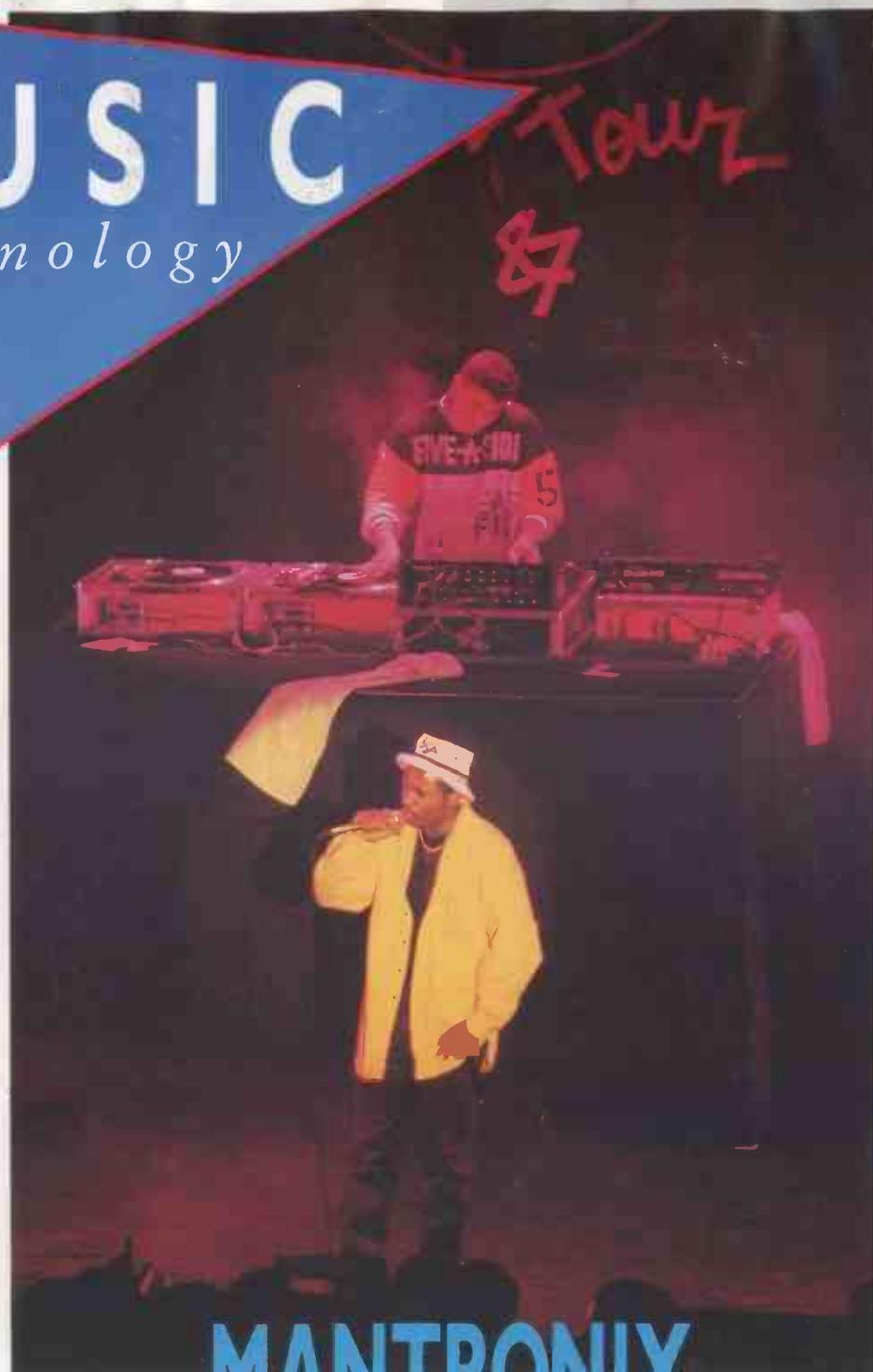


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IN-DEPTH REVIEWS

Yamaha RX5 Drum Machine; Yamaha TX81Z Module; ART DR1 Reverb; Steinberg Cosmo Software

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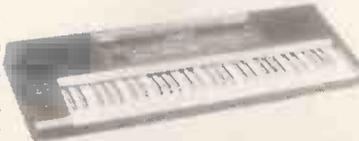
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Synthesizers: Expanders

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REVIEWS EDITOR

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Sam Masters, Lynn Cooper,
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PHOTOGRAPHY

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Ce Ce Hernandez

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PUBLISHING DIRECTOR

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Terry Day

I KNOW THIS is a bit early on in the magazine to start getting technical, but let me ask you this question. What do you understand by the term "16-bit sampling"?

Chances are, you see it as the "sampling nirvana" it's been described as in these pages in the past. A system of digital sound-sampling with specs that are so inherently superior to those of eight-bit or 12-bit systems, it is considered almost perfect.

And in some respects, you'd be right. Sixteen-bit sampling is intrinsically superior to the systems most commonly used in hi-tech music-making machinery. Quite simply, the digital "words" that represent analogue sound signals have 25% better resolution than their 12-bit counterparts, and must, therefore, be capable of reproducing a more accurate signal.

But is 16-bit resolution perfect? Of course it isn't. Nothing ever is. Especially if, in the case of sampling, you put the sort of demands on it that musicians have an irrepressible habit of doing. As an example of this, you had only to listen to the vaguely damning comments being made by musicians listening to the new Casio FZ1 16-bit sampling keyboard at the recent Frankfurt Musikmesse.

Doubtless, the piano sample demonstrated had a frequency response superior to that of any sample replayed on any competing 12-bit machine, and a better dynamic range, and better noise figures, and so on.

But the timbre of the sample still didn't alter as you hit the keys with greater force, there was no sympathetic vibration from neighbouring notes as you hit each key, and there was little or no resonance from inside the instrument's case. In short, it still didn't sound anything like a piano, and the pianists weren't fooled for a minute. Cue the vaguely damning comments.

At the other end of the scale, the general public is already easily fooled by 12-bit samples of most musical instruments (or eight-bit samples of drum sounds), even when they're being replayed on a good hi-fi system. Subject them to the torture of the average TV loudspeaker, a medium-wave radio, or the nation's telephone system, and the deception becomes easier still.

So in commercial terms, the music business probably doesn't need 16-bit sampling at all. If the programmers, the engineers and the technicians want it, then the technology is there, and getting cheaper all the time.

The final question must be: do artists need 16-bit sampling? Holger Czukay, one of this issue's interviewees, would insist they do not. For Czukay is the kind of composer who believes that if you're talented enough, you can make good music "with a stone".

He's right, too. Some of contemporary music's most inspiring material has been made with limited resources. The first wave of British synthesiser acts (Human League, Depeche and so on) is a prime example. Hip hop is another, more current one.

Both genres adhered firmly to the belief that if you have a fault, you might as well make a feature of it. Thus the relentlessly metronomic rhythms of beat-boxes that were not sophisticated enough to create anything more "human" became inexplicably popular once record-buyers and nightclub-goers had got used to them. And the characteristic side-effects of early eight-bit sampling systems became precisely the qualities that made them indispensable industry tools.

We have all moved on from then, of course, but Henry Ford was wrong. History is not bunk; it is something we can all learn lessons from, if we know where to look.

And knowing where to look seems to be the clue to getting the best from sampling technology - 16-bit or otherwise. Specifications can be very misleading things, not because manufacturers print false ones (this is still a surprisingly honest industry, in spite of everything), but because many musicians simply don't know which specifications they ought to be looking at.

So next time somebody tries to thrust a technological buzzword or an impressive-looking spec-sheet down your throat, tell them you want the chance to weigh up the facts for yourself.

Because these days, as ever, higher quality of signal isn't an instant key to higher quality of music. Ask Holger Czukay. ■ Dg

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Comment

As the world and his wife gets hot under the collar about affordable 16-bit sampling, we wonder if the increase in sound quality is necessary at all.

4

Newsdesk

Now that show fever has died down, time to catch up on some of the novelties that weren't being exhibited at the winter trade fairs.

7

Communiqué

MT readers give their views a thorough airing, and nobody in the music business is safe – least of all MT itself.

10

Interface

Another selection of readers' technical queries, answered by MT's resident team of agony aunts.

16

Mission Impossible

Match reverb parameters up with the way you'd like to control them from a keyboard, and you could win a Korg DRV2000 – the digital reverb that makes MIDI performance control affordable.

86

Free Ads

Buying or selling hi-tech gear? This is the busiest, most influential classified section in the music business.

92

APPRAISAL

QED Pickup

It sounds like sci-fi, but someday, all guitar pickups may work by sensing shadows along the frets with an infrared detector. Rick Davies again.

23

Kawai K5 Synthesiser

Real-time additive synthesis at an affordable price will become a reality when the K5 hits the shops later this year. Rick Davies previews Kawai's best yet.

24

Yamaha TX8IZ Module

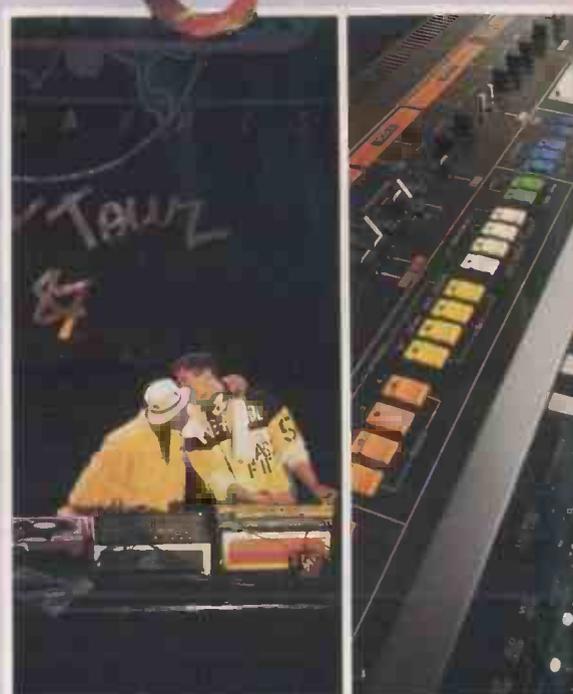
"Son of FB01" is one way to describe Yamaha's latest FM module, which adds programmability and a number of the features given to the new DX7. Martin Mickleburgh keeps it in the family.

26

Yamaha RX5 Drum Machine

Is it worth spending nearly a grand on a non-sampling digital beat-box in 1987? Trevor Gilchrist, after testing the RX5, comes to the inevitable conclusion that it is.

40



Roland GM70 Guitar

Paul White, who's owned almost every Roland guitar synth built, puts the new GK1 synth driver and GM70 "brain" under test. Is this the first pitch-to-MIDI system that really works?

60

Oberheim Prommer

Chris Meyer takes an in-depth look at Oberheim's EPROM burner and reader, and considers its renewed significance in the light of continually evolving MIDI applications.

64

MUSIC

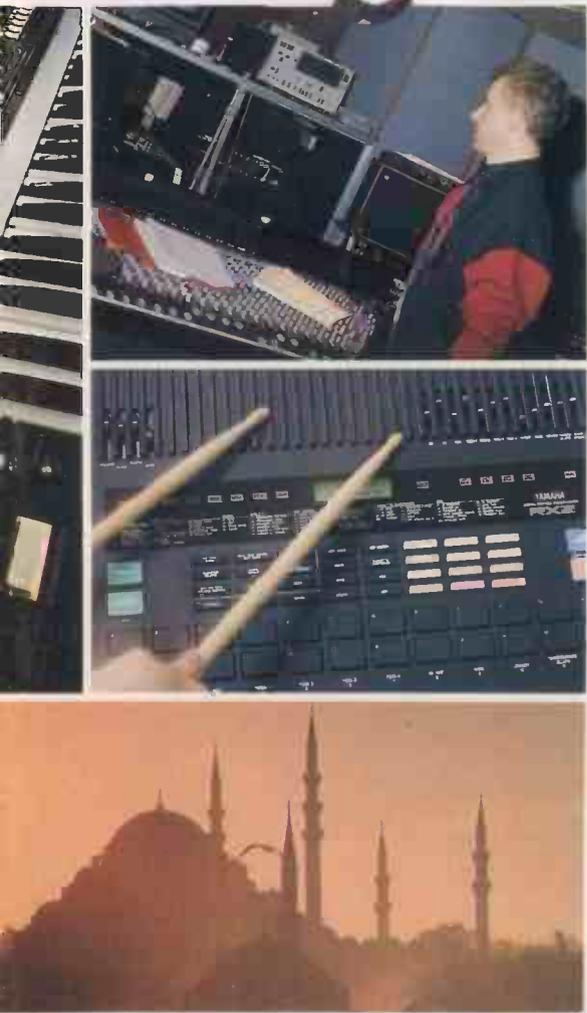
State of Play

As film music becomes a more popular means for composers to earn a living, Tim Goodyer talks to soundtrack expert Steve Parsons about his work on the new British film, 'Empire State'.

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EVENTS

APRIL 1987



Mantronix

Is hip hop an unending stream of monotonous, empty rhythms, or the brightest star in the use of modern musical technology? Tim Goodyer cross-questions MC Tee and DJ Mantronix.

67

Out-Takes

We appraise Arcadia's latest extravagant video, new album releases from Shriekback and Larry Fast's new label, and another clutch of readers' demo tapes.

78

Holger Czukay

Dan Goldstein talks to the Can founder member whose current interests include providing the Pope with a backing band, recording with four valve tape machines, and chopping-up bits of Bulgarian folk music.

88

STUDIO

Hugh Padgham

Still in his early 30s, yet a man who's worked with The Police, Genesis, Bowie and McCartney, Padgham is one of the most successful young producers in the world. Paul Tingen coaxes him into revealing a few secrets.

50

Korg DRV2000 Reverb

In the first of two appraisals of digital reverb units that offer real-time control of parameters via MIDI, Rick Davies analyses Korg's affordable approach...

72

The Wool Hall

If you earn a fortune in royalties from record sales and you want your own recording studio, what do you do? If you're Tears For Fears, you build The Wool Hall. Paul Tingen reports.

76

ART DRI Reverb

...While Simon Trask gets to grips with a more expensive model from America, with more parameters, a remote-control unit, and various other goodies; is it worth the extra?

80

TECHNOLOGY

Istanbul Music Expo

For the first time, a UK magazine gives coverage to the fair that follows NAMM and Frankfurt. It may not be as big, but it's growing in importance all the time. Dan Goldstein reports from the Bosphorus.

30

We Can't Go On...

...Beating like this. We start a major new series on how to make your drum machine - no matter what its spec - sound more interesting, both sonically and rhythmically. Your guides are Chris Meyer and Matt Isaacson.

44

Eighth Wonder

Of all the instruments that became popular in the heyday of the "big synth" a few years back, Roland's Jupiter 8 has stood the test of time the best. Tim Goodyer, a self-confessed JP8 addict, explains why.

56

Dumping Grounds

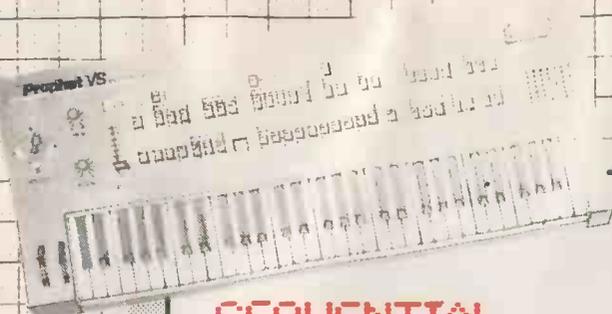
The start of another series, in which Chris Meyer reveals just how useful the new MIDI Sample Dump Standard can be in everyday applications.

58

Patchwork

Another crop of readers' own synth sounds. This month's featured instruments: the original DX7, the Casio CZ, the Ensoniq ESQ1 and the venerable Korg MS20 monosynth.

82



SEQUENTIAL

2002 PLUS, VECTOR, STUDIO 440,
VECTOR RACK



EMAX, DPX-1, KORG DSS-1,
ROLAND S10, S50,
AKAI S7000, S700,
S900, MIRAGE,
MIRAGE RACK.

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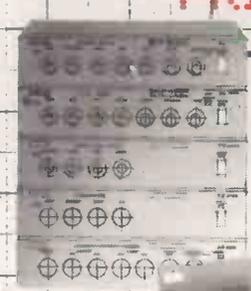


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EFFECTS

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MICRORACK REVERB,
MICROVERB,
EX RACK.



YAMAHA

TX 81Z, DX 7MK1, DX 7MK2,
DX 100, DX 27, RX 5, RX 11,
RX 21, RX 21L, PF 70, PF 80



AKAI

AX 73, MX 73, VX 90



ROLAND

JUNO 1, JUNO 2, JX 10, MKS 70,
MKS 50, D 50, MKS 20, RD 1000,
RD 300

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TX 81Z, DX 7MK2, VECTOR RACK
MIDIVERB 2, MICRORACK REVERB.

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MUSIC AT ATARI USER SHOW

► Reflecting the growing importance of MIDI in Atari's world domination plans, this year's Atari User Show at the Novotel, Hammersmith, London, on April 24-26 will be highlighting MIDI applications on the Atari ST.

Throughout the show there will be a music studio which will be run by Syndromic Music (distributors of Hybrid Arts and SoundBits ST MIDI software), together with regular lectures and demonstrations. While the studio will concentrate on providing hands-on experience of ST MIDI software, the lecture/demonstrations (in a separate area) will concentrate on explaining professional MIDI applications of the ST.

This is obviously a unique showcase for all importers of ST MIDI software – and also a unique opportunity for musicians, who will find the full range of software from Hybrid Arts, Steinberg Research, Dr T, Passport, C-Lab, SoundBits and others on demo. In total there will be some 20 packages on show, taking in the full range of sequencers and patch editor/librarians – and including the UK debut of Hybrid Arts' 16-bit ADAP1 sampling package for the ST.

ADAP aside, all this software is not a lot of use without instruments to make the sounds. Fortunately, many major instrument manufacturers have also recognised the importance of the Atari Show – so along with the software, you'll find equipment from the likes of Akai, Casio, Yamaha, Korg, Roland, TOA and Alesis.

All in all, this has to be an important event in the calendar of any musician who is remotely interested in computer-based MIDI software. Be there. ■ **St**

NEW KEYBOARD HYBRID

► Now available from Hybrid Technology is the Hybrid Music 4000 music keyboard, designed for use with the company's Music 5000 synthesiser (and upgraded Music 500).

The keyboard is a four-octave unit with full-size keys, and comes with Studio 4000 keyboard operating software which has been fully integrated into the AMPLE system – the system disk holds an improved version of the

NEWSDESK

HIGH TECHNOLOGY IN THE EMERALD ISLE

► With the new U2 album under their belts, and a past year which has seen the likes of Howard Jones, New Order, Def Leppard, The Waterboys and The Chieftains pass through their doors, Dublin-based Windmill Lane studios can perhaps justifiably claim that the Irish climate is conducive to good work, and that Dublin is becoming one of the hip places to record.

Windmill Lane began the year by opening a new computer music studio: Studio 3, designed by Andy Munro. The new studio has an equipment lineup that includes a Fairlight Series III, PPG Wave 2.3 with Waveterm B, Oberheim Xpander and Matrix 6, Roland Super Jupiter and E-mu SP12,

and is tie-lined to Studio 1, and to Windmill's broadcast-standard video facilities.

Just completed is a new live room attached to Studio 1, again designed by Andy Munro. The room features complete acoustic isolation from the main studio area if required, while maintaining excellent visual contact.

Windmill's Studio 2 has also received a facelift during the past year, with the installation of a Soundcraft TS24 console and a Studer A800 24-track tape machine, along with a complete refurbishment.

More from Windmill Lane Studios, 4 Windmill Lane, Dublin 2, Ireland, ☎ (from UK) 0001-713444. ■ **St**

EXAMINING THE FAIRLIGHT

► Now here's a novel concept. Syco Systems and the Gateway School of Recording and Music Technology have announced a formal examination course in Fairlight CMI programming.

The course (which is based around the Fairlight Series IIX) covers both theoretical and practical aspects of CMI operation and programming, and runs over a four-day period, culminating in a comprehensive examination. Each course caters for a maximum of five people.

Essential entry requirements are a basic knowledge of computing and of the recording process, together with the ability to read and write music. You *can*, however, be a complete

novice when it comes to Fairlight programming, and you don't actually have to have a Fairlight at all.

The reasoning behind the course is a desire to establish and maintain industry standards in what Gateway's Dave Ward terms "formal personnel training and qualifications". Gateway see the course as being aimed primarily at current or aspiring engineers and producers.

The next course will run from May 4-7, and prices are £200 per day for the course, plus £100 for exam, excluding VAT.

More from Gateway, ☎ 01-350 0340; or Syco, ☎ 01-724 2451. ■ **St**

standard Studio 5000, an extended main menu, and user-friendly editor panels for keyboard instrument and effect selections, instrument sound manipulation and recording. The keyboard allows you to play and record with eight-note polyphony, and a connected footswitch functions as a sustain pedal.

Owners of the ATPL Symphony keyboard can also purchase an upgrade pack which provides all the software facilities of the Music 4000 keyboard package.

The complete Music 5000 system

runs on the BBC Model B, B+, B+128K and Master 128 computers with Acorn-compatible disk drive. (For a review of the Music 5000, see MT November '86.)

Prices are as follows: Music 4000 keyboard (including footswitch) £169; Symphony upgrade pack £47; footswitch (for Symphony) £11.50; all including postage and packing but excluding the dreaded VAT.

More from Hybrid Technology, Unit 3, Robert Davies Court, Nuffield Road, Cambridge CB4 1TP. ■ **St**

MISSION IMPOSSIBLE CRACKED



► These two unlikely-looking characters are, in fact, typical MT readers – just the sort of people who might win a part of our Mission Impossible competition, for example.

And, in fact, that's exactly what Mike Sinclair (Nottingham) and Dave Baron (Leeds) succeeded in doing, winning an Akai AX73 synthesiser and a Casio SK100 sampling keyboard respectively. Both were awarded their prizes during a (very) minor celebration at the magazine's offices at the beginning of March, proving that our questions *can* be answered if you have sufficient patience/audacity/sheer good luck (delete where applicable). Also in attendance were Dave Caulfield and Toni Rutherford of Akai UK, and Martin Brady and Dave Clancy of Casio; sadly, the Editor made the photographs they appeared in unprintable.

Congratulations, Mike and Dave. And congratulations also to Rochdale's Tom Szakaly jnr, who won the Slapback Scintillator (with a grand total of 1795 words, by the way); and to Clinton Beale of Lichfield, who won the Dynacord Rhythmic Stick. Neither winner could attend the prize-giving, which has proved doubly annoying for Tom, whose Scintillator has been mislaid by the carriers: another is on its way.

After a month's respite, Mission Impossible is back this month, offering you a chance to win £500 worth of Korg DRV2000 digital reverb. So what are you waiting for? One day, you too could get your photograph in Newsdesk... ■ **Dg**

MAC BY MAIL

► If your musical imagination was fired by our recent reviews of Intelligent Music's M and Jam Factory ►

software packages, you'll be glad to know that these programs are now available in the UK courtesy of new mail-order company Sound Creation, which has been set up to specialise in music software and hardware for the Apple Mac.

In addition to the Intelligent Music software, Sound Creation are also selling programs from other American software houses such as Opcode, Digidesign, Southworth and Electronic Arts. The prices we have so far are as follows: Intelligent Music M £95, Jam Factory £90; Opcode Studio Plus MIDI interface £200, Sequencer 2.5 £200, DX/TX Editor/Librarian £175.

More from Sound Creation, ☎ 01-994 6138 (24 hours). ■ St

DX INSTRUCTION ON VIDEO

► Included among the latest videos from Hotlicks Instruction Tapes are two one-hour videos on the subject of DX7 (no, not the MkII) programming. Both are presented by Ronnie Lawson.

The first, 'Programming the DX7', discusses FM synthesis (taking you through the concepts of algorithms, carriers and modulators), provides a complete run-through of all DX7 parameters, and takes you through programming a DX sound from scratch.

The second, 'Advanced DX7 Programming', provides quick editing tips, covers such features as keyboard level

scaling, voice initialisation and edit recall, and takes you through programming a split-keyboard sound from scratch. DX performance features such as breath controller, aftertouch and mod wheel are also covered.

The videos are available in both VHS and Beta formats, cost £24.95 each, and should be available from your local music shop. Reviews to follow in due course.

More from Stephen McLuckie, Labtek International, ☎ (060684) 6455 ■ St

The software currently provided allows the transfer of stereo 44.1kHz, stereo 22.05kHz or mono 44.1kHz 16-bit digital audio to or from a special soundfile section on the Atari or hard disk. Various other related utilities are also included.

More from Audio Design, Unit 3, Horseshoe Park, Pangbourne, Berks. ☎ (07357) 4545 ■ St

GUITAR SYNTHS GO NATIONWIDE

► From March onwards, Roland will be holding a series of Guitar-MIDI masterclasses at main dealers throughout the UK, aimed at demonstrating the benefits of their GM70/GK1 guitar-to-MIDI system (see review elsewhere this issue) to guitarists who are considering entering the world of MIDI. Each masterclass is designed to cater for up to 30 guests, and will include "audience participation and interaction", according to Roland.

Taking charge of the masterclass sessions will be one-time Roger Waters guitarist Jay Stapley, who has been demonstrating Roland guitar synthesisers since the early '80s. Stapley will be MIDI-ing up his guitar to a range of Roland machines including the MKS50, MKS70 and MKS100 modules, the DEPS signal processor, and the new GP8 Guitar Processor which incorporates eight programmable FX in a single rack unit. This arsenal of MIDI gear will be remote-controlled from Roland's new FC100 multi-pedal Foot Controller.

More from Your local Roland dealer, or Roland's Customer Support Team, ☎ 01-568 4578. ■ St

ATARI MEETS SONY IN DIGITAL AUDIO LINK

► "SoundStream" is the name of a new product for the Atari ST computer which allows the transfer of compact-disc-quality stereo digital audio between the computer and a Sony PCM digital recorder. Developed by York University's Electronic Music Studio as part of the Composer's Desktop Project (CDP), and exclusively manufactured and marketed by Audio Design, SoundStream is described as opening up previously undreamt-of possibilities for manipulating

and editing audio on a low-cost system.

To run the system, you need an ST computer equipped with hard disk, a SoundStream and a Sony PCM 501/601/701 digital recorder equipped with a suitable interface conversion and appropriate software. SoundStream itself consists of a 256 kilobyte FIFO (First In First Out) buffer memory and a control system which links the Atari's ROM port to the Sony digital recorder.

AES DIGITAL MUSIC CONFERENCE

► The Audio Engineering Society will be holding its fifth international conference, titled 'Music and Digital Technology 1987', at the Biltmore Hotel in Los Angeles, California on May 1-3.

Twenty-eight invited speakers from the music industry, the computer industry and research institutions in the United States and abroad will summarise the state-of-the-art of making music with digital technology, and outline new directions in digital music-making. The conference is planned to be an intensive learning experience for all involved, and attendance is limited to 300.

Session topics include MIDI protocol (but of course), computer networks for music, new and unusual controllers for digital synthesisers, composition with computers, digital music workstations, digital synthesiser design, and the MIDI-SMPTE connection.

The roster of guest speakers includes Dave Rossum, E-mu; William Mauchly and Albert Charpentier, 8

Ensoniq; David Wessel, IRCAM; Michel Waisvisz, STEIM; Robert Moog, Kurzweil; J L Cooper, president of both the MMA and J L Cooper Electronics; Wendy Carlos, Serendip; Dominic Milano, Keyboard; Craig Anderton, Electronic Musician; Evan Brooks, Digidesign; Curtis Roads, Computer Music Journal; and F Richard Moore, Centre for Music Experiment, University of California San Diego.

But it's not all work and no play, with a concert on the first evening which will feature music generated by computer and digital devices, some of the live performances involving unusual, highly expressive controllers, and a banquet on the second evening with Dr John Chowning as guest speaker.

There will also be an exhibition, with exhibitors limited to those whose products are directly related to the theme of the conference.

More from AES Inc., 60 East 42nd Street, Room 2520, New York, NY 10165-0075, USA, ☎ (from UK) 010-1 (212) 682-0477. ■ St

SHOCK TACTICS FOR CHINA



► Following last month's news item on music technology developments in China, news reaches us of another company investigating the Chinese connection. This time it's console manufacturers TAC (Total Audio Concepts) who've been on the ball. They first explored what they refer to as "the potentially burgeoning Chinese

market" in 1982, and subsequently exhibited their products in Beijing in 1983.

In late 1985, a year of negotiations paid off with the placement of the largest single order that TAC have ever received: over 70 of a slightly customised version of the popular TAC Scorpion console – possibly the largest order China has ever placed with a console manufacturer.

The company are now working to consolidate their position in the Chinese marketplace, and are "forging ahead to supply a wide range of console formats to suit the particular needs of the expanding Chinese audio industry". Eat your heart out, Simon Napier-Bell. ■ St

CTS LIVES TO RECORD ANOTHER DAY

► Wembley-based studio complex CTS Studios is one of this country's largest, best-known and most-established recording studios (you may remember our article on CTS' Studio 4 programming suite in E&MM December '85). They have also been the subject of industry-wide speculation in recent months, concerning the possibility of imminent closure and/or sale by owners Lee International.

Now the speculation is at an end, with the news that CTS have been acquired by Lansdowne Recording Studios, who are promising business as usual. Both CTS and Lansdowne are

internationally renowned for their achievements in film and TV soundtrack recording, though the new directors are quick to point out that their clients are drawn from all aspects of music recording.

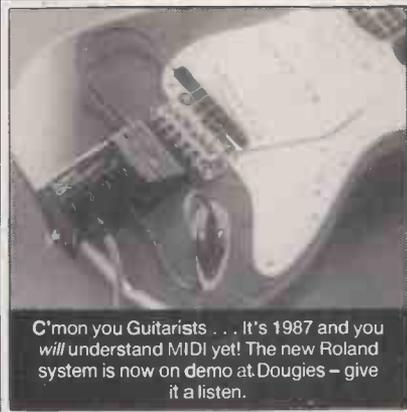
While CTS and Lansdowne will be operating autonomously, bookings for either can be made at either – making a total of five studios available.

One of the first major bookings at CTS under its new ownership will be one of the studio's oldest customers: James Bond. The latest 007 movie, *The Living Daylights*, will have its soundtrack recorded there. ■ St

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C'mon you Guitarists . . . It's 1987 and you will understand MIDI yet! The new Roland system is now on demo at Dougies - give it a listen.

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THE DEDICATED KEYBOARD CENTRES...



ENSONIQ Sampling simplified. Good God - the all new looking Mirage MKII is here - all Mirage disks and sequences will play on this real beauty. At £999 RRP there IS no competition . . . don't forget . . . 8 second loading giving you THREE different sounds across the keyboard (or 6 separate split) FROM ONE 3.5" disk!! only £999
ESQ-1 Module. It's here soon - ring for details!..... £POA
EDP1 Piano module. One canned Grand Piano in a rack!..... £POA
And not forgetting the synth of 1986 - ESQ-1 itself! Stocks are slowly improving (Now with Rev 2.0 software)..... £1195

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COMMODORE BASED:

Card 32 16 track with sync to tape, graphic editor and scorewriter..... £325
Card 325 16 track with sync to tape, graphic editor (no scorewriter)..... £265
Pro 16 plus 16 track with graphics editor (disc) £100

CARTRIDGES GIVING INSTANT PROGRAM

ATARI BASED (ST)

Famous Pro 24 £285
Pro Creator 150 (DX programmer etc) £285
S-900 Soundtracs (Akai S-900 visual editor) £899
SMP-24/MIDI Processor NEW! £899

Atari based using PRO24 software write for details

Note: Atari 520 STF now available £399 inclusive gives you all the features of the 1040 STF disc drive built-in, no monitor required (any TV will do!). Package price including PRO24..... £POA
NB not recommended for S-900 soundtracs

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X-stands post free..... £19
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3 tier alum Lifeweight..... £125
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Sustain Peds (Quote for which K/Bd) "square type"..... only £12
Cases eg DW8000..... only £42

YAMAHA

MR10 Fun Drum Machine J3)..... £49
CS01 self-contained synth..... £69
CS15D dual ch.preset mono..... £99
CX5 (M) & YK01 compute s/h..... £250
Q2031 rack stereo graphic..... £299
PF10 piano S/H..... £399
PSR 6100 multikeyboard s/h..... £450
PSR70 multikeyboard new..... £525
DX21 FM synth x-demo..... £550
DX7 FM synth s/h..... £799
DX9 FM synth s/h..... £399
CVP5 Clavinova x dem..... £799
PSR6300 NEW multikeyboard..... £POA

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DB11 Music Conductor/Tuner/Stopwatch..... £39
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Dr Pad perc. bashers x dem..... £99
Micro-rack Phaser..... £99
Micro-rack Flanger..... £99
Micro-rack Pitch shifter..... £199
EM101 MIDI module..... £199
MKS 10 piano module s/h..... £199
JUNO 6 classic anal. synth..... £269
CUBE 60K versatile amp x dem..... £345
SDE2500 rack prog DDL (MIDI)..... £399
CPM120 compact pwr'd mixer..... £399
TR727 prog latin perc..... £399
JUNO 60 great synths s/h..... £550
HS60 (Juno 106 speakers)..... £550
HP350 60 oct piano (MIDI) x dem..... £699
JUPITER 8A legendary anal synth incl. case superb condition..... £1199
TR505, TR707, JX10, MC500..... £POA

KORG

700 mono synth..... £69
M500 preset synth..... £50
MR16 pers MIDI module..... £299

PSS50 super section..... £325
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MPX820

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BC RICH nj WAVE..... £299
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ESP STRAT..... £345
IBANEZ RS530 (Gary Moore)..... £325
ARIA Knight Warrior Ltd Edit. red..... £399

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ARIA LW15..... £169
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DIAON Twin neck 6/12..... £329
LOWDEN S5C..... £399
OVATION Elite..... £799

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WESTONE Concord 1 red..... £150
SQUIER Bullit USA..... £150
WESTONE Thunder I marked..... £169
IBANEZ Blazer..... £169
WESTONE 'The Rail' white..... £179
WESTONE TH1A fretless bl..... £199
ARIA CSB300 fretless wine..... £189
IBANEZ Musician f/less s/h..... £345
WESTONE Head & fretless w/c..... £480
WESTONE Headless (2)..... £480
ARIA RSB deluxe white..... £399
PEAVEY Patriot white..... £199
OVERWATER..... £299

MISCELLANEOUS

AKG BX5 stereo spring reverb..... £199
CASIO CZ5000 as new..... £499
IBANEZ DM1100 rack DDL..... £250
ALESIS MIDIVERB..... £250
JVC KB700 S/H..... £299
TECHNICS K350..... £399
RHODES MkII St73 s/h..... £345
RHODES 88 'Upright version'..... £229
WURLITZER El Piano..... £299
CRUMAR Roadracer El Piano..... £69
RHODES Janus I 100w powered cabs 2x 12 on castors the pair for..... £299
ROTEC 1 x 12H Cabs pair..... £229
OSCAR synth..... £325
MOOG Source..... £345
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ARP Axse..... £89
IBANEZ HD1500 & PC40 prog harmonizer and f/switch (rack mount)..... £299
MEMORYMOOG no MIDI, no velocity, no aftertouch but must be the fattest analogue synth EVER made . . . what a sound for only..... £1100

HOT NEW PRODUCTS THAT COULD/SHOULD BE IN STOCK AS YOU READ THIS . . .

E-Max, Ensoniq Range, Korg DS-8/DDD-5/SQ-8, Roland D50, Roland PR100, Midiverb II/Microverb, Steinberg, Oberheim SPX-1 plus MUCH MORE

COMMUNIQUE

Write to: Communiqué, Music Technology, Alexander House, 1 Milton Road, Cambridge CB4 1UY. Free year's subscription if yours is the letter of the month.

Dear MT

Photo Replay

Having read M D Everett's comments (Communiqué, MT January '87), I was left wondering whether he considered himself a musician or a technician. His suggestion that very few musicians the world over should be allowed to speak in public would, I suppose, indicate he is in the latter category.

As for the photos of Howard Jones, I personally feel they are excellent both compositionally and technically, and certainly shouldn't cause blushing at the newsagent checkout - as they apparently did for Mr Everett.

■ Gearóid Dullaghan
Hemel Hempstead

Dear MT

On Course

I've just finished the first year of City University's Diploma in Music Information Technology, and thought other readers might be interested to read a personal appraisal of the course.

I was one of three full-time students alongside 12 part-time. The first year exhibited obvious deficiencies, yet the breadth of topics covered ensured that an educational time was had by all. Not bad, considering our diverse backgrounds - musicians, teachers, electronics wizards and programmers. In fact, being able to talk with and comprehend experts from other disciplines was part of the experience.

Topics covered by the course steered well clear of "DX programming" and "Moog licks", veering instead towards the academic. We had lectures on acoustics, psychoacoustics, sampling theory, dBs, filters and so on. As a musician I felt overwhelmed by the amount of mathematics, but apply simple logic, rub vigorously, and anyone should be able to complete the course.

Naturally, the Diploma is founded upon excellent facilities: a "Mac rack" with Mark of 10

the Unicorn software, a Fairlight IIX and Voicetracker, several BBC B and Acorn 500 systems, plus a growing arsenal of MIDI machinery. Add to that experienced and learned lecturers (Simon Emmerson, Eric Clarke and Jim Grant) and City University have a world-beating cure-all for closet music technologists.

I'm not sure whether the Diploma will aid students looking for employment. But who cares? You can bet it will become increasingly harder to secure a place on the course.

Anyone require a music graduate with a Diploma in Music Information Technology?

■ Stewart J Wallace
Wapping

Dear MT

Teacher Support

letter of the month

The new GCSE exam is the most exciting thing to happen to music education in years. When I was at school it was all "How many sons did Bach have?" and "How many symphonies did Beethoven write?". Like most of the subjects taught at school, the emphasis - even in music - was on the accumulation of facts rather than the development of a skill like writing music, arranging it, or playing an instrument.

But now all that has changed. Everyone taking music as a GCSE subject has to compose and play an instrument. Instead of learning about the so-called "serious" music of the last three or so centuries - to the exclusion of any other style of music - the syllabus now covers all sorts of music, ranging from ethnic music from all over the world to rock and experimental electronic music of the late 20th Century.

Now, all this sounds marvellous, but just spare a thought for the teacher who suddenly has to become an authority on life, the universe and everything. Not only do schools need to spend a small fortune on records, tapes and CDs in order to be able to hear this wealth of music, but although the majority of

teachers do not compose, they have to teach composing for the new exam.

Teachers are aware that, in order to cope with the demands of this new syllabus, they need to buy new instruments and equipment. Keyboard instruments are popular because they offer a wide range of sounds which could be useful for young composers. But even professional keyboard players find it difficult to keep up with new equipment, so teachers don't really stand much chance of choosing the most versatile piece of equipment at a given price, let alone equipment which is best suited to GCSE requirements.

I left the teaching profession in July last year to make way for a British and European tour by the "roots"-influenced band Pyewackett. In addition to being their keyboard player, programmer and producer, I also work as a session musician and a composer and teacher of music.

I've designed a one-day course for music teachers which I am taking to education authorities throughout the UK. The purpose of this course is to talk to teachers about how MIDI, synthesisers, sequencers and four-track cassette recorders can be put to great use in the classroom, and to demonstrate same. The boroughs usually arrange for all their music teachers to come to one central school within the borough where I will hold my one-day demonstration/lecture.

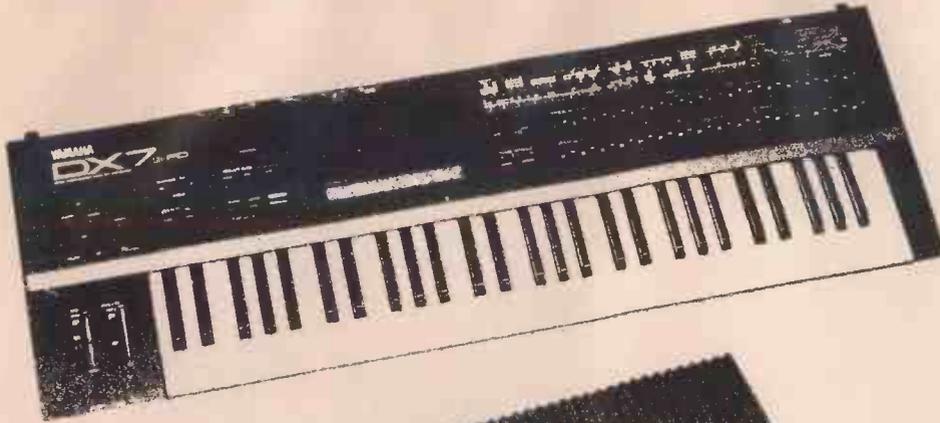
After approaching different manufacturers to look at equipment, I finally decided on Yamaha gear as the best for price, quality and suitability. They agreed to supply me with 10 setups consisting of a DX27 synth, QX21 sequencer and MTIX four-track cassette recorder. In my demonstrations I also use an FB01 tone module, RX21 drum machine and YMC10 MIDI converter for syncing sequencers and drum machines to tape.

By the end of the day, the teachers - up to 20 of them - will have had time to use the instruments themselves under my instruction, and will even have edited some DX27 voices. They will also have been introduced to concepts such as MIDI, discovered some of the potential of instruments which use MIDI, and



YAMAHA

Milestones in Technology!!

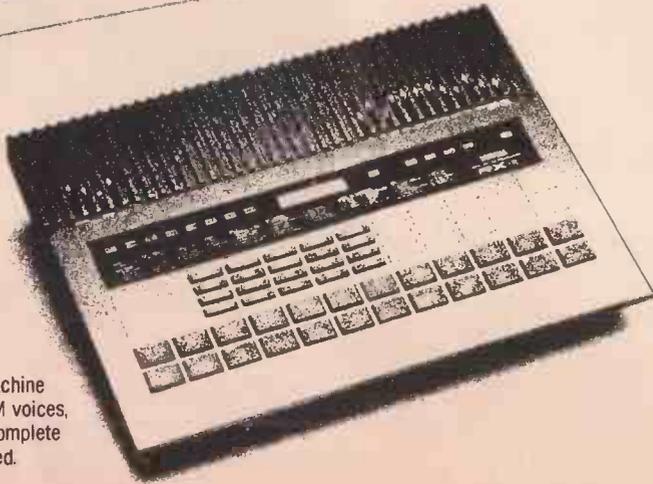


DX7 IID ~~£1699~~ Our Price £1499

Significant changes in FM system giving a remarkably clean sound. Major improvements in frequency response and dynamic range. 64 internal sounds, 32 performance memories including split + dual capability. Advanced MIDI spec, voice data of old DX's fully compatible. New RAM pack gives greater storage control.

DX7 IIIFD ~~£1899~~ Our price £1699

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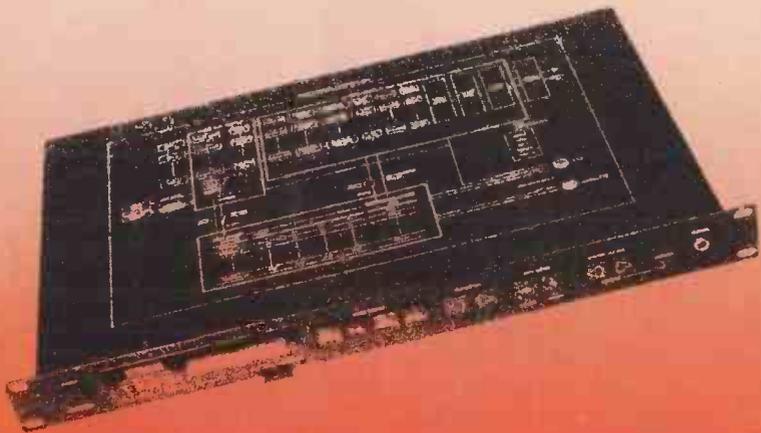


RX5 DIGITAL RHYTHM PROGRAMMER
~~£999~~ Our price **£899**

The state of the art drum machine. 24 internal sounds, 12 RAM voices, 100 patterns, 20 songs. Complete drum kits can be memorised. MIDI direct outputs.

RX17 - DIGITAL RHYTHM PROGRAMMER ~~£325~~ Our price £299

Low cost quality drum machine. 26 sounds, 100 pattern/10 song memory with programmable tempo, volume changes and tempo changes. Programmable dynamic control via MIDI.



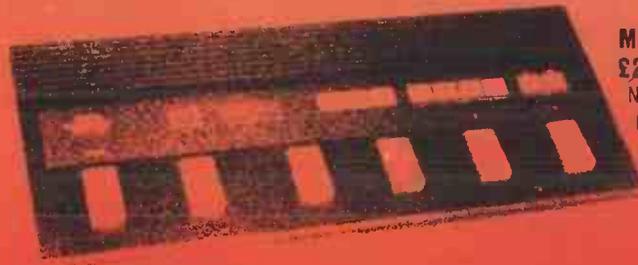
TX81Z ~~£449~~ Our price £399

19" rack mount FM expander. Can be 8 separate instruments, or 8 note polyphonic. Fully programmable from front panel. Compatible with DX21/100/27.32 RAM, 128 ROM and 24 performance memories. A more sophisticated and programable FB01!



MDFI - MIDIDATA FILER ~~£328~~ Our Price £299

Very quick storage medium for synthesizers, sequencers, drum machines etc. 2.8". Quick disk quicker than a cassette for saving and loading data. Perfect for use with: DX7IID/DX7/100/21/27 - TX7/TF1/TX81Z - RX5/RX17/RX11/RX21/RX21L - QX5/21/7 - FB01 and some CX5 software.



MFC1 MIDI FOOT CONTROLLER
~~£225~~ Our price **£199**

New foot controller capable of transmitting program changes, effect changes and MIDI control data i.e. volume, modulation, portamento, sustain etc.

DRUM KITS	NEW MAXTONE 6 1/2" CHROME	£85	SAH 22" K RIDE	£125	NEW ROLAND HP100 PIANO	EPHONE
SAH MAXWIN 5 PIECE	NEW REMO LIBERATORS	£159	SAH ZANKI FLAT RIDE 18"	£40	EX DEMO HP3000	£1199 C
SAH PREMIER ROYAL	CYMBALS		SAH BRONZE 18" FLAT	£30	KORG DSS1 £2259	£1499 SPB
NEW OCTOBANS	SABIAN HH		SAH ZANKI SWISH	£30	YAMAHA DX7 £1549	£999 SPB
SAH ROGERS USA JAZZ KIT	14" HI-HATS	£185	SYNTHS		ENSONO PIANO EX-DEMO £1225	£999 SPB
SAH SONORPHONIC 6 PC W/SHARE	AA		EX DEM YAMAHA TX816	£1899 C	ROLAND HP100 EX-DEMO £830	£599 PB
NEW KITS FROM	SAH 18" CRASH	£55	ROLAND JX10	£1599 C	YAMAHA TX816 + KY88 £5498	£2999 B
NEW SONOR HI-TECHS4500	SAH 16" CRASH	£45	SAH YAMAHA PSR60	£349	ROLAND JX3P SAH	£349 S
SONOR PERFORMER 7 PIECE £1150	PAISTE		SAH YAMAHA CS40M	£275	SAH SEQUENTIAL MULTITRAK	£499 P
SIGNATURE 6 PIECE RED £2795	SAH 602 MED 18"	£50	SAH MOOG PRODIGY	£89	MOOG PRODIGY SAH	£89
SONOR SONORLITE JAZZ 4 PC, WHITE £1950	SAH 602 THIN CRASH 16"	£40	SAH JUNO 6	£249	YAMAHA CX40M SAH	£275 B
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NEW PEARL DLX 5 PIECE MAPLE £800	SAH 17" A CRASH	£55	SAH KORG MICROPRESET	£50	EX-DEMO ROLAND MKS30	£399
SAH PEARL 7 PIECE SILVER	SAH 18" A CRASH	£65	SAH CASIO CZ101	£159	SAH MOOG TAURUS PEDALS	£399
NEW PREMIER OLYMPIC 3 PIECE WITH HI-HATS	SAH 18" SIZZLE CHINA	£65	SAH MOOG TAURUS PEDALS	£299	EX-DEMO YAMAHA TX7	£399
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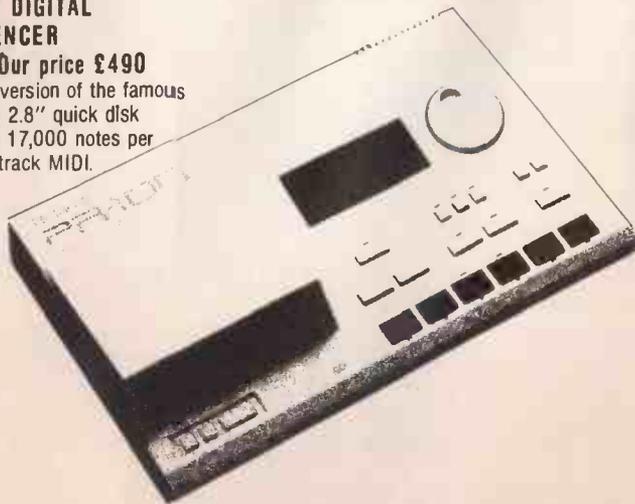
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Budget version of the famous MC500. 2.8" quick disk storage. 17,000 notes per disk, 2 track MIDI.



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~~£1445~~ Our price **£1350**
Rolands Smash Hit New Synth. Rolands new L.A. Technology gives a new outstanding synthesizer which combines new sampling and digital sound techniques. Must Be Heard. 61 key velocity, 16 note poly, pressure sensitive, 64 memory, built in digital eg: reverb, chorus, split, optional PG-1000 programmer.

FANTASTIC NEW BOSS PRODUCTS

BOSS RV10 DIGITAL REVERB

~~£225~~ Our price **£199**
Fantastic New Boss Digital Reverb at new low price. Nine reverb modes, 10 second delay, micro rack size.



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GP8 GUITAR PROCESSOR

~~£745~~ Our price **£690**
At last a multi function device exclusively for the guitarist in one box! Featuring eight programmable effects, dynamic filter, compressor, turbo overdrive, distortion, phaser eg: digital delay, digital chorus, all storable in 128 patches.

MKS-50 ~~£560~~ Our price **£499**

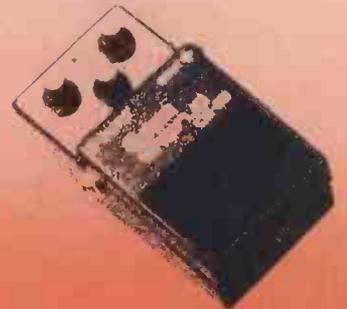
Digital polyphonic synth module, new rack version of the best selling Juno 2.

DEP-3 ~~£515~~ Our price **£475**

New budget version of the famous DEP5 digital reverb, delay eg: 16 bit, great value!

VP70 VOICE PROCESSOR ~~£1075~~ Our price **£999**

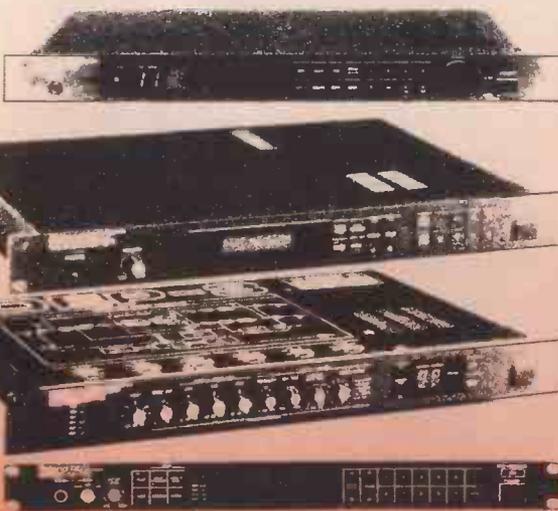
Fantastic new pitch shifter and MIDI convertor, 4 voices from a mono input, 128 memory, many other uses.



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- CEB Chorus **£66**
- BF2B Flanger **£79**
- GE7B Graphic **£72**
- LMZ Limiter **£69**

Boss introduce a complete range of pedals for the bass guitarist.



MKD-100 ~~£980~~ Our price **£899**

Digital sampling module new rack version of the famous S10 sampler.



MPD-4 MIDI PAD

~~£145~~ Our price **£134**
At last a single pad to MIDI controller. Trigger any sound source or using sets.

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S/H MIRAGE RACK SAMPLER	£999	ELECTRONIC KITS		ARIA LEB BASS C255	£215	S/H KAY 50W BASS COMBO	£99
ELECTRIC PIANOS		NEW LP K2X COMPLETE C850	£599	EPHIPHONE RIVERA SEMI ACOUSTIC + CASE	£300 C	S/H JHS 30W BASS COMBO	£89
EX-DEMO YAMAHA P780	£799	EX-DEMO KORG DRUM & STANDS	£399	COLUMBUS LES PAUL L/H	£85 C	FENDER STUDIO LEAD C385	£275 S
EX-DEMO ROLAND HP450 + FREE RHYTHM UNIT + MIDI SEQUENCER	£695	S/H SIMMONS SDS9 1199	£899	ARIA PRO II DE500 + CASE	£140 C	YAMAHA G100 2 x 12 SL S/H 669	£399 S
EX-DEMO ROLAND HP400 + FREE RHYTHM UNIT + MIDI SEQUENCER	£595	GUITARS AND BASSES		EPHIPHONE 5200	£149 C	ROLAND CUBE 100 BASS EX-HIRE C508	£299-SB
DRUM MACHINES		ARIA TS-300 S/H	£149 B	S/H ARIA SB700 L/H	£250	HH 100W PA TOP S/H	£199 S
S/H BOSS-110	£89	FENDER USA JAZZ BASS	£299 S	S/H ARIA SB600 L/H	£199	CARLSBRO PRO CABS 1 X 15 + 2 HORNS S/H	£425 S
S/H KORG KPR77	£399	WESTONE THUNDER 1A OAK L/H	£185 S	S/H FERNANDES TELECASTER	£275	FENDER HARVARD REV II	£199 S
S/H ROLAND TR909	£299	YAMAHA BBIV	£199-SB	S/H IBANEZ RS1300NT	£199	RECORDING EQUIPMENT + RACK GEAR	
YAMAHA RX11	£499	YAMAHA SA-800 + CASE EX-DEMO (SLIGHTLY MARKED)K559	£395	NEW STRATS FROM	£239	VESTAFIRE REVERB S/H	£175 S
EX-DEMO KORG DDM220	£125	YAMAHA SG1200S £499	£375	NEW FENDER ESPRIT	£265	ROLAND SRV2000 NEW	£599 PSB
S/H ROLAND TB606	£125	TOKA LES PAUL	£299	NEW IBANEZ AH10	£399	KORG DUAL DELAY NEW	£315 PSB
S/H ROLAND TB303	£125	FERNANDES TELECASTER	£275	NEW YAMAHA SG200	£179	KORG MULTI GRAPHIC NEW	£209 PSB
EX-DEMO BOSS HC2	£39	IBANEZ RS1300NT	£199	NEW APPLAUSE STRATOCASTER	£129	KORG SDD1000 NEW	£249 SB
EX-DEMO BOSS PC2	£39	IBANEZ ROADSTAR II £425	£299	PLUS FULL RANGE OF YAMAHA, ARIA, FENDER, IBANEZ, WESTONE, Hohner, PSB.		S/H YAMAHA MT44D	£399
EX-DEMO DIGISOUND	£48	FENDER CONTEMPORARY STRAT £449	£350	AMPS		EX-DEMO FOSTEX SYNCHRONISER COMPLETE	£1299!! C
EX-DEMO YAMAHA MR10	£49	WASHBURN FORCE 3 £245	£175	ROLAND JC77 £595	£399 C	EX-DEMO FOSTEX AUTOLOCATOR E16/A80	£599!! C
		KRAMER HALF FRETLESS £495	£215			TASCAM 38 8TRACK	£2399 C

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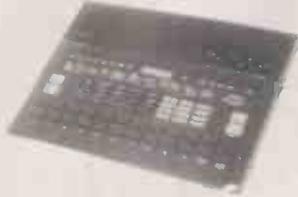
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There's a booklet which teachers can take away with them, and which includes discussion of possible applications of this equipment in the classroom and covers ways of teaching composing.

If anyone wants to contact me, they can do so at: 56 Lyndon Avenue, Blackfen, Sidcup, Kent DA15 8RJ. ☎ 01-850 6765

■ Bill Martin
Kent

Dear MT

MC Rapping (1)

I read with interest Steve Howell's overview of the Roland MC500 MicroComposer in MT February. I've been demonstrating the MC500 in a freelance capacity for Roland UK since its introduction, and while I feel that much of the article was fair, there are one or two points I would like to draw to Steve Howell's attention. Some inaccuracies, like metronome resolution, are hardly worth comment. But the following points deserve more detailed discussion:

- 1: MF-2DD disks are capable of storing more like 20 songs than the eight mentioned.
- 2: The use of the microscope facilities, 10-key pad or alpha dial allows step-time input of all MIDI information, not just chords and velocity.
- 3: Although a punch-out point cannot be set numerically, the use of a DP2 footswitch enables the user to drop out at any point.
- 4: By pressing Play while in rhythm pattern record mode, you hear the single pattern played (all drum instruments simultaneously). By pressing Shift Play, the pattern is repeated. Using this method, the entire pattern can be monitored as it is being written.
- 5: The very fact that the MC500 system is disk-based (and must therefore be booted before use) guarantees that it doesn't contain the planned obsolescence mentioned in the article's concluding paragraph. Any software revisions, therefore, require only the acquisition of an updated systems disk, rather than any modifications to hardware.

I hope this clarifies any misconceptions that Mr Howell may have.

■ Gez Kahan
Bucks

Dear MT

MC Rapping (2)

What a pleasure it was to see my sensual Roland MC4 re-reviewed by Steve Howell (MT February). True, she's not as young as she used to be, but she still delivers a classic performance – as does Tina Turner.

The MC4 was my first music computer. In one fell swoop I purchased the old girl with a LinnDrum, a Jupiter 8 and an OP8 to translate the MC4 to DCB (not into MIDI, as stated in the article). A year later, MIDI was upon us and I added a DX7 controlled by the addition of a Roland MD8, which does convert the MC4 into MIDI. I haven't looked back, since this
MUSIC TECHNOLOGY APRIL 1987

initial combination (plus some newer sound modules) has been the foundation of many hits.

The MC4 was and still is fantastic, due partly to its many outputs. On the last Moody Blues album, this angel was running a Linn I, LinnDrum, Roland MSQ700, Kurzweil, several DX7s and an unconverted Minimoog all at once. I don't know of another MicroComposer that does all this. And as long as I program a two-bar count, I can make up for any time-lag between various synths or voice programs by adding or subtracting a few digits in the step time of the count-in. This ability to play freely with step-time values enables me to program human feeling quite easily. Tempo changes can be programmed for each note, giving a more natural feel to drum machines.

Since it took me a good six months to become fluent on the MC4, I've been reluctant to put any length of time learning the new MIDI-everything MicroComposers. My job is essentially to produce records, not to stick my nose into boring Japanese manuals – though I do use my MSQ700 for the simpler block chord work, which is very tedious on the MC4. Being very loyal, I've just purchased an MC500, along with a very thick beige manual. I've hardly stuck my nose into this one yet, but it'd better be good if I'm expected to put my MC4, OP8 and MTR101 data recorder back in their boxes (a shudder just went through my body).

I have, however, a quick way of getting through manuals these days in the form of my 14-year-old son Morgan, who devours such things. He spent a day with the MC500 and its boring manual, and promptly announced that he knows everything about it. What I wouldn't give for several billion new brain cells.

You may be wondering why I bother playing with these little Japanese desk-top music machines; surely I should have a Fairlight or Synclavier by now? Well, I'm fairly dense with things technical. I'm also computer blind, deaf and dumb. However, I was always hot in the music department. I just couldn't drag myself through the year or two it would take to learn how to use these beasts. I also have too much pride to hire a programmer (most producers do this, in case you didn't know).

Virtually all the musician friends I know who bought these super-synths have faded into the oblivion of their manuals in their country homes, never to be seen or – more tragically – heard from again.

On the other hand, I could always get my son a Synclavier on his next birthday. Now there's a thought.

■ Tony Visconti
Good Earth Studios
London

It's nice to know even big-league producers can lose patience with Japanese manuals. To clear up this OP8 business once and for all, the original interface did indeed translate the MC4's CV/Gate information into DCB. There was, however, a later version – the OP8M – which had MIDI on it as well. It was the second machine that Steve Howell was referring to in his retrospective piece. ■ Dg

Dear MT

Alternative Voices

We were pleased to see that our DX100/27 voice tape had been reviewed (MT March). However, on reading the review we found it lacking in several respects.

First, Mr Manning dwelt on his own thoughts to the extent that the review of the product seemed to become secondary to his indulgent ramblings. We would take issue with the emphasis placed on the naming of voices – surely any keyboard player worth his or her salt can play a patch and then decide its usefulness on its own merit? For most people, the name is merely a convenient way of remembering a specific sound.

We also resent the implication that our sounds are often derived from unspecified "roots" patches; they simply are not. We take pride in the originality of our voices, and would be interested to know what roots Mr Manning thinks we used.

On the comments about the drum banks, we would accept that as a keyboard player in a band these voices may be superfluous. But in our experience most of our customers are not using their gear live but are primarily into composing and recording. CX5 music computer users have found the drum sounds very useful, and while we wouldn't claim that they rival digitally sampled drum sounds in quality, when programmed thoughtfully they can be very effective. Many of our customers cannot afford £250+ for a drum machine.

On the subject of our special effects banks, we were glad that Mr Manning found them amusing. But useless? The narrow-mindedness of the review completely ignores the area of sound effects for theatres, video production and so on, where we know our voices have already been put to good use by several happy customers – not to mention those who are into experimental or avant-garde music.

It's also worth mentioning that Mr Manning apparently reviewed the DX21/27/100 and CX5M voice tape using his DX21 keyboard. We now have a DX21 tape of 256 voices in a more convenient form for that synth, but more importantly, the tape reviewed doesn't use the DX21's inbuilt chorus at all. This might explain why Mr Manning found some of the voices "lacklustre"...

The tone of your review could put a lot of people off buying our voice tapes, which is a pity both for us and for them. Even if a small fraction of the total number of our sounds ultimately joins a user's group of fave patches, we would contend that it is still worth having.

Obviously this letter comes from a biased source, but we can truthfully say that in the year that we've been selling tapes to the public, not once have we received any adverse response on the quality of our sounds. In fact, several of our customers have come back for more.

■ Colin Muir
Compuflex
Wimborne
Dorset

INTERFACE

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

Q A friend of mine who is in the know (or likes to think he is) tells me that 16 MIDI channels isn't enough for serious recording applications. Yet here I am, getting along just fine with my humble Casio CZ101, Korg Poly 800 and Yamaha QX5 sequencer – and I'm perfectly serious about what I'm doing. And why, if MIDI only has 16 channels, are software companies producing sequencers with as many as 60 tracks? Surely this is technological overkill.

As I'm fairly new to music technology (and to 'Music Technology', for that matter), I realise that you've probably covered this subject before. On the other hand, there are probably many people like me who are finding they can afford hi-tech goodies for the first time, as prices seem to keep on falling.

Don't leave us behind!

■ Peter Sharrock
Manchester

A No, the subject you're raising hasn't been covered in the hallowed columns of Interface before – though the answer necessarily touches on the hoary old subject of the relationship between sequencer tracks and MIDI channels, and there's no harm in reiterating that.

Most sequencers allow you to select one MIDI channel for each sequencer track – from recording through editing to playback. Each track can be assigned to any MIDI channel: thus track 1 could be assigned to channel 12, track 2 to channel 6, track 22 to channel 4, or whatever.

Of course, several tracks can be assigned to the same MIDI channel if, for instance, you want more than one part to play on the same instrument, using the same sound or a simple split-keyboard texture.

Alternatively, if you're using a drum machine and you intend to record your rhythm parts into a sequencer rather than into the drum machine's memory (a topic discussed in last month's Interface), you may well find it advantageous for each drum part to be recorded on a

separate track – even though they are all playing on the same MIDI channel.

Perhaps you begin to see how the number of recording tracks can build up, even though you're using a lesser number of MIDI channels. Consider another way of using sequencers: recording MIDI controller information such as pitch-bend or modulation on a separate track from the musical part they're intended for, but with both tracks allocated to the same MIDI channel. Similarly, you may find it advantageous to record MIDI information for a MIDI-compatible effects processor on a separate sequencer track from the instrumental part that it's processing in the audio domain.

But a major reason why a large number of tracks can be useful is the flexibility they provide when it comes to working on a piece of music. Virtually all MIDI sequencers provide individual track muting – just as you would expect to find on a mixing console in a recording studio. Thus you can record several alternative takes of a part and switch them in and out as desired using muting; eventually you'll only keep one take, but while you're working on the music, it's useful to have the capacity for storing several takes.

Similarly, you may want to record and store several alternative parts, from which you may eventually choose only one. And if you decide to edit a part, it's useful to keep a copy of the original and store each edit on a different track; that way, it's easier to recover from an editing disaster.

What it really boils down to is working flexibility. Once you've done all your recording and editing work, you can consider bouncing down tracks for the sake of compactness, or for transfer to another sequencer with a lesser number of tracks (hurry up, MIDI Sequence Dump Standard). Who knows? You might even end up with 16 tracks. ■ St

Q Dear Mr Goldstein, may I say how very pleased I was to meet members of your Music Technology staff at this year's Istanbul Music Expo – it's nice to be

able to put a few faces to the names.

As a programmer of rhythm working at the Pan Studios here in Istanbul, I have collected quite a number of Roland drum machines. Unfortunately Roland had no importer here prior to the discontinuation of the model TR808, and my efforts to obtain a secondhand one have so far yielded no results.

As I now have an Emulator model SP12, I was wondering if you know of anyone who has samples of the sounds of the model TR808 for sale, and where I might obtain them.

■ Ali B'Orange
Istanbul

A As far as we know, nobody in the UK or overseas has actually advertised samples of TR808 sounds, either on disk or tape. We suggest you try other programmers in your area (if there are any) who may have an 808 you can record from.

Failing that, it may be worth keeping an eye on this magazine's free classified ads; TR808s do crop up there from time to time, and even if buying one of them is not practicable, you may be able to negotiate getting hold of a tape of the sounds before or after the unit is sold. ■ Dg

Q I have an SCI Pro One, and for three years, I've been very happy with the bass sounds it makes. Recently, however, the other half of my two-piece band has bought a Sequential Prophet VS, and during home-recording sessions we have used the VS for bass sounds with excellent results. We now feel that these sounds are the ones we need but, for live work, this would mean either buying a second VS (which I can't afford) or recording the basslines and drums and using backing tapes. This means a) lower sound quality and b) ►

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▶ nothing for me to do on-stage.

What I would like to know is this: if I bought a remote keyboard controller, could I play single-note basslines on the VS in MIDI Mono Mode, leaving my keyboard player with a seven-note polyphonic synthesiser?

My other alternative is to buy a cheap sampler and sample the VS sounds I want to use (and possibly my bass guitar, too) but, as I said, my budget is a small one. If I opted for sampling, would the Casio SK1 or the new SK100 give me the sort of sampling quality that professional music requires? If they would, is it possible to dump samples to tape, and is there any way at all of controlling it from a MIDI slave instrument? If not, are there any samplers available secondhand, or are

there any other really cheap samplers coming on the market soon?

■ Adam Lawrence
Wolverhampton

A Robin Verner of Sequential advises us that splitting the VS keyboard and assigning your bass patch to the lower split would allow that patch to be played from a remote MIDI controller, while still allowing another patch to be played from the keyboard above the split. The only disadvantage here is that it would limit the flexibility of the VS and the length of playable keyboard available to your keyboard player. Still, that's one alternative.

On the other side of the coin, if you're talking studio-quality samples, I'm afraid you're going to be

disappointed with the Casios. Although they make sampling an awful lot cheaper than it's ever been before, there is a price to pay in other areas: sound quality, for a start. I suppose you could say you can dump samples to tape, but only as audio data and, as the keyboards you mention only hold one sound in memory at a time, each new sound you needed would mean more messing about with tape – hardly an ideal gigging situation. And control from a master MIDI controller (I assume that's what you mean) is another non-starter.

Possibly your best sampling bet would be the Akai S612 module, which you can now pick up for as little as £599 new including the MD280 disk drive, probably even less if you can find a secondhand one. That only leaves you having to find your remote MIDI controller (the Casio AZ1 is cheap and usable), and learning to play it without making a fool of yourself.

You could always consider the rack-mounting version of the VS, which would save you the cost of the onboard keyboard, but you've still got to sort out how you're going to play it.

All in all, it sounds to me as though the old Pro One has still got a lot going for it. ■ Tg

A I thoroughly enjoyed reading Rick Davies' review of the new Yamaha DX7IID and DX7IIFD (MT March '87), but I feel it's worth drawing your readers' attention to an interesting anomaly in the MDR (MIDI Data Recorder) function of the DX7IIFD.

Rick correctly points out that the DX7IIFD MDR can only accept about 20 Kilobytes in one dump (although the memory size per side of formatted 3.5" disk is 360K). This limitation is because of the size of the IIFD's memory buffer, and is unfortunate because, whereas Rick quite rightly assumes that sequencer data dumps may be handled over MIDI by the MDR, the onboard disk recorder can't handle a bulk dump from the Yamaha RX5. This is even more surprising when you find out that the Yamaha MDF1 (which uses the smaller 2.8" Quick Disks) will accept a MIDI bulk dump (just over 32K) from the RX5.

I'm pointing out this fact so that would-be purchasers of the DX7IIFD are aware of this limitation. However, if an RX5 owner has a RAM4 cartridge, the drum machine's song and pattern data can be taken to the IIFD and saved to disk using the IIFD's CRT Dump facility.

By the way, the QX5's sequence memory can reach approximately 128K, but you're able to save bulk sequence data to both DX7IIFD and MDF1 because you can send the data in several "chunks" – a track at a time, if need be.

Hope this helps some of your readers. More helpful tips from the April issue of 'Feedback', the X-Series Owners' Club's magazine (plug, plug).

■ Martin Tennant
Yamaha X-Series Owners' Club

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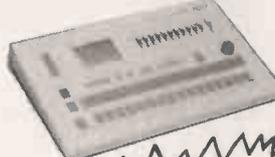
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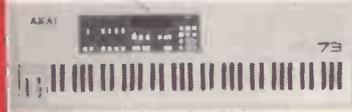


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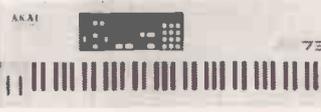


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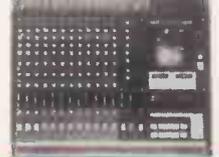
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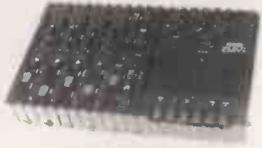


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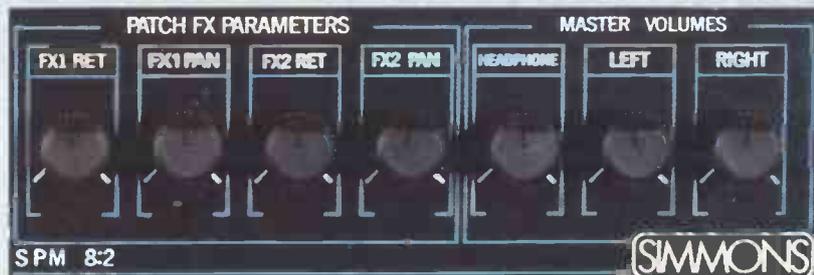
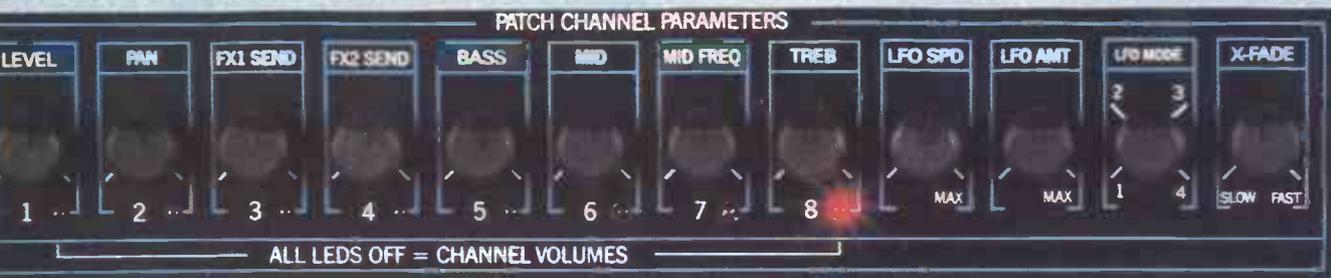


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SPM 8:2

A Conventional Mixer?

The SPM 8:2 from Simmons is anything but a conventional audio mixer. There are, however, some similarities: Eight channels, each with bass, treble and parametric mid-range equalization, two effects sends, pan and level controls. Two effects returns. A headphone/monitor output and left and right master outputs.

Here the similarities end because SPM 8:2 is a computer controlled device making duplication of channel controls unnecessary.

64 different mixes of eight channels, each comprising level, pan, eq and effects data can be stored in SPM 8:2's memory and individual mixes selected at will via MIDI, footswitch or the front panel. Cross-fade times between mixes are programmable for individual channels allowing fade outs and ins of different instruments simultaneously. Each channel also has a four function effects bank offering such features as variable rate auto-pan and phasing.

With a specification and price tag the envy of most "mixing desk" manufacturers SPM 8:2 has only one disadvantage . . . How do you fill a page with its picture?

SIMMONS

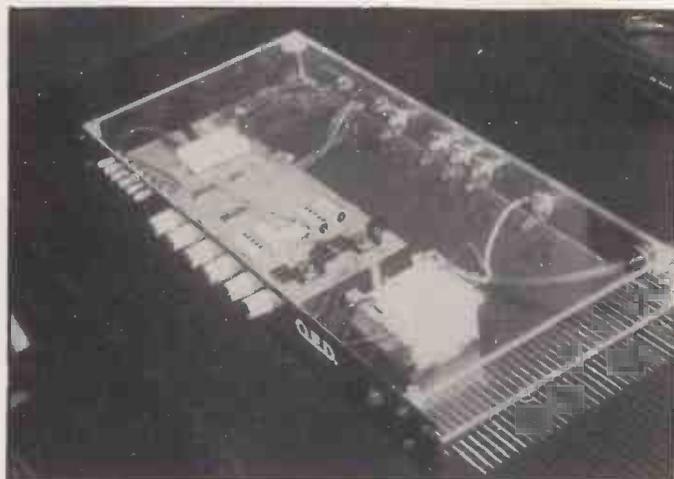
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SIMMONS SPM 8:2

Audio-Optics QED

Infra-Red Guitar Pickup



AS YOU PROBABLY know, this magazine usually reserves In Brief pages for previews of synthesisers, effects, and other electronic devices when we have not had an opportunity to review them in depth, and for reviews of items that can comfortably be covered within the space of a single page. Now we are deviating from this unwritten norm because the QED pickup – an American invention that should, all things being equal, soon be available in the UK as well – is really different, and may well have a lasting effect on the sound of electric guitars.

Many shortcomings of standard magnetic guitar pickups are either overlooked, or so familiar to guitarists that they are considered as part and parcel of just *being* a guitarist. All guitarists have, at one time or another, had a go at reducing the amount of hum generated by their guitar pickups. But how many guitarists realise the effect the magnetic pickup has on a string's ability to sustain, and the effect this has on the string's overtone series? It would be easy to say that it doesn't matter, that this has always been the case, and that all we can do is work around these drawbacks – were it not for the alternative that the QED pickup presents.

Rather than sensing fluctuations in a magnetic field which a metal string vibrates within, the QED uses two sets of infra-red sensors to detect string vibrations by sensing the shadows cast on the infra-red sensor by the string. The QED uses two sets of sensors for each string, so that the string's vibrations are sensed over two perpendicular axes (ie. back and forth *and* up and down), something magnetic pickups are incapable of doing. By eliminating the magnetic influence over the string's vibrations, the QED produces a more accurate representation of the string's natural acoustic characteristics, and gives guitarists a much higher dynamic range to work within.

There is another interesting side-effect that could make guitarists take another look at how they amplify and record their instruments in studios and on stage: the QED works equally well with nylon strings as it does with steel strings. Audio Optics made this perfectly clear when they demonstrated a nylon-strung Strat at the NAMM show in February. The sound which came out of Audio Optics' monitor system was not that of a Strat, but that of a nylon-string guitar – without any of the acoustic colouration of a hollow body. And though, for many guitarists, this means that the dream of stringing a guitar with both steel and

nylon strings has come true, the real crux of the matter is that the QED works with *any* strand of material which vibrates. It was almost frightening to see the woofers on Audio Optics' studio monitors moving to and fro as the designers demonstrated their pickup's frequency response by manually moving one string back and forth.

The QED derives power for its sensors from a rack-mounting unit which provides individual volume control for each string; since the QED depends on one set of sensors per string, the system automatically has six separate audio outputs and a summed output. The unit also has a six-band EQ for tailoring the summed output, so you have the option of either running the unit in stereo, or running each string output through its own signal-processing.

At NAMM, the QED was demonstrated with each string running through a separate Yamaha SPX90 processor. A slightly less costly approach might be to run the outputs into a Simmons SPM8:2 programmable mixer, which has built-in three-band EQ, auto-pan, LFO modulation, and two effects sends... But then that's just one of many possibilities.

Audio Optics say they plan on supporting the QED in future with various effects and programmable EQ systems designed especially for six-channel pickups, though the basic non-programmable rack is the only unit being prepared for production at the moment.

Initially, Audio Optics will offer the QED as a custom retrofit to any guitar, but plan on shifting the emphasis to their own QED-equipped custom guitars. Christopher Wilcox, designer of the QED, says there are more complications involved in retrofitting guitars with the QED than most guitarists may be aware of. By offering a completely set-up guitar, Audio Optics will reduce the potential for customisation flaws.

But as we all know, sci-fi innovations like these are all very well, except that they come with sci-fi price-tags. Not this one, chum. The retrofit kit should cost in the region of \$400 in the States; including the rack unit, and the custom guitar will probably retail for around \$1500.

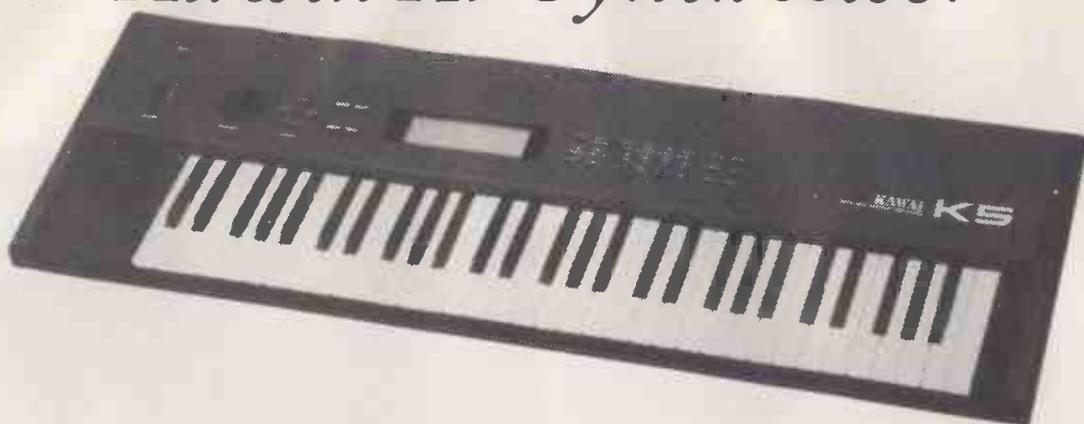
The QED is still at its prototype stage, and a lot could happen between now and production. But rest assured that as a concept, this one is going to make plenty of waves. ■

Rick Davies

More from Audio Optics, PO Box 691, Santa Barbara, CA 93102, USA. ☎ (805) 563-2202

I·N B·R·I·E·F

Kawai K5 Synthesiser



IF THERE IS one thing that this year's NAMM and Frankfurt shows made unmistakably clear, it is that static waveform-based keyboards are on the way out. Samplers are more popular than ever. Yamaha's FM and Casio's PD-based synths continue to offer impressively wide selections of dynamic timbres. Roland's D50 uses short PCM samples to spice up digital waveforms. And Kawai's new K5 uses real-time additive synthesis – and does so for under £2000.

The K5 is a 16-voice instrument which features 48 "single", and 48 "multi" programs. In Single mode, the K5 plays one sound across the entire keyboard. In Multi mode, it assigns up to 16 "single" programs to individual key ranges which may overlap one another. When more than one sound is assigned to the same key, key velocity can switch from one sound to another, allowing the K5 to maintain its 16-note polyphony.

It's tempting to say that the K5 combines digital waveforms with conventional VCFs and VCAs, because that is *almost* the case. The fact of the matter, though, is that the Kawai's waveforms are generated using real-time additive synthesis, and all filtering takes place in the digital domain. So the K3 and K5 have *much* less in common than their appearances suggest.

Each "single" program consists of two "sources" which, by most synthesisers' standards, are complete voices on their own. Each source combines 64 harmonics to provide a raw (though by no means static) waveform, whose pitch may be modulated by any of four modulation sections. The resulting waveform is then processed by an 11-stage digital formant filter (DFF – good for vocal sounds), a digital dynamic filter (DDF), and a digital dynamic amplifier (DDA). In effect, the K5 provides control over its sounds at a similar level to most analogue synthesisers, though the terms and controls used differ considerably.

The real key to the K5 is its digital harmonics generator (DHG), which controls the dynamics of each source's set of 64 harmonics. A high-resolution LCD gives a graphic representation of the basic harmonic structure, and with its help, you can adjust the level either of each harmonic individually, or of groups of harmonics. A "trend" function allows groups of harmonics to be scaled either uniformly or with a tapering effect on higher harmonics for more natural-sounding timbres.

To add motion to the basic timbres, the level of each harmonic can be modulated by the four modulation sections mentioned above. Each of these combines the effects of key velocity, monophonic aftertouch, key number, LFO, and a six-stage envelope. This provides a selection of four complex dynamic modulation sources, which will certainly be easier to deal with than individual envelopes on each harmonic.

The K5 provides individual keyboard scalings and LFOs for each source. The overall pitch of each source is set by the digital frequency generator (DFG), which also provides a six-stage envelope for pitch modulation.

Although additive synthesis has come out of the shadows in the last year or so, the K5 is certainly the first affordable *real-time* additive synthesiser. When the level of a harmonic, or group of harmonics, is adjusted, the sound is instantly altered, whereas on other additive systems, harmonics must be updated following a pause while the computer calculates the new waveform.

The K5 also brings release velocity back to keyboard players. The DDA has a dedicated seven-stage envelope, and any of those stages may be modulated by attack (note-on) or release (note-off) velocity, so that the dynamics of each note can be altered by how quickly or slowly you release each key.

Until now we've been discussing only one source, though, and there are two sources in each "single" program. Although the two sources are most likely to be used in parallel, with two different timbres, they can also be used together as a single 128-harmonic source (just in case 64 harmonics aren't enough). Add the K5's "multi" programs to all of this, and the potential is there for a superbly flexible and musical keyboard instrument.

Programs may be stored in any of the internal "single" or "multi" program locations, or on RAM cards inserted into a front-panel slot.

To do justice to the K5's multi-timbral capability, four assignable audio outputs accompany the main summed output on the back panel, making this instrument well-suited to recording applications.

And the K5 is also available as a rack-mounting module, the K5M, in case you already have all the keyboards you need. Note, however, that not many keyboards generate release velocity, so not all controllers will take full advantage of the K5's DDA section if you opt for the module.

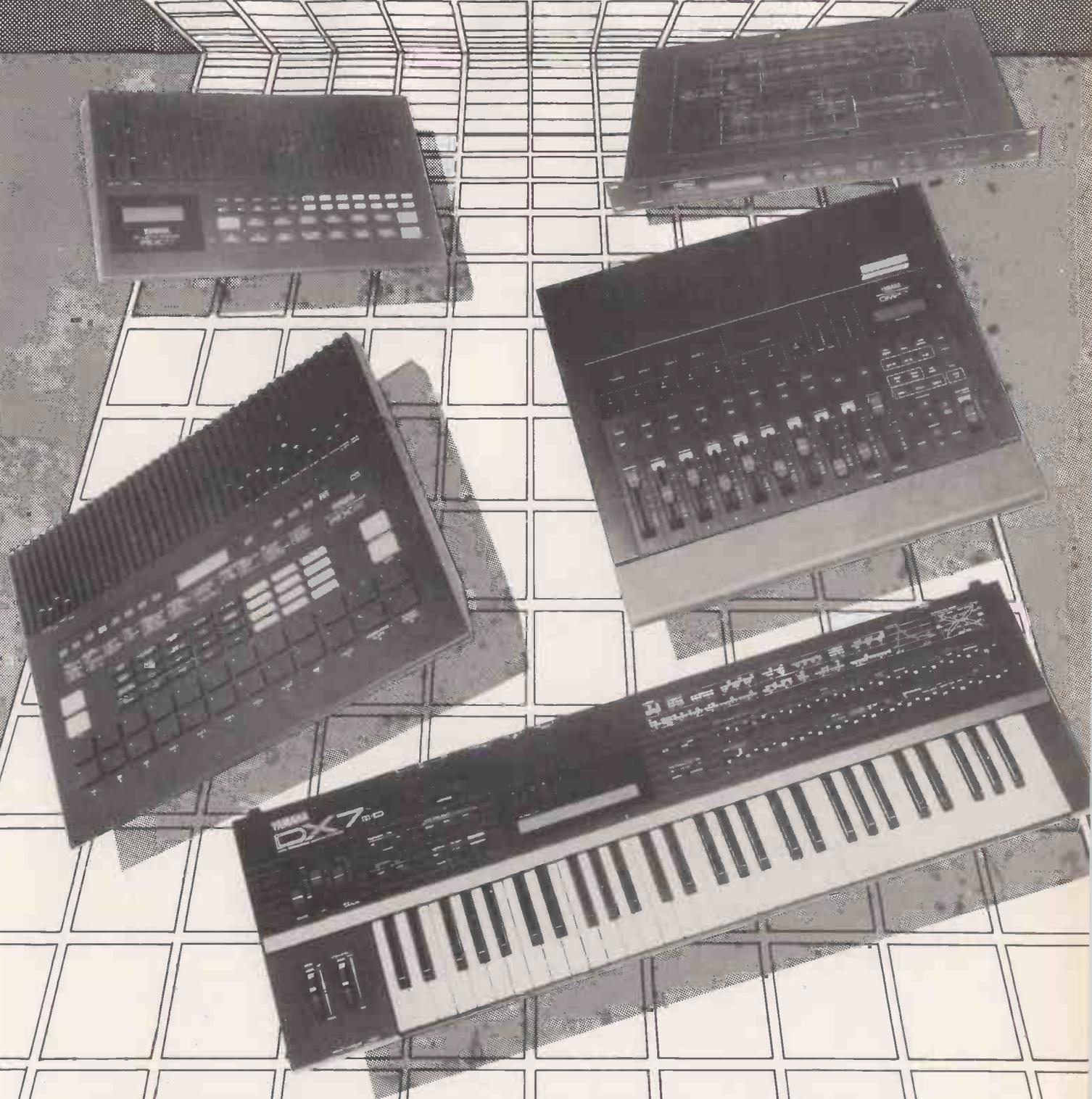
The K5's success will depend mainly on the range of sounds provided as factory programs, especially since many synthesists will require some reference points to get going quickly. On the other hand, this is the first time additive synthesis has been so accessible, so there is likely to be a lot of interest in this instrument one way or the other.

In the meantime, you can look forward to a full review of the K5 in a forthcoming issue. I know I am. ■ *Rick Davies*

Prices K5 £1597; K5M, £1159; both prices provisional, including VAT

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I·N·B·R·I·E·F

Yamaha TX81Z FM Module



"FB01? WONDERFUL, BUT how can I take it seriously if I can't program it and it doesn't have an X in the name?" You can just imagine the reaction to that in Hamamatsu, the tearing of hair and cursing at the ingratitude of The Great Expander-Buying Public. However, those members of the design team who didn't commit seppuku or take up underwater soot juggling have stuck to it and produced Son of FB01.

Or should it be Distant Cousin? Because the TX81Z is a rather different machine. For sure it is programmable, has eight voices, is multi-timbral and uses FM synthesis with four operators. But eight different waveforms? Programmable program-change table? Programmable microtonal tuning? And all for less than £500? This is Yamaha product development in a feisty mood.

Those extra waveforms allow you to achieve with a single operator what on any other X-series synth could take a two-, three- or four-operator stack. Perhaps more important to all those musicians who have bemoaned the sheer inaccessibility of FM programming, making interesting noises is rather easier.

However, FM remains as non-intuitive as ever, and the TX81Z's user-hostile front-panel (viz. a handful of buttons to access over a hundred parameters) does nothing to help. Still, Yamaha have provided a neat little pull-out card to remind you what all the parameters are, and the sequence in which they appear in the backlit LCD.

Despite the extra waveforms, the sounds are still very FM: clear, sharp brass, splendid pianos and weedy strings, all enhanced by the stereo output. As with the new DX7s, overall sound quality has been improved with better digital-to-analogue converters (so less aliasing and general noisiness) and better resolution on the envelope generators. There's also a "pseudo reverb" which adds a bit of character, and three useful special effects: panning, chords generated from a single note, and transposed delay, all programmable for each voice.

The voices are stored in five banks of 32 voice memory locations. Only one bank is user-programmable, the rest containing the usual assortment of Yamaha presets. Each voice memory location holds a complete set of function data (pitch-bend range, portamento time and so on) to complement the voicing. Unhappily, there is no provision for a cartridge ROM or RAM, so you may find yourself making more use of the presets than you might like.

In multi-timbral mode, each grouping of up to eight voices is referred to as a performance; there are 24 performance memories, all of them programmable. When constructing a new performance, the TX provides four basic settings – single voice, dual, split and eight mono voices – which can be customised to your requirements. Each voice can be assigned to a different MIDI channel, and

can occupy the full note range from C2 to G8. Each voice can be shifted by up to two octaves up or down in semitone increments, and can be detuned by up to seven increments either way. The volumes of individual voices can be balanced at the set-up stage, but subsequently overridden by a MIDI volume command. If you want to be deeply bizarre (man), you can assign some voices to one of the available microtonal scales and the rest to equal temperament.

Again, like the DX7IIs, there are 11 built-in microtonal scales and two user-programmable. In creating your own scale, you can either set up a single octave and then transpose it up and down the scale, or you can program every single note with a different interval.

The TX81Z recognises all four MIDI modes, and has a couple of extra goodies built in to make it more flexible: channels can be specifically assigned to receive system exclusive commands and controller commands; and voices and performances can be transmitted over MIDI, either individually or in groups of 32 and 24 respectively. More interestingly, you can transmit and receive all the other system settings, such as the program-change table, the two user-programmable scales and the data for the three special effects.

The program-change table allows you to reassign any incoming program-change command to any individual voice or performance memory. Program changes take a little time, so you need to be careful where you place the change commands in your sequences. Changing from one single voice to another takes about 1/16 second, which is very noticeable if it comes out of the first beat of a bar; changing from one performance to another takes up to 1/8 second. In both cases, anything sounding when the change command arrives is stopped dead, leaving a "hole" in the sound.

The manual is a gem. Each parameter is covered in detail in the same sequence as it would be programmed. There are overviews of MIDI and FM programming, and lots of diagrams and tables to help you find your way around. Yamaha are clearly very interested in getting software developers to create applications for the TX: they provide immense detail on all the system exclusive commands, and the datastreams which the commands create.

The TX81Z is bound to be an immensely popular instrument, that forbiddingly sparse front panel notwithstanding. It combines the power of FM synthesis with a very complete MIDI implementation at a rock-bottom price. What more could you ask for...? No, don't answer that, Hamamatsu already has its fair share of underwater soot jugglers. ■ *Martin Mickleburgh*

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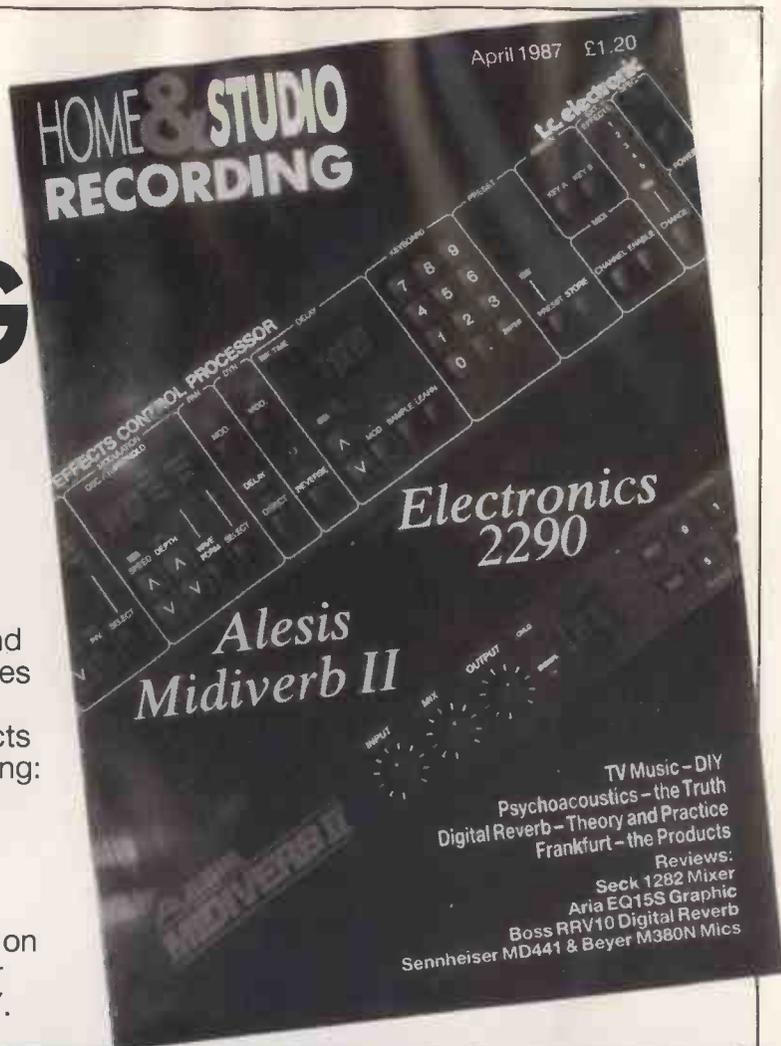
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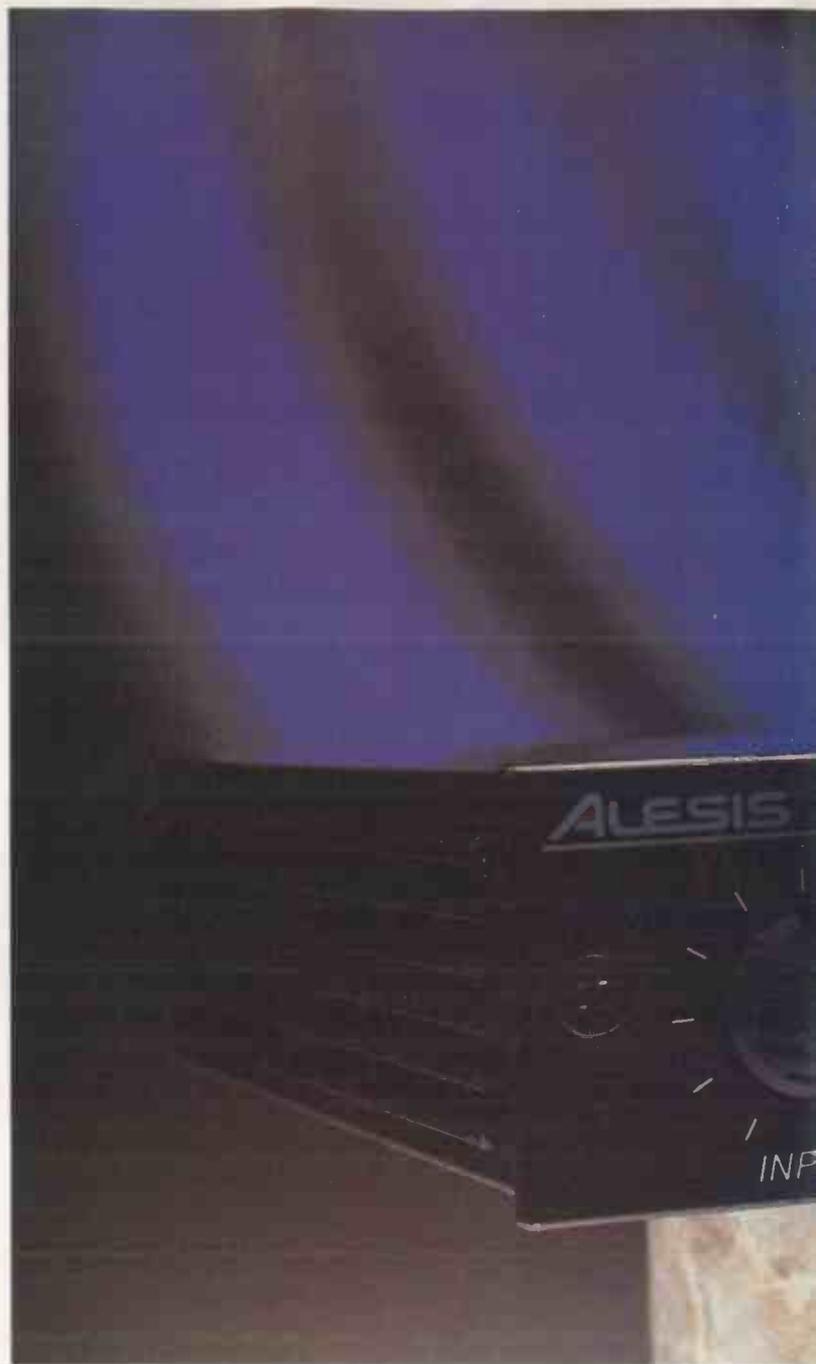
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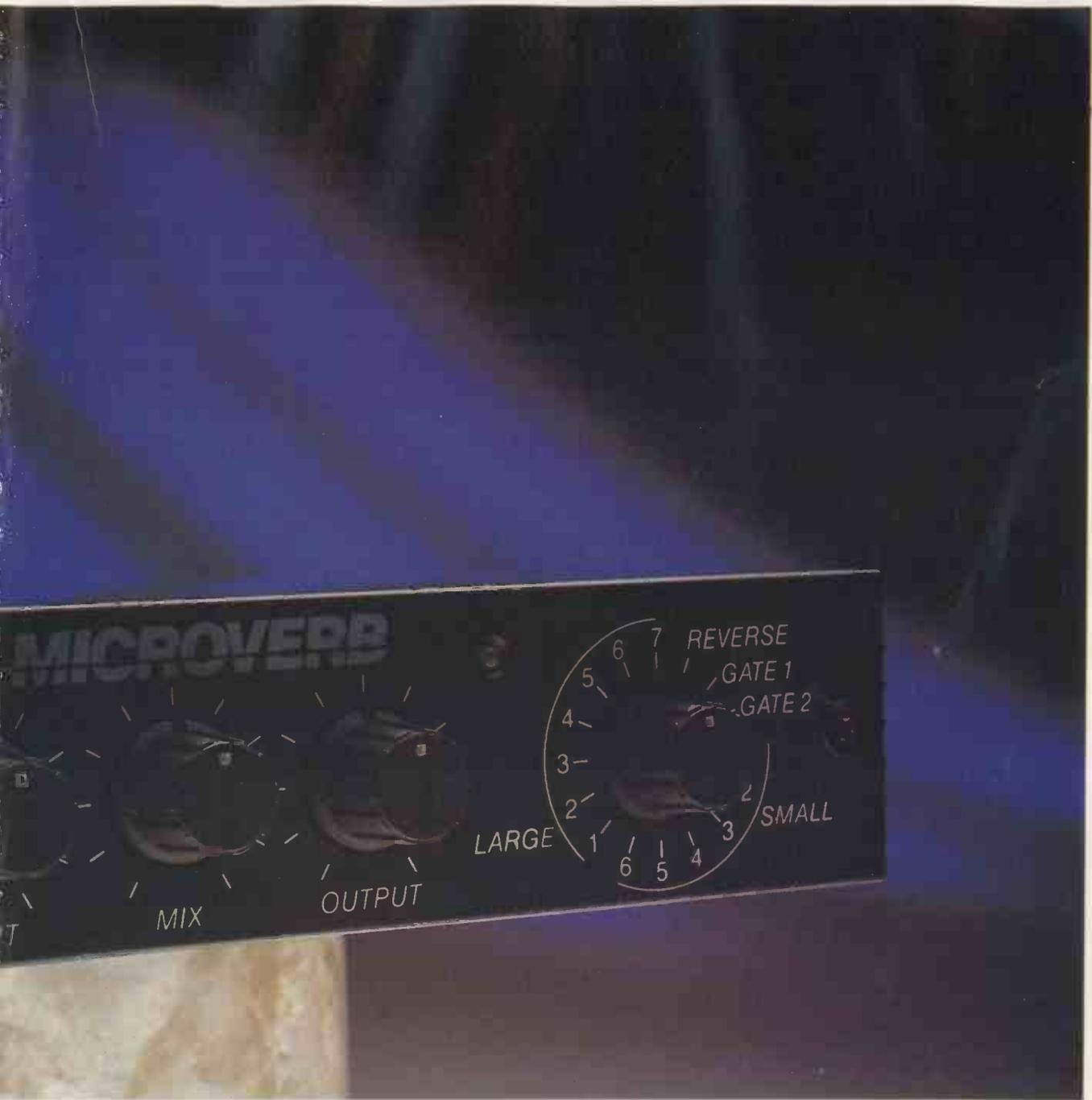
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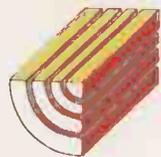
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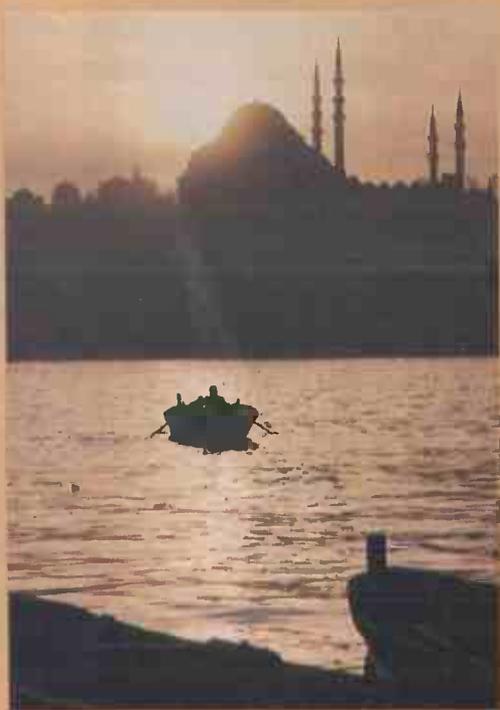
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letter from ISTANBUL

In the shadow of NAMM and Frankfurt is the Istanbul Music Expo, a show gaining in importance as the computer music revolution begins to make headway in the East. It's worth the trip. Report by Dan Goldstein; photography by Trevor Gilchrist & Mustafa Ürgüp.



IN CASE YOU missed it, last month's issue of MUSIC TECHNOLOGY was something of a show special, with reports of two of the most important exhibitions in the music industry calendar. The first was the NAMM convention in Anaheim, Los Angeles (the biggest ever), while the second was the Frankfurt Musikmesse, easily the largest and best organised event of any in the world.

In all likelihood, though, few of the shop



owners, musicians, engineers and liggers who attended either show were aware that a third exhibition was due to take place shortly afterwards. It would not be on the same scale as either NAMM or Frankfurt, but in its own way, it would be just as interesting to anyone interested in modern musical technology.

The show in question is the Istanbul Music Expo, an annual event that is to Asia what the Musikmesse is to Europe. Not surprisingly, the Expo has lived in the shadow of the NAMM and Frankfurt shows ever since it first took place in 1983. When, for example, was the last time you saw any mention of it made in these pages?

However, the growing importance of several Asian markets (India, China, Saudi Arabia and other oil-rich states, and Turkey itself) in musical terms has led to some of the world's biggest musical instrument manufacturers taking it more seriously. Result? The likes of Roland, Yamaha, Korg and Technics all had stands at Istanbul this year, in addition to Casio, who've supported the Expo from day one.

How do we know this? Well, the Istanbul Expo usually clashes with this magazine's press week, during which time most of the staff are scurrying around trying to compile our Frankfurt report. This year, however, the assembled Music Maker entourage flew to Frankfurt instead of going by car, with the result that Goldstein and Gilchrist had a small amount of time on their hands once Frankfurt was over and done with. So off to Istanbul we went, tolerating an hour-and-a-half's worth of Turkish Airways catering between Frankfurt and Istanbul, and relaxing at a genuine Turkish bath (no sniggering at the back, Godlington Minor) before the Expo began.

As mentioned, the Istanbul show is nothing like the size of either NAMM or Frankfurt. In fact, the Kemal Atatürk Memorial Palace which played host to this year's Expo was not much bigger than Olympia 2, the boxed-off section of Kensington Olympia that houses the British Music Fair each summer.

But the Istanbul event has more character than any of the fairs mentioned above. The products on show are part of the reason,

but so are the people who make the trip across the Bosphorus to look at them.

If you'd been at this year's show, you'd have found yourself mingling in the aisles with Pakistani accounts executives, members of several Chinese cultural delegations, hordes of white-clad Arab businessmen, and a multitude of Japanese engineers and marketing men. Not, rather obviously, yer average music show crowd.

And not, again rather obviously, yer average music show backdrop, either. The Atatürk Palace is an ornate and labyrinthine building that seems ill-suited to housing demonstrations of musical equipment – which indeed it is. So, half-a-mile up the catchily titled Kocamustafa Paşa Cad (sort of Regent Street, but not quite) lies a small, elderly-looking mosque which has been converted internally to provide a series of soundproof booths for demos.

Outside of these cubicles, the main part of the mosque was given over to concerts of varying types of music, each of which took advantage of the building's stunning acoustic properties – I'd like to see Alesis simulating that one.

SPEAKING OF ACOUSTIC properties, digital reverberation is one area of modern music technology that is beginning to make headway into the Asian market. However, the people who make digital reverb systems have had to alter their machines in the light of differing demands and applications.

Hence a unit like the Korg DRV2000 (reviewed elsewhere this issue) may come with preset treatments such as "Small Minaret", "Large Temple" and "Deep Cavern" in addition to the effects on the standard Western equivalent.

From what we could hear at the Expo, these sorts of effects certainly sound interesting, but not as dramatically different from their Western counterparts ("Small Hall" and the rest) as their names would suggest. A slightly longer delay time here, some extra modulation there, and that's about it. Obviously makes a difference to the Eastern buyers, though.

Similar alterations have to be made to some other items of new technology before they are acceptable to Asian
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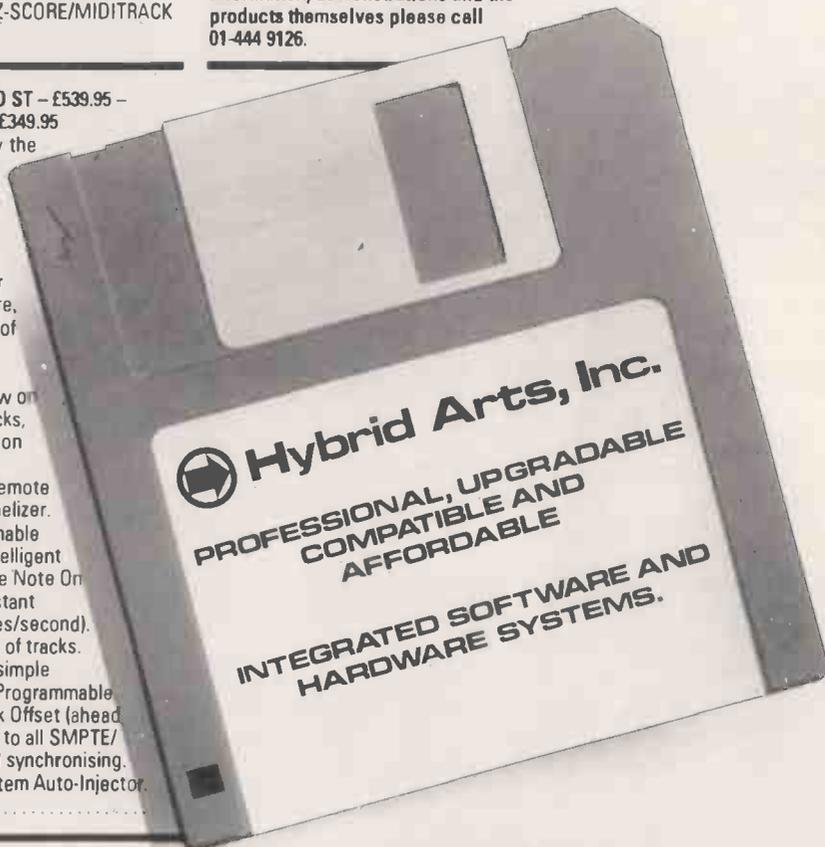
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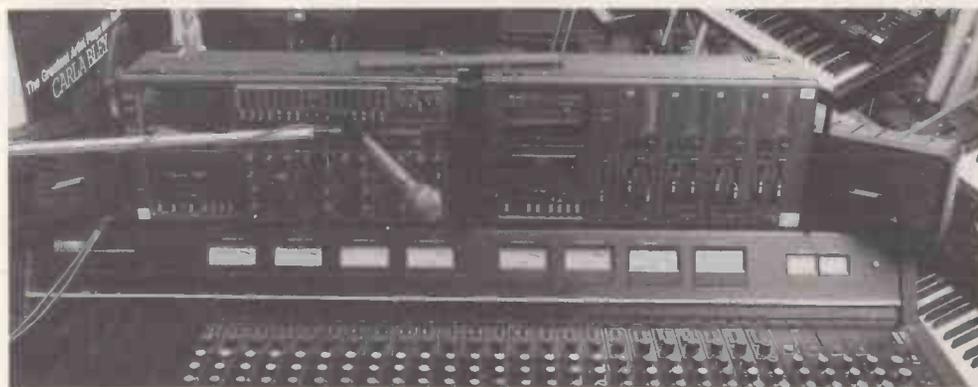
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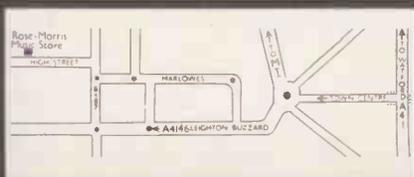
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musicians. Synthesisers, samplers and other electronic keyboards are often subjected to retuning to the quarter-tone scale, something which Western keyboard players are only just finding out about with the advent of microtonality on the DX7II. In the East, so much popular music is based around quarter-tones that few keyboardists can afford to be without a suitably equipped instrument. And the same principle extends to home keyboards, currently the biggest boom area of the Turkish music industry, and in that of the Gulf states. Hence Casio's unveiling of a number of new home keyboards with quarter-tone tunings, identical in all other respects to their Western stablemates.

Sampling keyboards have yet to capture the imagination of many Asian musicians, but the idea of sampling percussion instruments is catching on fast – particularly in India, where the huge film industry is relying more and more on soundtracks provided by composers using a small amount of electronic equipment to produce a big sound.

As a result of this trend, the Yamaha RX5 – with its promising range of alternative ROM sounds – was one of the biggest hits of the Istanbul Expo, as was Korg's DDDI and DDD5. Korg's tabla ROMs have been particularly successful in the Indian sub-continent, and rumour has it that a number of other drum sets are currently being recorded for use in the Middle East, where bass, snare, cymbals and handclaps mean less than they do almost anywhere else in the world.

BUT ASIDE FROM adaptations of instruments we in the West are already familiar with, Istanbul was also notable for showcasing a number of unusual new musical devices that were simply nowhere to be seen at either Anaheim or Frankfurt. The ones that caught our attention most were those that fused traditional Eastern technologies with those of the computer world.

Not unnaturally, MIDI plays a large part in joining together these unlikely bed-fellows. Witness the Iznik MIDI yapilar, a home-grown (from Western Turkey) instrument that Gilchrist's camera unfortunately missed because its owner spent too long "window-shopping" in a nearby brothel. The original yapilar is a large, 20-string instrument that resembles a cross between a banjo and a concert harp, and which isn't a million miles away, conceptually speaking, from the West African kora. It's an important instrument in Turkish pop, and surprisingly large numbers of musicians seem to be capable of playing it with incredible dexterity. The only problem is its sound, which many producers are complaining is becoming clichéd.

Enter Iznik's MIDI yapilar, a custom-designed instrument that uses two deca-phonic pickups, guitar synth-style, to detect the pitch of each string and send that information to be converted into MIDI data. Being a 20-string instrument, however, the MIDI yapilar needs two MIDI

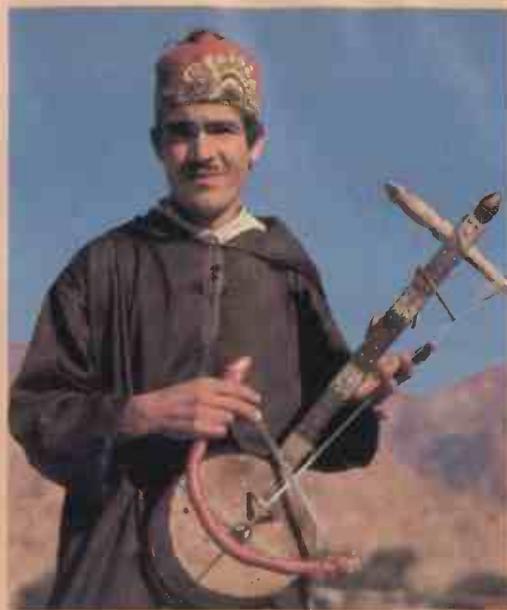
connections, since there aren't enough MIDI channels to allow each of its strings to trigger a different sound on a multi-timbral synth or sampler in Mono Mode.

Computer music hasn't really caught on in much of Asia, with the obvious exceptions of Japan, Hong Kong, and the Gulf states, where rich kids play with IBM PC clones in luxurious MIDI-based studios that differ little from their counterparts in Britain, Germany or the US.

For these people, software genius Wasim Ali has developed a program called MIDI Virtuoso. Briefly, it's an improvisation package not dissimilar to Intelligent Music's Jam Factory program for the Apple Mac. You define your own set of variables, which are inputtable from any MIDI instrument, and the program comes up with several variations on your original theme. Interestingly, though, Ali has consulted several of the Arab world's best-known modern musicians and performers, and obtained their consent for their own distinctive styles to be imitated by MIDI Virtuoso. Thus, if you want to know what the most successful male singer in Saudi Arabia would make of your composition, you need only load the relevant data file into your PC from disk, and he (or his software counterpart) will come up with his own interpretation, along with an on-screen comment along the lines of "not bad for a drummer, are you?". Luckily, the MIDI Virtuoso uses English characters for its displays (unlikely much of the software on show in Istanbul, which used Arabic, Urdu, Mandarin, or whatever), so we may yet see it available in England.

Talking of computers, the newly established music department of technological research in the People's Republic of China – PRK – was making its public debut at the Expo. Why they chose Istanbul above the other, better-established shows is not clear, since their computer music system is more a reflection of Western thinking than a development of traditional Eastern ideas. Perhaps the reason lies in the fact that the system – tentatively and confusingly titled DX1 – is still little more than a fledgeling. Truth to tell, it looks like a cross between a Series II Fairlight and a small telephone exchange, and the inside story isn't much better – eight-bit technology stretched to provide low-quality polyphonic sampling, real-time multitrack recording (no MIDI yet), and basic harmonic resynthesis. It didn't sound too good, but you get the feeling that if the Chinese put their minds to it, they could yet be a force to be reckoned with in the music technology stakes, and not just in Asia. There are an awful lot of them, after all.

THERE ARE AN awful lot of Russians, too, but Eastern Bloc exhibits at the Expo were confined to some swish-looking, matt-black balalaikas for image-conscious folk-rock groups in Soviet Georgia and Armenia, and an interesting Romanian stand on which a pan-pipe player was delighting the crowds by using his instrument to control a Roland

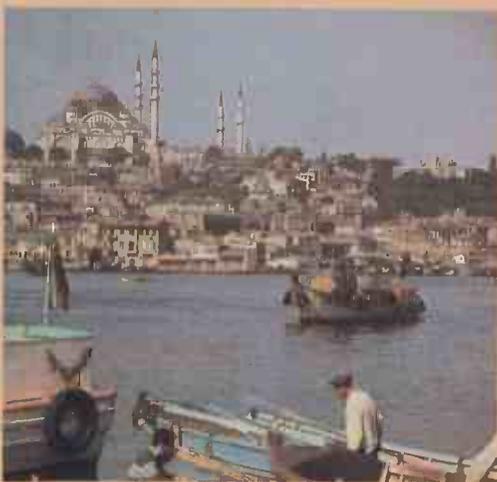


S50 sampler with the help of the same company's new VP70 voice processor. Probably the *nicest* sounding moment of a show that often came across as cacophonous to Western ears.

The great Bulgarian music technology co-operative, Zlatna Panega, was listed as having a stand in the Expo show guide (though it took us a while to find out, by not an English translation in sight), but a quick stroll to its listed location revealed only a sleazy kebab bar that had been hurriedly constructed to make the main show area look full.

As a sudden strike by Turkish air-traffic controllers meant we had to return to England by train, I made a point of keeping an eye out for the Zlatna plant as the Istanbul Express passed through the Bulgarian city of Plovdiv. It was evening, but there was enough light to see that the factory buildings and laboratories were almost deserted, confirming our fears that the co-operative's innovative work has been all but halted by the nation's killjoy authorities.

But if press week isn't pressing, we shall be going back to Istanbul next year – if only to sample the Turkish bath (not digitally, you understand) one more time. ■



state of play



More and more composers are writing music for films. But it's harder to get into than many think, and incredibly demanding once you're in. Sound-track veteran Steve Parsons spills the beans about his work on the new British film 'Empire State'. Interview by Tim Goodyer.

DRENCHED AND EXHAUSTED from her flight through the driving rain, Liz collapses on the floor of the cottage. She lies for several moments, catching her breath in semi-darkness. After the cacophony of the storm outside, the cottage seems starkly silent.

(Short pause then fade up eerie string chords. Camera pulls back to reveal detail of room. Dust sheets cover the furniture – the room has obviously been unoccupied for some time.)

A loose shutter blows violently in the wind, its staccato rattle subtly changing into an approaching footfall. Suddenly startled by another's presence, Liz lifts her head and looks around the room, peering into the darkness.

(A drum beat picks up the rhythm of the footsteps. As they get closer – and louder – a dramatic orchestral chord strikes with increasing frequency...)

Well, we've all wanted to score the music for a horror film at some time in our musical careers. After all, it's pretty easy, isn't it? You just surround yourself with banks of synths and samplers, and drag out all those terrific ideas that you'd never get away with in any "serious" area of music. And think of the money...

But, as with many a good film plot, the reality is a far cry from the fantasy. Even a

horror film score represents a frightening amount of work and may also involve other, well, horrors.

"I once did a horror film and it gave me nightmares. I don't think you realise what it's like looking at disgusting images for hour after hour, spikes going through peoples' brains and so on. I love horror films, but to sustain that and consider just what sort of sound effect should accompany a spike going through someone's brain is completely different."

The words belong to Steve Parsons, a rock veteran grazing in pastures new. Back in the 70s, he had his own band called the Sharks, with Chris Spedding and Andy Frazer, and later sang with the Baker Guervitz Army. If asked directly, Parsons would no longer consider himself either a singer or a keyboard player, yet both disciplines play a part in his current work, composing music for television commercials and films.

At the time of our meeting, he's working on the soundtrack to a new British film called *Empire State*. The film is set in London's developing docklands, stars Martin Landau, and should go on general release during April. And it's the film and the nature of a film composer's work that have brought us together this afternoon. The film is nearing completion

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and a rough cut is running on a large video monitor as we speak, complete with scenes and music that will later be changed or even cut completely.

Parsons describes the move from rock singer to composer as "a quantum leap", and nothing like the easy number so many musicians imagine it to be.

"The first thing you have to learn is that you're not making your own music. Pop stars consider it to be that way; they think they can do the nice moody music that they don't normally get the chance to do. But I don't think they do such a good job. That's not to say they can't, but suddenly coming from pop music to film cueing is quite a leap in psychology. A lot of them treat it too lightly – as a bit of fun, a bit of a giggle, and not as the sustained piece of hard work that it actually is. After Midge Ure did the Levi's ad there was an orgy of pop people doing music for ads and most of it was thrown out. It was very embarrassing – there were all these egos involved that just weren't used to having their music thrown away.

"One of the things you have to learn when you go into film music is that 50-60% of your lovely cues are going to vanish. There's no point in raising any personal hopes or putting any feeling into it, because you'll only be disappointed. You know you're going to lose. If you feel your music's got a valid point you fight for it, but the narrative has to work first. Every film has a grain to it, and if you go against that then you're in a lot of trouble. Only if it's animation will anyone consider cutting to your piece. Normally the film's already made, and someone eventually remembers they need some music to go with it.

"In films, the music is basically there to help tell the story. If it stuns as music that's an extra, but that's not what it's there for. People come out of the cinema remembering a great movie – you don't expect them to come out whistling the tunes. If they do, that's to the credit of the composer concerned, but the point is that you're in service; whether it's a TV advert, a TV documentary or a major motion picture, you're a slave to the project itself. The film defines what you do, not the other way round.

"Fifty per cent of your job is to find out what needs to be done – what the film *really* wants. The other half of the job is finding out how to do it. Then there are secondary things like artistic considerations and how much money you've got to spend. Between those, the composer has to make the reality. If the film's good the music comes easily; if the film's bad you have to dig it out with a shovel."

CULTURE SHOCK OVER. Composing film music isn't a job for the faint-hearted, no matter what your impressions may be. But assuming that you don't fall into the faint-hearted category, just how do you go about breaking into the world of cues, rushes and shoots?

"Probably the best place to start is on
MUSIC TECHNOLOGY APRIL 1987

the industrial side. People like British Leyland are always making in-house films, and they want scores for them. Sometimes they use library music, so I competed in the first place by being cheaper. It's very dull though. I've done forensic science, the Department of Industry... All very boring, but you learn how to put music to pictures, you find out what fits and what flows and you're being paid to learn. At the same time I did a couple of documentaries that turned up on TV, and that helped.

"At this stage you're also working with people who're on their way up and working cheap. Some of the directors I worked with five years ago are now big advertising directors, and occasionally they'll bring me in. All these things are exclusive little clubs.

"Eventually I got what's called a 'reel' together. Once you've got your reel you're in business, because you can circulate that amongst people."

His initiation over, his audio-visual portfolio assembled, Parsons' list of credits expanded to include everything from radio jingles for Pampers disposable nappies, through television and cinema ads for the *Daily Mail* and Fat Frog ice lollies, to *Grab Bag*, an Australian TV computer show. But how about the big time – feature films? Again, it's a case of starting small and moving up. And for Steve Parsons, small meant *Howling II* and *Recruits*, both secured through the company whose tea we're now drinking: Filmtrax.

"Musically I'm very pleased with *Howling*. It's a little bit different from normal horror film music, a bit more pagan. I had the idea, discussed it with the director and he said 'go ahead and do it' – I had very little discussion with him after that. Consequently I think I did too much, I filled every corner of it in my enthusiasm. Fortunately we cut out quite a bit of it, and that left the stuff that worked best."

And it was good enough to get Parsons first refusal on *Empire State*. The chance was too good to miss.

"Good projects are very rare so I was happy to be involved from the start. The film's very intelligent, very hard – there are no likeable characters in it at all. It's rough but it's good.

"My mind started to generate ideas from day one when I read the script. The script is the initial source of interest for me: if the script's good then I'm off. I got the feel of it as we went along and developed my relationship with the producer and director at the same time."

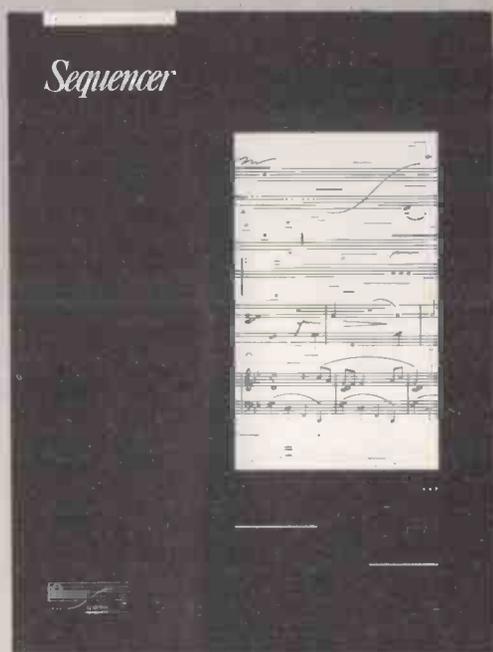
But Parsons isn't the only one with fingers in the musical pie of *Empire State*...

"The Communards were originally going to do quite a lot of the music and I was going to do the bits and pieces. That was before their recent success; things have happened in such a big way for them since then that their input's been cut right back. As it is I've done most of the music, but we're still hoping that the Communards will provide the closing title piece, and that will then be released as a single,

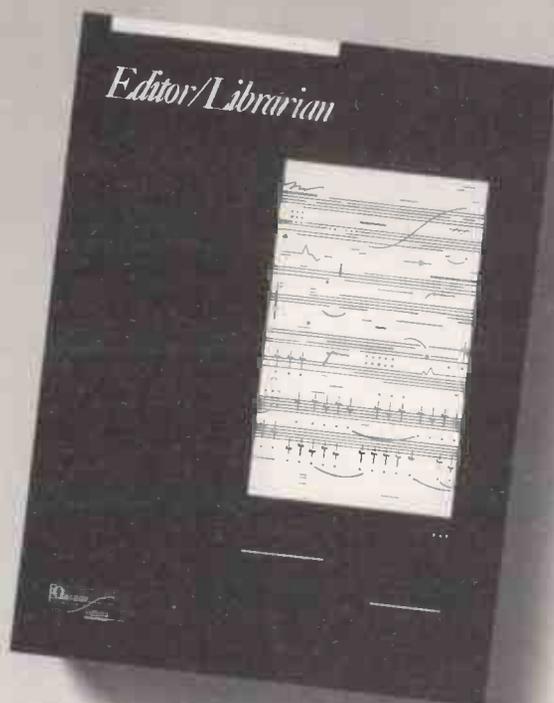
"I also brought in Sarah Jane (from the ▶

"When I first saw the picture I was able to record several pieces very quickly, and get an immediate reaction from the producer."

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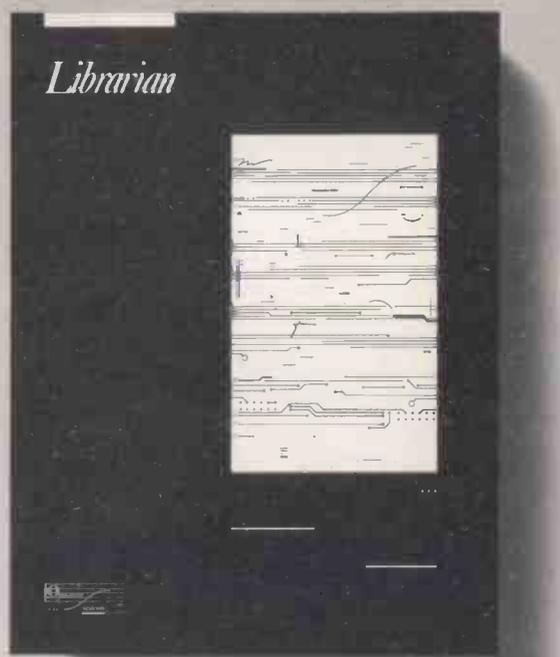


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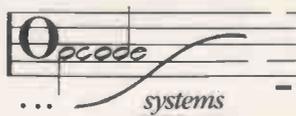
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Happy End and the Communards' guest on 'Don't Leave Me This Way') to do the vocal on my featured piece; I've laid off one piece to Paul Hardcastle who was very keen to get involved; and a band called A Bigger Splash have also done something. I'm not a name that will help sell tickets but Paul, the Communards, and Sarah Jane probably will. There's to be an album too, but we've got so much material that I really don't know how it will turn out."

SO MUCH FOR the personalities involved. But regardless of your status (financial, artistic, or otherwise), you've still got to get involved with the business of putting music to moving pictures? It's a simple enough idea in theory, and with today's technology, it's not too difficult to realise in practice, either.

"One of the nice things about working now, as opposed to ten years ago, is that you can make lovely demos very quickly using this..." (With a casual wave of the hand, Parsons indicates a Fostex 4030 SMPTE Synchronizer lying on the mixing desk.)

"When I first saw the picture I was able to go away and record several pieces very quickly on 16-track, and get an immediate reaction from the producer. Sometimes it's even simpler than that: I just sit with a tape recorder and sing my ideas straight into it; being an ex-singer, I can improvise more freely like that than I can on keyboards.

"This time, I started working to a VHS copy of the film that ran about 20 minutes over length and had yet more scenes to go into it, so it was pretty rough but it was enough to get things going. Most of it was done with quick front-room demos. I probably haven't got a much more sophisticated setup than some of your readers, except that I've invested about two grand in the synchroniser so I can run it to both VHS and U-matic videos. U-matic is preferable because it slips less than VHS."

Moving on to the equipment being used to make the music, it's reassuring – though hardly surprising – to discover that Steve Parsons' considerations are basically the same as those of any other musician working with new technology. Where a soundtrack commission does differ from a pop session is the choice of sounds. Parsons confesses to being unsure of the equipment available to him at any time (he's thoughtfully brought a list to prompt him), but is decisive when it comes to the demands he makes of it.

"I'm only really interested in achieving effects, not in what they're achieved on. I employ a technical assistant to help with the rhythm programming and sequencing and I have a keyboard player, Simon Etchel from Boom Boom Room, helping out with the playing and arranging. On this particular project we've used a Roland MC500, a Prophet 2002, and an Akai S612 controlled by a DX7. We've also used a Roland GR300 guitar synth, a Roland Super JX and the Roland Digital Piano. The piano really is unbelievable – I defy

anybody seeing this film to recognise it's not an acoustic.

"I use an RX11 for drums, although it's rare that its sounds appear in the finished cues – I use it to get things going and then sample in the drum sounds I need afterwards. I do use an old TR808 though; I love all the top-kit stuff on that – claps, cabasa, claves – it's much sharper than the RX.

"I find I replace a lot of things as the score develops: I'll bring in real drummers, bass patterns become lead passages, and so on. Every sound has its own idiosyncracies: a pattern you've set up for bass will sound quite different with a tom sample, for instance.

"I suppose syncopation is a very important part of my writing, having worked under Ginger Baker. Every piece is like clockwork in that it only works in relation to all the other pieces. My rhythm parts often don't work without the guitar or keyboard part, for instance. Not a lot of pop music is done that way.

"Some things I record wild with no synchronisation – because as long as it's tight to picture it's OK. Another trick I like is controlled improvisation with the sequencer running. We do an improvisatory piece rather than a structured piece, and then I edit it later on. It gives a fresh feeling, whereas a lot of synthesiser music I hear has a sort of pedantic 'it took me ages to work this out' feel. TV music, especially, sounds like that. Perhaps I'm being unkind because the budgetary considerations are very poor and the time scale is tight, but that's how it seems.

"For the same reasons, I try to avoid writing music out as much as possible. There's no point in presenting a sheet of manuscript to someone who can't read, but everyone's got a pair of ears, so however untutored they are they can understand it."

Which makes perfect sense for all applications except, perhaps, those where orchestral arrangements are brought into play. Here, a further talent is called upon.

"I've got a big brass piece on this. I put all the parts on to tape and sent them to an arranger. He scores it out for me and suddenly it sounds like Alex North or John Williams. They don't score everything out themselves either – John Williams didn't score all the parts for *Star Wars*, he just played them out as piano themes to suggest melodies and counter-melodies to his arranger (who probably works with him all the time for an enormous fee) and he sorts out all the orchestrations. Not that John Williams couldn't do them, but time is precious and you need as much of it as possible for composing and thinking about the project, rather than performing manual tasks."

IDEAS FORMULATED AND agreed and arrangements scored, the next move is into the recording studio.

"The first thing that happens in the studio is all the timecodes go down – SMPTE, the code from the sequencer, the code from the RX – so that all the

"I avoid writing music out. There's no point presenting a sheet of manuscript paper to someone who can't read, but everyone's got a pair of ears..."

machines will talk to each other. The Fostex acts as the master and everything else follows it. Then I start replacing things, so there might not be any of the original sequencing left at the end, but you're left with an elegant but totally different feel. You can have something that feels very loose, yet will fit all the cues perfectly.

"I don't put ideas to tape until the last minute – then, when it does come out, I like to work very quickly. All the music I've done for this was prepared in two weeks and recorded in one, except for a couple of pieces that had to be shot to. It sounds punishing, and it is, but I prefer to really burn and get more stuff onto tape than I need – then I've got stuff to fall back on if I need it.

"Almost half of this film takes place in a club, so it's wall-to-wall music. The first idea was to try it with source music, tracks from well-known groups, funk stuff, hi-energy stuff and so on. At that point the purpose of the music was to provide the atmosphere you'd have in a club. The trouble is that if you use popular stuff, it's all old hat when the film comes out because of the delay.

"We tried all sorts of things that'd work for 30 seconds and then not – the vocals would get in the way where people were talking, or the feel would change. In the end we decided not to use much source music at all, and started to construct the music in another way. It serves two purposes now: to be the music in the club, and to underscore the moods and actions that are going on. It has narrative qualities as well as being music played in a club.

"Once it's mixed down, it's transferred to mag tape and then run in on the dub. We'll mix it two ways: some as a normal quarter-inch, two-track stereo mix, and the others on four-track, where there's one track for timecode, you might have the rhythm section on one, some of the melodies on another and discrete dubs on the last. You do that where there's a lot of dialogue, because if you've mixed it on two-track, all you can do is pull the track down. We've tried to do something a bit special with the club scenes, where we can pull something conflicting down but keep the drums going, or pull the drums down and keep the rest at the same level. But you only pull it down at the section where people talk, then push it back up.

"There's a scene in the lower bar where we did an Ellington-style piece with a cocktail piano solo. Now, with some neat editing on the sequencer, the piano solo isn't playing when anybody's talking – so he's the hippest cocktail pianist you're ever likely to hear. Who's going to notice that in the picture? Nobody, but the overall effect is perfect. If everybody does their business, you should feel you're inside the club. And we'll construct the Dolby stereo so that the music comes on the outside and the dialogue in the middle, because that's the way it is in a club. The club sets were full sets too, not one side off, so that we got that atmosphere when we were filming. These are all technicalities



peculiar to this film though – not the sort of thing that normally happens."

Once it's in the can, Parsons' material has to be sifted through to select the final pieces for each cue. Here, an already tricky situation is further complicated by the fact that scenes are continually dropped and altered, which means updating the music to fit.

The final stage in the musical process is the dub. From the chaos of music, dialogue and sound effects, the team must build a coherent soundtrack.

"Every piece of tape is marked with an 'M' number", says Parsons. "So reel one, cue three is '1M3'. On the dub they'll have loads of cans of my stuff, plus people walking, windows breaking and so on. It's orchestrated by a dubbing editor who has to balance everything out. I'll be there screaming for the music to be loudest, and the sound-effects man will be saying: 'no, no, no, we must hear the guy buttoning his jacket'... Then the director will step in and prevent us physically coming to blows.

"There are stories of composers bursting into tears on the dubbing room floor. And there's a story that Bernard Herrmann, Hitchcock's composer, once walked out on a dub. Obviously you realise that some things will have to be sacrificed for the film to work, and if you don't firmly believe that, then it's very difficult to come to terms with. Again, that's an aspect of the job that you have to be aware of if you're contemplating getting involved in it. Sometimes you have to give up because you know you're not going to win, and there's another battle to be fought tomorrow. It's like a war zone, really."

Which sounds vaguely reminiscent of the climax of *Empire State*. On soon, at a cinema near you... ■

YAMAHA RX5

Programmable Digital Drum Machine



The next generation of drum machines is upon us, with the RX5 as the likely standard bearer. Is it worth the cost of a good sampling keyboard? Review by Trevor Gilchrist.

POWER ON! GOOD. Jeez! That's impressive, look at all those little lights... Now then, what happens when I press Start? Nothing. Great. Ah, headphones, that's better. And again...

No, that can't be right, that's not a drum machine. Better just check I've plugged into the right socket... Yep, the tape deck's not on, the sequencer's not even plugged in, so it must be the RX5 making all the noise. But hang on a minute. Orchestral stabs? Slap bass? Tuned marimbas? Gongs? Vocal samples? What the hell's going on here?

Wait a minute, wait a minute. Turn the bloody thing off and let's have a look at the manual... Hmmmm. No, that's right, 24 internal voices; another 28 on this natty little cartridge ROM, and yeah, vocals, electric bass, tympani, orchestra...

Ah, but what about the "proper" sounds, eh? Where's me snare and me toms, and what about the bass drum? Didn't think of that, did they? Er, wait a second... Yes, it seems they did. Three bass drums, three snares, eight toms, four types of cymbals... Okay, okay, I get the idea. Now it's your turn.

This, ladies and gentlemen, is the Yamaha RX5. And, in case you hadn't already guessed, we're talking power, flexibility, incredibly high-quality sounds and yes, just about everything that Yamaha never managed to include on their previous machines—the RX1 I, RX1 S, RX2 I and RX2 I L.

Let me just say, right at the very beginning, that I found this machine lacking in only two relatively insignificant areas. This is state-of-the-art equipment. It is the argument for drum machines, as opposed to any other method of creating rhythm you can think of.

The RX5 was launched upon an almost totally unsuspect-

ing world at the Winter NAMM show in Los Angeles last January. A couple of weeks after that, some fairly unsuspecting members of Her Majesty's music press got a preview of it during a champagne reception at a hotel near Heathrow Airport. And a short while after that, the world, his wife, and their albino rabbit saw it at the Frankfurt Musikmesse.

It's destined to hit the shops at around the £999 mark, so Yamaha are obviously directing the RX5 at a serious and committed sector of the buying public, and it would be worth keeping that in mind while reading what follows. This machine is a lot of fun, but it's anything but a toy.

Now, £999 is big bucks, but as I shall attempt to illustrate, the RX5 is in every way worthy of such a sterling sum. For starters, it offers the user an enormous array of voices—all the expected, standard kit sounds; a full percussion section; a tuned percussion, Clavinet and electric bass department; and an ambitious (if a little clichéd) selection of special effects, like gunshots, crashing glass and vocal "Ooos", "Waos" and "Heys".

Now, before you start complaining that I've dragged you away from the 3.15 at Kempton Park to read about another stupid, gimmick-ridden beat box, just take into consideration the fact that any of these voices can be tuned, in tenths of a semitone, over a +24 to -36 full semitone range; that their envelope structure (attack, decay, and so on) can be edited in six stages to a ridiculously useful degree; that each voice can be subjected to pitch-bend over a selected range and rate, and then programmed to an individual volume level over a 31-step range (pause for breath... thank you); that any individual voice can be assigned to the top row of 12 pads on the front panel at 12 different tunings, thus turning

the RX5 into a programmable sequencer; and that any of the voices can be played or programmed in reverse, at the touch of a button.

There are two ways you could sum up the RX5 in terms of the sounds it provides. First, you could say that "Yamaha have provided an incredible amount of choice and flexibility on the RX5". Or second, you could say that "the RX5 is an absolute monster". Either way, you'd be wandering pretty close to the truth.

Sounds

LET'S START WITH the standard drum voices. Like the rest, these are all 12-bit samples which, if you're not familiar with sampling terminology, means that they're very, very good indeed. Not perfect, but far superior in terms of definition, accuracy and simple *credibility* to the eight-bit sound sources of the S's predecessors, the RX11 and the RX15.

To say that this machine offers a choice of three snares is true enough, but then the presence of those powerful voice-editing facilities means that such a statement really only tells a fraction of the whole story.

Altering the attack, decay, gate time, tuning, pitch, and relative volume of each voice is so easy (once you're familiar with the machine's layout), that the three basic snare sounds constitute mere starting points for straightforward and individual experimentation. And (perhaps more importantly), at no point is the user barred from exploiting this facet of the machine's capabilities for want of previous experience in digital synthesis. The manual is written in plain English and makes good sense – but more on that later.

You'll have perhaps realised by now the potential the new RX offers for personalising sounds within your programmed rhythm patterns. And of course, the same flexibility applies to the three bass drum samples, the two rimshots, the eight toms and the hi-hats. Marrying together the whole lot is where your "to-be-acquired" skills come into play – and remember, we've not touched on the machine's percussion section yet.

Patience... Let's do the cymbals first. Again, we're given four, very impressive samples to explore – China, Crash, Cup (or bell) and Edge (normally just known as the ride). Gone are the days of cymbals that stop dead just as they're getting interesting. Gone are the feeble, noisy, tinny excuses that normally pass as crashes and rides. Thanks to that most wonderful of voice-editing facilities, the loop, which takes hold of the tail end of a sample and repeats it at a steadily decreasing level to give a full, authentic-sounding decay, we can enter a whole new realm of convincing cymbal voices. Thus the already splendid china becomes a delicate splash or a rich, deep gong; rides go from dark and heavy to bright and lively at the push of a couple of buttons, and if you use a crash to end a pattern; it will die away just as if you'd hit the real thing.

It's plain to see, or rather hear, that Yamaha's engineers have been doing their Latin homework as well. The RX21L machine was a cracker in its own right, but the RX5's percussion section represents a significant improvement. The sounds are better and more flexible; the clarity and realism have been improved, and basically, with high muted conga, high open conga, low conga, bongo hi, bongo lo, agogo hi, agogo lo, whistle, cuica, cowbell, tambourine, shaker, timbale hi, timbale lo, marimba and claps, you're going to find its flexibility very hard to fault.

Remember, we're talking about tunable, bendable, reversible and assignable voices here. With the aid of tuning, the congas alone can become the most disturbingly deep log drums, tambouras – or whatever the hell takes your fancy...

Enough. I've made my point. Let's have a look at how the machine works.

Programming

YAMAHA ARE AS notorious as anybody for heaping more than one function onto any single button or keypad on their instruments. Sometimes it's justified – like the provision of the alphabet for song naming, which is something used so little that it doesn't warrant its own set of 26 keys – but sometimes it's not.

Their philosophy with the RX5, because there are so many functions, is obviously to rationalise the whole process. This has been necessary because where a machine like the RX21L has some 24 different functions, the RX5 has about a hundred; and flexibility aside, this is bound to cause problems. This is how Yamaha have coped...

The most important button on the whole machine is called Job. Functions are grouped together under headings such as Edit Voice, Edit Song and Key Assign, each of which can be accessed via their respective pads on the front control panel. There are eight banks altogether, all with fairly self-explanatory titles and all containing between one and ten functions. Having called up the desired bank (and they're all listed on the front panel), your access point to the various commands that each contains is this Job button.

For instance, let's say you want to alter the tuning of a marimba. You summon up the Edit Voice bank, press Job 01, and then the marimba key to call up that particular voice, followed by Job 02 to access the pitch-change facility. LEDs along the main information panel remind you of which mode you're currently working in, while the back-lit, 32-character LCD keeps you informed of everything else.

It's all very straightforward, it's just that there's quite a lot of it – though after a few days' intensive use, you may well be able to put the 60-page manual back in the box for good. In fact, I'd go as far as to say that getting to know this machine is quite a pleasurable experience, simply because you're dealing with logic and common sense *all* the time.

It goes without saying that the RX5 offers all the usual step-time and real-time writing facilities. In Pattern mode we've got quantisation (auto-correct) down to 1/48, or off altogether; a variable Swing function from 54% up to 71%, and the usual Erase, Copy and Append commands for linking bits together. In Song mode too, all the expected chaining features appear, but Yamaha have been far from content to leave it at that. The RX5 is not merely a standard drum machine with a few clever voices tagged on for effect; its writing facilities and memory capacity are both utterly vast.

The 100 available pattern locations can be stretched to a length of 99 bars each, which is pretty good in itself. But once written, as many as five parameters relating to individual notes can be edited. Switching to Song mode, these 100 patterns can be linked together to assemble up to 20 songs – each comprising (deep breath) 999 parts. Each song can be given its own name of up to eight letters, and an initial tempo which can then be programmed to increase gradually (*accelerando*), or decrease gradually (*ritardando*) over a variable range and duration as many times as you wish throughout the song. And the same is true of the volume of particular sections, which may be programmed to add subtler dynamics to various passages, or to create fade-ins and fade-outs for songs – though it's worth remembering that unlike the Korg DDD1, for example, the RX5 doesn't possess touch-sensitive programming pads on its front panel.

Locating those particular sections has been made easy too, with the provision of a Search Mark facility which allows you to insert *named* locator marks within a song that can be called up for the start of editing or playback.

Song chaining on the RX5 is ridiculously simple – with the ▶

provision of enough memory to make and name three chains, each containing some 90-odd steps. But – wait for it – a song containing 999 parts constitutes *one* step in one chain. Making a total of 269,730 parts in three chains.

Just think about that for a moment. It means you could program in a few empty bars between each of your songs, turn the machine on at the start of a gig, and not have to touch it until the end – and you'd still probably have left much of the memory unused.

Want to know how much you *have* used? Call up the Utility mode, press Job 02, and the display tells you the percentage of memory left in a particular song. Simple, isn't it?

Interfacing

NOW, I'M NOT going to wallow too much in the nitty-gritty of this facet of the RX5, because that's what manuals are for, and I wouldn't want to put Yamaha's technical authors out of a job. On top of that, there's so much to the MIDI side of the new RX, there just isn't enough room to get it all in – so a brief outline must suffice.

There are ten functions (or "Jobs") within the MIDI mode, plus MIDI In, Out and Thru sockets on the back panel. The RX5's MIDI facilities allow its voices to be triggered from an external keyboard or sequencer (or from a drum pad-to-MIDI converter, of course); external keyboards and sequencers to be run from the RX5; and

Before we get back to the fun side of things, we've got to find room to say that all your pattern data can be saved to, or loaded from, either a separate RAM cartridge or a standard cassette. You can also save 12 edited versions of drum voices to RAM, and have access to them (for insertion into patterns) at the same time as the 24 built-in voices and 28 ROM voices – making 64 sounds simultaneously available. That done, we can indulge a little further in the delights the machine has to offer...

Verdict

SO YOU'VE SPENT your thousand pounds. You've managed to get the RX5 home on the bus without dropping it, and now it's sitting next to the four-track in your bedroom.

You're committed. You've got to spend time getting to know the machine. There's a lot to learn, a number of previously forgivable preconceptions about drum machines to dispel, and a whole new approach towards creative programming to adopt. If you're willing to expand your thinking, the RX5 will reward you and reward you well. The sounds that it makes available are nothing short of stunning, while its programming power and flexibility put it streets ahead of the opposition.

On the fun side, the three vocal samples "Hey", "Wao" and "Ooo" are a barrel of laughs, injecting the enthusiasm of some strapping, beat-crazed hip-hopper into the final mix. Reverse the voices, and the "Hey" becomes a "Yeh?"; tune them down and you've got a long, agonising groan – a bit like an audience at a *Little and Large* recording.

If you want to add a bassline to your rhythm patterns, this machine makes it possible. Using the Key Assign mode, you simply allocate the voice Electric Bass Low to the first row of 12 instrument keys on the front panel (over a range of 12 full tones, or 12 semitones, or 12 tenths of semitones), and just play the bassline you want in Real Time Write over the pattern. Alternatively, the unique capability (mentioned above) of the RX5 to stretch an entire sound's pitch across a five-octave keyboard makes for an even broader range of melodic options.

Want to add a Clavinet melody? Go back to Key Assign, substitute the Clavinet voice for the bass, put the machine back into Real Time Write, and away you go. You could also add a couple of orchestral stabs (via the same process) to spice things up even more. You've already got a stirring Latin percussion section driving away in the background, replete with resonant log drums, deep-tuned marimbas and exuberant cries of delight... So all that remains is to spill out a stereo mix via the two main outs, or to assign all the 24 voices to the 12 separate outs along the back panel if you're engaged in multitrack recording.

After a couple of hours you're making music. After a couple of days you're ready to set the world on fire. Like I said before, this machine is the argument for drum machines, and I don't see it being long before we see extra voice cartridges from Yamaha that will establish the RX5 system as the studio digital drum box.

I mentioned there were two areas in which the RX5 fell short. First, there's no facility for creating your own samples. (The official reason for this is that Yamaha's engineers do not believe sampling to be a particularly worthwhile technique; the unofficial reason is that Yamaha's engineers are still putting the finishing touches to a sampling add-on.) Second, English law prevents marriage to a drum machine – whether you're a man or a woman. If you feel you can live with both of these limitations, go down to the nearest Yamaha stockist, and ask them to play "Demonstration Song 02". And make sure there's a chair nearby; you'll need to sit down for a while afterwards. ■

MUSIC TECHNOLOGY APRIL 1987



individual voices to be assigned to the keys of a keyboard, providing immediate access to the full pitch range of the voice, and enabling full programming of dynamics.

Access to the Receive, Transmit, Note Number Assign and EG Velocity facilities is again effected through the Job button, and is as straightforward as everything else – if you knows yer MIDI.

In Sync mode, Yamaha have provided the poor, by-now-befuddled user with a further four options: Internal Sync, which allows the RX5 to be controlled by its own internal clock (this is the mode used for all normal playback and real time write functions); MIDI Sync, by which the machine can be started, controlled and stopped by another MIDI device; Tape Sync, which links it to a synchronisation signal recorded onto tape; and External Sync, which ties the machine to another, non-MIDI device that puts out a gate-type clock or trigger signal.

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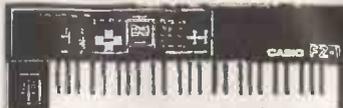
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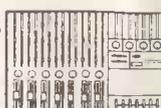
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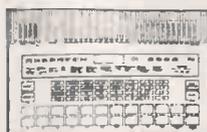
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BEATING LIKE THIS



Your drum machine is a sophisticated piece of technology, yet your percussion parts still sound lifeless and robotic. True for you? Don't panic—we're starting a major series on creative drum programming.

Text by Chris Meyer and Matt Isaacson.

A COMMON ELEMENT in the vast majority of music we hear today is The Beat — drumming, percussion, rhythm, whatever you want to call it. The advances in technology these last few years have allowed more of us to produce more parts of the music we record, and to take over the role of the traditional drummer or percussionist to create The Beat.

Great? Not to some people's ears. What has made all this possible — the drum

► *“The memory that drum machines use is expensive. True, the price of memory is coming down, but so is the price of drum machines — and memory is one of the first things to get cut.”*

machine — is, next to the tape recorder, arguably the most used and certainly the most cursed piece of equipment used in the creation of music today. It's been accused variously of putting ordinary

drummers out of work, turning popular music into little more than an elaborate metronome, and making modern dance a mockery.

But one thing is certain: nobody is going to give up the convenience and new possibilities inherent in one person being able to create all or most of the parts of a piece of music. So the metronome goes on.

The aim of this series is to make all of us (we hope) better pseudo-drummers and percussionists by pointing out common traps and pitfalls, and giving good hard advice on how to make both our percussion programming and our percussion sounds more lively and more authentic — or failing that, at least a lot more interesting.

T*he Problem*

DRUM MACHINES JUST don't sound like drummers. It's nothing mystical or intangible — there are honest factual reasons

why this is so, whether or not you've been able to put your finger exactly on them (and don't feel bad if you haven't — many, many others haven't, either). Following the idea that to Know Thy Enemy is the best way to conquer (and that's what this series is all about), it's a worthwhile exercise to spell it out.

Analogue drum machines (of which the Roland TR808 is the last example still in common recording-studio use) don't sound right simply because their electronically generated sounds fall so far short of simulating the characteristics of real percussion instruments, even your deaf old Aunt Mary could tell the difference. That hasn't stopped these machines finding a niche for themselves in modern music, of course, and even the limitations of their programming facilities can be got round by sampling those analogue voices into a digital drum machine.

But on digital drum machines, the short length of sampled drums is often just as big a problem. The type of memory that drum machines use to store sounds is expensive.

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True, the price of memory has been coming down, but so has the average price of drum machines — and amount of memory (and, therefore, length of sounds) is one of the first things to get cut.

The first noticeable effect of this is that sounds in drum machines end up far shorter than their original parents — pale imitations of the real thing. Toms go “blat” instead of “thooooommm”, cymbals go “tish” instead of “tiiihshhhhh” (usually cutting off abruptly instead of decaying smoothly into silence), and so on. Open hi-hats are rarely long enough for the closed hi-hat to actually cut them off. It’s like a person abruptly cutting off a word at the end of a sentence, instead of winding down his or her inflection — subtle, and not something we think about every day (if every year), but a psychoacoustic “hint” that our ears and brain notice.

Ambience is another lost property — the sound of the room around the drum and of the drum itself shuddering to a stop. Most of this shows up after the bulk of the sound itself has died away, and ends up getting trimmed off. This makes many sampled drums sound unnaturally close, which tends to work against the volume level of the drum or percussion device itself — if something is soft, you expect to hear as much reverb as the source sound itself. If a sound is extremely high in level, this usually implies that it has been hit harder, which also tends to excite more reverb in the room in which it was hit (and more shuddering in the drum shell).

In some cases, ambience is purposely left out of the sound. Since drum machines are in one sense trying to be all things to all musicians, most of them come with standard issue, middle-of-the-road sounds. Aside from memory constraints, the sounds are recorded in such a way as to strip them down to their generic essentials, using head damping, isolation, and close miking in acoustically dead rooms — in a word, dry. In multitrack recording, drums are often recorded this way with the assumption that ambience will be reinserted during mixdown — ambience-free tracks leave the widest number of options open. Perhaps unfortunately, the same assumption has been applied to most drum machines.

A third issue related to lack of memory is the data format used to store sampled drum sounds. Memory that is eight bits wide costs two-thirds as much as memory 12 bits wide (the current accepted standard for sampling instruments). Linear eight-bit data has very little dynamic range — only 48dB, or less than the difference between silence and normal conversation. Turn it up, and more noise creeps in (plus a digital audio phenomenon known as quantisation noise, where the quieter the sound gets, the more distortion and noise creep in).

Most digital drum machines use an encoding scheme known as eight-bit COMDAC, where 12 bits of dynamic range — 72dB — are squashed into eight bits
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of data. This means there are some holes in the range of volume a drum or percussion sound can have as it fades away, which often results in some high-frequency noise. So sounds without a lot of high frequencies such as toms, congas, and bass drums need to be heavily equalised (filtered) to cut out this noise. The sound ends up cleaner, but dull. Listen closely to a drum-machine tom next to the real thing — it lacks the “whack” of the initial hit, and much of the sustaining character of a real tom.

Next is an effect that’s caused both by lack of memory, and by few people realising that it is that important — multiple copies of the same sound. You can hit a cymbal in many different places, and get many different sounds. Next time you’re next to a drum-kit, listen to the way the cymbal wavers on the stand when you hit it again, even if you are trying to hit it in the same place. Some drum machines use the same tom transposed to different pitches to fake having multiple toms. True, if toms were perfect, different sizes of the same manufacturer should sound alike — but they’re not, and they don’t. And any ambience that does manage to get left with the original sound gets transposed along with the rest of the sample — so the authenticity of such sounds suffers. The same goes for retuned snares — making a real drum head tighter doesn’t change the size of the shell or the snares that vibrate against the head themselves, it’s just that retuned samples make it sound that way. And a hi-hat has a virtually infinite range of sounds, depending on how hard it is clamped shut. If at least one of the authors hears one more string of semiquaver closed hi-hats without any dynamics being wilfully created, he will murder.

Ah, yes — dynamics. Many, many drum machines do not take any form of dynamics into account. No one short of a robot can do anything precisely the same way over and over again. Even if a drum machine lets you adjust the levels of the sounds against each other, you often can’t change the levels of any one sound throughout the piece or on any given take, though some machines, such as the Korg DDDI and Kawai R100/R50, feature force-sensitive pads.

But volume is only a part of dynamics — drums and percussion instruments are complex beasts. When you hit something harder, not only does it tend to get louder, but the timbre of the sound changes (more stick crack, more snare, whatever), and even the pitch itself changes subtly from the skin head getting stretched further (increased tension equals increased pitch). Where you hit the drum can also have as much effect on pitch, and even more on timbre. Once again, you may not know this, but your ears do.

The “robot feel” of drum machines does not apply just to the sounds themselves — timing comes into play, too. Whether they can help it or not, very few people can play at a perfectly constant tempo (on any instrument). And there’s a lot to be said

for the subtle placement of hits just ahead of or behind the beat — some drummers have tracked this down to just a few milliseconds, which is finer than the vast majority of auto-correct functions available (or even what a drum machine or sequencer claims to be “free time”).

Drum machines also play back sounds differently than the sounds themselves “play”. When you hit any drum or percussion instrument that has not finished sounding from the last time you hit it, the energy and the state it was in affect how the new strike excites the drum (and, therefore, how it sounds). The more “loose” the physical device, the greater this change (ie. crash cymbals sound different every hit; items such as wood-blocks or xylophones nearly always sound alike on multiple strikes). No electronic percussion instrument yet developed is able to take this properly into account. Most drum machines just restart the sound from scratch, which just isn’t the same.

Another thing that just isn’t the same is the way we play the sounds on a drum machine. To be fair, Roger Linn did us all a great service when he allowed us to hit pads in real time on the front of a drum machine as a way of programming drum patterns — it’s certainly more interactive

► *“There’s a lot to be said for placing bits ahead of or behind the beat — some drummers have tracked this down to a few milliseconds, which is finer than the auto-correct functions on machines.”*

than having to chart out patterns on paper and in our head, and then enter them by hand into a computer. However, hitting small hard plastic squares with our fingertips isn’t quite the same as a drummer or percussionist swinging sticks at, or whacking hands across, the real thing. Well-trained is the person who can do a tom roll on one pad with two fingertips. Often, this means entering the more difficult, or faster, parts in step time.

Neither method encourages playing drum or percussion parts the way a drummer or percussionist would. Result? We get boom/chock/boom/chock bass and snare patterns, as opposed to all of the little half-hits and flams more typical of the Real McCoy.

Then there is the important, and quite common, crux — most of us aren’t really drummers. Therefore, we do not program drum patterns the way a real drummer or percussionist would. Now, some of you may comment that this is a cop-out, and that it is equally valid to do things a drummer might not think of or even can’t do. No disagreement there. However, many are still incorrectly imitating real drummers, and like it or not, there is a whole tradition of how we’re used to hearing real drummers sound that sends ►

- off alarm bells in our heads when somebody does something blatantly wrong.

Possible Solutions

SO, WE'VE DISCUSSED some of the things which can make a rhythm track sound synthetic or unexpressive – things that give it away as sounding “not real”. We've also seen that many of these things are inherent to drum machines, particularly older ones or those in a modest price range.

Can we get around these problems? Well yes, but there's some bad news in advance – a lot of the solutions may mean getting instruments or other devices you don't already have. If you have not yet made an investment in electronic drum and percussion devices, then this series is just in time. If you are looking to upgrade, perhaps you can pick up some advice on better (and occasionally, non-obvious) ways to spend your money. And in any event, drum machines themselves are getting better, and are starting to address some of the problems listed above.

But what if you already have one of the poor, broken-down drum machines we've been maligning from an ivory tower in the above paragraphs, and don't see many extra pound coins floating your way in the near future? Well, the rest of this instalment is dedicated to you.

If you find yourself in the position of being constrained to work with these devices, you may at this point be wondering whether you are doomed to suffer with rhythms which always fall somehow short

of what you wanted. The answer? Depends. Honestly, there isn't much hope of making a £250 drum box on its own sound like Billy Cobham behind a large Tama drum-kit – with such a goal, it should be obvious by now that satisfaction shall not soon be yours.

On the other hand, many recording applications are not so critical. Much of the ability of a reasonably good drum machine to simulate recorded drums can arguably be credited to the way in which real drums and drummers have been used in the past in pop recordings – as providers of metronomic rhythms and muffled sounds meant to stay well in the background, especially when vocals are the main attraction. In these musical situations, a producer may opt for a mediocre drum box program in favour of a more expensive

studio drummer, with relatively little effect on the final recording or the ability of the listener to tell if it is a drum machine (or a drummer who sounds like a drum machine). And anyone who has been around real drums knows that they tend to sound a bit different from what you hear on recordings. This is no accident – a lot of work is done to get them that way.

The good news is that this points to one approach to treating our problem on the drum box itself – namely, avoid programming techniques that cause rhythms to jump out of the mix and say, “I'm a machine”. This calls for some discipline, and careful listening to both the sound made by your box and to any recordings you may be using as musical or stylistic references. The goal here is to avoid two common problems: sounds that are obviously not created using real drums; and rhythmic arrangements that no human drummer would or could be expected to play.

Here are a few specific cases, starting with fast licks and rolls. Now, the snare sound in your beat box probably sounds remarkably like a well-recorded medium-loud single hit on a perfectly set up, isolated studio drum. Only when rapidly repeated does it become annoyingly obvious that the sound is exactly the same every time you hit it. As mentioned before, retriggering a sound on most drum machines cuts off the previous hit and starts it all over again. If you play fast enough, you get down to a point at which only the very beginning of the sound is heard – now you've *really* got a machine-like sound.

In the case of real snare drums, the heads continue to ring from each hit even while other hits are piled on, and fill in the spaces between the hits with a natural, random sound that's definitely *not* identical for every hit – not even for Mr Cobham. In what is known as a “crush” roll, the goal is to play so rapidly and smoothly that the stick strokes literally blend into the sustained ringing of the drum heads against the snares – this is what's responsible for the “rolling” sound. This sound has little in common with the sound our machines make repeating the sample's attack over and over again, making the “crush” technique nearly impossible to program. Do everyone a favour – forget it.

Careful listening to the three-, four-, and five-stroke rolls played by drummers (more slowly, usually as demi-semiquavers) will reveal the volume dynamics which make them effective – an accent on the last stroke, with sometimes a mini-crescendo building up to it, such that the roll in effect becomes a single event that leads your ear along into the rhythm, rather than an obtrusive burst of machine-gun fire that breaks it up. This sort of dynamics takes some practice to program – you will probably have to slow things down a bit, and may need separate takes to record the changing levels of individual drums (although, as we've said, velocity-sensitive

pads are starting to find their way onto lower-priced drum boxes).

In spite of the difficulty it takes to create, you should resist the temptation towards heavy re-use of one such event to save programming time – these rhythmic devices are most effective when used sparingly, as occasional embellishments to the rhythm, and with some element of surprise. If exactly the same roll comes in at exactly the same time every fourth bar, we might as well go back to square one...

Much of what's just been said applies to solos and fills, too. Hold the speed down somewhat and play “around the set”, rather than homing in on one drum. This lets the sounds ring out longer and minimises the artificial character of abbreviated drum sounds. Work dynamics in as much as possible – not just to showcase the dynamic capabilities of your machine, but with an ear towards the motion-suggesting power that makes percussion dynamics musically useful. A good fill does not stand out from the rest of the rhythm so much as it gives it an extra kick in the arse. And remember – the more off-the-wall it is, the less it needs to be repeated before it starts shouting “I'm a machine” again. Solos should take the listener somewhere (and back?) instead of grinding wheels in one place.

Carelessly used, ride cymbals can appear rather blatant when, after a moment, the cymbal suddenly disappears. Ride cymbals are so named because a drummer can “ride” one with one hand, laying down a steady stream of light quavers and semi-quavers to form the top layer of a rhythm. They're large, heavy, and ring for a long time, “hanging” in the air between strikes – so long that a complete hit and decay would easily exhaust the sound capacity of almost any drum machine. In order to capture that “hang”, drum-machine ride cymbals use a second or so of unadulterated cymbal (adequate to span the gaps between slow quavers), after which the sound is digitally faded down (or “enveloped”) rather abruptly. This compromise solution was obviously intended for the “standard” style of ride cymbal playing, and sounds artificial if the strikes are left too far apart or allowed to die in an open space.

Try to lead the ride rhythms into a crash cymbal hit or other bright instrumental accent, to distract the ear away from the sudden cutoff of the last strike. Some subtle dynamics – even as simple as accenting the even beats or all odd 8th notes – can help transform sequencer cymbal monotony into something with a bit of organic flow.

Sound Changes

ASIDE FROM RHYTHM programming techniques, there is the issue of the sounds themselves. As we mentioned earlier, drum-machine sounds tend to be pretty devoid of ambience – either on purpose, MUSIC TECHNOLOGY APRIL 1987

- “Retriggering a sound on drum machines cuts off the previous hit and starts it all over again. And if you play fast enough, you get to a point where only the very beginning of the sound is heard.”

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or because of memory constraints. Back when drum machines were first introduced, and expensive enough to be found only in professional studios with large mixers and stacks of outboard effects, this wasn't a problem. Now, however, drum machines are widely used in situations where none of these things is present, and we get to listen to the sounds straight out of the box.

The good news is two-fold. One, some manufacturers are beginning to recognise this problem and are providing their boxes with sounds that are more useable on their own; and two, just a little bit of help goes a long way here. As with drums-in-a-box, ambience-in-a-box has taken spectacular nosedives in price during the past couple of years, with decent-quality stereo digital reverbs now available for as little as £250. Reverb, in particular, will help restore what is missing from dry drum machine sounds, putting them into a larger acoustic space in which the ambient image is also part of the rhythm, and diverting the ear away from specific shortcomings – such as filling in holes in the rhythm. The sudden cutoff at the end of a ride cymbal sound can be effectively extended or masked by a medium-to-long decay reverb, for instance. Reverb of almost any decay time will provide a space for drums to swell into – in particular, fast licks will sound much more full when reverb is there to pick up where the drum machine leaves off.

Here, as elsewhere, the "less is more" axiom applies. Long reverberation times work best with slow or sparse rhythms, or if kept low in the mix. For busier or more up-tempo tracks, gated reverb or small-room settings may prove more effective – they will give the desired sonic enhancement without overwhelming the mix, even when mixed in at a fairly high level.

Another useful technique is that of applying reverb only to certain sounds, rather than to the drum box as a whole – for example, kick the decay time back up and send just the snare through, to accentuate the second and fourth beats, or leave the hi-hats out of the reverb to keep the upper frequency spectrum open for voices and other instruments.

With drum machines that have individual

sound outputs (and always assuming your mixer has enough inputs to cope), this is straightforward. Stereo-out drum boxes can also be used to achieve this setup with no external submixing – use the pan control to send the sounds you want reverberated to one output, and the rest of the sounds to the other output. If you have access to a second reverb unit (beg, borrow, or whatever), try using different types of reverb on different sounds at the same time (a common studio practice).

Digital delay lines (DDLs) have, until recently, been less expensive than digital reverbs and therefore more widely used. While they might seem to be an obvious tool for creating ambience, they must be used carefully – in contrast to the diffuse echoes created by a reverb unit, the discrete echoes generated by a delay line are none too subtle, and can wreak rhythmic havoc if not kept under control. In fact, at longer delay times corresponding to quavers and semiquavers, delay lines can be considered rhythmic tools as opposed to ambience (we'll discuss that much later in the series). Keep echo times shorter, and use little or no echo feedback – you will have less trouble with the digital delay taking over. Ambience effects are more often connected with echo times found in rooms or halls – one-tenth of a second or less. Alternatively, you can use slightly more feedback and longer delays with some equalisation to eradicate treble and midrange frequencies (in either the echo send or return) to take the sharp edges off those repeats.

If your delay line has settings in the chorus/doubler range (20-40mSecs), there is a simple and rather effective route to stereo small-room simulation at your disposal. Pan the sounds to be processed fully to one side of the output mix (you may even want to do this to the entire mix). Run this set of sounds through the delay line, and pan its output fully to the other side of the mix with the delay line's Mix control set to echo only. Use a delay time of about 30mSecs, with no feedback and (optionally) a small amount of modulation to the delay time. Finally, balance the level of the echo output to match that of

the program mix in the other channel. The echo generated by the delay line falls too closely on the heels of the source sound(s) to be heard as a distinct echo. Instead, your ears do the work of combining it with the original sound to create a pseudo-stereo image in the form of the original sound. This is admittedly a bit cheap, but it works – and is not all that blatant, either.

When nothing else is available, you may be able to use the acoustic properties of one of the rooms in your dwelling (or wherever it is you're recording). Ideally, you would use the largest room, but if this is the living room, it may be too well damped by carpeting.

For best results, the speaker(s) and mics should be as far away as possible from each other, and should not point directly at one another – try the walls, ceiling, or particularly the floor (if it's not carpeted). The mics should be free-standing, as

► *“Apply reverb only to certain sounds, rather than to the drum box as a whole. Send just the snare through to accentuate the second and fourth beats, or leave the hi-hats out to keep the upper frequencies open for other instruments.”*

opposed to placed in the corners or right against the walls – but feel free to experiment. Be careful about placing a speaker or mic too far in front of its partner – phase cancellations may result. Naturally, you'll also have to remove, tape, or nail down anything that rattles, and keep people away while recording. This is actually a low-rent version of the "live chamber" echo widely used in recording studios, especially before the advent of plate and digital reverbs.

Next time, we'll confront the possibility that keyboardists have the best tools for making good drum and percussion sounds, and discuss how to exploit them to our own ends. Until then... ■

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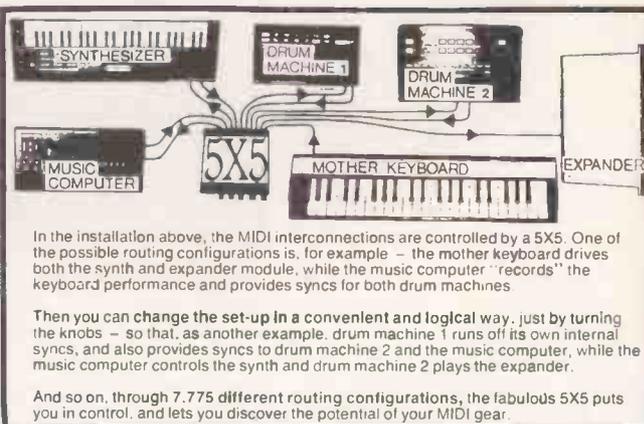


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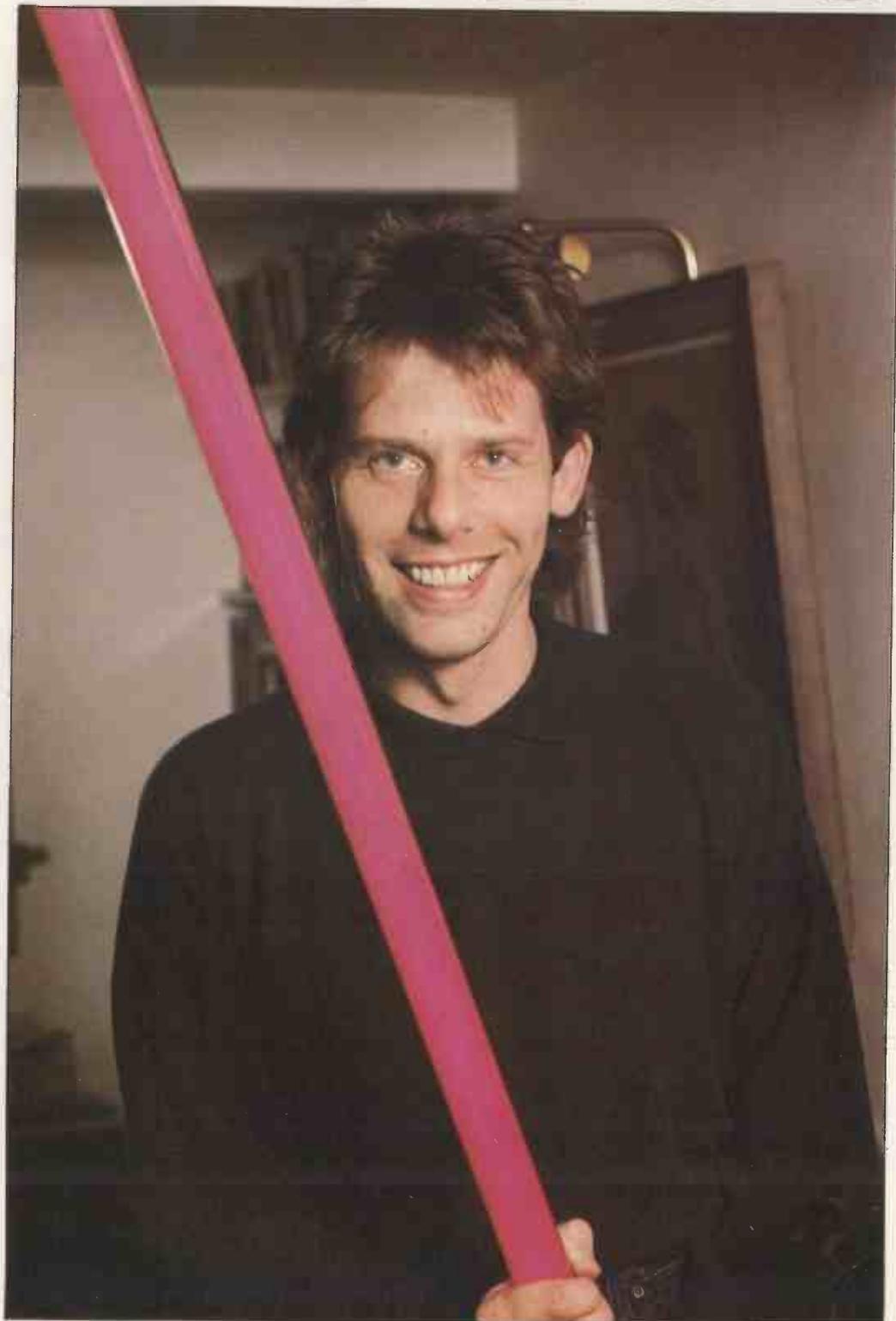
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S U C C E S S

His 30th birthday wasn't too long ago, yet already, producer Hugh Padgham has worked with Genesis, David Bowie, Paul McCartney and The Police. Is he a genuine and reliable innovator, or did he just get lucky? Interview by Paul Tingen.



HUGH PADGHAM LIVES in a relatively modest house in Hammersmith, West London. Inside it, there are few things which hint at the fact that here lives one of the world's most successful record producers, a man who has worked with the likes of David Bowie, Paul McCartney and Genesis, and a man who – with the help of Steve Lillywhite and Phil Collins – started a revolution in the sound of drums.

At the back of Padgham's house there's an extension, covered by a glass roof. Underneath is the living area. A huge sofa, lots of plants, and a fluorescent lamp spreading a strange coloured light. It isn't until we visit the bathroom that we discover a small selection of platinum and gold records, a photograph of Padgham with Sting, and a card signed "Paul and Linda".

Back in the living room, Padgham is pouring some drinks. He is dressed in a black shirt, has blond hair and friendly blue eyes. He is obviously very tired, yawning while leaning back on the sofa, a beer glass hanging loosely in his hand. Yet his relaxed, easy-going manner puts writer and photographer at ease instantly. He is clearly used to dealing with people – an asset which must have played a part in his monumental success as a record producer.

Initially, it's hard to get him interested in conversation. He rubs his eyes frequently, and talks softly, monotonously. It isn't until a remark is made about his continued involvement with artists like Bowie, McCartney, Genesis and The Police that he suddenly comes to life. He was once renowned for his work with obscure and progressive artists, so what's he doing now, working with older, established acts? Padgham suddenly raises his voice.

"I think all these people, the Bowies, the McCartneys and so on, come from an era when playing and liking music seemed more important than having a good haircut. The people you've mentioned are all very talented individuals and surround themselves with good musicians. I would get, and have been, frustrated, having to work with groups where people can't play. I'm just not interested in that, because then you've got to get all political and get somebody else in to play which will upset the band, and so on. I'm not into music for people's haircuts, I'm into music for music. I'm not prepared to waste my time sitting in a studio with somebody who can't play.

"I'm not saying that young groups can't play. There are plenty of young groups with competent musicians, and I think the emphasis is getting back on playing again. But if someone asks me why I work with these old fuddy-duddies, then the answer must be that I do it mainly because I like them and their music."

Hugh Padgham was born 31 years ago, not far from London. His parents were amateur musicians, and his father built organs and spinets in his spare time. At the age of ten, the young Padgham started taking piano lessons, later switching to drums and finally bass guitar while playing

in a jazz band. Rehearsals with this group were recorded on an old mono Ferrograph recorder, a device which quickly became something of an obsession for the band's bass player. This fascination, together with the realisation that he wasn't terribly proficient as a bass player, determined the course of his career to come...

"I wanted to become a professional musician, but I figured that if I was thrown out of this band, no other band would hire me. So I decided to become a studio engineer, and bought a lot of studio magazines. My parents didn't like it very much. They wanted me to go to University and all that sort of thing, and if I *had* to work in a studio, then I should go to the BBC and get some formal training. But I didn't want to do that. So I wrote to a lot of studios and ended up with a job at Advision as a tape-op-cum-tea-boy-cum-gopher. That was pretty exciting."

The excitement vanished quickly, though, as Advision's engineer wasn't willing to share any of his studio expertise. Padgham got made redundant on top, and continued his apprenticeship at Lansdowne Studios. Later, via the Manor Mobile, he came to work at Virgin's Townhouse Studios. And it was there that he ran into Steve Lillywhite.

"Steve is exactly the same age as me, and we had a similar attitude and taste as far as music was concerned. We enjoyed working together, and as a result did a lot of bands together like The Members and XTC. It was with XTC that our careers started taking off because the two albums we did, *Black Sea* and *Drums and Wires*, were very well regarded."

The duo's real breakthrough, however, came with their work on Peter Gabriel's third album, which has since become a milestone in modern pop and rock. On it, drummer Phil Collins, producer Lillywhite and engineer Padgham created their revolutionary "full frontal" drum sound, using ambient mics and noise gates. Subsequently, Collins asked Padgham to produce his first solo album, *Face Value*. The success of this record led Padgham to co-produce with XTC (*English Settlement*); The Police (*Ghost in the Machine* and *Synchronicity*); Genesis (all albums since *Abacab*); Phil Collins again (*Hello, I Must Be Going* and *No Jacket Required*); David Bowie (*Tonight*); and most recently Paul Young (*Between Two Fires*) and Paul McCartney (*Press To Play*).

But the Gabriel venture is still the one which brings a spark to Padgham's eyes. Gesturing wildly with his hands, he explains how that new approach to recording drums came into being...

"Somewhere, halfway through the '70s, Steve and I started getting sick and tired of hearing all those terribly close-miked drums on records. Everything was padded up to the hilt. We figured that when you went to a gig or stood next to somebody playing drums, it sounded incredibly loud. You can't stand being there for too long.

"So we thought: 'Why don't drums sound like that on records?'. As it happened, the Townhouse had a separate room with

► quite a live sound. There we started using room mics as far away from the drums as possible, and getting this big, ambient sound which you hear on Gabriel's 'Intruder' or Phil's 'In the Air Tonight'. It's just two mics in the room, with some close mics to pinpoint specific sounds."

Those techniques became common property in the studio world – though before then, it was almost exclusively Padgham's and Lillywhite's trademark.

"It's a long time ago now", Padgham recalls. "Everyone was calling me for this drum sound and I kept saying: 'My God, that's done, why don't you try something new?'"

ASK THIS PRODUCER which direction his work is now taking, and his answers are vague. Not because Padgham is protective about his studio secrets, but because his current approach is intuitive, occasionally improvised, and invariably matter-of-fact.

"I don't really have a system; it just varies with the band or the room I'm working with. I don't spend hours getting a sound together – I get sounds very quickly. I suppose that's one reason people like me. You hear these dreadful stories about people waiting for days while somebody is trying to get the drum sound OK. It usually takes me 10 or 15 minutes to get a sound, because I make sure the drummer is good, the drum-kit is good and the room is good.

"It's becoming more of a problem to find a good room, because people are using DIs and forgetting about the studio room... It's ridiculous that they're building bigger control rooms at the expense of studio rooms."

"I think the important thing with recording drums is choosing the right microphone and choosing where to put it, rather than spending hours fiddling around with the EQ on the desk. Say I want to add a bit of top frequencies to the snare drum: I might change the mic or maybe I'll back the mic off a bit, so that it's an inch away from the rim and can get more of the floor reflections of the snares underneath the drum. Or, if the drums are on a carpet, I might take that away. Similarly, if I want to hear more attack from the bass drum, I'll change the padding or I might ask the drummer to play with a wooden beater rather than a felt one.

"The mics I use are usually dynamic mics on snare drums and tom toms. Which one depends on the drum-kit. Either Shure or Sennheiser or Beyer – they've all got good mics. I like using a U47 on the bass drum, especially while working with Phil, because he's got a small 20" bass drum.

"With Phil, and this sounds ridiculous, but one time we had three different tom-tom sounds. I'd miked them inside, up above and also via the room mics. So even though he played the drums once, I still had three different drum sounds at my disposal for one song. For the ambient mics I'll use anything, though usually a condenser mic like an 87 or a 47 or the

AKG 414. But I always try out new things.

"As far as the room goes, it should sound nice and live, though not too live, and you want to make sure it doesn't have a muddy resonance. Yet it's really hard to tell what's a good room and what's not. I've been in some rooms and thought: 'Oh wow, this sounds fantastic'. Then you put the drums in and it turns out that the sound is either uncontrollable or it has a horrible resonance in it.

"It's becoming more and more of a problem to find a good room, because in the '80s people are using more and more drum machines and DIs and are forgetting about the studio room. So there are a lot of studios that have quite a good control room, but the actual studio rooms are terrible. I think it's ridiculous that they're now building bigger and bigger control rooms at the expense of the studio rooms."

Apart from Padgham's preference for live, performed music, there's another reason why he is so bothered about the decline of the studio room. Because as far as he's concerned, drum machines still sound nowhere near as good as real drums...

"Even sampled drums never, ever sound like someone hitting a drum and it being recorded properly. They all have a very bad transience. The quality of a chip in, say, a Linn is just not good enough – the attack time is always somewhat rounded. To me that takes the excitement out of it.

"I'm not against using drum machines. Sometimes using one might be right for the song, and some machines have their own characteristic sounds which you can put to a use of their own. I still love the Roland CR78. It's got all sorts of nice latin sounds, and the bass and snare are useful in a weird sort of way. Nowadays, the Emulator SP12 is pretty good, I think."

Among his fellow producers, Padgham is often scornfully labelled as simply a good engineer who's hired because of his good drum sound and because he's a nice guy, implying that he is not too much of a producer. Such remarks come about partly through jealousy (who *wouldn't* want to work with Bowie or McCartney?), but there is a hint that Padgham's role in the recording studio isn't that of the typical, all-seeing, all-supervising producer. The hint lies in the fact that in almost every single case over the last few years, Padgham has been credited on albums as co-producer/engineer, rarely producer alone. The man himself is unpretentious about his work.

"I think people hire me because I am a good engineer who gets his sounds quickly. I also get on well with musicians. A lot of working in the studio is diplomacy as much as talent for pressing buttons. As far as my co-producer status goes, there's no way, when you're working with The Police, that you could say: 'I am going to produce you'. They don't want a producer who tells them what to do.

"There are obviously groups who want a producer who's more heavyweight in that sense, like Trevor Horn or Ron Nevison. These guys are known for going

in and taking over. I'm not interested in that. I'm just interested in making records.

"I didn't ask to become a co-producer. It just happened and it works well with the sort of acts that I work with. When people like McCartney or Phil ask me to come in and produce an album with them, I'm not going to say: 'Sorry, I've got to produce the whole thing alone or it's not going to happen'. I actually like co-producing. I look at myself as an invisible catalyst. I give feedback and don't keep my mouth shut if I disagree with anything, but also, I don't want to put myself in the foreground too much.

"Still, it's quite a difficult thing to engineer and co-produce at the same time. Just doing the engineering side of things takes a lot of attention, so I guess it works well when I'm working with people who know what they're doing, and who are not looking to me the whole time. I'm one person less to take into account when there's a difference of opinion."

Yet despite his low profile, Padgham does manage to leave an identifiable imprint on the various albums he has engineered and/or co-produced. Not, perhaps, through a consistency in musical approach or arrangements, but through a range of sounds that is recognisable as being his trademark. His records sound "live" and rocky, and it's usually obvious that there are real musicians playing.

HISTORICALLY, THE ONE occasion where Padgham was hired initially only as engineer and then became co-producer was when he started working with David Bowie on the recording of *Tonight...*

"Bowie and Derek Bramble had arranged the album together, and I was asked to come in and engineer later on. But because of some friction between Bowie and Bramble, I got more deeply involved in the musical side of things than was originally intended. So Bowie gave me a co-producing credit afterwards, much to my surprise. Still, I wish I'd got involved in an earlier stage of the making of the album, because I don't think it turned out to be a very strong record."

Padgham's collaboration with Genesis and Phil Collins dates back as far as 1981, through his work on Collins' first solo album, *Face Value*. Genesis' most recent album, *Invisible Touch*, emerged after some extended sessions at their home studio, The Farm, in Sussex. Padgham was present during most of those sessions, recording them and helping the band sort out the material which was to become the finished, well-crafted album. Remarkable, and at times disturbing, on the end product is the almost continuous use of Simmons drums, giving the album a rather synthetic feel. Given Padgham's declared preference for real drums, this is also rather surprising.

"I have no idea why we used so much Simmons. To be quite honest, I'd never really thought about it. I don't really like electronic drums too much. It just worked out like that. A couple of tracks with real

drums on them didn't end up on the album, so I suppose that tipped the balance a bit."

Yet even while working with electronic drums, Padgham stuck to his "room" approach.

"We had Phil playing the Simmons kit in the studio. As well as DI-ing them straight into the desk, we put them

"If I can record a rhythm track really steaming, I'll do it, and playing with a drum machine is not the best way. You can't expect a drummer to play along to a click-track for five minutes with lots of feeling."

through a small mixer into a PA system, playing it back very, very loud in the studio. In that way we tried to get more than just the DI sound. Listening to the album now, I find the Simmons a bit thin and toneless. Perhaps it was us trying too hard to be a bit modern. But I think the album is a good record, because here is a band that could be doing the same thing over and over again, renewing itself and doing something quite fresh."

Paul McCartney asked Padgham to produce *Press To Play* because he wanted to make a "raunchy" album, away from the MoR area into which he'd felt he'd wandered. So Padgham went ahead and organised a crew of musicians renowned for their capacity for raunchy playing, like Jerry Marotta, Phil Collins and Pete Townsend. The reason the experiment didn't work as well as it could have, says Padgham, was that Eric Stewart (10cc founder member who co-wrote six out of the ten songs on the album) just wasn't the right partner for McCartney.

"Eric is very talented, but the song he is most well-known for is a ballad, 'I'm Not In Love'. So in retrospect, while we were trying to make a modern and more ballsy album, that probably wasn't the right combination.

"Apart from that, I think that some songs could have been a bit better. I remember thinking that in the studio, but then I thought: 'I'm working with Paul McCartney; if one guy can write songs, this guy can, so I'm not going to say this song is a pile of shit'. I mean, the man is a living legend. I used to stand in front of the mirror trying to be Paul McCartney with a cardboard cutout when I was six or seven! It wasn't that I was still in awe of him, it was just the repertoire of the songs he has written - it's frightening."

Commercially speaking, *Press To Play* was a failure. Padgham blames two factors.

"It's a good album, but it seems that people who are into buying a Paul McCartney album like MoR stuff, and that's a drag. The other reason is that we haven't had a hit single on the album, and we're now in this area where you have to have a hit single otherwise your album doesn't sell.

"When I first started recording, Led Zeppelin were top of the album charts and a group like The Sweet was top of the singles charts. The two didn't relate to each other at all. Then suddenly, ►

▶ around 1979/80, record companies started refusing to release albums which didn't have a potential hit single on them. Therefore albums tended to become three hit singles and the rest of the songs fillers to make up the rest of the space on the piece of plastic.

"I've always refused to work like that. I'd like to pride myself that I've always worked with very musical groups, as opposed to the fads, the 'here today – gone tomorrow' bands."

Paul Young can hardly be called a fad, though his previous albums did resemble collections of hit singles, even if the rest of the songs were far from being mere fillers. Yet with Young's latest long-player, *Between Two Fires*, Hugh Padgham has again been confronted by a lack of hit material. According to Padgham, 'Wonderland' was "probably too good for the charts".

Like McCartney, Young hired Padgham because he wanted to make a rockier, more live-sounding album. And it appears Padgham's involvement with *Between Two Fires* went quite deep. He rehearsed intensively with the musicians to get the arrangements 100%, and then went into the studio to record most of the tracks with them, live in one take. The co-producer elaborates...

"Everybody in the band is a superb musician in his own right, so it just seemed stupid to have this bunch of musicians go into the studio and do overdubs. If I can record a rhythm track really steaming, I'll do it, and overdubbing or playing with a drum machine is not the best way. You can't expect a drummer to play along to a click-track for five minutes and still play with lots of feeling."

AND IT'S FOR similar reasons that Padgham's relationship with hi-tech machinery hasn't all been a bed of roses.

"I do see it as somewhat negative, yes. I mean, I'd never get somebody to sing a chorus and then sample it. To me that's no good at all. OK, if you're working with somebody who can only sing it once, then you have to do it that way. But I make sure that I work with people who can sing."

"As for sequencers, (sighs) they're boring. I used drum machines with Phil because we usually write to them, and then we overdub afterwards. It's all very nice now, because you can sync it all up to SMPTE and run your computer or your sequencers off it, yet now people are saying: 'What happened to the pulling and pushing in the rhythm of the chorus?'"

So what does Padgham think of attempts to program that pushing and pulling – programmers' attempts at making machines sound more human? He snores and plays at being asleep for a couple of seconds. Then he raises his arms.

"Yeah, you can spend five hours sitting around your Roland Sync Box putting the tempo up half-a-BPM in the chorus, but that's still not the same as when it happens naturally. And then, with the amount of

work and time you spend doing that, why don't you just get somebody in to play? I'm sure there are other producers who go absolutely crazy with this amount of time that's wasted in the studio.

"I remember working with the Human League when there was this guy sitting around with a Fairlight – or was it a Synclavier? – who would say: 'Well, I've got something to do now and it's going to take a bit of time'. We'd literally go home because it would take at least three or four hours. This was four years ago and even then the studio was costing £100 an hour. At the time I thought: '£400 to wait for a computer to do its thing? This is not what I wanted to make records for'.

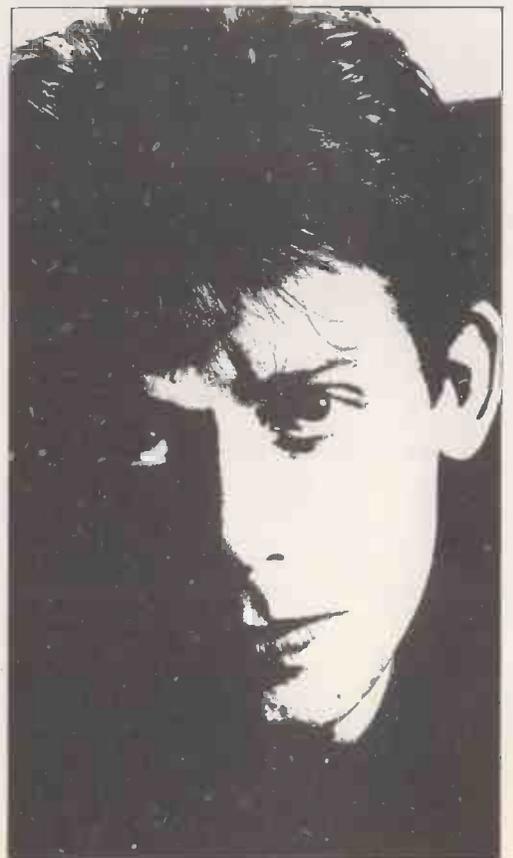
"So much time is wasted using machines. They'll either break down or dump their information. It's horrible. You know, I'm not knocking machines. I like machines and use them frequently. But they get overused. It's like having a 98-channel desk and therefore thinking you've got to use them all. And that, of course, is nonsense.

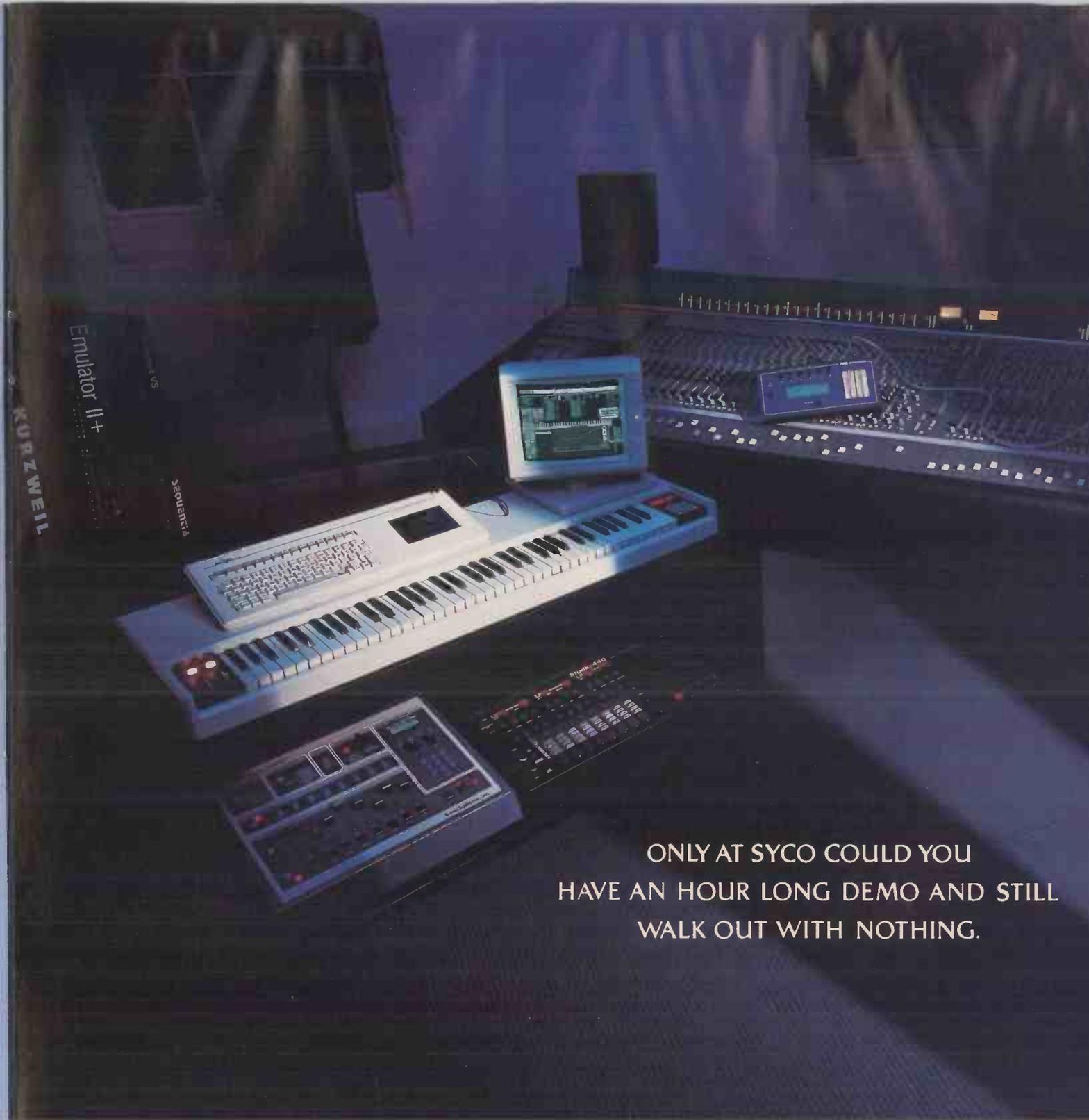
"You tell me. Are records any better nowadays than they were in the '60s? Perhaps they are better played and better recorded, but then to me, the mistakes are part of the character of the old songs. Through working with The Police I discovered what value mistakes are. Sting would have played this bass part, and it would have some small irregularities in it, no big howling mistakes, and I'd ask him to do it again and Sting would tell me to fuck off. He valued the human element of it. That really changed my attitude, and I'm grateful for that. Thank you, Sting."

Padgham leans forward, smiling, honouring an imaginary Sting in the room, and concludes:

"Music is about all these small nuances, and if you take them away it becomes bland and boring."

And there, at least, I see no reason to argue: ■





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Eight Wonder

It may not have the classic ancestry of a Minimoog or the cachet of a Prophet 5, yet Roland's Jupiter 8 is arguably the most influential analogue synthesiser ever built. What were the qualities that made it so popular, and how useful is it today?

Text by Tim Goodyer.



CAST YOUR MIND back to the long, hot summer of 1983, and the arrival of Yamaha's first FM synthesisers, the DX7 and DX9. Exciting, wasn't it? Two new synths that promised just what the technology-hungry (but relatively impoverished) keyboard player wanted: a completely new palette of sounds, a new vocabulary in sound creation, and a fully professional spec, at a laughably low price

tag. In other words, small synths with big ideas that actually worked.

Up until then, the big synth held court exclusively. The Prophet 5, Oberheim OBXa, Memorymoog and Jupiter 8 – all were professional, programmable analogue polysynths with lots of oscillators and filters, making obese brass sounds, rich, sweet string washes, and fascinating, polyphonic, portamento-enhanced (except

in the case of the Prophet) changes from one innocent chord to the next. They all made very impressive listening (and playing), but not without making a £3000-4000 dent in your bank balance.

The DX7, on the other hand, weighed in at less than half the cost of the Jupiter. Anyone who'd thought seriously about investing in a professional analogue polysynth probably had enough cash to buy a DX straight out. It's little wonder, then, that the "big synth" found itself held in abeyance, while the novelty value of FM gave way to more serious use.

If a revolution in sound synthesis wasn't enough, another innovation accompanied the arrival of the DXs: MIDI. Although the MIDI implementation on the DX7/DX9 was crude, it was, nonetheless, MIDI. The same could not be said of Roland's DCB (Digital Communication Bus), Moog's ancient CV, Gate and S-trigger, Sequential's Analogue/Digital buses, or Oberheim's Performance System.

The big synth was in big trouble. Moog discontinued the Memorymoog, and stopped making synthesisers altogether soon after. Oberheim went a little quiet before helping to restore everyone's faith in analogue with their phenomenal Xpander. Sequential struggled with their SixTrak, MultiTrak and Max, before giving up on analogue synthesis making good with their Prophet 2000 sampler. And Roland hastily concocted the Jupiter 6 – a slimmed-down Jupiter 8 with a crude MIDI implementation – slipped further downhill, and then finally struck gold again with their MKS80 Super Jupiter module – as devastatingly versatile as the Oberheim Xpander, but in a format people were already familiar with.

What Oberheim and Roland proved was that FM was no more the death of analogue synthesis than the LinnDrum was the death of the acoustic drum-kit.

What, then, of the musicians who'd already invested thousands in yesterday's "big synth" technology? And what of the instruments themselves? Well, Roland Jupiter 8 serial number 222571 was the stuff dreams were made of when I bought it in 1982, and I'm happy to report that, five years on, it's still an extraordinarily powerful and usable synthesiser, even when set alongside Yamaha's latest DX7IIIFD. And even five years on, JP8s are still cropping up in interviews, studio reviews, and on LP credits with monotonous regularity. In the States, where big, fat analogue synth sounds have never gone out of fashion, they have become something of an institution.

One glance at the Jupiter 8's control

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panel shows another major hardware difference between it and the DXs – knobs, and lots of 'em. And they all do different things at the same time, unlike these incremental controllers and multi-function whatsits. You can actually see what's going on in your patch, as opposed to jotting down hundreds of parameters on scraps of paper, or needing a short-term memory of Gigabyte order. Now, the cost of this hardware represented a significant proportion of the JP8's original retail price. But once you've worked with a panel full of knobs instead of a tiny LCD display (which many of today's younger synth programmers have not, of course), you'll know what all the fuss is about.

WITHOUT READING TOO much about oscillator syncing, cross-modulation of one oscillator by another, switchable –12/–24dB/oct filters and self-diagnostic fault programs, the paper spec reveals the JP8 to be an eight-voice, 16-oscillator synth with split and layering facilities. Eight voices, that is, in Whole mode. When Split mode is selected, this becomes four voices each side of the split, and in Dual mode four voices stacked on top of the other four.

Each bank of four voices has its own output available simultaneously on standard quarter-inch jacks and cannons – neat when it comes to EQing and processing patches independently of each other.

A simple calculation tells us that the Jupiter 8 ordinarily uses two oscillators per voice, and a screwdriver reveals another of the beauties of the instrument: inside, there are two identical voicing boards, each responsible for half of the instrument's power – and each a fully capable four-voice synth in its own right. Apart from allowing you complete freedom to assign any of the Jupiter's 64 patch memories to either module, this configuration ensures independent detuning and dynamic characteristics, and an exceptionally flexible arpeggiator arrangement.

As well as being one of the strengths of analogue synthesisers in general, strength of tone is one of the Jupiter 8's specialities – and keys to its popularity. In Whole mode the oscillators and filters give a pretty good account of themselves, but there are two ways to fatten the sound still further. The first of these is Unison mode, which ensures that all 16 oscillators are in operation regardless of the number of notes being played. Be warned, though. One 16-oscillator note assumes the destructive power of a small bulldozer, and should be treated with extreme care. Meanwhile, a two-note chord has four oscillators assigned to each note, and so on. Apart from anything else, this arrangement also keeps the audio level fairly constant, and so prevents your chord melody disappearing should you choose to throw in a couple of single notes, and stops you inverting speaker cones if you want to chuck a couple of big chords into an ear-splitting single-note solo. Calculated, but neat.

The alternative sound-fattening procedure is patch layering. When a patch is

layered on top of itself, slightly detuned and stereo panned where possible, the results can be devastating – never mind SPX90s, and all the other outboard sound-fattening tricks that have been discovered over the last 12 months.

Yet the value of sound layering has been sadly underestimated by a good many pre-MIDI analogue programmers. I found that, by treating the JP8 as a four-voice synthesiser with four oscillators and four envelope generators per voice, it became a far more sophisticated programming tool. Not only have you then doubled-up on the number of oscillators and envelope generators per note, but each pair of oscillators and envelopes is completely independent of the other. In other words, you're dealing with a simple, but very powerful, two-stage wavetable. It's possible to construct a composite patch (and store it as such in one of the eight Patch Preset memories that accompany the 64 ordinary memory locations) with each keyboard layer responsible for different aspects of your sound. Among other things, this is still the only way to get a convincing Simmons drum sound from a keyboard synthesiser, as the demands placed on the filter by the white noise and pitched elements of the sound are normally incompatible.

Meanwhile, the value of a Split mode had been conveniently overlooked by FM designs (and by post-FM analogue designs) until the recent popularity of MIDI layering and MIDI controllers with keyboard zones.

AS WELL AS having a useful programmable split point (now once again common property among well-specified modern keyboards), the Jupiter 8 takes splitting a stage further with its arpeggiator.

In Whole mode, the arpeggiator deals with as many as eight notes arpeggiated up, down, up and down or randomly over one, two, three or four octaves. In Dual mode, the same options are available to both patches but with only four note polyphony. And in Split mode, only the patch assigned to the lower area of keyboard is arpeggiated, with the same options including the four-octave range. This, again, is more like having two four-voice synths playing simultaneously than compromising one synth by asking it to do two jobs at once.

Being more cunning than most of its brethren fitted to less worthy machines, the JP8's arpeggiator also has the ability to memorise notes in the order in which they are input, and at the pitch they are input. Or to put it another way, they are *not* compressed into one octave before being repeated over the chosen octave range.

Yet the arpeggiator really comes into its own when synced up with a drum machine. Happily, the provision of a Sync 24 input means that it's possible to sync to most recent drum machines, and if all else fails there's always MIDI and a suitable interface.

Now, my guess is that, after reading the last couple of paragraphs, you're thinking either that the JP8's arpeggiator is the finest ever designed, or that it's no less a waste of time than any of the others. But let me put it like this. Before I got my JP8,

I'd probably have fallen into the latter category. Arpeggiators were poor man's sequencers, I thought, and not to be meddled with when there was more serious work to be done. The Jupiter made me an instant convert. So much so, in fact, that I'd say there are fewer better uses for an arpeggiator than *alongside* a sequencer, where a little confusion equates to a little

► *“The MD8 interface allows transmission and reception of note-on/off, pitch and program-change data over any of MIDI's 16 channels. Not stunning, but it keeps the JP8 on speaking terms with advancing technology.”*

harmonic *je ne sais quoi*. The Random setting, in particular, can help bring freshness to a tiring chord progression. Believe me, it's a useful tool.

The original Jupiter 8 production model had no facilities for interfacing above a CV/Gate output from the highest keyboard note in use, and Roland Sync 24 and trigger inputs for the arpeggiator. A modification became available, however, to fit Roland's Digital Communication Bus (DCB) and hence permit the instrument to exchange note-on/off and pitch data with the MC4 MicroComposer – and eventually with the JSQ60 DCB sequencer and the MSQ700 MIDI/DCB sequencer. Later models, dubbed Jupiter 8A, were fitted with DCB as standard.

But then along came MIDI, and with it (Roland must have *known* people were going to hang on to their JP8s) came the MD8 MIDI-DCB Interface. This allows transmission and reception of note-on/off, pitch and program-change data over any of MIDI's 16 channels. Not a stunning spec, but one that helps keep the Jupiter 8 on speaking terms with ever-advancing technology. You may have a few communication problems, but you shouldn't ever be faced with a total breakdown.

You can pick up a secondhand Jupiter 8 now for around £1000 – or less than the cost of most state-of-the-art digital synthesisers. Not bad for an instrument that was once high up in (perhaps even the leader of) the big league of big synths. If you're *at all* interested in creating fat, original, electronic sounds, and you're prepared to forego the luxuries of disk storage and the more comprehensive interfacing capabilities of MIDI, it makes an awful lot of sense. Your JP8 may be a little dirty between the keys and a little scratched around the edges, but they don't build them like this any more – it should last a long while yet.

Then again, if MIDI is an essential part of your music-making, the above-mentioned MKS80 Super Jupiter module contains the essentials of the Jupiter 8, plus a healthy dose of MIDI, increased programming flexibility, and an improved bass end – though this too has become something of an industry standard, and doesn't come cheap. Ah, the high price of fame. ■



Dumping Grounds

In the first part of an occasional series, we look at how the new MIDI Sample Dump Standard can be used in conjunction with the Prophet 2000, Oberheim Prommer, and Digidesign Sound Designer and SoftSynth programs.

Text by Chris Meyer.

A SCANT FEW YEARS ago, each synth or drum machine was an island unto itself. You played it. No other synth or drum machine was allowed access to what it was doing or how it was doing it.

As these machines became more micro-processor-based, a few manufacturers started allowing some of their own machines to speak to each other—Roland's DCB and the Oberheim System being notable in their field for this breakthrough.

And then came MIDI. Fast-forwarding through the first three-plus years of MIDI's life (yes, it really is that young/old, depending on your perspective), not only can machines tell each other what notes they're playing and with what program, they can now tell each other the time of day (MIDI Time Code) and exchange actual sound data itself (via the MIDI Sample Dump Standard).

For those who tuned in late, the MIDI Sample Dump Standard (SDS for short) is a universal way of transferring sample data between devices (samplers, computers, and so on) using MIDI System Exclusive messages. They were the first messages to use the new Universal System Exclusive area, reserved for all manufacturers as opposed to being manufacturer- and product-specific.

SDS was co-developed by Sequential and E-mu in 1985, the hope behind it being that it would be an easy way for users who own more than one piece of sampling-based equipment to exchange samples between them without any signal loss (resulting from going through an analogue conversion stage), and also that "generic" sample editing and synthesis packages would appear that could be used with any machine that supported the standard.

When the SDS first appeared on Sequential's Prophet 2000 a bit over a year ago, all of the above was mere fanciful speculation. Now that it's early 1987, none of the imagined processing packages have appeared, but several sampling-based instruments now support the SDS, and the

time has come to evaluate what can be done with this aspect of the MIDI spec.

Now, I've had an Oberheim Prommer (see review elsewhere this issue) around the homestead for the past couple of weeks. A fellow writer and musician (Sequential's Stanley Jungleib) spotted it in my office one day at work, and it occurred to us both simultaneously that he had a Drumtraks drum machine that could benefit from my temporary possession of this device. Stanley and I both have Prophet 2000s, and fairly extensive libraries of percussion sounds on disk. I also have the Digidesign Sound Designer (a sample editing package) and SoftSynth (an additive synthesis package) for my 2000, and was interested to see how they could help me in creating sounds for the Prommer. So, without much further ado...

Prophet to Prommer

AN UNFORTUNATE FACT of many of today's samplers is that the audio input stage is one of their weaker links. To build a true brick-wall filter at the Nyquist frequency to kill any aliasing effects is expensive, tricky, and would introduce a large amount of phase shift at higher frequencies, anyway (audible as a slight smearing of the attack transient). To send this signal back out of a sampler, through an inevitable output filter and into yet another sampler's input stage with the additional phase shift and accumulated noise is not a prospect you or I should jump at considering. So, the ability to transfer sounds digitally with no generation loss via (you guessed it) the SDS immediately seems to be a more attractive proposition.

Stanley selected a set of seven sounds that he wanted burned into ROMs for his Drumtraks, and gave me the Prophet 2000 disks. I loaded these sounds one by one into my 2002, and made a working copy. Next, I referred to the back of the

Prommer manual to see how long the sounds should end up in the Drumtraks, and truncated them on the 2002 until I was happy.

I then used the "Request MIDI" function of the Prommer to transfer the sounds over from the 2002, as opposed to sampling them. The 2002 uses a 12-bit linear format, as opposed to the Prommer's (and Drumtraks') eight-bit COMDAC format. Fortunately, the SDS takes this into account and forces the devices to convert to and from a common linear format.

In general, I was pleasantly surprised with how good the samples sounded in the Prommer, with the exception of the acoustic bass – it had taken on the hiss-like noise common to what eight-bit COMDAC inflicts upon sounds lacking an abundance of high-frequency components to mask the noise.

It was at this point that I spotted my first mistake – the Drumtraks uses a lower sample rate than the 31.25kHz that the 2002 sounds were created with. There is no way to do sample-rate conversion on the 2002 short of playing the sounds an octave higher, but fortunately, the Prommer has a "squash" feature that effectively halves the sample rate. So, I went back to the original samples on the 2002, made new truncated versions that were twice as long (since squashing was going to halve their size, too), and retransferred the sounds to the Prommer. I then "squashed" all of the samples on the Prommer.

The unfortunate side-effect of this is that it also halves the bandwidth, thus cutting some of the high end. However, they sounded cleaner than when I sampled at 15.625kHz on the 2002 (less clock and aliasing noise – the clock part of this I have to attribute to the Prommer's output filtering; the aliasing to the Prophet 2002's input filter at this frequency).

The Prommer also has a utility which envelopes the end of samples down to silence (dedicated drum machines generally do not have VCA and VCF filters to do the same thing) which I used to clean up the sounds further. (The 2000's VCA and VCF envelopes have no effect on sample data sent over MIDI.) When I occasionally messed this up (enveloping of this kind does irretrievably alter the sample data), I just retransferred the sound over from the 2002.

When I finally got round to burning ROMs for the Drumtraks, I ran into my first problem again – the sample rate still wasn't low enough for the Drumtraks, with the lowest tuning being just below the sample's original pitch. The playback rate of the Drumtraks varies from 2.3kHz to 25kHz (dependent on sound and channel), which means I probably wanted an effective sample rate of somewhere around 8-12kHz. I could squash the samples again, giving me an effective sample rate around 7.5-8kHz, but at this low a rate (and bandwidth) I would have preferred sampling the sounds into the

Prommer at 12kHz with some form of pre-emphasis equalisation to compensate.

It's worth mentioning that I would have been better off if my eventual target had been an Oberheim DX/DMX (playback rates 12-32kHz) or a Linn (playback rates 24 or 32kHz), or if my 2002 sounds had been originally sampled at 41.67kHz (double squashing would have brought the effective sample rate down to just under 12kHz). As it was, I was thwarted, through no fault of any one piece of equipment, from doing everything digitally and still having the desired end result.

More of SDS

ANOTHER USE OF the Sample Dump Standard is to use features of one machine to process a sample you intend to play back on a different machine.

For example, there were several instances where the Prommer had editing functions essential to tailoring sounds for ROMs that my 2002 did not have. At first, I considered using the Prommer to edit sounds that I would then bounce back to the 2002 for use, but I quickly discarded this idea when I remembered that the Prommer was going to reduce everything to eight-bit COMDAC for its functions, and that I wasn't going to get my 12-bit linear fidelity back when I retransferred the sounds (some data formats "munch" or degrade the sample in interesting ways – unfortunately, I do not consider the shortcomings of eight-bit COMDAC to be very interesting, except for the possible brightening of a snare drum). However, with Sound Designer and SoftSynth for my Prophet 2002, my mind immediately went thinking of what I could do with those to augment the features of the Prommer.

In addition to the obvious advantage of visual editing, Sound Designer has some features that the Prommer does not – namely, the ability to equalise digitally and to crossfade from one sound to another. The digital equalisation would come in particularly handy for doing my "pre-emphasis" if I insisted on keeping everything in the digital domain, but considering that the target format is eight-bit COMDAC with a reduced sample rate and bandwidth, it became silly to bounce a sample up to Sound Designer, digitally equalise it (taking several tries, since I have to wait until the Mac's done number-crunching before I can hear what it's achieved), transfer it back down to my 2002, then transfer it over to the Prommer, where I would then have to squash it to make it match the Drumtraks. Sampling the 2002 through a graphic equaliser at the desired target sample rate would be much quicker, more intuitive, and worth the relatively small loss in sound quality.

Far more interesting is the use of SoftSynth in this system. The "SmartSynth" function of this package creates several canned "dinks", "bumps" and

"clicks" which are fun to graft on to the front of sounds. It's easy to create enveloped noise with SoftSynth for mixing with normal cymbals or toms on either the Prommer or with Sound Designer to create electronic (à la Simmons) drum sounds. And the Prommer has a feature that no other component of my sampling system can offer – a software ring modulator. This function multiplies two sounds together, which results in a sound that has the sum and difference of the harmonics of the two source samples. The usual result is some clangerous sound (unfortunately, more often obnoxious than musical), but this is because the two sounds quite often have clashing harmonics.

I was able to take a tom, transfer it to Sound Designer, calculate its fundamental frequency by looking at its wave, create a sine wave of this fundamental frequency with SoftSynth, then ring-modulate them together on the Prommer. The result was a more in-tune "android" tom than I would have created through random mixing.

Conclusions – So Far

PERHAPS THE ULTIMATE judgement of a feature is whether or not it is so important that it persuades you to buy an instrument. In this particular combination of using a Prophet 2000/2002 and the SDS to justify purchase of an Oberheim Prommer (or vice versa), I would have to say the answer is a (qualified) no.

The sample editing features the Prommer adds to the 2000 (enveloping, ring modulating) are offset by the loss in sound quality (since the Prommer is constrained by the eight-bit COMDAC format common to the drum machines it was designed to support). The improvement in sound quality by digitally transferring samples as opposed to resampling them is lost to the lower bandwidth of some drum machines, but perhaps worth it for those with higher sampling rates. If you already have Sound Designer or SoftSynth and a Macintosh computer, you'd spend less money buying Digidesign's Burner to create drum ROMs. (True, the Prommer is also a sample playback device, which Burner is not, but if you have this system, you already have a sampler, don't you?)

Of course, if you already have each of the components of this system (which I did, at least for a couple of weeks), there are some nice advantages to having the SDS on the Prophet 2000/2002 and the Prommer, which I was able to make good use of.

In future instalments, we hope to be taking a look at using the SDS among some similar machines, including the Prophet 2000/2002, Oberheim DPX1, E-mu Systems Emax, and Akai X7000, paying particular attention to what advantages the SDS brings in sound quality in swapping sounds between machines, along with some moral questions about doing this in the first place. Until then... ■

ROLAND GM70

Guitar-to-MIDI Converter

Roland were the first company to take synth control by guitar seriously, and their latest offering shows they've lost none of their enthusiasm – or their ingenuity.
Review by Paul White.



BACK IN THE LATE 1970s, when Roland first entered the guitar synth market, you had to buy a complete system comprising a special guitar and a synthesiser with a control interface built in – the GR500. Only access to the outside world was via a monophonic CV and gate interface, and the package cost rather more than a complete system based round the new GM70. Due to limitations of the design, the instrument never enjoyed much popularity – though I must confess that I bought one.

Its successor, the GR300, is probably still the most playable guitar synth ever built, but is non-programmable and produces a very limited range of sounds. Nevertheless, I bought one of those, too.

With the introduction of MIDI, it seemed logical to produce a guitar-to-MIDI interface rather than just a self-contained guitar synth, and Roland's GR700 filled both needs by having an onboard polyphonic synth (based on JX3P electronics) as well as a MIDI output to drive other MIDI-equipped synths. The attraction of this type of package is that you can, in theory at any rate, just plug it in and play. However, due to the special guitar needed and the imperfections in the system, only the most serious guitar-synth advocates used it.

Before seeing what the new GM70 offers in the way of facilities and performance, and how it differs from all of the above systems, it may be helpful to delve briefly into the operating principles of guitar synths.

Operation

BY THEIR VERY nature, guitars are not the ideal devices to control synthesisers; there are simply too many nuances of guitar playing – such as pitch-bend, hammer-ons, harmonics, damping and vibrato – that have to be translated accurately into MIDI information. Some systems (such as the SynthAxe and Stepp) attempt to make the conversion by using the strings and frets as electrical switches, but this can make bending and hammering a problem, and precludes the use of harmonics or damping unless the design is very complex; both the Stepp and SynthAxe designs resort to elaborate computer-controlled systems to extract the required performance information.

Roland, however, have always taken a more direct route – that of converting the pitch of each string, picked up via a hexaphonic pickup, into some form that can be used to control a synth directly. This type of pickup is necessary because each string needs to be processed separately if the electronics are to have any chance of extracting the right pitch. With the early models it was control voltages that were derived; now digital means are used to convert the string pitch to MIDI codes (with the attendant note-on, note-off and velocity information).

The problem with the pitch-tracking method is two-fold: first, the guitar string frequency is indeterminate at the time
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of picking, and only settles down into a regular pitch after a short delay; second, the frequency content of a guitar string is difficult to analyse, as there are high-level harmonics present which can mask the fundamental frequency. In early systems, this resulted in the note produced by the synth wavering and/or jumping octaves as the electronics tried gamely to follow the pitch.

What's more, the tracking circuitry can't establish the pitch accurately until it has followed one or two cycles of the waveform, so there is always a slight delay between picking a string and the synth note being triggered. And though this delay has been reduced by ingenious circuit design, even the best pitch-tracking systems may be too slow for virtuoso playing while using percussive sounds such as h rpsichord or piano.

The GM70

HAVING SET THE scene, let's take a closer look at the system under scrutiny here, the Roland GM70. This is a rack-mounting processor with no sound-generating facilities onboard. Pitch extraction is implemented by means of a 16-bit microcomputer combined with specially developed LSI chips to improve speed and accuracy.

It has a sophisticated MIDI implementation so that different combinations of strings can be routed to different synth/sampler voices, or even totally different instruments if needed, and it can store MIDI control parameters in one of 128 programs. Programs may be called up from the front panel, from an optional footswitch system (using the RRC input on the rear panel), or via program change commands received over MIDI. A multi-function plasma display is used in conjunction with up/down buttons and patch edit buttons for programming, tuning, and to display program information during performance.

The GM70 interfaces directly with the Roland GR300 or 700 series guitar controllers, but it can be used with virtually any guitar with the addition of the GK1, Roland's synth driver. This device consists of a hex-pickup which is mounted close to the guitar bridge, and a tiny control box which is fitted (in most cases) to the guitar's strap peg. The pickup comes with a comprehensive mounting kit, which is just as well, as it's important to follow the advice in the handbook about pickup positioning and the spacing from the strings.

The GK1 control box accepts a multicore lead, provided with the kit, which plugs directly into the GM70. The box has four rotary controls, the first being for setting overall volume and the second for adjusting the balance between synth and guitar sounds. The guitar level is only affected if the guitar's regular output is routed via the GK1 to the GM70, as this contains the voltage controlled amplifiers necessary to do the job. In the event that your voice units don't respond to MIDI level information, don't worry; there are two channels of VCAs accessed via jacks on the rear panel of the GM70, which can handle the output of your synths to give the same result.

The last two controls are in effect assignable controllers which can be set up via the GM70 to vary such parameters as vibrato depth, filter sweep and so on. If you use a G303 guitar as I did, two of the existing controls, normally used exclusively for vibrato depth and filter control, perform the same functions. I also noticed that the three-position selector switch on the G303 could be used to switch between octaves depending on how the parameters to the external synth were set.

Now, since the GM70 makes no sound on its own, you have to plug in a suitable MIDI synth or sampler before you can use it; I used two synth modules—a Roland MKS50 and a Yamaha FB01. Before you can start playing, you have to

perform a once-only calibration ritual to set the individual string sensitivities to complement your string gauges and playing style. A bar-graph style level meter on the GM70 makes this a fairly simple task, and the adjustments themselves are made using six presets, one per string, located in the GK1.

If you're using an existing Roland guitar controller, it's necessary to perform this same calibration using the presets found under the back-plate of the instrument. I got the best results by setting the controls so that each string, when plucked fairly hard, caused the meter to go into the red slightly. This procedure is important because any synth patch that responds to picking intensity (or velocity, as keyboard types like to call it) will sound unevenly if the setup is wrong. The guitar also uses a threshold system to define a note-on command, so picking a string very gently, below the threshold you have set, produces no sound at all. Then again, if you set the sensitivity too high, strings will sound if you brush lightly against them or when you unfret a string.

All this might sound like a bit of a chore to accomplish, but you only have to do it once, and it's not that difficult. Once set, all you have to do is tune up properly—and help is on hand here...

The GM70 presets the pitch of middle A at 442Hz, but this can be reset very easily using the edit controls. Then you simply go into tune mode and pluck a string. The display shows two zeros, one of which moves from one side to the other as you tune either sharp or flat. When one zero is directly above the other, the string is in tune. And, as the GM70 knows which string you are playing, you don't have to switch pitches when you want to tune another string. Again, it's vital to tune the guitar in this way rather than trying to retune external voice units to match the guitar. This is because the circuitry has to decide at what pitch to change from sending a code for say, C, to sending a code for D. If the pitch your guitar is tuned to is near to this crossover point, you could find the slightest string bend causing semitone jumps.

But enough of this. What I want to get down to is how well the system works.

Programming

AFTER THE INITIAL setting up, I was immediately impressed by the tracking accuracy of the GM70. I was using

► *“Before you can start playing, you have to perform a once-only calibration ritual to set individual string sensitivities to complement your string gauges and playing style.”*

my old G303 controller with a fairly ancient set of strings, and the only adjustment I needed to make was to the string sensitivity. There was none of the indecisiveness that plagued earlier synths—the pitch was rock steady and it was difficult to get it to misbehave unless the strings were picked unreasonably hard. Even harmonics on the twelfth and seventh frets tracked OK.

You do have to develop a fairly even picking style though, or you might miss notes by playing too softly; this doesn't take too much getting used to, but it's something guitar players unused to such instruments have to be aware of.

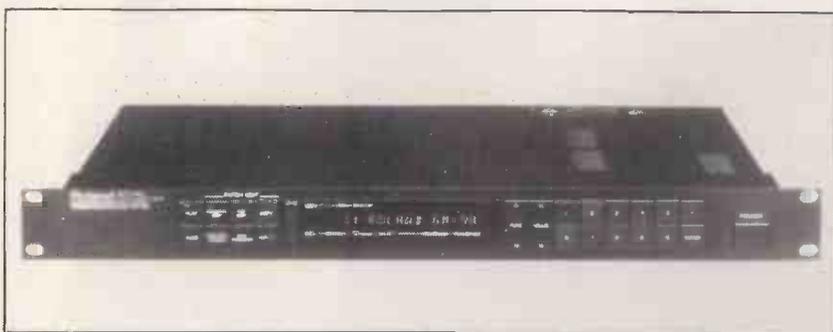
So what's the catch? If this system is so good, why do Stepp and SynthAxe bother at all? Well, it's all down to the age-old problem of delay.

If you're unused to guitar synths, you might be tempted to set up a brass patch, hammer into a few Van Halen runs, and then complain that the synth isn't keeping up with you. That isn't delay—that's just a lack of understanding of what's going on. A real brass instrument may well have quite a slow ►

► attack time, and if anyone was physically capable of playing guitar hero licks on a tuba, then the real instrument would not be able to keep up for the same reason. The moral is, if you set up a brass sound, play it and phrase it as a brass player would.

On the other hand, a harpsichord setting should follow your fastest playing style, because the voice has a very short attack time. If you try this on the Roland GM70 system, you'll encounter a short but perceptible delay which is disquieting at first, and can play havoc with your timing on complex passages. Playing the guitar's natural sound simultaneously with the harpsichord synth patch, you'll notice that the harpsichord sound appears almost like a very fast slap-back echo of the guitar sound.

To find out just how much delay was present, I delayed the guitar sound using a Klark Teknik DN780 delay/reverb processor, and adjusted the delay time until the guitar and synth voices were playing together. I repeated this several times to make sure there were no mistakes, and the result came out consistently at a delay of 38mSecs. The delay was the same for the top and bottom strings, and remained the same using both the Roland and Yamaha expanders. As



these expanders produced no appreciable delay when run from a MIDI keyboard, I have to assume that the bulk of the delay is generated in the pitch-to-voltage converter section of the GM70.

How serious is this in practice? If you play using the synth and the guitar sound together, your mind locks onto the guitar sound, so timing isn't a problem. And slow-attack sounds are fine because the 38mSecs is insignificant compared to the envelope profile of the sound. But faster, more percussive voices are a problem and, though practice helps you to compensate for the delay, it can still subtly change the feel of what you are playing — after all, a change of timing of only three or four milliseconds on a snare drum is enough to alter the feel of a rhythm track.

In the studio, the delay may be less of a problem, depending on how you work. If you monitor a mix of synth and guitar sounds, you can get your timing right, even though everything is 38mSecs late. And with a versatile

► *"In MIDI Mode 4, each string behaves independently, so it's possible to use all your normal vibrato and bending techniques — though you do have to set the bend range of your voice unit to match your guitar pitch."*

MIDI sequencer on the end of your system rather than a tape recorder, you might easily be able to correct this at the editing stage. If, on the other hand, you are going directly to tape, you could turn the tape over when you've finished, and re-record the synth part onto a spare track via a wide-band, low-noise digital delay set to 38mSecs. When the tape is played normally, the new synth track will be in exactly the right place.

How does the delay affect your live performance? Well, to get things into perspective, 38mSecs is about the same delay you would get if you played with your amplifier 40ft behind you.

At this point I must make my apologies for dwelling on

this delay business, but it will be that factor more than anything else that will make a player decide to purchase the system or not. Personally, I'm very excited by the possibilities. But there are some curious manifestations that are nothing to do with the GM70, but are connected with the MIDI system itself (after all, MIDI was really designed with keyboard instruments in mind).

MIDI

THE PROBLEM REARS its head when the subject of pitch vibrato or note bending is examined. If you control one synth in MIDI Poly mode, the synth expects to see bend information coming from the bend wheel (or whatever source) and applies this bend to all notes being held down. The guitar, on the other hand, is normally under no such restriction — it's actually quite common for guitar players to add vibrato or bend to one note while other notes are sounding unbent. In Poly mode, this doesn't translate too well. What you get is a series of semitone jumps rather than a smooth change when you do a bend, or on some systems you may get a true bend when you play only one string, but get the semitone steps again if more than one note is triggered at any one time.

An elegant way around this is to use a voice expander that will allow you to assign one voice to each string on separate MIDI channels using MIDI Mode 4 (for more info on this, see the past two instalments of 'Getting the Most from Mono Mode' in MT Jan/Feb '87, which dealt with MIDI guitar controllers). You choose a MIDI channel for the first string, and the other five strings are assigned to the next five MIDI channels up. This way, each string behaves independently of the others, so it should be possible to use all your normal vibrato and bending techniques — though you do have to set the bend range of the external synth or sampler to match your guitar pitch; the manual suggests that the voice unit's maximum available bend range is the one to go for, and that this value should be matched on the GM70.

Another advantage of using Mode 4 is that you can program the voices to be slightly different on each string to simulate the changing timbre of a natural acoustic instrument. You can even, if the situation demands it, put a bass sound on the bottom couple of strings and bagpipes on the top four.

Well, that's about as far as I got with the GM70's MIDI implementation, and though this may well be as far as many musicians go, it doesn't really do justice to the software within the system. Our in-house MIDI expert, Simon Trask, has been busy deciphering the implementation more fully. Over to you, Simon:

"As indicated above, the GM70 allows you to select Poly or Mono modes for MIDI transmission. Poly mode assigns all the strings to one MIDI channel (1-16) while Mono mode (otherwise known as Mode 4) assigns the strings to six consecutive MIDI channels (basic channel 1-11) ascending from strings 1-6.

"But Roland have gone one better by allowing you to layer Poly and Mono modes using up to four of what they call 'Branches'. Perhaps the best way to understand this approach is to think of four sets (Branches) of six strings overlaid on one another. For each Branch you can select Poly or Mono mode transmission, while MIDI transmit on/off, MIDI patch number (1-128) and MIDI transposition (+/-36 semitones) are selectable for each string in a Branch.

"The GM70 doesn't allow any MIDI channel to be assigned to more than one Branch. So if Branch A, for instance, uses channels 1-6, Branch B (or C, or D) must use channels above 6. Thus you can layer Mono mode twice,

which uses 12 channels (2x6), leaving you with the option of using Poly mode for the other two Branches (2x1).

"As Paul has already mentioned, if you want to use string-bending or glissando, then Poly mode is of limited use. This is because the GM70 won't send MIDI pitch-bend information derived from your guitar-playing in Poly mode if more than one note is sounding; instead, if a bent string (or string glissando) reaches the next semitone up, the system will trigger that note automatically. The purpose of this appears to be to prevent other notes from being pitch-bent too, as would normally happen in Poly mode. In fact, the GM70 will transmit pitch-bend quite happily in Poly mode if only one note is sounding. No such problem exists with Mono mode, however, because each string is sent on a different MIDI channel.

"The GM70 also provides you with some controller assignment facilities. These are global in operation, i.e. neither channel- nor branch-specific, which places some limitations on the way in which you can use them – but then, by the same token, it's also easier to map out your controller settings.

"Using the GM70 in conjunction with the GK1, you have two definable controller knobs (already mentioned by Paul), while the GM70 itself provides one footswitch and two foot controller inputs, and the FC100 controller board has a further two assignable footpedals. These can be assigned to any MIDI controller from 1-95, with footswitches setting minimum or maximum values in the case of continuous controllers. This flexibility means that you can alter such parameters as volume, balance, panning, sustain, sostenuto, soft pedal and chorus depth on your MIDI instrument(s), all in real time. In addition, pedal and rotary-knob controls can be set to generate aftertouch, pitch-bend, octave up, patch-shift up or patch-shift down.

"The GM70 has 128 onboard memory locations (organised in Group/Bank/Number format) which allow

you to store all Branch and controller settings. These programs can be selected from the GM70's front panel, the FC100 foot controller board, patch up/down footswitches, or MIDI program-change commands (the latter via MIDI In on the GM70, of course).

"You can transfer program data between one GM and another, or between your GM and an external storage system (such as Roland's own MC500 sequencer) via System Exclusive dump. This can be a bulk dump of Group A, Group B or System data (i.e. control assignment, MIDI receive channel, master tune) separately or all together."

Verdict

WHEN IT COMES to guitar-to-MIDI converters that use the pitch-tracking system, the GM70 has to be near the top of the pile. I'm not pretending that it's perfect – the delay can be a problem. But the system will follow bending, vibrato and hammering quite faithfully without musicians having to make too many compromises in their playing style.

The GM70 is streets ahead of the last generation of guitar synths, in which I include Roland's own GR700, and the MIDI side of the system offers tremendous flexibility to the player with imagination and enough spare cash to buy a few good MIDI voice units.

And considering what is on offer, the price is certainly attractive. So much so, in fact, that I'm seriously considering adding a third guitar synth to my collection. ■

Prices GM70, £755; GK1, £195, including VAT
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lost a pair of speakers testing the lower end of this range). The Prommer gets the upper end by dropping samples at higher rates – not great for fidelity, but samples tend to lose their character up high, anyway.

This row also contains parameters for setting up external triggering (from drum pads and the like) and for looping the sounds, with a helpful zero-crossing detector to minimise clicks.

Modifications

THE SOUND MODS section includes the typical abilities to copy, swap, reverse, erase, and mix sounds. The mix ratio representation took a little getting used to – it's a fraction in which the current block's number always equals "4", and the secondary block's mix is 0-16 (whatever happened to nice, friendly percentages?).

Unusual features include the ability to look at and modify each bit of the sound (the latter on a per-byte or global basis – powerful, tedious, and of real use only to the patient, brilliant, or lucky – but I never complain about having more features, and if you don't need it, you can always not use it); envelope the sound to silence for smoothing out abrupt ends (again presented to the user in less-than-obvious terms); the ability to ring-modulate one sound against another (clangerous, but again, there if you want it); and the very special abilities to stretch or squash a sound.

Stretching a sound is done by duplicating every sample twice. This makes a sound twice as long, and drops its pitch by an octave – similar to sampling at twice the rate, except that you don't gain any extra fidelity. If you're ultimately planning to burn ROMs for a drum machine, this is one way to get those massive slowed-down sounds (for example, any gated reverb snare dropped an octave makes a passable gated kick drum).

Squashing, as you may have guessed, does the opposite. It removes every other sample, thereby halving the length of the sound and raising its pitch by an octave – giving the sound quality you'd get had you sampled at half the sample rate. This is essential for taking sounds sampled at a higher rate than a drum machine can play them back at, and dropping them back into range (and besides, a tom raised in pitch approaches a log drum).

If you intend to transfer sounds from other samplers digitally into the Prommer (see later), these functions become simply invaluable. My only complaint is that squashing a sound leaves residue in memory where part of the sound once was – you have to go back and erase it before burning ROMs, or it might end up tacked on to the end of another sound.

The PROM section is obviously what this machine is named after. In case you didn't know, EPROM stands for Erasable Programmable Read Only Memory, which means you can program into an EPROM what somebody else may read back – typically in our case, drum sounds. The manual is very thorough on this section, which is good – programming ROMs is not an everyday task for most of us.

The Oberheim can "burn" (program) or read (for taking sound from other ROMs) a wide variety of 4K-64K EPROMs, along with reading 2K ROMs. It can burn them in eight-bit COMDAC or linear (as used by Simmons) formats, and the manual goes into great detail on how to burn multiple sounds into the same ROM (I messed up my first try, but that wasn't the manual's fault). A section in the back of the manual shows what types of ROM go where in Oberheim DX/DMX, Linn 9000 and LinnDrum, Sequential Drumtraks, and Simmons SDS1/9 drum machines and pads.

Kudos to this part of the machine – but then, this section is supposed to be its heart and soul. Also in this section is the

ability to load and run programs the user may write to operate the Prommer – but only the very advanced need apply.

MIDI

OBERHEIM HAVE SOME of the best MIDI implementations around – and the Prommer is no exception. Considering the machine's inherent limitation of being able to play only one sound at a time, its MIDI section lets you assign each sound to different channels, zone them over the keyboard, transpose them, velocity switch them, pitch-bend them, open the filter of VCA with pressure or velocity, and select different sounds via MIDI program-selects.

The zone arrangement has a particularly clever feature of allowing sounds to have overlapping zones. If you play in the overlapped region, the sound from the last uncontested zone has control until you play a sound from the other zone. So, you can extend a lead sound down below what may be its normal split point, then play a bass sound, and continue it up the keyboard over the split point.

I still want to experiment with sampling the four different open strings of a bass guitar and mapping them this way, to simulate the way a real bass player may use the slightly different tones of the guitar's strings for different melodic lines.

The final buttons in the MIDI section deal with getting the data in the sound blocks in and out of the Prommer over MIDI. Sounds may be transferred over MIDI using Oberheim's own format or the – you guessed it – MIDI Sample Dump Standard (a boon to me, since I have about 30 percussion disks and a sampler that also supports it). The Prommer also allows the user to store MIDI data (such as program dumps) as opposed to sounds in the sound blocks, should you want to store your patch library on EPROMs.

Verdict

IN A WORD, mixed. For the most part, the Prommer and its manual are very easy and friendly to use. However, there was the occasional non-intuitive (read strange) numbering system or undocumented need to hit Execute twice that left me scratching my head.

It's obvious that the Prommer's designers have given the user every possible feature they could squeeze out of the limited hardware inside the box.

If you're only looking for a sampler, you can get an eight-voice polyphonic one with similar sound quality, a disk

► *"The prommer can burn EPROMs in eight-bit COMDAC or linear (as used by Simmons) formats, and the manual goes into great detail on how to burn multiple sounds into the same ROM."*

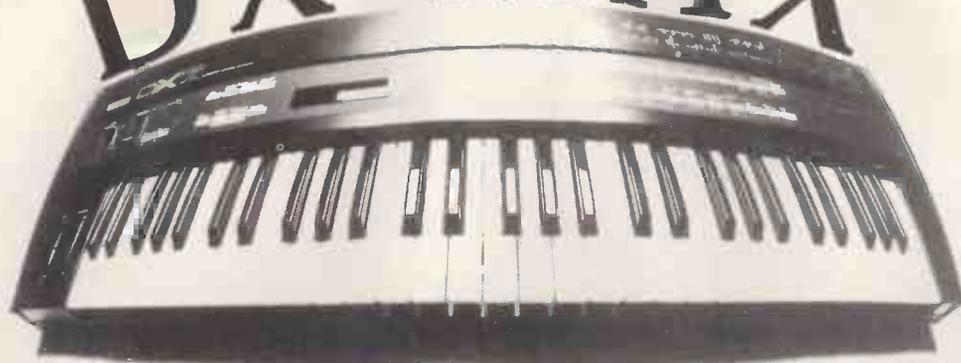
drive, keyboard, envelopes on the filter and VCA, and so on, for not a lot more money than the Prommer costs. And if you don't have one of the drum machines supported by the Prommer, don't say I told you to buy it.

On the other hand, if you are someone who lives or dies by your LinnDrum, DMX, Drumtraks, or whatever, this box will increase your power tenfold. In short – if you need it, you'll love it. ■

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► MUSIC

► MAdNeSS

As pop reaches its lowest levels of creativity since the 1950s, one spark of originality shines from the street music of New York – hip hop. Mantronix, almost unknown in their home country, are one of its leading exponents. Interview by Tim Goodyer.

OUTSIDE THE SHIFTING and growing body of its hardcore fans, hip hop has a mixed reputation: hard music devoid of real melody or structure, produced by a couple of guys using little more than a microphone, a drum machine and a record player instead of “proper” musical instruments. Can you take music like this seriously? Can you even call it music? The fans – and hip hop fans really *are* fanatical – certainly do.

The music is as bare and hard as punk in 1977, but has its origins in New York’s Bronx, rather than on the streets of Britain. But where punk was a reaction to

the self-indulgence of techno-rock and the boredom of the dole queue, hip hop was an alternative to gang warfare on the streets of New York. The bloodshed was replaced with rapping and scratching competitions held in abandoned warehouses, power often being diverted from nearby street-lighting to run the only tools the artists needed – a couple of turntables and a PA.

The lineup of a hip hop band quickly settled down to a typical two-piece: an MC (the rapper) and a DJ (responsible for the action behind the turntables). The first generation of rappers included Afrika Bambaataa (of ‘Planet Rock’ notoriety) and Grandmaster Flash, whose ‘The Message’ scored a healthy No 8 hit here in 1982. Those records took their cue from European electro-poppers like Kraftwerk and Depeche Mode, with simple, instantly memorable synth melodies and solid, driving drum-machine beats.

Now we are faced with second-generation hip hop: artists who are continually discovering and redefining the music’s limits. Artists like Doug E Fresh, the Real ►

► Roxanne and Hitman Howie Tee, the Beastie Boys and Mantronix.

Mantronix – MC Tee and DJ Mantronik – recently graced our shores for a short series of gigs to promote their second album *Music Madness*. Seated quietly in a record company office, the violence of the Bronx could not seem further away. And indeed Mantronik sits quietly, exuding the kind of self-confidence expressed in MC Tee's lyrics. But the word is, Mantronik isn't entirely happy with *Music Madness*.

"I'm not crazy about it because it was so rushed", he confirms. "To tell you the truth, I didn't know exactly what to do on this album so I experimented with a lot of things, trying to take rap in a different direction. Some of the stuff works and some of the stuff doesn't, but if I can take what I like on this album and what I like on the first album and combine them on the third album, that should be it. I'm just feeling out my areas at the moment."

Mantronik's doubts are a complete contradiction to the enthusiasm of the crowd at the duo's recent London gig. From the moment they took the boards, the air was filled with the sound of approving whistles and the floor with dancing feet.

MC Tee raps his heart out to the audience, while Mantronik remains aloof behind his turntables and a Sequential Studio 440, hardly an instrument you'd expect to see in a music that prides itself on being down-to-earth. Yet though it may all have started out with a mic, a choice selection of records and a cheap beat box, hip hop has done a lot of technological growing-up lately. Nowadays, a hip hop record is more likely to have been cut in a big, multitrack studio, each element of its sonic collage coming from, as likely as not, a sampling keyboard rather than a record-deck. Live, Mantronix' music is divided between good old-fashioned backing tapes and live use of the 440, the latter being



"I like to get the new technology first, and get a new kind of sound that people can recognise as the Mantronix sound."

used to play back samples of percussion sounds, but extracts from whole rhythm tracks sampled off records.

"Most of our show is on tape but some of it I do live; real programming going on live and samples looping for days", Mantronik muses. "It all depends on how much memory I have in the machine and how I feel that night. If I have five seconds' sampling time I can only do so much. The machine I've got now holds 16 seconds, so

I have four different drum tracks in there. It's just a matter of taking your time to organise it.

"Whenever I've been to concerts where people have tried to sound exactly like their records it hasn't sounded that good – the actual record seems to have more bite", asserts Mantronik. "When you record, everything is like fine-tuned and you just can't reproduce that live. With a tape you're using studio technique and a recording that people are most familiar with.

"A lot of the guys who make hip hop records can't cut it live anyway. They don't program their own sounds – they get an engineer or a beat programmer to make a beat for them. You speak to a lot of rappers and they know they got a def beat, but they don't know how it was made or what made it. I program and produce my own stuff, so I know I can go out there and do the stuff live."

LESS THAN TWO years ago, Mantronik was just plain Curtis Kahleel, mixing records in Manhattan's Downtown Records Store on Sixth Avenue.

"One day I decided to go out and buy a drum machine and make a beat. Then I bought a little Casio keyboard and started playing around learning how to program it and, eventually, how to play by ear. When I teamed up with my partner and we made 'Fresh is the Word', I found myself spending more time in more studios watching the engineers pressing all the buttons. Then I started pressing the buttons myself.

"I picked hip hop because it was the simplest thing to understand. I was playing keyboards and programming and it was the easiest way to learn. I could program a beat and have a rap on it and then do some scratching over the top and I'd got a hip hop record. Now I'm ready to do anything because I've learned so much. I work on these machines constantly, I don't ever stop, so I know them inside out. We have the technology and we understand what we're doing with it, and now we're just going crazy."

But as one of hip hop's best-known and most consistent innovators, Mantronik is notoriously secretive about the equipment he uses. Perhaps it's due to the peaceful charm of England, but today it seems his guard is down.

"I don't like to say too much about what I'm using because I like to stay ahead of the competition. Rap groups have a tendency to copy each other, so you may hear like ten different records with the same drum sample.

"Before the 440 appeared on the scene there was an Akai S612 sampler. That was OK until the S900 appeared and made the S612 look a little silly. Then there was an E-mu SP12 sampling drum machine... Not too many people know about the 440 yet, but they'll be amazed at what it does.

"To make samples, I need a source. If I want a cello sample, I need to get hold of a cello and spend time over getting the

sample right, looping it, filtering it and all that. But if you start worrying about these things too much you forget you've got records to make, records to produce, records to mix and then a social life also. People that *do* spend all their time on sounds usually don't come out with records all that often. Trevor Horn's are every hundred years, aren't they?

"Having the 440 makes life a lot easier. Let's say I sampled something and the loop wasn't working out; I could just can it right there, carry on programming a beat, and then come back to the sample later. You can't do that with the Akai—you need another sequencer and a MIDI controller to play your samples back. With the 440 I can do everything in one. It's 12-bit, the highest bandwidth is 41kHz, and the only thing is there's so much RAM in there that when you power down you lose the memory. They couldn't put a big enough battery in there to hold it all, so you have to store it on a disk. But it's hip.

"I like to be ahead of the competition. I like to get the new technology first and create a new kind of sound that people can identify as a Mantronik sound. It's like Phil Collins has a certain type of drum sound. Like I say, in rap music everyone copies everyone else. One week you can have a Mantronix record like 'Hard Core Hip Hop', and the next week someone samples it. These guys just keep on stealing things, but they're stealing the old shit that I've done in the past and while they're doing that I'm doing something new.

"I did something called 'Bass Machine' with T La Rock where I took the 808 snare and pitch-changed it. People thought 'wow!' because nobody'd ever done that with an 808 before."

Ah, yes. There may be a rapid turnover of hi-tech gear in the world of hip hop, but it's still easy to hear that a lot of the music's syncopated rhythms still bear the character of the old Roland TR808. So what becomes of the old equipment? The answer is as simple as it is obvious.

"I sample it. With the 808 that also means I can take the quantization off—you can't do that on the 808 itself. When I make a beat I make the kick drum really off. I take like 4/4 time and really change it up and make it more funky that way. After I've sampled something I get something new and forget about it. I have the sounds so I can use them again."

IN THE DELICATE world of pop, a single sampled sound can be seen as the justification for four minutes of music.

Hip hop, by contrast, sees sampling more as a means to an end: complete rhythms are sampled, looped and modified to create new ones. Genuine, bubbling dance records, not TV-advertised gimmicks, are made entirely from samples of other (*any* other) kinds of music. But now that the samplers have replaced tape machines and record decks, stealing beats has become an art form in its own right. And that's where the Bronx fighting spirit comes across again, as some bands cover their tracks (literally) better than others.

"I think you have to draw the line when it starts sounding too much like what you've taken it from", comments Mantronik. "I take little things, obscure things that people don't notice. Subliminally they pick them up, but they don't recognise them.

"If you listen to Run DMC's 'Peter Piper' you'll hear a percussion line running through the background. That's an actual track. They took Bob James' 'Take Me to the Mardi Gras' and synced up the record underneath the beat. They didn't even sample it, they just took the whole record. On LL Cool J's 'Rock the Bells' the timbales are a rhythm track off Trouble Funk's *Saturday Night Live*. That was synced up too because the studio didn't have a sampler at the time. I'm giving away secrets here, but there's no creativity involved in doing that, it's just called ripping off people."

The sampling isn't confined to rhythms, either.

"On 'Hard Core Hip Hop' we took a brass sample from a Pan Am commercial. That was fine because nobody knew where it came from. And that's the same thing the Art of Noise does—they take samples from these old records that hardly anyone's ever heard before, change it up and put a beat behind it, and that's OK. But if you take a recording and let it keep going, that's like bootlegging someone else's record."

'Hard Core Hip Hop', from Mantronix' first LP, also owes a little to Force MD's 'Forgive Me Girl' in the form of a sampled vocal. Presumably, Mantronik feels he can get away with that one, too. But another of the tracks on *Music madness* has a strangely familiar harmonica line. It's taken from a song by Area Code 615 called 'Stone Fox Chase', otherwise known to us in the UK as the theme from *Whistle Test*. Hardly a good cover-up...

"I knew you were going to come to that", says Mantronik with a grin. "I did it because I saw Run DMC doing it, Cool J doing it, Doug E Fresh doing it... You guys know it as the *Whistle Test* theme but I'd never heard of it. It's an old club record in New York. Yeah, I stole that and I'm wrong, but if these other guys can do it and get away with it, I can do it. The reason I did it was we had a track with no rap to put on it, so I used that. I did it once, that's all."

Then, like a naughty schoolboy who's been caught in the act: "I won't do it again".

Again, in the delicate world of pop, a remix is a balancing act between the demands of the nightclub circuit and the demands of record company executives. But in hip hop, a DJ will take as much pride in a new mix as a new song, expecting it to sell as a new product, rather than as an alternative to the original.

"It's like putting something out and testing it", says Mantronik. "If it looks like it's going to work, you can go back and do the remix knowing what needs to be changed. You can even re-record it and ▶

"On 'Hard Core Hip Hop' we took a brass sample from a Pan Am commercial, which was fine because nobody knew where it came from."





► put extra things in and make it better if you want – although you can also make it worse. When the remix comes out, if it's already had some groundwork done by the first mix, then it's going to be that much more of a hit. The same people will buy the second mix as long as it is *that* much better.

"In the future I think records are going to have like a test model or a preview of what's to come. It's a good way of marketing: instead of spending a lot of money in the first place you can find out if something's got potential, then you do your remix and dump a lot of money into it."

Which leads us to the question of what makes a mix.

"When I mix records, I don't do it in the conventional way. Most mixes I hear are level, but I like to emphasise the beat more – like making the kick and snare more powerful. I like the beat to almost overpower the track, but everything else in the mix has to be heard too because I put it there for a reason. If I don't mix it right, then a part that I put in isn't going to have any effect. I've heard a lot of records where some things that are real good are hidden in the mix. I noticed on Janet Jackson's 'Control' there's a thing that sounds like finger snaps. It's mixed real low on the seven-inch but they've brought it out in the remix. That's cool, but if I'd mixed that track I'd have made the drums *real* powerful and had those snaps come right out at you.

"I don't use much reverb because it takes all the bite out of the drums, and that's the most crucial place. I like leaving the drums dry and bare so that when you hear it over a sound system or on your speaker at home, it sounds like someone playing an 808 live. That has a lot of impact in the clubs where it really cuts through – aggressive mixing.

"The important thing to me is if I'm going to sample something or make a beat, it's got to be right to begin with. Anything I put on after that will add a little extra to it, but my sound has to be there first. If I go into the studio with a sample, that's the sound I want to keep, I don't want to fuck with it any more. A lot of people end up changing a sound in the studio just because the reverb sounds good. They get fooled. They go in with a sound that they believe is going to make a hit, but they get in there and forget that."

SO WHERE NEXT for hip hop, sole glimmer of hope in another year of cover versions, Levi's ad soundtracks, and soap opera spin-off discs? Its champions claim it can be whatever its fans want it to be, but so far, it's still a beat, a scratch, and a rap – not necessarily in that order. And though those ingredients *do* make a hot dancefloor mixture, it's difficult to see where things are going to go next. Which direction will Mantronix take?

"Hip hop is basically empty. It's just a beat. But we're doing more things with it now. For instance, there's a song on the

new album called 'Scream', that reminds me a little bit of the Stray Cats. It's going to be the next single and, if we do a good mix and if it's pushed right, it's going to click into the Top 40. As far as Mantronix is concerned we're more musically orientated than, shall we say, other rap groups. When you hear a Mantronix record you hear less of the rapper and more of the music – that's basically our sound."

Mantronix is sceptical, however, about the achievements of acts like Run DMC, who have fused the worlds of rap and rock to make huge-selling, crossover records like 'Walk This Way'.

"It's opened the door in the sense that for Run DMC, and any other hip hop band that wants to put a rock guitar on their record, they can have a hit. If you take someone like Fresh Prince or some other hardcore rap record and it went as big as 'Walk This Way', then that would really open the doors for rappers because that's real rap music. Rap music is scratching, beats and real rhyming, not rock guitars. The way I see it now is that any rap group using a rock guitar in a song has a chance of making it pop. The Beastie Boys are doing the same thing with 'Fight for the Right to Party' – it's a rock record, not a rap record."

MC Tee: "No matter what people say, to me hip hop is still a form of music. They said it would die about seven years ago but the music lives on, it's a part of life. Dance steps die but dance itself will always live on. People can give music different names but it can't die. Rock back in the 50s didn't sound like the rock of today, but rock is still alive – it sounds a lot like hip hop in some ways.

"If you want to categorise everything then that's your problem. A lot more kids will get involved in hip hop now. It's starting to cross over into the white audience, people are seeing money in it – that's how it's going to get stronger. The thing is it's cheap music to make, so the record companies are saving a bundle of dollars, and we can get rich guys. Of course the style of hip hop is going to change because everything must change. Of course the name will die – we used to call it B-boy music, funk music, but now those names are played out, people want to have something new to sell and the kids want something new to be hip to."

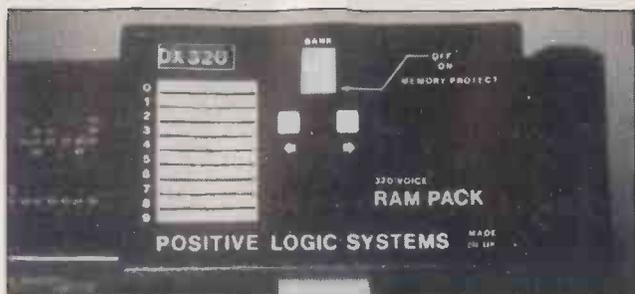
And will Mantronix keep their place in the running? Mantronix believes so.

"We're not a one-trick pony band with only one hit record. We haven't had a monster hit yet but, in time, we can do it. Take Talking Heads – they're weird, they have a weird sound, but it took like four or five albums for that to really cook in.

"We do hip hop music but, it's different so it's hard for kids to understand at the moment. But in time they will – we'll make them understand, we'll find some medium where Mantronix can really fit hip hop into the pop market.

"Over the past two years we've been growing and growing, and by next year or the year after we will be tremendous. We won't die overnight." ■

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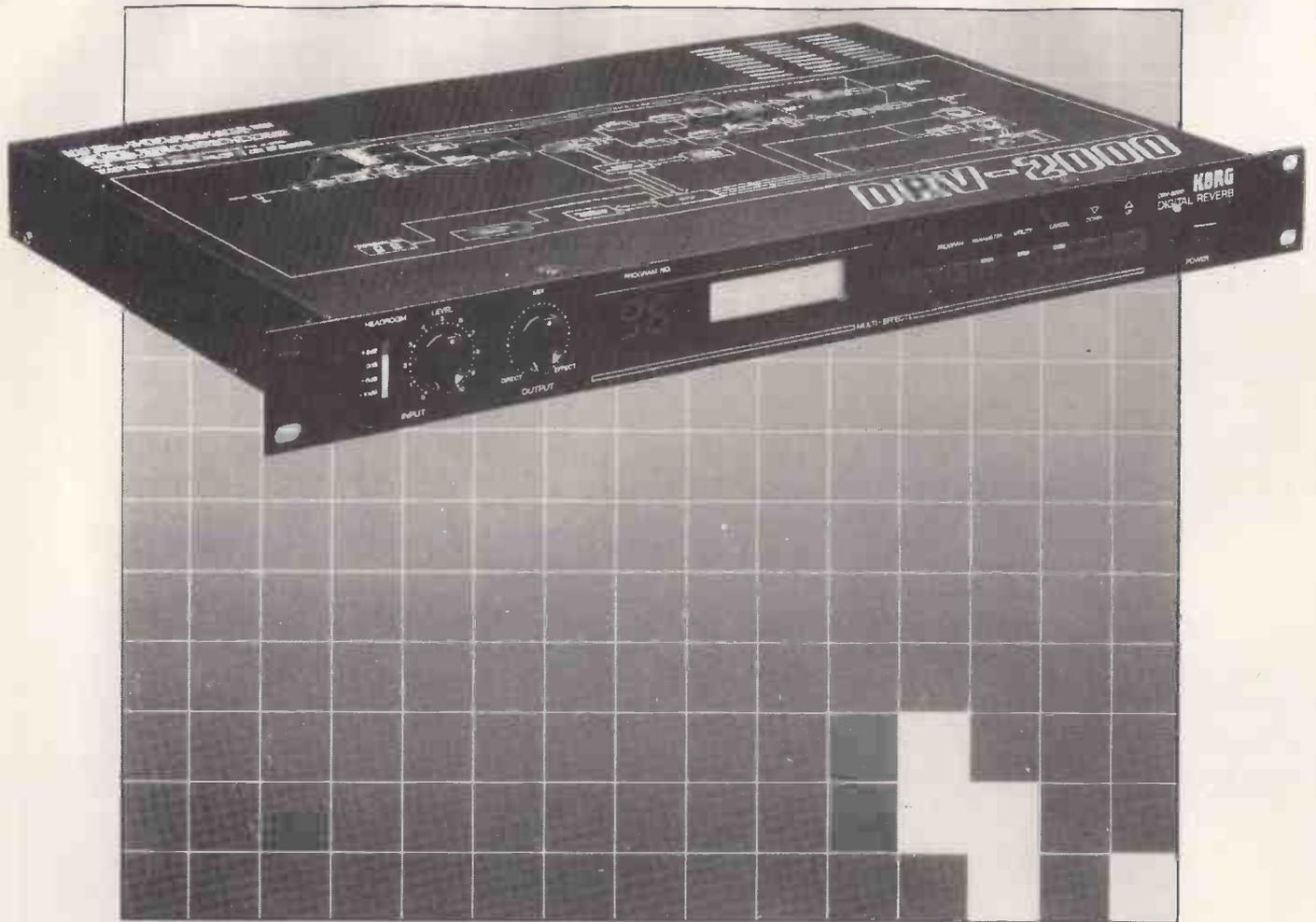


PRO-TECH



KORG DRV2000

Programmable MIDI Reverb



There was a time when the only thing MIDI allowed you to do on a signal-processor was change programs. But now all that is changing – and fast. Review by Rick Davies.

AS WITH SYNTHESISERS, digital reverb units are going through a visible evolution as MIDI makes its way into the hands of an ever-increasing number of musicians and engineers. But perhaps most surprising is the sophistication of MIDI implementations in digital signal processors, which have benefitted from as many innovations as keyboards have.

Starting with programmability, the logical first step was to make program changes possible over MIDI, followed quickly by assignable program changes by which one incoming program number could select another program number, as the user's circumstances demanded. This last point was very encouraging, since there has never been any guarantee that program 23 on a given synthesiser will sound good with program 23 on a MIDI-equipped reverb. Then there's the matter of the organisation of programs: some instruments organise programs in banks of eight, others in banks of ten; some starting at 00, others at 11, and so on. And then you have to bear in mind that some keyboards (notably the Casio CZ101) have a limited number of programs, which could be less than the number of reverb programs available – hence some reverb programs won't be accessible over MIDI at all.

The last year has seen many developments on the keyboard market in the area of MIDI controllers and System Exclusive dumps; new types of controllers, computer-based and stand-alone, generic System Exclusive patches or

sequence files, with other new angles on the way. It was only a matter of time before these made their way into signal processors.

Perhaps this is why the DRV2000, one of Korg's latest digital signal-processors, may not come as that much of a surprise, though it only takes a look beneath the superficial layer of its specification to see a gem of a reverb at what seems to be a reasonable price. Still, the market's always in gear and going new places, so the question before us is, "does the DRV2000 go where the rest of the market is going?"

Format

HOUSED IN A 1U-high, 19" rack-mount chassis, the DRV2000 offers a selection of 96 programmed effects settings, 80 of which are user-programmable. Korg provide 16 basic reverb, delay, and combination effects as starting points, each with its own set of adjustable parameters, leaving the user with plenty of programming options without requiring a thorough understanding of reverb to get useful results. These basic programs are permanently stored in program numbers 1 through 16, and cover an assortment of hall, room, plate, and gated reverbs, stereo delay programs including flanging, chorus, and pan effects,

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and combinations of reverb and delay effects. These programs provide between four and ten adjustable parameters for the user, and the manual goes into a suitable level of detail to guide the first-time programmer through each program's parameters.

The DRV2000 is a mono in/stereo out machine employing 16-bit digital processing (which provides a respectable sound quality – something which is becoming more common lately). The unit relies on just a handful of front panel controls to access all of its functions, but Korg have done an admirable job in taking advantage of MIDI to make life considerably easier in almost every respect – from program selections to real-time parameter control.

This is not to say that Korg have cut corners where they couldn't afford to: 1/4" phone sockets are provided for the audio input and outputs, and a Gain switch on the rear panel selects either +4dB or –20dB signal levels, while the front panel Input control and its corresponding LED bar graph help avoid overdriving the input. The Mix control performs the usual duty of setting the dry/effect blend.

Like many other budget signal processors, the DRV2000 relies on serial access for program selection, having no numeric keypad or set of dedicated program select switches. This means a fair amount of time spent scrolling through the programs to get from one program to another at first, but once you've had a chance to hook the DRV2000 to a MIDI controller, you'll find yourself spending less time working the DRV's front panel controls, and more time operating it from the controller.

A large LED display shows the selected program number, while a back-lit LCD shows the selected program's title along with one of its parameter values. For example, a "vocal plate" program might display the reverb time value, whereas a "gated reverb" program might display the pre-delay value. This flexibility is particularly useful in situations where quick edits are required; after working with the DRV for only a short while, it becomes apparent which parameters are most often adjusted in the different types of effects.

The 16 different basic programs allow for a good variety of effects, including reversed gated reverbs, ping-pong stereo echoes, stereo chorus, and dynamic panning. In the latter category, the DRV offers some variety to stereo imaging by producing left-to-right and right-to-left continuous panning with variable "phase" for control over the apparent depth of motion. This effect is most dramatic when heard without the dry signal, so the DRV's bandwidth limitations (20-12kHz) are unfortunately more noticeable with this program than with the reverb programs, for which this bandwidth is quite acceptable. For this reason the DRV is probably best suited for use as an auxiliary effect, a situation which would also allow independent equalisation of the dry and effect signals.

Programming

THE DRV OFFERS the type of control format that has become standard on most budget synthesisers and signal processors. The controls include several mode switches (Program, Parameter, and Utility), a Write switch for storing edited programs, and increment and decrement switches for stepping through programs, parameters, or values, depending on the selected mode. As mentioned earlier, the specific parameters available for editing depend on the current program's type of effect. For example, a stereo chorus program has fewer parameters to control than, say, a reverb/echo combination program.

It would be easy to get by with these basic programming functions, editing one or two parameters, changing the program title, and writing the new program to other MUSIC TECHNOLOGY APRIL 1987

program locations, but the more adventurous programmer won't be able to ignore the multi-modulation feature offered for external MIDI control. Each effect type has certain parameters which may be adjusted under MIDI control, but the choice of specific controller affecting each parameter is left up to you, and can vary from one program to the next.

In fact, each program can have any combination of two eligible parameters controlled by any two of 70 possible MIDI control sources – hence the "multi-modulation" tag.

► *"If you happen to have a keyboard with assignable MIDI controllers, it would be easy to customise the DRV so that each program's main parameters could be adjusted without ever coming near the unit."*

Possible modulation sources include MIDI key numbers, key velocity, aftertouch, pitch-bend, and any of 64 continuous controllers.

Needless to say, if you happen to have a keyboard with assignable MIDI controllers, it would be easy to customise the DRV's programs so that each program's main parameters could be adjusted without ever coming near the DRV, which could then rest undisturbed in a rack off to the side somewhere.

To test this feature, I used a Yamaha DX7IIDF, assigning its two sliders (CS1 and CS2) to continuous controllers 11 and 12. I then programmed the DRV2000's "Comet" program (a reverb/chorus combination) to assign controllers 11 and 12 to the reverb time and chorus modulation amount respectively. The DRV's multi-modulation section lets you establish positive or negative modulation amounts for each source individually, so there's no need to adjust any of the program's other parameters to accommodate the controller range. This proved to be quite effective; while playing the DX through the DRV, one slider set the length of the tail of the reverb, while the other slider controlled the depth of chorus applied to the reverb. The only problem I came across was that a few of the parameters which the manual indicates can be multi-modulated could not. Being a synthesist, I'd prefer it if everything could be modulated by everything else, but that's not to say that I lost any sleep over this temporary setback; on the whole, this is a very clever implementation.

Now all that's needed is a way of calling up DRV2000 programs corresponding to programs on a MIDI master keyboard (or other controller) without having to juggle programs around inside either the DRV or the controller. Some keyboards already incorporate features for this very application, and there are even stand-alone devices, such as the Voyce LX4 and LX9, which essentially enable simpler controllers to have similar control. But the DRV2000 also has this power. Using the Utilities switch, you can access a "switch program change" display. From there you simply

► *"The DRV can be set to interpret MIDI note numbers as program selectors – interesting, but I'm not sure how you'd go about playing the controller without selecting a different DRV program with each note."*

enter an incoming program change number, followed by the number of the program you want it to select on the DRV when it is received. Simple, elegantly implemented, and the sort of thing that should, in a perfect world, cause other manufacturers to follow suit. Mind you, on the last point, things could get confusing if every piece of MIDI equipment had different program-change assignments going on at the same time.

In fact, this brings up an odd detail which I stumbled across just before testing the DRV's System Exclusive dump feature: the unit transmits a program change whenever it ►

► receives one at its MIDI input. While this might be useful for passing along program selections to other instruments in a MIDI chain, this is usually what MIDI Thru sockets are for. I had the keyboard and DRV2000 in a closed loop, and after selecting program 13 on the keyboard, the DRV changed to program 96 (as it had been programmed to). But this caused the DRV to transmit another program change which, in turn, changed the program on the keyboard! Although I'm willing to avoid running the DRV's MIDI output into other instruments to prevent this from happening, such evasive action *shouldn't* be necessary. After all, the DRV's MIDI output can be switched to operate as a MIDI Thru at any time.

On the subject of MIDI program selections, the DRV can also be set to interpret MIDI note numbers as program selectors. Now, while this is very interesting, I'm not sure how anyone would go about playing the controller *without* selecting a different DRV program with each note. There is an Enable/Disable toggle, but since this feature is intended for remote control, I remain unconvinced that dedicating one keyboard to program changes is a viable alternative to conventional program selections from instruments' front panels, especially given the DRV's rather slick features in that department.

However, considering how the MIDI keyboard controller is becoming standard fare these days, Korg's general approach to central control over effects from musical instruments should earn them a few points with musicians in both live and studio environments. After working with the DRV for a while, I wondered how soon it will be before MIDI effects controllers become as popular as keyboard controllers. The Voyce LX4 and LX9 do fine for program selections and MIDI mapping, but as far as MIDI continuous controllers are concerned, the Yamaha MCS2 is the only device which springs to mind...

The DRV can store its programs over MIDI using a System Exclusive dump. If you don't happen to have a SysEx program for the Atari ST or another generic program librarian (and let's face it, most UK musicians don't), Korg recommend using their MEX8000 Memory Expander. If you don't have access to either of these, despair not: first of all, the DRV's program memory is non-volatile (naturally), so it remains intact after switching power off; second, program variables are so few, it really wouldn't take too long to keep hard copies (you remember pieces of paper, don't you?) of parameter values for custom programs.

Verdict

I HAVE TO admit that I was sceptical at first, but the DRV2000 proved that I could get excited about a digital reverb in this price range, regardless of the influx of sub-£400 non-programmable reverbs; there is no way you're going to find this level of flexibility, in terms of user interface and programmability, on such units. Until now, the Korg's level of real-time control has been seen only on units such as the Lexicon PCM70, but regardless of this now familiar idea of increased accessibility, I genuinely believe the DRV is an indication of where affordable signal-processing is going.

The DRV2000 dedicates its attention to reverb and delay effects, and performs well. The factory programs are a good selection and, thanks to Korg's clever MIDI implementation, you couldn't ask for a better way of reaching them. ■

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Photography Matthew Vosburgh

*...Lies a new residential studio that specialises in the hi-tech. It's called The Wool Hall and it belongs to Tears For Fears, but it's far from being a private facility for the band and a few friends.
Report by Paul Tingen.*

SOMEWHERE DEEP IN the heart of rural England, on the edge of the West Country, a new residential recording studio is beginning to make a name for itself – in a market that many believed was already overcrowded. In fact, if things continue to go as they are right now, the studio will be one of the long-term recording facilities in the country.

Of course the latest technology is involved. There's a 56-channel SSL desk, and all the expensive outboard gadgets which every self-respecting studio simply must have. Yet on top of that, the studio focuses on elaborate service, ("making people feel at home"), has a programming suite with Fairlight, Synclavier and Emulator to cater for synthesiser-oriented artists and, lately, has been channelling its energies towards providing special acoustically designed studio rooms.

We're talking about The Wool Hall in Beckington, near Bath. Expensively constructed and extensively marketed, its main claim to fame is that it's Tears For Fears' studio – the house that 'Everybody Wants to Rule the World' built.

Yet studio manager Pete Dolan is quick to point out that it is by no means a private studio that's occasionally open to others when the owners are on holiday. No, sir. This is a serious commercial enterprise.

"Obviously we used to be known initially as the Tears for Fears studio. It puts you on the map and gives you some opening credit, but we're now starting to move beyond that, as we're getting repeat business, and making ourselves a name through word of mouth."

The studio came into being during 1984, when TFF's Roland Orzabal and Ian Stanley were looking for a place to store their equipment, and perhaps develop a recording studio, while they were recording *Songs From The Big Chair* in Ian's front

room in Bath. They found The Wool Hall, an "historical curiosity" which in medieval times used to be a wool market. They then asked Pete Dolan, a music business veteran with experience as a musician and as a manager in the recording industry (he worked for Virgin for eight years, setting up the Virgin Megastore in Oxford Street, and also started up several independent labels in the US and UK) to take charge of the process of renovating the building, designing the studio, and installing the hi-tech equipment in a way that would retain the original atmosphere of the building. It was felt that history should be married to technology, rather than be abandoned by it.

The task was not an easy one, though it had its rewards. The walls of the building were in good condition and didn't need too much work, but rotted floorboards needed attention. One especially creative solution to this problem involved the building of a steel cage in which the control room was fitted. With the studio room positioned underneath the control room, absolute acoustic isolation between the two was needed, and the steel cage provided just that. With several tons of sand in the floor, the cage structure is completely independent of the rest of the building, and the control room therefore well isolated.

A residential and relaxation area was then built, intricately designed and sympathetically decorated. In the studio room, walls were installed with a slight angle upwards, to reduce the amount of direct sound reflections which might cause nasty resonant frequencies. Not surprisingly, the royalties from *Songs From The Big Chair* had by now come in rather handy...

The renovation work took nearly a year, and ended in April 1985. Enter the studio now, though, and there's nothing to indicate the metamorphosis of the building took place so recently. The place feels comfortable, relaxed, bathing itself in a tranquil atmosphere that is a huge relief after the pressure of London. The remote location of The Wool Hall is seen as one of the studio's assets by Pete Dolan, though he acknowledges it has its disadvantages, too.

"People can work in complete concentration here, undisturbed by anything else, since we only house one project at a time. The local people are very friendly and have no problems suddenly seeing a celebrity turning up at their bar.

"Yet one thing we had to take care of was maintenance and repair. Obviously being a hundred miles from London can be a drag if your equipment breaks down. So we have John Fredericks as a full-time maintenance and repair engineer."

Fredericks, who's on 24-hour call and who trained with CTS studios in London, sees his job mainly as "preventative maintenance".

"I have a good stock of spare parts, which is an absolute necessity when you're as far from London as we are", he says. And apart from his maintenance work, Frederick also designs and builds equipment modifications - like a computer protection assembly which puts the SSL out of action whenever it gets overheated.

Basically, though, for musicians who want quietness, somewhere they can concentrate without disturbance, and beautiful countryside, The Wool Hall is an oasis. The interior has been deliberately decorated in pastel colours, and there are various acoustic instruments (restful on the eye after all the LEDs and LCDs) adorning the house, like a sitar, a marimba and a zither. There's even the odd bit of fine art hanging on the walls.

The control room has natural daylight coming in through two large windows, highlighting the dominant features of the SSL.

"At the time we bought it the SSL was the best thing around, and really it still is", says Dolan, "although we're closely monitoring the ripples of resistance which are starting to show against it. Because everyone has SSL, records are starting to sound a bit the same, so we have a large outboard equalising section to give people a range of choices."

Also in the control room is a SycoLogic 16-channel MIDI routing system, which can organise and link large amounts of keyboards. Expert here is assistant engineer Steve Williams: "That routing system is brilliant. Lately we had Ryuichi Sakamoto in here with Virginia Astley. Sakamoto was using virtually every keyboard you could think of - Emulator, Fairlight, Prophet, even an MC4. The system saved us lots of time and trouble."

Williams is basically available ("apart from pouring cups of tea and juggling with mics") to help people get to grips with the advanced technology in the studio. And though producers usually bring in their own engineers, his engineering skills prove very handy when "a producer comes in who engineers himself. I then often sit in and engineer while he can concentrate on other things."

For projects that demand another level of hi-tech jiggery-pokery, the studio's programming room (complete with programmer) can be hired as an extra. "The Keyboard Club", as the room is affectionately called, was initiated and is run by Paul Ridout (for an interview with Ridout, see MT February 1987). It features a Fairlight, a Synclavier, PPG Wave 2.3 and Waveterm B, an E-mu SP12 percussion sampler, a Yamaha TX rack and a Macintosh computer.

A second Macintosh should soon be installed in the control room, which will have a direct link to the Mac in the Club. When it's up and running, clients will be able to program patches and sequences in the Club and send them directly to the MUSIC TECHNOLOGY APRIL 1987

control room, where they can be used instantly.

Obviously, The Wool Hall is *extremely* well-equipped for dealing with synthesiser-orientated bands, having seen the likes of Latin Quarter, The Colourfield, Ben Orr (Cars bassist who spent several months in the studio working on a solo album produced by Larry Klein, Joni Mitchell's husband - Joni is said to be considering recording her next album at The Wool Hall), and of course Tears For Fears, though curiously, their use of the studio has so far been very modest. If all goes according to plan, 1987 will see the recording of their new album as their first major recording project in their own studio.

So as it stands today, The Wool Hall is a refreshingly designed residential studio with a definite bias towards the hi-tech. But, as Dolan explains, the ever-present twinkle in his eye growing even more intense, things are changing. Apart from the considerable effort which had already been put into making the studio room sound good, work is now in progress to convert the barn into a piano room of 18' by 28'. Dolan elaborates.

"...And we will be building a live stone room, which will give us three acoustically designed studio rooms. The stone room will be 15' by 26' at its longest point, but it will have no parallel walls for acoustic reasons. The whole thing should be ready by August.

"We're trying to cater for all tastes, and really, there is no substitute for a great-sounding room. We've got all the major reverb units - Lexicon, AMS RMX 16, EMT valve plates, Yamaha REV7 - but it's the rooms that give the studio its individuality. A producer once discovered that our laundrette sounded very good. So he laid cables to the laundrette and recorded the guitars there. That says it all really, doesn't it?"

Reading between the lines, it's clear Dolan believes that it's no longer equipment lists which make the difference between top studios. Apart from the live rooms and the idyllic location, there's another weapon he throws in to separate his studio from the competition - an extensive, seemingly unstoppable service to create the right ambience for his clients: the sort of ambience that will allow them to feel completely relaxed, and which will allow their creative energies to flow. When Van Morrison came in to record, he wanted to have the whole band playing live in the studio room - so Dolan and his crew rolled in palm trees and other plants to create a "front room atmosphere".

"Basically our attitude is that the place is yours for as long as you rent it", says Dolan, "and we will do everything within reason to accommodate people." "Within reason" once stretched as far as organising the arrival of a hot-air balloon after a tongue-in-cheek suggestion from a guest. Dolan just did it to see whether it could be done. And it could... ■

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video T·A·K·E·S

Arcadia

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ALTHOUGH DURAN HAVE recently been re-mobilised, there's still some mileage left in the Simon Le Bon/Nick Rhodes collaboration as *Arcadia*, the video, proves. Musically it's not new material – five tracks from last year's *So Red the Rose* album find themselves accompanied by some typically ambitious sets, the sultry glances of beautiful women and, of course, Rhodes and Le Bon.

The settings are every bit as elaborate as those you'd expect from the Duran Duran/Russell Mulcahy stable, though Mulcahy himself has directed only one of the clips here, 'The Flame'. And the women are every bit as stunning, the musicians every bit as moody and the gear responsible for making the music every bit as scarce in camera, too.

What we're left with is a series of exotic scenarios that complement the imagery of the songwriting surprisingly well. Or, to put it another way, no-expense-spared stage sets concocted by special effects men and lit by lighting experts, through which Messrs Rhodes and Le Bon wander for no apparent reason – with the exception of 'Missing', where the subject is a woman (what else?) rather than the band.

In fact, 'Missing' is the video's strongest moment. Directed by Dean Chamberlain, who devised the technique for his still

photography, 'Missing' sees each frame individually lit by torchlight. The effect produces a gentle restlessness of image that's reminiscent of Seurat's painting, and we're treated to a beautiful sequence of pastel scenes of a woman alone in a room. And, for once, the pictures and music do gel.

But where 'Missing' succeeds, 'Election Day', 'The Promise', 'Goodbye is Forever' and 'The Flame' only come close. All the essential ingredients are there – rubber-clad women, horse-headed men, Rhodes plucking petals from a flower, Le Bon spreadeagled on the face of a huge clock. But many of the musical cues that *could* have been taken up (these are stirring, multi-layered records, after all) are too loose to have their deserved impact, or are simply not used at all.

Even accepting the overall style of the videos, the continuity between the songs and the mystery behind the images are both destroyed by clips of the filming in process, and short interviews with Rhodes, Le Bon, and the directors and technicians involved. Much of this is underscored with a selection of music ranging from Wagner and Vivaldi to Michael Nyman and John Williams, which sounds nice and cosmopolitan on paper, but only succeeds in further isolating each piece on videotape.

If I had this much time and money, I'd channel my energies into other areas. And I suspect you would, too. ■ Tg



Photography Tim Goodyer

vinyl T·A·K·E·S

Deihim & Horowitz

Desert Equations

Crammed Discs LP

Not a new record, this, but Volume 8 in a seemingly ever-growing catalogue of releases under the title *Made to Measure*, and put out by Belgian label Crammed Discs. The idea behind the series is that each disc contains music that is "made to measure" for a particular purpose other than the release of an album.

In the case of *Desert Equations*, that purpose was a music dance piece called *Azax Attra*, which premiered at Carnegie Hall, New York in 1985. The music marries the combined talents of Richard Horowitz (electronic music composer, master of the Moroccan ney flute, and one of Jon Hassell's favourite collaborators) and Sussan Deihim (a virtuoso singer/performer from the Persian National Ballet).

Thus *Desert Equations* presents an unlikely mixture of styles. 'Azax Attra' layers Deihim's Oriental stuttering over Horowitz's complex Fairlight programming and some startling conga-playing by Steve Shehan; 'Jum Jum'

strips the ingredients down to the bare, brutal minimum of vocals and synth washes; and 'Desert Equations' itself is the album's swansong, traditional vocal melodies interweaving with melancholy trumpets, stunning Prophet patches and constantly shifting Lexicon reverb treatments.

Haunting, occasionally unsettling, always compelling, *Desert Equation* is proof that ethnic musical skills and new technology can collide harmoniously – if you get the balance right.

The composer could be Gabriel, the engineer could be Lanois, the producer could be Eno. Search it out. ■ Dg

Shriekback *Big Night Music*

Island

It's getting on for 18 months since Shriekback released their last LP *Oil and Gold*. In that time, Carl Marsh has left the band and the remaining members have gotten themselves a new record deal with a new label.

There's been a little speculation about the group's future, but rave reviews of *Big Night Music* have suggested it's unfounded.

Yet from the sleeve notes' assertion that "*Big Night Music* is entirely free of drum machines, sequencers, Fairlight Page Rs – digital heartbeats of every kind" sows the first seeds of doubt. Not because technology has become an indispensable part of modern music, but because anyone who needs to make a proclamation like this in 1987 must have something to hide. Trouble is, Shriekback haven't found enough hiding places.

The technology remains, despite the disclaimer – Fairlight, DX1, Jupiter 8, Kurzweil, Kobo – and the programming is a masterpiece, each sound playing its part in the creation of a unique atmosphere for each song.

But gone is the menace of the songs on *Oil and Gold* and *Jam Science*, replaced by an incoherent collection of lightweight doodlings. And gone is the intrigue of a bizarre but compelling music that took an unexpected turn at almost every junction, replaced by trite chord structures and melodies that are polite to the point of impotence.

The only aspect of Shriekback's music that
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has remained uncompromised is the beauty of its rhythm patterns, which are still constructed from the unrelated bangings and scrapings of a variety of instruments, yet work together to form a solid foundation for each song.

There's still hope, but it's fading fast. ■ Tg

Various Artists *The Audion Sampler*

Audion LP

Seven tracks from seven acts, all of them recording artists signed to the Audion company, a label set up by US synth composer

Larry Fast as "a new home for electronic music".

Like so many collections of instrumental electronic music, the *Sampler* puts the emphasis on timbre and structure, rather than melody. There are plenty of memorable sounds and arrangements on the record, but not a hummable tune in the entire 45 minutes.

But unlike most collections of instrumental electronic music, this one puts the emphasis on composers who shy away from keyboard synthesisers. Don Slepian is a masterful acoustic-guitar player who uses synths for background textures; Emerald Web aim to create a new kind of chamber music by combining electronics and woodwind; and Neil Nappe's 'Nova' is 11 minutes' worth of guitar-synth virtuosity, with not a set of ivories in sight.

In fact, 'Nova', an entrancing guided tour through novel synth textures played with syn:athy and originality, is one of the most interesting cuts on offer. Other goodies are Slepian's 'Reflections' (a short, sweet instrumental cameo, beautifully played and recorded) and Barry Cleveland's 'Abraxax' (another guitar-synth indulgence, but more in the Robert Fripp vein).

Each of the artists on the *Sampler* has their own separate LP release on Audion, so if you take a particular fancy to one track or another, you can investigate their output further.

Intriguing music, then, that raises its head well above the norm of instrumental electronic ramblings, and is an awful lot more fun to listen to (and learn from) than anything currently masquerading under the label "New Age". ■ Dg

demoT·A·K·E·S

JUDGING BY THE number of readers' tapes submitted to DemoTakes each month, news that an independent demo-reviewing body has been set up should be extremely welcome.

Demography is a new magazine devoted to reviewing demo tapes and providing contact addresses for those on sale. The man responsible is Paul Gallant (an apt name, perhaps) and his declared aims are to offer an outlet not provided by the existing record companies. Each review will be conducted by a "suitable" reviewer, and will provide both a subjective opinion of the music and a technical breakdown of the equipment involved in making it.

If all goes according to plan, *Demography* will sell for under a quid.

Demos to and information from: Paul Gallant, 407 Newmarket Road, Cambridge. ☎ (0223) 321696.

And so to this month's demos. **Dreams of Theatre** sound like Howard Jones, package their cassettes like Wang Chung, but can't count. True, all the bars have the same number of beats in them, but there are twice as many songs here as you need on a demo cassette.

And it's more pop: four-on-the-floor rhythms, loud snare drums, furious sequences, slap bass and orchestra samples... you know the form. It's all very well-executed, and catchy too, but it's also too derivative by half.

If you're happy playing gigs and feeling like pop stars for a couple of hours a week, then fine. If not, try analysing what you like listening to instead of ripping it off.

You like uptempo rhythms – fine, but don't nick Trevor Horn's. There's more than one brass sound in a JX3P, too. You can all obviously play and handle the JX, Mirage, OSCar, CZ1000, DX7 you've used here, so why not spend a little time thinking before you save off your next synth patch or drum pattern?

Drop the oriental lettering, stop worrying about what the other chart acts sound like, and let us all hear what Dreams of Theatre sound like.

And now for something completely different... All very military, this stuff: snare drums, helicopter noises, titles like 'Four Horsemen' and 'The Rage'.
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Wayne Trotman is the man in command, though only of a JX3P, Casio SK1 and Korg DDM110 drum machine at the moment.

Perhaps it's all the violence on the telly, but the overall feeling on Trotman's tape is one of utter confusion. There's some good mileage being had



out of fairly modest equipment, especially on the drum side, but their treatment completely undermines the ingenuity of their programming.

Most of the good ideas are rhythmic, with the odd interesting synth patch to liven things up a bit, but it's all buried under irrelevant goings-on. And apart from the odd phrase, the melodies are limited to two or three notes related by very simple intervals – whole tones or fifths, usually. The Smiths' Morrissey would disagree with me, but this quickly becomes, well, boring. Result? Forceful music with no particular place to go.

Edinburgh's Neil H Gray offers us three original, cheap 'n' cheerful instrumental tracks that sound as if they were originally intended as theme music for a TV holiday programme... You know the sort of thing: Cliff Michelmore visits some exotic island paradise, samples the local food and drink, and leaves the BBC to pick up the tab.

The opener is a little ditty titled 'Holiday for Errant Cowbell', which accurately sets a lively if

predictable mood for the following tracks, 'Stompin' at the Saveloy' and 'S-S-S-Sixteen'. A Yamaha CX5M lays a collection of steel drum tones over a bog-standard RX11 pattern, before being joined by an equally uninspiring Hammond patch. 'Stompin' at the Saveloy' picks up where 'Holiday' leaves off with more familiar FM brass chords. Where the two differ is in the infectious melody of 'Stompin'', where the choice of key changes is a little obvious, but the use of dynamics in the arrangement and RX21 programming provide the kind of interest that's lacking elsewhere.

The moral of this story is that you don't need original songs or sounds to get results, it just depends where you intend your music to find favour. And before you ask, 'S-S-S-Sixteen' bears absolutely no resemblance to Paul Hardcastle's '19'. In fact, it sounds a lot like 'Holiday for Errant Cowbell'.

I'd lay even money the Pause button on Life of Work's Fostex X15 is just about shot. Because that's what happens when you don't own a sampler and you try tape editing on cassette instead.

Admittedly, the rest of the results achieved here with a Roland TR808, SH101, MC202 and Casio CT202 (aren't abbreviations wonderful?) are quite impressive technically, if a little directionless musically.

Judging by the choice of found-source material and the title, *Areas of Protest*, these are three Yorkshiremen with something to get off their collective chest. I'm bugged if I can work out what it is, though. There are no lyrics to help – only a mood of despondent repetition and snatches of TV documentaries about the police and the Red Army, and interviews with students. Oh, and a quick note on recording: keeping levels high to improve the signal-to-noise ratio is fine, but you have to make allowances for distortion, too... ■ Tg

Send your demos to: DemoTakes, Music Technology, Alexander House, 1 Milton Road, Cambridge CB4 1UY; enclosing – if possible – a recent photograph, some line-up/biographical info, and some technical details about your recording where appropriate.

ART DR1

Programmable Digital Reverb



"Performance MIDI" is what ART call their system of real-time control of reverb characteristics. It's good, but there's a lot of competition. Review by Simon Trask.

NOT SO VERY long ago, there was a clear dividing line between the outboard gear used by professional studios, and what you were likely to find in the average home studio. But the past year has seen the arrival of microprocessor-based digital reverb and multi-effects units whose relatively low price belies their professional quality, and which have consequently found their way into both types of studio.

Americans Applied Research and Technology (ART) are no strangers to signal processing, having started life as the renowned MXR company. The DR1 is ART's top-line digital reverb, and as such appears to be subject to ongoing software updates which are intended to make it one of the best-specified reverbs on offer. For instance, the latest update (version 1.2) introduces what ART call "Performance MIDI" – essentially a means of controlling reverb parameters in real-time via MIDI.

Specification

THE DR1 HAS a frequency response of 35kHz dry and 14kHz reverb, with a 16-bit linear DAC and a dynamic range in excess of 90dB in all modes. A bass rolloff switch located *inside* the unit (time to get the screwdriver out) allows you to tailor the low-end frequency response of the DR1 – low-frequency filtering is applied to the incoming signal before it's sent to the reverb processing circuitry. The switch selects between two rolloff frequencies: 50 and 150Hz (50Hz is the default setting, and should prove adequate for most requirements). One slightly alarming aspect of the DR1 is that it "runs warm" (to use ART's phrase) and exhibits a degree of hum (presumably from the transformer), but as long as you leave adequate ventilation space, this doesn't appear to cause any operational problems.

The unit comes with 40 ROM preset and 100 user-programmable memories onboard. The presets provide a healthy selection of reverb and other effects, based on 21 different "room" algorithms: five plate, five room, five hall, two effect, one reverse, one gated, one DDL and one flanger/chorus. However, unlike the SPX90s and DEPS/3s

of this world, the DR1 doesn't allow you link different effects – either in series or in parallel.

The DR1's presets can of course be used as the basis for creating your own effects, which can then be stored in any of the user-programmable memories. A particularly handy feature is the ability to lock any of the latter individually, which guards against accidental overwriting of some effects while allowing others to be created and stored.

The rear panel of the DR1 sports quarter-inch jack stereo inputs and outputs, MIDI In and Thru (the latter software-switchable to Out), a footswitch input for controlling the "kill/in" function (more on this later), telephone-style input for a remote control unit (which comes with the DR1), a button for selecting a choice of two input levels, and a further button for switching the dry signal in and out of the signal path.

The front panel divides into three sections: Preset (governing memory selection), Value (governing parameter setting), and Level (where you set the amount of reverb for left and right channels separately, and view the overall input level on a ladder LED); two two-digit LED windows indicate memory number and parameter value respectively.

Programming

THERE ARE SEVEN effect parameters directly accessible from either the front panel or the accompanying hand-held remote control. These are: room, pre-delay, decay, high-frequency damping, position, diffusion and minimum decay. While front-panel access is straightforward enough, selecting and editing parameters is made a lot easier by the remote control (which comes attached to a lengthy stretch of cable, and therefore allows you to program the DR1 on a flat surface far removed from your effects rack – invaluable in the studio, of course). Let's take a closer look at those programmable parameters.

Pre-delay is adjustable from 0-200mSecs in millisecond intervals. This governs the time interval between the source signal and the first reflections, allowing the former to sound uncluttered and more distinct.

Decay is variable from 0.1-25 seconds, with a greater resolution of values provided for shorter times. "Decay time" is defined here as the time required for the reverberant sound to decay to one millionth (-60dB) of its original energy.

"Minimum decay" on the DR1 is a useful feature which essentially brings a shorter decay time into play when the signal level builds up – useful for avoiding boominess in a reverb simulation with a long decay.

Diffusion refers to reverb density, which is a function of the number and spacing of reflective surfaces in the environment. On the DR1, a setting of zero creates the illusion of sound bouncing off a lot of surfaces, with a resultant "choppy" effect – especially in the case of percussive sounds. Increasing the parameter value results in a progressively smoother effect, which creates a more natural-sounding reverb.

Another characteristic of reverberation is that higher frequencies are absorbed more quickly than other frequency components, with the rate of absorption depending on the nature of the reflective surfaces that define the environment. On the DR1, damping is variable over a relative range of 0-19. A value of zero actually results in a sound which is brighter than what you'd find in the real world, while values above 9 result in treatments which are unnatural at the other end of the scale. All in all, this turns out to be one of the most effective features in determining the character of a DR1 reverb effect.

Position allows you to change your apparent position in the environment being simulated. This is achieved by

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varying the mix of initial sound and subsequent reverberation. In real life, if you move away from a sound source, you hear less of the initial sound and more of the reverberation. On the DRI, a Position parameter value of zero means you are at the front of the room, 5 puts you in the middle of the room, and 9 puts you somewhere near the back.

The above parameters apply to the "normal" rooms in the DRI's housing estate-full of acoustic treatments. In the case of special effects, they take on new functions. For instance, with the flanger/chorus "room", the controls assume such functions as left and right sweep width, sweep speed and regeneration, while for the multi-tapped DDL, decay and min decay become left-channel and right-channel delay times respectively (a tenth-of-a-second to a second in 10mSec increments for each channel).

On the subject of non-reverb effects, the DRI's ROM presets include such effects as step flange, reverse slap, reverse swell, drone, ping-pong, echorec, downward percussive flange and chorus – all of which are useful treatments, though as the DRI can only utilise a single effect at a time their use may be constrained by your need to use reverb effects. If outboard gear is at a premium and you're involved in multitrack recording, you can always record with one treatment and mix with another.

Subjectively speaking, the quality of the DRI's effects is (almost) everything that you would expect from a pro-quality digital reverb unit nowadays. However, the DRI exhibits more colouration on its reverb effects than you will find on some other reverbs; to these ears the Ibanez SDR1000, for instance, has a more transparent and smoother quality. The plates in particular are quite "ringy", and the gated and reverse effects may not be to everyone's taste, either, as they lack bite. Otherwise, full marks.

Now, about that "kill/inf" button. This can be assigned to have one of three effects: kill the entire reverb signal, kill the decay (early reflections continue), or infinite hold, which far from killing anything, actually sustains the reverb effect. Useful and usable, "kill/inf" can also be selected by a footswitch plugged into the DRI's rear panel.

The DRI provides another murderous feature: a "kill" preset memory. This has the effect of killing any reverberant signal, which effectively means that you can deactivate the DRI via a MIDI program change – a handy feature.

In their quest to pack the DRI with as many features as possible, ART have included a Factory Demo mode. This auto-steps through the unit's factory presets, displaying each parameter value in sequence; the speed at which this happens can be set on a scale of 1-10. Thus, when trying out the DRI, you can concentrate on playing and listening while the DRI does all the fiddly selection work for you.

Yet another feature, this time potentially useful in performance, is the Increment Preset mode. This allows you to select a sequence of chosen memories that can be stepped through from the front panel or a footswitch.

MIDI

I'VE MADE BRIEF mention of the DRI's newly found "Performance MIDI" features without going into them in any detail. Before I do that, I'd better mention that MIDI on the DRI doesn't confine itself to such involved functions; there are some perfectly standard facets to the implementation, too. To begin with, the reverb's programs can be called up remotely from a MIDI instrument using MIDI program-change commands. You can assign an onboard memory to each incoming program-change number (1-128) so that, for instance, MIDI program 67 could call up DRI memory 24. This feature (now fairly common on MIDI-compatible effects processors) allows you to assign the same effect to a number of synth patches without having MUSIC TECHNOLOGY APRIL 1987

to duplicate effects in memory. Program-change reception can be allocated to any single MIDI channel (1-16).

And so to Performance MIDI, which allows the DRI to have two of its current values simultaneously altered via various MIDI messages: note-on and note-off velocities, note-on and note-off key numbers, poly and channel aftertouch, pitch-bend, continuous controllers 1-11, and switch controllers 64-67. For each DRI memory, you can choose two groups of four values: the front-panel parameter affected, the MIDI message used to affect it, the scaling, and the starting/centre value. The greater the scaling value (the range is -128 to +128), the greater the DRI will change in response to MIDI messages (the negative scalings allow inverse responses). Now this is what I call flexibility – or, more specifically, performance responsiveness, which is what this aspect of the MIDI standard is all about.

The possibilities offered by Performance MIDI are too many to consider here, but a few examples are: note-on/off velocity controlling decay, so that the harder you play, the longer the reverb effect continues to decay; note-on/off key number controlling position, so that depending on where you play up and down the keyboard, the apparent position of the listener in relation to the reverberant field changes; volume controlling high-frequency damping; sustain pedal controlling Kill/Inf on/off; and sostenuto pedal controlling high-frequency damping.

It's significant that ART have called this feature Performance MIDI, because there's no doubt that used in conjunction with a MIDI keyboard – I used the DX7IID, which currently has pride of place in the MT office – or with something like Yamaha's MCS2 MIDI Control Station, this aspect of the DRI hugely enhances the unit's effectiveness as a creative performance tool.

The DRI's MIDI section also caters for System Exclusive communication, allowing its memories to be sent to another DRI or to a remote storage device. While the onboard memory provision is plentiful, there's no denying the value of this ability – particularly for studio engineers who want to store groups of settings used on particular sessions. The DRI allows you to dump the current memory settings, or all the memories plus the MIDI program table.

It's also possible for the DRI to transmit and receive SysEx messages for individual parameter value changes in real-time, which makes for interesting possibilities both for slaving a second DRI, and for recording and playing back effect parameter changes using a MIDI sequencer.

The manual gives full details on the DRI's SysEx implementation, so no-one should be left in the dark about what can and can't be done. Finally, a word of praise for the DRI manual in general. It's thorough, easy-to-read, and educational – throwing in a sensible discussion of the nature of reverb alongside explanations of how to use the DRI. Also included is a (very) handy quick reference card.

Verdict

AS WELL AS being a high-quality reverb with a great deal of flexibility when it comes to creating effects (which can be natural simulations or "unnatural" creations) the DRI comes packed with useful features.

Still, it's worth bearing in mind that there are other high-quality digital reverbs on the market (the Ibanez SDR1000 and the new Korg reverbs, for instance) which are significantly cheaper than the DRI, and some of which also manage to offer sophisticated MIDI control. Listening to space has never been this crucial. ■

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patchW.O.R.K

WHILE WE LOVE to hear from owners of Casio CZ and Yamaha DX synths, we think it's about time some of the older machines got a look in. So if you consider you own one of the all-time classic synths – such as the Minimoog, Prophet 5, Yamaha CS80, Oberheim OBX, ARP Odyssey, and Roland Jupiter 8 – then we'd like to hear from you, too. And if you're still waiting to see your particular synth featured in these pages, then why not be the first to submit some sounds?

Many readers are now supplementing their patch charts with a short demo cassette of the sounds in question, and this is *really good news* for our over-worked (and generally hungover) editorial team. Don't worry too much about classic performances and impeccable recording quality; just present your sounds simply and concisely – and convince us you're the best of the bunch. If you can't lay your hands on a cassette player, don't let that put you off submitting some patches – an interesting description is a good substitute.

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

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

KORG MS20

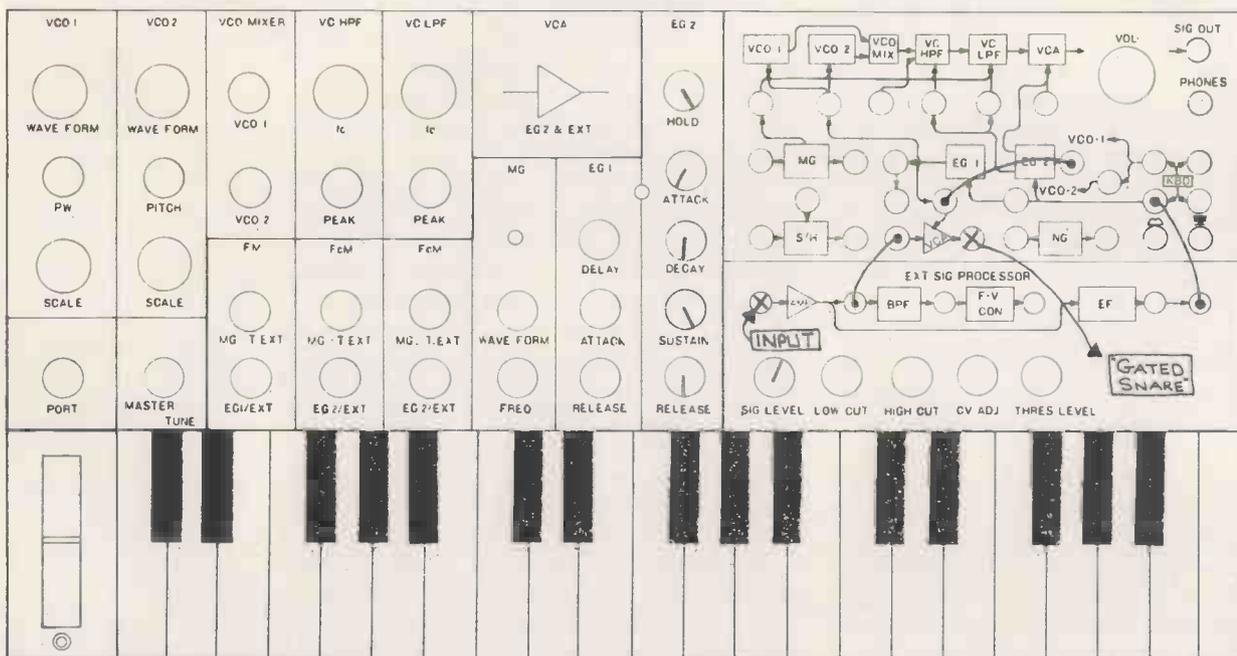
Gated Snare

Ole H Overli, Norway

And now, just when you thought it was safe to bury the ole MS20 under the stairs...

'Gated Snare' is more of a production technique than a sound, as it's basically about using the MS20 as a gate. You simply route the output of your drum machine's snare voice through a reverb (if one's available), and route the treated snare sound through the envelope shaper of the MS20 as indicated: the decay time is now determined by the attack set on EG2. For a novel effect, Ole suggests "turning the Hold on EG2 to about 01, and increasing the decay time (attack knob)".

Which just goes to show what you can do with so-called obsolete tools (the Publisher's still wondering what to do with his). ■



ENSONIQ ESQ1

Vostr

Tony Otyehel, Bradford

Following the ESQ1's debut in last month's MT, Tony felt that anything 'Tubes' could do, he could do better – and 'Vostr' is designed to show off the "warmer" characteristics of the digital ESQ1.

If you've created two sounds for the ESQ1 that complement each other when they're layered, then we'd especially like to hear from you. So why not drop Patchwork a line? ■

	OCT	SEMI	FINE	WAVE	MOD1	DEPTH	MOD2	DEPTH
OSC1	-1	00	03	SAW	LFO1	+03	ENV1	+44
OSC2	-1	00	00	SAW	LFO1	+03	ENV1	+40
OSC3	-1	00	07	SAW	OFF	+00	LFO1	+00

	LEVEL	OUTPUT	MOD1	DEPTH	MOD2	DEPTH
DCA1	54	ON	OFF	+00	OFF	+00
DCA2	54	ON	OFF	+00	OFF	+00
DCA3	54	ON	OFF	+63	OFF	+00

	FREQ	Q	KEYBD	MOD1	DEPTH	MOD2	DEPTH
FILTER	029	00	38	OFF	+00	OFF	+00

	FINAL VOL (ENV4)	PAN	PAN MODULATOR	DEPTH
DCA4	36	08	LFO3	+46

	FREQ	RESET	HUMAN	WAVE	L1	DELAY	L2	MOD
LFO1	22	OFF	OFF	TRI	00	01	20	OFF
LFO2	00	ON	OFF	SQR	63	00	63	WHEEL
LFO3	01	OFF	ON	TRI	00	20	63	VEL2

	L1	L2	L3	LV	TIV	T1	T2	T3	T4	TK
ENV1	+00	-01	+00	00	00	00	15	12	00	02
ENV2	+63	+50	+00	00	00	00	31	29	00	15
ENV3	+63	+08	+00	08	00	00	19	25	20	09
ENV4	+63	+63	+63	21	00	12	42	49	40	00

	SYNC	AM	MONO	GLIDE	YC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	00	OFF	OFF	OFF	OFF

	SPL/L	S/L PROG	LAYER	L PROG	SPLIT	S PROG	S KEY
SPL/L	OFF	-	OFF	-	OFF	-	-

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When it comes to new equipment you may have noticed that we don't say 'phone for best deal, POA, or ring for lowest price ever'. When you telephone us you will simply be quoted a good price. To be honest if you spend the afternoon on the telephone the chances are you will find someone somewhere who will undercut us by a pound or two. The difference at THATCHED COTTAGE is if your E16 breaks down on a Sunday morning or your drum machine blows up on a Bank Holiday Monday you CAN ring us, we'll be here and we WILL do something about it 18 hours a day 365 days a year. Have you ever needed help and advice outside shop hours? If you are serious about your music you will know that it is quality of service that makes the difference and at THATCHED COTTAGE it's only a phone call away!

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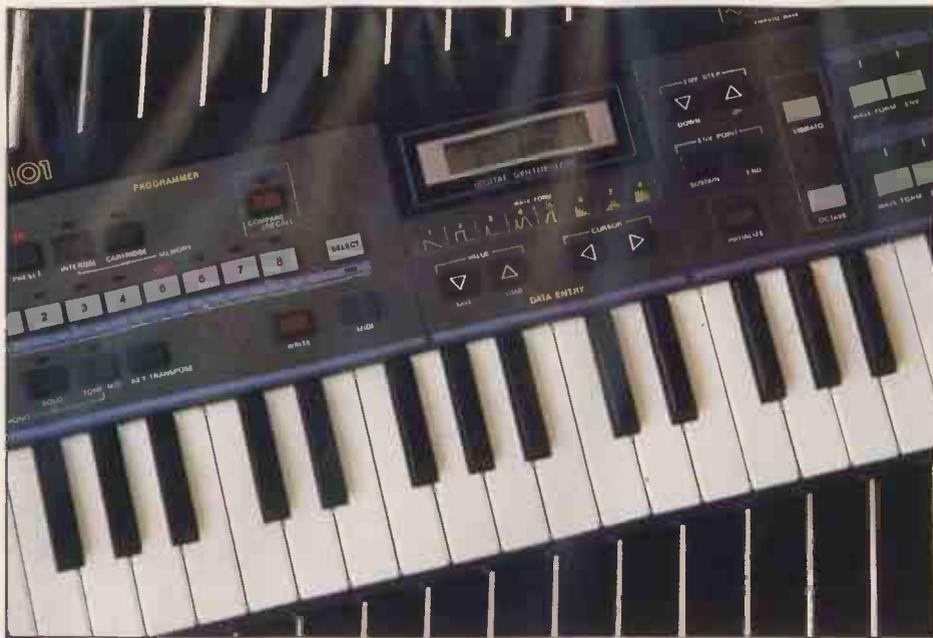
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Peter Brušeliđ, Sweden

No, we didn't understand the title either... 'Nasi Goreng' is a mixture of a distorted timpani sound at the bottom end and a Japanese stringed instrument higher up the keyboard. There's plenty of movement too, thanks to some tasteful detuning and vibrato effects, and though 'Nasi Goreng' has a strong Oriental flavour, it's still a pretty versatile sound. ■

PARAMETER

TONE NAME	CARTRIDGE NO.	TONE NO.
N A S I G O R E N G		

LINE SELECT (1,2,1-2,1-1)	MODULATION		DETUNE				VIBRATO				OCTAVE	
	RING	NOISE	+/-	OCTAVE	NOTE	FINE	WAVE	DELAY	RATE	DEPTH	+/-	RANGE
1+1'	ON	-	+	1	09	00	1	22	53	15		0

1

DCO 1

WAVE FORM	
FIRST	SECOND
3	4

	E N V (PITCH)								
	STEP	1	2	3	4	5	6	7	8
RATE	99	99							
LEVEL	73	00							
SUS/END		END							

DCW 1

KEY FOLLOW	(0-9)
4	

	E N V (WAVE)								
	STEP	1	2	3	4	5	6	7	8
RATE	99	10	10						
LEVEL	15	20	00						
SUS/END			END						

DCA 1

KEY FOLLOW	(0-9)
4	

	E N V (AMP)								
	STEP	1	2	3	4	5	6	7	8
RATE	99	30							
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SUS/END									

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Part 5: Take Control

Photography *Tim Goodyer*

Lexicon call it "Dynamic MIDI", ART call it "Performance MIDI", Korg call it "Multi Modulation". What all these names refer to is real-time control of digital reverb parameters by MIDI commands, and with the release of Korg's DRV2000 (reviewed elsewhere in this issue) such control is available at a lower price than ever before.

As you'll know if you've read our review, the DRV allows two parameters from each of its programs to be controlled in this fashion, with a single MIDI command for each parameter. You can choose from pitch-bend, aftertouch, note-on number, note-on key velocity, and any MIDI control changes from 0-96 – and that's a healthy choice.

Now, real-time MIDI control is ideally suited to keyboard players, and if you're one of those, this is a once-only, never-to-be-repeated opportunity to get into the world of "multi-modulation" without spending a penny on the reverb unit itself.

To stand a chance of winning the Korg DRV2000, £500 worth of digital reverberation with "multi-modulation" thrown in, we're asking you to concentrate on the performance aspect of the machine. We've selected three of the DRV's factory programs, and listed three of the parameters that make up each program. What we want you to do is select the two parameters from each program which you feel will be most effectively controlled by pitch-bend and aftertouch via MIDI.

Eyes down, then, and get the old musical imagination into gear.

1. Program 6: "Rev. inst."
 - (a) Early Reflection Level

- (b) Reverb Time
- (c) Output Level

2. Program 12: "Stereo Flanger"

- (a) Mod Depth
- (b) Feedback Gain
- (c) Left Channel Input Level

3. Program 16: "Reverb and Chorus"

- (a) Reverb Time
- (b) Mod Freq
- (c) Mod Depth

For each program, write down the two parameters you think would best benefit from MIDI control, together with the MIDI commands you would use to control them. For instance, if you think that for program 6, the E/R Level and Output Level would be best controlled by aftertouch and pitch-bend respectively, your answer for that section should read:

1. (a) aftertouch
(c) pitch-bend

Answers on a postcard only please, to: **Mission Impossible (Take Control), MUSIC TECHNOLOGY, Alexander House, 1 Milton Road, Cambridge CB4 1UY**, to arrive no later than second post on **Thursday, April 30, 1987**. Don't forget to include your full name, address and daytime telephone number. Multiple entries will be summarily despatched to the wastebin.

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

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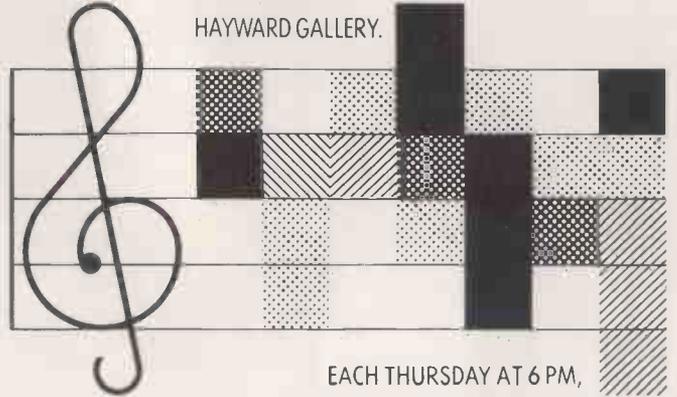
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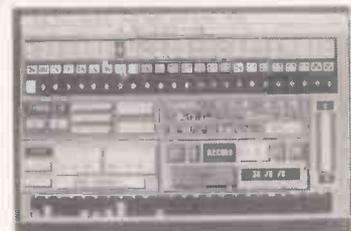
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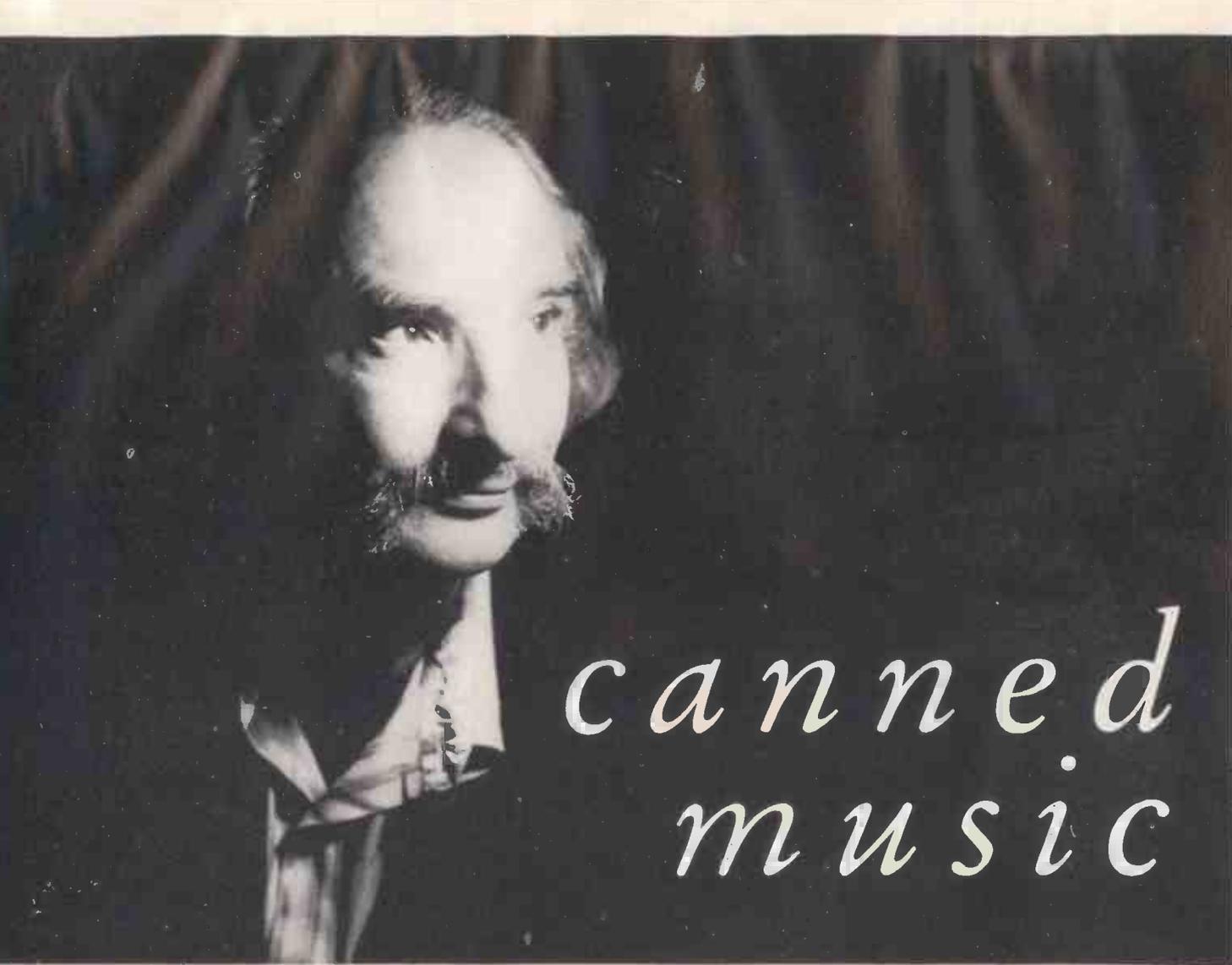
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canned music

Photography Tim Goodyer

What do a seminal German rock band of the '70s, short-wave radio recordings, and Pope John Paul II have in common? Answer: oddball musician Holger Czukay, whose new album is just out. Interview by Dan Goldstein.

AS THESE WORDS go up on the word-processor screen, five of the top six singles in the UK chart are either cover versions of old songs, or simple re-issues of records that date back more than 15 years. It's a sad state of affairs, and though this is neither the time nor the place to discuss all the possible reasons for its existence, there's simply no shying away from the fact that Nostalgia is the one dominant trend in today's popular music.

More people are buying old records, either because they remind them of their mis-spent youth, or because (in the case of record-buyers who are still busy mis-spending their youth) they allow them some insight into what young people got up to in earlier, more exciting times.

So whereas, in the late '70s and early '80s, it was fashionable for young musicians to assert that their main artistic goal was originality, today's equivalents are more likely to proclaim (loudly) that they are going back to their roots – jazz, blues, Merseybeat, psychedelia, punk...you name it.

One musician who hasn't, as yet, stopped claiming to be an original is Holger Czukay. And more than most of today's soundmakers, Czukay is a genuine individual. His clothes are thrown together with a refreshing lack of concern for co-ordination; his lifestyle seems anarchic and unrestrained; and his music stands

out like a beacon of originality in today's murky sea of repetition and, like I say, nostalgia.

Czukay is an eccentric, and probably always has been since he was born in Germany just before the Second World War. His first musical experience was singing chorales for American servicemen in exchange for Coca-Cola, after the War was over. He then progressed through a series of abortive attempts at tuition in music theory and composition, after which he saw playing live jazz as his only possible musical opening. He played guitar in a Dixieland band, continuing his studies in harmony, theory and basic composition under his own steam. The guitar remained his main performing interest, but he tried learning to play "as many different instruments as I could".

In the mid-'60s he secured a place studying composition alongside Karlheinz Stockhausen, an arrangement that lasted for three years until Stockhausen told Czukay he was "too intellectual" for him. So the pupil acquired pupils of his own, teaching music in a Swiss public school. The syllabus was classically-orientated to the exclusion of almost all else, but one member of Czukay's class – a young guitar player by the name of Michael Karoli – encouraged his teacher to listen to the Beatles and the Rolling Stones. Czukay did just that, and eventually joined forces with Karoli and other musicians to form a

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unique rock band, Can.

What set Can apart from the majority of rock outfits in the early- to mid-'70s was their emphasis on improvisation as a means of composition, and their willingness to accept new technology and incorporate its use into a method of production that ensured the band's sound remained "street", for want of a better term.

The various members of Can went their separate ways towards the end of the decade, with Czukay opting to make solo albums at the band's studio near Cologne. The first of these, *Movies*, was an unexpected cult success – for though Can boasted a loyal following among musicians, their music was never likely to enter the mainstream on its own account.

That success enabled Czukay to lead "a modest bachelor life", which was all he required to continue his work. Two further albums, *On the Way to the Peak of Normal* and *The East is Red* followed at the start of the '80s, and this spring, they are joined by another solo outing, *Rome Remains Rome*.

It's this new album that Czukay seems most eager to discuss as we sit in an unoccupied corner of Virgin Records' press office in London. He talks confidently, almost arrogantly, and he gives the impression of being pretty much set in his ways: his favourite expressions (his English vocabulary is excellent, his grammar nothing special) seem to be along the lines of "this is perfectly good" or "that would be absolutely stupid".

"It took me two years to produce this new album", he says. "That's a year-and-a-half of real work, and then some months of putting it into the cellar; it has to mature, like a wine. But in that two years, I actually produced four albums' worth of material. The rest of it is still in the cellar. I'm waiting until the time is right, until the world is ready for me to release it."

So Holger Czukay is more prolific than the level of his recent recorded output would suggest. He's also – in common with visionaries like Cage, Stockhausen, Eno and Zappa – as much concerned with the *process* of making music as he is with the music itself. The idea being, of course, that if you go about working in the right way, your work will ultimately benefit.

For Czukay, the most important part of his compositional process – which has hardly changed since Can days – is his own studio, a collection of ancient Telefunken M10 tape recorders and auxiliary valve equipment which forms a unique music "computer" with which Czukay obviously feels very at home...

"One of the things I hate most of all is writing music down. I really hate writing. It's something that went out of date 200 years ago. It makes a lot of sense, much as I condemn it. It means you have total data access; you tell the musicians exactly what you want them to play.

"But you don't *need* to do it at all. Today's technological systems make it possible for people who are unemployed to produce something, and you have total access to the data anyway – though not
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with computer systems, which have not progressed that far. But my system works like that.

"You could say that my system works like a stone-age system. But it is so effective and so fast, even the best computers cannot follow it. It's very simple. There are just four very reliable stereo tape machines, a good watch, and professional editing units – the kind of setup you'd find in a radio station, like a BBC studio.

"The difference between today's system and the writing system of 200 years ago – which is definitely a computer system of a sort – is that now you can hear the input data instantly; you don't need an orchestra, and most important of all, you don't need the unions.

"You are fully responsible for the end-product, and that's a good thing. I think people should feel responsible for what they're doing."

THINGS DO NOT begin, however, at Czukay's ancient and individual studio. Stage one takes place at Can Studio, a more conventionally equipped multitrack facility where he records his own instrumental playing (guitar, synth, French horn, or whatever) along with that of guest musicians. In the case of *Rome Remains Rome*, those musicians included Michael Karoli and Can percussionist Jaki Liebiezeit; ex-PiL bassist Jah Wobble; and an American broadcaster by the name of Sheldon Ancel, who provided much of the album's vocal content.

Most of what these people play is improvised, in the Can tradition, and the starting point for their ideas can be, as Czukay asserts, absolutely anything at all.

"My source can be anything. These days I have what you could call outside sources. *The East is Red*, for example, which is just a reworking of the Chinese national anthem, came about simply because one of the Chinese communist party leaders told the young people of the country that they shouldn't listen to western pop music, because it creates bad habits, makes people homosexual or whatever. A friend of mine asked me to listen to the Chinese national anthem to see if it had any elements of western rock music in it, and after listening to a lot of the world's national anthems (and especially those of communist countries), I realised that the Chinese anthem was the only one that had a real rock rhythm to it... I decided to make something good out of it.

"One of my most used sources is from the short-wave radio, or I could get inspiration from some kids. 'Hit Hit Flop Flop', on the new album, was just me going out to the beach and asking some kids to say 'Hit Hit Flop Flop'. I got them into the studio, tried to get them into the rhythm – which is quite difficult for kids of about ten – and recorded those words maybe 200 times. Of those recordings, you may have five which are usable. So the kids go home, and it's up to me to access the ▶

► data and decide which of them is good.

"What I like, practically speaking, about working with other people, is letting people do just what they want to do. I don't want to get another musician into the studio and say 'do this' or 'do that'. I like to set up an atmosphere that enables somebody else to do something that suits us both. And then he can make as many mistakes as he wants... And after that, he can go home. Then it's up to me to access the data he has input, and start working everything out."

And it's that stage, the "working out", that takes place on Czukay's venerable Telefunken. As he's mixing, processing, remixing and re-recording, however, he has no particular goal at which to aim, nor any pre-conceived notion of what he may be able to achieve.

"I never allow myself the luxury of having pre-conceived ideas. Because if you have those ideas, you have to follow them through to a certain extent. You tell me: how can you be spontaneous if you have to follow some kind of pattern? Your hands are tied. You should make music clearly, freely, and with plenty of life. Then start thinking about what you have done, and what you may do with it.

"I start questioning my music after it has been created. And the system I have with these machines enables me to question everything I do. Let's say I have a guitar solo, 20 of them. I can do 20 different mixes, make notes about them, and then make the final mix as a result of listening to all of them.

"At this stage I still have no idea of what I am going to do. It's important to start off with a completely empty head. This time, the last thing I put down was the voice of Sheldon Ansel. He is a radio announcer for the Voice of America in Germany. He's someone who has musical talent, but who was completely inexperienced at making music. He integrated perfectly, even after all the rest of the mixing was done. It was only then that I thought about having a singer at all, not before."

But if Czukay starts out on his road to composition without any ideas, how does he know when he's finished?

"Quite simply, when I have no more questions to ask. And actually, that's something that happens quite quickly. You find that you have done a load of recording and mixing and processing, and suddenly, that's it – no more questions spring to mind.

"So you have your finished product, though you can do a counter-check – which is to listen once again to everything that you've thrown away, and compare that with your finished product. Do that, and you soon start asking questions again.

Which is all very fine and cosy and intellectually satisfying, but not, all in all, terribly democratic. This is just Holger Czukay, remember, taking the work of other musicians, and blending it with his own until he is satisfied with the result. Doesn't he ever ask anyone else's opinion?

"Oh yes, always. I have one golden rule, which is: 'I am the Lord my computer, and I shall have no other God but me'. That's

while I am actually in the process of recording and mixing and processing.

"But then, when I have my finished product, I always get other pairs of ears to listen to it. That can take another month or two, to play the music to other people, to get their opinion, to feel what they feel, and to go back into the studio and ask yourself: was he right about that?

"When that is over, you can say for the first time that your product is ready for the public. Not before."

WELL, HOLGER CZUKAY obviously didn't ask *this* member of the public for his opinion of *Rome Remains Rome* before declaring it a finished product. For although it contains the germs of several great ideas and offers a couple of real gems (more of which later), the overall sound is confused, fragmented, and altogether too deliberately "whacky" to really succeed. On this album, it seems, Czukay is wearing his eccentricity very much on his sleeve.

The first gem of a track is 'Blessed Easter', a sleazy, downbeat rock instrumental, overlaid with a recording of Pope John Paul II singing his Easter greeting to the world, backwards, forwards, and in a variety of different languages...

"The Pope just appeared on the television one day", Czukay recalls. "I was listening to him, and I suddenly realised what a good singer the Pope really is. I heard that he had actually done some concerts in Germany that were a terrible flop, but that he was selling a lot of records. It suddenly became obvious to me that all he needs is a good band. So I decided to help him, and provide a band of my own creation."

After 'Blessed Easter' comes the second gem, 'Sudetenland' – a more anarchic track that laces cuts from 4AD's *Le Mystere des Voix Bulgares* (an album of Bulgarian vocal music released in the UK last year to considerable critical acclaim) in and out of some wild percussion-playing and Jah Wobble's nonsense vocal wittering. Curiously, Czukay denies taking the Bulgarian voices direct from the disc.

"That track happened the other way around to 'Blessed Easter'. We were creating a rhythm without really knowing anything about where it was going or what we were doing. And suddenly, on the short-wave radio, there were the Bulgarian voices, just waiting to fit in.

"The voices are chopped about and edited an awful lot. Then again, on the other hand, you have to retain a form that is understandable, and so they are totally in synchronisation all the time. The rhythm we created was quite complex, but that is one reason why these Bulgarian voices fitted so well. The Balkan people are born rhythm-makers, as are the Turkish people. Everyone says rhythm was born in Africa, with the drums and so on, but actually the Africans got it from the Arabs."

For the rest of the album, Czukay seems content to pursue two themes that have
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pervaded his work since before the premature death of Can. The first is his preoccupation with traditional polyphony (by which several melodies are interweaved in the classical tradition to create chords, rather than block chords being created on one instrument), and the second is his assertion that rhythm, not melody, is the key to successful music.

"Rhythm is a digital language, like a morse-code language", he says. "It does not require great frequency-response for people to understand it. You can broadcast it over a telephone line, which is one of the worst sound systems there is, and it can be understood perfectly at the other end. It can pass through all systems.

"That's why people can latch on to a groove easier than they can latch on to a melody; the groove is easier to communicate. You can have rhythm without melody and it is still understandable. You can have melody without rhythm, also, but as soon as you create melody without a groove, you start to lose the gift of making music."

CLEARLY, THOUGH, THIS particular composer isn't about to lose the gift of making anything. At the time of our meeting, his much-publicised collaboration with David Sylvian was due to be extended to include a separate album release (the material is already there, according to Czukay), while on a slightly bigger scale, Karoli, Liebezeit

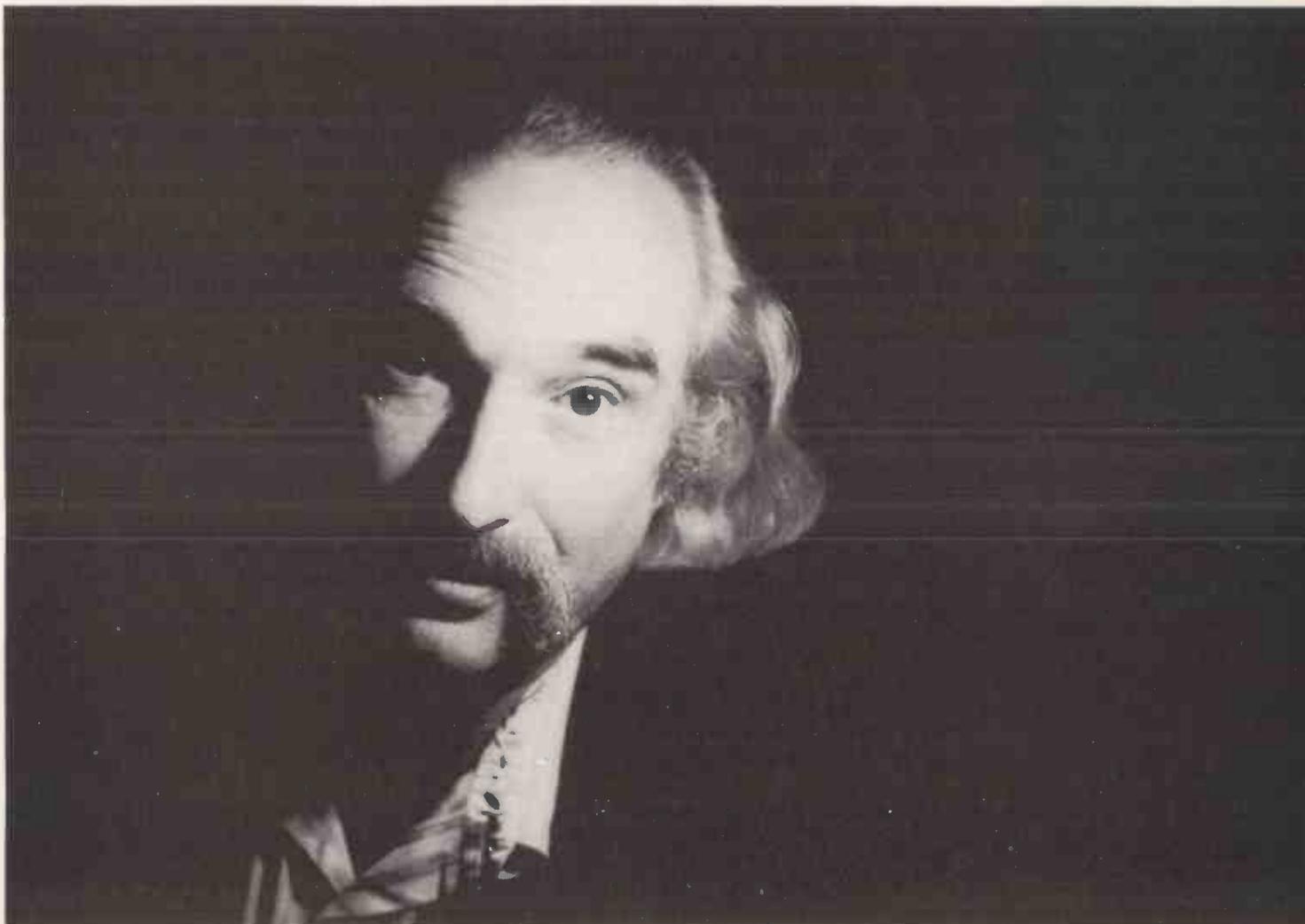
and company are preparing for a Can reunion, which should also result in some vinyl output before too long.

Busy and influential he may be, yet Holger Czukay isn't about to invade the singles charts I mentioned at the start. Alas, his brand of music is simply too idiosyncratic to make the national airplay listings, even if small groups of musicians mutter quietly about every note he plays.

"Of course I am never going to be communicating to a mass audience. I see no point in making any concessions towards that; it would be completely stupid. On the other hand, it would also be very stupid for me to say that I am making my music only to satisfy me, and that nobody else could understand it because it was very personal to me.

"But one of the great fallacies of the rock business is that people who have hit records think they are influencing a lot of people. If somebody has a No. 1 hit record in the UK and the record sells two million copies, then what is two million people against the five *billion* there are in the world, or the one billion that there are just in China?

"My music lasts longer than most hit records, it gets better with each play, and my music stays with me. I am just as capable of making music now as I was 15 or 20 years ago. Many superstars have just one or two years when they can make music, then the pressure gets too much and suddenly they can't do it any more. I have the luxury of knowing that will never happen to me..." ■



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CASIO CZ1000 exc cond, home use only, boxed with manuals, 6mths warranty, £275. Don ☎ (0493) 669109.

CASIO CZ1000 perfect cond, as new, swap for £295, Juno 106 or DX27. Simon ☎ (066 33) 2827).

CASIO CZ1000 polysynth, mint cond, under guarantee, £260 or swap for disco equipment. Simon ☎ Bournemouth (0474) 323835.

CASIO CZ1000 good cond, with RAM cartridge, £300. Dean ☎ Bournemouth (0202) 517538.

CASIO CZ101 home use only, with adaptor and manuals, vgc, £165. Simon ☎ 021-355 2519, Birmingham area.

CASIO CZ101 exc cond, psu, RAM cartridge, leads, manuals, bargain at £190. Can deliver. ☎ Watford (0923) 43362.

CASIO CZ101 synth, boxed, with manuals, £165. ☎ Stafford 46059.

CASIO CZ101, £150. Korg EX800 £150. Washburn DDL £150. All perfect, £400 the lot! Jimmy ☎ Edinburgh 031-556 4936.

CASIO CZ101 custom hard case, psu, £225. CZ230S, psu, £195. Both mint cond. ☎ Wirral 051-648 3607.

CASIO CZ101 manuals, boxed, £200 or swap FB01 or TR505. Gordon, 124 Chelston Avenue, Yeovil, Somerset BA21 4PR.

CASIO CZ230S 100 preprogrammed sounds, programmable drum-machine, full MIDI, £270 ono. Elka Strings £120 ono. Tej ☎ (0203) 412643, eves.

CASIO CZ230S 2mths old, boxed, manuals; p/x for CZ101 or CZ1000 and cash, or £270. ☎ (0324) 23589.

CASIO CZ3000 mint cond, 7mths old, boxed with manuals, £350. Simon ☎ (0280) 813758.

CASIO CZ3000, 8mths old, boxed, £330 ono. Tim ☎ Rugby (0788) 810158.

CASIO CZ3000 boxed, guaranteed, bargain, £285. Yamaha DX9, exc cond, £295. John, 4 Alma House, Ashton Road, Lancaster.

CASIO CZ3000, £325. QX21 £215. Both boxed, immac. Tascam 144 £280. Wanted: Bit 99 poly. ☎ (0257) 452303.

CASIO CZ5000, £490. Yamaha DX100, £260. Both boxed, immac, many extra voices. ☎ Bournemouth (0202) 690740.

CASIO CZ5000, 2mths old, vgc, 8-tr sequencer in-built, £550. Tim ☎ 021-354 5748.

CASIO CZ5000 perfect, swap or p/x for touch-sens MIDI synth, anything considered. ☎ 061-226 3434 (leave name & number).

CASIO MT70 poly kbd, psu, £95. Casio

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MT31 poly kbd, hard case, £45. ☎ 01-399 8084, after 6pm.

CLEF PIANO, £70. Piano kit, £195. Roland HP70, chrome stand, £300. Yamaha PSR70, new, boxed, £495. ☎ (062 84) 5583.

CRUMAR ROADRUNNER electric piano, £90 ono. Roland MC202 Micro-Composer, £90. ☎ 01-659 5225.

CRUMAR STRATUS dual oscillator polysynth, layerable organ, £175 or swap CZ101. Write: N Ashton, 18 Mason Street, Blakenhall, Wolverhampton.

CRUMAR TRILOGY polysynth, fat analogue sounds, £295 ono or swap for smaller polysynth (cramped university space). Richard ☎ Doncaster (0302) 700404.

ENSONIQ ESQ1 or p/x for older piano or synth with good acoustic sounds. Offers? ☎ Tyneside 091-266 8295, anytime.

ENSONIQ ESQ1, £999. Casio CZ1000 £249. Akai MG614 £899. Roland TR505 £239. Alesis Microverb £229. Will deliver. ☎ (0948) 2230.

FENDER RHODES Stage 73 piano, superb sound and very light action, Inc Tynes, oa £200. ☎ 01-788 3729.

HAMMOND ACETUNE GT7, same as X5, portable organ with bass pedals, £250. Barry ☎ 01-807 6041, after 6pm.

JEN programmable analogue polysynth, 5-oct kbd, 64 memories, sequencer, good cond, £180. ☎ (0909) 477802.

JVC KB700 stereo kbd Compucorder, auto rhythm, solo synth, orchestra set, first class cond, £350. ☎ Letham (Angus) (0307 81) 670.

KORG DELTA poly, £220. Moog Source, monosynth, £190. Tascam Porta One, £250. All good cond. ☎ 041-634 1027.

KORG DELTA polysynth, good cond, £170 ono. Marshall 100W master volume bass amp, £135. ☎ Manchester 061-969 8275.

KORG DW6000 mint, boxed, guaranteed, £390. Write: Daren Horley, 3 Sandringham Road, Rainham, Gillingham, Kent, ME8 8RJ.

KORG EX800 synth expander, psu, leads, data tape, £180. Vox AC120 combo 120W, 2x12", £250. David ☎ 01-555 8126.

KORG EX8000 (DW8000) MIDI synth module, £600. Also Yamaha MCS2 MIDI Control Station, £100. Geoff ☎ Brighton 461610.

KORG POLY 61 cased, £425. Drumatix £75. Fender Bassman 100W, £150. Vox Continental MkII, offers? ☎ 01-482 5920, 01-341 9325.

KORG POLY 61 synth, £250 ono. Roland SH101, psu, £100. Korg KPR77 beat box, £80. ☎ Halifax 883025.

KORG POLY 800 mint, soft case, psu, cassette, rechargeable cells, £300 ono. ☎ Guildford (0483) 576680.

KORG POLY 800 reverse, boxed, £280. ☎ (049 46) 4692, eves.

KORG POLY 800 plus stand, exc cond, boxed, £275. Vesta Fire DDL pedal, stereo, boxed, £80. Ian ☎ (0223) 861676, days.

KORG POLY 800 MkII vgc, home use only, £400. ☎ Andover, Hants (0264) 55231.

KORG M500 Micro Preset synth, 30 presets with variable attack, sustain, portamento, vibrato & mod, £70. ☎ (0635) 43159.

KORG MONO/POLY with chorus, FX built-in, £185. Dean ☎ Bournemouth (0202) 517538.

KORG MONO/POLY good cond, no manual, offers? Mark ☎ Medway (0634) 362706, after 7.30pm, Mon-Fri.

KORG MS10 vgc, £90 ono. ☎ Streatham 01-769 8018, after 7pm.

MOOG MINIMOOG with interesting history, £350. Casio 1000P poly kbd, £120. Trucker guitar amp, £75. Pete ☎ (088 32) 2282 (Surrey).

MOOG POLYMOOG synth with poly-

pedal controller, stand and f/case, vgc, offers? Steve ☎ 01-241 1585.

MOOG PRODIGY monosynth, manual, £100. Roland SH101 monosynth, manual, £90. Both exc cond. ☎ Hereford (0432) 77569.

MOOG PRODIGY 2VCO monosynth, £100 or p/x for MIDI synth/expander. Wanted: Akai S612/MD280 sampler. ☎ Darlington (0325) 466826.

MOOG ROGUE monosynth, ideal for bass sounds, mint, sensible offers. Bruce ☎ (0234 82) 2313.

OBBERHEIM synth, 8 memories, CV/Gate but powerful lead/bass sounds, £250. First-man (step) sequencer/synth, 8 programs, £75. ☎ (0602) 411 185.

OBBERHEIM OBXA exc name, exc cond, + Bulldog full f/case, delivery possible, £950 ovo. ☎ (0452) 71 3883.

ORGAN electronic, double kbd, pedals, roll-top, lockable, exc cond, handsome furniture piece, £295. For details, ☎ Henlade 433088.

ORLA P21-A organ, a few key contacts need cleaning, £50 ono. Wanted: rlng modulator. Carey ☎ 091-584 4141.

OSCAR monosynth, 6mths old, hardly used, home use only, £280. Angus ☎ Carnoustie, Scotland (0241) 54780.

OSCAR latest MIDI, X-stand, leads, manual: swap for your TX7. ☎ Southend (0702) 367075, days.

ROLAND HP2000 SAS piano, 2mths old, boxed, must sell, £925. Gary ☎ 01-856 4210, 6-7pm.

ROLAND HP70, 76 note, 2 piano, 2 harpsichord voices, stereo chorus, pedal, perfect cond, £395 ono. ☎ Dorking 889913.

ROLAND HP70 piano, 76 note, touch-sens, immac cond, £300, no offers. ☎ Hayling Island (0705) 465702.

ROLAND ALPHA JUNO 1 polysynth, absolutely exc cond, brand new, programmable memory, up-to-date MIDI, £375 ono (deliver). Colin ☎ 091-267 5222.

ROLAND ALPHA JUNO 2 mint, as new, home use only, £600. Nick ☎ (0977) 513386 day, (0532) 892253 eves.

ROLAND ALPHA JUNO 2 good cond, still boxed, £600 or p/x with DX7 or Mirage. ☎ (045 74) 64649.

ROLAND ALPHA JUNO 2 semi-f/cased, £675. Oval 200W stereo power amp, £175. ☎ Brighton (0273) 592447.

ROLAND ALPHA JUNO 2 with f/case, exc cond, hardly used, £650. ☎ (0632) 662721.

ROLAND JX3P with PG200 programmer, aluminium f/case and stand, vgc, £395. Dave ☎ Hornchurch (04024) 44352.

ROLAND JX3P inc PG200 programmer, £375. Yamaha MT44D recorder £225. Both in top cond (boxed). ☎ 01-300 0827.

ROLAND JX8P vgc, with stand, and leads, manuals, still boxed with guarantee, £850 ono. Jonathan ☎ (040 481) 2264, eves.

ROLAND JX8P immac cond, £750 ono. Peavey KB300 amp, £200 ono. Chris ☎ (0202) 671821 work, (0202) 685634.

ROLAND JUNO 106 absolutely perfect cond, comes with sounds catalogue, quick sale, therefore £480. Chris ☎ (0707) 56550, eves only.

ROLAND JUNO 106, £425 (+ f/case £50). E-mu Drumulator £275. OSCar (MIDI) £325. All as new, manuals, ono. Steve ☎ 061-336 0366.

ROLAND JUNO 6 + case, £260; SH101, PSA240, MGS1, boxed etc, £130; Moog Rogue £100. £450 the lot. Don ☎ 031-441 3948.

ROLAND JUNO 6 immac, with box and instructions, £299. Chris ☎ (0252) 29703.

ROLAND JUNO 60 with sequencer unit, 4-ch digital recorder, £475. ☎ West Harptree (076 1) 221632.

ROLAND JUNO 60 programmable poly-

synth, home use only, £370 ono. Lenny ☎ 01-437 5099.

ROLAND JUPITER 6 mint cond, latest MIDI update, £725 ono. Selling due to house purchase. John ☎ Doncaster (0302) 329309.

ROLAND JUPITER 6 vgc, with hard case, MIDI, EPROM update, floating split, memories, £625 ono. Steve ☎ (0254) 774554 (Lancs), anytime.

ROLAND JUPITER 6 f/cased, immac, £600 ono. Yamaha PF70 f/cased, mint, £750 ono. ☎ 061-224 4796 anytime.

ROLAND JUPITER 8 vgc, £899 ono or p/x sampler. Marc ☎ Plymouth (0752) 550401, anytime.

ROLAND SH101 monosynth, exc cond, with case, £130. ☎ Southend 351026.

ROLAND SH101, Toshiba music computer system, Synsonics drums, tape deck, all boxed, £500 agc. Richard ☎ Medway (0634) 660478.

ROLAND SH101 monosynth + Boss psu, manual, boxed, vgc, £100 ono. ☎ Hornchurch (04 024) 54418.

ROLAND SH101 grip, psu, boxed, manual. Also Synsonics. Reasonable cash offers for either. Jay ☎ (023 57) 65056, eves.

ROLAND SUPER JX10, f/case, stand, guaranteed, offers over £1300. Clive ☎ 051-733 5933.

ROLAND VOCODER PLUS classic choir sounds, good analogue strings and vocoder. £400 plus carriage. ☎ (0437) 66991, after 6pm.

SCI MULTITRAK good cond, manuals, etc, nice Prophet type sounds, £475 ono. ☎ (0256) 58053.

SCI SIXTRAK plus f/case, good cond, £300 ono. Philip ☎ 041-334 3689.

SCI PRO ONE monosynth, mint, with f/case, can deliver, £150 for quick sale. ☎ 061-728 1411.

SCI PRO ONE home use only, £120. Monst 512 ROM for DX7, £130. ☎ Rayleigh (0702) 741413.

SCI PRO ONE unrigged, £175 ono. Zog ☎ 01-736 1050.

SCI PRO ONE, £170. Korg Poly 800, £270. Alligator 120W kbd, bass, or guitar combo, £150. All vgc. ☎ 01-892 7938.

SCI PROPHET 5 (Rev 2) plus remote kbd, brilliant live! Both in vgc, offers around £750 or p/x DX7/Casio CZ1/any sampler. ☎ (0758) 61 3721.

SCI PROPHET VS digital synth, brand new, boxed, immac, offers around £1700. Paul ☎ 01-884 0474.

SCI SIXTRAK w/case, £325 or p/x for MultiTrak synth. Also Crumar Compac piano, £75. ☎ 01-223 1857.

SCI SIXTRAK, £300 ono. Korg DDM110 £100 ono. Good cond. Tony ☎ (0274) 390329, after 6pm.

SCI SIXTRAK, £280. 64 sequencer and 910 software, £50. Roland TR909, £230. All as new. ☎ Doncaster (0302) 61672.

SIEL DK80 touch-sens, ROM, programmable pedals, full MIDI, split kbd, sequencer, manual, boxed, exc cond, £375. Dave ☎ 01-531 9824.

SIEL ORCHESTRA (Arp Quartet equivalent) strings/brass, etc. Good cond, £100. Four 8038 function generator ICs, £3 each. ☎ (0785) 21 1462.

SWAP MIDI OSCAR for Drumulator, Drumtraks, 244 or RX11. Consider other swaps. Ian ☎ Southampton 778276 eves, Sun.

SWAP PROPHET T8 MIDI, f/case, beautiful synth, big, powerful. WHY or sell £950. Jeff ☎ (0642) 561254.

SWAP SCI SIXTRAK for JX3P or DX9 in good cond. Andrew ☎ Birmingham 353 4580. Please!

SWAP ROLAND JX3P and MIDI OSCar for DX7, JX8P, DW8000, Jupiter 6/8, or offers. Ian ☎ Southampton 778276, eves, Sun.

SWAP ROLAND SH101 hard case, psu,

+£120 cash for Casio CZ1000. ☎ Cradley Heath 61425 (West Midlands).

SWAP TASCAM Portastudio for MIDI polysynth, good electronic piano and/or accessories (deliverable). ☎ Plymouth (0752) 269191.

SYNCLAVIER Now I have your attention, someone please buy my Korg Poly 61, boxed, immac, £280 ono, or swap OSCar MIDI. ☎ Leicester (0533) 776322.

VOX CONTINENTAL for the real '60s sound, £100 ono. ☎ Shropshire (05885) 329.

YAMAHA CP30 touch-sens stereo electric piano, c/w Sunn 50W combo, £200. ☎ Brighton (0273) 557557.

YAMAHA CS50 synth, good cond, reason for sale, any offer considered. Graham ☎ (04302) 2700.

YAMAHA CS70M polysynth, 4-tr sequencer, 32 memories and memory cards, exc cond, £485 ono. Will consider swaps. ☎ (0943) 72783.

YAMAHA DX100, VSS100+, Jen SX1000, Fostex X15, £305, £115, £59, £195. P/x OSCar etc. Pete ☎ (0382) 738089, after 5.30pm.

YAMAHA DX100 psu, boxed, home use only, good cond, £270 ono. Giles ☎ (0833) 31153, eves.

YAMAHA DX100, boxed, £245 ono. Roland TR505 drum m/c, boxed, £200. Korg DW6000, semi-f/cased, £350. ☎ (05645) 3862.

YAMAHA DX21 boxed, £500. QX21 £200, as new, would swap for DX100 plus case. ☎ Petersfield (0730) 66815 (Hampshire).

YAMAHA DX21 hard f/case, extra sounds, vgc, £500. ☎ St Albans (0727) 57525.

YAMAHA DX21, 1yr old, immac, boxed plus manuals, home use only, £500 for quick sale. Geoff ☎ (09904) 4199 (Staines).

YAMAHA DX27 case, footswitch, exc cond, £300 or swap CZ1000. Dave ☎ 01-254 8069.

YAMAHA DX7, TX7, Boss CE3 stereo chorus, Ohm kbd combo, stand, £1200 cash only. ☎ High Wycombe (0494) 26960.

YAMAHA DX7 case, 2 cartridges, £900. Yamaha PF15 piano £550, case £50. Dave ☎ Brighton (0273) 685669.

YAMAHA DX7, CZ5000. Both immac, £875 and £475 onos. Ade ☎ 051-734 4983, after 5pm.

YAMAHA DX7 perfect, exchange for Ensoniq ESQ1. ☎ Wakefield (0924) 366754.

YAMAHA DX7 immac, boxed, home use only, ROMs, stand, leads, £800 ono. QX7 sequencer £175. Could deliver. ☎ (07456) 2006.

YAMAHA DX7 never gigged, exc cond, pedal, manuals, many voices on print, quick sale £775. Gary ☎ Portsmouth 732146.

YAMAHA DX7 obsessively cared for, £800. ☎ Southend 587984.

YAMAHA DX7 plus ROMs, £750. ☎ (09277) 66664.

YAMAHA DX7/TX7 expander with original ROMs/RAM1, sustain pedal, breath controller, latest MIDI retrofit. ☎ Bristol 741256, eves.

YAMAHA DX9 digital FM synth, great sounds, f/case + extra 220 sounds, £350, can deliver London. ☎ 01-474 2886.

YAMAHA DX9 aluminium f/case and manual, £420. Korg EX800 £150. Roland SH101 monosynth £130. Huw ☎ (0248) 78620.

YAMAHA DX9 home use only, plus data tape, manual, £330. ☎ Liverpool 051-526 2178.

YAMAHA DX9 boxed, brand new, mint cond, with stand, £399 ono. ☎ 01-385 4193, eves.

YAMAHA FB01 with case, £220. KX5 £100. As good as new. ☎ (0473) 718062.

YAMAHA KX88 master kbd, f/cased, excellent, oa £850. Paul ☎ 01-884 0474.

YAMAHA PF15 electric piano, 88-keys, piano feel and action, ten superb voices, built-in speakers, £540 ovno. Dave ☎ (0273) 685669.

YAMAHA PF15 bargain, £500. Chris ☎ 01-226 2726.

YAMAHA PSS5 stereo kbd plus adaptor, soft case, boxed as new, £325 ono. Paul ☎ 01-444 9733.

YAMAHA PS6100 FM kbd with drums

and 4-tr recorder, boxed, exc cond, £600 ono. ☎ 01-759 1543 (Heathrow).

YAMAHA PS6100 kbd, MIDI, 64 PCM programmable rhythms, FM sounds, 4-tr music programmer, digital solo/orchestra, immac, £550 ono. ☎ 01-991 0060.

YAMAHA PSR40 kbd with carrying case, hardly ever used, very extensive accomp section, offers invited. ☎ 061-980 6140.

YAMAHA PSR60 case, manual, good cond, £350 to £400. Alan ☎ Southampton (0703) 768307.

YAMAHA PSR70 exc cond, MIDI PCM drums, sequencer, a gift at £450 ono. Brian ☎ Carterton 843203.

YAMAHA TX7, £325; S612 + disks, £495; Roland MKB300, £325; RX15, £275; RX21L, £145; Tascam 34, £525; Promark MX3, £345; Akai GX400D, £75. ☎ Salisbury 710650.

YAMAHA TX81Z absolutely mint, used for two weeks software writing only, offers around £380. ☎ 01-788 3729.

ZLATNA PANEGA ACS100 thought control add-on (as reviewed E&MM 4/84), c/w MIDI retrofit. Home use only, never gigged, genuine reason for selling (not kosher). Offers? Igor ☎ Bulgaria 0-10 (359 32) 329837

Sampling

AKAI S612 + disk drive, boxed, perfect cond, month's quarantine remaining, superb quality samples, £495. Ian ☎ (0223) 861676, days.

AKAI S900 digital sampler, absolutely brand new, in sealed box, £1500. ☎ (0763) 81356.

AKAI X7000 sampling kbd, plus approx 30 disks, 3wks old, exc cond, £895. Paul or Sean ☎ (0235) 26598.

BOSS SAMPLING DELAY 2wks old, inc psu, £170 ono. Yamaha 8:2 stereo mixer, built-in echo. £110 ono. ☎ (0926) 36668.

CASIO SK1, 5mths old, boxed, psu, perfect, £55. The Kit electronic drums, perfect, £23. ☎ (07462) 2971 (Shropshire).

ELECTRO HARMONIX digital sampler, plus trigger, plus SCI Pro One (used as controller), both immac, £425 ono. ☎ (0491) 34894.

ELECTRO HARMONIX Super Replay, 4secs, loct, CV/gate control, £230. Yamaha E1000 analogue delay, £99. ☎ 01-446 3098.

ENSONIQ MIRAGE, 7mths old, little used, mint cond, 10 disks, MASOS etc, £925. ☎ (0306) 885968.

GREENGATE DS:3, MIDI interface, Apple IIe, monitor, twin-disks, keyboard, Syn1, DDL looping, 6 DX7, extensive library, £1400 ono. Mr Williams ☎ Manchester 061-236 8002.

GREENGATE DS:3 Apple IIe system, £800. Casio CZ3000 £400. SCI MultiTrak £450. Roland 700+ modular £2800. ☎ (0239) 711032.

GREENGATE DS:3 MIDI, Apple II Euro-plus, dual drives, monitor, looping, DDL, samples, £700 or will split. ☎ 01-237 0837.

GREENGATE DS:3D Apple IIe, monitor, dual drives, MIDI, performance keyboard, latest software (looping, DDL etc), sound library, £1250 ono. Demo poss. Steve ☎ 061-336 0366.

GREENGATE DS:3 inc Apple IIe plus accessories, MIDI, keyboard and disks, £700. James ☎ (0792) 202027, after 6pm.

POWERTRAN MIDI-controlled sampler and DDL, £300 ovno. Korg DDM110, separate outputs, £100. Both perfect. ☎ 01-6737194 or (06053) 2548.

PROPHET 2000/2 owners wanted to swap disks. ☎ (0706) 50897.

ROLAND S10 sampler, 4mths old, under guarantee, 32 sounds on disks, as new, £840. ☎ (0634) 404050, anytime.

SCI PROPHET 2000 f/cased, immac cond, with disks plus tapes, £1300. ☎ Brighton (0273) 565370.

SCI PROPHET 2002 512K and ten blank discs, brand new, fully guaranteed, £1395. ☎ (0703) 787122.

YAMAHA VSS100 exc cond, with sampling cassette, £100. Casio CT1000P kbd, £50, or £125 for both. ☎ (0795) 21310.

Sequencers

CASIO SZ1 MIDI sequencer, psu, manual, good cond, for quick sale (no offers) £125. ☎ 01-221 7072.

CASIO SZ1 3mths old, under guarantee, £200 ono. Giles ☎ 01-304 4898, after 6.30pm.

CASIO SZ1 sequencer, boxed as new, exchange for new Casio SK1 sampler. ☎ Southend 351026.

CASIO SZ1 4-tr MIDI sequencer, £140 ono, immac cond. ☎ (055 385) 497.

CASIO SZ1 psu, cartridge, as new, £135. ☎ (0532) 787953.

CASIO SZ1 boxed, psu, exc cond, £130. Chris ☎ (0606) 594775.

ROLAND MC202 MicroComposer with manuals, £90. Yamaha DX7 video "Getting Started", £7. Robert ☎ WGC (0707) 326704.

ROLAND MC202 sequencer, £80. ☎ (0795) 530296, after 6pm.

ROLAND MC202 manuals, psu, £85. (£105 inc 32 waveform Digisound VCDO), home recording only. Jon ☎ Southend (0702) 332323, eves.

ROLAND MC4B MicroComposer; MTR100 data recorder; OP8 DCB interface; extraordinary music computer system, £350. ☎ 01-703 9309.

ROLAND MSQ100 MIDI digital sequencer, as new, boxed, £190. ☎ 01-291 7519.

ROLAND MSQ700 perfect cond, £350 ono. Oberheim DMX drum/machine, as new, £800 ono. Dave ☎ (0767) 291994.

ROLAND MSQ700 as new, £350. ☎ Downland (07375) 56110 (Croydon).

ROLAND TB303 Bassline, boxed, hardly used, hence £75. ☎ 01-871 2685, after 7pm.

YAMAHA QX21 two-tr MIDI sequencer, boxed, £210. ☎ (049 46) 4692, eves.

YAMAHA QX21 sequencer, bargain buy, immac cond, home use only, £170. ☎ (0842) 2607, after 7.15pm or weekends.

YAMAHA QX21 boxed and guaranteed, only £175. Roland TR505, psu, £195. John, 4 Alma House, Ashton Road, Lancaster.

Drums

BOSS DR110 perfect cond, case, boxed, £70. ☎ 021-552 1049.

BOSS DR110 programmable drum m/c, vgc, boxed, manual, great LCD display, £55. ☎ (0706) 41158.

BOSS DR110 new, boxed, ungigged, with lead, £65. Alan ☎ (0452) 27213, eves.

BOSS DR110, £65. Yamaha SFG01 £30. Casio MT40 £40. Casio VL Tone £10. Steve ☎ (0203) 450135 (Coventry).

BOSS DR110 drum m/c, manual, case, vgc, £60. Steve Drapac ☎ 01-743 9313, days.

BOSS DR55 drum m/c, £25. Tony ☎ Leeds (0532) 741655, after 6pm.

EIGHT PIECE Pearl kit, cased, plus hi-hat cymbals, roto-toms, £500 or swap for DX21. Steve ☎ (0279) 30466.

E&M SYNDROMS full kit, 8 modules in rack with psu, £100 inc free Amdek drum m/c. Bill ☎ Knowle 78488.

E-MU DRUMULATOR, £275. Synsonics £25. OSCar, £325. Roland Juno 106, £425. Cond as new, manuals, ono. Steve ☎ 061-336 0366.

E-MU DRUMULATOR 2, 64 song, must sell due to non-MIDI compatibility, £150 ono. ☎ 01-609 9507.

£50 FOR a digital drum machine: MFB512, nine voices, individual outputs, Inc leads. Andy ☎ (0935) 76441.

KORG DDD1 drums, 3mths old, cost £800. Sensible offers please. (Plus DX7/TX7, see Keyboards) ☎ Bristol 741256, eves.

KORG DDM110 and Roland M202, £180 ono. Will split, both boxed as new. Terry ☎ (0405) 69461, eves.

M&A K2 electronic kit, 2x bass drum, 6x tom brain (c/w micro-sequencer), hi-hat, pedal, cases, stands, extras, £375 ono. ☎ Doncaster 857970.

MPC PERCUSSION COMPUTER, Spectrum interface, trigger box, £120.

QX7 MIDI sequencer, immac cond, £180. ☎ (0283) 33458.

BERHEIM DX tuning, separate outputs, immac, £595. Roland TR505, boxed, £225. Accessit Compressor, £25. ☎ (0342) 23094.

ROLAND PAD-8 OCTAPAD, very little home use only, great machine, £300. ☎ 01-868 0331.

ROLAND CR78 CompuRhythm, £80. Chris ☎ 01-226 2726.

ROLAND TR606 Drumatix, separate outputs, soft case, manual, £90. MC202 boxed, sync leads, exc cond, £95, both £170. ☎ (0909) 477307.

ROLAND TR606 Drumatix and Prelude digital sound module with snare chip, all for £110. ☎ 01-720 3383.

ROLAND TR606 Drumatix, exc cond, carrying case, £75. Roland MC202 Micro-Composer, perfect, boxed, manuals, £85. ☎ 01-481 1407.

ROLAND TR707 drum m/c, one careful owner, £300. ☎ (0245) 358131, anytime.

ROLAND TR808, £150 ono. E-mu Drumulator plus Rock chips, £150 ono. Leaving country. ☎ 01-300 9207.

ROLAND TR909 rhythm composer, MIDI, separate outputs, vgc, little used, home use only, £225 ono, or swap TX7. ☎ Wendover 625200 (Bucks).

SCI DRUMTRAKS prog tuning/volume, separate outputs, MIDI, sync, interchangeable sounds, £495. ☎ (02576) 2609 (Lancs).

SIMMONS SDS1 x2, month old, inc stands, £160 the pair. Adam ☎ Benfleet (0268) 753145.

SIMMONS SDS9 black, exc cond, 6mths guarantee, genuine sale, £895. John ☎ Leam Spa (0926) 315812.

YAMAHA RX11 drum m/c, perfect cond, still boxed, £400. Alan ☎ (0323) 764191, eves.

YAMAHA RX11 drums, £370 ono. Roland TR727 Latin, £365 ono. Ohm KA125 kbd amp, 125W, £200 ono. All mint. Matt ☎ (0252) 721264, eves.

YAMAHA RX15 immac, boxed with manuals, £250. Grahame ☎ 051-644 6782, after 5pm.

YAMAHA RX21 exc cond, boxed, manuals, £170 ono. Yamaha CS5, exc cond, £65. ☎ (0784) 248089 (Heathrow), eves only.

YAMAHA RX21, 3mths old, still under guarantee, never used, immac, £169. ☎ (0223) 61614.

YAMAHA RX21 p/x for your Roland TR505 or sell for £175. David ☎ Maidstone (0622) 26861.

YAMAHA RX21, £125. E&MM 1984/85/86, make me an offer. Les ☎ (0245) 72572.

YAMAHA RX21 as new, home use only, boxed, manuals, can deliver locally, £140. ☎ (0273) 493659 (Brighton area).

Computing

ACORN MUSIC 500 + ATPL full-size kbd, tapes, leads, manuals, only £125 (worth £320). Simon ☎ (0625) 523845.

AMSTRAD 6128 colour, with Music Machine sampler/sequencer and £200 software, £400 ovno. Brian ☎ Bradford (0274) 584478.

APPLE II Europlus, 128K, monitor, twin disks, £320. (Ideal for Greengate.) ☎ 01-328 0244.

BBC MODEL B + software, £300 ono. Powertran Vocoder, £180 ono. Memotech MTX500, £100 ono. ☎ 021-420 3295, eves.

COMMODORE 64 plus d/drive, £200, swap for Roland Octapad, Marshall Mercury 25W combo, £75. ☎ (0952) 727922.

COMMODORE 64 + d/drive, printer interface, tape, joysticks and software worth £2000. Only £250 ono. Simon ☎ (0730) 63345, eves.

COMMODORE 64 with data cassette, several games, joysticks etc, £110 ono. ☎ Halifax 883025.

COMMODORE FM sound expander on disk, £70 ono. Andrew ☎ Penketh (0925) 8775, after 6pm.

EMR BBC B interface, Composer, Performer, Editor, disks, £110 ono. Might split or p/x for Yamaha KX5. Bill ☎ Knowle 78488.

EMR MIDI INTERFACE for BBC m/cro, plus Performer, Composer, Editor, CZ Voice software, £140 ono. Gary ☎ (0293) 519821.

ENSONIQ MIRAGE editing software plus CZ and DW6000 editors, never used, absolute steal, £60 ono. Charlie ☎ 01-466 5593.

MICON Spectrum+, touch-sensitive sequencer, DX7 Editor, library of 224 sounds, manuals, leads boxed, immac, £160. ☎ (0622) 858967.

MIDI INTERFACE for the Commodore 64 with sequencer program, £50. Timor Ozergin, Slingerstigen 17, 66700 Forshaga, Sweden.

SCI CBM64 MIDI Interface, SixTrak software (disk), £65. Drumtraks, immac, £600. ☎ (0233) 812406, after 8pm.

SPECTRUM + Micon DX7 Editor/Library, Multitrack Sequencer, complete MIDI control, boxed, manuals, leads, absolutely mint, £150. John ☎ 01-691 5057.

SPECTRUM 48K with cassette recorder and games, good cond, only £45. ☎ Wheatley 4993.

SPECTRUM 48K with SpecDrum, Latin and electro kits, £60 or swap for DR110, MC202 or monosynth. ☎ Newquay (0637) 873023.

SPECTRUM 48K interface 1, SpecDrum, Currah Speech, Music Machine, datacorder and software, bargain £160. Tom ☎ (0926) 23940.

SPECTRUM 48K, SpecDrum digital drums, tape sync, datacorder, games, all boxed, £95. ☎ 01-805 0827.

SPECTRUM OWNERS! XRI Micon MIDI sequencer interface, £65. RAM Music Machine, sampler, £35. Tim ☎ (0825 75) 549 (East Sussex).

STEINBERG MIRAGE editor, also CZ and DW6000 editors, never used, total bargain £60 or offers. Charlie ☎ 01-466 5593.

STEINBERG PRO 16 C-Lab, CBM64, d/drive, MIDI interface, sync-to-tape, B&W TV, vgc. can demonstrate. The lot, £380. Milo ☎ 01-902 4757.

STEINBERG PRO 16 + Editor, sync interface, CBM64, d/drive, colour monitor, cassette, all as new, £500. ☎ 01-876 0599.

STEINBERG PRO 16 sequencer plus interface, for CBM 64, £70. ☎ Romford (0708) 64218.

STEINBERG PRO 24 + Atari 520STM, twin double-sided d/drives, brand new, unused, £700. Gary ☎ (0268) 43601.

SWAP YAMAHA CX5M computer for Roland TR505. Andy ☎ 01-572 5062.

SWAP SPECTRUM 48K, SpecDrum + kits, various games etc, for CX5M, CZ101 or (with £100) a DX100. ☎ (0222) 33588.

UMI-2B, BBC B, colour monitor, d/drive, DFS, DX7 librarian, 512 DX7 voices, speech, games, £675. ☎ 01-229 4052.

UMI-2B, BBC B, d/drive, DX7 Library,

£700. DMX £650. TX7 £350. SBX80 Sync Box £750. Roland Cube 60W, £100. Peter ☎ 01-263 1232.

WATFORD 5 1/4" 40/80T twin-d/drive DD/DS for BBC, 3mths old, + double density interface, £250, boxed, as new. Adam ☎ (0444) 450024.

XRI MICON interface for Spectrum, sequencer, DX7/CZ101 voice libraries, with Editor, microdrive and cartridges, £100. ☎ (0602) 704958.

YAMAHA CX5 SFG05 + all software, exc cond, boxed, £200. Colour monitor/TV, £80. ☎ (0629) 3550.

YAMAHA CX5 and **RX21**, mint cond, inc cartridge software, large kbd, data recorder, FM voices, £370. ☎ Maidstone 46099.

YAMAHA CX5M MkII, large kbd, MIDI sequencer, chord progression, FM voicing, unused, boxed, all leads etc, £500 ono. ☎ 01-907 8110.

YAMAHA CX5 MkII, 128K music computer, d/drive, YRM301, word processor, games, MSX books, guaranteed, total £650 ono (splittable). ☎ (0827) 899064.

YAMAHA CX5M MkII/128 with mouse, boxed, as new, 6mth's guarantee, £320 or swap TX7. Steve ☎ 01-627 0413.

Recording

ACES TR24, 24-track and Aces ML26/24 console, £10,000. Jamo 566 power series monitors, £380. Fred ☎ (0234) 327683.

AKG D202E1 microphone, offers? Damian ☎ 051-424 4981, after 6pm.

ALLEN & HEATH 16:8:16 desk, £550 ono. ☎ Darlington (0325) 466826.

ASTRONIC valve graphic EQ, rare, give some warmth to your digits, £250 ono. Binson Echorec, offers? ☎ (0222) 42329.

AUDIO TECHNICA ATRMX64 4-tr recorder, 6-ch mixer, professional standard, brand new, £875 ono. Tony ☎ (0532) 640638.

CLARION 4-TRACK studio, complete RX15, EX800, rack delay, graphic monitors: with Yamaha kbd, £1480, without £1080. ☎ (0405) 2549.

DIGITAL DELAY: 12kHz bandwidth, 1/6s delay, chorus, flange, ADT, echo, phase and infinite freeze, £250. ☎ 01-482 3334.

EMT K140 reverb plate with Neve remote and service book, delivery can be arranged, £500 ono. ☎ Hull (0482) 212780.

EXR EXCITER SPI, like Aphex without tune knob, nicer sound, perfect cond, rack use only, £150. ☎ (062 67) 2353.

GRAFF high-speed audio cassette duplicator, two copies from one master, exc cond. Jim ☎ (0253) 293495 or 405852.

FOSTEX 3050 digital delay, £110. MM mixer 16:2, £150. Gordon ☎ (02214) 68970 (keep trying, 1 work shifts).

FOSTEX 350 studio quality mixer, as new, can demonstrate, very versatile, owner needs cash, £300 ono. ☎ (0909) 486971 (Notts).

FOSTEX A8 8-tr recorder, immac, £800. Chris ☎ 01-226 2726.

FOSTEX B16 absolutely mint, very limited home use only, two reels! £3250 including remote. Genuine bargain. Paul ☎ (0424) 218711.

FOSTEX E16 new, unused, boxed, £4300 ono. (MRP £4999) Inc VAT. Tannoy Little Reds, £380. ☎ 01-541 5006.

FOSTEX X15, £210. Alesis MIDIflex £270. Ohm AC120 amp, all perfect, boxed, manuals, etc, offers invited. ☎ 01-466 5593.

ITAM 805 1/2-inch 8-tr recorder, good cond, £725. Dynacord DRP16 digital stereo reverb, vgc, £175. ☎ (0255) 830185.

JBL 4411 studio monitor speakers, vgc, £500 ono. ☎ Brighton 27894.

POWERTRAN DDL, exc cond, £100. Nic ☎ 01-385 3210, eves.

RAM 10:8:2 desk, 6mths old, £500. PortaOne £260. Yamaha QX5 8-tr sequencer, £380. All boxed, vgc. ☎ 061-338 2589.

REVOX E36 1/2-tr stereo r-to-r, still works well! £50 to loving home. Paul ☎ 01-646 4755, eves.

ROLAND SDE1000 DDL, boxed and customised for sampling, £210. ☎ (02214) 68970 (keep trying, 1 work shifts).

SCULLY 1", 8-tr, 8ch; Bel NR; M&A 16:8:2 mixer; package £2600. Offers? John-Marc ☎ 01-377 5726, or Andrew 01-883 5935.

SEPTEMBER 16:2 mixing desk, inc f/case, £2000 ono. Keith ☎ (0706) 541 38.

SWAP ARION Metal Master pedal, only 2mths old, hardly used, worth £50 for drum m/c. ☎ Bristol 393174.

TASCAM 22-4, 4-ch r-to-r, £500. M30 mixer, 8:4:2, £350. JBL L86 professional monitors, £250. All as new & boxed. ☎ (0202) 747191.

TASCAM 244, £499. Roland SH101 £120. TR606 £100. Boss pedals CE2 £50, DM2 £50, boxed as new. Peter ☎ Weybridge (0932) 40292.

TASCAM 244, £460 ono, exc cond. ☎ 01-736 8877, days.

TASCAM 244, 4-tr Portastudio, £450. Dynamix 12:2 mixer, £175. SCI Drumtraks, £500. Paul or Sean ☎ (0235) 26598.

TASCAM 246 Portastudio, boxed, hardly used, perfect, sensible offers. Also Roland Drumatic, vgc. ☎ 01-858 6634.

TASCAM 246, £825. Tascam M208, £625. Boss KM60 £190. Dynacord CLS222, £245. Vesta Fire RV1, £100. ☎ 01-304 3851.

TASCAM 38, £1250. AHB, System 8 16:8:2, £850. Boss DE200, £175. Roland DD320, £250. Fostex 3070, £125. ☎ (0279) 505292.

TASCAM 38 absolutely immac (only 10hrs home use), demagnetizer, rack-mount kit, fully guaranteed, £1595. Angus ☎ (09323) 40157.

TASCAM PORTA ONE immac, boxed, psu, £300. Roland TR505, as above, £200. Dave ☎ (040 481) 5155.

TASCAM PORTA ONE exc cond, used only 7 times, 8mths old, £250 ono. ☎ Slough 30565.

TASCAM PORTA ONE portastudio, home use only, psu, £300 ono. Mark (049 481) 2547.

TASCAM PORTA TWO, 3mths old, mint, manual, psu, microphone, headphones, cleaners, £480. Genuine reason for sale. ☎ (0789) 840673 (Warwickshire).

TEAC 144 Portastudio, vgc, boxed, £295. ☎ Guildford 67882.

TEAC 80:8, 8-tr recorder, hardly used, perfect example, with Bel BC3-8T noise reduction, amazing, £1500. ☎ 01-359 6723, eves.

TEAC A3440, 4-tr, £420 ono. Yamaha RX15 digital drums, £275 ono. ☎ Cheltenham (0242) 43693.

TEAC A3440, 4-tr in exc cond, £495. Also Great British Spring reverb + psu, exc, £95. Both ono. Paul ☎ 01-804 7724.

TEAC A3440, 4-tr tape recorder, little use, exc cond, £525. David ☎ (0327) 857456.

TEAC A3440 with dbx, 4-ch mixer, and remote, £650, will separate. Also Fisher studio cassette Dolby B/C, £45. ☎ (0761)

221632. **TEAC A3440**, 10 1/2" reel, 4-tr recorder plus RC70 remote, £400. Pete Becker ☎ (0203) 349009, eves.

TEAC RX9-DBX noise reduction, 4-tr unit, £125. MTR Mk2 4-tr mixer, £200, exc cond. ☎ (0736) 762826.

VESTA DIG-411 delay, £160. Yamaha RX15, mint cond, £260. Both hardly used. ☎ (0952) 883756.

YAMAHA D1500 multi-FX unit, DDL/chorus/flange, MIDI, rack mountable, absolutely perfect, £275 ono. Ian ☎ 091-267 6733.

YAMAHA MM30, 4:4 mixer, £135. Fostex X15, £160. Tascam Porta One, £335 ono. All in exc cond. Dave ☎ Gravesend (0474) 65247.

YAMAHA MTIX, £300. Roland TR505 £200. Both boxed with manual, absolutely mint, must sell. Jim ☎ (0387) 68931.

YAMAHA MT44D, 4-tr, MTR 6:4:2 mixer, flexible system, both exc, £450, can deliver. ☎ Canterbury (0227) 464908.

YAMAHA REV 7 as new, £770 ono. Yamaha RX11, as new, £430 ono. Roland Mixline SMX880, £90 ono. DeltaLab DDL jr, £90 ono. ☎ 01-828 3952.

YAMAHA RM804, 8:4 mixer, £375. Yamaha R1000 digital reverb, £190. Celestion SL6 speakers £140. ☎ Ipswich (0473) 710051.

YAMAHA SPX90, £495. Korg SDD2000 £395. Roland TR707 £450. Vesta Kozo driving enhancer £150. ☎ (0604) 46320, eves.

YAMAHA SPX90, £520. Sony EVS700 Video 8 digital audio multitrack, £600. Neumann U87 condenser, £520, mint. ☎ 051-334 1749.

YAMAHA SPX90 brand new, offers around £450. Paul ☎ 01-884 0474.

Amps

CARLSBRO professional amp, twin ch, parametric EQ, reverb, chorus, vib, 4-way f/switch, cover, £275. Simon ☎ 01-397 5034.

CARLSBRO COBRA 90W bass combo, 'deep', and five bass-pass filters, unglgged, £120 ono. ☎ (0795) 874022 (Kent).

CARLSBRO COBRA kbd amp, exc cond, £200. Errol Thomas ☎ 01-684 9205, after 6pm.

CARLSBRO HORNET 45W kbd combo, 4 inputs, line output, reverb, 18mths old, unglgged, perfect, £130 ono. Dave ☎ 01-346 8138.

CARLSBRO HORNET 45W kbd combo, home use, £110 nearest. Dave ☎ Glantawe (0639) 843372.

CARLSBRO STINGRAY 150W bass combo, graphic EQ, compressor; DI, effects and headphones sockets; never giggered, £150. Dave ☎ 01-511 5318.

CARLSBRO STINGRAY 150W amp, speakers, 3-ch, reverb, chorus, vibrato, footswitch, vgc, £199, no offers! Steve ☎ 01-504 3718.

CLUBMAN BASS amp, 150W, 2-ch, EQ controls, very powerful. Sim ☎ Blackpool (0253) 700238.

PEAVEY 100W BASS amp, and 2x12" 'Black Widow' cabinet, £210. Paul or Sean ☎ (0235) 26598.

ROLAND BOLT 60W valve combo, split-ch reverb, distortion, effects send and return, £160. Joe ☎ 01-263 1935.

Personnel

AMATEUR HM/HR band require 13-15 yr old singer, powerful voice, no pros, jobs. Good friendly style. Ben ☎ Cambridge 245788.

DRUMMER WANTED for Nottingham-based band, electronic kit and own transport essential. ☎ (0602) 701455.

DX PROGRAMMER fed up with clichéd DX sounds seeks musical outlet. Interested? ☎ 01-304 3352, eves.

EXCELLENT GUITARIST (rhythm & lead) wanted to join band about to sign deal

MUSIC TECHNOLOGY FREE CLASSIFIED ORDER FORM

Fill in the form to a maximum of 18 words (one in each box), and send it to: **MUSIC TECHNOLOGY Free Ads, Music Maker Publications, Alexander House, 1 Milton Road, Cambridge CB4 1UY.** Please print clearly in **BLOCK CAPITALS.** The ad must reach us on or before **Monday, April 6** for inclusion in the May '87 issue of **MUSIC TECHNOLOGY** - late arrivals will be printed in the next available issue.

Please include this ad in the section.

(Sussex/Surrey area). ☎ (0342) 23094.

EXPERIENCED MUSIC graduate seeks paid work writing and performing, keyboard, sax, vocals, Cambridge/London area. Mark ☎ (0279) 506701.

FEMALE SINGERS wanted: for work with songwriter/producer; Shannon/Chaka. Ambition, style, voice. Yes? Demos, see: Fascination Music, 45 Elswick, Skelmersdale, Lancs, WNB 6BX.

FEMALE SOUND sculpturists, vegan, arisen and free. Esoteric synthcraft awaits your contribution. Music for Enlightenment. Mazda ☎ (0605) 48776.

GRADUATE keyboards, composer, requires brilliant lyricist/vocalist for professional duo. Sting, TFF, Genesis. Must make millions. Mark ☎ (0279) 506701.

HARD ELECTRONIC dance group (major indie label) require live engineer/certific organiser, experience preferable, attitude essential. NEP ☎ 01-590 2524.

KEYBOARD PLAYER wanted with gear, ability, passport, sense of humour and urgency, paid work waiting. ☎ (0532) 622903.

KEYBOARD PLAYER, female vocalist, and hip hop don't stop body poppin' rappers wanted. ☎ (0704) 894047, after 6.30pm.

KEYBOARD PLAYER: single and gigs soon (Furs, Pet Shop Boys, Stranglers). No session musician! Morgan ☎ 01-609 7504.

KEYBOARD/SYNTH urgently needed for up-and-coming band, Kasumi. Andy ☎ 01-701 8321, after 8pm. (London SE17)

MODERN cover band need competent kbd/synth player to complete lineup. ☎ Basingstoke 87 294.

NUMAN, JAPAN, Ultravox influenced synth players. Interested in forming a band? Serious please! Scott ☎ (0890 81) 579, Edinburgh area.

SYNTH PLAYER wanted. Depeche, Kraftwerk inspired, no experience needed, just musical (no Paul Hardcastles!). Tim ☎ Birmingham 354 5748.

TALENTED KEYBOARDIST/composer, over 200 demos, seeks hi-tech band, company. Don Laka, 10865 Mamelodi, Rethabile 0122, RSA. ☎ 012-8011770.

TENOR SAXIST doubling several instruments, 20yrs experience, prepared to cooperate in home recording venture. ☎ Faringdon 20732.

YOUNG, IMAGINATIVE keyboardist needed to turn singer and songwriter live. Beatbox advantageous. No plagiarists please, 4AD influences. ☎ 01-303 4441.

Misc

CASIO RZ1, £250. Casio SZ1 £145. Fostex X15 multitracker, £150. All with leads, manuals, immac. Call (055 385) 497.

COME AND PICK UP your 4-track: I've forgotten who you are and lost your address! ☎ (0772) 315638.

DIGITAL REVERB units with 18kHz sampling rate, 90dB signal to noise, £99 with guarantee. ☎ (0494) 774868.

DRUMATIX exc cond, boxed, £85. Casio CT202 keyboard with accessories, £70. Accessit Compressor, £25. Steve ☎ (0883) 45979, after 6pm.

GUMBY! Happy 28th! Iuv Pokey.

KORG DDM110 £100. Shure Unisphere B, immac, £45. Fostex MN15, £25. Yamaha FG355 MkII acoustic, £75. Mark ☎ Bristol (0272) 638231.

KORG DDM110 digital drums, perfect, £99. HH 2x15 bass cabinet, 200W, perfect, £120 ono. Guy ☎ 01-533 1018.

KORG KMS30 brilliant sync MIDI Thru box; Roland Korg sync to/from MIDI/tape, £130. Bill ☎ 01-634 3573.

KORG KMX 8-ch kbd mixer, immac cond, £100. Paul ☎ Leeds (0532) 865197.

MIDIFEX, £265. Poly 61 £280. GBS £75. Left-handed Ibanez Rickenbacker bass £99. All exc cond. ☎ (0347) 3777 (York).

MIDIFEX perfect, boxed, unused, only £260. Schtillator, boxed, unused, £130. Can deliver. Charles ☎ (0635) 200295, after 8pm.

RAM 128 voice for DX7, £55. Roland JX3P £395. Casio CZ101 £180. All home use only. ☎ Beckenham 01-650 8731.

ROLAND GR300 guitar synth, G808 neck thru body guitar, £400. SDL1000 Korg delay £275. Adrian ☎ (044 46) 41708.

ROLAND GR300 guitar synth with blue G505, good cond, any offers? Swap for star bass player! Phil ☎ 01-724 6232.

ROLAND GR700, G707, PG200 programmer, exc cond, boxed, new stands, cartridges inc, £1350. ☎ Lichfield (0543) 258037.

YAMAHA DX7 plus TX7, CE3 stereo chorus (Boss), keyboard combo. (Ohm), stand. £1200 cash. ☎ High Wycombe (0494) 26960.

Wanted

BOSS RPS10 Ibanez HD1000, two-tier keyboard stand, cash waiting. Jerry ☎ St Albans 31761, office hours.

CASIO CZ1000 or similar; must be with MIDI. James ☎ (0609) 2631.

CASIO CZ101 must be unigged and vgc, up to £175. John, 103 St Andrews Road, North St Annes, Lancashire, FY8 2JG.

CZ101 RAM cartridge, Roland DR110 rhythm for sale, £65 ono. Barry ☎ Cambridge (0223) 62881, eves.

EMS SYNTHI AKS or VCS3, any cond. ☎ (0726) 883265.

ESQ1 80-factory programmed sounds on audio, tape. Can anyone help? Your price paid. Del ☎ (0383) 416408.

FENDER 15W practice amp (or similar). £40 cash waiting. Dave ☎ 01-531 9824.

FOSTEX X15 also basic reverb/echo unit, top price paid if cond good. Len ☎ Faringdon (0367) 20732.

CX5M 4-TRACK MIDI recorder cartridge. Ade ☎ Nott'm (0602) 395426.

HAS ANYBODY got a Moog ribbon controller, model 1150, for sale, compatible with Minimoog! Tom ☎ (0706) 44410.

INSTRUCTION MANUAL (or photocopy) for Moog Opus 3 keyboard. Tim ☎ (0380) 4372.

KORG MKPI MIDI (organ) pedalboard. ☎ 01-291 4798.

KORG POLYSIX, £325 cash. Could collect. ☎ Bristol (0272) 736116, eves only.

KORG POLY 800, Casio CZ1000, SCI SixTrak, with manuals, £240 top price. James ☎ (0609) 2631.

KORG PSS50 SuperSection, with manual. Will pay up to £150 for perfect. Chas ☎ Byfleet 48051.

KORG SDD2000 delay/sampler. Possible delivery Midlands area? (disabled person), COD, half mile off M6. Tony ☎ (0203) 310808.

KRAFTWERK: ultra loyal fan wants pictures, videos, records, etc. Mr A Hine, 68 Dellfield Crescent, Cowley, Middx UB8 2EU.

MKB200, **MKB300** or any velocity and pressure-sens MIDI kbd, £350-400 cash waiting. Mick ☎ 01-505 1998.

MOOG & EMS products, Electro-Harmonix effects products. ☎ 021-420 3295, eves.

MOOG PRODIGY CIRCUIT diagram wanted (or photocopy); attempting to fit CVs! Sarge ☎ 01-800 2779.

PROPHET 2000 sample disks to swap. Also instruction for EMR Real Time (BBC B). ☎ 091-271 6403.

ROLAND ALPHA JUNO 2 or Akai AX80, £450. Mark Nijs, 72 Danger Lane, Moreton, Wirral, Merseyside. Include phone no, will collect.

ROLAND JUNO 106 for around £380, in good cond, preferably in Yorkshire area. Paul ☎ (0759) 72094.

ROLAND JUNO 6, £180, cash waiting. John ☎ (0737) 72045, eves.

ROLAND MKS30 or Super Jupiter module, will p/x with cash either way for Jupiter 6. Steve ☎ (0254) 774554.

ROLAND SH101 in good cond, or Jen SX1000 similar. ☎ (0438) 317413.

ROLAND TR808 I will give you cash for your 808. Andy ☎ 061-835 2127.

ROLAND TR808 or TR505, CZ101, Fostex X15 and Squire Strat required in good cond. £110 offered for each. ☎ 01-727 2245.

SONGS WANTED: Jam/Lewis, Scritti, System, Cameo, Shannon, pop/funk. Majors

jumping, demos, see to: Fascination Music, 45 Elswick, Skelmersdale, Lancs, WNB 6BX.

STUDIOMASTER 6:2:1 mixer, cash waiting. ☎ 01-346 9385.

SWAP CASIO CZ101 or CZ1000 patches: Send to AJK, 14 Swale Close Road, Northampton. Enc your address, we will return equal number.

TFI MODULES for TX816, vgc, will pay cash or swap two for never used RX15. John ☎ (0622) 858967.

VESTA FIRE MIDI-to-CV converter, full working order, OK cond, £50 cash offered inc delivery. ☎ (0424) 218711 (Bexhill, E Sussex).

VOCODER Powertran or similar, semi-assembled, or in working order (not broken). Jake ☎ (0227) 730410, eves.

YAMAHA CX5M with large keyboard and software. Good cond. Offers? ☎ Coventry (0203) 78804.

YAMAHA D1500, Lexicon PCM70, Neumann U87, graphic EQ, Sony PCM-F1 or similar. ☎ (0332) 385021, (0602) 414892.

YAMAHA DX7 home use only, any offers

anywhere. Jeff ☎ (0482) 46166.

YAMAHA KX5 remote, also SCI Tom cartridges, cash waiting. Steve ☎ Slough 40243.

YAMAHA MCS2 MIDI Control Station, approx £150. Kristian Sommerfelt, Johan Blytts V. 61B, 5030 Landas, Norway.

YAMAHA SPX90, £300. MIDlverb £150. Microverb, £150. MIDlverb II £250. QX5 £250. SQDI £275. MSQ700 £200. MC500 £475. Cash waiting, will collect. ☎ (0269) 843257.

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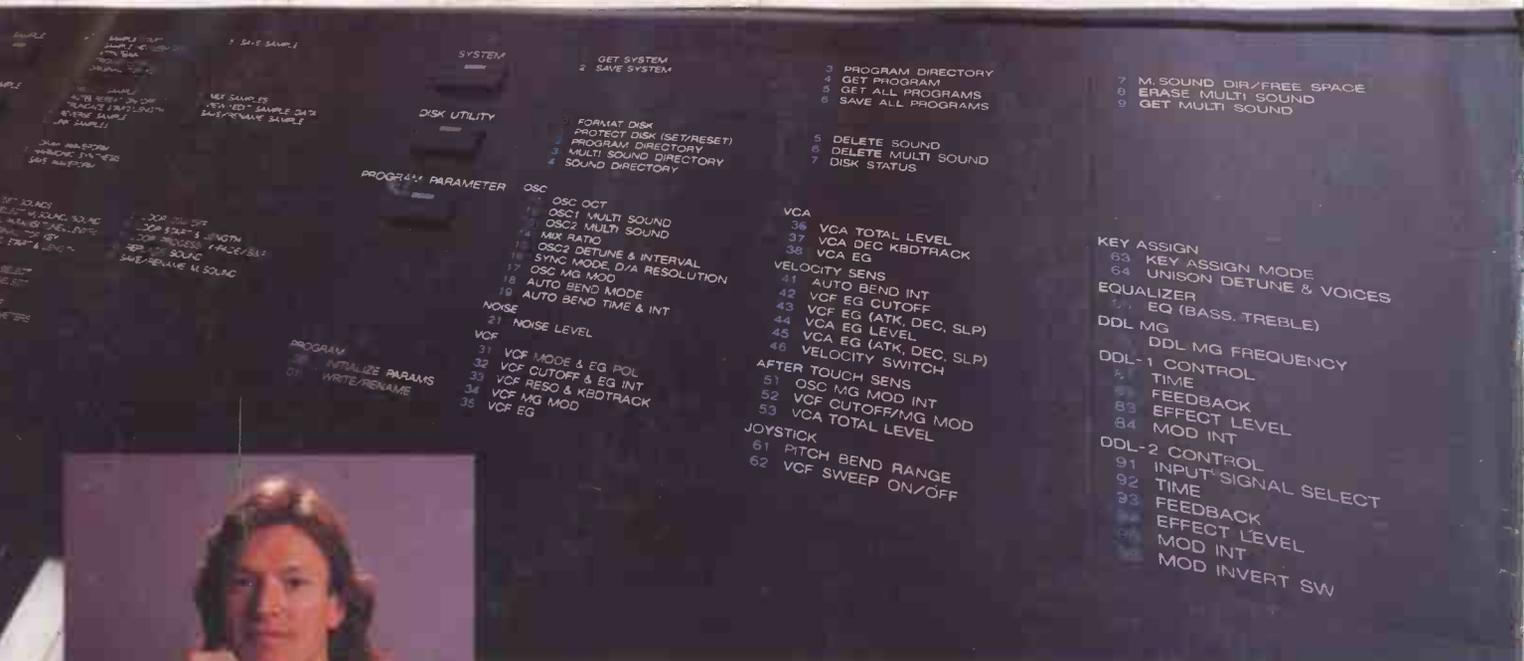
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