of nine hours for manganese batteries and 23 hours for the alkaline type (the type you'd typically use in a Walkman). These batteries also preserve the contents of the 550's memory when the drum machine is switched off, so you need to beware running them down. Also, to avoid losing your patterns and songs while changing batteries you need to maintain power to the 550 via a psu.

**"The new DR's drum and percussion samples match those of Roland's R5, R8 and R8M in quality - in fact, a number of them have their origins in the R-series' library."**

**SOUNDS**

THE DR550's 48 samples are organised into eight categories: kick, snare, side stick, tom, hi-hat, cymbal, percussion, effect. There are five bass drums - room, dry, solid, face and techno - which between them provide a good range of acoustic and electronic kick sounds. The six snares are similarly varied in character, from the massive reverb snare through the ringing, rattling rimshot to the snappy TR808 snare. The toms category provides low, mid and high room toms along with the more resonant low, mid and high attack toms, and low and high electronic toms.

TR808 samples crop up again in the hi-hats, which include the 808's electronic-sounding open and closed hi-hats along with open, closed and pedal closed hi-hats of acoustic origin. More splashy sounds are provided by crash cymbal, ride cymbal and ride cymbal bell samples which, like the R-series samples, capture the character of the sounds well, avoiding dissolving into undifferentiated high-frequency hiss (in fact, I think these are R-series samples). Here the fact that sample memory is at a premium on the 550 is most obvious, with these longer samples ending before you expect them to. In fact, many of the samples seem to have been kept as "tight" as possible, without shortening them to the point where they lose their character.

Percussion offers the 808 handclap and cowbell along with a "real" cowbell, claves, three congas (open low, slap high and mute high), low and high bongos, low and high timbales, low and high agogos, shaker, cabasa, a rather anaemic tambourine and a suitably piercing whistle.

Of the three effects, High Q is a highly concussive electronic click, the sort of sound much used by Kraftwerk, which sounds like it's been sampled from an old analogue synth with a very sharp filter attack. Scratch Low and Scratch High appear to be sampled record scratches (as in DJ scratching rather than knackered records), but they're better used as abstract rather than imitative sounds.

It's worth emphasising at this point that, while the DR550's sound quality might be on a par with that of the Roland R-series drum machines, it loses out in sonic versatility compared to those machines through not allowing you to pitch-shift its samples up and down. I found this quite frustrating, but sacrifices have to be made somewhere in pursuit of the budget price tag, I suppose.

## ORGANISATION

PERHAPS NOW IS a good time to start a campaign for more colourful instrument front panels. Anyone who remembers (and who perhaps still has the pleasure of looking at) the multi-coloured front panels of old Roland instruments like the JP8, Juno 106 and TR808 will know that in the past Roland could hardly be accused of producing dour-looking instruments. Yet what do we get nowadays? Endless variations on sombre charcoal grey. What's wrong with a splash of colour, eh?

The DR550 is a case in point. To be more specific, it's a sombre charcoal grey case in point, with only marginally less gloomy grey buttons. This glum appearance isn't helped by the fact that the otherwise generous LCD window is - perhaps inevitably on a budget instrument such as this - not backlit. What it does do is display in its upper half the currently-selected Pad Bank, the Scale of the current pattern (its quantisation) and the Accent rhythm or the rhythm of any one of the instruments assigned to the drum machine's pads. In this respect it's less well specified than the old Boss DR110, which can display (in grid format) the rhythms of up to four of its six instruments together with the accent rhythm. ►

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“Of the three effects, High Q is a concussive electronic click - the sort of sound much used by Kraftwerk - which sounds like it's been sampled from an old analogue synth.”

- However, you can very easily select a different instrument or Accent for the 550's display by holding down the Voice button and tapping the relevant instrument pad.

The lower half of the LCD, meanwhile, divides into three boxes which variously display such information as the current and next pattern numbers, the current song and song step number, and the current edit parameter and its value.

Below the LCD are the inevitable Start and Stop/Continue buttons together with the numeric keypad and mode buttons which are the operational heart of the 550. Although they're of the squidgy rubber variety, they seem to be operationally reliable. The 550 also has 12 rubber playing pads, which stood up well to the bashing they received during this review (with fingertips rather than drumsticks, I hasten to add). These pads aren't velocity sensitive, but then I'd have been pleasantly surprised if they were. The 550's sounds *are* velocity-responsive via MIDI, but although you can record patterns into the drum machine's memory from an external MIDI source - an Octapad, for instance - disappointingly, MIDI velocity information isn't recorded.

The DR550 adopts the Pad Bank concept of the R5 and R8 whereby you can program four “drumkits” on the machine's pads. This effectively gives you equal access to not 12 but 48 sounds from the 550's instrument pads, all of which can be used within a single pattern. Successive presses of the dedicated Pad Bank button rotate around the four Banks (A-D).

To understand how the DR550 functions, it's important to grasp that when you record a pattern the drum machine is storing pad hits only. If you record a cowbell part using pad three in Pad Bank four, say, and then assign a cabasa to that pad instead, your cowbell part will become a cabasa part. This way of working makes it easy to try out different sounds for an already recorded rhythm, plus it's easy to delete a part from a rhythm because you can quickly find the pad that it's assigned to. The down side is that any alterations you make to a Pad Bank to suit a new pattern that you're recording will affect any already-recorded patterns which use that Pad Bank. It's the perennial swings and roundabouts situation.

The DR550 adopts the “fixed memory” approach to recording rhythm patterns. If you imagine that each pattern is represented by a 16 x 49 grid in memory, with each “box” in the grid representing a 16th-note hit for one of the 48 instrument pads or Accent, then

you can see that a fixed amount of memory is used for each pattern regardless of the actual rhythm being played. The advantage of this approach is that when the DR550's manual says you can record 64 one-bar patterns it means 64 one-bar patterns regardless of how dense or sparse the rhythms are.

Most of the operational buttons and instrument pads have a second function which is selected by holding down the Shift button and then pressing the relevant button or pad. The most difficult thing about using these functions is reading the labelling which identifies them - more shades of grey on grey. In practice the DR550 is a straightforward and fairly intuitive instrument which presents no real operational or conceptual problems for anyone already familiar with the way drum machines work. The beginner should find the 550 a reasonably friendly machine to get to grips with, especially as the accompanying manual is clearly written and well laid out, and includes what is now becoming (for Roland instruments, anyway) the customary index to help you get straight to the information on anything you don't understand.

## PAD SETTINGS

EACH INSTRUMENT PAD within a Pad Bank can be assigned not only one of the 48 instruments but values for level, tone colour, decay, assign type, accent follow and pan parameters. Level setting is accessed via a dedicated Level button, and as the name suggests, allows you to set a volume level for each pad. Not only does this allow you to balance the levels of the instruments in your “composite kit”, but by assigning one instrument to two or more pads you can simulate a limited velocity sensitivity for internal recording purposes.

Tone colour (0-7) provides a means of subtly varying the timbre of an instrument when it's assigned to a pad. This is a “static” alteration, but by assigning the same sound to two or more pads and giving each pad a different tone colour value you can introduce subtle inflections of a sound into a rhythm. A neat feature.

The default decay time of an instrument can be changed by assigning its pad a different decay value (-32 to +32), though with short sounds this won't necessarily have any effect.

You can record an Accent rhythm in the same way as you'd record a rhythm using any of the instruments. Accent is either on or off, and applies to all instruments sounding at a particular step. However, by setting a different accent follow value (-7 to +7) for each pad, you can tailor the response of individual instruments. A value of zero means that the instrument won't respond to accents, while a negative value results in the instrument playing more quietly on an accented step.

This approach does allow for a fair amount of flexibility, though should two instruments with the same accent follow value both sound on an accented step, both will have the same response even if you only want one of them to be accented. Again, assigning the same instrument to more than one pad

and giving each pad a different accent follow value can help you get around any problems.

Assign type allows you to set an instrument pad to Mono, Poly or Exclusive 1 or 2. If a pad is set to Mono, new pad hits cut short the instrument if it's still sounding from a previous pad hit, while Poly allows the instrument to play for its full duration, so that the sounds overlap. Setting two or more pads to the same Exclusive number effectively means that the instruments assigned to those pads can't be layered, which also means that you can use one instrument to cut short another. A traditional choice here would be open and closed hi-hats, but you can choose whatever combination of instruments you want.

Finally, the DR550 allows you to select one of seven pan values for each pad in each Pad Bank, so that if you're taking advantage of the drum machine's stereo audio outs you can position up to 48 instruments in the stereo image. You can also experiment with auto-panning effects by assigning an instrument to two or more pads and giving each pad a different pan value, but as with the other pad parameters this is at the expense of the variety of instruments you can use for your patterns.

## RECORDING

THE DR550 ALLOWS you to record in real time and step time. Once you've selected Pattern Record

mode, both methods are equally available to you: when the pattern is playing you're in real-time record, when it's stopped you're in step-time record.

Real-time recording is in familiar drum machine-style fashion of continuously looping the pattern while you add parts on each pass. You get a quarter-note metronome click (with settable level 0-15) and a flashing red pinpoint LED to play along to. With Delete selected you can erase any sequence of notes within an individual instrument part by holding down the relevant pad at the relevant time during real-time record, while whole patterns or individual instruments/pads within a pattern can be erased with the Clear function.

In step-time recording, the DR550 records what pads you play at each step in the bar (while playing back whatever instruments, if any, you've already recorded for that step), and automatically advances to the next step after each hit and loops back to the first step when it reaches the end of the bar. As in real-time recording, the DR550 is permanently in overdub mode for step-time recording.

Alternatively you can use the instrument pads in conjunction with the Voice button to select the current instrument/pad in the LCD display "grid", and then enter your rhythms graphically rather than physically.

Usefully, during both real- and step-time recording, you can temporarily drop in and out of play mode by pressing the Voice button, which allows you to quickly ▶




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(Loading can be lamp or spot lamp loads.)

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Lamp on time is assignable as is the receive MIDI channel. An internal light sequencer is also available for syncing to the MIDI clock.

Add to this a further 8 channels of power on another MID channel and slave the POWER PACKS together and you are left with a complete lighting system in perfect time.

## 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.

- MIDI LITE CONTROLLER ..... **£325.00**
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- MIDI GATE..... **£225.00**

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- M303+ ..... **£499.00**

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CHECK IT OUT..... **£249.00**



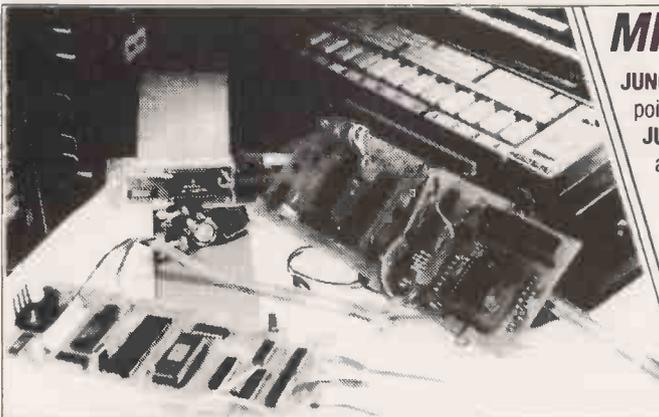
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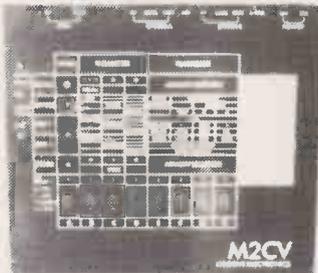
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## MIDI CONVERTERS



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► locate the pad that a particular instrument is assigned to or try out an instrument part before recording it.

The 550 doesn't limit you to 4/4 time. By setting a Last Step value of less than the maximum of 16 you can create, for instance, 3/4, 5/8 or 7/8 time signatures. Scale, meanwhile, allows you to alter the quantisation of a pattern. This defaults to 16th notes, but alternatively you can select 32nd notes, triplet 16ths or triplet 8ths. There is a catch, however: because you're still limited to a maximum of 16 steps, selecting 32nd-note quantisation effectively reduces your pattern length to 2/4, so a 4/4 pattern has to be recorded over two 550 patterns. In similar fashion, selecting triplet 8ths allows you to use 5/4 time, while selecting triplet 16ths limits you to 2/4 or at most 5/8. So if you want to record a go go rhythm or a swingbeat rhythm, both of which use triplet 16ths to create their feel, you'll have to record a single 4/4 bar using two DR550 patterns.

Another possible limitation of the 550's approach, depending on what sort of rhythms you want to create, is that you can't combine triplet and non-triplet values (triplet 8ths and straight 8ths, for example).

Creating a DR550 Song is easy. You just scroll through the Song steps entering the required pattern number for each step. If you hit Start or Continue in Song Edit mode, the 550 repeatedly plays the pattern you've entered at the current step, which quickly allows you to see if you've chosen the right pattern. You can also start playing a Song from any step while in Song Play mode by scrolling to that step and then hitting Continue.

You can insert and delete occurrences of patterns within a Song, use the Song Chain function to link songs together in continuous play (giving you, as I mentioned earlier, fewer but longer "composite" songs), and set repeat on/off for each Song. You can also set an Initial Tempo value (40-250bpm) for each of the eight Songs - which, of course, only applies when the 550 is set to internal sync. The drum machine has a global tempo value which defaults to 120bpm each time you switch the machine on, but as soon as you select a Song that value changes to the Song's initial tempo value. Consequently, if you're working to and fro between Pattern and Song modes, Pattern mode automatically assumes whatever initial tempo value the Song is set to.

## MIDI

THE DR550 CAN be set to internal sync or slaved to incoming MIDI clocks. For the purposes of playing the drum machine's sounds from an external MIDI source you can set it to Omni receive (all channels), or to one of the 16 MIDI channels (it defaults to channel 10, the channel which Roland have ordained as the rhythm channel on their instruments).

For MIDI performance purposes you assign instrument pads rather than the actual instruments themselves to MIDI note numbers, which means that if a DR550 instrument isn't assigned to one of the 48 possible pads then you can't play it via MIDI. The

550 comes with a default set of pad-to-note assignments, but you can alter these to suit your own preferences. One thing you can't do is play more than one instrument/pad from a single MIDI note. The 550 allows you to set up such an assignment, but in practice the drum machine only plays the sound which is assigned to the lowest-numbered pad in or closest to Pad Bank A.

The 550 can respond to MIDI Song Select messages, allowing you to remotely select its internal Songs. However, one MIDI message it won't respond to is Song Position Pointer, the message, which tells a sequencer or drum machine where to start playing from in a song. Consequently, if you're slaving it off a sequencer and you've stopped the sequencer mid-song, and fast forwarded or rewound it to a different position, the 550 won't be able to tell where to play from. Which is rather a disappointment in this day and age, and one good reason to use the 550 purely as a sound source, putting together all your rhythm parts in your sequencer rather than using the 550's onboard pattern and song facilities.

## VERDICT

THE NEW DR Rhythm has instant appeal - from the moment you see it to the moment you hear its high-quality sounds to the moment you discover that it's easy to use. Boss have concentrated on providing a solid collection of standard kit and Latin instruments rather than dazzling you with a diverse collection of more exotic instruments, and have ensured a good balance of acoustic and electronic sounds with an overall clean, upfront quality. The 550 is far more versatile sonically and far more sophisticated functionally than its predecessors, and benefits from the introduction of MIDI, at last, to the Dr Rhythm series. I have a few reservations about its rhythm programming flexibility, but what it loses in flexibility it gains in simplicity.

If you want sonic expandability and greater programming sophistication then it might be worth hanging on for Cheetah's forthcoming 16-bit drum machine, the MD16. But then you're talking half as much again on the price, which can be a lot to find if you're on a tight budget. The point is that Boss have packed a lot into the DR550 for its price and for its size, and have made it all easy to use in a way which should be attractive not only to the first-time buyer but also to anyone who likes their hi-tech instruments to be accessible. You can always wish for more of everything on a budget instrument, but overall Boss have come up with a balance of sounds, facilities, and accessibility on the DR550 which is well suited to its very attractive asking price, and I expect it will be a big success for them. Now, which pocket did I put it in? ■

**Price** £199 including VAT

**More from** Roland (UK) Ltd, West Cross Centre, Brentford, Middlesex TW8 9EZ. Tel: 01-568 1247.

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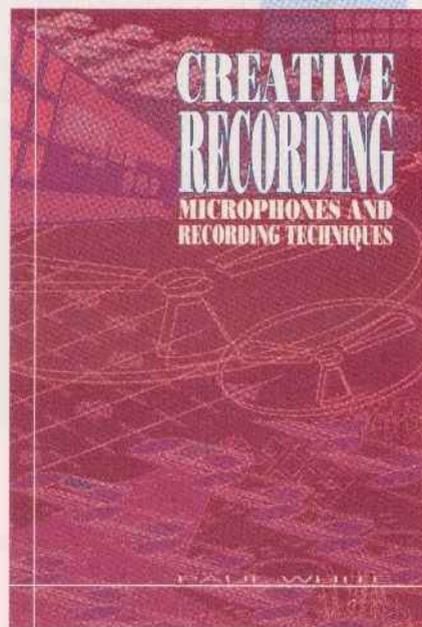
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**HAMMOND B200** portable organ, immac cond, home use only with Sharma 400W Leslie, £500. Tel: Liverpool 051-260 6675.

**HAMMOND L102** tonewheel (valve) organ, Leslie 110, wicked sound - £500 ono or p/x? Alan, Tel: (0922) 683215.

**KAWAI** Model 100P synth. Touch and aftertouch, 32 presets, £95 ono. Tel: 061-980 6140.

**KAWAI K1**, almost new, boxed, with extras. Bargain at £430 ono. Steve, Tel: (0484) 719057. Yorkshire area.

**KAWAI K5M**, plus 8 RAMs, £495; Kawai R50e, £195; Yamaha MT100, 4-track, £195. Consider swaps - anything interesting. Tel: (0934) 614303, after 6pm.

**KAWAI K5M**, and card, boxed, with manuals, £500 ono. Swaps? Rhodes 73, mint cond, as new, £275; PA speakers, £125 pair, Atari 520STFM. Offers? Tel: (0253) 861425, work.

**KORG 707**, only 6 months home use, immac cond, £250. Tel: North West (0254) 85 2044.

**KORG DP80** digital piano, £400; Kawai K1M synth module, £300. Wanted: Roland D10. Tel: (0482) 850218.

**KORG DW8000**, Roland Juno 106, £900. Both swap D50, SQ80. Simon, Tel: (0423) 509727, days; (0423) 887977, eves.

**KORG DW8000**, boxed, unrigged, all manuals, inc leads, home use only, £475 ono. Tel: (0373)

826457.

**KORG EX800** expander, a Poly800 in a box, vgc, with original manuals and patch tape, £125 ono. Tel: (0223) 464117, days; (0638) 720090, eves.

**KORG M1**, home use only, £1150. Clive, Tel: 01-832 5203, days; 01-579 4518, eves.

**KORG M1**, as new, £1200 ono; Roland D50, as new, £850 ono. Dave, Tel: (0249) 713396.

**KORG M1** sound cards, mind blowing sounds. Both cost £80 each, selling both for £100. Steve, Tel: 071-476 0718.

**KORG M1**, vgc, plus additional sounds, manual etc, £1150. Can deliver. Steve, Tel: 071-476 0718.

**KORG M1**, boxed, immac cond, £1099. Tel: Camberley (0276) 682869.

**KORG POLYSIX**, inc flightcase, analogue poly synth, £280; SCl Pro1 mono synth, boxed, manuals, £150. Paul, Tel: Leeds (0532) 865197.

**KORG POLY 61** programmable analogue synth, good working order, £260 ono. Glyn, Tel: (0643) 705872.

**KORG POLY 800** synth, £160; CX5M, YK01, YRM101, YRM102, DMS8 track sequencer, £190 ono. Andrew, Tel: (0726) 815461.

**KORG POLY 800** synth, good cond, £175 ono; Roland SH09, classic synth, £60 ono. Tel: (0272) 876297.

**KURZWEIL PX1000**, highly programmable, 32-note polyphonic, sampled supremacy. (Nothing compares!) Module. Chris, Tel: 01-675 8783.

**MOOG POLYMOOG**, spares/repair, £50; ARP pro soloist, £75; E&MM Spectrum, £50; CX5M, DMS monitor, £100. Tel: (0992) 461987.

**OBERHEIM DPX1**, £675; Roland MKS20, £495; Yamaha REV5, £675; 12:8:2, £695; E-mu SP1200,

£795. Tel: 01-462 6261.

**OBERHEIM OBXA**, (120 programs), with MIDI retrofit, see March MT, delivery anywhere. Tel: Scotland (0555) 51430.

**PEDALBOARD**, two-and-a-half octaves, (classical organ), interfaced to Sequential Pro1 in flightcase, manual, £250. Tel: (0865) 65934.

**ROLAND ALPHA JUNO 1**, excellent cond, home use only, boxed, manuals etc, £275 ono. Tel: (0373) 826457.

**ROLAND** System 100, sequencer, VCF, VCA, £120. Martin, Tel: Slough 820853.

**ROLAND A80**, 88-note weighted action, MIDI controller keyboard, superb, never used, £1150. Tel: 01-361 0421.

**ROLAND D5**, multitimbral synth, £500; Roland MT32, inc Dr T's edit software, £275. Tel: (0803) 311672.

**ROLAND D10**, over 1000 PCM sounds, Atari editors, D50 sound files, £620 ono. Tel: (0592) 759252.

**ROLAND D10**, with Dr T's editor, £500 or p/x D20; MMT8, £150. Tel: Reading (0734) 854347, days; 668709, eves.

**ROLAND D10**, boxed, manuals, voices, home use only. Tel: (0353) 699586, after 6pm.

**ROLAND D10**, £600 ono; U110, £450 ono; EROS Gibson copy, £150; Aria 12-string, £120; Notator, £350. Tel: (0909) 566695.

**ROLAND D10**, £550; MC500, £350; 3-tier stand, £30. Home use only. Jim, Tel: 051-678 8178.

**ROLAND D20**, as new, boxed, £800. Tel: 01-684 1191.

**ROLAND D50**, mint cond, home use only, inc X-stand, £800. Tony, Tel: (0253) 737906.

**ROLAND D50**, boxed, immac cond, with dust cover, £900. Also optional MEX multitimbral board. Nick, Tel:

(0635) 42110.

**ROLAND D50**, perfect cond, home use only, manuals, £850. Graham, Tel: Bedford (0234) 45920.

**ROLAND D50**, boxed, with card, £825; Roland S220, £625; DW6000, £340; MT32, £220; Yamaha FB01, £99; Roland MC500 MKII, £650. Tel: (0564) 775181.

**ROLAND D50**, card, manuals, £750. Tel: (0299) 404608, after 5pm.

**ROLAND D110**, as new, £399; Dr T's D110 voice editor for Atari ST. Tel: (0562) 824484, after 6pm.

**ROLAND JUNO 1** synth, excellent cond, with flightcase, £230 ono. Jon Dixon, Tel: 01-743 1249.

**ROLAND JUNO 6**, £195 ono; Yamaha RX21, £75 ono. Chris, Tel: Harrow 01-868 0070.

**ROLAND JUNO 60**, well wicked analogue sounds, c/w manual, £265 ono. Brian, Tel: Bournemouth 738477.

**ROLAND JUNO 106**, mint cond, with semi flightcase, £290. Craig, Tel: Lancs (0254) 888187.

**ROLAND JUNO 106**, £295; Yamaha TX81Z module, £215 ono. Tel: (0203) 251152, days; (0203) 302752, eves.

**ROLAND JUNO 106** synth, excellent cond, £290. Tel: Harrogate (0423) 711662.

**ROLAND JUNO 106**, £300; Yamaha YS200, £375; Korg DDM110 drum machine, £60. Tel: (0782) 538362.

**ROLAND JUPITER 6**, MIDI, manuals, £350; Yamaha CX5M and Casio RZ1, both with extras, £100 each. Tel: Sheffield (0742) 334139.

**ROLAND JUPITER 8a**, flightcase, manual, £750 ono; JSQ60 sequencer, £25 ono. Steve, Tel: Southampton 737338.

**ROLAND JX8P** and PG800, never gigged, immac cond, £550. Benoit, Tel: (0273) 726219.

**ROLAND JX8P**, inc flightcase, ROMs, and unique sounds, boxes, manuals etc, immac cond and ungigged, £550 ono. Tel: (0223) 464117, days; (0638) 720090, eves.

**ROLAND MC64** cartridge, boxed, with labels, £35. Nick, Tel: (0902) 755561.

**ROLAND MKS7**, multitimbral, £200; Roland MKS100 sampler, £300; Casio CZ1000, £200. Trevor, Tel: (0283) 42956.

**ROLAND MKS50** and PG300 programmer, £250; Roland TR909, £300. Great for House music. Tel: (0305) 65558.

**ROLAND MT32**, £220; Steinberg

MT32 editor, £40; TX81Z, £170.

Tel: Oxon (0491) 573980.

**ROLAND MT32**, multitimbral sound module, perfect cond, boxed, manuals, £260 ono. Tel: Middlesborough (0642) 311269.

**ROLAND PG1000** programmer for D50/550. Immac cond, £150 ono. Tel: (0223) 464117, days; (0638) 720090, eves.

**ROLAND S10**, plus 100 disks, £300; Roland TR707, £200; Casio CZ101 plus RAM card, £120. Tel: (0525) 370914.

**ROLAND SH101**, great for Acid basslines. Complete with PSU and poser grip/strap, £99. Tel: (0353) 721523.

**ROLAND SH101**, £120; Sequential TDM, £250; JL Cooper Fadermaster, £200; Alesis MMT8, £175. Darrin, Tel: 01-650 1033.

**ROLAND SH101**, inc hand grip, £120; Boss micro rack flanger, £50; Yamaha RX21L drums, £95. Tel: (0532) 865197.

**ROLAND SH101**, Roland MC202 and 303, plus extras. Sell as package or split, £250 ono. Tel: 051-632 4617, eves.

**ROLAND SH101**, with grip etc, excellent cond, £130. Will swap for Yamaha R100 reverb. Tel: (0524) 64116, eves.

**ROLAND U110**, £400; K1M, £240; 40 2HD disks, sounds (FZ1), £40; MD8, £45; QX21, £100 ono. Wanted: 520ST, MS6, VZ1, sampler, £500-600. Swaps? Tel: (0748) 5481.

**ROLAND VOCODER VP330**, aluminium flightcase, excellent cond, £425 ono. Tel: Newcastle 091-266 2721, days; 091-252 6183, eves.

**TECHNICS PX7** digital piano master keyboard, onboard sequencer, aluminium flightcase, manuals, pedal, £750. Tel: 01-769 0430.

**TECHNICS SXK700**, 1 yr old, home use, £600. Patrick, Tel: Worcs (0386) 750909, after 3pm.

**TECHNICS SXK700** keyboard, with stand, pedal and case, unused, half price, £475. Tel: Hitchin 452925.

**THE ORIGINAL** Casio CT201, 29 sounds, full size, 4-octave keyboard, £60. Tel: (0442) 871870.

**TOA D4**, stereo keyboard mixer, 2U-high, 2 effect loops, MIDI, excellent cond. Cost £400, sell £250. Tel: 01-517 2967, eves.

**YAMAHA CP70B**, home use only, complete with manual, PSU. Any offers/swap considered. Tel: (0942) 37095.

**YAMAHA DSR1000**, programmable sounds, built-in drum machine, manual, adaptor, immac cond, £350 ono. Darryl, Tel: (0322) 72271, eves.

**YAMAHA DX7** keyboard, excellent cond, ROMs, studio use only. Guy, Tel: (0761) 32953.

**YAMAHA DX7**, MKI, mint cond, inc ROMs plus sounds and Atari software. Tel: 01-671 9886.

**YAMAHA DX7**, mint cond, manuals, ROMs, pedals, superb RAM sounds available, £500. Tel: Southend (0702) 367484 or 75257.

**YAMAHA DX7**, excellent cond, 2 ROMs, stand, flightcase, £495 ono. Tel: (0276) 32249.

**YAMAHA DX7**, 1 RAM, variable/sustain foot controllers, sounds/Atari software, home use only, £480. Tel: (0761) 32610.

**YAMAHA DX11**, 1200+ voices, breath controller, Atari editor/librarian, £350; Pro24 v3, £150. Graeme, Tel: 01-674 1977.

**YAMAHA DX11**, £290; Kawai R50, £180; Hohner B2A and stand, £115. All boxed, as new. Tel: (0268) 776554. SE Essex.

**YAMAHA DX21**, £250 ono; Korg Poly 800, flightcase, stand; Boss DR110, £200 ono; Yamaha RX15 drum machine, £125 ono. All mint cond. Tel: Weston 521061.

**YAMAHA DX21**, £280; Casio CZ101, with cartridge, £140; RX15 drums, £180; 4-track, £190. All boxed. Tel: (0732) 451909.

**YAMAHA DX21**, split/layer, full size keys, sustain pedal, low mileage. Tel: Wrexham (0978) 365809.

**YAMAHA DX21**, complete with manuals, good cond, £250; Yamaha QX21 sequencer, with manuals, £125. Tel: 01-658 7251.

**YAMAHA DX100**, SK5, Squier 15W amp, X-stand (Claire Launchbury), £200; studio chair if you want it, £15. Matt, Tel: (0293) 37950.

**YAMAHA FB01**, perfect cond, boxed, manuals etc, £125; Steinberg FB01 editor, unused, £50; FB01 librarian with 500 voices, £25. Offers for the lot? Tel: (0223) 464117, days; (0638) 720090, eves.

**YAMAHA FB01**, multitimbral FM expander, flightcase, manual, mint cond, £100. Tel: (0865) 65934.

**YAMAHA HS4** organ, MIDI, programmer, £1550 (px MIDI keyboard), Marshall 30+ lead/bass amp, £95. Tel: (0375) 673217.

**YAMAHA PS6100** keyboard: excellent cond, boxed, manuals, stand. Bargain at £299 ono. Alan,

Tel: 01-991 0060.

**YAMAHA PSR70**, orchestra and solo sections, custom accompaniment, sequencer, MIDI, stand. Bargain at £350. Tel: Trowbridge 767411.

**YAMAHA QX5**, FD, disk drive, brand new, 5000 notes, 8 month warranty, £365 ono; Yamaha FB01, £140; X-Juno sound cassettes, £15. Fass, Tel: (0703) 270100.

**YAMAHA TX81Z**, RX17. Both as new, home use only. Offers. Tel: D'ton (0325) 286618.

**YAMAHA TX81Z**, excellent 8-voice multitimbral 4-op synth module, with built-in effects, manual. Bargain at £200. Tel: 01-515 0713.

**YAMAHA TX81Z** and Steinberg editor, £275; Roland MC202, manuals, tape deck, £175. Norman, Tel: 091-465 1055, eves.

## SAMPLING

**AKAI/LINN MPC60**, £1600; SP1200, £875; Akai MPX80 mixer, (rackmount), £600; FZ20M sampler, £899. Tel: (0860) 319031.

**AKAI S612**, and disks, £200 ono; Roland TB303, £90; Roland MC202, £90. Mint cond. Andrew, Tel: (0325) 466319.

**AKAI S700**, inc memory upgrade, 20 disks. The lot must sell cash, £275. Tel: 041-221 1220.

**AKAI S900**, trigger board, 40 disks, vgc, £950; Alesis HR16, £250; DX7, £450. Robin, Tel: 01-381 3844.

**AKAI S900** sampler, plus library, excellent cond, £800. Ruth, Tel: (0584) 74 269.

**AKAI S950**, fully expanded, large library, perfect cond, £1250 ono. Alan, Tel: (0246) 204291.

**AKAI X7000**, and library, PSR70 keyboard, DX100 synth, RX17 drums, Microverb. Offers considered. Tel: Somerset (0460) 63021.

**CASIO FZ1** sampler, disks, DD/HD, flightcase. Best value sampler at £700. Tel: (0908) 606936.

**CASIO FZ1**, with 2Meg upgrade, 20 disks, £600; TX81Z, £170; MT32, £220. Tel: Oxon (0491) 573980.

**CASIO FZ1** sampler, inc disks, mint cond, only £700. Tel: (0530) 37277, eves.

**CASIO FZ10M** sampler with library, £500 or swap for D110; Roland U110, £350. Tel: (0442) 216982.

**CASIO FZ10M** sampler, 2Meg memory, manual etc, plus library, £650. Steve, Tel: 071-476 0718.

**CASIO RZ1** sampling drum machine, boxed, manual, large

library of sounds and patterns, £125 ono. Tel: (0420) 541172.  
**ENSONIQ MIRAGE**, MkII, complete with case, MASOS and large sound library, immac cond, £500. Don, Tel: 031-441 3948.

**KORG DSM1** sampler/synth module, over 30 seconds sample time, 16 separate outs, excellent cond, boxed, manual, cost over £2000 new, offers around £750. Tel: (0706) 815912.

**MICROVOX-PRO** for Commodore screen editing, auto loop, easy to use, studio samples included, £100. Tel: (0742) 727093.

**OBERHEIM PROMMER**, slightly tatty, but works perfectly. Owner upgrading, £90 ono. Michael, Tel: (0271) 62485.

**PROPHET 2000**, £700 or swap 2002+; Bokse SM9, £300; Yamaha SPX90, £300; Yamaha SPX50, £200. Will, Tel: 01-263 2123.

**PROPHET 2000** sampling keyboard, flightcased, library, expanded memory, excellent cond, £595 ono; Atari Mega4, £995 ono. Tel: Hemel Hempstead (0442) 862373.

**PROPHET 2002** rackmount sampler, £400. Martin, Tel: 041-339 0344.

**ROLAND S10**, boxed, mint cond, 80 disk library, £500. Tel: (0283) 33458.

**ROLAND S220**, multitimbral sampler, perfect cond, £625; MT32, £220; DW6000, £340; FB01, £99. Tel: (0564) 775181.

**ROLAND S330** sampler, never left its 19" rack in my bedroom. Perfect cond, complete with nearly £2000 worth of pro samples, £850. Tel: (0223) 464117, days; (0638) 720090, eves.

**SECOND-HAND** factory disks for S10 or S700, £25 for 10 (inc post). Trevor, Tel: (0268) 43815.

## SEQUENCERS

**ALESIS MMT8**, with data recorder and manual, £120. George, Tel: (0296) 28626.

**ALESIS MMT8** sequencer, boxed, manual, PSU, excellent cond, £150. Phil, Tel: Leicester (0533) 887617.

**ATTENTION** Juno 6 owners! Interface for your Juno 6 plus Roland JSQ60 sequencer, £95. Tel: (0442) 871870.

**CASIO SZ1**, boxed, manual, £65. Phil Roberts, Tel: (0923) 36502 or 01-903 6666.

**KORG SQD1**, 10 hrs use, boxed, manuals, leads, superb cond, £220 ono. Tel: (0373) 826457.

**ROLAND MC500**, inc performance, MUSIC TECHNOLOGY MAY 1990

bulk librarian, plus turbo software, and thousands of D110 and K1 sounds, £450. Tel: (06333) 65758, eves.

**ROLAND MC500**, hardly used, £375; Korg Poly800, £175; Casio CZ1000, £175; Yamaha DX100, £175. Mint cond, updating. Tom, Tel: 091-272 4414.

**ROLAND MC500** sequencer, with disks and leads, boxed, perfect cond, £400. Ian Shepherd, Tel: (0753) 692442, days.

**ROLAND MC500**, £400; JX3P, £250; Premier kit bass drum, 4 toms, stands, cymbals, £250. Tel: (0462) 421485.

**ROLAND MC500II** sequencer, great cond, £650; Roland S220 sampler, £625; D50, £825; DW6000, £340. Tel: (0564) 775181.

**UMI** sequencer, (5.01), ROMs and interface (for BBC micro). Offers? WHY? Jaime, Tel: Bucks (06285) 26562.

**YAMAHA QX1**, 16-track flagship sequencer, £450 ono. David Wright, Tel: (0908) 667349.

**YAMAHA QX1** sequencer, (80,000 notes), 8 MIDI outs, mint cond, boxed, 10 disks, £375. Malcolm, Tel: 091-565 4334, eves.

**YAMAHA QX5** sequencer, as new, superb machine, £185. Patrick, Tel: (0604) 76984.

**YAMAHA QX21**, £110 ono; Roland MC202, £80. Manuals, PSU etc. E&MM transposer, £75. Peter, Tel: 061-483 4879.

**YAMAHA QX21**, immac cond, boxed, manual, leads, £120. Alan, Tel: (0705) 525204.

**YAMAHA QX21**, boxed, immac cond, £115; Casio CZ101, £110. Write: Alan Smith, Lonsdale College, Lancaster University, LA1 4YN.

**YAMAHA QX21**, £120; Yamaha DX100, £150; Studiomaster Session Mix 16:2, £580. Tel: (0273) 463328.

**YAMAHA QX21**, immac cond, £100 ono. Wanted: Korg DSM1, will pay £800 cash!!!! Jon, Tel: (0225) 762983, after 6pm.

## DRUMS

**ALESIS HR16**, super sounds, little use, boxed, £250 ono. Richard, Tel: Hull (0482) 792839.

**ALESIS HR16**, only used as a sound bank, boxed, as new, £250 ono. Daniel, Tel: 01-958 7012.

**KAWAI R100** plus jazz fusion sound chip, home use only, £250. Andy, Tel: (0954) 7248, eves.

**KORG DDD1**, boxed, home use only, 2 ROM cards, immac cond, £290

ono. Tel: (0373) 826457.

**KORG DDD1** sampled drum machine, excellent sound, tuneable, decay etc, plus extra soundcard, £170. Tel: (0294) 53819.

**ROLAND CR78** and Korg MR16, £100 each; Simmons Kit and TMI, £550; TR909 and flightcase, £450. Tel: 01-533 1533.

**ROLAND R5**, new, boxed, immac cond, £325; Roland MPD4, MIDI pads with holders, £125. Tel: 091-537 4817.

**ROLAND TR505** drum machine, boxed, manuals, excellent cond, £120. Mike, Tel: (0527) 60033.

**ROLAND TR505**, £130; Fostex 160, mint cond, £300; Casio SZ1 sequencer, £70. Jim Burton, Tel: (0283) 33458.

**ROLAND TR505**, £130 ono; Accessit stereo reverb and PSU, £80 ono; Passport Midisoft studio software, £80 ono. Tony, Tel: (0332) 367707.

**ROLAND TR606** Drumatix, vgc, boxed, manual, £70. Tel: (0442) 871870.

**ROLAND TR626**, best ever beatbox, 3 hrs use, as new, boxed etc, £190. Tel: (0273) 813015.

**ROLAND TR707**, boxed, manuals, PSU, £150. Nick, Tel: (0902) 755561.

**ROLAND TR707**, boxed, manuals, PSU. Swap for Yamaha FB01 or £180 ono. Tel: 041-954 0802, eves.

**ROLAND TR808**, MIDI, £400; MC202, £100; Tascam 244, £300. All with manuals. Tel: 061-747 7070, after 6pm.

**ROLAND TR808**, £295; Linn drum MkII, Rev3, £275; flightcase, £40; EPROMS, £5. Many spares included, LM1 circuit boards, power supplies, switches, diagrams. Offers. Tel: 01-372 3724.

**SIMMONS SDS9**, crash ride, hi-hats and stool included, ungigged, £550 ono. Tel: (0373) 864029.

**SIMMONS SDS1000**, black, good cond, all leads and module, plus some extras, £350. Tel: (0702) 461366.

**SIMMONS SDS1000**, 5-piece electronic drum kit, unused, as new, £800 ono. Tel: (0202) 749158.

**SIMMONS SDS1000**, 5 pads, rack, as new, £350. Tel: 061-998 3494.

**SIMMONS TMI** trigger to MIDI converter, 8 channels, 99 memories, excellent cond, £175. Tel: (0978) 354482.

**YAMAHA RX5**, plus 3 cartridges, home studio use only, £450. Tel: Ascot (0990) 25900, eves.

**YAMAHA RX7** digital drum machine, perfect cond, £300 or p/x Minimoog or analogue. Tel: (0622) 746872.

**YAMAHA RX11**, manual, MIDI, stereo, or 12 separate outputs, home use only, £150 ono. Tel: 01-688 0723.

**YAMAHA RX15** drum machine, £120 ono or swap any portastudio. Sam, Tel: (0603) 503781.

**YAMAHA RX21**, £100; RX21L, £90; Roland MC202, £80. Manuals, PSUs, studio use only. Peter, Tel: 061-483 4879.

**YAMAHA RX21L**, percussion machine, perfect cond, £75. Richard, Tel: (0536) 746113.

## COMPUTING

**AMIGA A500**, many hardware extras, all MIDI packages currently available. Simon, Tel: 01-398 3178.

**APPLE MACINTOSH**, vgc, 23 program disks, inc Performer, plus extras. Bargain at £950 ono. Tel: 041-429 4451.

**ATARI REPLAY FOUR** sound sampler, MIDI compatible, £40. Tel: Erith (0322) 346083, eves.

**ATARI SOFTWARE**: Sonus Masterpiece sequencer, brilliant editing/recording facilities. Manuals, boxed, (upgrading), £130 ono. Tel: East London 01-500 5520.

**ATARI SOFTWARE**: Steinberg Pro12, £45; power basic, £25; Teac 3440 plus RX9 dbx, £445. Tel: (0538) 308680.

**ATARI STM**, 1Meg memory, 1Meg drive, lots of software, immac cond, £290. Tel: (0761) 32610.

**ATARI 520STE**, 1MB RAM, upgrade, 9 month warranty, Pro24, Microsoft Write, database, PC Ditto, many games, £425 ono. Fass, Tel: (0903) 270100.

**ATARI 520STFM**, accessories, editors, sequencer, £225; Yamaha DX100, good cond, £216. Tel: (0227) 464881, after 8pm only!

**ATARI 1040**, SM125 monitor, Pro24 with key, £480; Roland MT32, £200. Mark, Tel: 041-552 7370.

**ATARI 1040STF**, boxed, pristine cond, plus £5,000 worth of latest professional MIDI software, £695! Tel: (0831) 204034.

**ATARI 1040STFM**, and mono monitor, Steinberg Pro12 MIDI sequencer, plus music, games, utilities, software etc, 6 months old, boxed, £399. Tel: (0384) 410853.

**CBM64**, 1541 drive, datacassette, £200; C-Lab Scoretrack, 16-track MIDI sequencer with Scorewriter,

plus MIDI interface, £200. The complete package for only £300. Tel: 061-872 5200.

**C-LAB CREATOR v2.2**, £180; Export (64 MIDI channel expansion), £85. Tel: (0392) 876675, eves.

**C-LAB Creator**, Unitor, v2.2, integrated sequencer and SMPTE/MIDI unit, vgc, cost £650 new, sell for £450. Steve, Tel: 01-476 0718.

**COMMODORE 128**, disk drive, TV, joysticks, sampler, Music Maker keyboard, disks, books, £300. Tel: (0502) 714919.

**CX5 BITS**: DMS 8-track sequencer, YRM501 composer, SFG01, Bit2. All cheap. Offers. Tel: Derby 766167.

**DIGIDESIGN** universal sampler editor, edits all samplers from S1000 to FZ1, plus manual, £100. Tel: 071-476 0718.

**DR T's KCS** Level II and backup (Atari), Roland TR707, GBS stereo reverb (XLR's). Best offers. Tel: East Sussex (0424) 218711.

**DR T's KCS** keyboard controlled sequencer, v1.6 (Atari), incredibly versatile, was £200, only £85. Tel: Darlington (0325) 481154.

**DR T's KCS** sequencer, inc manual, v1.5. Bargain at £40. Tel: (0562) 824484, after 6pm.

**GREENGATE DS3**, Apple IIe, (MIDI), complete with 2 drives and all software. Large library!! Adam, Tel: (0545) 560164.

**IBM MIDICARD**, with sequencer software, D20 editor, £200. Derek, Tel: 01-928 5151 X54144, days; (0323) 640749, eves.

**INTELLIGENT MUSIC M**, £100; Hybrid Arts EZ-Track and EZ-Score, £85; Dr T's D10/110 editor, £45. Tel: 091-537 4817.

**MUSIC-X**, £120 ono or swap for old equipment. Also Amiga penpals. Darryl, Tel: (0527) 403103.

**SIXTRAK** editor, sequencer for Commodore, £35; Commodore CBM64, drive, cassette, £100. Tel: 01-328 0244.

**STEINBERG CUBASE** v1.5 with key (Genuine) £300 ovno (0424) 436674

**STEINBERG PRO24**, v3, official dongle, as new, £110. Tel: 01-985 2739.

**STEINBERG PRO24**, v3, £160. Tel: 021-777 9826.

**STEINBERG PRO24**, v3, plus additional software, manuals, key, £105. Ronnie, Tel: (0382) 552768.

**STEINBERG PRO24**, v3. For sale or trade for synth, expander or multi effects. Anything considered. Tel:

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**STEINBERG PRO24**, v3, plus dongle, manual, £150; Hybrid Arts Genpatch, manual, £50. Tel: Glasgow 041-423 5485.

**STEINBERG PRO24**, v3.0, with manuals and dongle. A bargain at £125. Tel: (0263) 768936.

**STEINBERG PRO24** sequencer, Dr T's D10/D110 editor, C-Lab Creator. Brian, Tel: (0298) 24776, after 6pm.

**UMI** v5.01 sequencer for BBC, plus dual 40-track drives, £170. Richard, Tel: 01-506 0533.

**YAMAHA DX5M/SFG05** - use as sequencer/expander. Choice of cartridges, £95. Andrew, Tel: (0726) 815461.

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**FOSTEX M80**, excellent cond, very little home use, inc programmable Quplay remote, £850 ovno. Ben, Tel: (0932) 62117.

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**FOSTEX X15**, Fostex MN15, £150; Korg DDM110, DDM220, KMS30, £250; Desctech 1202 mixer, £330; SCI Multitrak, £340. Tel: (0323) 37612, eves.

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**YAMAHA MU802**, 8-channel rackmount mixer, 2 auxs, panning, £170. Tel: (0562) 824484, after 6pm.

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**KORG DS8**, ROMs and RAMs, plus Yamaha RX5 voice cartridges. Cash waiting. John, Tel: Reigate 248215.

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**ROLAND D5** wanted. Julian, Tel: (0792) 299699.

**ROLAND D10/20/110** voice edits wanted on self-loading Atari disks. Tel: 041-339 3032, eves.

**ROLAND D550**, SBX80, MKS70, Alesis Datafile, XRI 300, Tascam MM1, Beta 58. Tel: 01-372 3724.

**ROLAND JUNO 60**, in complete working order. Tel: South Godstone (0342) 892563.

**ROLAND OCTAPAD** wanted for £150. Must be in vgc. Bobby, Tel: 01-435 7598.

**ROLAND TR727**, TR707, MPU101, MKS7, JX3P, MKS30 wanted for cash. Orlando, Tel: Croydon 081-667 0298, anytime.

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**WANTED:** Roland PG800 programmer (for JX8P/JX10). Cash waiting. Tel: (0245) 355194.

**WANTED:** sounds for Kawai K3 on disk for Atari 1040. Tel: (0983) 404949.

**YAMAHA SPX90** MkII for £200. Must be in vgc. Bobby, Tel: 01-435 7598.

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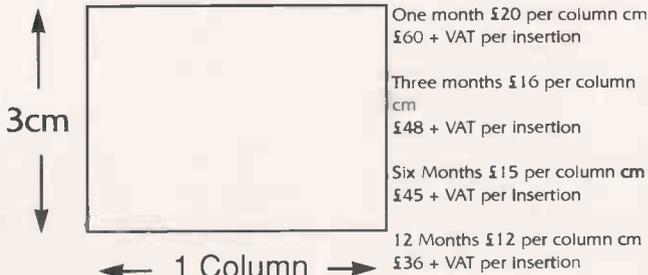
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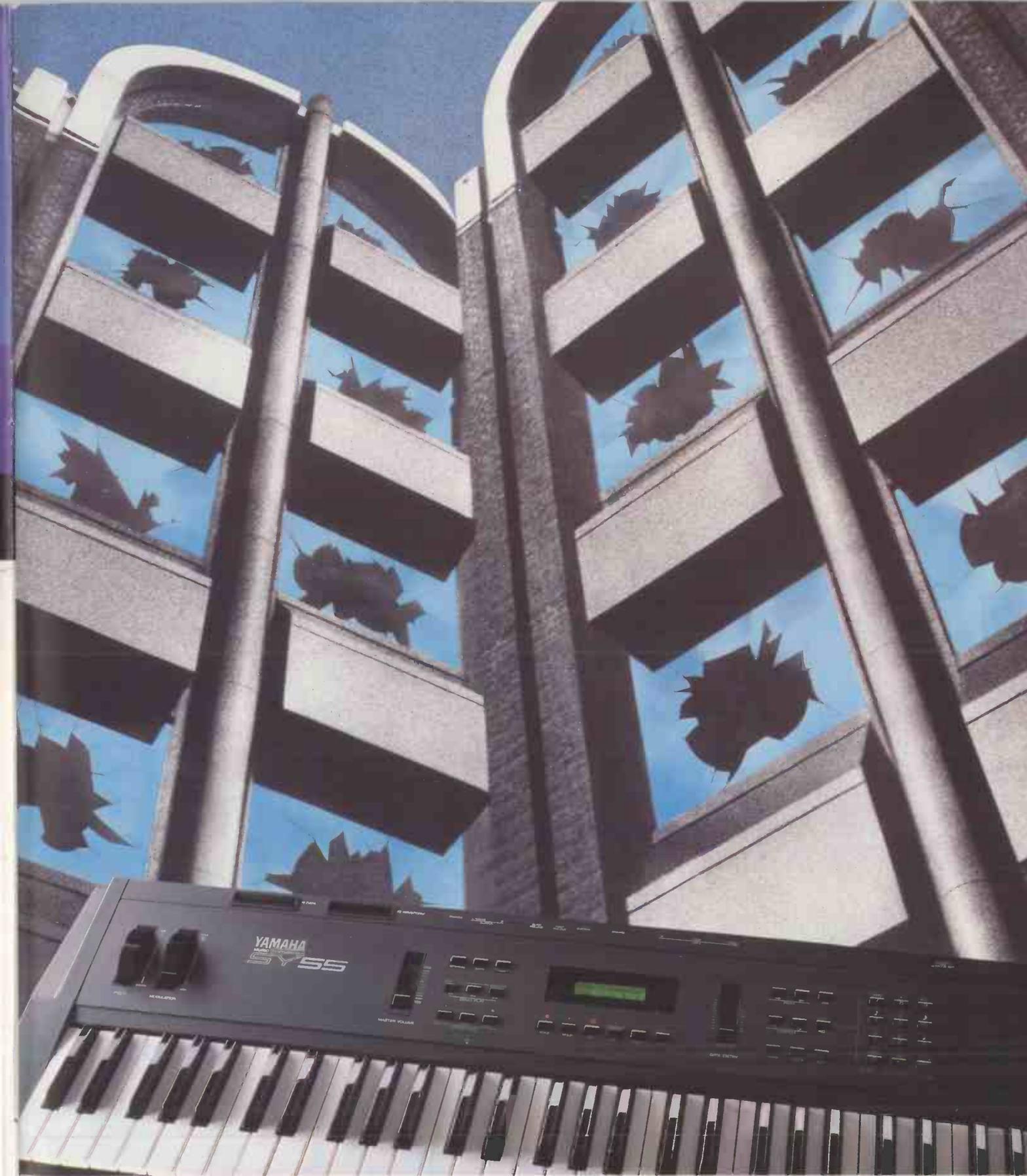
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