

SOUND ON SOUND

EUROPE'S No.1 HI-TECH MUSIC RECORDING MAGAZINE

SOUND ON SOUND



Emagic Logic 2.0 for Windows

A QUANTUM
LEAP FOR PC
SEQUENCING?

Yamaha O2R Preview

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WRAPS
OFF THIS DIGITAL
BLOCKBUSTER!

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GS1
Recording
Console**

- D:Ream*
- DIY Drum Pad & Pedal Triggers*
- Post-Production Sweetening Tips*
- Guide To Second-hand Bargains*
- How To Get A Good Mix*
- Steve Reich: City Life*
- Tascam DA-20 DAT*
- Digitech Harmony Processors*
- NEW SERIES: MIDI Basics**
- Akai DR8 Hard Disk Recorder*
- Waldorf Microwave 2.0 Synthesizer*



Mackie SR24.4

DOES THE WORLD
NEED ANOTHER
4-BUSS MIXER?

VOLUME 10 • ISSUE 10

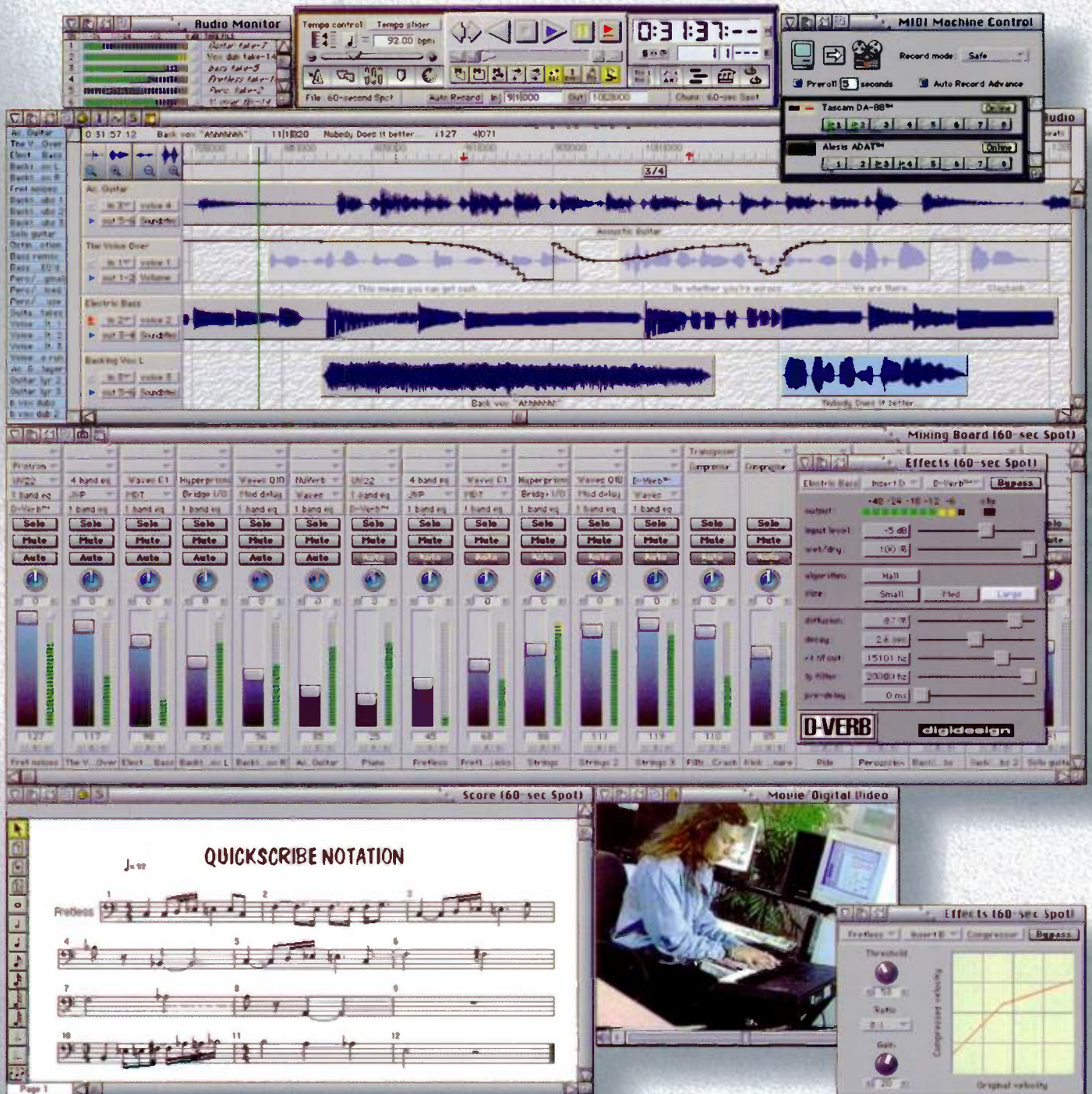
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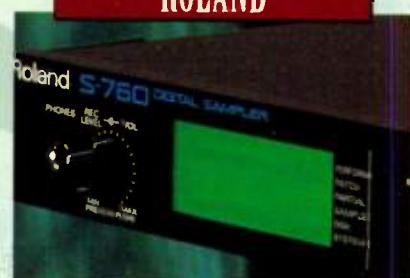
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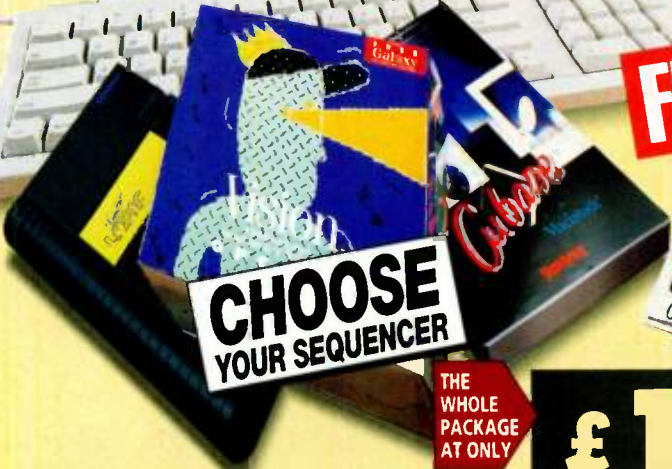
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As those of you who read Vic Lennard's Atari Notes column last month will be aware, the MIDI song file business has taken a serious knock lately. Most song file advertisements have all but disappeared, and those of you who use CompuServe may have noticed that MIDI files have vanished from there too. I can understand music publishers and composers not wanting their work to appear on bulletin boards where anyone can gain free access, but why is it that we can no longer buy MIDI files from legitimate companies who always pay their dues for the use of copyright material? After all, accurate MIDI files can be particularly valuable in helping analyse

slurs. It seems that the industry magnates are objecting to the sale of MIDI files on the basis that for certain users with particular software, MIDI-to-score translation is a possibility. I hope then that these same wise people have taken the precaution of getting a court injunction preventing the sale of CDs or pre-recorded cassettes to any persons with musical training, because it's just *possible* that these people might listen to a piece of music and write down the score. I don't know if anyone has been imprisoned under this ruling, but if they have, you can bet the last thing they'll want to see is a cake with a (MIDI) file in it!

The Ex Files

how a certain artiste or producer arranges material, as well as providing a great way of practising your vocals or chosen instrument.

The bone of contention appears not to be associated with any of the above applications, but the music moguls are instead worried that users will exploit the score printing capabilities of their sequencers to produce pirate musical scores. While copyright clearance is paid for on the recorded music, a separate licensing

agreement is needed to produce printed scores from copyright material. From where I'm standing, this smacks of both greed and paranoia, because most MIDI files are bought by people for whom



the written musical score might just as well be tadpoles on telegraph wires! Furthermore, as anyone who has used a scoring package will know, the printout from a MIDI file often bears little resemblance to the correct score, due to the way MIDI handles (for example) bent notes and

Sadly, I feel that the true reasons for this legal manoeuvre are to be found elsewhere, and that this unhealthy move is simply a

cynical attempt to remove competition, allowing the companies concerned to go ahead with marketing their own MIDI files in a monopoly marketplace. If the above scenario is true, and if the possibility of printing music is the only legal obstacle to a legitimate trade in MIDI song files, then I have a suggestion — why not produce the MIDI equivalent of SCMS to prevent scores being printed out? This would require the sequencer writers to add a piece of code to their packages enabling them to recognise a commercial song file, which would also have to be tagged with a coded key.

This system would be designed to prevent files from being loaded into sequencers not equipped with the recognition routine, but when loaded into a sequencer capable of recognising them, they would play normally while disabling the score printing facility. I know this system would require a degree of cooperation between software companies and MIDI file suppliers, but then that's how MIDI started in the first place. Indeed, there's no reason why something like this couldn't be brought under the General MIDI umbrella. I suppose the real question is, do we feel *that* strongly about commercial MIDI files, or are we happy to let big business take them away from us?

Paul White Editor

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CHANNEL A CLIP POWER CHANNEL B CLIP

ALESIS

MATICA 900

HIGH SPEED WIDE BANDWIDTH
DUAL CHAN POWER AMPLIFIER

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Introducing the Alesis Matica™ 500 and Matica™ 900 High Speed Wide Bandwidth Dual Channel Power Amplifiers. The first amplifiers to offer accuracy, precision and refinement with the performance of brute force audio machines. These are terms not often associated with professional audio amplifiers. But this isn't the first time Alesis has rewritten the rules.

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were designed by experienced engineers who have created extremely high-end reference amplifiers as well as bullet-proof touring amps. Now, with

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Amplifier	8Ω - 2 CH	4Ω - 2 CH	2Ω - 2 CH	8Ω - BRDG	4Ω - BRDG
Matica 500	162 Watts	250 Watts	350 Watts	500 Watts	650 Watts
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Matica 500, Matica 900, aLink and CoolSync are trademarks of Alesis Corporation.

Matica Power Output Rating

Typical, 1kHz 1% THD, both channels driven.

CHANNEL A CLIP POWER CHANNEL B CLIP

ALESIS

MATICA 500

HIGH SPEED - WIDE BANDWIDTH
DUAL CHANNEL POWER AMPLIFIER



Akai DR8 Hard Disk Recorder p98
Offering more tracks and more features than the DR4d, Akai's 8-track recorder looks mouth-wateringly tempting.

Waldorf Microwave 2.0 Synthesizer 50
by Paul Nagle

Digitech Studio 5000 & Studio Vocalist 66
by David Mellor

Emagic Logic 2.0 for Windows 76
by Paul Nagle

Tascam DA-20 DAT Recorder 94
by Paul White

Akai DR8 Hard Disk Recorder 98
by David Mellor

Widgets 160
• CP Cases EMS 400/500 Modular Rack Cases
• Sound Foundation Kill Switches

REVIEWS

Preview: Yamaha O2R Digital Recording Console 24
by Paul White

Peavey PVM480 Microphone 26
by Steve Brodie

Byetone VM95 & VM07 Microphones 28
by Paul White

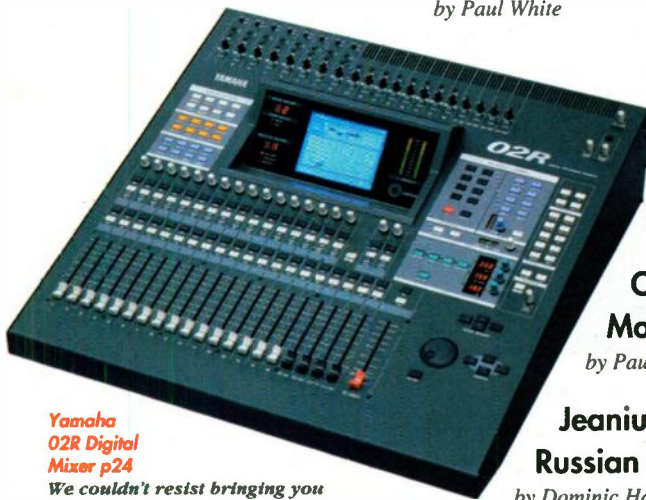
TL Audio Mic Preamp/DI Box 30
by Paul White

Audio Technica ATH D40 & M40 Headphones 32
by Paul White

Silver 5L Closefield Monitors 34
by Paul White

Jeanius Electronics Russian Dragon 36
by Dominic Hawken

Mackie SR24:4 Mixer 38
by Paul White



Yamaha O2R Digital Mixer p24
We couldn't resist bringing you this quick preview of Yamaha's show-stopping new 8-buss fully automated digital recording console. With an estimated price tag around £7000, this baby is hot! Check out the spec!



D:Ream p42
D:Ream's Peter Cunnah may give our graphic designer (Clare) the bots, but he ain't just a pretty face — he's the architect of his own destiny when it comes to music composition and sound technology.

features

D:Ream 42
by Nigel Humberstone

Steve Reich 108
by Paul Tingen

Second-hand Bargains 124
Part 2: by Debbie Poyser & Derek Johnson

Roland MC202 Retrospective 176
by Tom Carpenter

computer notes

Apple Notes by Martin Russ 162

Atari Notes by Vic Lennard 164

PC Notes by Brian Heywood 166

Amiga Notes by Paul Overaa 170



Emagic Logic 2.0 for Windows p76

Already a bit on the Macintosh platform, just how well does Emagic's top-line sequencing system translate to the Windows environment?

SOUND WORKSHOPS

How To Get A Good Mix 58

by Duke Ashton

Post-Production Sweetening 88

by Paul White

MIDI Basics 114

Part 1: by Paul White

Creating A Cubase SY85 Mixer Map 138

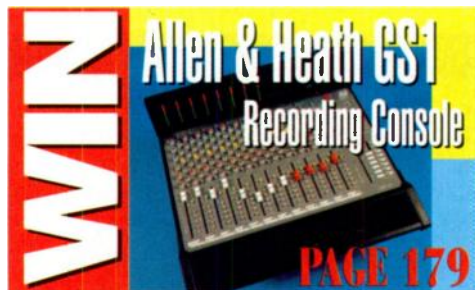
Part 2. by Simon Millward

Digeridoodling 146

by Paul White

DIY Drum Pad & Pedal Triggers 146

by Paul White



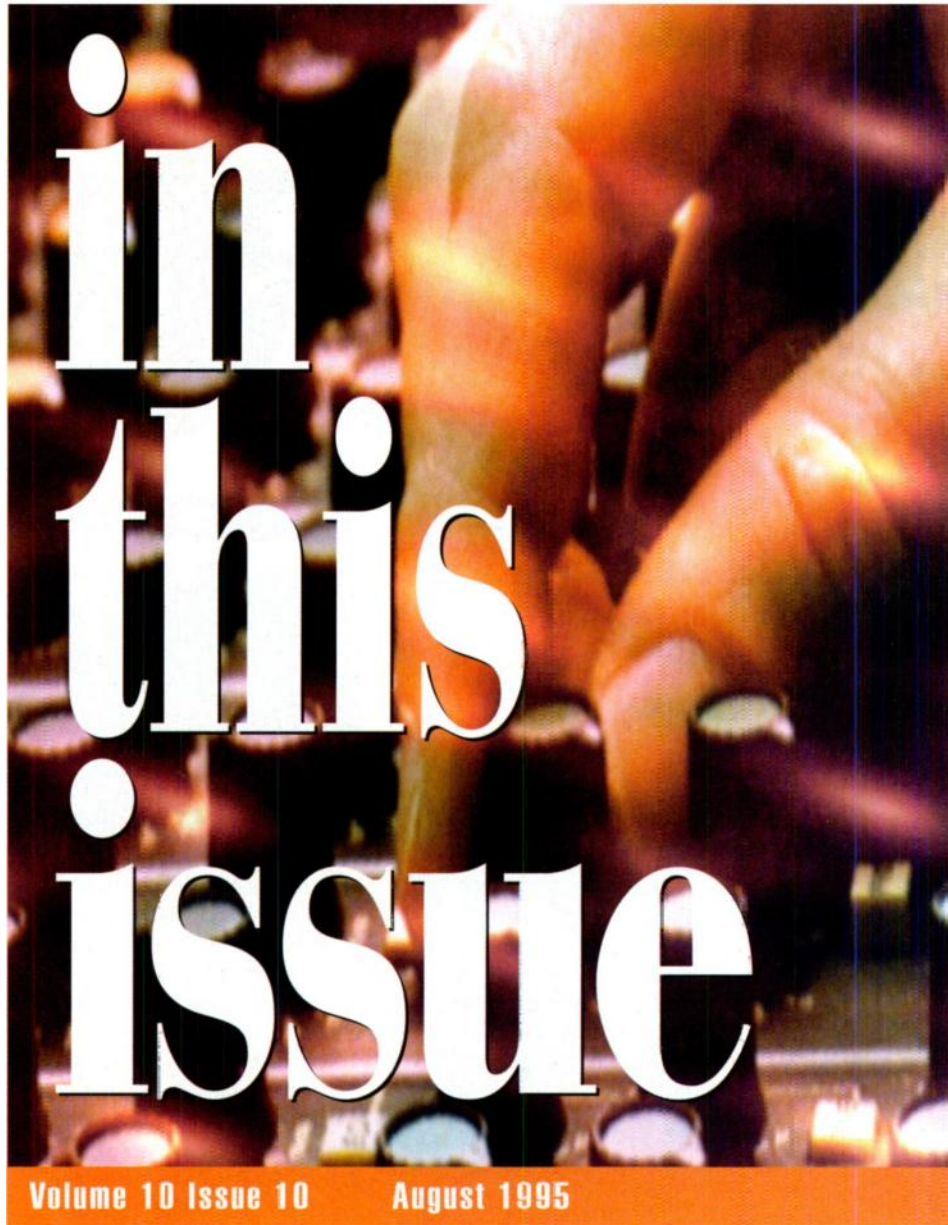
regulars

Crosstalk 8

More of your problems solved by our experts.

Shape Of Things To Come 12

News from the leading edge of the hi-tech music and recording.



Volume 10 Issue 10 August 1995

Demo Doctor 152

John Harris dissects and diagnoses your demos.

Sample Shop 158

Wilf Smarties and Paul Farrer pass judgement on a new batch of sample CDs and CD-ROMs.

Readers' Classifieds 180

Readers' Tape Exchange 186

Sell your own music to fellow readers.

SOS Mail Order 190

Classified Adverts 197

Production Lines 216

Engineer/producer Phil Da Costa discusses different production approaches in the recording of today's dance orientated music.



Digitech Harmony Processors p66
Explore ways to spice up vocal and guitar lines, courtesy of two new Digitech harmony processors, the Studio 5000 and Studio Vocalist.

Crosstalk

Send your letters, tips and comments to: The Editor, Sound On Sound, Media House, St Ives, Cambridgeshire, PE17 4XQ. Or email us — from CompuServe on 100517,1113 or from outside CompuServe, on 100517.1113@compuserve.com

ADDRESSING A PROBLEM: AN APPEAL FOR HELP

I've recently started using CompuServe and the Internet access it provides. One of the reasons for this is so that I can locate and download samples and sounds for the Yamaha SY85.

While I've managed to locate one source, I'm sure that there are more around. Without spending time on-line trying to search for lists (increasing BT profits, and decreasing my bank balance), I wondered if I could appeal to all SOS readers to contribute any addresses they know of. For your information, the one address I do have is: <http://www.neuroinformatik.ruhr-uni-bochum.de/ini/PEOPLE/heja/sy-list.html>

This provides access to all Yamaha SY/TG models (I think).

Simon Neale

West Midlands, via CompuServe

Assistant Editor Matt Bell adds: *Perhaps I could widen Simon's request and ask net surfers with known addresses for the libraries of any synth sounds on the Internet to let us know what they are. We'll publish any we receive. Many thanks!*



BASS CORRECTION



With reference to Jonathan Miller's review of our BassStation Rack in the July issue of *Sound On Sound*, would you please inform your readers at the earliest possible opportunity of the following technical errors:

1. The Rack's program memories are stored in a re-writable EEPROM, *not* a battery-backed memory with 10-year life.
2. Both the Rack and the original BassStation do have extensive Modulation facilities, as follows:
 - Osc 1 — Envelope 2/LFO plus and minus modulations can be set up individually or simultaneously. PWM can also be added using either Envelope 2, an independent LFO, or manually.

- Osc 2 — Envelope 2/LFO plus and minus modulations can be set up individually or simultaneously. PWM can also be added using either Envelope 2, an independent LFO, or manually.
3. The setting of the Pulse Width can be independently controlled on Oscillator 1 and Oscillator 2.
 4. The attack time of Envelopes 1 and 2 is actually 500 microseconds and not 1ms as stated in the manual (the fault of a printing error at our end). This allows the BassStation Rack to create very percussive textures.

Apart from these errors, we were extremely pleased with the review.

Mark Thompson

Director

Novation Electronic Music Systems

A LEADING EXPERT SUGGESTS

I am using 5 Amp, two-core mains flex as speaker leads for a 750 Watt PA and a 200 Watt monitor system. The leads are each ten metres long, and I am wondering if I am losing any power or frequency response with this type of cable. If so, what sort of cable should I be using instead — and is there anything else to take into consideration when connecting speakers to amplifiers, apart from impedance?

Stan Wills

Avon

Editor Paul White replies: *You don't say what speaker impedances you are using, but in a standard system with 4 Ohm cabinets, a system rated at 750 Watts can generate peak currents in excess of 20 Amps. However, as the average current is likely to be much lower, there's no*

risk of overloading your cable and starting a fire. Nevertheless, you may still have problems, because the higher your cable resistance, the more power you will lose, and the more the damping factor of your amplifier will be compromised. Although you may get away with the cable you're currently using, I would recommend you change for something rated at at least 13 Amps, and preferably more. Check out catalogues such as Studiospares for purpose-designed PA speaker cable.

Other than this, if you get your impedances right (for some guidance on this, see my article on pages 172-3 of October 1994's SOS) and use the shortest possible lengths of suitable cable, there's really little else to worry about — although if you have a choice of connectors, avoid jacks, as they aren't suitable for such high power levels.

REASONS TO CHOOSE THE MACKIE 8-BUS-PT 2

Lately, several big pro audio companies have gone out of their way to "mention" us in their own 8-bus console ads. Okay, we'll admit it, several consoles have at least one more thingamajig, dooflanger or whozabob than ours does.

If your sole criteria for buying an 8-bus console is the sheer amount of STUFF on it, there's always gonna be contenders.

But the Mackie 8•Bus console is founded on sound *quality* — ultra low noise, high headroom, premium mic preamps — rather than sheer quantity of knobs and buttons.

Not surprisingly, seasoned professionals share the same priorities. In competition with several of the very consoles that keep "mentioning" us in their ads, we recently won *MIX* magazine's highly coveted TEC Award for Small Consoles. As well as *LIVE! Sound* magazine's Best Front of House Mixer Award.

Call us toll-free for our 24-page 8•Bus brochure. It details more of the reasons that our 8•Bus Console series is the best recording or PA console values available today.

An expandable console system.



If you can successfully foretell the future, you might as well play the stock market, make a zillion bucks and buy a 128-channel SSL console.

However, because most of us are less clairvoyant and a lot poorer, we've designed a system that can grow with your needs and budget. Start with our 24•8 or 32•8 console. Then, when your tax refund comes back, add an optional meter bridge. When you land that Really Big Project That Pays Actual Money, add more input channels (and tape returns) in groups of twenty-four with our 24•E Expander console.

You can keep right on growing your Mackie 8•Bus console system up to 128 channels or more.

And, beginning this spring, you can automate the whole shebang with our OTTO-34/Ultramix™ Pro/OTTOpilot Universal MIDI Automation system. It's receiving rave reviews from



seasoned pros who are used to working with "big console" automation systems.

¹ Mention in this ad denotes usage only, not official endorsement by the artists or production companies listed.

+4dBu operation throughout.



This is a biggie in terms of overall noise and headroom. There are two current standards for console

operating levels: -10dBV and +4dBu.

Without knocking our competition, let's just say that +4dBu is the only truly professional standard, used with all serious recording, SR and video production components.

This higher operating level effectively lowers the noise floor and increases dynamic range.

Naturally, our 8•Bus consoles operate exclusively at internal levels of +4dBu. (It's one of the many reasons that Mackie 24•8s and 32•8s have already been used to track top-charted albums such as Queensryche's new *Promised Land*, edit dialog for TV shows like *The Untouchables*¹).

And, for those of you who still own -10dBV gear, our 8•Bus console tape outputs and returns can be switched to accept this semi-pro/hobbyist standard.

Built like tanks.



Our 8•Bus Series consoles have been in the field long enough to gain an almost legendary reputation

for durability. For example, several absorbed the impact of toppling monitor speakers during last year's Los Angeles earthquake with little more than a few broken knobs.

Others have survived drops off loading docks, power surges that wiped out whole racks of outboard gear, and beer baths, not to mention gazillions of air and semi trailer miles with major tours.

Read our 8•Bus tabloid/brochure to learn about the impact-absorbing knob/stand-off design, fiberglass circuit boards and steel monocoque chassis that make our consoles so rugged. And why we ship our consoles with a massive 220-watt power supply that can withstand high ambient temperatures and low line voltages.

Bottom line: You simply can't buy a more dependable console. Maybe that's why *LIVE! Sound* magazine readers voted us 1994 "Best Front of House Console."



MACKIE.

KEY AUDIO SYSTEMS LTD • UNIT D, 37 ROBJOHNS ROAD
CHELMSFORD, ESSEX CM1 3AG • TEL 0245 344 001 • FAX 0245 344 002

Crosstalk

HARD TIMES (PART DEUX)

Dear SOS,
Without wishing to muddy
contentious waters even more,

I feel that Digidesign should make
some observations on the PC/Mac
debate [Crosstalk, SOS July 1995].

WHERE IS XRI SYSTEMS COMPANY?

I've been trying to replace my old and now sadly inoperative XRI Systems SMPTE-MIDI synchroniser, but have been unable to find the company or any third-party organisation who deal with XRI product support. Have the company ceased trading?

Elan Polushko
London

Matt Bell replies: XRI Systems are still in business and are located in Birmingham at the following address: Electric Avenue Studios, Prior Estate, Electric Avenue, Birmingham B7JJ. Tel/Fax: 0121 382 6048. Hope this helps!



Digidesign systems are designed for *maximum* stability in any type of professional situation. Although most users will experience a crash at some point in their life, a computer that crashes with the regularity discussed in Stephen Bennett's original article should be looked at by an approved service agent to check for problems.

Digidesign's commitment to the PC as a platform for hard disk recording should not be doubted as the release of the Audiomedia card for PC, Session software, and DAE for Windows will confirm. Whilst Mark Stubbs is correct in stating that Session 8 (PC) is not expandable, it is the only PC-based system discussed in the article that gives eight real time inputs/outputs and offers full

integration with ADATs.

The world of direct to disk recording is one that is changing rapidly, and as a responsible company we feel the best way to protect our customers' investment in a Digidesign system is to offer a continuing programme of updates and development. The reason that Digidesign systems 'dominate' the market, and are the most popular hard disk recording systems in the world, is due to our determination to keep our systems open as a platform for third-party developers (Emagic, Steinberg, Lexicon amongst others), whilst offering the best facilities at value for money price points.

Dave Hatton
Field Marketing Specialist
Digidesign UK

QUEST FOR THE HOLY MIDI

I was very interested to read Richard Fincher's letter about MIDIQuest in May's issue, especially since I had decided to purchase version 4.0 (for DOS) after reading the review in April's edition: the three synths

upgrade to the Windows 5.0 version, on top of having to buy Windows itself — just to run one program! I realise you can't always review all versions of a piece of software, but I do wish you could have in this case —

to correct the bugs you've experienced, because hardly anyone is actually using that title.

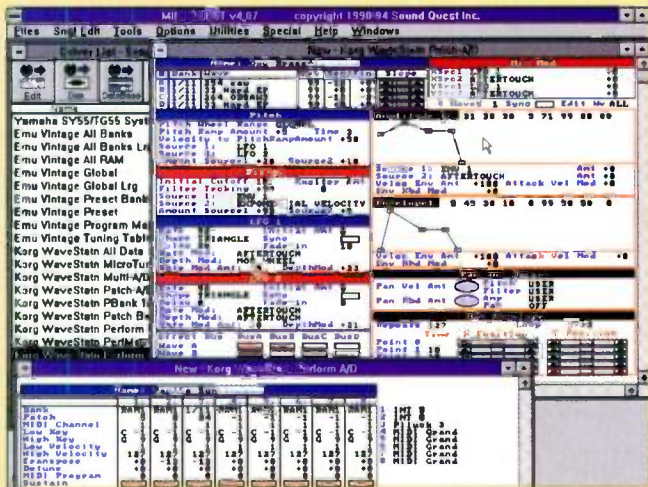
I realise that this is not really what you want to hear, but I hope that my offering you a complimentary copy of MIDIQuest 5.0 for Windows upgrade (enclosed) will demonstrate that we wish to resolve the problem without it costing you any more time or money. The Windows version is the best-selling version of MIDIQuest, (roughly 20 times as many people use it), and we've found that it performs well on all PCs with 4Mb of RAM or more.

I'm sure that you're aware that Microsoft Windows, whatever its shortcomings, is ubiquitous in today's 486-dominated PC marketplace. You may also know that DOS itself will become obsolete with the release of Windows '95. Therefore, it seems likely that the discontinuation of non-Windows DOS software will be very common across the software industry.

Windows does have numerous advantages however, not least the access to memory over 640K. You may also multi-task Windows MIDIQuest 5.0 with sequencers such as Cakewalk and Cubase (using MIDI Master Plus, £29), and record live edits into the sequencer.

If you have any questions about MIDIQuest 5.0 for Windows, I'd be pleased to answer them for you.

Richard Fincher
Computer Products Manager
Arbiter Music Technology



I use are a Casio CZ1000 (lousy LCD screen), and Oberheim M1000 (no editing from the synth at all), and a Wavestation SR ('wallpapering through a letter box'?), so MIDIQuest seemed as if it would answer all my problems. Alas... if only things were as simple. Within days of receiving the software various problems developed.

As far as I can tell, the only solution to these problems is to spend £49.95 on an

it would have saved me a lot of grief, not to mention expense. The crazy thing is, when I can get it to do what I want, especially with the M1000, the results are superb (in my opinion anyway), but, please, can Mr Fincher rationalise the bugs and flaws in this version, and do something about it.
Kevin Perry
Gloucestershire

Matt Bell replies: We passed Kevin's letter on to Richard Fincher. Within a few days, we received a copy of a letter Richard had written back to Kevin, which is reproduced below.

I'm sorry you have had lots of problems with Sound Quest's MIDIQuest 4.0 for DOS. Unfortunately, the DOS version of MIDIQuest is now obsolete, and is about to be discontinued. The reason for this is lack of demand — it is not economic for Sound Quest

**THE CLOSER YOU LOOK
THE BETTER IT SOUNDS**

SPIRIT



6x2 Matrix section, for side fills and extra speaker clusters



6 Auxiliaries with up-to 4 pre-fade for monitoring or post-fade for effects



4-band EQ with two sweep mid-frequencies and EQ input for precise control



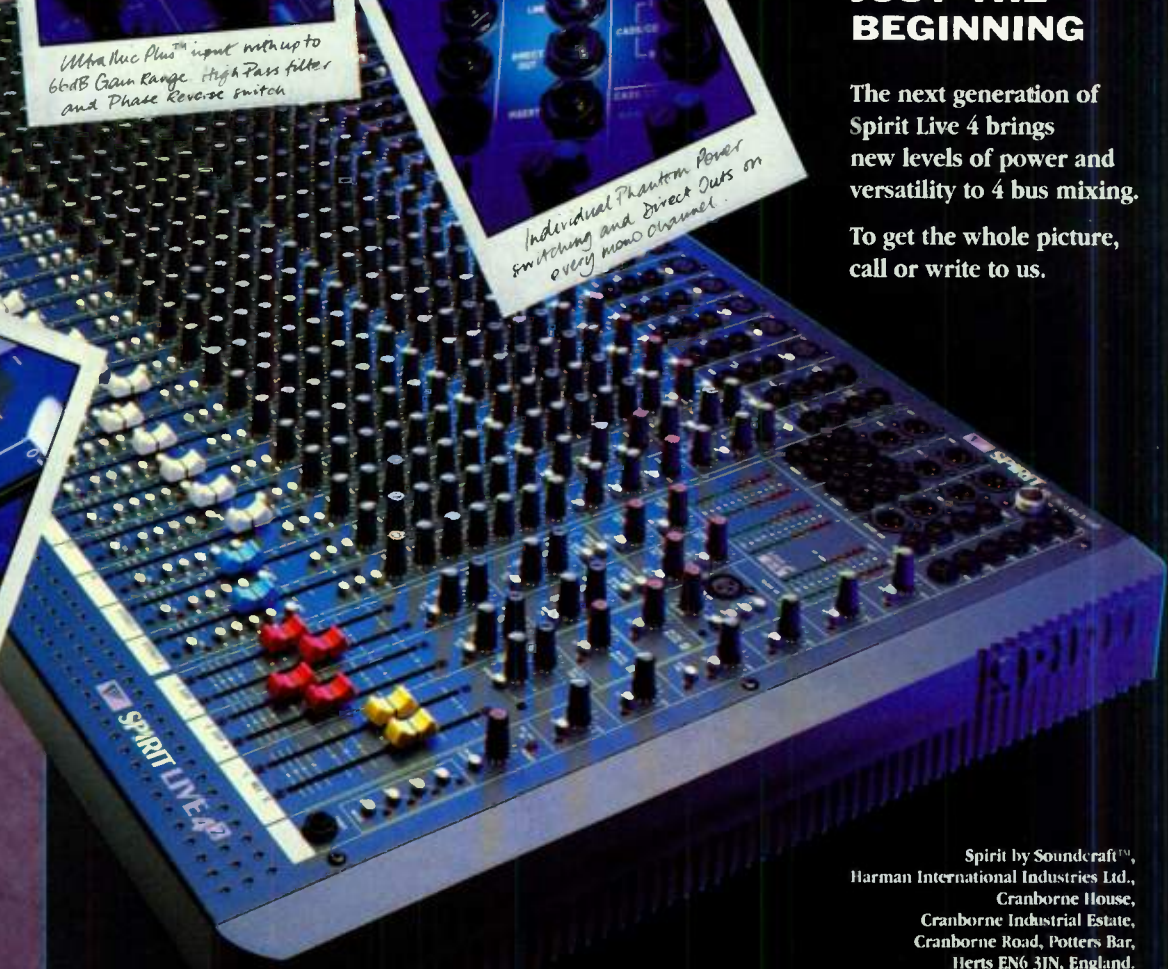
UltraMic Plus™ input with up to 66dB Gain Range, High Pass filter and Phase Reverse switch



Individual Phantom Power switching and Direct Outs on every mono channel



4 faders groups for scene setting



**AND THAT'S
JUST THE
BEGINNING**

The next generation of Spirit Live 4 brings new levels of power and versatility to 4 bus mixing.

To get the whole picture, call or write to us.

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Harman International Industries Ltd.,
Cranborne House,
Cranborne Industrial Estate,
Cranborne Road, Potters Bar,
Herts EN6 3JN, England.
Tel: +44 (0)1707 665000.
Fax: +44 (0)1707 665461



SPIRIT LIVE 4²
AVAILABLE NOW

A Harman International Company

Shape of THINGS TO COME

CARD BLOWOUT AT SOUNDS OK

Sounds OK have a limited number of Roland JD800/990 PCM data card sets for sale, including 'Drums and Percussion Dance', 'Strings' and others. Each set includes one PCM data card and one patch card priced at £65 per set inc VAT and p&p.

During August, they also expect to be able to offer a limited number of Roland R8/R8m drum machine PCM cards, including the popular TR909 set, priced at £59 inc VAT and p&p. Write off for the full list of cards.

A Sounds OK Interactive, 10 Frimley Grove Gardens, Frimley, Camberley, Surrey, GU16 5JX.

SOS can be reached on CompuServe; our e-mail address is 100517,1113. Our full Internet address is 100517.1113@compuserve.com.

Yamaha have announced the launch of their first dedicated soundcard for the PC. The innovative SW2-PC 'Sound Edge' is based on the OPL4 chipset, combining Yamaha's AWM wavetable and industry standard FM sounds on a single chip. A DSP effects chip is also

and create custom effects using the included Effects Edit Program.

- Extensive support including all major game titles, SoundBlaster Pro, Windows Sound System and General MIDI Level 1. The Sound Edge is also fully compatible with Windows 95.
- 128 programs and 8 drum kits.
- 128kb of SRAM for sampling.

YAMAHA EDGES FURTHER INTO PC MUSIC MARKET

- Sample rates from 5.5kHz to 48kHz, 16 or 8-bit linear from mono mic, stereo line, or stereo CD inputs.
- MIDI, gameport and multiple CD-ROM interface.
- Easy installation and no hardware jumper for IRQ/DMA settings.

The package also contains a healthy selection of software tools and applications, including *Voyetra's* 16-track *MIDI Orchestrator Plus* with Digital Audio; *Audio Station* — an easy-to-use control panel for MIDI, digital audio, CD and mixer

installed for additional sound enhancement. Features include:

- Yamaha's proven wavetable synthesis including sampling capability, with 2-operator FM tone generation to allow up to 44-note polyphony.
- Built-in DSP unit. You can edit

C-Lab have announced a series of smaller configuration Falcon computers, which could provide a substantial cost-saving for anyone currently considering the C-Lab Falcon MKII.

The MKII-4, already shipping, has the same audio modifications and 514Mb SCSI-2 internal drive of its more expensive relative, but with just 4Mb of memory as standard and costs £1499 (inc VAT). *Cubase Audio 16* is said to run perfectly well on this memory configuration (the only functions which are limited are triggering RAM samples and off-line processes like timestretch on long files). This model can be upgraded to the full spec for the cost of a 70nsec (or faster), 72-pin SIMM and a mounting board (£49 inc VAT).

MORE C-LAB FALCONS

The next series, the MKI, will retain all the audio modifications, but contain no internal drive. This reduces the price of the 4Mb machine to £899. C-Lab then recommends the use of their 270Mb Syquest drive at £599, which comes with the correct SCSI-2 cable and a free first cartridge optimised with a custom ICD driver install and *Cubase Audio 16*, ready for use. Alternatively, an upgrade to MKII status (ie. the internal 514Mb SCSI-2 hard drive) is available for £399 from Digital Awareness, the UK distributor.

A Digital Awareness, Eurotec House, 31-35 High Road, Chadwell Heath, Essex RM6 6QW.

T 0181 598 8081.

F 0181 598 8984.

functions; *Voice Morph* — a 'fun' program to convert your voice to an alien or other new characters!; plus a host of sound utilities. Price? A competitive £175 inc VAT.

Also from Yamaha comes news of *SAMM* (Software Audio MIDI Mixer). This PC/Windows based program is designed to bring control of all the functions of Yamaha's ProMix 01 digital mixing console onto the PC screen, whilst adding other features to enhance the capabilities of the hardware. *SAMM*

allows live hands-on mixing as well as automation and cue control of mix sequences. The interface has been engineered to emulate the 'look and feel' of a traditional hardware mixer. Some nifty 32-bit assembly language programming has been used to allow 'fast and detailed graphics to be smoothly handled without taxing Windows at all'. *SAMM* will happily co-exist with other Windows programs. Price is £399 inc VAT.

A Et Cetera Distribution, Unit 17, Hardmans Business Centre, Rawtenstall, Lancs BB4 6HH.

T 01706 228039.

F 01706 222989.

SAMPLITUDE STUDIO

Evolution have added to the *Samplitude* series of hard disk recording products for the PC with the release of *Samplitude Studio*.

Containing considerable enhancements on the *Samplitude Pro* package, *Studio* will retail at £399 inc VAT. New features include:

- 16 tracks of simultaneous playback and record (with appropriate hardware).
- Synchronisation to SMPTE/MTC.
- Support for 4 soundcards; 8 individual outputs.
- Graphic and parametric EQ, compressor, expander, noise gate.

For those with access to the Internet, a demo version is available at the Evolution WWW site (<http://www.evolution.co.uk>).

A Evolution Electronics, 8 Church Square, Leighton Buzzard, Bedfordshire LU7 7AE.

T 01525 372621.

F 01525 383228.



Last month, in our rush to bring you news of Synclavier's highly useful audio file format conversion software for the Macintosh, *S-Link* (see p.32-33

SYNCLAVIER S-LINK FROM STIRLING

SOS July), we mistakenly stated that UK distribution of this product was via Natural Audio. We were wrong! The official distributor is London-based Stirling Audio Systems, to whom we apologise profusely for the monumental cock-up.

A Stirling Audio Systems Ltd, Kimberley Road, London NW6 7SF.

T 0171 624 6000.

F 0171 372 6370.

Patchbay specialists Signex have announced Smartpatch, a new MIDI controlled audio routing patchbay system. Designed to work alongside conventional patch



SIGNEX SMARTPATCH

panels, Smartpatch can manipulate interconnections between 16 audio inputs and outputs using an electronic switching matrix. Patch settings can be stored in 128 patch memories which can be selected and edited from the front panel, or remotely

via MIDI. Prices are £410 inc VAT for the 2-pole version and £469 inc VAT for the 3-pole version.

A Isopatch, PO Box 747, Poole, Dorset, BH12 4YG.

T 01202 747191.



MORE LIVE SPIRITS

UltraMic Plus preamp gives a 66dB gain range, making the new mixer capable of handling an even wider range of input signals. The EQ on mono channels is a 4-band configuration with two swept mids, while the number of aux sends increases to six. Full mute group facilities have been added, with four mute groups controlled from the master section.

A new, improved version of the Spirit Live 4, with "even better audio quality" and more 'big console' features is being launched by Spirit By Soundcraft. The Spirit 4² is available in 12, 16, 24 and 32 channel frame sizes with mono and stereo inputs offering up to 48 channels in a 32 channel frame. Spirit's new

All mono inputs also feature Pre-Fade Listen, 100mm linear faders, insert points, direct channel outputs, individually switchable +48V phantom power, phase reverse, EQ in/out switching and a hi-pass filter. The stereo inputs — two on every 12-channel frame, four on other frame sizes — feature shelving 2-band EQ and six aux sends.

In the group section, all four groups have 100mm linear faders, insert points, and individual output jacks. The six auxiliary master sends have their own rotary level controls with four stereo returns. Metering is via six 12-segment bargraphs.

Finally, a 10x2 matrix has been added to the master section, making it easier to deal with multi-speaker systems in theatre sound reinforcement. The main stereo XLR outputs are ground compensated with insert pints and a separate mono output is available to feed a centre speaker cluster.

A Spirit By Soundcraft, Cranborne House, Cranborne Ind Estate, Cranborne Road, Potters Bar, Herts EN6 3JN.

T 01707 665000.

F 01707 660482.

SHURE PORTABLE MIXER

Shure's new M367 Portable Mixer is primarily designed for professional use in electronic news gathering, field production and general audio mixing. The M367 will handle up to six line or microphone inputs and can be used with any balanced, low impedance dynamic or condenser mic. New low-noise circuitry makes for a 25dB improvement over the older M267 mixer, which, together with a 20Hz to 20kHz frequency response and a dynamic range in excess of 100dB, makes the M367 eminently suitable for digital recording duties.

Other improvements include user-friendly LEDs and peak lights, 12 and 48 Volt phantom powering, input clipping LEDs, detachable power



cord, XLR outputs, easy access side battery compartment, power-on LED and headphone monitor circuit. Two 9-Volt batteries will provide up to eight hours of continuous use under 'typical' conditions.

A HW International, 161-171 Willoughby Lane, London N17 0SB.

T 0181 808 2222.

F 0181 808 5599.

PANASONIC LOW COST BACKUPS

Silica Systems are now supplying the new Panasonic PD System — the first combined quad-speed CD-ROM drive and rewritable disk system. This device cannot write to a CD, but can record 650Mb on proprietary rewritable optical disks, making it a very attractive proposition for hard drive backup and archive usage. The drive retails for £645 inc VAT with Panasonic optical disks at £38.99 inc VAT.

A The Professional Computer Centre, Silica House, Matherly Road, Sidcup, Kent, DA14 4DX.

T 0181 309 1111.

F 0181 308 1230.

Shape of THINGS TO COME

Spirit's Absolute 2 nearfield monitors have made their presence felt atop of Master Rock Studios' massive blue 48 channel Forte Series Focusrite console to mix forthcoming albums by Sting and Bryan Adams.

T 01707 665000.

American composer, Steve Reich, chose to perform his latest composition, *City Life*, from behind the controls of a new Yamaha PM3500 8-bus concert console. The piece was played by the London Sinfonietta at the Queen Elizabeth Hall on the 10th May.

T 01908 369269.

Soundtracs recently celebrated the opening of their new and salubrious premises in Epsom, Surrey with the help of not only a wide selection of industry personnel, but notably Ace Of Base's Ulf Ekberg, a Soundtracs user.

T 0181 388 5000.

British percussion band 'Inner Sense' recently bought 18 Audio Technica microphones from Concert Systems, Altrincham, thanks to a grant from the National Lottery.

T 0113 277 1441.

D-Zone Direct have some new telephone numbers and some new prices. Sample CDs now retail for £12.50 and LPs for £9.

A D-Zone Direct, PO Box 3, South Croydon, Surrey, CR2 0YW.

T 0181 651 2222.

F 0181 651 3333.

The Federation of British Tape Recordists are looking to recruit new members. Interested? Then get in touch...

A Membership Secretary, Federation of British Tape Recordists, 8 Sherwood, King Edward Road, Barnet, Heris, EN5 5AT.

SOLO FEEDBACK KILLER!



Sabine, manufacturers of the patented FBX Feedback Exterminator and ADF Workstations, have come up with another product to help engineers and performers get the best from their sound systems. The FBX-Solo, available in mic or line level

versions, is a six filter miniature version of the award-winning FBX-901. The Solo helps in achieving extra gain before the onset of feedback by automatically adjusting its extremely narrow band digital filters to attenuate the offending frequencies. The mic version also provides selectable phantom power plus a high quality preamp.

A Fuzion plc, Lyon Road, Walton-On-Thames, Surrey, KT12 3PU.

T 01932 882222.

F 01932 882244.

CD SAMPLING MADE EASY

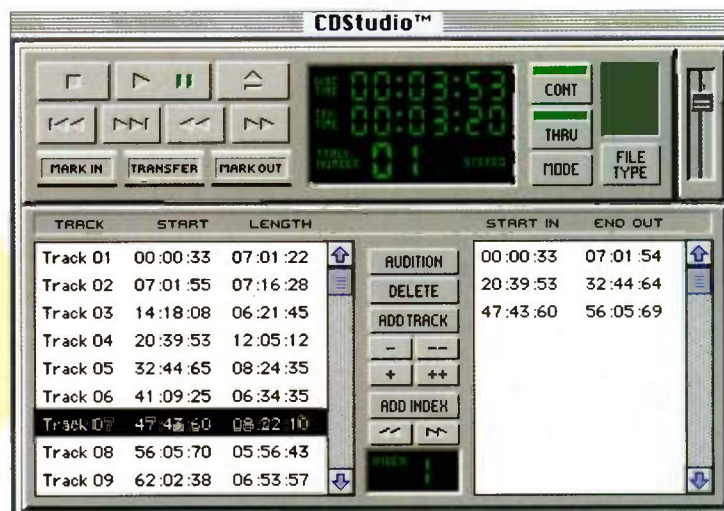
Gallery Software, Digidesign development partners since 1993, have announced the availability of version 1.7 of *CD Studio*, their audio transfer application for the Apple Macintosh. *CD Studio* eliminates the need for professional quality audio hardware by using an Apple CD-ROM drive to read audio directly from any audio CD through SCSI into a Macintosh sound file. When used with an Apple CD300 drive, double speed transfer is possible. Sections may be auditioned through the CD-ROM player's own outputs or through the Macintosh itself and it is possible to mark audio sections while listening to the CD. A range of sound file formats and sampling resolutions can be chosen.

Interpreter 1.0 is Gallery Software's format translation tool. Any Macintosh can be made to browse Akai S1000/S3000 format CD-ROMs, opticals, Syquests or hard drives, audition samples off disk and then transfer samples or groups of samples into Sound Designer II, AIFF or WAV files. Gallery suggest that, although only samples may be transferred in this version, an imminent version will be able to convert S1000 programs into SampleCell instruments, with later versions promising support for other sampler manufacturer formats and the ability to translate a variety of disks into SampleCell II format.

Precision Audio Tools is aimed at producing an integrated system

for multimedia audio production for companies involved in the preparation of audio for multimedia, video games, and CD-ROM. A handful of audio tools are provided to automate every aspect of the process, from scripted recording

categories. It also offers numerous batch conversion and processing functions including file format translation, normalisation, and 'AutoCrop' (automatic top and tail). In addition, it has 'power functions' for manipulation of a variety of Digidesign file types, such as the ability to intelligently 'resolve' inter-file references within SampleCell II



through automatic editing and batch processing of the audio files. While virtually eliminating the need to perform any manual editing *Precision AudioTools* also offers the flexibility to use your favourite DSP tools, such as Waves L1, in a batch operation.

Last, but not least, *SampleSearch 1.9* offers a wealth of features for all users of Digidesign systems and other audio workstations. Firstly it allows them to scan huge sound libraries for matches by a host of parameters, including keywords and

banks and instruments and Pro Tools sessions. It also understands Sound Designer II files and can perform automatic creation and extraction of audio regions, plus the ability to translate between regions and markers. Batch move, rename, strip characters and add characters are also supported.

A Gallery Software, Suite A, 87 Redington House, Hampstead, London NW3 7RR.

T 0171 431 6260.

F 0171 435 8134.

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The singer's stopped moaning about us being too loud, now that we've given him an Sx200 to use as a wedge monitor on stage. As for the punters, they're well made up for 'em. They can hear us properly, and since our new System 200 doesn't take up all our stage room, they can see us properly, too. And, although my Dad said it would never happen, everywhere we play, they ask us back.”

ELECTRO-VOICE. EXTRAORDINARY ENGINEERING.

Shuttlesound

4 The Willows Centre, Willow Lane, Mitcham, Surrey CR4 4NX
Tel: 0181 646 7114, Fax: 0181 640 7583



Electro-Voice

Shape of THINGS TO COME

DIGITAL FIRST FOR PERFORMER

KLEMM Music Technology are now shipping *Digital Performer v1.6*, the first integrated MIDI sequencer with digital audio support for Pro Tools III. A long list of features include:

- TDM bus support, giving access to plug-in DSP programs such as D-Verb.
- Multitrack audio editing window, allowing for non-destructive editing functions such as cut and paste, copying, moving and resizing of soundbite regions. The window can be zoomed and audio

'scrubbing' can be used to find exact edit points.

- QuickTime 2.0 support to enable film composers to work 'to picture' without the problems of synchronising to external VCR or VTR transports.
- Mixdown Window, with volume, pan, mute, solo and TDM plug-in assignment. Users can create and save custom configurations showing any combination of tracks (audio and/or MIDI) and functions such as meters, volume faders, pan knobs, effects inserts etc. Access

is also provided to MIDI effects processors such as transpose or compressor/limiter functions.

- MIDI Machine Control lets *Digital Performer* work with any MMC compatible device, such as ADAT, DA88 or DR4d/DR8.
- QuickScribe, a new outline font for score notation, comes at no additional charge.

Digital Performer 1.6 costs £599, although update prices will be provided for registered users on demand.

A KLEMM Music Technology,
PO Box 4, Arlesey,
Bedfordshire, SG15 6AA.

T 01462 733 310.

F 01462 733 390.

EDUCATION CORNER

East Yorkshire College, Driffield, is offering a two year BTEC National Diploma in Music Technology, designed to enable students to develop all the skills required to work in today's music business. The course is based at the new music facility, which includes a 16-track tape and direct-to-disk digital studio with automated desk, comprehensive outboard gear and full MIDI sequencing/sampling capabilities.

A East Yorkshire College,
Manorfield Road, Driffield.
T 01377 252401.

Steinberg's Scottish Training Centre at the Jewel and Esk Valley College, Edinburgh will host a 3-week programme of courses between August 21st and September 11th, to run in conjunction with the world-famous Edinburgh International Festival.

- Week 1: 'Cubase In Education' is an introductory 'hands-on' course for teachers covering the basics of sequencing and scoring, and some of their specific applications in the music curriculum.
- Week 2 and 3: 'Making Music With Cubase' is an opportunity for users at different levels to explore the techniques and possibilities for making music with *Cubase*.

The courses will be taught by staff and visiting specialists in the

College's custom-built MIDI and post-production facilities.

A Graham Weir, Jewel and Esk
Valley College, Music Section, 24
Milton Road East, Edinburgh
EH15 2PP.

T 0131 657 7235.

F 0131 657 2276.

ABC Music Education Division have just set up the third Steinberg approved UK training centre in conjunction with the University of Bristol's Music Department. Courses for both teachers and general users will be available at all levels, covering various aspects and applications of *Cubase*. A limited number of places will be available on each course to ensure individual attention.

ABC MED have also completed the installation of a complete Music Technology Department at Dulwich College. An existing squash court and accompanying rooms on two floors were converted into a small recital room, overlooked by a recording studio and music technology suite.

To further enhance their educational support, ABC MED have announced the opening of five more regional centres around the UK. Offices are now present in Bristol, Essex, Belfast, Glasgow, Newcastle, Derby, Cardiff, Worthing, London and Oxford, with a further opening shortly in Cambridge. These offices are designed to help provide a

service for teachers who can call on a local contact to advise and train them on their own equipment. All ABC Education staff are ex-teachers or musicians and undergo extensive product training. A free 24-page brochure is available on request.

T Tim Walter, ABC 01450 310300.

F 01454 329466.

Dawson's Music Education Division, Warrington have recently completed a short series of Steinberg training days for teachers in England and Wales. The Steinberg Training Centre is now taking applications from teachers wishing to attend *Cubase* training sessions from September 1995 onwards. Tuition is available at all levels. Early booking is advised for this service which has recently attracted great interest following a successful series of visits and demos by education staff to a number of UK venues.

A Keith Halligan, Dawsons Music
Education Division.

T 01925 632591.

F 01925 417812.

SAE have opened a new school in Glasgow which offers a full range of SAE courses, from a 24 week 'Certificate' to the 18 month 'Diploma of Audio Engineering' — which allows students over 500 hours of hands-on experience, working with a

variety of new high spec equipment. The school's primary 24-track facility includes a 90 square metre live room, 32 channel Mackie mixer, digital multitrack, and healthy array of samplers and effects processors from Lexicon, Digitech and Yamaha. A secondary 8-track studio and separate MIDI programming suite are also available, while a number of Macintosh computer workstations offer experience of Steinberg and Digidesign software.

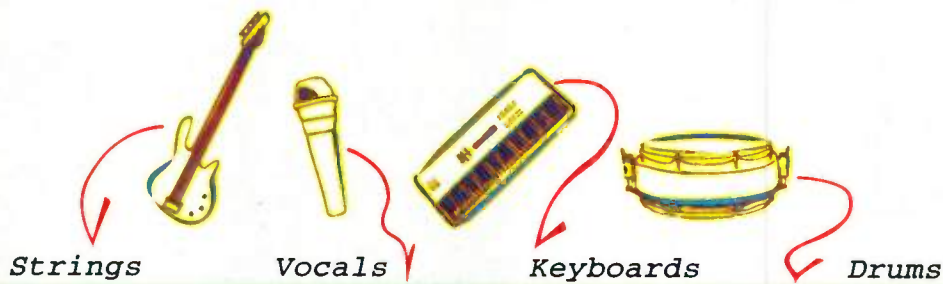
T SAE 0171 609 2653.

East Berkshire College is recruiting its second intake of students for its Music Production and Performance National Diploma course in September. The two-year course includes modules in Music Technology, Music Performance, Sequencing, Studio Techniques, Music Industry, Composition and Arrangement, and Music Theory. Students have access to the music department's Atari and Mac based workstations plus 8/4-track studios.

An evening course in Sequencing also starts this September, and the College's existing programme of A-level and GCSE music continues to run.

A East Berkshire College, Station
Road, Langley, Berkshire SL3
8BY.

T 01753 793000.



The Peavey Spectrum Analog Filter

a programmable analog system that can process any audio source

warm up
to a fat & sassy, full-of-personality sound

The **Peavey Spectrum[™] Analog Filter** combines the best of old and new technologies. This product is a must for any studio or live music environment where you want to enhance the personality and nuances of any audio source. Plug in your miked drums, vocals, electric guitar or bass, keyboard, and voilà!—you won't believe your ears. A smooth, warm sound reminiscent of the days when synthesizers had real guts. Better yet, the Spectrum Analog Filter is MIDI controllable, allowing you to filter, envelope, and resonate signals to your heart's content.

“ Does the Spectrum Analog Filter sound *exactly* like a real Minimoog filter and VCA? Well, not quite, but it sounds great, and it's close enough to a Mini for most purposes. Besides, try fitting your Minimoog into one rackspace. If you want to warm up that icy-sounding, digital synth you've been whining about, this will do the trick. ”

Steve Oppenheimer
Electronic Musician Editors' Choice (Equalizer/Filter)

“ Specs be damned, how does the thing sound? One thing is certain, we didn't hear a \$150 difference between it and the [competitor]. The Peavey, simply put, knocked our socks off. It's nice and smooth, and has plenty of beef and bite. Some of our tweezy synths have never barked bigger. One listener dubbed the Spectrum 'a big, fat pig' (a compliment, by the way). Another enthused: 'This is cool. I want one.' ”

Greg Rule
Keyboard magazine

FEATURES—

- Classic Analog 4-Pole Filter Circuit
- 100 Programmable Locations
- 3 Audio Inputs
- MIDI Note Triggering
- Audio Trigger and Envelope Follower
- Filter Frequency Velocity and Key Tracking
- MIDI Controllable
- Mono Audio Output
- Great Price!



Shape of THINGS TO COME



MARSHALL TAKE ON ROCKTRON

Marshall Amplification have set up a new distribution arm to handle specially selected products in the UK and Eire, beginning with the entire range of Rocktron Guitar Rack Technology products. These include brand new models not previously seen in the UK, such as the Voodoo Valve DSP preamp and the Replifex DSP — both featuring the unique HUSH noise reduction system; the All Access touring MIDI foot controller; the Blackjack overdrive/distortion/boost pedal and the Velocity 120 stereo guitar power amp.

A Marshall Amplification plc, Denbigh Road, Bletchley, Milton Keynes, MK1 1DQ.
T 01908 375411.
F 01908 376118.

If you are fleet of foot you may still be able to take advantage of Digidesign's

DIGIDESIGN SUMMER PRICE-CUTS FOR PC

very attractive price drop on Session 8 and SampleCell for the PC (not the Mac versions, sadly). £800 +VAT will buy a Session 8 PC Core (software and cards)

package, normally £1399; the Session 8 PC System (Session 8 PC Core with 882 I/O) goes for £1499+VAT (usually £2098); SampleCell PC, the 32-voice sample playback system will be available for only £499 +VAT (normally £1030). This offer is only applicable until the

31st July from Digidesign dealers, so hurry!

A Digidesign, 20/28 Kingly Court, London W1R 5LE.
T 0171 494 2949.
F 0171 494 2758.

2turnkey complete



1Gb HD from £699

CDR from £1,100

Being a leader in storage technology solutions means that you get the fastest, state of the art devices that are compatible and reliable. All areas of music need different storage solutions whether you have a computer based hard disk audio system, a sampler or mixing console automation. The **Advantage Series** is a complete range of CD-ROM, removable cartridge, rewriteable optical, DAT and hard disk drive systems. For no compromise performance the **Raven Professional Series** feature Fast/Wide SCSI-2 disk drives that take full advantage of Apple's latest SCSI technology ideal for rapid, uninterrupted data transfer and fully Digidesign compatible.

NEW v3.1

PRO TOOLS

SESSION

Apple Authorised Reseller

ProTools now supports 32 & 48 tracks of record and playback along with several nifty new features including QuickPunch which allows seamless punch in/out -on-the-fly & automatically created crossfades. Digidesign's new Session Software™ 2.0 is a multitrack audio editing software for the Macintosh which runs on the PowerPC range of Apple computers without any additional hardware. Session software includes 4-16 tracks of simultaneous audio playback, 2 bands of real-time parametric EQ, automation of volume and pan. Although the retail price is £350 from the end of October for an introductory period we can offer it for £179 or FREE with the purchase of an AudioMedia II card.

A SELECTION OF EX-DEMONSTRATION, USED AND NEW ITEMS, (All prices include VAT)

Tape	
Alesis ADAT	£1999
Fostex RD8 new	£3295
Tascam 122Mk II	£595
Revov B77	£595
Tascam MSR16 dbx	£3995
Tascam DA88	£POA

Consoles	
Soundcraft 1208	£1999
Soundcraft 1208	£POA
32ch DC2000	£15,800

Direct-to-Disk	
Digidesign ProTools	£3499
D design AudioMedia II	£799
Akai DR8	£POA
Phillips 2x CDR522	£1,999
Samplers / Synths	
Akai CD3000 NEW	£2199
Emul Ellixp	£1949
Peavy DPMC8	£1295

Telephone: 0171 240 4036 Facsimile: 0171 497 0690

adj (1927.) : installed and ready to operate

The legendary American synth designer Tom Oberheim's **Pro Synth** is today's analogue synthesizer. The eight part multi-timbral voices utilise 200 RAM patches, 200 ROM and 100 layers, with 2 high resolution oscillators per voice. All this is housed in a 1U rack and at an incredible price of **£699**

We have the complete Time & Space sound CD/CD-ROM catalogue on Sony CD carousel, + full E-mu CD-ROM libraries + mountains of Turnkey library & available for anyone interested purchasing an **E-mu EIV** from us.



David Manley's vacuum tube designs use only the highest quality components. He is the only authorised user of the original Western Electric passive EQ circuitry used in the original Pultecs. Both the EQP1 and Mid Frequency EQ monoblocks use this classic design for an equally classic sound. If you are interested only in the best valve equipment call us to arrange a demonstration. Assessments 'on site' are available, call for details.



We have on permanent demo all of the available Modular Digital Multitracks whether it is for a standard **ADAT** with a Soundcraft Spirit package or integration with hard disk audio via Digidesign's ADAT interface. If you need longer recording time and a slightly more rugged build the **Tascam DA88** is ideal for mobile /on location recording. Or if you want ADAT compatibility with a souped up transport and all the timecode, MIDI, Sony 9 pin options built-in come and look at the **Fostex RD8**



Yamaha's revolutionary new console shows that affordable digital mixing has come of age. For under £8,000 you can now have a 44ch, 8 bus desk configurable for direct digital interfacing to ADAT, DA88 or AES/EBU standards. 24 analogue inputs, featuring 20-bit, 64 x oversampling are built-in, with 16 mic inputs. 100mm motorised faders, with total recall dynamic automation, Yamaha's 32bit DSPs provide 4 band parametric eq & 50 dynamics processors via 8 auxes.



The **Waldorf Wave** is the programmer's synthesizer with an unmatched sound quality. It has to be heard to be believed! Waldorf's new **Miniworks Analogue Filter** makes it now possible to address the legendary filter of the MicroWave with any audio signal, whether from a sample, mic or guitar. A resonant 24dB low pass filter, ADSR envelope curves. Via a sequence, all settings can be operated in real-time a MIDI controller.

turnkey
Studio Systems

Kurzweil K2000	£1699
Roland JV1080	EPOA
Roland MKS70	£695
Microphones	
Manley Baby Cardioid new	£1199
Langevin CR3A NEW	£349
Neuman KM56	EPOA
Neuman TLM193	EPOA
Audio Technica 4033	EPOA

DAT	
Sony TCD-D3	£1150
Fostex D20B new	POA
Sony PCM2300	£1049
Computers	
OpCode Studio 5	EPOA
MOTU MTP II	EPOA
JL Cooper DataMaster	£499
s/h Mac Quadras	CALL
Outboard	

Manley Pultec EQ NEW	£1599
Manley Dual E/O Lim new	£1875
Langevin dual micpre+EQ	£1099
Langevin dual E/O Lim	£1349
Drawmer DS201	£299
Roland SDE330	£549
Drawmer DF320	£339
Sony MP5 new	£449
Lexicon PCM80	EPOA
Lexicon LXP15 Mk II	EPOA

Massenburg GML EQ	EPOA
SSL G383FX new	£2799
SPL Vitalizer Stereo	£585
Behringer Composer	£269
Analog	
SE1 Rack MiniMoog	£1475
Prophet VS	£1399
Oberheim OBX-A	£699
Oberheim ProSynth	£699

Turnkey Studio Systems.
14 Flitcroft St.
LONDON.WC2H 0DT

Shape of THINGS TO COME

The 7th edition of the Raper & Wyman Catalogue was launched at Audio Technology '95. The free catalogue has a totally new look and format including easy to follow bulleted information on equipment's main features.

A Publications Division, Raper & Wyman, Unit 3, Crusader Industrial Estate, Hermitage Road, London, N4 1LZ.
T 0181 800 8288.
F 0181 809 1515.

The latest single from US rock band Extreme, 'Unconditionally', was mastered by M Works using their newly acquired TC Electronics M5000.

ANALOGUE PROBLEMS? CALL ANALOGUE SOLUTIONS

Tom Carpenter, formerly analogue synth and MIDI-CV expert at Kenton Electronics (and occasional SOS contributor; see 'MC202' retro review p.176) has recently formed his own company, Analogue Solutions. As the name implies,

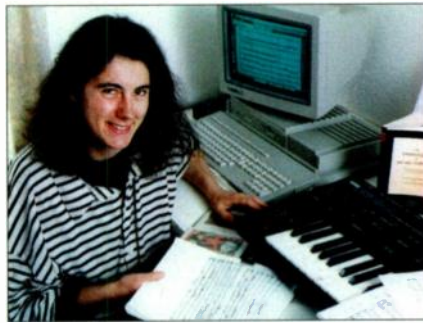
the company will specialise in solving the problems that arise when interfacing pre-MIDI analogue equipment with modern MIDI systems, though the company can also handle service and instrument modifications such as fitting separate outputs or installing external CV control inputs, MIDI retrofits/upgrades, MIDI-CV converters and so on.

A Analogue Solutions, 29 Horton Hill, Epsom, Surrey KT19 8SS.

T 01372 745 494.

F 01372 812 226.

JANE STRIKES A CHORD WITH MUSIC INDUSTRY



Former music teacher Jane Yeats is setting up in business as one of only a handful of independent music copiers, editors, and typesetters currently working in Scotland.

Her company, called Skye Time Music, has received the backing of Skye and Lochalsh Enterprise (SALE), which

provided a funding package worth £2400 to help Jane buy a wide range of computer and musical equipment for her business. Jane is currently preparing a symphonic work, composed by her husband, for use by the BBC Philharmonic Orchestra later this year.

A Calum Iain MacIver, Skye & Lochalsh Enterprise, Kings House, The Green, Portree, Isle of Skye, IV51 9BS.

T 01478 612841.

F 01478 612164.

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44.1 KHz recording from analogue sources · 1-bit, high density Super Bit Mapping A/D converters with 20-bit resolution
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 Advanced indexing facilities · Absolute time · Infrared remote · Optional HNB 19" / 3U rackmounting kit · 32KHz long play mode

Theft of musical equipment and computers from studios continues to be a serious problem for recording studios and musicians. Today's villains are becoming extremely sophisticated. They work from a shopping list and know exactly which machines they require — sometimes it's not even a machine, just a chip. To say that

IS YOUR STUDIO INSURED?

insurers are becoming paranoid about computer theft is an understatement. Hardly surprising, when the proliferation of a certain machine in a former Iron Curtain country is nothing short of remarkable, especially given that the manufacturers have no local sales outlets whatsoever!

The consequence is that Underwriters are insisting on more protection, both electronic and physical: reinforced doors, 5-lever mortice deadlocks, shutters,

computer lock-down plates, etc.

The good news is that insurance rates are not increasing and that substantial discounts can be obtained for the well managed risk. Insurance company Hencilla-Canworth specialise in the music industry and are able to obtain excellent cover for the larger studio and media companies, offering a 'non specified', 'new for old' policy, with an extension of cover to include additional property until renewal (without more premium). Theft from unattended vehicle cover is also available up to £10,000 in respect of unalarmed vehicles and £20,000 for alarmed vehicles. The policy includes breakdown and can be extended to cover business interruption, if required. One studio in Essex was recently delighted when Hencilla were able to quote a premium of 75% less than their renewal, so a quick phone call to them may well prove extremely cost-effective.

A Dudley T Parker, Hencilla
Canworth Insurance Group, 27-29
Brighton Road, South Croydon,
Surrey, CB2 6EB.

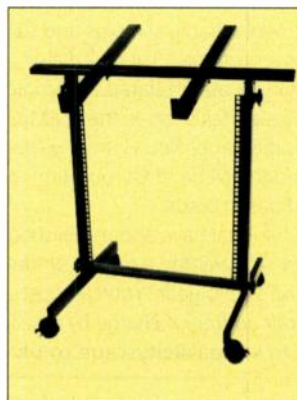
T 0181 686 5050.

F 0181 686 5559.

STANDING PROUD

HW International have introduced the MTS1 rack stand/mixer trolley and the KAF1 keyboard A-frame stand. The MTS1 provides a 12U height, 19-inch rack mounted on a trolley base, which is fitted with support bars for a mixing desk or keyboard. It is ideal for on the road or installations where the PA system has to be mobile.

The KAF1, meanwhile, is a 3-tier, 143cm (56 inches) wide A-frame. Made of tubular alloy and finished in black, it offers a solid platform for the most agile of keyboard players. It is reputedly easy to assemble and folds flat for transporting to and from gigs.



A HW International,
167-171 Willoughby
Lane, London N17 0SB.

T 0181 808 2222.

F 0181 808 5599.

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Andertons Music	Guildford	01483 38212	Dawsons Music	Warrington	01925 245422	Spectre Sound	Huddersfield	01484 513949
Axis Audio Systems	Stockport	0161 4747626	Digital Village	Barnet	0181 440 3440	Stirling Audio Systems	London	0171 624 6000
Carlsbro	Birmingham	0121 6434655	Honky Tonk Music	Southend On Sea	01702 619615			
Carlsbro	Derby	01332 348156	Musical Exchanges	Birmingham	0121 2367544			
Carlsbro	Leeds	0113 2405077	The M Corporation	Ringwood	01425 470007			
Carlsbro	Leicester	0116 2624183	Musicland	Cardiff	01222 621715			
Carlsbro	Mansfield	01623 651633	Music Village	Chadwell Heath	0181 598 9506			
Carlsbro	Norwich	01603 666891	Rose Morris	London	0171 836 0991			
Carlsbro	Nottingham	0115 9581888	Sound Business	Woodford Green	0181 559 0373			



HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU
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Sony TCD-D7 Portable DAT Recorder

Measures just 133 x 37 x 88mm
Runs off conventional dry cell batteries
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Illuminated LCD display
£425.52* excluding VAT (£499.99 including VAT)

The UK's lowest-priced DAT recorder



Shape of THINGS TO COME

The UK Disk Jockey Of The Year competition, sponsored by Trantec Systems, was won by Birmingham DJ Pete Sherriff and judged by top music industry figures, including Pete Waterman. First prize included £2000 cash, a celebrity tour of New York, Detroit and Chicago, and over £1000 of Trantec radio microphone equipment.

T 0181 640 1225.

Computer games manufacturer Sega has purchased a Soundcraft DC2000 24-channel digitally controlled console from Music Labs, for use in the production of the company's new generation of advanced games packages.

T 01707 665000.

HNB Communications, suppliers of professional audio equipment, have just published their 1995 Catalogue. A definitive guide to more than 1300 pro audio products, the catalogue covers 128 pages and is printed in full colour throughout.

A HNB Communications Ltd., 73-75 Scrubs Lane, London NW10 6QU.

T 0181 962 5000.
F 0181 962 5050.

John Hornby Skewes & Co are now the exclusive musical instrument trade distributors of TDK recording media.

A JHS & Co Ltd, Salem House, Parkinson Approach, Garforth, Leeds, LS25 2HR.

T 0113 286 5381.
F 0113 286 8515.

Hot Chocolate guitarist Harvey Hinsley has upgraded his UK studio with a new Soundtracs Solitaire VCA automated production console, supplied by Soundtracs' UK distributor Larking Audio.

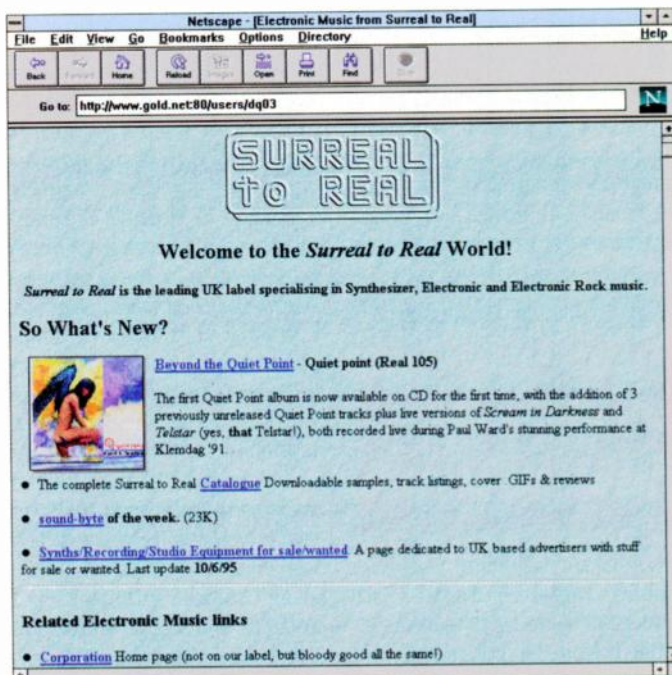
T 0181 388 5000.

E-MUSIC ON THE NET

Electronic Music label Surreal To Real have become one of the first independent CD labels to establish a presence on the Internet. The URL address of their Web home page is:

[http://www.gold.net:80/users/dq03/](http://www.gold.net:80/users/dq03). The site features current news of the artists on the label (John Dyson, Paul Ward, Tranceport, Mike Shipway, Glyn Lloyd-Jones et al), album reviews, downloadable samples and CD cover artwork. There are also links to other related Electronic Music sites such as the EMMA home page, Neu Harmony Mail order, EM band Corporation, and Midas Records.

Surreal have also established a for sale/wanted page for synths and studio gear. You can post your ad free of charge by emailing it to surreal@cityscape.co.uk.



Anyone with a modem and suitable Internet browsing software can visit the page at:

http://www.gold.net:80/users/dq03/for_sale.html.

Surreal To Real will also be present at the forthcoming EMMA

III electronic music festival, being held at the Octagon Centre, Sheffield on September 2nd.

A Surreal To Real Ltd, PO Box 33, Evesham, Worc. WR11 6UX.

T 01386 832586.
F 01386 833720.

SAE'S SOUND ACQUISITION

Continuing its aggressive expansion policy, the School of Audio Engineering (SAE) has recently acquired Soundtrade Studios in Stockholm, Sweden. Currently undergoing refurbishment and redesign to conform to SAE College standards, the 4-studio complex boasts the largest recording room in Sweden and is one of the leading commercial facilities available in the territory, occupying over 1000 square metres of floor space.

Studio One is a 48-track facility, based around a 54-input moving fader Neotek console and will continue to operate as a commercial facility under its existing name of Soundtrade Studios. Studios Two and Three offer 24-track facilities with Dolby SR noise reduction, while Studio Four is a hard disk recording facility with extensive video sync capabilities. These three studios will be used by the new SAE students.

Founder of SAE, Tom Misner comments: "We are very proud to be able to offer our students the opportunity to be educated in such a famous and well equipped facility. Soundtrade's recording history and artists have had such enormous influence on the world music scene, so the impact associated with this venture is enormous."

SAE Stockholm will be taking its first students in September while offering both full- and part-time Audio Engineering Diploma programmes, with courses in both Swedish and English. Contact Guy Nicholson at SAE Amsterdam for enrolment details.

T Guy Nicholson +31 20 689 4189.

ROC SCHOOL COURSES

The Roland Owners' Club (ROC) are organising a range of courses on various dates during the coming months, following the success of ROC's MC-50 course earlier in the year. All courses are based on a one day, hands-on tutorial with top industry professional instructors, at low affordable prices. Planned courses include:

- Getting to grips with MIDI (beginners/intermediate/advanced).
- JV-1080 programming (all levels).
- S-750/S-760 sampling (all levels).
- W-30/S-330/S-550 sampling (all levels).
- D-10/D-110 (and compatibles) programming (all levels).
- E-Series sequencing and editing (beginners/intermediate/advanced).

For courses in any model not listed above, please contact ROC's Tony Eve for further details.

T 01733 233135.

FROM HI-FI TO HI-TECH

The new hi-tech music store backed by hi-fi specialists Richer Sounds, X-Music, are heralding themselves as "the first of a new generation of music shops", offering a high level of friendly, professional and helpful service as well as free lollies (good to see that one making the transition from hi-fi to music stores!) and coffee. The Bristol shop opened on May 27 this year.

A X-Music, 20 Cotham Hill, Cotham, Bristol BS6 6LF.

T 0117 9734 734.
F 0117 9734 800.

In celebration of their 50th anniversary, Sennheiser are introducing the HD414 Classic, a limited edition, modernised version of the world's bestselling headphone.

In 1968 Sennheiser created the first 'open' headphone, the HD414, which went on to sell millions over the years, many of which are still in use today. The open principle has subsequently been adopted by every other headphone manufacturer, a fitting endorsement to

ANNIVERSARY CLASSIC

versions of Sennheiser's latest drive units. To distinguish the new model, Dr Sennheiser's signature is printed on the headband. The simplicity of the structure extracts the maximum performance from the drive capsules, resulting in headphones that are light and comfortable and sound remarkable for the price of £49.95 inc VAT.

A Sennheiser UK, 12 Davies Way, Knares Bosc Business Centre, Loudwater, High Wycombe, Bucks HP10 9QY.

T 01628 850811.

F 01628 850958.

Hi-tech musicians looking for an all-in-one solution to their gigging requirements should find JBL's new EON PowerSystem portable PA attractive. Available both as a



JBL EON PORTABLE PA

complete system or individually as components, the new EON PowerSystem is claimed to be the industry's "first complete, portable, PA system in one box", featuring two 15" bi-amped speakers, a 10-channel stereo mixer, two JBL E50S microphones, and all necessary cables, all designed to perform together optimally.

One key to EON's claimed

genius resides in the speakers' unique mix of power, performance, and weight. EON's bi-amped, powered speakers eliminate the confusion and cost of adding additional power amps and electronic crossovers. The made-to-match amplifiers distribute just the right amount of power to the high and low frequency drivers, eliminating power compression and distortion, and resulting in a cleaner, more natural sound. The built-in, bi-radial horn provides a 90x60 degree coverage pattern.

A variety of speaker configurations are available in the EON range, and all incorporate a proprietary woofer design that features a neodymium magnet and JBL's own Differential Drive Voice Coil system. The actual design of the enclosure allows the EON speakers to be used as either an upright speaker or an angled monitor.

A Harman Audio, Unit 2, Borehamwood Industrial Park, Rowley Lane, Borehamwood, Herts WD6 5PZ.

T 0181 236 7250.

F 0181 207 1662.

KRK DON'T MAKE MIXERS, MICS OR EQUALISERS - JUST THE BEST STUDIO MONITOR SYSTEMS YOU CAN BUY.



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£399
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- High power rating
- Compact sizing
- Smooth frequency response



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6000S
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- Close-field monitor
- Low distortion
- Compact sizing
- Extremely smooth frequency response



7000B
£995
EX VAT (£1169 INC)

7000BS
£1095
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- Phase-aligned
- Kevlar drivers
- High power rating
- Extremely smooth frequency response



When you buy a pair of studio monitors you want excellent audio quality, rugged reliability and the highest value for your hard earned pound.

That's why the people who know head straight for the KRK's.

Manufactured by people who specialise in the art of studio monitoring systems they're real favourites with engineers with discerning ears.

And starting at just £399 ex vat they're favourites full stop.

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9000B
£1595
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- Close-field monitor
- 3-D transparency
- High power rating
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13000B
£2995
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- High power rating

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Yamaha O2R

Digital Recording Console

June 20th saw Yamaha's world launch of the O2R at Air Lyndhurst Studios, London. PAUL WHITE spoke to Yamaha's engineers to get the lowdown on this appealing 8-buss digital recording mixer.

Yamaha make no secret of their long-term aim to develop digital mixing consoles for the project studio sector of the market; their Promix 01 stereo mixer offered moving fader automation, recall and internal digital effects, all for under £2000. It was inevitable that this technology would eventually find its way into a recording

channels are accessed via optional interface cards and function much like the monitor section of a regular in-line desk. Cards will be available to interface with the Alesis/Fostex ADAT, Tascam DA88 and Yamaha's own Y2 digital format, as well as AES/EBU or analogue. In addition to the 8-buss routing to the multitrack outputs, direct channel outputs may also be used to give a total of 16 tracks of simultaneous recording.

The price is expected to be very close to £6000 (ex-VAT) with the meter bridge adding between £800 and £1000 to the package.

INSIDE STORY

The O2R includes two multi-effects units, dynamics (compressor/limiter or gate) on every channel, and internal dynamic and snapshot automation up to a maximum of 64 snapshots. Mix data is stored in internal memory, which may be expanded to 2.5 Megabytes as required, and mix data may then be dumped to a computer via RS422 or to any suitable MIDI storage device. Over 3000 parameters can be automated and the console can run against either SMPTE/EBU or MTC timecodes. The stereo outputs from the console are available in the analogue domain via 8x oversampled, 20-bit converters, or in AES/EBU and S/PDIF digital format at up to 24-bit resolution.

The input converters have a 20-bit resolution while Yamaha's latest 32-bit DSPs handle processes like EQ and effects generation. RISC technology is used to keep the cost down and the processing speed up.

Every input on the O2R (and the stereo outs) has 4-band, fully parametric EQ, and the user

interface is relatively straightforward, most actions being accomplished by first selecting the desired channel, then tweaking the physical channel controls to the right of the console. A large, bright LCD display is provided to present the necessary information and this intelligently flips to the appropriate screen whenever a control is manually adjusted. EQ and dynamic curves are displayed in graphical format on the display where appropriate.

Access is provided to a staggering

number of parameters; each channel has eight aux sends, two dedicated to the internal processors and six routed to analogue effects send outputs — and then there's the 50 sets of dynamic processors. You can also programme up to a 60ms (max) delay on each channel (in single sample increments) to compensate for mic positioning when recording with multi-mic setups.

A Mac-based Project Management program will be released with the O2R, enabling multiple O2Rs to be run together as one large mixer. The software will also act as an archive for mix and project data. The O2R may also be controlled directly via MIDI, and a Local Off mode will allow the

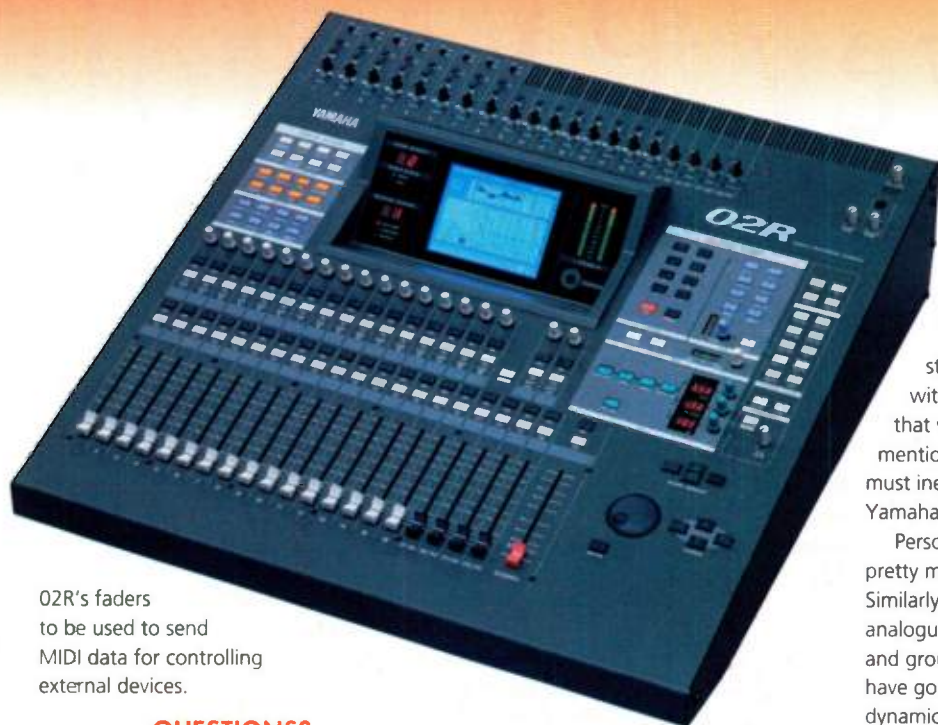


console, so the announcement of the O2R came as no real surprise.

Styled very much in the same vein as the Promix 01, the 8-buss O2R has a total of 40 channels plus two stereo (analogue) effects returns. The 24 main channels (16 mono and four stereo) have dedicated analogue inputs and the first eight channels have both line and mic inputs with switchable phantom power. The second group of eight channels are general purpose jack inputs, which can still accept mic levels. The remaining 16

O2R FEATURES

- On board automation of all digital mixing parameters, referenced to SMPTE/EBU timecode or MTC.
- Instant and total reset of all digital mixing and signal processing parameters.
- 40 input channels and two full-featured stereo internal effects returns.
- 24 'built-in' analogue inputs equipped with 20-bit, 64-times oversampling AD converters, 16 of which are equipped with high quality mic preamps and 8 with individually switchable phantom power and analogue insert points.
- 8 output busses, stereo analogue (20-bit, 8 times oversampling DA converters) and digital (S/PDIF and AES/EBU) outputs.
- 16 digital outputs to multitrack (8 busses plus direct outs).
- 100mm motorised faders.
- 4-band fully parametric automated digital equalisation on all input (and stereo output) channels.
- Comprehensive 32-bit programmable dynamics processing on all input channels and output busses (equivalent of 50 stand-alone processor units).
- 8 aux sends (pre or post fader) on every input channel; two directly routed to internal multi-effects.
- Programmable fader groups, mute groups, and stereo pairs.
- Digital cascade of multiple consoles with full 24-bit precision.
- Interchangeable digital I/O cards, providing direct digital interfacing with Alesis ADAT, Tascam TDIF, AES/EBU and Yamaha formats, as well as multiple analogue I/Os.
- Comprehensive input and output metering and parameter status monitoring.



O2R's faders to be used to send MIDI data for controlling external devices.

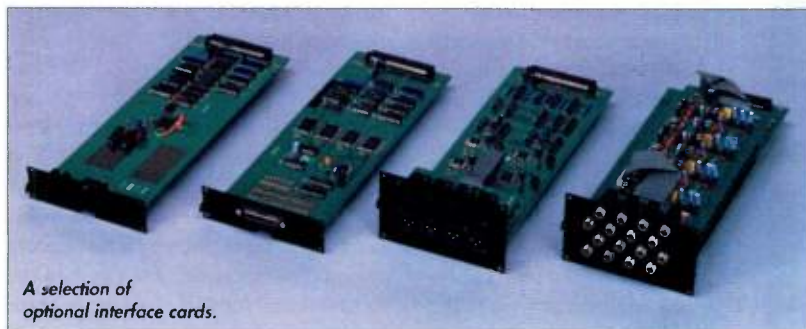
QUESTIONS?

Although the O2R has 40 input channels, you can only access 24 of them without buying additional interface cards. Furthermore, without these interface cards, no multitrack work is possible. However, if the cost of the cards is as projected (around £250 +VAT), I don't see this as a major setback.

On the face of it, the O2R is a technological miracle which is priced to strike terror into the hearts of those companies still striving to produce low cost, moving fader analogue consoles. After all, moving faders don't provide

but it's still not instantaneous, and just a few milliseconds of delay may be enough to affect the feel of a good drummer. If you're monitoring off digital multitrack in the digital domain, it should be possible to keep the delay to a couple of milliseconds or less which, in practical terms, is equivalent to standing two feet further from the monitors than the rest of the band.

Sound quality is also a major factor. Despite the technical spec of the Promix 01, there were users who felt it didn't deliver the same noise and headroom performance as a typical analogue desk.



A selection of optional interface cards.

anything like the same total project recall ability as something like the O2R, and for me, the fact that you can very quickly recall a three-year-old session exactly as it was is more important than being able to make every virtual pot and fader change in real time as you mix. However, whether the O2R really does signal the end of analogue multitrack depends on a number of factors, not the least of which is the delay between a signal coming off tape and being audible in the monitors. Using modern technology, this can be very fast,

And even if the O2R's technical spec does hold up on paper, there are still the subjective aspects of sound to take into consideration. We already have users who don't like the sound of digital multitrack or DAT, for whatever reason, and I'm sure the debate will continue over mixers. Similarly, digital EQ can sound quite different to analogue EQ, so there's plenty of leeway for subjectivity there.

If the sound of the mixer does meet expectations, and there's a good chance that it will, are you happy with a user

interface that requires you to select channels one at a time and then adjust them from a single common control panel?

There are bound to be those who still want knobs for everything, but with so many parameters on the O2R, that would be totally impractical, not to mention prohibitively expensive. There must inevitably be a compromise, but have Yamaha made the right one?

Personally, I think they've got things pretty much right, but you may not agree. Similarly, because it isn't practical to put analogue insert points on every channel and group of a digital console, Yamaha have gone the route of building in dynamics processing. This provides either gating or compression type functions, but from my own viewpoint, I like to use compression *with* gating. However, there are analogue inserts on the O2R's first eight channels, so you could always patch in your trusty Drawmers. Obviously any restrictions have to be seen in the light of the benefits 50 channels of dynamic control gives you, and at current prices I reckon you save over £50 just in rack bolts, let alone the gear itself!

Finally, the user interface means that you have the equivalent of a serious studio console in a remarkably compact package, but do your clients still expect to see a mixer that crosses three time zones? True, you can make a small mixer look very hi-tech and futuristic, but for my money Yamaha have chosen a rather uninspiring style which looks a little dated, especially with the wooden end-cheeks. What's more they haven't even provided an arm rest, even though everyone knows that an automated mix takes at least four times as long as doing the same thing manually. Anyway, you have a while to make up your own mind, because the O2R isn't due to hit the shops until late autumn. One thing's for sure, if Yamaha really have got it right this time, there are going to be some very worried mixer manufacturers out there, as well as a very buoyant 'used mixer' section in the SOS reader ads. Watch out for our full hands-on review later in the year. **SOS**

FURTHER INFORMATION

- £ O2R from £7045 inc VAT (projected price).
- A Yamaha Kemble Music (UK) Ltd, Sherbourne Drive, Tilbrook, Milton Keynes, MK7 8BL.
- T 01908 368872.
- F 01908 366700.

Peavey PVM480

Back-Electret Capacitor Mic

Though not new, Peavey's PVM480 back-electret mic is an ideal first capacitor mic.

Sound Engineer STEVE BRODIE explains why.

Recent years have seen the Peavey product portfolio expanding into many areas, and the previously traditional range has been redefined by the introduction of such hi-tech equipment as synths, samplers, and effects processors. Despite the expansion, however, Peavey's comprehensive range of microphones has not received the attention that it perhaps deserves, including as it does dynamic models for stage vocalists and instrument miking, Lavalier, and even boundary mics.

The model under review here, the PVM480, is not new, having been released back in 1992. Nevertheless, its relative age does not mean it's unworthy of consideration for purchase today — it's a modestly-priced back-electret capacitor mic, and should interest anyone desiring high sound quality for minimum outlay. The mic comes packaged in an impressive metal case finished in grey and silver, the styling of which falls somewhere between retro '50s chic and Jean-Luc Picard's lunchbox. Peavey's description is of a 'flite-type' case, which is perhaps a little generous, but it is certainly a very substantial case to be included in the price, and outstrips the usual plastic or vinyl offering.

Inside, the mic is packaged in rather sumptuous velvet-covered foam alongside the usual mic clip and foam windshield. Also supplied is a 25-foot balanced mic cable terminating in Neutrik XLR plugs. Including cables with microphones seems to be increasingly rare, but it is a practice which I think should be encouraged; you can never have too many mic cables!

The pretensions of the case belie the unassuming appearance of the PVM480

itself, which is a virtually featureless black tube, nearly 5.5 inches long and just wide enough to accept an XLR plug. The hard black finish over the machined casing has a smart and attractive appearance, and looks as though it would tolerate a reasonable amount of abuse. But enough of appearance — after all, we don't buy equipment on looks alone, do we...?

TESTING TIME

Being a capacitor mic, the PVM480 requires a power supply, and will accept phantom power rated at between 9 and 52 volts. I was disappointed by the absence of an option to power the mic from an internal battery; not only would this widen potential applications, it would also open up new markets for the PVM480 — multitrack owners who lack phantom power, for a start! Of course, this would undoubtedly have added to the cost.

The frequency response is said to be nominally flat between 40Hz and 20kHz. The supplied graph supports this, as well as revealing a slight 'lump' around 5kHz. This is a common characteristic in mics, and improves presence and clarity on vocals — but it's often far more pronounced than on the PVM480. According to Peavey, the hypercardioid pickup pattern is designed to limit the effect of the acoustic environment, and also, of course, to reduce the risk of feedback in a live situation.

I performed various tests on the PVM480, including an A/B comparison with an AKG C1000S, and as a reasonably-priced capacitor mic, the PVM480 bore up well. I made recordings of the same source material onto DAT using the two mics in turn, and on playback, distinct characteristics were evident. The PVM480 has a fairly neutral sound which seems to produce an honest representation and a pleasing clarity, particularly at the top end; acoustic guitars seemed 'zingy' and fiddles lively. The C1000, in contrast, had a warmer sound.

These assessments are inevitably subjective, and I should say that the



PEAVEY PVM480 £132

PROS

- Low price.
- Good sound quality.
- Quality case and cable included.

CONS

- No battery power option.
- Slightly lacking in bass response.
- There's nothing else at this price!

SUMMARY

A very competent mic, capable of high-quality results at a very low price.

sound of the two mics is in many respects very similar, which is of great credit to the Peavey, retailing as it does for considerably less. If I were to find fault with the PVM480, I would say that it is less convincing in the lower octaves than the C1000. I would also like to have seen an integral windshield on the PVM480 (as with the C1000) in order to accommodate use as a live vocal mic. This would have added some flexibility, but then of course, this rarely comes in tandem with low cost. Who'd be a designer?

The PVM480 carried itself off with similar grace on stage, providing an accurate sound from which any desired polish could easily be added at the mixing stage. The mic's compact dimensions and black finish would make it very suitable for stage applications where discreet placement is required.

CONCLUSION

In short, the PVM480 is an excellent choice for anyone who needs a first capacitor mic suitable for the bulk of their miking requirements. The bottom line is that for the same price as a half-decent dynamic microphone, you can buy the PVM480, and for those looking to make quality recordings, a capacitor mic will outperform a dynamic model in most situations. Those who overlook it in favour of more established brands do so at their (quite literal) cost. Well worth checking out!

505

FURTHER INFORMATION

- E** PVM480 £131.80 inc VAT.
- A** Peavey Electronics (UK) Ltd, Hatton House, Hunters Road, Weldon Industrial Estate, Corby, Northants NN17 5JE.
- T** 01536 205520.
- F** 01536 269029.

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Byetone VM95 & VM97

Dynamic Microphones

If you've ever wondered what happened to the Iron Curtain, PAUL WHITE's theory is that it was melted down to make budget Russian mics! Here he takes a look at the latest two to defect to the West.

The Russian mic market continues to expand further, as UK mic distributor AS McKay have tenaciously tracked down yet another ex-Soviet audio manufacturer — this time Byetone from St Petersburg. The product name may be indescribably naff, but the products themselves are solidly built, have a good standard of finish, and work rather well. They're also stunningly cheap, at just over £60 each.

AT A GLANCE

The two mics on review are the models VM95 and VM97, the main difference between the two being that the VM95 is a supercardioid mic while the VM97 is a conventional cardioid. At least, that's



what the documentation says, although the VM97 body also bears the legend 'Super Cardioid'. Tonally, the mics are very similar — the only cosmetic differences are that the cardioid VM97 has a chromed lower body section, while the VM95 is finished in dark grey metallic paint all over. Both mics are extremely heavy at 350g apiece, and though this helps reduce handling noise, you might find them a touch on the weighty side for prolonged hand-held use. On the other hand, if you tend to play at rough gigs, the extra weight could come in handy!

These are strictly no-frills mics designed for general-purpose and vocal applications. As you might expect with a mic of this type, the frequency plot shows a broad presence peak combined with a gentle LF roll-off below 150Hz to help improve vocal articulation and reduce the effects of unwanted low frequency sounds. There are no switches, no free stand adaptors and no leads, but you do get a neat zip-up carry bag, and a spec sheet printed on what looks like recycled *Pravda*.

The top of the mic unscrews, allowing the tough, foam-lined, wire-mesh basket to be removed for cleaning. A flexible mounting is used to damp capsule vibrations caused by handling noise, and the mic output comes via a conventional XLR connector, which, unlike some Russian connectors, mates and locks perfectly with a decadent western mic lead.

TESTING, TESTING...

On paper, the cardioid VM97 has a slightly more extended HF response than the 95; the former's response extends from 60Hz to 19kHz, while the 95 only reaches 17kHz. In reality, the HF response of both mics starts to roll off above 15kHz. Even so, in speech tests, the top end was clear and well-detailed. I compared both the tonality and sensitivity of these two mics with my trusty old SM58, and found the Russian contenders to be only marginally less sensitive and tonally similar, but with perhaps slightly less warmth and a more open top end.

Handling noise was acceptably low, though in the studio, stand-mounting would be more normal. As is to be expected with any cardioid, the tonality warms up considerably when you work

BYETONE VM95 & VM97
£63

PROS

- Solid, stylish construction.
- Very inexpensive.
- Good sound.

CONS

- A bit heavy.
- No included stand clip.

SUMMARY
Ideal budget vocal or general-purpose dynamic mics that don't suffer from a budget sound.

closer to the mic, due to the proximity effect. The tonality also thins out noticeably when you move too far off axis (again, as you would expect from a cardioid). When you move the sound source directly behind the mics, the best rejection is in the 500Hz to 1kHz part of the spectrum. In practice, the mics were no more susceptible to feedback than most other dynamic models I've used.

IN SHORT...

I was very pleasantly surprised at the performance of these mics, especially when their low prices are taken into consideration. Most of the dynamic mics I've tried in this price range have been a bit of a compromise; they either sound coloured or they're quite insensitive, but the Byetones (I can't help but smile at the name) have a transparent, natural sound with just about the right balance of tonal warmth, HF detail and sensitivity. OK, they don't sound quite as refined as a good £200 dynamic mic, but then they wouldn't actually disgrace themselves in a direct shoot-out either.

Some of you occasionally take us to task for being too kind when we review products, but I really can't find anything to complain about here given the performance, price, and build quality. If anyone builds a better dynamic mic for 60 quid, please send it in and I'll gladly review it!

SOS

FURTHER INFORMATION

E Byetone VM95 £62.50; VM97 £62.50.
Prices include VAT.

A AS McKay Ltd, 6 Bridle Close,
Surbiton Road, Kingston-Upon-Thames,
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When Rick Wakeman first saw the Vestax HDR-6, he said 'That looks user friendly...'

When Rick Wakeman first used the Vestax HDR-6, he said 'It's incredibly user friendly...'

As a busy composer and musician, Rick Wakeman wanted a machine that would do a professional's job with minimal fuss. 'The HDR has all the features (and more) of a bigger pro job and with fantastic quality and ease of use...'

TL Audio

Dual-Valve Mic Preamp/DI Box

PAUL WHITE tries out the new TLA Preamp/DI box, which combines leading edge solid-state technology with vintage tubes in an attempt to offer the best of both worlds.

TL Audio have already established a reputation for building quality valve outboard gear, and their new two-channel preamp/DI is designed to handle guitar, instrument and mic level signals. Presented in a sturdy, utilitarian steel case, the preamp/DI is straightforward and functional, though I wouldn't go as far as to say it was pretty!

QUICK TOUR

Rackmount ears are provided with the unit, and power comes in via an IEC mains lead. A dedicated low-noise SSM chip is used as the mic preamp stage (complete with switchable phantom power for use with capacitor microphones), while a valve input stage — which utilises half of a 12AX7 or ECC83 double triode — handles the Instrument/Guitar input signal. This comes into the unit via an unbalanced jack, and when set to Guitar, the impedance of this input is 100kΩ. When switched to Instrument, however, it is 10kΩ. Guitar amps usually have a higher input impedance — more on what effect this has on performance in a moment.

A push-button switch selects either Guitar or Instrument sensitivity, and a further button switches between the Mic and Instrument/Guitar inputs. A single gain control affects whichever input is active, and the second channel also has a phase invert button to aid in the correction of phase errors.

The selected input passes through

the second stage of the valve before encountering the solid-state balancing circuit feeding the XLR output. A peak LED is also provided, which monitors the output LED and comes on progressively to warn of clipping. This combination of solid-state and tube technology is theoretically a good idea, because it enables a very low-noise mic input to be followed by a stage of tube buffering and coloration. Because the Guitar/Instrument input passes through two valve stages, you might expect that this would be more coloured than the mic input, but in practice, there was no perceived difference.

WARMER BY TUBE?

To evaluate the effect of the Tube Preamp/DI on the output of a microphone, I plugged in a Beyer MC740, purely because I know the sound of this mic pretty well. After arranging a system where I could quickly switch between the mixer input and the Tube Preamp/DI, tests with speech showed a noticeable difference in sound quality. The Beyer mic turns in good results under almost any

circumstances, and I used no EQ. Nevertheless, with the TLA in circuit, the sound seemed a little clearer, and the bottom end just a hint warmer, but with no suggestion of cloudiness or boominess. Indeed, if anything, the bass end was tightened up slightly, resulting in a positive and confident tonality that was at the same time very natural. This impression of

TLA MIC PREAMP/DI BOX £405

PROS

- Easy to use.
- Quiet.
- Sweet tonal quality.
- Mic and instrument inputs.
- Built-in phantom power.

CONS

- No high-pass filter.
- Guitar input impedance on the low side.

SUMMARY

Although better suited to use with mics and non-guitar sound sources than with electric guitars, this remains a versatile unit, ideal for adding 'the valve sound' to your recordings.

increased clarity is a known side-effect of adding small amounts of second-harmonic distortion (indeed, that's how exciters work), and it's long been known that valve circuits add just this kind of coloration.

Used with an electric guitar, the sound was smooth and very warm, but I felt it was just slightly lacking in brightness compared with, say, a high-impedance, active DI box using solid-state circuitry. That's not to say that the TLA's tone isn't good, because it is — but I feel the 100kΩ input impedance may be loading the guitar pickups slightly.

CONCLUSION

On the whole, the Tube Preamp/DI is a well-designed unit from a manufacturer with a good pedigree, and though the effect

of valve coloration is relatively subtle, it's still very nice to listen to. Having both mic and instrument levels adds to the versatility of the device, and I can think of numerous applications, from use in the making of quality live and studio recordings, to treating an entire stereo mix with a touch of colour. The only thing that's missing is a high-pass filter switch for bass roll-off, but one thing's for sure — the TLA is a lot cheaper than buying a valve mic, and the results are much the same.



BRIEF SPECIFICATION

Frequency Response	20Hz to 40kHz within 1dB at 20dB gain
Noise	Mic EIN -127dB (22Hz to 22kHz, maximum gain, input terminated in 150 Ω)
Distortion	0.05% at 1kHz, mic input with 20dB gain
Output	Balanced XLR, impedance less than 10Ω, maximum level +26dBu
Input Impedance	Mic 10kΩ, Instrument 10kΩ, Guitar 100kΩ (Max mic gain 60dB)
Phantom Power	48V switchable



FURTHER INFORMATION

- E** Mic Preamp/DI Box £405.38 inc VAT.
- A** Tony Larking Professional Sales Ltd, Letchworth, Herts SG6 1AN.
- T** 01462 490600.
- F** 01462 490700.

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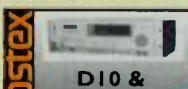
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Audio Technica ATH

Studio Headphones

Established mic company

Audio Technica have branched out into the world of headphones with their new ATH range. PAUL WHITE listens in.

Audio Technica have already established themselves as one of the *élite* amongst manufacturers of professional studio microphones, and now it is evident they intend to continue their marketing thrust into the professional studio by building headphones.

The two pairs of headphones under review, the ATH M40s and the ATH D40s, are similar in most respects, the



only real difference being that the M40s have a wide, flat frequency response, while the D40s have a degree of bass enhancement built in to accommodate the needs of musicians using the phones for performance monitoring (see the 'Phoning Around' box for more information on headphones).

CONSTRUCTION

Both sets of phones follow the enclosed format, and each phone can swivel through a full 180 degrees, which makes it easier for people who like to work with one phone on and one phone off. The comfortably padded earpads sit on the ear itself rather than enclosing it, and the padded headband is fully adjustable.

On the outside of the phone enclosure is a small downward-facing port (presumably associated with the tuning of the acoustic system) each phone is embossed L and R so you know which way round to wear them. A Neodymium magnetic system is used to drive the 40mm diaphragms which are wound with copper-clad aluminium wire to maintain a low mass. The maximum rated input power is 1.6 Watts, but I think that most people would be well on their way to a serious headache by then. A clean SPL of 100dB is available, but for extended use it is probably unwise to exceed 90dB.

Considering that these are studio headphones, a couple of points surprise me. First of all, there's no manual, just a few brief facts printed on the back of the box. Secondly, the cable entering via the left headphone is fixed, rather than being connected via a plug, which means that if you trip over the lead, you may well damage it beyond repair. On a similar note, the ear pads don't appear to be removable for cleaning.

When it comes to performance, both sets of phones produce a smooth but highly detailed sound, with excellent stereo imaging, and good bass extension. As expected, the bass on the D40s is

AUDIO TECHNICA ATH D40 & ATH M40 £120

PROS

- Smooth, detailed sound.
- Comfortable.
- Low sound leakage.

CONS

- Not field serviceable.
- Fixed cable connection.

SUMMARY

Technically impressive and well-suited to private studio use, but the lack of field serviceability could be a problem in a commercial environment.

hyped up slightly, but not to the extent where it feels unnatural. For drummers and bass players, this characteristic will probably be very welcome.

In conclusion, while on the performance side the ATH D40 and ATH M40 are extremely capable and nice-sounding headphones, they don't have the serviceability that we've come to expect from the established players in the studio headphone marketplace. I've already mentioned the fixed cable, but with professional headphones you also expect to be able to replace the majority of the parts while in the field. In short, I feel these phones are built more like a high-end domestic product than a pro audio tool, which for an RRP of almost £120 may be, in the words of our (current) Prime Minister, "rather inappropriate".

SOS

FURTHER INFORMATION

£ £119.95 inc VAT.

A Audio-Technica, Technica House, Royal London Industrial Estate, Old Lane, Leeds, LS11 8AG.

T 0113 227 1441.

F 0113 270 4836.

PHONING AROUND: A WORD ON HEADPHONES

Since headphones require very small amounts of electrical power to produce massive SPLs at the ear, the diaphragm assembly can be made sufficiently light that a single transducer can cover a far wider frequency range than a loudspeaker monitoring system. While a studio loudspeaker system might go from 35Hz to 22kHz, the ATH M40s under review here run from 5Hz right up to 28kHz. What headphones don't provide is the physical impression of bass — you only hear the sound, you don't feel it in other parts of your body. Furthermore, as achieving an accurate bass response

depends on how well the phones couple to the ears of the listener, people with differently shaped heads or ears may perceive varying levels of bass. This being the case, I've always advocated that when it comes to mixing, headphones should be used in conjunction with loudspeakers, and never alone.

Traditionally, open-ear headphones produce the most neutral sound, though at the expense of a less impressive bass end than fully-enclosed models. Enclosed models can deliver surprising amounts of true bass, but the fact that they are enclosed can

produce a slightly coloured sound. However, they are useful when several musicians are playing together, as they help shield the wearer from external sounds and are used for performance monitoring, where absolute fidelity isn't usually as important as volume and freedom from sound leakage.

Open phones are more likely to be used for mixing or qualitative analysis, and while they offer relatively poor isolation from external sounds, some performers still prefer them, because they don't feel so acoustically cut off.

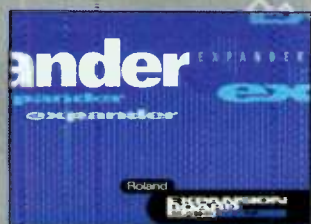
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Silver 5L

Closefield Monitors

PAUL WHITE tests the latest Silver closefield monitoring system, which can be extended to full-range use by the addition of bass enhancement cabinets.

There's certainly no shortage of nearfield monitors on the market, but one company tackling their manufacture is taking a slightly different angle. Silver Productions produce very well thought-out monitors which deserve to be taken very seriously; at the recent 1995 APRS show, it seemed that nearly everyone was using Silver 5L speakers to demonstrate their products.

CONSTRUCTION AND DESIGN

The 5L monitors are physically very compact (260 x 175 x 210mm) and as is true of virtually all very small speaker systems, the bass end rolls off quite swiftly — at about 80Hz or so. However, for use in applications where a full-range bass end is required, the BH passive bass enhancement cabinets are available, and these allow the 5Ls to function as part of a full-range system. Nearly all nearfield monitors (or closefield, as Silver prefer to call them) are based on 2-way, passive driver systems, often in ported boxes, but Silver have gone right back to basics and have attempted to eliminate the baffle effect by using two very small bass/mid drivers in a small, unported cabinet. The baffle effect is due to the fact that the sound from a loudspeaker is also reflected from the surrounding baffle. This produces a 6dB increase in level, which might not seem a bad thing, but unfortunately, unless the baffle is very large, low frequencies (with wavelengths which are long compared to the dimensions of the baffle) suffer — a 6dB drop in level is produced at the cutoff frequency of the baffle. Silver have tried to obviate this problem by fitting a second driver in a separate acoustic compartment. This second driver has a

response tailored to counteract the baffle effect, by supplying additional energy below the baffle's cutoff point.

Because the 5Ls are so small, the cabinets have little tendency to resonate, and the close geometry of the two 4.5-inch magnetically-shielded bass/mid drivers and the single one-inch tweeter helps maintain a sensibly wide listening angle. The bass/mid drivers employ polypropylene cones in roll surrounds and the silver 'prop spinner'-shaped central section is actually a phase plug. The chassis are injection-moulded magnesium.



The passive crossover comes in at 2.4kHz with a 12dB/octave slope to drive the ferrofluid-cooled, soft-dome tweeter, which is stepped back from the other drivers to preserve phase accuracy. When the crossover response is combined with the tweeter's natural characteristics, the resultant crossover slope is around 24dB/octave, though no high-pass filtering is used in the feed to the bass/mid driver. The designers rely on the natural roll-off of the driver, and claim that the lack of filter components improves cone damping at low frequencies.

The second bass/mid driver looks exactly like the first, but employs additional low-pass filtering which brings it into play below around 400Hz, where the baffle cut-off frequency occurs. Connection is via banana plugs only, and there is no provision for bi-wiring.

SUB BASS

The response of the 5Ls starts to drop away at around 80Hz, and that's where the passive BH bass enhancement system (if fitted) can come into play, extending the system response down to 30Hz. Each

of the BH Bass Augmentor cabinets measures 410 x 330 x 330mm, and encloses a 10-inch paper-coned woofer featuring a roll surround and a heavy cast magnesium chassis. Two separate cavities within the box provide band-pass loading on the driver, and the entire sound output comes from a single, large-diameter port. Used with the 5Ls, the frequency response in a reverberant field is nominally flat down to 45Hz or so, then drops off fairly sharply, though there is some usable energy as far down as 25Hz.

Constructionally, the BH cabinets are pretty unexciting, with a simple port on the front and two sets of banana sockets on the rear, one for the amplifier output and the other to feed the 5Ls. Triple-mounting spikes are provided on the bottom of the cabinet to ensure good coupling with the floor. Because the BH cabinets are passive, you don't have the expense of buying a second power amplifier, and because there's nothing to adjust, the balance between the main and bass speakers should always be correct.

LISTENING IN...

Without the bass enhancers, the 5Ls still turn in a remarkably solid performance with very precise stereo imaging; the overall sound is clear and open, with just a hint of stridency at the top end. The 5Ls have been redeveloped from their original form to minimise the impedance dips that give many amplifiers a hard time — so the choice of amplifier isn't as critical as it used to be.

With the bass enhancers wired in, the bottom octave of the sound fills out nicely, but without in any way clouding the existing mid-range. It would appear that the designers have wisely adopted a policy of sonic honesty rather than boosting the bass to try and impress. The resulting system is capable of handling

SILVER 5L MONITORS £649

PROS

- Open sound with good imaging.
- Optional bass enhancers.
- Realistic pricing.
- Will fit in even the smallest studio.
- Magnetically shielded.

CONS

- Some users prefer terminals to the banana sockets employed for speaker connection.
- Sound tends to be just slightly bright.

SUMMARY

A practical and flexible system that can be used for nearfield/closefield monitoring or, with the bass enhancers, as a full-range system. Particularly appealing to those working in confined or awkward spaces.

SPECIFICATION

5L MONITORS

Size	260 x 175 x 210mm
Impedance	8Ω nominal
Amp Power Requirements	30 to 100 Watts per channel
Magnetic Shielding	Compensating magnets
LF/Mid drivers	4.5-inch, polypropylene cone with phase plug, mounted in a magnesium magnetically-shielded basket
HF Driver	1-inch soft dome with Neodymium magnet in glass-reinforced moulded fibre chassis
Crossover Frequency	2.4kHz
Cabinet Material	MDF
Weight	6kg

BH BASS AUGMENTORS

Size	410 x 330 x 330mm
Combined system Impedance	8Ω nominal
Amp Power Requirements	100W per channel minimum
Cabinet Material	MDF
Weight	14kg

System Sensitivity	87dB @ 1m @ 2.83V @ 8Ω
Power Handling	150W nominal music power

full-range monitoring up to quite high SPLs in small and medium-sized rooms, and experiments confirmed that the bass cabinets can be positioned in variety of locations without significantly affecting the integrity of the sound, so long as the cabinet fronts are nominally in line with each other.

CONCLUSION

Silver have produced a sensibly-priced monitoring system that works well with or without the bass enhancers. Because the 5Ls are so compact, they can be conveniently positioned in even the smallest studio, and their high efficiency

means you don't need a huge power amp to run them. On the whole, the tonality is accurate, though as stated, I detected a slight high-end edginess on some material. The imaging is very good, and the dispersion pattern is wide enough to maintain an essentially consistent tonality over a wide listening area.

Bass enhancers can be problematic, but the BHs work particularly well without intruding on the clarity of the 5Ls, and when you consider that the whole system costs little more than £1000, the Silvers stand up well against the competition on both price and performance. Of course, if your budget is tight, it's also worth considering that you can buy the 5Ls and then save up for the bass enhancers later.

SOS

FURTHER INFORMATION

£ 5L monitors £649. BH bass enhancers £509. Prices include VAT.

A UK Sales: The M Corporation, The Market Place, Ringwood, Hants, BH24 1AP.

T 01425 470007.

F 01425 480569.

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Jeanius Electronics Russian Dragon RD-R3

Repackaged and re-launched, one of the audio industry's only specialist timing analysis tools is back in the shops. DOMINIC HAWKEN takes a closer look.

Taking its name from a dubious pun on the words 'rushing-dragging', the Russian Dragon was released on an unsuspecting market about five years ago. After receiving a number of very reasonable reviews and endorsements from major producers, it then appeared to vanish without trace and is now a rare sight even on the secondhand market.

The basic concept of the unit is to provide an accurate method of determining which of two different audio signals came first — a perennial problem in the recording industry since the first drummer played along to a click track — and one which has been further compounded since the arrival of frame accurate sequencers and MIDI triggered samplers. The Russian Dragon offers a finite LED display capable of graphically showing the timed relationship of two individual sounds, all within a claimed accuracy of a fraction of a millisecond.

DESIGN

The rear of this extremely compact 1U unit is simplicity itself, housing only three sockets: two mono jacks for the audio inputs that feed channels 1 and 2, and a connection for the power supply (a simple external unit supplied as standard). The front panel is dominated

by a large, horizontal row of 25 square LEDs, consisting of a central display, surrounded by 12 smaller versions on either side. The comparative timing between the two main audio signals is then shown as a position on this scale, offering a visual indication of the current synchronisation state.

Another set of jack inputs for the two channels are fitted to the front of the unit, together with separate rotary input level controls. Simple LED VU meters are available for monitoring source levels, and each channel is also equipped with a Polarity Check button — more of which later. At the right-hand end of the panel are two Mask rotary controls, together with their associated trigger LEDs, which are used to set the speed at which an individual channel can re-trigger. Lastly, a nine position rotary switch, next to the power button, adjusts the scale of the main display from one to nine milliseconds in single units.

Channel 1 is designed to be the 'reference' or 'click' input, and channel 2 takes the sound or instrument that is to be checked. Almost any type of sound will do, but obviously, the more rhythmic the input, the greater accuracy achieved. Once a reference source has been connected, the large central LED flashes whenever audio is received on this channel. Any signal detected on channel 2 then lights one of the other 24 LEDs, indicating its relative timing with reference to the original signal. A lit LED to the left of centre indicates that the signal is 'dragging' (ie. later than the reference), and one to the right indicates that the signal is 'rushing' (ie. earlier). The further the outer LED is from the centre of the display, the greater the time differential detected between the two signals.

To check a drummer's synchronisation with a click track, a wide scale would be

RUSSIAN DRAGON £445

PROS

- Simple to use.
- Mask function helps analysis of complex drum tracks.
- Extremely accurate timing reference.

CONS

- None!

SUMMARY

Essential visual timing aid for drummers who play to click tracks or anyone wishing to check timing sources against an accurate reference.

used; a narrower one to test the timing of a sequencer against a recording. One exceptionally good feature is the inclusion of the Mask controls, which determine a channel's re-trigger speed. If a channel appears to 'double trigger' because of extra noise between transients, or extra beats in the rhythm, then adjusting the Mask time can silence the input to the Russian Dragon when a trigger is not required. With careful use of the Mask function, it is possible to analyse even the most complex of drum tracks against a simple click.

ALL FIRED UP

Set up is quick and easy — feed the two separate signals into the appropriate sockets, adjust the input levels, then sit back and watch for any timing discrepancies. For the really hi-tech approach, Jeanius have included a polarity check button on each channel, which displays whether a trigger sound begins with a positive or negative transient — the Russian Dragon analyses the time between positive transients only, so this is a good way of testing for possible errors, especially when synchronisation times are very small.



Feeding the same pulse into both channels immediately showed the 'snake eyes' display — the two inner LEDs light up to confirm perfect synchronisation. Gradually introducing a delay into channel 2 caused the unit to track the timing difference with a moving LED.

The owner's manual is well thought out, with a number of in-depth examples describing how to use the unit in typical situations. The only caveat is that some care should be taken when setting the input levels, as overloading the unit (or alternatively feeding it a signal that is too low) can cause inaccurate readings. This is only to be expected with a unit such as this, and in general the system performed flawlessly.

CONCLUSION

I can think of many different uses for the Russian Dragon in today's technology-based studios. As the producer Keith Cohen states in the manual, the system is probably best left connected directly across a Mix-2 buss, so that if any sounds need to be checked for timing accuracy, all the engineer has to do is solo both sources and pan them hard left and hard right. Programmers who resort to locking up kick drums because the synchronisation details have been

"...drummers playing along to click tracks can now also have the benefit of a visual display, rather than just a loud ticking noise in their cans."

left off the track sheet need worry no longer, and drummers playing along to click tracks can now also have the benefit of a visual display, rather than just a loud ticking noise in their cans. Other uses include synchronising delayed loudspeaker systems for PA use or locking variably spaced microphones in phase. The overall accuracy of the system is very high, and as such, I am sure that the unit would be a worthwhile addition to any studio rack. **SOS**

FURTHER INFORMATION

- E** RD-R3 £445.32 inc VAT.
- A** Project Audio Limited, Unit 1, 321 Essex Road, London N1 3PS.
- T** 0171 359 0400.
- F** 0171 359 3393.

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Douglas Adams once observed that alongside the development of civilisation comes a disproportionate growth in the number of shoe shops. He described how an archeological exploration of a dead planet uncovered layer upon layer of fossilised shoes, and I'm starting to feel pretty much the same way about mixers — after all, we must nearly be at the point where there are more mixers in the world than there are sound sources to plug into them! In eons to come, when our own civilisation is being rediscovered by the archeologists of the future, I can almost visualise them stumbling across the carcasses of long-corroded mixing consoles, stacked in layers like some surreal electronic lasagne.

Seemingly undaunted by this prospect, Seattle-

you could send signals to all eight tracks of an 8-track recorder if you wished. To save re-patching when using an 8-track tape machine, eight output jacks are provided for the groups, with Group 1 feeding jack 1 and 5, Group 2 feeding jack 2 and 6, and so on.

When you come to mix, channels 9 onwards are free for use with sequenced MIDI instruments. This method of working emulates a split recording console more closely than an in-line model, so you have full EQ on all signal paths at all times. If you tend to record by overdubbing a few parts at a time, and you don't have a MIDI system with lots of outputs, it's possible that you could even use the SR24•4 for 16-track recording. In theory, the same is true of any conventional 4-buss desk, so what makes the Mackie SR24•4 special?

THE FOUR TOPS!

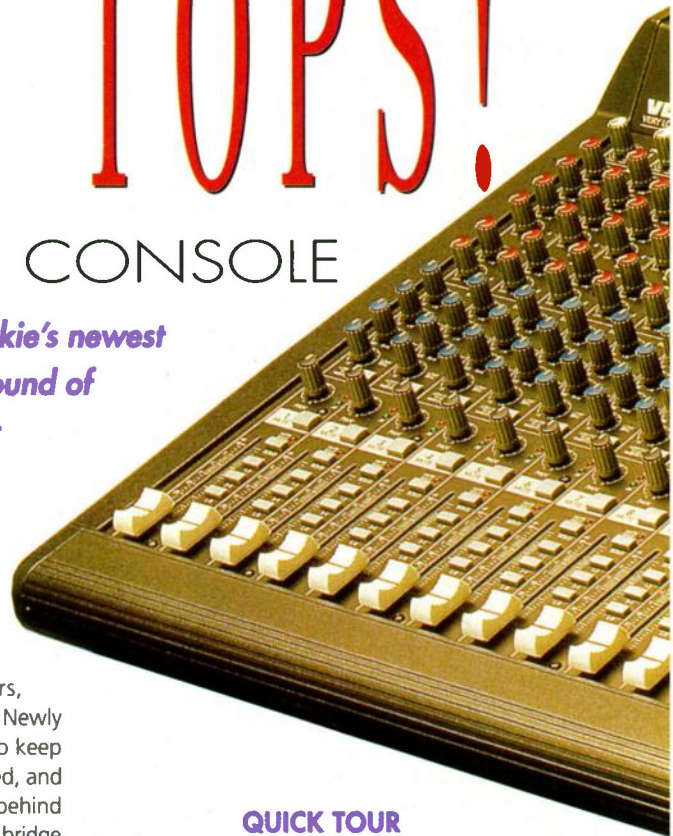
MACKIE SR24•4 MIXING CONSOLE

PAUL WHITE checks over Mackie's newest mixer and predicts another round of credit card battering amongst SOS readers.

based Mackie has just added another mixer to its expanding portfolio. It is a general purpose 24 into 4 desk, which somehow manages to be both compact and at the same time bristling with sensible features. Like their other mixers, Mackie's SR24•4 is incredibly solidly built. Newly designed slimline knobs have been used to keep the control surface from becoming crowded, and all the connectors are on the rear panel behind what would undoubtedly qualify as a meter bridge (if it had any meters on it).

A cursory glance at the control layout reveals that this is not specifically a recording console, as there's no monitor section. It may therefore surprise you that I believe this product will become a huge success in the 8-track recording marketplace, as well as in the more obvious live sound and general music mixing sectors of audio.

The SR24•4 has true 4-buss routing. Each channel can be routed to the main Left/Right outputs, or to buss pairs 1-2 or 3-4. By using, say, channels 1 to 8 routed to L-R to monitor the outputs of a multitrack recorder, and channels 9 onwards to feed signals to tape via groups 1 to 4, you can easily record up to four tape tracks at a time while monitoring the results. By using the insert sends as additional direct-to-tape outputs,



QUICK TOUR

The Mackie SR24•4 combines 20 mic/line channel strips with two stereo, line-only strips and four stereo returns, making a total of 32 different ways of getting a signal into the mixer (not counting the 2-track inputs). All the input channel strips have six aux sends, and unlike some desks that use buss switching, each of the SR24•4's sends feeds its own dedicated buss. Sends 1 and 2 are dedicated pre-fade sends, for foldback or cue mix applications, while Sends 3 and 4 may be switched as a pair to function in either pre- or post-fade mode. Sends 5 and 6 are fixed post-fade for use as effects sends, and each send buss has its own level control and Solo button in the master section of the console.

The mic/line channels differ from the stereo channels in that they are fitted with a 3-band equaliser, complete with sweep mid and switchable

MACKIE SR24•4 £1495

PROS

- Excellent range of facilities for such a small console.
- Rugged but stylish construction.
- Clean, musical sound.

CONS

- No EQ bypass switches.
- No group metering.
- No phantom power warning LED.

SUMMARY

A neat, good sounding mixer suitable for 8-track recording, live sound, and MIDI studio applications.

low-cut filter, while the stereo channels use a 4-band, fixed-frequency EQ system. All the mic/line channels have globally switchable phantom power, plus insert points on stereo jacks.

The routing system is quite conventional, with separate routing buttons for L-R, 1-2 and 3-4, where the Pan control steers the signal between left and right, or odd and even numbered busses in the traditional way. A large channel Mute button is located below the Pan control, and all channels have the benefit of a Solo switch as well as green and red LEDs indicating -20dB and overload signal levels. A clever touch is the Solo/Mute status LED which blinks if a channel is solo'd, but remains on if the channel is muted.

Unusual for a desk of this size is the option to select either PFL or Solo In Place (SIP) — when PFL is selected in the master section and a Solo button is pressed, the pre-fader channel is monitored and metered in isolation, which is eminently useful in allowing you to set up the input gain trim to optimise

conventional in that there are no detents, and the statutory 10dB of gain is provided above the 0dB (unity gain) mark, rather than the 20dB offered by some of their designs.

MASTER SECTION

The master section of this console is refreshingly uncluttered, yet nothing essential is missed out. Level controls are provided for all six auxiliary sends and four stereo returns, and to add to the routing flexibility, Aux Return 4 may be routed to either pair of groups, or to the L-R mix. There are two further controls for sound reinforcement work which allow independently adjustable amounts of effects to be fed into the Aux 1 and Aux 2 foldback mix. A single Solo button allows all the stereo aux returns to be solo'd globally.

Each of the four Group faders may be assigned to the L-R mix via a L-R Assign button, and unlike many mixers which irritatingly route all odd numbered groups left and even numbered groups right, this one has a Pan pot above each Group fader, as well as a Solo button, and an intriguingly named 'Air' knob (see 'Equalisation' box).

Over on the far right is Michael Portillo — no, just



the input level on the channel strip. In SIP mode, the isolated signal is monitored after the fader and Pan pot, so what you hear is the EQ'd signal in its proper place in the stereo soundstage, and at its correct level. More than one channel can be solo'd at a time in either solo mode, and a bright, pulsing red LED in the master section reminds you that at least one Solo button is down.

Mackie's other small mixers tend to include centre-detented faders with plenty of extra gain above the detent position, but the SR24•4 is more

kidding — a BNC connector to accept a gooseneck lamp, the stereo bargraph meters, and status LEDs for Solo and Power, but there is no status LED for the phantom power, which I find mildly alarming. The Solo Mode button is accompanied by a Level control which makes it

MACKIE SR24•4

► possible to PFL a channel without having your eardrums meet in the middle of your head — a thoughtful touch; talkback is also provided. You can opt to talk into the main mix or to Aux 1 and 2, but you have to use your own mic plugged into an XLR socket on the rear panel — there's no built-in capsule.

If a 2-track tape machine is being used, a button lets you route this back into your headphones and the control room speakers. Another button lets you feed the tape back into the stereo mix. If you aren't careful, however, you could end up feeding the mix, via the tape machine, back into itself, resulting in a howl of feedback. This is simply nature's way of telling you that a button is down that really should be up! In the studio you'd usually route the stereo tape machine to the control room feed, but live, you might want to add backing tapes to a mix, so Mackie has given you the option to do either. A single stereo fader controls the main stereo mix level. The tape out monitor level is controlled by the master control room pot (see 'Connections' box for details).

SUMMARY

Despite its apparent simplicity, this nicely thought out and highly versatile little desk will appeal to a wide range of users who need a compact, robust mixer that isn't going to compromise their sound. A few corners have been cut to meet the price point and to keep the size down, but none of these are disastrous. Perhaps most irritating is the lack of an EQ bypass button, and had this been a larger, more expensive console, I might also have expected to see dual sweep mids on the main channels. At this price, however, I can't really complain — six aux send busses on a console of this size is unshamed luxury, and the simple control layout means that even visiting mix engineers won't take more than a couple of minutes to figure out what is going on.

As to the sound, the 24•4 seems very much like other Mackie consoles I've used. It has a clean, well-

"I believe this product will become a huge success in the 8-track recording marketplace, as well as in the more obvious live sound and general music mixing sectors of audio."

CONNECTIONS

Most of the connections on the 24•4 are on standard quarter-inch jacks, with the exception of the mic inputs, the main outputs, and the mono output (all on XLRs), and the 2-track connections which are on RCA phonos. Power is supplied directly via an IEC mains lead, not a carpet carbuncle, and the only thing that makes me a little uneasy about the back panel is that there's a small rotary gain control next to the mono output which will almost certainly become a casualty the first time someone stands the console on its back end. I know you shouldn't do this, but not everyone will be wise enough to invest in a flightcase, and with the best will in the world, mixers do occasionally get handled by roadies! Nuff said.

The Power switch is directly adjacent to the mains inlet and the Phantom Power switch sits right alongside, where it could get switched on by accident if you're used to just leaning over the console and then groping around the back panel until you encounter something that feels like a

switch. Admittedly, the latter is a different size switch which you would come to recognise, but I'm still uncomfortable with this arrangement. As there's no warning LED, this could go unnoticed until there's a problem.

Jacks are provided for all the line inputs, which will happily accept balanced or unbalanced signals, and stereo TRS (Tip-Ring-Sleeve) jacks are used as inserts on all the mic/line channels, as well as the four groups and the main stereo output (the latter is also available on balanced XLRs). The two stereo line channels are wired so that if a signal is plugged only into the top socket, the channel works in mono. Two sets of stereo jacks are provided for phone outputs and these are located on the rear panel — not the most convenient place for the user, but far more logical for the design engineer.

The console can be used in systems operating at both -10dBV or +4dBu levels, due to the gain range available.

SR24•4 EQUALISATION

The mic/line channels employ a 3-band equalisation system with shelving high and low sections, plus a sweep mid covering the frequency range 100Hz to 8kHz. Many mid-range equalisers fall down in not going low enough, but this one goes right down to the edge of the bass band, so there's plenty of scope both for fattening sounds and tuning out boxy resonances. The high equaliser operates at 12kHz, which gives a more airy sound than the 10kHz frequency chosen by some other designers, while the bass equaliser turns over at 80Hz providing plenty of control in the part of the spectrum normally inhabited by kick drums, bass guitars, and bass synths.

A 75Hz bass-cut filter with a very steep 18dB/octave response may be switched in to reduce the effect of unwanted sub-bass sounds on the mic/line channels.

The two stereo channels incorporate the same high and low shelving filters, but instead of one sweep mid, there are two fixed-frequency, bandpass filters centred on 3kHz and 800Hz. All the equaliser controls have a gain range of +/-15dB. There are no EQ bypass buttons but the controls are centre-detented, making it easy to find the neutral position.

One feature I haven't seen before on a mixer of this type is the 'Air' equaliser on the four group outputs. This is a broad-band, boost-only, equaliser centred at 16kHz which has, as its name implies, the effect of adding top-end clarity. With a setting of 0, no high end EQ is added, but as the control is increased, you can add up to 10dB (at least I assume they're dBs and not pounds per square inch!) of 'Air'.

focused sound with no nasty, rough edges and a wide-ranging EQ system that provides very positive control in the areas you need it most; the bottom end sounds tight and full, while the mid-range is clear and transparent with plenty of transient detail. As a bonus, the additional Air controls turn out to be far more effective in adding top-end clarity than you might first imagine — it's almost an 'exciter' kind of effect but without the harshness.

The review console was provided with a preliminary manual (still incredibly well written and fun to read) with most of the technical spec yet to be filled in, but practical tests indicate that this console is well up to Mackie's usual standard. Indeed, there may still be some improvements because many of the components are now surface mount, and the VLZ logo on the case announces that this is a 'Very Low Impedance Design'. If that statement applies to the mix busses, then it would imply even lower mix buss noise, which becomes more important the more input channels you have.

I don't think you need me to tell you that this little console is destined to be a big success, and its open-ended design makes it equally suitable for live and studio work. Above all, it's almost indescribably cute!

SOS

FURTHER INFORMATION

- C** Mackie SR24•4 £1,495 inc VAT.
- A** Key Audio Systems Ltd, Unit D, Chelford Court, Robjohns Road, Chelmsford, Essex CM1 3AG.
- T** 01245 344001.
- F** 01245 344002.

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D:REAM WORLD

With a second album release imminent, NIGEL HUMBERSTONE talks to the creative driving force behind D:Ream, Peter Cunnah.

SONG DIARY

Way back in 1992, D:Ream released their debut single, 'U R The Best Thing'. It was aimed initially at the London club scene, an area of energetic and euphoric music that had exhibited such a profound influence on D:Ream frontman, Peter Cunnah, following his move from Derry in Northern Ireland. It was the marriage of rock and dance that Peter wanted to achieve in his music, and once he had teamed up with (now ex-partner) DJ Alan Mackenzie, the future was set.

Despite limited club success the first single attracted the interest of Rhythm King, who funded the next single, 'Things Can Only Get Better', which crept to number 72 in the charts. National chart success would have to wait until the re-release of the track following D:Ream's signing to Magnet, at which point 'Things Can Only Get Better' became the anthemic 'feelgood' smash hit of 1994, followed closely by the debut album, *D:Ream On Vol. 1*

Peter takes up the history lesson: "There really was no perception of us having existed in 1993 until we did the Take That tour, but we've now had four Top 30 hits with 'Things Can Only Get Better', 'U R The Best Thing', 'Unforgiven' and 'Star/I Like It'. It just shows you the power of the teeny-bop market — it catapulted us to No. 1 for a month. After that, it was like a downhill curve as we milked the album dry with re-releases, which was mainly

the record company's idea. I wanted to take time out to work on the next album, but they said 'no, let's remix this and stay with it'."

Once Peter had fulfilled his demanding promotional and touring commitments, he put together two albums worth of material in a matter of weeks.

"I took a month out in November to go and get a life, because I'd literally been on the road for three and a half years. I bought a house and set up a small studio in it. I was forced into moving because of problems with my neighbours, who complained I was making noise. In fact, I got a criminal conviction under the Criminal Justice Act for working on a track called 'Party Up The World' (the second single)! Ironically, that experience was also the catalyst for the track's lyrics."

Prior to interviewing Peter, I was generally aware that he represented the creative driving force behind D:Ream, but I was surprised to learn the full extent of his involvement in all levels of production. Not only does he write, sing and perform, he also programmes the instruments, demos, and co-produces all his own material.

"I started work on the new album in January '95," Peter reveals. "I keep a song file system — it's something I learned from Sting, and I think Paul Simon keeps something similar also — where you catalogue all of your ideas and keep referring to them. I keep a Recording Walkman with me wherever I go and use the tape counter for a position, give it a date and description, and whether I think the idea's good as a song or as an inspiration for something. Usually it'll be vocal and MIDI stuff, maybe a guitar, or perhaps me just walking down the high street humming a bass line. Just as long as it captures enough of the atmosphere."

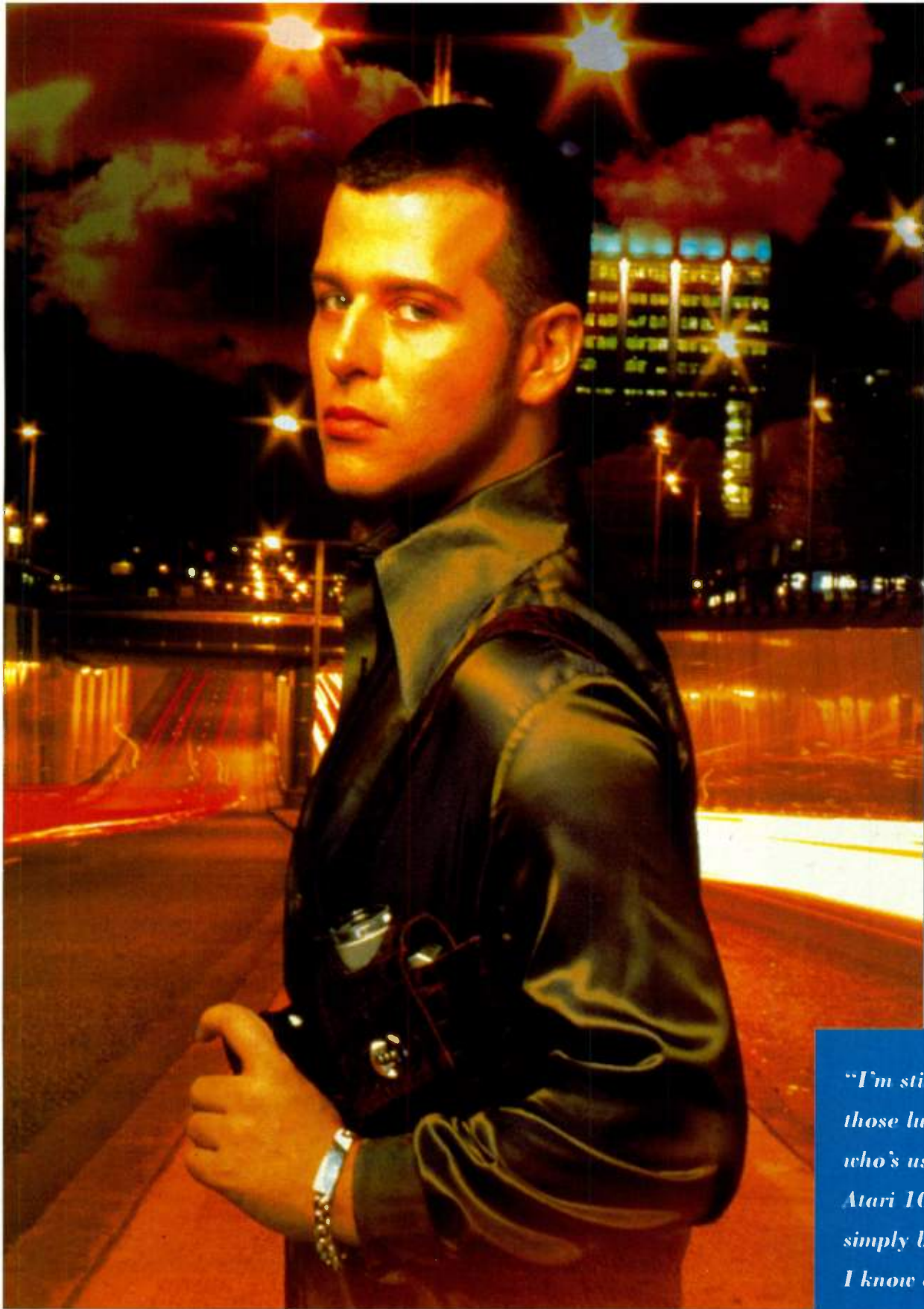
Intrigued, I asked Peter if he could trace back the origin of the current single, 'Shoot Me With Your Love', to this catalogue of ideas?

"Yeah. Just before I formed D:Ream I was working with a guy called Tim Hegarty, who's an old friend of mine from a band I used to be in back in Derry. One of the songs he was working on at the time was called 'Shoot Me', and I started producing it and turned it into a club track. Then I let it sit for a while, because I thought the lyrics weren't hard enough to fit the title. Later I demoed it up and added the choirs, played it to some people and realised that it would make a great single. At that stage I changed the lyrics, so we came to an understanding over the publishing side because I felt that I'd entirely changed the track. We tried to record the track last summer, but I was so busy that we just didn't get a chance to go into the studio. We eventually had 'Shoot Me With Your Love' recorded and mixed by late January and it went down for a remix by Loveland, but the pop/rock crossover sound from the dance scene that I'd been trying to achieve had been totally ignored by my record company, because they wanted to play safe."

So how did Peter feel the rest of the new *World* album compares to past D:Ream material?

"I was so close to the last album that I couldn't say which track I preferred. But on this album, because of the schedules imposed on it, I've included tracks which I didn't really want to go on, even though other people said they loved them. I'm surrounded by so many people who say 'yes' that I don't know if I can trust their opinions. I think it was Dave Stewart who said 'You never know when to finish an album, only when to abandon it.' And that's what I've done, in true artistic fashion."





HOME STUDIO UPGRADE

Upon starting work on the new album, Peter finally got the opportunity to update and reconfigure his personal home studio, which is based around an Allen & Heath GS3V mixer, Atari 1040/Notator sequencer, and Fostex M80 8-track.

"My setup was pretty basic but then I went on to buy an Akai S3200 sampler, plus the digital interface and CD-ROM stuff. I spent a lot of time building up a palette of sounds from various sources, and

managed to ween myself off the old favourites, like the R5 [drum machine] for percussion. I find Akai samplers to be incredibly intuitive machines. With the S3200 I've got 32Mb memory, the optical hard disk, and all the options. I've also got a small, portable Sony DAT machine, so that when I go out I can record sounds, then digitally transfer them into the sampler when I get back."

At a time when more professional musicians are making the move to Macintosh-based

"I'm still one of those luddites who's using the Atari 1040 STE, simply because I know every key stroke and I'm very fast on it."

D:REAM



D:Ream's Peter Cunnah with producer/engineer Tom Frederikse (right).

RECORDING D:REAM VOCALS

Producer/engineer Tom Frederikse explains how he captures Peter Cunnah's vocals on tape: "Pete's basically a 414 (AKG) guy when it comes to microphones. But the best thing was having this old Teletronix LA2A valve compressor, which is brilliant — we used it on virtually the whole album, on the backing vocals as well as in the mix.

"For vocals, we tended to use tape as an effect most of the time and did a lot of thick texture backing vocals. Like on 'Hold Me Now' — we had 10 stereo pairs of probably 10 takes each, I guess. So there were around 100 to 200 tracks of Pete just sitting there going 'aaah'. It sounds fantastic, but when he was doing it we were thinking 'This is a lot of effort, I hope it works'. The thing is, it's only subtly different from the amazing sounds you can get on keyboards nowadays, so you have to be a true connoisseur to notice that it's actually the real thing."

► sequencing, Peter is sticking with his Atari. Why?

"I'm still one of those luddites who's using the Atari 1040 STE, simply because I know every key stroke and I'm very fast on it. I used to use *Creator* but switched to *Notator*, because Tom (Frederikse) reads music."

Peter's new palette of sounds consisted of tried and tested old favourites, sampled into his new Akai, plus the new source of CD-ROM libraries.

"I had the Zero Gravity and CD-ROM showcase stuff but I didn't want to delve into the 'Loopisms' CDs and all those 'ambient' things straight away. I just thought, 'Where are the good ones, the ones I've heard all the good beats from?' and I tried to get hold of those. If I pick up a good loop and I've got a song hanging around somewhere, they might match, and all of a sudden I've got the building block for the song. Then I'll move in with a bass line off the DX7 or the SH101."

I point out that the DX7 is a strange contemporary choice for bass sounds, although they are now beginning to find favour once again amongst the dance fraternity.

"Unfortunately, yes," admits Peter, aware that his preference is becoming less unique, "but the DX7 has been the one and only mother keyboard that I've owned and I was lucky enough to be given 1000 DX sounds for the Atari running through *Chameleon* [a librarian program], so I essentially use it as a bass machine. At the touch of a button I have a bass to fit the loop, and then I'll run up the TR909 and 808 stuff as standard."

TOM FREDERIKSE

Producer and engineer Tom Frederikse has a respected background within the dance and remix scene. Having partnered Sasha for four years on countless remixes, he's now formed a new mix team

with the guys from Cream (ex K-Class) in Liverpool. His presence in producing successful dance records is often an unseen quantity, but his relationship with D:Ream has been from the very beginning.

"Tom's been involved since I did the first mix of 'U R The Best Thing'," Peter explains, "which was three and a half years ago. I'd been working with Alan Mackenzie on the remixing scene and Tom came down and started to iron things out. We had all the ideas but didn't realise how much detail you have to go into.

"Tom works mainly to tape, unlike a lot of bands that run the computer live in mixes, which is the reason why I think we get such a punchy sound. The thing about MIDI is that I challenge anyone who claims that they switch on their setup and the mix is there after being away for two weeks. But when printing to tape, apart from the effects, the track is there. For me it's a more secure feeling, because I know how volatile MIDI can be."

WORKING PRACTICES

So what is the division of labour between Tom and Peter when working together to create a typical D:Ream track? Peter takes up the explanation...

"I usually demo the stuff at home and get the tracks up to a listenable standard, then Tom would come along and work out arrangements, the key and range for vocals, and the tempos. Then we'd come to the studio (Route One in North London) and begin what we refer to as the 'analy retentive' work of laying down the tracks."

Tom: "That's the thing about computers; once



you've programmed it all, getting it onto tape the way that you intended it is such a time-consuming task. Printing to tape just removes the MIDI hassle out of mixing."

Peter: "It's also easier for remixes, because you can hand over the multitrack tape, which is what they usually ask for anyway; you don't have to worry about DATs and sound disks."

Being so involved in the whole project, I wondered what Peter considers to be the most enjoyable experience throughout the various stages?

"For me, it's cracking the back of a tune when

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D:REAM

SENSESIONAL

SONGWRITING ON THE ROAD

Peter Cunnah: "I'm at the stage now where I'm already writing tracks for the third album and I've invested in a Card Star laptop PC, which allows you to install your own soundcard. I've got a waveform sampler and the Rio soundcard, and I'm running Cubase Lite with a Novation BassStation keyboard and Technics headphones.

"The beauty of it is that a company like Nokia have a new digital telephone system, where you can use the laptop PC's fax modem. So now I can literally work on tracks on the tour bus and send them down to a computer setup at the other end of the phone line. The idea is for the whole package to fit in a cabin bag. It'll be interesting to test it out during the next few months, while I'm out on tour."

► I know that I've captured the atmosphere that I want, and a certain amount of lyrics in the chorus. After that there are certain shining moments: like finishing a vocal comp, which Tom's particularly good at."

Tom interjects: "There's a saying in Hollywood with scriptwriters facing countless rewrites that 'it only gets worse'. Unfortunately, it's the same with the music business. Pete loves that moment when the whole thing comes together for the first time ever. After that, you have to go through all these stages to make a record out of it."

Peter: "I'd say that the tracks have moved on a lot lyrically, and we've spent a hell of a lot more time on this album just singing. Because I was doing the vocals as well as the programming, the trick was to do that in the evenings and then come in next day and catch my voice at between 12 and 4 o'clock, when I was at my freshest.

"The best stuff we did was on a song called 'Heart Of Gold'. We tried that 10cc 'I'm Not In Love' effect, where they tracked up all the layers of vocals. So we went over to the slave reel and I spent four hours tracking each individual note in the key scale. Then we took the notes, looped them up, put them into keygroups on the sampler, and then played the vocals in again with some extra little diminished chords here and there to give it a nice little texture. And it really, really worked. A lot of people think we used a synthesizer, but what I like is that you can still hear the texture of my voice through it."

Despite the D:Ream sound exhibiting heavy club characteristics, there were a number of session musicians employed. But rather than just being featured, their performances were taken and manipulated in order to suit the intended feel of the album.

"We'd get players in and I'd loop their performances rather than use a lot of samples made by somebody else. Having demoed the songs to such a stage, we knew where live playing was required and we just captured the live vibes and all the attitude of playing, then stacked them to get the finished sounds on tracks like 'Save My World'.

Was the inclusion of live parts also a conscious decision on Peter's part, knowing that he would later be taking the tracks out and performing them with a live band?

"Yeah. I was very aware of how I wanted us to sound on this album. I've got quite a few good players surrounding me, and some of the best voices that I've ever worked with, like T.J Davis and Paul Simpson. I'm very aware of the band's input to the album, but I still think it was minimal, because I didn't want to go too far to the right of centre. I think on my third album I'll be a lot more experimental, but with this album I developed my songwriting more than anything."

One particular contributor was Simon Bates; a session sax player who also plays the Yamaha WX7 MIDI wind controller, for which he has built up his own set of sounds.

"He came in and just jammed over the track," Peter explains. "Then I looked at what he'd done and resampled it. There was also a demo session I did with Nick Beggs [ex-Kajagoogoo] on the Chapman Stick, which is this great 10-string instrument — a mixture between bass and guitar. He played it onto my little 8-track Fostex tape machine and I resampled all of that."

Tom neatly sums up their approach: "I think that's part of the D:Ream sound — it's live sounds and live playing, but interpreted through a computer."

"Rather than nicked off records," Peter adds. "I never actually sit down with a record and say 'Oh I like this', then lift it.

If there's something like a Candi Statton sound that I like, then I'll find something similar to it and re-programme it in my own way."

So even when the pair are copying something, Tom explains, they prefer to emulate it rather than steal it.

"Even my guitar parts were played into the S3200," Peter reveals. "Like with 'Can't Tell Me You Can't Buy Love': rather than actually work on a performance, the performance comes from playing my sampled guitar parts on the keyboard. That way you discover bits that you wouldn't normally play on the guitar, but which really fit with the track."

This preference for sampling whole performances extended to ex-Squeeze piano player Jools Holland. ►

ROUTE ONE STUDIO EQUIPMENT

MIXER.

Amek Angela 32/32/8/2.

RECORDERS:

Otari MX80 24-track.
Otari MX50/50 2-track.
Sony ES1000 digital 2-track.
Sony TCD5 portable 2-track.
Akai GX912 stereo cassette.

AMPLIFIERS:

C-Audio SR606 power amp.
Yamaha 2010 power amp.
Quad 306 power amp.

MONITORS:

Urei 813C main monitors.
Celestion Ditton 44 monitors.
Yamaha NS10 studio monitors.

EFFECTS:

Yamaha SPX1000.
Yamaha SPX900.
Yamaha R1000.
Alesis Midiverb II.
Roland DEP5.
Roland SRV2000.



Roland SDE3000.
Eventide FL201.

PROCESSORS:

Dbx 160X compressor/limiter.
Yamaha 2020B compressor/limiter.
EAR 660 valve compressor.
Drawmer DS201 gate.
Yamaha 2031 equaliser.

COMPUTER/SOFTWARE:

Atari STF8 1040 computer.
Steinberg SMP24 MIDI processor.
Steinberg Pro24 (v3)

and Cubase (v1.5).
Steinberg Synthworks editor (for DX7).

MICROPHONES:

AKG 414.
AKG 451 (x2).
AKG 112.
Beyer MC160 (x2).
Beyer MC500.
ElectroVoice ND408 (x5).
ElectroVoice ND757.
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Yamaha VL-1	£2450	Behringer MDK 1000 Autocom	£249
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Yamaha W-7	£1249	Zoom 2020	£225
Yamaha RW-20	£349	Zoom 4040	£369
Yamaha RV100	£225	Zoom 9050	£499
Yamaha FX-770	£499	Digitech Vocalist II	£699
Yamaha ProMix	£1599	Digitech TSR-12	£399
Yamaha MT1205	£399	Philip Rees V-3 Midi Thru Box	£11.99
Yamaha MT4X	£449	Philip Rees V-10 Thru Box	£45
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Yamaha PIP-100	£1599	Philip Rees 2M Merge	£79
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Korg Pro X	£1899	Fatar CMS 61 Computer Keyboard	£219
Korg Wavestation SR	£799	Fatar Studio 990	£599
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D:REAM

PETER CUNNAH HOME STUDIO EQUIPMENT

- Akai S3200 (fully expanded with SMPTE and SCSI interfaces, digital I/O).
- Akai S1100 and S1000 (8Mb) samplers.
- Apple CD-ROM drive.
- Sony DAT Walkman (with digital interface).
- Atari 1040 STE running *Notator* (v.3).
- Allen & Heath GS3V mixing desk (16/8/2).
- Fostex M80 8-track.
- Quad 306 amp powering Yamaha NS10 monitors.
- Yamaha DX7 IIFD synthesizer
- Roland SH101 synth.
- Roland Juno 106 synth.
- Roland Jupiter 8 synth.
- Roland R5 drum machine.
- Prophet 2000 sampler.
- Roland S10 sampler ("good for strings, choirs and some piano").
- Cheetah MS6 ("sounds trashy, but great because you can control the filters from the MIDI volume page in *Creator*").
- Korg M3R.
- Yamaha TX81Z.
- Emu Proformance module.
- Alesis Quadraverb multi-effects.
- Sony DAT recorder.
- Denon CD player.
- Denon Twin cassette deck.

▶ whose performance was "too organic", according to Tom Frederikse:

"He came in and played live piano takes for 'Shoot Me With Your Love', which were really great. But unfortunately, the way Jools plays it, it's *too* live. So we took bits of what he played and made them work with the other machine stuff. He's an amazing player — and so fast. The track is very fast at 129 bpm, but he did a couple of takes and then actually asked us to varispeed it up even quicker. So he recorded these takes at 133/134 bpm, partly for the pitch but also because he prefers playing fast."

Session player Simon Bates also played piano on 'Save My World' and 'Heart Of Gold', with the latter track extolling Peter's willingness to experiment: "We did something special with the Akai on that track," he explains. "We had this spoken vocal part which was very rhythmical. I reversed the sample, wrote it down phonetically, learned how to speak it, and then we turned it round on itself again and put it through the filters to really bugger it up. Apparently, if you play the record backwards, it tells people to go and shop at Tesco!"

"There was a lot of weird stuff on 'Heart Of Gold', Peter recalls. "I'd bought these death chimes from Portobello Road — they're like a mobile of bent and shaped silver spoons. We sampled them, reversed parts and played it in, which was quite eerie because the studio (Route One) backs onto a graveyard."

DIGITAL MASTERING ON F1

The final mixes for the new D:Ream album had only just been compiled and mastered, ready for production, at the time I interviewed Peter and, interestingly, he announced that the process had entailed resorting to an old system which uses Sony Betamax F1 digital machines.

"We'd noticed that the quality of the A/D and D/A convertors involved in going to and from the Sound Tools system is still terrible. On the first album we'd actually mastered the whole thing using a SADiE system. This time, when Aaron at the Townhouse went to cut it, he played it back to back with the originals, and I couldn't believe what had happened — the amount of crunching that had occurred simply because it had passed through so many low quality convertors. A lot of the top end had disappeared and the sound was fluffed a wee bit.

"But it gave me the chance to recompile the

MOOG PHASER

During the recording sessions for the new album, Peter hired in an old Moog Phaser: "It's like a 12-stage phaser but it's analogue and makes everything sound as powerful as the synths from that era. If you listen to 'Save My World', the whole drum section at the end was dropped into that. Similarly we'd put a whole vocal mix, at certain breakdown moments, through something like the Eventide H3000, and if you listen to 'Enough Is Enough' on headphones, you'll find it does your head in!"

album and I actually turned it around, because until then I'd had the wrong running order. You've got to think about the pacing between tracks and keeping things like the same tempo count."

Tom adds: "The vital element was to keep the club feel going on D:Ream this time. It was a constant effort throughout the album to remember that."

D:REAM LIVE

The new album's 'club atmosphere' was assisted by the involvement of Loveland and D:Ream's resident live DJ, Pierre. His live mixing introduces D:Ream and then continues afterwards, providing a real club performance environment. The live show has been meticulously prepared and configured, with Peter Cunnah taking an active interest at all levels, especially in the choice of gear.

"We've found the [Roland] MC500 to be the least volatile sequencer for live work. Then we have a Roland JD800 acting as a mother keyboard, the fully expanded Akai 3200 sampler, plus two S1100s for all the BVs (backing vocals) and samples. We cut down on the sampled BVs, because the two new girls (T.J Davis and Nicole Patterson) are so good."

Bass is handled by Derek Chi playing Musicman and Fender 5-strings, plus a Roland guitar synth. Keyboard player Toby Chapman plays Rhodes and piano, with Pearson Grange on d-drums (using S1100 samples controlled from the d-drum 'brain'). James Mack plays percussion and, according to Peter, "he's got everything under the sun, including a piece of metal which sounds like a 909 clap. It's great, because we're now cutting down on sequencing — the sequencer is only used for stuff like flutes, effects, and strings. I play guitar — a Gibson Chet Atkins and Les Paul Custom through a Trace Elliot Acoustic T200.

"We do around 12 songs in the show, four of which are completely live, with everything running through two Yamaha DMP7 digital mixers. The click is generated from the MC500, and fed to the drummer's headphone amp."

Not exactly a one man band then, but D:Ream's Peter Cunnah certainly likes to keep his eye on things: "I'm involved with *everything* — even the programming for the live show. The only reason being that, at the end of the day, it's my responsibility."

SOS

D:Ream's second album, *World* is released on 24th July.

INTERACTIVE D:REAM SINGLE

At the time of going to press, D:Ream's scheduled second single from the new *World* album is to be 'Party Up The World'. It is set to include a bonus CD-ROM track previewing the video, other snippets like fan club information, general text and lyrics, as well as advertising for the album. Designed and programmed by Digital Arts from Oslo, Norway, the groundbreaking project will utilise the new 'CD Plus' format, where computer data is 'hidden' on an audio CD and only recognised by a compatible CD-ROM drive.

Like all other elements of D:Ream's music, Peter Cunnah is overtly enthusiastic about the interactive possibilities being made available to music listeners: "It's going to have a feature where you can take control over different elements of the song (such as bass and drums, synth sequences and vocal samples) and you can actually remix the track, and record your arrangement of that mix into the computer. At the very least it's going to give the listener hours of fun, beyond just listening to the music."

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MICROWAVE WARM-UP

Basically, the Microwave features 16 digital oscillators (two per voice) plus a noise source, all processed via conventional filter, envelope, and pan modules. The synth can be used in single or multi mode, the latter allowing up to eight individually addressable voices to be assigned and routed through the two stereo or four mono individual outputs. The front panel is sparse, having a small LCD, card slot, power switch and only seven buttons with which to wade through its many edit pages. There is no headphone socket and no dedicated volume control — presumably because most rack gear is turned up fully and left that way? Edits are performed using the distinctive red alpha dial, which is a little lightweight for my tastes (lacking the positive action of the Emu continuous data knobs, for example), but you do grow used to it. A dazzlingly bright red LED indicates the level in the 4x4 matrix of parameter pages, through which you navigate using five of the buttons.

Since the display is just 2x16 characters, it can mean lots of pages and lots of button-pressing even to change something as simple as the volume envelope — since each parameter is on a separate page! Realising this, Waldorf have provided quick edit pages which, combined with the generous eight edit buffers, goes a long way to making this synth usable, even without a computer-based editor. Actually, you soon get to know your way around, and after a couple of days you hardly need to refer to the manuals at all. Speaking of the manuals, they cover performance, programming, and the various system upgrades and are worth a good read. Quirky humour is present and welcome

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PROS

- Unique wavetable sounds.
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- Programming sounds is addictive!

CONS

- Only 8-note polyphonic.
- Quite expensive, but rare objects always are!
- Factory sounds only hint at what this synth can do, so be prepared to programme your own sounds.

SUMMARY

This synth is not for everyone and does not follow the 'everything in one box' philosophy. Instead it produces raw, powerful and rich sounds that range from subtle through to gritty and aggressive. If you've already got enough chuffy flutes and realistic trombones in your sonic arsenal and want to tackle a wild synthesizer, the Microwave could well be for you.

The Waldorf Microwave is a bit of a maverick in the world of hi-tech instruments. This unassuming 2U rack synth is only 8-note polyphonic, has no built-in effects, and creates its sounds from a series of sampled waveforms processed through a traditional analogue filter. It doesn't offer realistic pianos, drums or saxophones, nor does it attempt to. The fact this instrument is still in production in its sixth year suggests that there must be something appealing hidden behind that shiny red knob; for a synth to be significantly enhanced after so long is almost unprecedented.

The ongoing Microwave upgrade policy has now reached version 2.0, which doubles the number of wavetables (the building blocks employed by the Microwave's unique synthesis method), as well as adding several important tweaks to the operating system. Furthermore, existing owners can upgrade for a mere £82.25 (inc VAT) — how many other synths you bought six years ago can boast so much? Perhaps it is this ongoing commitment that inspires such near fanatical devotion amongst Microwave owners?

Since this is intended to be more of a revisit than a review, I suggest you rummage through your old *Sound On Sounds* until you find December 1989. For those of you with a filing system like mine, let's take a quick Microwave refresher course before moving on to some of the features new in version 2.0.

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Waldorf Microwave 2.0

► and some of the programming suggestions make me wonder why on earth the supplied factory sounds are, with only a few exceptions, so naff?

Notable features of the Microwave are its wonderful, big 4-pole filter, which is capable of self-oscillation. Both cutoff frequency and resonance are accessible by any of the modulators or external control. In these times, when so many synths have a glorified tone control pretending to be a filter, the power of a real filter cannot be underestimated when it comes to sound creation. Welcome too are the portamento and glissando modes, which allow both smooth and stepped transition from note to note — ideal for those old monosynth emulations.

But the real heart of the Microwave is in its unique sound generation system — *wavetables* — which are derived from raw sample data stored in ROM.

WAVETABLES

Since wavetables are what separates the Microwave from just about everything else on the market, it is important to appreciate how they work. Version 2.0 of the Microwave operating system provides a total of 64 basic wavetables plus 12 internal user wavetables (and 12 more on a card), each 'containing' 64 waves. This seemingly vast number of sound sources is better understood when we realise that not all the waveforms live in ROM — many are dynamically created (or 'interpolated') by the processor from waves in the current table. This technique both saves memory and gives the Microwave its unique 'dirty' sound. Compare this to the Korg Wavestation, which simply fades cleanly from one ROM sample to the next. Only one wavetable can be active at a time on the Microwave, but each oscillator can reference different areas of the table and progress through it independently. Of the 64 waveforms in a table, the last three are always sampled triangle, square, and sawtooth waves and may be used to create more traditional synthesizer sounds if no modulator is applied.

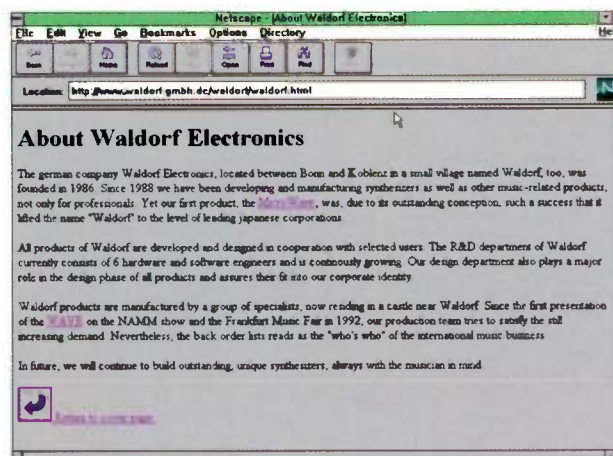
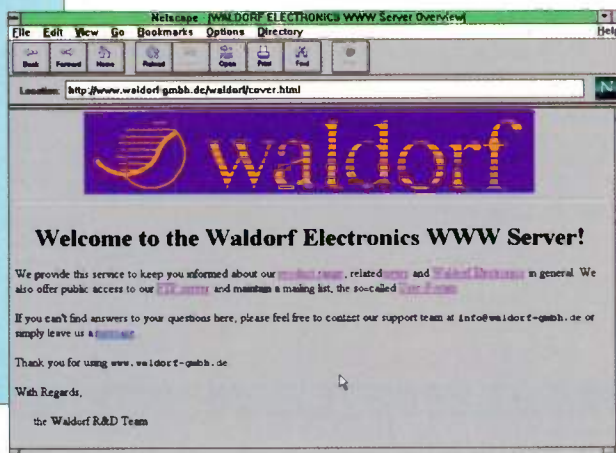
"By specifying a negative slope for one oscillator's wave envelope and a positive one for the other, both can sweep in opposing directions creating some truly monstrous sounds."

Although wavetables may be selected by name, each wave is referenced only by a number. Interesting ranges of timbres can be found by slowly sweeping the table, but you need to devise your own method for remembering the positions of your favourites. Movement through the wavetable is achieved using a special dedicated 8-stage envelope, which may be looped or modulated by a variety of sources. By specifying a negative slope for one oscillator's wave envelope and a positive one for the other, both can sweep in opposing directions creating some truly monstrous sounds. The timbral transitions can be either audibly stepped or smooth, with no detrimental effect on polyphony. However, this has some limitations: the processor is not omnipotent and some harmonic changes are simply too complex to calculate smoothly, as you hurtle through a table at a hundred miles

MICROWAVE LINKS — WALDORF ON THE NET

For the Internet surfers out there, Waldorf have their own World Wide Web page accessed at: <http://www.waldorf-gmbh.de/>. From here you can link to the FTP site for wavetable utilities, SysEx documentation and new sounds, or take a look at back issues of the Waldorf user forum.

If you wish to subscribe to the forum, send an email to: user-forum-request@waldorf-gmbh.de and include the keyword "subscribe" in the text. Much of it is pretty technical stuff but it's good to see that the Waldorf programmers reply with genuine enthusiasm to questions posed there. So get your surfing kit on and take a look.





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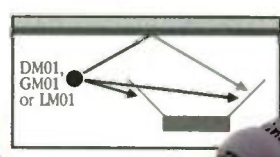
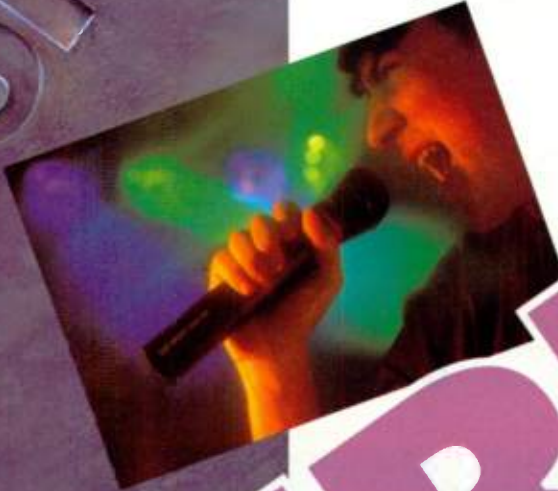


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AMWMB

Waldorf Microwave 2.0

- an hour. Strangely, the result is often quite interesting and certainly distinctive. User wavetables may only be generated using computer-based software — checkout Mark Of The Unicorn's *Unisyn*, X-Or, Emagic's *SoundDiver*, Sound Quest's

through a mix, while also being capable of warm pads, powerful brass, and shimmering glass and bell effects. If you're familiar with Tangerine Dream's *Exit* album, many of those weird PPG digital tones are typical Microwave territory.

The new wavetables really add to its armoury with some great oscillator sync waves (it has no genuine oscillator sync of its own), fuzzed and distorted sounds, and some fun mixtures containing voice samples and other oddities. The powerful filter and varied portamento are great for the more traditional lead synth roles. If this synth has a weakness at all, it is in the bass department where some of the wavetables fade noticeably. Since many of the available sound cards specialise in bass sounds, perhaps I just haven't discovered the rich seam of waves which work well in the lower octaves?

During the review period, I can honestly say that I didn't miss built-in effects. A smattering of reverb is really all the Microwave needs — anything else is like painting over good wood! It didn't take me long to surpass the majority of the dull factory-supplied sounds, which left me feeling pretty smug. Did I like it? You bet!

SOS

WE'RE COOKING! — NEW WAVE SOUNDS

Three MIDI Files containing SysEx dumps of 128 voices and multis are provided on disk. They are intended to show off the new v2.0 wavetables and do so quite well. Here's a quick run down of some of my favourites:

- *Prepared Piano* — marvellously playable and hardly like a piano at all.
- *ComputerWorld*, *Techomusic*, *Revolution* — all using new 'speech' wavetables.
- *SlowSweep* — rich, harmonic sweep. Lush and classy.
- *Sacred Chorus* — mysterious solo voice-like patch with mod wheel controlling subtle mouth movements.
- *Alien Visitor* — a Theremin-like wail right out of those early sci-fis.
- *MW-Receiver* — spooky radio-noise, complete with robot voice.
- *Distd Bass* — notable in that it is the only half-decent bass in the collection.
- *Wave Choir* — unusual choir that does weird electronic things when you move the mod wheel.
- *Sync Lead* — the Microwave's own wavetable version of a sync sound. Similar to the real thing but with that special graininess.
- *Elektra Sync* — an unusual pad.

MIDI Quest or the Geerdes dedicated editor if you're interested in such exotic things. Sadly, it does not seem possible to name user wavetables, so you need to use your ears to check which ones are currently in use.

CONCLUSION

The Microwave is a synthesizer that dares to be different. It simply gets on with what it's good at, delighting in spikey, mean sounds which cut

FURTHER INFORMATION

£ Microwave 2.0 £1099 inc VAT.
Upgrade £82.25 inc VAT.

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VERSION 2.0 ENHANCEMENTS

- 32 new internal factory wavetables.
- SAWSYNC1 3 Sawtooth waves with oscillator sync.
- PULSYNC1 3 Pulse waves with oscillator sync.
- SINSYNC1 3 Sine waves with oscillator sync.
- PWMPULSE Pulse waves whose width is modulated.
- PWMSAW Sawtooth waves whose width is modulated.
- FUZZWAVE Light metallic fuzz waves.
- DISTORTD Powerful distortion waves.
- HEAVYFUZZ More powerful distortion waves.
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- 19 / 20 Saying "19 20"
- WTriP 1-4 Rich and varied selection of waves.
- MaleVoic Metallic vocal sound.
- LowPiano Like the bottom end of a piano.
- ResoSweep Resonant filter sweep.
- XmasBell Ring-mod-like harmonic series.
- FM Piano Convincing DX7 piano waves.
- FatOrgan Even harmonic series — the name says it all.
- Vibes Hollow metallic vibes.
- Chorus 2 Rich phasing chorus — the best of the lot!

The descriptions are intended to give a flavour of the harmonic progression of each wavetable when heard with a single oscillator and the filter fully open. In use,

individual portions of each table can yield a wide variety of timbres.

- Volume control Amplitude of two oscillators as well as the noise source can be modulated individually. Six new parameters cover this facility.

- LFOs: Both Low Frequency Oscillators now have sample and hold — LFO2 can also create a waveform whose rate is phase shifted from LFO1, making for some very rich and subtle vibrato effects.

- MIDI Clock Control: MIDI Clock may now be used as a modulation source. Don't all you wavesequencing freaks get too excited though. Sadly, you can't do fancy things like trigger envelopes, synchronise LFOs, or step through wavetables at the MIDI Clock rate. What you can do is use the MIDI Clock as a kind of controller, where fast equals a high controller value. In practice, you can programme LFO filter sweeps that speed up with music tempo or even modulate the time or level of the wave envelope.

- Four new allocation modes for monophonic playing (Multi mode):
RETRIG — new notes only activate a voice if not already active or the new note is higher than the current one.
SGL-RETRIG — attack portion of the envelope only triggers if no current note held down, otherwise just

new pitch and velocity values are used.

L-SINGLE — attack portion of the envelope only triggers if no current note held down, otherwise only new pitch and velocity values are used if new note is lower than one currently being played.

H-SINGLE — as above, but new pitch and velocity values are only used if the new note is higher than one currently being played.

- New panning mode which can disable an instrument's panning parameters or invert them (Multi mode).

- Glide & Portamento — new functions for fingered playing (ie. only invoke the glide if another key is already pressed — a handy performance thing).

- SysEx speed select (fast/slow) to allow communication with slower devices/software.

- Example Disk — also included is a disk containing some example user wavetables and software (for the Amiga, Atari, MS-DOS and Unix platforms) to transmit the wavetables to the synth. More interesting still are three MIDI Files which contain SysEx dumps of banks of sounds created by Waldorf. These sounds drastically improve on the factory sounds — especially where new user wavetables are involved. All you need to load them is a MIDI sequencer capable of replaying Standard MIDI Files.

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I always get excited and a little nervous when I'm about to mix; after all, it's the culmination of many hours' hard labour and the birth of a brand new work of art. But how do you set about obtaining the perfect mix? There are as many answers to that question as there are engineers to ask, and if you listen to

to as much music as you can, in all styles, and in every possible listening environment. This is a wonderful excuse for you to have a huge collection of recordings and indulge your passion for music, but it goes further than that. Don't just watch television, listen to the incidental music. Check out the sound effects on that sci-fi movie. Analyse

Sympathetic

HOW TO SET UP A GOOD MIX

DUKE ASHTON provides a personal guide to setting up a good mix.

what is around, you'll hear a huge variety of sound sources, effects treatments, equalisations and levels within any one musical style or genre. What's more if you start comparing, say, Andrew Lloyd-Webber to Anthrax to Annie Lennox, you'll find that one of the few things they have in common is that their names begin with 'A'. They certainly don't sound the same and their records have definitely been mixed differently.

What would be nice is a recipe that produces a perfect mix, like a recipe to bake the perfect cake, but there are many kinds of cake and which one you choose to bake depends on who you're baking it for. With mixing, you have to consider the needs of the particular piece of music you're working on, the needs of your perceived audience, and the environment in which the finished product will be heard. I like to call this approach 'sympathetic mixing' and, as with all good practical philosophies, it has its pleasures as well as its chores.

LISTEN WITHOUT PREJUDICE

If you're going to make a good mix engineer, you first need to know how other people do it, so listen

MIXING

the jingles to your favourite ads. Drive with the radio on or go to clubs. The great thing is, you can be working while you're enjoying yourself.

Listen out for mixes that have been particularly well done and start asking yourself exactly why you like them. Is it a particular combination of sounds that works so well, and what if any

"Although there is always room for creativity in the mix, there are established routines and techniques which it pays to learn before you start to develop your own mixing style."

processing has been used? Just how much compression was applied to the bass guitar which sits so tightly with the kick drum? Does the depth of reverb affect the listener's perceived intimacy

MIXING GUIDELINES

Although there is always room for creativity in the mix, there are established routines and techniques which it pays to learn before you start to develop your own mixing style. Here are a few 'essentials' which you should keep in mind when mixing a pop song.

- Pan the bass drum and bass guitar to the centre, and keep them fairly dry. These elements underpin and hold the whole track together, so they're a good place to start.
- Put the snare in the centre and then pan the rest of the drum kit. Beware of hard panning though, there's something disquieting in hearing a drummer whose arms apparently stretch right across the stereo field! However, hard panning does work well on other

percussion instruments, such as tambourine and shaker.

- Choose the decay time of any reverb effects used on drums and percussion carefully; if it's too long you can easily lose the rhythmic drive, and because reverb fills up the spaces between sounds, it also detracts from the sense of loudness.
- Bring up other instruments to their appropriate levels, and once they're balanced in mono, separate them out by panning. Pay particular attention to the overall stereo balance, both by ear and on your meters.
- Your lead vocal needs to be in the centre of the stereo image and well forward. If the vocal is too loud, it will sound 'stuck on'; if it's too quiet, you'll start to lose

out on intelligibility. Checking from outside the room is especially useful when evaluating vocal levels.

- Some instruments, especially the human voice, often require you to ride their fader throughout the mix in order to achieve appropriate dynamics. A suitable soft-knee compressor will make this job much easier and often has the benefit of making the vocal sound more exciting and punchy, but beware of over-compressing the sound (unless that's the effect you're after).
- Use a reverb treatment whose tonality complements the vocal, and remember — the proportion of dry signal to wet has a strong correlation with the perceived intimacy or distance of the performer.

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HOW TO SET UP A GOOD MIX

► of the singer's performance, and what relationship does the reverb decay time have to the tempo of the song? Even in an apparently simple mix, there can be a lot going on, and once you get into the habit of listening carefully to other people's mixes, you'll pick up a lot of information and ideas in a very short time.

One thing I can confidently predict is that you'll find your favourite mixes are balanced in such a way that the individual instruments and voices complement and contrast each other in a sympathetic manner, while contributing to the whole emotion of the piece.

EMULATE OTHERS

The next logical step is to experiment with your own gear; find out what it can do by trying to emulate the best engineers' and producers' work you've heard. Stretch yourself. Something that I've tried, which I'd thoroughly recommend, is to record your own version of a really brilliant track — it doesn't matter that they probably had mountains of equipment and you've only got a 4-track, you'll still learn a lot by experimenting. As with playing a musical instrument, the first step to learning is to emulate performers who you admire — your own style will develop later.

While working on your trial mix, you should constantly be doing A/B listening tests between your work and the best tracks in your record collection. Again, you'll teach yourself plenty while you do this and I bet your next in-house production benefits very noticeably from your efforts.

HERE'S ONE I DID EARLIER...

The next stage is to try out sympathetic mixing on one of your own tracks — perhaps you have an unfinished piece lying dormant in the form of a MIDI File or partly recorded multitrack tape. If you have any early rough mixes, check them out to see what worked and what didn't, then draw up a plan for the final master.

Firstly, decide what carries the main hooks (or

delivers the most vital emotions) and give those instruments/voices the highest priority, setting up any necessary gates, compressors and effects as you go along. Next, introduce the instruments that are most essential to the style of the music, such as the bass and rhythm section. After that come instruments of lesser importance, which you can bring in at levels where they feel comfortable. Check the overall balance regularly and make sure no portion of the overall frequency range is too full or too empty (it's very important that you know and trust your monitors for this). Once the mix seems to be happening, take a short break and give your ears a rest.

“Even in an apparently simple mix, there can be a lot going on, and once you get into the habit of listening carefully to other people's mixes, you'll pick up a lot of information and ideas in a very short time.”

Make sure your mix sounds good in mono before you start to use the pan pots, and keep in mind that bass sounds tend to be panned at or close to the centre of the mix. Once you've got the stereo side of the mix working, check the mono compatibility by hitting the mono button on your mixing desk. It also helps to listen to the mix from outside the room (honestly!), as this can often reveal balance problems that weren't immediately obvious.

The tonal balance of a good mix is largely determined by the choice of instruments/sounds and by the arrangement, but minor tweaks to EQ may be used to create a 'hole' in which the priority vocal or instrument can sit. It's best to go for EQ cuts rather than boosts when doing this. When the mix is close to perfect a change of just a couple of dB will sound like a lot, so be wary of having to make radical adjustments — it may be time for another cup of tea! The degree of effects treatment will also alter your perception of how far forward or back something sounds in the mix, and a judicious tweak can be tried here and there.

Now we can pay attention to the clever twiddly bits and 'specials' that give the mix its character and your trademark. Finally, try running through the mix at very low volumes to give an indication of what it will sound like on a small sound system. If you've got time to check out a cassette of a rough mix in the car, so much the better.

505

DON'T DO THIS!

Here's a short list of things you shouldn't do when mixing, which I've compiled from (bitter) experience.

- Don't master on old tape — you risk compromising hours of painstaking work. Always use fresh tape.
- Don't mix when you're tired after a 14-hour session.
- Don't try to achieve a balance by continually raising levels, you'll end up with no headroom and risk distortion.
- Don't attempt to make every part sound big and impressive, your mix will sound like an aural competition. Accept that some parts are supposed to be up-front while others are in the background.
- Don't forget to check that your mix sounds good in mono, before you start to use the pan controls.

- Don't monitor at continually high levels, it dulls your sensitivity and quickly tires you. It can also damage your hearing, and in any event, it will alter your perception of sound for several hours.
- Don't forget to check each signal in isolation for unwanted noise and distortion. Set up your mixer and effects gains before you start mixing.
- Don't drown the mix in your latest favourite effect — no matter how much it cost! Most professional mixes use effects sparingly.
- Don't attempt better instrument separation by applying lots of EQ boost to everything, the overall effect will sound unnatural and harsh. If you must use EQ, cutting always sounds more natural.
- Don't stick to the rules if you can improve something by breaking them!

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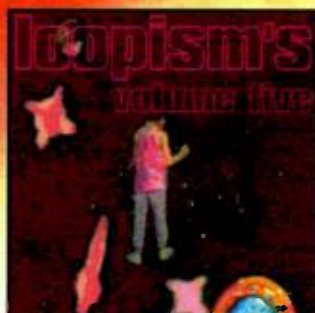


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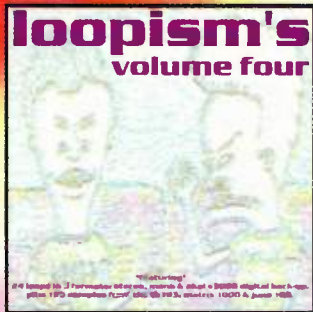


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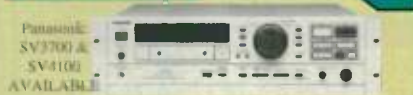
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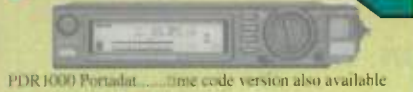
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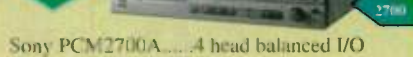
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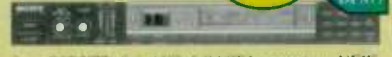
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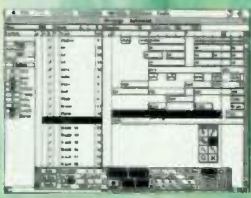
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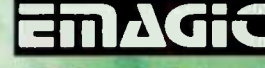
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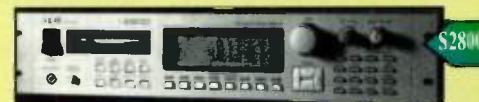
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Dual Harmony

DIGITECH STUDIO 5000
DIGITECH STUDIO VOCALIST

DAVID MELLOR explores ways to spice up vocal and guitar lines, courtesy of two new Digitech harmony processors.

Pitch-shifting was once deemed to be an unattainable effect; something that everyone wanted, but not really practical to any usable level of quality. Then came a company called Eventide, with their famous Harmonizer, which changed all that for good. True, the original product didn't provide perfect pitch-shifting, and even now with modern technology you can't expect a pitch-shifted sound to be every bit as good as the original. There will always be some glitching, warbling, or other artifact to give the game away. Even so, there are many occasions where these side-effects go unnoticed, don't matter, or can be consciously traded against the advantage pitch-shifting can

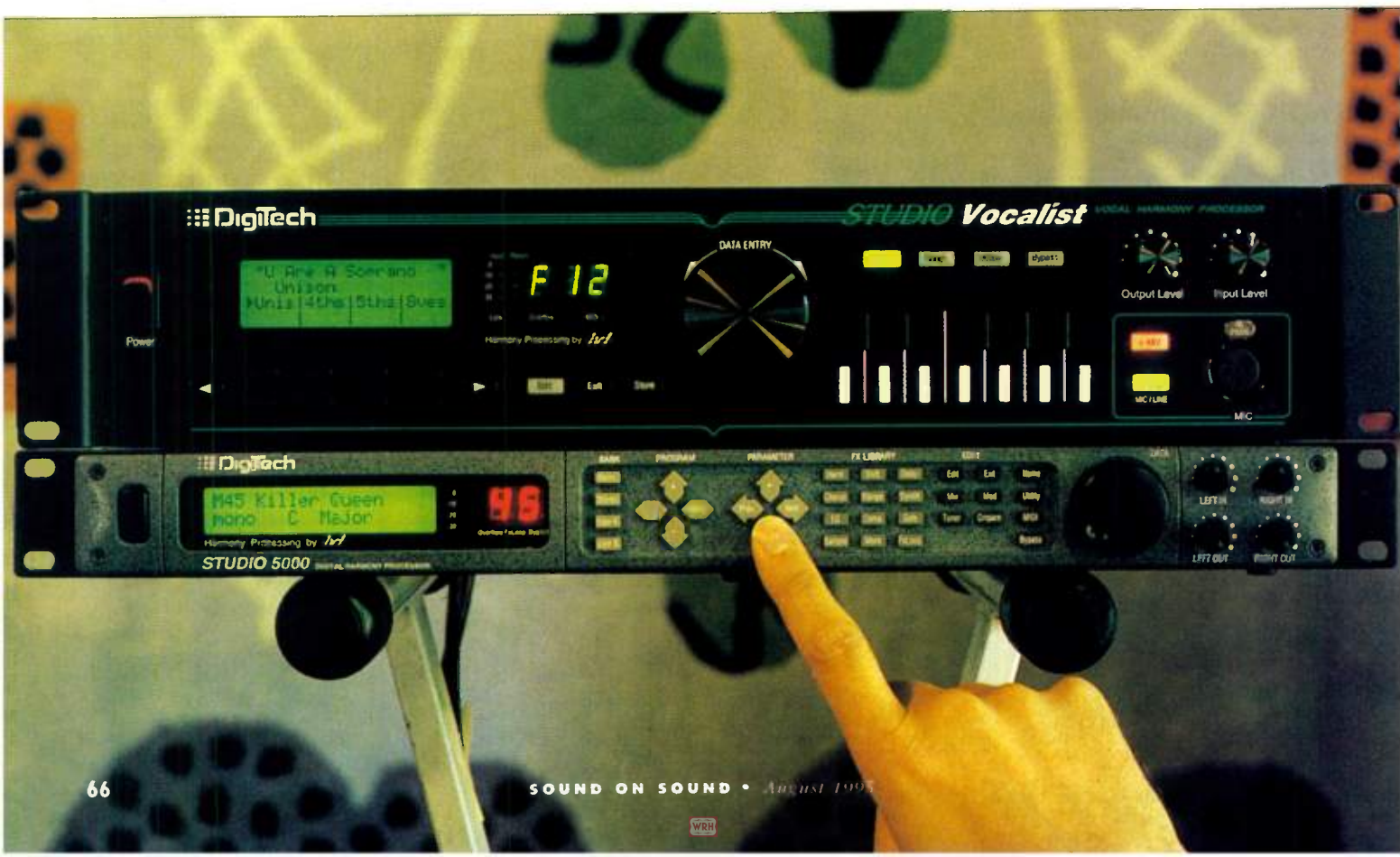
offer. Subtle pitch-shifting is great for thickening up a sound, and small amounts can bring a persistently flat vocalist into correct tune (or at least they will waver up and down around the correct pitch rather than always being below it).

If these problems with pitch-shifting have been all too evident in the past, particularly on lower cost devices or multi-effects units that incorporate pitch-shifting, then perhaps it has been because each unit has tried to address all pitch-shifting applications. Digitech, however, have broken away from that idea and are offering units tailored to particular types of use. Under review this month, we have the Studio 5000 Five Part Digital Harmony Processor — I think I'll call it the Studio 5000 for short — which is tailored for instrumental sounds, and the Studio Vocalist Vocal Harmony Processor, which obviously is mainly intended for vocals. There's nothing to stop you breaking the rules and using either unit for any purpose, but I think Digitech's intentions are clear. And judging by the results, they are heading along the right lines.

STUDIO 5000

The Digitech Studio 5000 has the appearance of a multi-effects unit rather than a dedicated pitch-shifter. It would be a mistake, however, to assume that this is all it is. Multi-effects units, if they are not quite ten-a-penny yet, are certainly not nearly as exciting as they once were. When you listen carefully to what this Digitech unit can do, you will understand that this is a multi-effects unit with a certain degree of class.

Digittech describe the Studio 5000 neither as a multi-effects unit nor pitch-shifter. 'Harmony Processor' is their term, which would imply that the Studio 5000 can take a single note input and turn it into a chorus, with harmonies that fit in with a particular key. This is true, and since it isn't





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DIGITECH HARMONY PROCESSORS

► necessary to stick to particular keys, or even harmonise in musical steps, then a whole range of thickening effects, and also weird effects, can be achieved along with the standard Brian May imitations that you would expect.

The Studio 5000 can take a single note input and create four harmony parts from it, giving five-part harmony. If four harmonies are too rich for your taste, then dual-voice programs are available. Some of the programs are better adapted to chordal rather than single note inputs — there is obviously a great deal of difference in recognising the pitch of a single note and applying harmonies to it, and working with a combination of notes, each note having a whole spectrum of harmonics.

Physically, the Studio 5000 occupies a 1U rackmount case, which seems to be no more than a multi-effects unit should occupy these days, no matter how much functionality it contains. On the rear panel you will find stereo ins and outs, and you can easily hook up the unit in mono if you prefer. The LCD display is nice and bright, but there are rather a lot of small buttons to press. These have a very rubbery feel and, sadly, don't offer a positive click in response to an action by the user. With forethought and patience however, great things are possible.

Many users will spend their first few weeks with the unit exploring the presets, and there is nothing like a new selection of sounds to get the creative juices flowing. I found that I was able to multiply the 400 factory presets in my Korg keyboard by the 100 presets in the Studio 5000 to get 40,000 new

delays. Presets 9 and 10 are, rather surprisingly, distortion programs (aimed at the guitarist), and are really rather good. The remaining effects come in groups: Detune Combinations, Chorus, Flange, Chord Shifting, Intelligent Harmony, Amplifier/Speaker simulations and Special Effects. With a list of effects and brief descriptions to hand, it is easy to home in on something approaching the sound you are looking for and resist the temptation just to spin the dial at random.

The stereo presets are fewer in number but no less tempting. The first 10 are called 'Mix Imager Programs', which really translates as 'Thickeners'. I liked these for their subtlety, because they really do give a useful thickening effect, but it isn't always obvious how it is achieved. With an ordinary pitch-shifter it is easy to set one output slightly sharp in pitch, the other slightly flat, to give a thick sound, but it is always perfectly obvious that the sound is effected and what was done to it. Here, you can tell that there is some chorus, delay, pitch-shifting, reverb or whatever involved, but the finished sound nearly always comes out sounding as though it was meant to be that way.

The other stereo presets are grouped into Stereo Keyboard Programs, Drum Programs, Stereo Vocal Programs and Special Effects. Two presets are especially worthy of mention: 'Drum Bright Kit', which is an excellent reverb (something I didn't expect on a unit of this type) and 'Stereo Sampler'. The sampler preset offers an editable three second stereo (six second mono) memory, which you can use to take bits from any multitrack recording (say) and spin them in at other places in the song. You can always achieve this with your favourite sampler, of course, but it's nice to be able to do it in the context of pure sound, rather than music and MIDI, and it's quite easy to achieve once you have the hang of it.

SOUND EDITING

No matter how good the presets are, you'll eventually tire of them and want to create your own. Won't you? The Studio 5000 may seem to have a lot of buttons, and this is where you'll find them very useful. The best way to approach editing is to pick a preset that is close to the sound you require, and then press the button corresponding to the component of the effect that you want to change. The effects library includes Harmony, Shift, Delay, Chorus, Flange, Dynamic Filter, EQ, Compression, Gate, Sample and More. What does 'More' include? For many of the programs, 'More' means reverb. And as I said earlier, the reverb is pretty good. Any unit of this type has a limited amount of processing power, so not all the effects are available at the same time. But when you have found a preset that incorporates all the components you require, just select it and then press the Edit button. A small number of relevant parameters will be made available for adjustment. There is of course a compromise to be struck here. Too many editable parameters and it would be too complex to be usable, too few and you won't get the sound you want. I think Digitech has got

STUDIO 5000 £1125

PROS

- A wide range of good quality effects.

CONS

- Rubbery feel to the keys, no positive click.

SUMMARY

An upmarket multi-effects unit with harmony processing too.



and exciting sounds. Why should I ever want to buy another keyboard? And before you ask, I haven't tried them all yet!

Presets are split into two main groups, the mono bank and the stereo bank. Starting off with the mono bank, the first 10 presets are obviously designed to show off the range of capabilities of the Studio 5000 with octave doublings and detunings available in varying degrees of subtlety, some with

STUDIO 5000: FEATURES AND FACILITIES

EFFECTS

- Two and four voice harmony.
- Two voice harmony with distortion.
- Four voice harmony with regeneration.
- Chord shifter.
- String pad.
- Multi-tap delay.
- Stereo delay.

- Stereo chorus.
- Stereo flange.
- Dynamic filter.
- Graphic equalisers.
- Sampler.
- Stereo reverb.
- Distortion.
- Speaker and cabinet emulator.
- Modulation Envelope generator.

CONNECTIONS

- Input left & right (left input doubles as effects return, right doubles as mono input).
- Effects send.
- Output left & right.
- Headphones.
- MIDI In, Out, Thru.
- Continuous control pedal.
- Footswitch.
- Foot controller.

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DIGITECH HARMONY PROCESSORS

STUDIO VOCALIST £999

PROS

- Good layout of controls.
- Easy to use, considering what it can do.
- Offers a new palette of sounds.

CONS

- It's unique, so none.

SUMMARY

Not so much a pitch-shifter, more an instant creator of vocal arrangements.

► the balance about right.

It would easily be possible to fill a book with the possibilities of the Studio 5000, and indeed the manual writers have! Let me say that for keyboard players, guitarists and sound engineers, the Studio 5000 offers a wealth of creative possibilities at a high level of audio quality. You will need a lot of time and patience to explore them all, but I feel sure that your input will be rewarded. Even if you don't want to do any editing, the Studio 5000 has a good enough range of presets to offer a whole new perspective on any instrument you care to connect to it.

STUDIO VOCALIST

This device is a completely different kettle of ball games, to coin a phrase. Whereas the Studio 5000 is one of a number of multi-effects units on the market, albeit a rather good one, the Studio Vocalist is (as far as I know) unique. The Studio 5000 is intended for use with instruments but the Studio Vocalist is, of course, dedicated to vocals. As you know, good singers are a very rare and valuable commodity. Good backing singers, perhaps even

ensemble of male and female voices to accompany you; you can do it all by yourself with the aid of the Studio Vocalist. Really!

To explain all of this I need to go through some important features of the unit, step by step. The Studio Vocalist understands five basic types of harmony:

- Chordal harmonies stick to a particular root note and a particular chord type. For instance, you could select an A major 7th chord, and the Studio Vocalist would provide appropriate notes from that chord to accompany whatever melody you were singing. It will of course sound best if you are singing in the correct key and reasonably consistently in tune.
- Scalic harmonies follow a key and a scale. 'Scale' refers to whether you are using major or minor modes. The Studio Vocalist will harmonise your melody with what it considers to be appropriate chords. Of course, there is always more than one possible set of chords to suit any particular tune, so don't expect miracles all the time.
- Chromatic harmony is where Studio Vocalist is used as a 'dumb' pitch-shifter, where harmony notes are always fixed intervals from the input note. Chromatic harmony is most useful at octave or fifth doublings. With other intervals it can sound as though the harmony is wrong.
- Vocoder mode is quite different from the other modes. Like Chromatic mode it doesn't use any of the machine's 'intelligent' harmony finding functions, but now you can play notes on a MIDI keyboard and Studio Vocalist's harmonies will follow what you play. Potentially there is a lot of flexibility here, at the expense of only a little time and trouble.
- Pitch Correct isn't a harmony mode. Until a MIDI note or front panel key is played, then the input is directed straight to the output. When a note is played, then the pitch is corrected to that note.



more so, since how many good singers want to remain in the background? Perhaps you sing yourself, and record vocal harmonies yourself too. If so, then the Studio Vocalist is the machine for you, since whatever raw ability you have it will multiply tenfold. Whether you want harmonies that follow the melody line exactly (and in tune with respect to the key it is in) or whether you want an

VOCALISATION

Let's explore each of these modes in more detail. With the Chordal Harmony mode, you need to tell the Studio Vocalist what chord you want to hear, and you will need to do this for each change of harmony in the song. The 'voicing' of the harmony will be very important, so you are offered the choice of two up and two down with respect to the input note, three up/one down, four up, and other combinations. When you have the right voicing, then you will have to press the front panel notes or the keys on your MIDI keyboard to define the chord's root note, and one of the eight soft keys to say whether you want a major, minor, dominant 7th, diminished 7th, major 7th, minor 7th with flattened 5th, or suspended. This could result in some pretty feverish button-pushing, so there is also a Song Mode where you can predefine the steps and simply push one button repeatedly, or use a footswitch to step through the chord changes of the song. 'Amazing Grace' is provided as a demo song, and it really does work amazingly

STUDIO VOCALIST: FEATURES AND FACILITIES

HARMONY TYPES

- Chordal.
- Scalic.
- Chromatic.
- Vocoder.
- Pitch Correct.

CHORD TYPES

- Major.
- Major 7th.
- Minor.
- Minor 7th.
- Dominant 7th.
- Minor 7th flattened 5th.
- Diminished 7th.

- Augmented 7th Suspended.
- Suspended 7th.

SCALE TYPES

- Major.
- Minor.
- Whole Tone.
- Diminished.
- Blues.
- Dorian.
- Harmonic minor.
- Melodic minor.

HUMANISING FEATURES

- Gender.
- Detune.

- Vibrato.
- Scoop.
- Timing.

CONNECTIONS

- Mic input (switchable 48V phantom power).
- Line input.
- Effects send & return.
- Dry signal output.
- Right/Voice 1 output.
- Left/Voice 2 output.
- Voice 3 output.
- Voice 4 output.
- MIDI In, Out, Thru.
- Footswitch.

well. If you ever wanted to be an 'a capella' choir all by yourself, then this is the unit for you.

An interesting provision is the ability to change the male vocal timbre into female (and vice versa) either while changing the pitch or keeping it the same. It really does sound quite convincing. I don't think anyone would be totally fooled on a lead vocal, but on backing vocals some very usable results can be achieved. The two timbres can be combined into a mixed ensemble, if you wish, and you can easily find yourself doing an impression of a gospel choir in the privacy of your studio.

Even though I don't find Scalic Harmony mode all that useful personally, probably because I prefer to choose my harmonies rather than have them added automatically, the Studio Vocalist certainly does a good job. Good enough to pass its Music GCSE exam, probably!

In Chromatic mode, where the pitch-shift interval is constant, then it comes down to a question of quality. What does the output sound like? About as good as the best on vocals, I would say, bearing in mind that there's no such thing as perfect pitch-shifting. For optimum results I would feed the signal through a compressor before pitch-shifting, since the unit definitely works best on a signal it can get its teeth into, without going over the top into horrible sounding distortion.

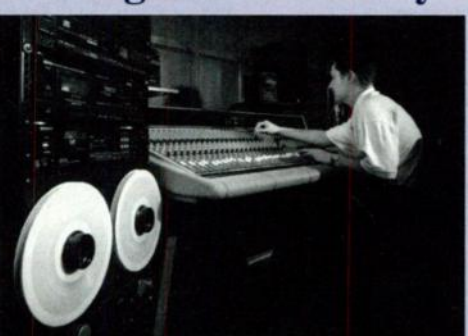
Going back to the intelligent modes for a

moment, signal level is doubly important here since the unit will try and create notes from whatever input it receives. It will harmonise breaths and coughs given half a chance. To control this to a reasonable extent, there is a gating function provided so that low level signals won't produce any sound. An 'ess' sensitivity control also regulates how responsive the unit will be to those noise components of the singing voice which can't be considered notes in any real sense. A 'Bass Rejection Threshold' function does a similar job of sorting out sounds which ought to be harmonised from those that ought not.

It's a wonder that vocoding isn't more popular, considering how powerful an effect it can be. Perhaps this is because vocoding is normally used to make an instrument appear to 'sing' and you can quickly tire of the novelty value. In this type of application, vocoding is used to take the relative strengths of the harmonics present in speech and superimpose them on another signal that is rich in harmonics. The Digitech Studio Vocalist in Vocoder mode isn't a real vocoder. What it does is to take an input signal and create harmonies according to MIDI note inputs that it is given. For instance, if you play a simple chord of C major and sing any note into Studio Vocalist, then you will hear yourself singing the notes C, E, and G. Oddly enough you can sing, groan or grunt, and you will *still* hear a

"The Studio 5000 can take a single note input and create four harmony parts from it..."

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 - Alesis Midiverb 4 Better quality pitch-shifting in a snazzy reverb unit.
 - Boss SE-70 Super Effects Processor Half rack pitch-shifter/multi-effects aimed at gigging musicians.

DIGITECH HARMONY PROCESSORS

- ▶ chord of C major, but the more you stick to a precise note, the better the sound quality will be.

When you input notes from a MIDI keyboard you need to be careful to lift all of your fingers and play the next combination of notes cleanly, because the unit can easily get confused about which notes it is meant to be producing.

HUMANISE YOUR HARMONIES

The first thing you will notice about using the Studio Vocalist is how precise the generated harmonies actually are. This will probably come as quite a novelty after years of trying to get real singers to be as precise as this, and early Queen-style vocal harmonies come out of the speakers almost unbidden. Eventually, you may wish for something a little more lifelike, so Digitech have thoughtfully provided a number of 'humanising' features: Gender (which I have already mentioned), Detune, Vibrato, Scoop and Timing.

Gender here isn't just a matter of being male or female; you can choose which you want to be and then set a value from -50 to +50. A masculinity or femininity value if you like. The idea is to make multiple harmonies sound as though they are coming from different people instead of clones of the soloist, and it works. The Detune function adds what Digitech call 'a subtle out-of-tuneness' to the harmony voices. Human voices are rarely perfectly in tune and Studio Vocalist doesn't have to be either. Vibrato is another human feature, one that often becomes more pronounced the older the singer is! Vibrato parameters include Depth, Rate, Type (sine, square wave, sawtooth up, sawtooth down), Delay and Randomness. Scoop is a technique (or do I mean mannerism?) where a singer hits a note slightly below pitch and then slides up to correct the pitch. Scoop can be introduced randomly on the Studio Vocalist, or via MIDI velocity data. Finally, Timing is a variable delay before the onset of a harmony note, which also can be randomised.

With all this functionality, you might think that creating and storing programs would be pretty difficult, since each time you use the unit you will probably require a different harmony. Fortunately, Digitech have provided a 'Style' feature where you can edit harmonies and each of the humanising functions in detail, and then store them independently as Styles. Styles can be mixed and matched as necessary to create new harmony effects.

I won't say that it is the work of a moment to create a harmony that exactly suits what you are trying to achieve, but if you compare it with the alternative of writing everything down and working with a group of singers, then I think you will see the Studio Vocalist in its correct proportion.



FURTHER INFORMATION

- E** Studio 5000 £1125.00 inc VAT.
Studio Vocalist £999.95 inc VAT.
- A** Arbiter Music Technology,
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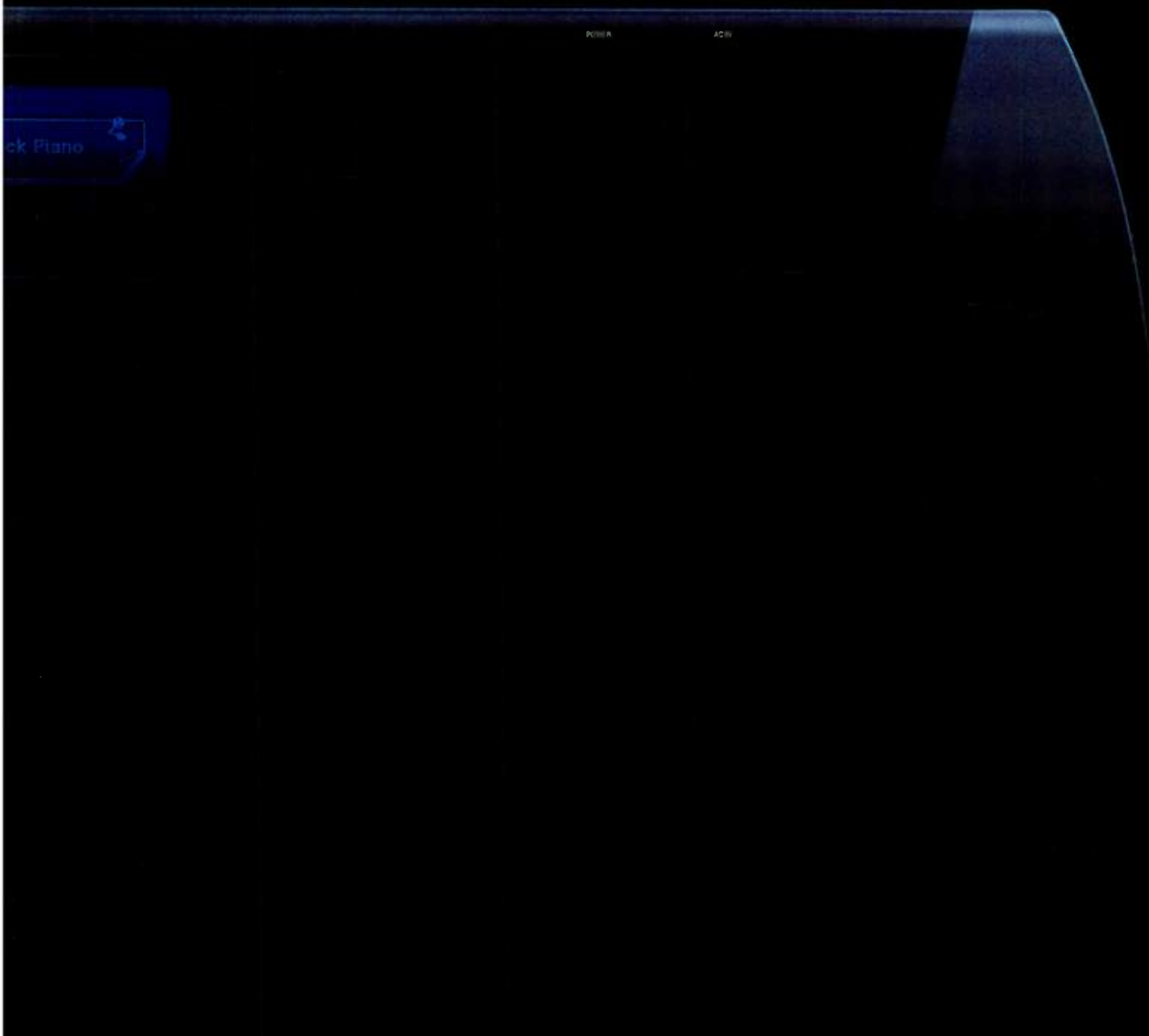
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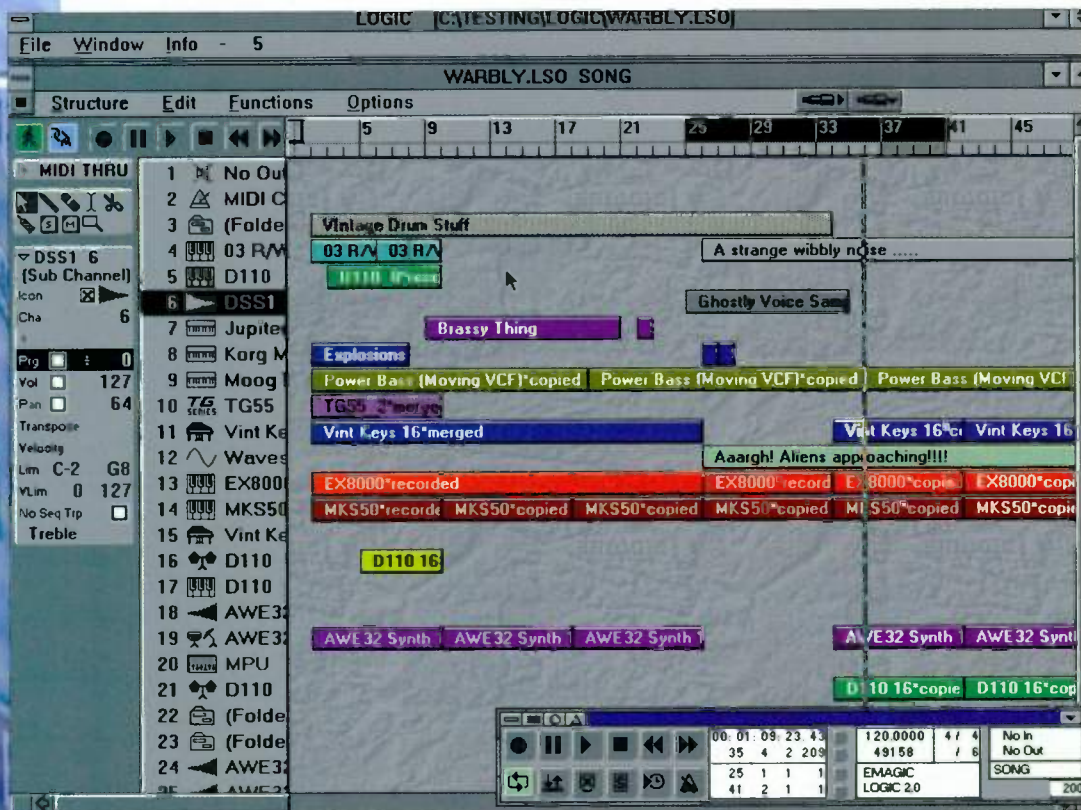
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The Logical

Emagic, like Steinberg before them, came to the PC with programs already well-established on other platforms. With the release of *Logic 2.0* for Windows (free to registered owners of v1.9), we see the most significant advance yet, but has the program truly 'settled in' on the PC and does it escape the 'lowest common denominator' tag that is prevalent among so many multi-platform programs?

This new version of *Logic* offers unlimited tracks, colour, MIDI Groove templates, extensive remote control of all commands, a graphical tempo editor, and sliders which can generate System Exclusive data. Package these with pretty much every type of editing you'd expect and a few things you probably don't, and *Logic* starts to look very interesting.

A great improvement for owners of earlier versions is that the manual is now 'Windows-aware' and Emagic have introduced an intriguing upgrade and crossgrade policy to tempt owners of other recording software (even from other platforms) to switch over to *Logic*. You can currently trade in just about any other music program for this brand-spanking new Object Oriented MIDI Recording and Notation System. Hmmmm...

GETTING STARTED

Logic is supplied in a sturdy plastic box which contains the high density 3.5" program disk along with two further disks containing score templates,

demo songs, and example environments.

The program is copy-protected by means of a hardware dongle that is attached to either COM1 or COM2 (serial) ports. The supplied environments contain graphical representations of the Yamaha ProMix, Mackie OTTO, ADAT SRC and a few others, but at present the only synthesizer editor provided is for the Oberheim Matrix 1000 — so you've got to dust off those manuals, lubricate your brain, and create your own.

The manual is packed with 400 pages of solid information, containing hints and tips for getting the best out of *Logic* as well as some practical examples. Better still, it actually refers to PCs, Windows and MIDI interfaces, although I would take Emagic to task for their references to disabling virtual memory, and to direct communication with MIDI cards instead of via their Windows drivers. Unless your PC is dedicated to *Logic*, this advice will cause you problems and it really is naughty of Emagic to even suggest them — especially the advice about removing jumpers from your cards. Take my advice and steer well clear of this. If *Logic* won't run properly on your system, these little back-door tweaks will only cause heartache further down the line. And unless Emagic intend to support every MIDI device ever made, there is no practical alternative to using Windows drivers created by the card's manufacturer.

Coming off my hobby horse for a moment, I



can say that I ran *Logic* on a 8Mb 486 DX2-66 machine with virtual memory enabled and oodles of Windows drivers, and the performance was OK. I wouldn't have dared to try it with less memory though, as *Logic* is a greedy beast, despite the claims that it will run in 4Mb.

After starting the program for the first time and marvelling at the 'welcome' song, with all its scrolling and changing screens, it is immediately obvious that *Logic* is (cosmetically, at least) different to most other Windows programs. There are some rather Mac-like dialogue boxes in evidence; not that this is necessarily a bad thing, but I would have liked to see at least one conformance to normal Windows practice — on-line Help. Equally confusing to this old Windows anorak, the top-line menu is almost totally devoid of features so you can't quickly nose into all the options you've got to play with. This is designed to reduce screen clutter — which it certainly does — since options only appear where they are relevant. I'm convinced that there are screens tucked away quietly that I've never even discovered yet.

ENVIRONMENTALLY FRIENDLY

At *Logic*'s heart is the Environment — a complete graphical representation of your MIDI system — including instruments, MIDI ports, faders and

instrument definitions, Emagic have created the concept of 'layers', each showing a particular part of your system. How these layers are organised is up to you, but it seems sensible to follow the trend of placing all MIDI instruments on one layer, virtual mixers on another, SysEx-generating sliders on yet another, and special objects such as MIDI delays, arpeggiators, keyboard splits/layers etc on another. Objects can be cut and pasted as you might expect and I'm sure a more organised person than myself could draw out their system far quicker.

The program's use of colour is of benefit here: when you assign colours to individual instrument objects, their colour is propagated through to the Arrange window whenever you make a recording with that instrument. Pretty.

Instruments can be defined as either single, multi or mapped (ie. drums). Multis are perhaps the most useful, as they allow you to quickly define all the channels used by a multitimbral module as well as the names of its sounds. You can even define the type of control change that is considered to be Bank Select. If, like me, you have a synth which uses non-standard Bank Select, it is so refreshing to simply inform *Logic* of this anomaly once, then forget about it forever.

Despite the fact that you can refer to your sounds by name instead of program number and

LOGIC FOR WINDOWS £349

PROS

- Very open-ended and powerful system.
- Good upgrade/crossgrade options.
- Excellent real-time functions.

CONS

- Not the most Windows-friendly program.
- No dedicated drum grid editor.
- Time-consuming to set up — too few instrument / SysEx environments provided.

SUMMARY

Version 2.015 is a versatile and flexible MIDI recording system designed to let you work any way you want. Not the best Windows implementation ever, but the sheer number of options may make it the only program you'll ever need.

Choice FOR YOUR PC?

With such a huge market to aim at, no software house can ignore the PC musician. PAUL NAGLE checks out Emagic's latest upgrade for Windows workers.

EMAGIC LOGIC 2.0 MIDI RECORDING SYSTEM FOR WINDOWS

knobs, etc. Emagic have also provided a wealth of interesting virtual devices — such as arpeggiators, delay lines, voice limiters, real-time transformations, etc — all of which can be patched together on the screen in just about any combination you can imagine. Each virtual device may be assigned its own icon (selected from a humungous scrolling list!), which is intended to speed things up when assigning objects to tracks later on. Now this might seem rather daunting and time-consuming (and it is!) but believe me — you do appreciate the benefits later. Of course, you don't need to do everything all at once — you can keep coming back to it whenever you like. I spent the first couple of days tweaking and modifying my set-up before I even touched the rest of the program, and even now I have to suppress the urge to go and define some more objects or I'd never get any work done!

Realising that the Environment can become a nightmare of virtual patch leads, sliders and

bank (unlike a certain other famous sequencer program), I could find no easy way to import these from, say, a standard text editor. Emagic have provided examples of many popular instrument preset lists, but you need to create your own banks for any original sounds you've created — a time-consuming process. Oddly enough, there didn't appear to be a way of naming sounds for single-channel instruments — if you wish to use this facility, you have to create a Multi instrument then limit it to only one channel.

If monster drum kits are your thing, you can create a Mapped instrument which uses drum sounds from different modules to create the ultimate kit, all from one object. This is achieved by simply patching each note you require to the appropriate channel and MIDI output. Potent stuff indeed.

Using the real-time transform options you can create wild keyboard inversions, change MIDI note

LOGIC 2.0 FOR WINDOWS

▶ values into volume or pan information, soup up your humble synth into a powerful master keyboard with velocity splits and fades (in fact, any number of layers and splits). You can patch in software arpeggiators, MIDI delay lines, voice limiters (useful to control multitimbral modules that don't let you

out how. The only disappointment was the lack of supplied instrument System Exclusive templates to allow me to tweak synth parameters on-the-fly in a recording. You can define them yourself but, personally, I'd rather have a life...

ARRANGE WINDOW

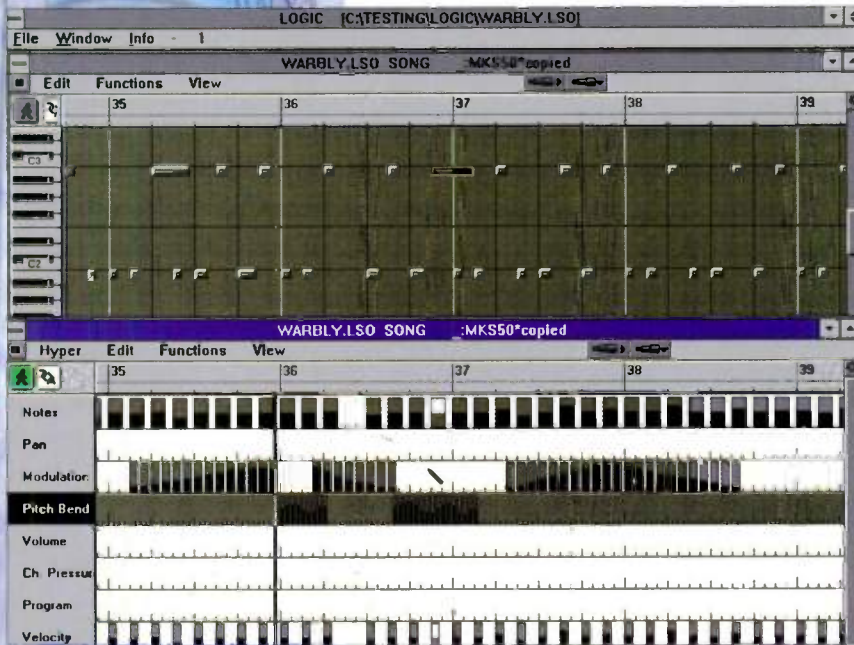
Ever since *Cubase* presented the music world with the 'Arrange window' view of a song, all the sensible MIDI recording programs have 'borrowed' the concept. Although *Logic* is no exception, it offers several unique features of its own.

The Arrange window is probably where you'll spend most of your time. Here you see a scrolling, graphical representation of your song which can be zoomed in or out vertically or horizontally, using the small telescope icons at the top of the window. The degree of zoom is quite staggering, allowing even a large and complex composition to be reduced to a single screen. As you zoom right in, individual notes are displayed in miniature — a nice touch. The whole thing maps onto a tasteful grey background (it can be switched to plain white) which I wanted to substitute with my own bitmap image — maybe the next version?

The left-hand side of the Arrange screen holds the real-time parameters, which modify sequence playback without altering the data. You can transpose, compress velocity, delay parts and limit pitch ranges, with access to a wide range of quantise options. And since tracks have no fixed instrument assignments, it is an easy matter to audition different synths and sounds by simply selecting a new object. Assigning arpeggiator objects to chord parts already recorded allows you to instantly switch between musical accompaniments — you can generate old-fashioned sequencer lines and bass patterns with ease from whatever chordal input you can manage.

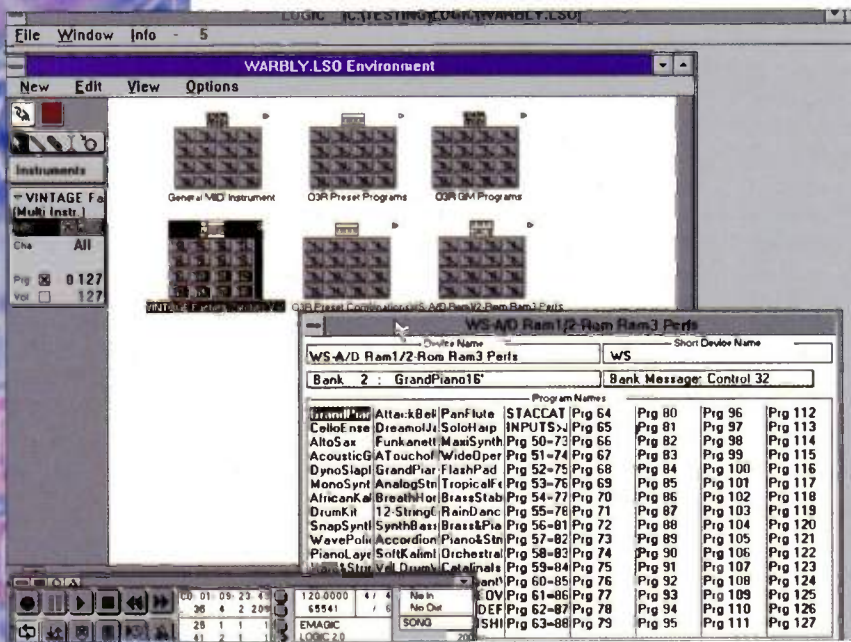
Also to the left of the main Arrange window, the small tool box is used to select an arrow pointer, glue, scissors, text, zoom, erase, solo (and a neat feature called Lock Solo, where you can quickly select several parts to solo with a single click) and mute. Having to keep moving back to select a new tool is a small irritation on all the screens, and not so neat as a floating tool box, but at least you can have a different tool on each mouse button if you want to.

Logic's use of colour works very well, especially if you bothered to colour your instruments when you first defined them. You can also re-colour sequences at any time, and if you stick to some kind of convention (eg. drums = yellow, bass = red, solo = blue, etc) you find that the extra level of visibility becomes addictive. Soon those drab, old, black and white Arrange windows start to look pale and uninteresting by comparison. ▶



reserve voices/partial) and even patch a physical MIDI output to a representation of a keyboard to obtain a real-time display of the notes being played. Or patch it the other way to play notes with your mouse. Or transpose the output of sequences or folders that already exist. Why not patch several transform objects in series to achieve some truly mind-boggling transmutations?

Pretty much everything that fell into the 'I wonder if I can do this?' category was possible with *Logic* 2.0 — it was just down to me to work



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LOGIC 2.0 FOR WINDOWS

- ▶ As *Logic* imposes no restriction on the number of tracks you can create, it's easy to find yourself with many screens' worth of complicated, multi-coloured parts threatening to overwhelm you. This is where Folders come in — a simple enough concept which emphasises the multiple layered approach taken by Emagic. The screen's cluttered? Pack away related tracks into folders. Need to edit something? Either click on the folder itself, or

The Transport represents the traditional tape recorder controls plus the cycle (loop) and left/right locator settings, tempo and time signature display, autodrop, solo, metronome, replace and sync, plus a rather natty quick navigator bar that allows you to leap around the song at breakneck speed. Several miniature menus are available from the Transport bar, and these are related to time, synchronisation, recording options, and the bar's own appearance. If, like me, you find the Transport bar often gets in the way, you can quickly open and close it with a single keystroke. If, on the other hand you think it's great, or if you need to see it easily from a small monitor (maybe on stage?), you can make it pretty big.

There are no limits to the number of windows you can have open at the same time, so you can have a zoomed-out miniature version of your main Arrange page alongside a more workable size, providing the fastest way yet of getting around a song. Other helpful navigational aids are achieved by naming sequences with just a letter of the alphabet. To go to the start of a sequence named 'A', just hit the letter A. If you create a track with no assignments at the top of your Arrange page, you can create text-only parts and use them purely for reminders and navigation — I can think of no other music program that offers so many neat options for simply getting around your song.

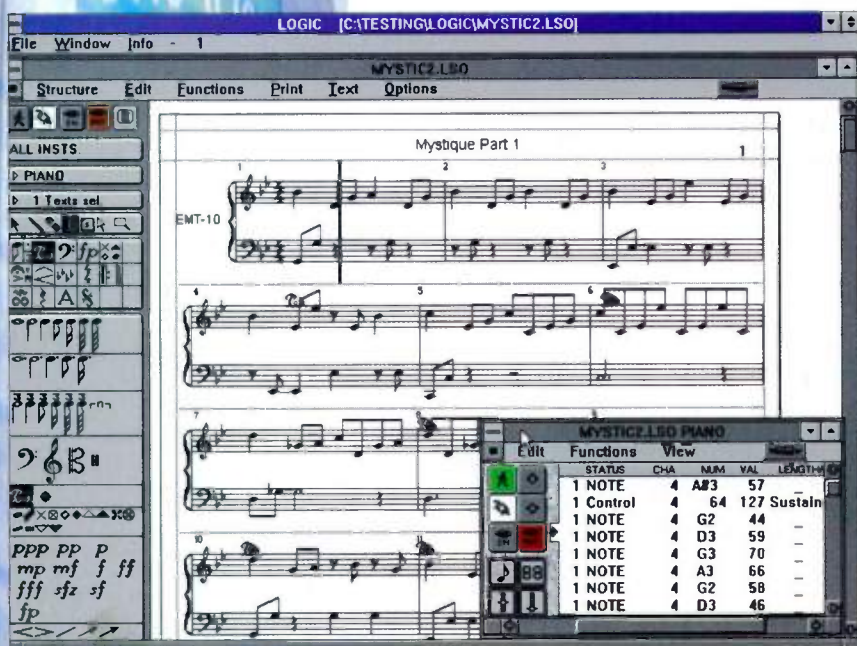
EDITOR'S CHOICE

Logic offers a good array of editors, with the only notable omission being a dedicated drum grid. Unique to *Logic* is Hyper Edit and this can be used to represent notes, controllers, pitch bend, modulation, aftertouch etc. It's here that you would probably draw in those percussion patterns, but it does rather lack the elegance and immediacy found on competing programs. Selecting the pencil from the small tool box, you can draw in all the velocity fades, pitch bend tweaks, and controller curves you ever wanted to.

Hyper Edit allows you to create unique 'Hypersets', which can represent individual notes, groups of notes or channels, or pretty much anything. At various points while I was creating Hypersets the dialogue box 'ILLEGAL SONG' / 'ABORT' appeared, but it didn't appear to do anything nasty. Probably some advanced form of pre-release music critique?

I found it a simple matter to knock up an edit screen containing all the popular things you might edit — volume, pan, mod wheel, aftertouch, velocity, alongside more specific objects such as 'all program changes on any channel' or 'every note in the range C1 - C2 on MIDI channel 10'. When editing multiple tracks, this kind of thing can prove quite handy.

The more familiar Matrix editor is a simple implementation of the traditional piano-roll editor, where notes are represented graphically on a time grid / note value axis. There's not a great deal to say about this, except that it works best in combination with other editors — particularly



unpack it again. Need to transpose an entire song? Pack all the tracks into a folder, and use the playback parameters until it's right (instruments defined as 'mapped', ie. drums, are automatically recognised as non-transposable). Want to have a number of songs ready to play live? Pack each into a folder and mute/unmute as you need them. And you can pack folders within folders many times — in short, folders are cool.

Floating Transport bars seem to be more and more common these days, although *Logic's* can be resized and customised in more ways than most.

LOGIC — KEY FEATURES AT A GLANCE

- Timing resolution of 960 PPQN
- 90 User-definable screensets
- All key commands and transport functions can be reassigned / controlled by external MIDI.
- MIDI File import and export.
- Tempo range from 0.05 to 9,999.9999 BPM.
- MIDI Groove templates with real-time length and velocity quantise parameters.
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- Expanded MIDI Machine Control functions for up to 64 MMC tracks, autolocating, autodrop, recording, track record enable etc.
- Complete virtual MIDI Environment including instruments, new SysEx faders, and vector fader objects.

- Unlimited tracks.
- Multiple songs can be open simultaneously.

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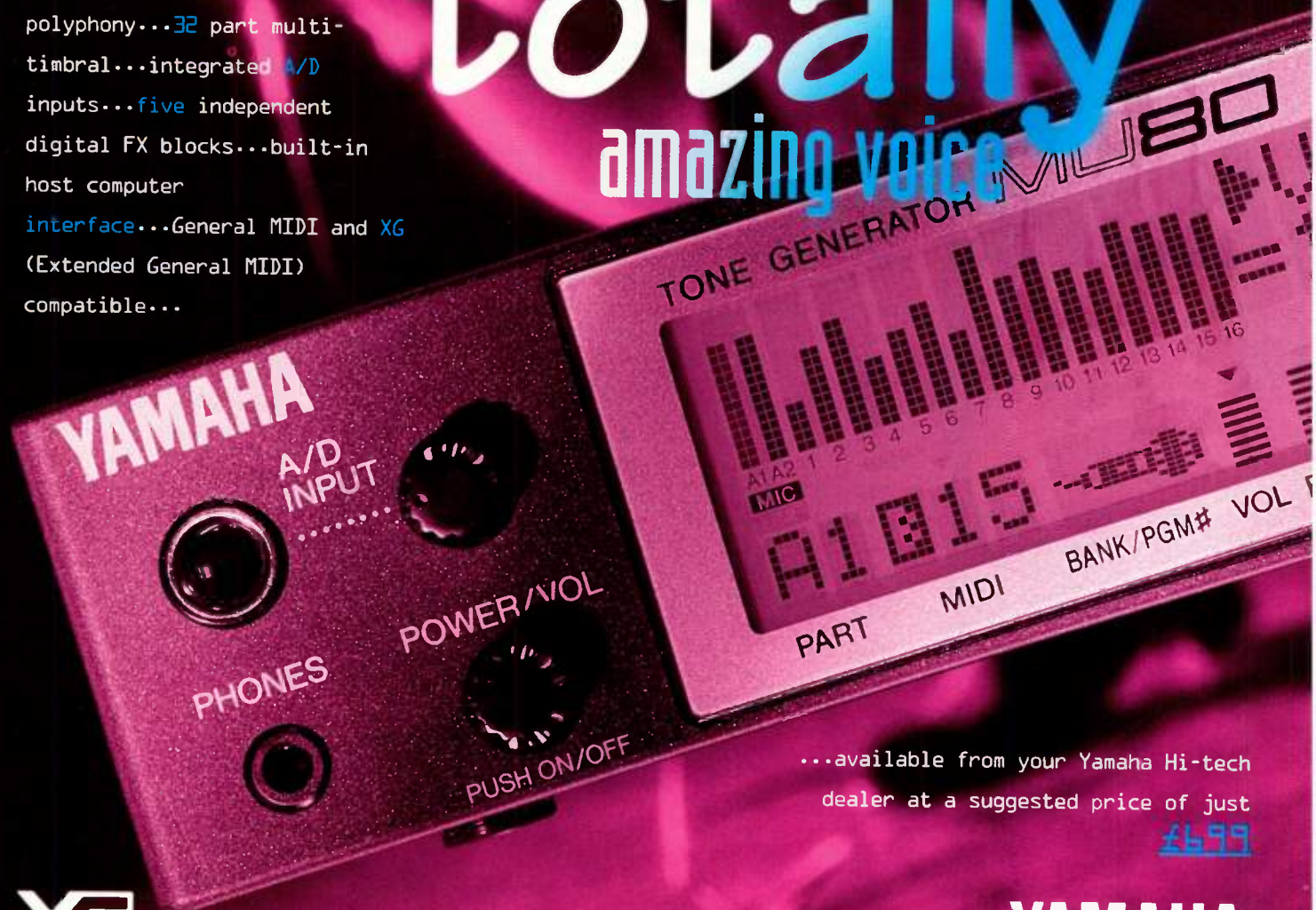
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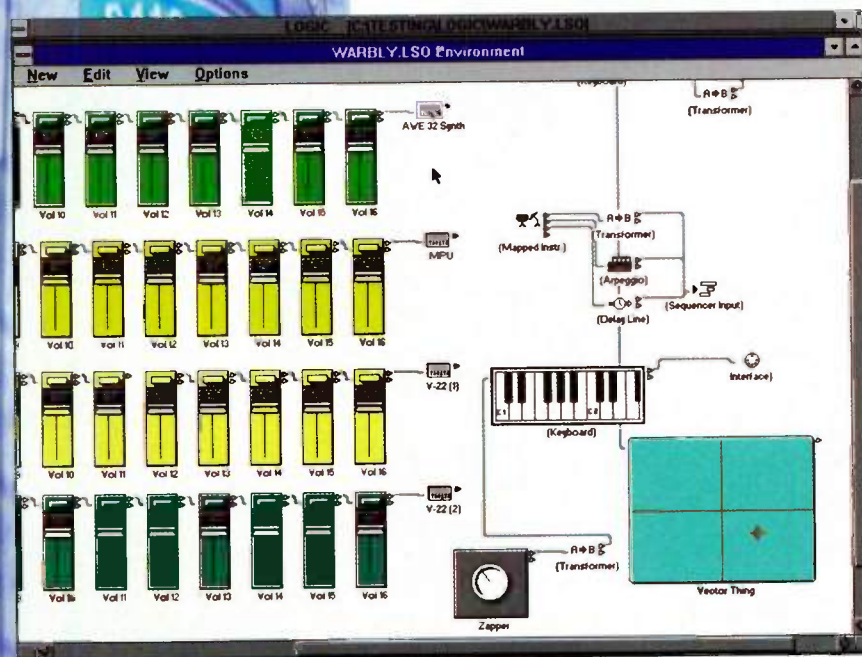
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LOGIC 2.0 FOR WINDOWS

- ▶ Hyper Edit, which you would use to draw in MIDI controllers etc. Both Matrix and Hyper Edit looked a little drab after the colourful Arrange page and I would like to have seen the use of colour expanded to these pages.

Logic's Event editor shows the full MIDI data in a list format, which is vitally important for those



precise editing, the tempo event list is maintained giving the best of both worlds. *Logic* provides useful facilities for mapping real-time, non-metronomed performances to its own bar divisions, although you must be prepared to expend some manual labour, especially if your playing features lots of changes of tempo. *Logic* can also map its bar divisions / tempo to other track events; if you are able to record a 'tap track' in time with your original performance, you'll find this invaluable in creating accurate scores from such 'free time' stuff. Using two Matrix editor pages to precisely move your 'tap track' events to match your performance is another good way to achieve this, if you have the patience.

SCREENSETS

Working with *Logic* instills you with a great desire to rush out and buy a huge monitor capable of displaying all the cleverly interlinked screens and editors simultaneously. However, if a big monitor isn't top of your shopping list, Emagic have kindly provided a snazzy function called Screensets, which is used to quickly swap from one painstakingly-created view of your song to another.

If I told you that Screensets comprise 90 saved window layouts which can be recalled at the touch of a key (or keys), you might be forgiven for thinking 'so what?'. Well, as with many features of *Logic*, you need to start using them to appreciate their power.

Activate the Catch and Link icons and any changes made in one editor will be reflected in another — so you can use the Score Edit page for notation-based editing whilst being able to view the changes in the graphical Matrix editor (which shows a far more accurate view of a note's real position in time). Or you can precisely edit ranges of drum notes in Event Edit whilst drawing in velocity crescendos in a linked Hyper Edit page.

The Event editor allows you to insert 'Meta Events' — i.e. non-MIDI stuff that is understood by *Logic* itself. You can automate the selection of screensets so that at any point in a song the screen format can switch.

You might (if braver than me) use your PC on stage with a specially-designed screenset containing your gig backing tracks, packed into individual song folders to be muted and unmuted as you need them. Add a large SMPTE display and scrolling cue messages (created in the Environment page) and even the smallest screen can become usable. Imagine, no more play lists sellotaped to your master keyboard? You can even create karaoke versions of your own songs to be recalled at a keystroke, complete with scrolling lyrics!

TRANSFORMATIONS

Most advanced music programs these days allow us to perform amazingly involved edits in a single operation. With *Logic* you can do this either in real time or after the fact, using the Transform option. So if you record a piece of music and then wish to send every note above C3 to another

MINIMUM SYSTEM REQUIREMENTS

- 25MHz 386 PC or better.
- 4Mb of RAM — 8Mb recommended.
- Windows 3.1 running in Enhanced Mode.

UPGRADE/CROSSGRADE POLICY

- Upgrade free to *Logic* v1.9 owners.
- *Notator / Creator* to *Logic*: £159.
- Crossgrade between platforms: £115.
- *Micro Logic* to *Logic*: £239.
- Other programs to *Logic*: call Sound Technology.

detailed edits. Mapped instruments are shown by name, which removes the need to remember which note is 'Electro Tom 3' (say), and various filters can be applied to the list to make getting around slicker. One facility that I have not seen before allows the Arrange window objects to be listed and edited, and I'm sure it's mere lack of imagination on my part that prevents me from seeing a good use for this.

The Score editor is particularly well implemented and gives you almost as many options to beautify your music's appearance as a dedicated scoring package. The scoring templates provided are ideal starting points for most types of music and, if you define your Environment instruments correctly at the outset, *Logic* will automatically present you with the correct scoring style ranging from various saxes and horns to piano, guitar or drums. Drum notation is well catered for with the ability to display individual or grouped percussion instruments on any line of a drum clef, without affecting the note value. *Logic's* 'interpretation' of scores takes much of the pain out of basic scoring, producing a finished score you could use with almost no effort.

If you require perfection and have the time to spend, you can create very professional-looking manuscripts using the many facilities available.

New in version 2.0 is a graphical Tempo editor, which makes it so much easier to create accelerandos with a deft flick of the mouse than it ever was with the event list. For

LOGIC 2.0 FOR WINDOWS

▶ sound module, whilst compressing its velocity ranges and reducing the note lengths, then *Logic's* Transform function is for you. Actually, you can do less obvious stuff too — such as changing notes to controller values; randomising pitch, velocities, duration and position; or splitting different notes

appreciated with time.

At present no dedicated SysEx editor page is included. Emagic's *SoundDiver* and *SoundSurfer* (generic editor and librarian combination), when converted to Windows, will hopefully do this one day. In the meantime, you'll still need any old PC librarian/editors you own to keep track of your sound banks.

I do have some reservations though. *Logic* does not have the look nor feel of other Windows programs — indeed, the manual states that you cannot multitask other MIDI programs with it, which is rather disquieting. It seemed fine alongside my patch editor, but I remain wary that Emagic should warn us off this (highly useful) feature of Windows. Perhaps it's only time-critical MIDI programs that won't multitask properly? Anyway, if you wish to run hard disk recording software, .WAV file players and such-like, *Logic* might cause you some problems. Then again, perhaps *Logic* is all the software you'll ever need?

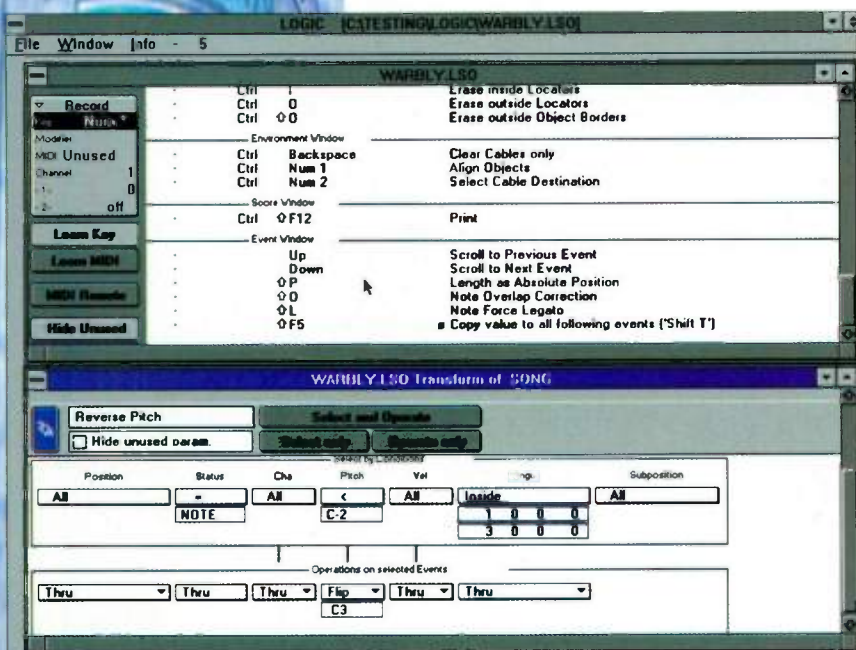
The manual claims that *Logic* will run in 4Mb RAM, but I wouldn't consider this a sensible option — at times, my 8Mb DX2-66 486 felt a little sluggish, and creating the simple screen shots for this review took an age and lots of memory juggling. I did encounter the occasional crash too, most often whilst I was creating masses of knobs and sliders in the Environment window, but even something as simple as altering the clef in Score Edit caused *Logic* to die in a nasty mess on one occasion.

Certain potential users will miss a graphical drum editor and find Hyper Edit a poor replacement, while others won't wish to invest in the kind of powerful PC required to do justice to *Logic*. Personally, I would say that I was impressed by *Logic's* sheer open-endedness and flexibility. Even though I wouldn't change my own familiar sequencer for it, anyone considering a top-of-the-range PC MIDI recording system should give it a very serious look. With *Logic Audio* scheduled for the autumn, it is clear that Emagic are quite committed to the IBM-compatible platform, so any complaints about 'Windows-friendliness' should be eroded with the passage of time. I'm sure we'll see future versions with on-line help and with recent file locations which are delighted to use virtual memory, Windows drivers, and able to multitask alongside any other MIDI program.

Check out the various cross-platform upgrades and even cross-program upgrades being offered by Emagic; these are designed to tempt you to travel the *Logic* path. Who knows — that old ST software going mouldy in your attic might knock a few quid off a shiny new version of *Logic* for Windows? SOS

FURTHER INFORMATION

- C** *Logic* for Windows £349 inc VAT.
- A** Sound Technology plc, Letchworth Point, Hertfordshire, SG6 1ND.
- T** 01462 480 000.
- F** 01462 480 800.



across different MIDI channels. Many edits are possible that you didn't even realise you might want to do and the best way to use the Transform option is when you specifically need it. Otherwise you might never get around to recording anything!

For those of us who need to tighten up our performance, a wide variety of quantise options exist with the added bonus that the changes can be reversed at any stage. You can even create your own Groove templates based on existing tracks, to capture their feel and use them elsewhere.

CONCLUSION

Logic is certainly powerful and almost infinitely customisable. At first I found it a bit strange and difficult to grasp, but this soon passed. When I remapped all the keyboard commands to those I was familiar with, things speeded up considerably. The fact that you can do this at all shows how much thought has gone into making *Logic* open-ended and flexible. If your studio is frequented by users of other programs, all you need do is create key command lists appropriate to those programs and boot *Logic* using the set needed for any particular session.

The Environment gives you unrivalled options for defining unique musical objects and real-time transformations and was my single favourite feature of the whole program. The 90 screensets that can be stored have a usefulness that is only

"...it is immediately obvious that Logic is (cosmetically, at least) different to most other Windows programs."

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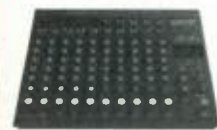
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POST-PRODUCTION

Sweetening

PAUL WHITE presents a few low calorie tips on how to sweeten and edit your sounds after mixing them.

HOW TO IMPROVE YOUR STEREO MASTER

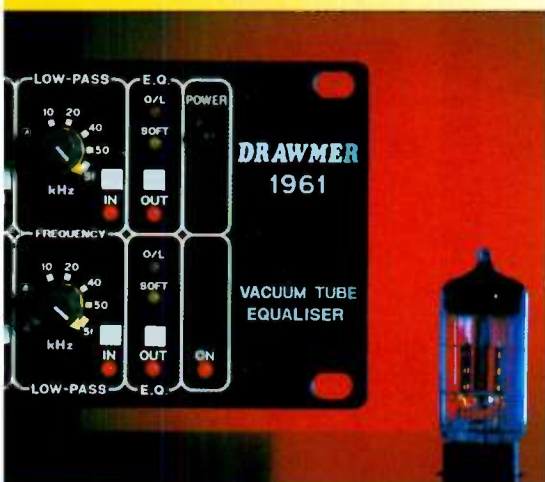
It's tempting to think that once you have mixed your stereo master, that's it — you can go ahead and put it on a record or CD, but that's not the end of the story. If you're recording an album then the tracks have to be compiled in the right order, with the right gaps between them, and at the correct respective levels. That part of the process has been covered in *SOS* before, and if you're working from DAT (or even analogue cassette), hard disk editing is the most practical way to do the job. If, on the other hand, you're working with an open-reel mastering machine, you'll need to physically splice the tracks together inserting a couple of seconds of blank tape or leader tape between the tracks. Other than rearranging the songs into the chosen order, what else can be done at the post-production stage to actually improve the sound of the recordings?

One of the problems with masters made in small private studios is that most have less than optimum monitoring environments, and this in turn leads to mixes which require further work on the tonal balance. To improve on this, you ideally need a good parametric equaliser and a monitoring system that you know to be accurate; one that you are used to working with. There's no reason at all not to use an analogue equaliser for the job, and some of the more esoteric tube models (like Drawmer's 1961 valve equaliser, reviewed in May 1994's *SOS*) can inject a little of their own personality into a mix. Since setting up my own Sound Tools hard disk editing system, I've been using the Waves *Q10* software parametric equaliser quite a lot and find that it's every bit as easy to use as the hardware equivalent. However, what's really important is not which equaliser to use, but what to do with it.

In the case of mixes done in rooms with poor monitoring systems or acoustic problems, the most serious errors tend to occur at the bass end of the spectrum, so you're likely to end up with a stereo master that has too much or too little bass. In a typical pop record, the bass drum sits in the 80Hz

part of the spectrum, so you can do quite a lot to balance the subjective bass drum level using a parametric (or even a sweep filter) tuned into this region. However, there's quite often stuff going on below 80Hz, and if there's too much down there, you can end up with a very ill-defined, rumbly bass end that's best treated using a shelving filter to attenuate everything below 60Hz or so.

For certain musical styles, dance music being one, your mixes may actually rely on deep bass sounds, but when you try to emphasise them using a simple shelving control, the lower mid starts to sound a bit boxy. A parametric EQ tuned to between 40 and 70Hz may produce the desired result, but if you have to use your mixing desk equaliser, try adding around +8dB of shelving bass boost and combine this with around -8dB of sweep lower mid cut, tuned to between 150 and 250Hz. This lower mid cut counteracts the bass EQ's tendency to spill over into the mid range, which enables you to add a lot of deep bass without swamping the lower mid range.



Drawmer's 1961 dual-channel valve equaliser.



The Waves *Q10* parametric equaliser for Sound Tools hard disk recording systems.

ATTENTION TO DETAIL

At the high frequency end, lack of brightness or detail can be a common problem, especially if the recording was made using analogue multitrack and several tape bounces were involved. It's tempting to simply turn up the treble control, but this will also bring up the noise and may not produce the tonal result you need. What can work better is to identify the high frequency sounds that need help, and

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HOW TO IMPROVE YOUR STEREO MASTER

► then use a parametric EQ or sweep mid EQ to lift these slightly. The sound of cymbals or the pluck of an acoustic guitar can be enhanced by boosting between 4 and 8kHz, and because you're only boosting a relatively narrow band of frequencies, you bring up less background noise. Be careful when adding high frequencies (or 'top') as it is too easy to make a mix sound harsh or aggressive. As a rule, the higher the boost frequency, the more 'air' you get around the sound. Boosting lower down, say at 3 to 4kHz, can bring out the bite in electric guitars and similar sounds, but it also tends to make the top end sound harsh.

The other popular way to enhance the top end detail is to use an exciter or enhancer of some kind. Most models work well if used sparingly, but my favourite is still the SPL Vitalizer (reviewed in May 1992's *SOS*), which includes a very effective bass enhancement system as well. I can't emphasise too strongly that enhancement needs to be used with restraint, so keep switching the

compressors seem to give the smoothest results on complete mixes, and if you can get hold of a model with an auto attack/release option, you may find this works better than setting up a fixed attack and release time. If you have to use manual settings, use a fast attack time (between the fastest available and 1 millisecond), and try release times of between 0.2 and 0.5 seconds to see what sounds best. Keep in mind that compression will bring up the noise level during quiet sections.

Limiting is also useful on finished mixes, because you'll very often have a few really high level, short duration peaks that force you to keep your average signal level low to avoid clipping. Because these peaks are so short, they can often be limited quite severely before any audible difference is evident, but you'll need a limiter unit with a very fast attack time and a fast release time to achieve this. You can usually pull the peak levels down by at least 4dB without changing the sound, which means your average signal level can be increased by the same amount.

NORMALISING

If you're working with a hard disk recording system, you may be tempted to 'normalise' the data to ensure that the highest signal peak comes right up to the digital maximum. If you do intend to normalise, there are a couple of points you should keep in mind. Firstly, always normalise *after* you've done everything else, otherwise you may perform a subsequent process that increases the gain further, thus forcing your signal into digital clipping. Even an EQ setting that produces only cut can increase the signal level slightly, simply because you may end up reducing the level of some frequency components that were previously helping to cancel out peaks at other frequencies. Apparently this is also true of sample rate conversion, because of the filtering involved.

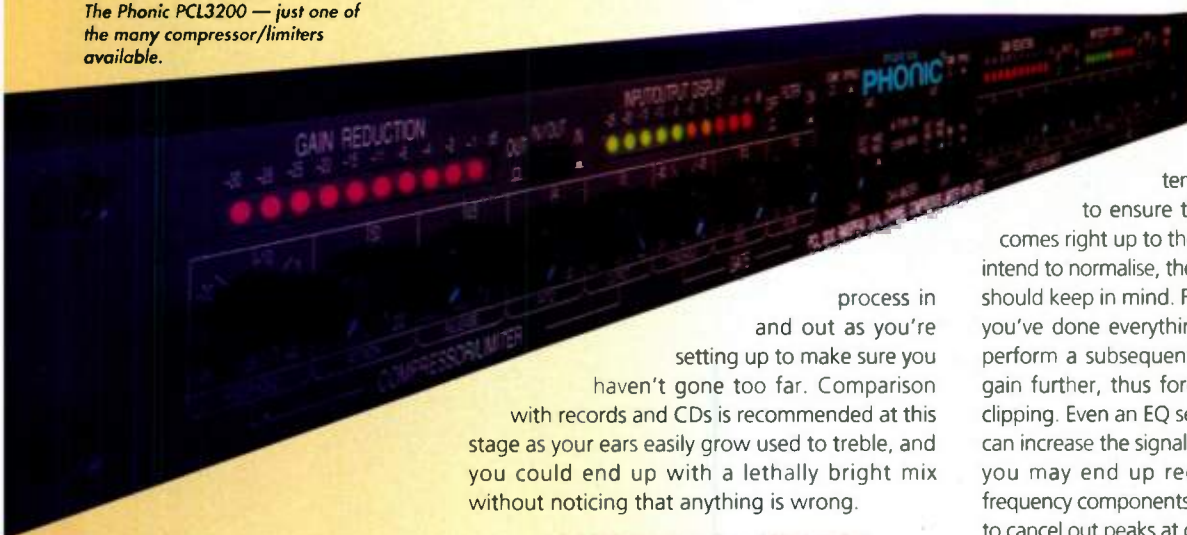
Secondly, if you have the option, try to normalise to a dB or so below the maximum peak level. For reasons similar to the previous example, clipping may occur when a normalised signal is passed through subsequent digital systems (such

process in and out as you're setting up to make sure you haven't gone too far. Comparison with records and CDs is recommended at this stage as your ears easily grow used to treble, and you could end up with a lethally bright mix without noticing that anything is wrong.

COMPRESSION & LIMITING

Some producers like to compress their finished stereo mixes while others claim that this always makes things worse. The truth is that it all depends on the type of material you're working with. If you want to maintain a high energy feel, then a few dBs of compression won't go amiss. Soft-knee

The Phonic PCL3200 — just one of the many compressor/limiters available.



AVOIDING SAMPLE RATE PROBLEMS

Never mix sample rates on a DAT because a digital editing system will simply take in all the data at a single sample rate, resulting in noticeable speed errors on the offending tracks. I run my own Sound Tools editing suite and I've been caught out before when bands have brought me a tape made at other studios. You ask them what sampling rate the DAT tape is recorded at and they usually reply: "What's a sampling rate?"

If their DAT contains material from two or more studios, there's a good chance that the sample rates could be mixed up. I get around this problem by connecting an Alesis AI-1 sample rate converter between my DAT machine and the input to my Sound

Tools system, so no matter what is on the DAT tape, I end up with a 44.1kHz master running at the right speed.

Another potential pitfall presents itself when you get a DAT tape to edit that was made on a Casio or an older Tascam portable DAT recorder. These two machines record using pre-emphasis (a simple kind of noise reduction), which means that the digital data on tape actually has a significant top boost which is filtered out again on replay. If you transfer tapes made on these machines into Sound Tools via the digital domain, the emphasis flag is stripped out and you end up with a horrible, tippy sounding master. I asked Digidesign's engineers why the ability to pass on the emphasis flag

(present in their old Sound Accelerator system) hadn't been retained, but their reply was, "You're the tenth person we've told today, there's simply no call for it." I also asked them why the system couldn't put up a warning if it saw the input sample rate change, but they said this wouldn't be easy to do.

Until now, the only solution to pre-emphasis has been to transfer your DAT recording via the analogue inputs so that you're loading in the de-emphasised audio. However, there's now a de-emphasis setup in the Waves Q10 digital EQ library that can undo pre-emphasis entirely in the digital domain. If you have a Q10 plug-in, I'm sure they'd be delighted to send you the setup via CompuServe.



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HOW TO IMPROVE YOUR STEREO MASTER

“One of the problems with masters made in small private studios is that most have less than optimum monitoring environments, and this in turn leads to mixes which require further work on the tonal balance.”

► as oversampling DACs). In practice, this source of clipping rarely causes audible problems, but if you have the option, then why not be a perfectionist?

Every time you manipulate the level of a signal in the digital domain, some resolution is lost; for example, if you add EQ, the signal level is likely to be increased, so it has to be scaled down again to fit into the original 16 bits. The practical outcome is that if you have several stages of digital processing to go through, low level detail may suffer, resulting in reverb tails becoming less smooth or the stereo imaging becoming blurred. This problem may be countered by adding ‘dither’ to the signal, which effectively adds a low level of noise, with the end result that low level resolution is improved, but the signal-to-noise ratio suffers slightly. A more sophisticated way to do this is to use so-called ‘noise-shaped dither’, which is mathematically designed so that the added noise components appear at the high end of the audio spectrum where the human ear is relatively insensitive. Sony’s Super Bit Mapping system is an example of noise-shaped dither. Once again, if you’re using something like Digidesign’s Sound Tools, the L1 plug-in limiter from Waves includes a very sophisticated dither system (developed by AES guru Michael Gerzon) that does the job very nicely. The limiter section of the L1 package is also very effective in trimming short duration peaks down to size, as discussed earlier. As an added bonus, the L1 can normalise the gain of the signal being processed to any maximum level at the same time as limiting, which can save you a lot of time.

REDUCING NOISE

Good recordings shouldn’t be noisy in the first place, but budget effects, noisy synths, and ground loop hums in home studios invariably mean that your recordings will contain some audible noise during pauses or quiet passages. A great improvement can be made by ensuring that your track is completely silent until the music starts.

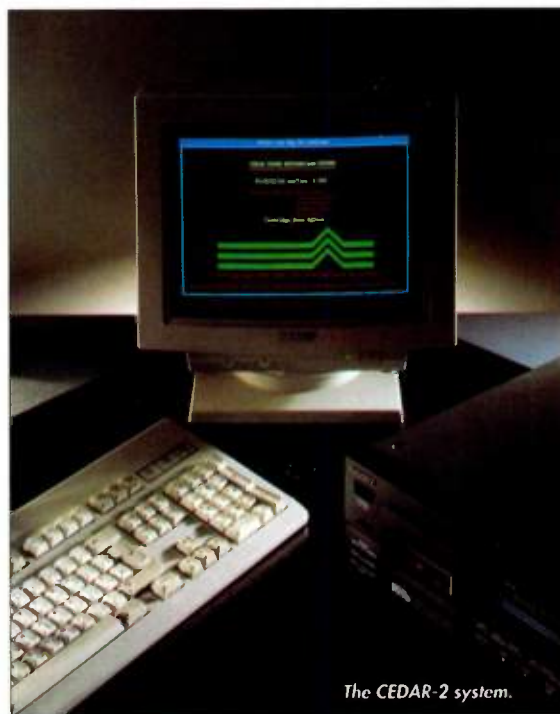
If you’re splicing analogue 2-track tape, this simply means taking care to make your splice half an inch or so before the song starts. Rocking the tape over the heads manually is the best way to identify this point, and you can mark the back of the tape with a wax pencil to show you where to cut.

If you’re using a hard disk editor, life is rather easier because you can actually see the waveform of the first sound in the song. It is then simply a matter of selecting the appropriate area and using the ‘silence’ command to replace it with digital silence. At the end of the song, you can also perform a digital fadeout at the tail end of the natural decay of the last sound, so that the song fades into true silence rather than hiss.

Noise which occurs during the track is less easy to deal with, and to tackle serious noise effectively, you really need a specialised digital noise removal system such as CEDAR or Sonic Solutions’ NoNOISE.

Less severe noise contamination can be dealt with in the analogue domain using a single-ended noise reduction processor such as the Drawmer DF320, Symetrix 511A, or one of the Rocktron, Behringer or dbx units. All these units work by monitoring the input signal’s level and frequency content; when a low level signal with little or no high frequency content is detected, a variable frequency low-pass filter moves down the audio band to filter out the noise. Obviously the filter has some effect on the wanted signal, so the trick is to set up the unit so that it’s only coming into action on very low level signals. By switching the bypass switch in and out, you can hear if the sound quality is suffering and adjust the threshold level accordingly.

Sound Tools users have access to noise removal software such as *DINR*, which isn’t as sophisticated as a CEDAR or NoNOISE system but is rather more effective than analogue, single-ended, noise reduction units. *DINR* behaves like a bank of



expanders, each covering a very narrow part of the frequency spectrum. When the signal in a particular band falls below the noise threshold, the expander mutes the signal. Because this happens over many independent frequency bands, it’s quite possible to expand out the noise in one part of the spectrum leaving other parts unaffected.

To use *DINR* most effectively, it’s best to let the software analyse and ‘learn’ a section of noise-only recording from immediately before the start of your song. The resulting noise spectrum is then used to set the correct threshold for each of the multiple expander bands, though the user can alter these parameters if required. In practice, *DINR* is good for between 5 and 8dB of noise improvement before any side-effects become evident, and though that might not look much on paper, it can make a huge difference to the

subjective sound. Be careful though; over-processing can cause the noise to take on a ringing character as frequency bands in different parts of the spectrum turn on and off.

ARTISTIC CONSIDERATIONS

When compiling an album, there are artistic as well as technical decisions to be made. For instance, the relative levels of the tracks need to be balanced so that they sound right — if you simply normalise all the tracks individually, any quiet ballad will sound unnaturally loud next to a heavy rock track. The only way you can get this right is to use your judgement, but a good guide is to make sure the vocal levels are subjectively similar from track to track. Once again, the old trick of listening from outside the room as one track plays into another will help you recognise any obvious level problems.

A related problem arises if you're using tracks recorded at different sessions or even in different studios. Do you want them to sound different or do you want to EQ them to make them all sound similar in tonal character? Again it's your choice, but you'd be amazed how different recordings of the same band can sound.

Finally, judging the length of the gaps between songs is an art in itself. The usual gap is between two and four seconds, but a lot depends on

whether the previous track has an abrupt stop or fades out, and on how different the mood of the two songs is. Fortunately, the correct gap is usually pretty evident, and I've found that even when several people are involved in a session, the chances are that they'll all agree on the optimum gap length to within half a second.

And that's about it. Don't forget to make a backup copy of the tape before you send it away for duplication, and if you're making a cassette master, it helps if the two sides are as equal as possible with side one being the longer if necessary. Leave a gap of at least two minutes between the two sides of the cassette, and if you're mastering to DAT, don't just wind the DAT on, leave silence, otherwise you could confuse the DAT machine at the duplicating plant. If you're mastering for CD, then you don't need to leave a gap, though you should always leave a minute or so of recorded silence at the beginning of any DAT tape, just to ensure you don't get any dropouts or errors. And most importantly, try to record the master DAT at 44.1kHz sampling rate. If your machine only works at 48kHz, then mark the tape clearly as such and you should have no problems. However, if you send away a tape for CD mastering which contains mixed 44.1kHz and 48kHz sample rates, you only have yourself to blame if some of the tracks on your CD album play back 10% slow!



USEFUL CONTACTS

DINR — Digidesign UK.
Tel: 0171 494 2949.

WAVES PLUG-INS — Natural Audio.
Tel: 0181 207 1717.

SPL VITALIZER — Beyerdynamic UK.
Tel: 0800 374994.

DRAWMER 1961 — Drawmer
Distribution Ltd. Tel: 01924 378669.

PHONIC PCL 3200 — Audio
Awareness. Tel: 0181 598 8081.

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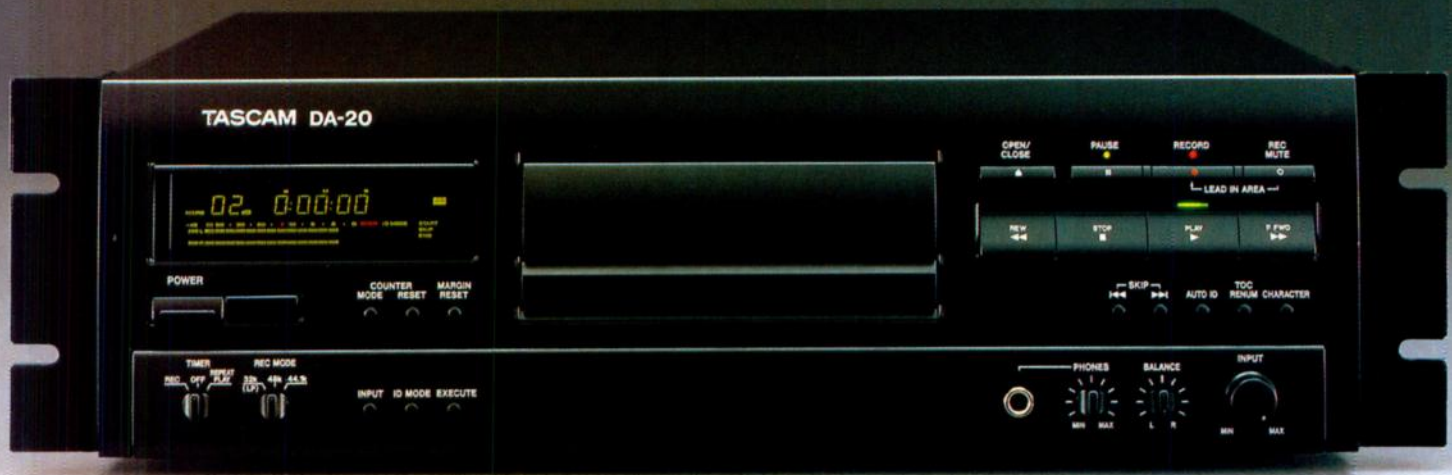


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TASCAM

DIGITAL AUDIO TAPE RECORDER

Tascam's new DAT machine combines professional features with an affordable price. PAUL WHITE puts it to the test.

Tascam's new DA-20 could be the answer for those looking for a DAT machine that combines professional features with a reassuring build quality, yet it costs just £799 inc VAT. Although this is rather more than you might expect to pay for a budget consumer machine, it's still very attractively priced at around half the cost of an analogue, open-reel, stereo recorder.

FULL-FEATURED

On the face of it, the DA-20 looks like a pretty straightforward rackmounting DAT recorder with transport and control layout seemingly identical to that of the rather more costly Fostex D5 (reviewed last month), though there are differences in the features offered. As you'd expect from a

professional DAT machine, the DA-20 records at either 44.1kHz or 48kHz sampling rates, and for less critical applications there's also a 32kHz long-play mode. Unlike the Fostex D5, however, the DA-20 has only unbalanced phonos for the audio ins and outs. S/PDIF ins and outs on phonos provide the digital connections.

One of the irritations of semi-pro and consumer DAT machines is SCMS, the copy-protection system that prevents you cloning a master tape beyond one generation, but on the DA-20 you can opt to either engage or disengage the SCMS, simply by holding down the Execute button and then powering up the machine.

All the usual subcode functions are included — Start IDs, Skip IDs, and everything you'd expect from a regular DAT machine — but on this machine you can also record a 'table of contents' (TOC) to the header of the tape, which tells you how many tracks are on the tape and how long they are. When you add more tracks, it's a simple matter to have the machine run through the tape and update the TOC, though the TOC information is only available when you have recorded an end marker at the finish of the recorded material on the tape. The cassette protect tab must also be set to safe before you can read TOC information. By stepping through the counter mode, the TOC shows you how long the current selection has been playing, the absolute time, the time remaining before the end marker, and the number of songs on the tape.

IS DAT ENOUGH?

DAT is a great invention, but its consumer origins are rather at odds with its almost universal adoption as a professional mastering and audio data transfer medium. The problem is that DAT isn't quite as robust as a truly professional format really ought to be, yet the fact that most people accept it as such means that no real effort has been made to develop a serious alternative.

Fortunately, professional grade DAT machines are pretty reliable these days, but horror stories still abound of budget DAT machines that break down after six months in the studio. In fairness, budget

DAT machines aren't guaranteed for commercial use, but then if a DAT machine can't stand up to running off the occasional mix in a home studio, what chance would it have in a domestic environment where it might be asked to play music constantly, several hours a day with little chance of ever being cleaned?

OK, so if you run a studio you need a serious DAT machine, but until recently professional DAT recorders tended to be very expensive, and most of the 'middle ground' consumer machines, such as the Sony DTC55, have long since gone out of production.

One other feature which the studio owner might find useful is the ability to store up to 60 characters of information along with the Start ID for each track. As I suggested in my review of the Philips DCC machine last month, only a very sad person would painstakingly key in track titles for all their record collection, but in a studio situation it is useful to be able to label material, especially when you have multiple takes of the same piece of music.

When recording music onto DAT, the Start ID system uses a level-sensing mechanism, which means you might end up missing some low-level information at the start of a track if you use the Start IDs for cueing. Similarly, a piece of music containing breaks or very quiet sections might generate additional Start IDs where you don't want them. You can edit and move Start IDs, of course, but with the DA-20 you can also record from a CD in the digital domain, whereupon the CD's Q codes are automatically used to create Start IDs. This operation happens automatically whenever the DA-20's digital input recognises a CD source.

DA-20

QUALITY SOUND

It's almost taken for granted that modern DAT machines sound very good, but having listened to quite a few, I must admit that the difference between models can be quite noticeable. The DA-20 has a clear, solid sound with none of the hard edge inflicted by some of the earlier DAT machines. This is due in part to the use of single-bit A/D converters driven from a very low jitter clock circuit. The monocoque-

"...the transport is extremely fast, even for a DAT machine, and the sound quality is all you'd expect from the latest generation of converters..."

style metalwork casing is also designed for minimum mechanical resonance and has a series of three-dimensional, honeycomb-shaped, depressions stamped into the base to add stiffness.

TASCAM DA-20 £799

PROS

- Good range of practical facilities.
- 44.1kHz or 48kHz recording, with or without SCMS.
- Excellent sound quality.

CONS

- As with Fostex D5, the tape loading drawer cover is rather lightweight.
- Lack of balanced analogue connections may put off some pro users.

SUMMARY

A good choice for the small-scale professional user or the serious project studio owner.

IMPRESSIONS

The DA-20 behaves very well, overall. The transport is extremely fast, even for a DAT machine, and the sound quality is all you'd expect from the latest generation of converters. All the expected features are provided, even a cordless remote control, but the additional features — especially the TOC, track naming, and SCMS defeat

— combine to make this a very attractive studio machine.

As you might expect, the TOC facility only works properly if there are no unrecorded portions of tape between tracks, so it is important to record a few seconds of silence after each track and then start the next recording during that period of recorded silence; you must also remember to create and end marker. Getting the machine to update the TOC requires only a single button press, but the procedure can take several minutes if you have a lot of IDs on the tape. Entering characters can also prove a long-winded process, as you have to use the Fast Fwd and Rewind buttons as cursor keys and the Skip buttons to scroll through the available characters. It's easy enough to do, but I wouldn't like to write a novel that way!

When you take into account the substantial build quality, the sound quality, the facilities and the price, it doesn't take much imagination to realise that Tascam have a real winner on their hands here, and it's only the lack of balanced ins and outs that prevent the DA-20 from meriting the 'fully professional' tag.

FURTHER INFORMATION

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Random access recording offers many benefits over tape for the creative recordist.

DAVID MELLOR samples this 8-track offering from Akai.

The next wave in recording is undoubtedly hard disk (tapeless) recording. Although I feel sure that tape will be with us for a long time to come, in both its analogue and digital varieties, for most people disk-based recording will eventually become a major part of our working lives. The Akai DR8 is one of a small but growing band of standalone multitrack hard disk recorders, following in the tradition of the company's 4-track machine, the DR4d. You don't need a computer to operate it and it works pretty much as you would want a multitrack recorder to work. There are no windows, icons, mice or pull-down menus, and plenty of people will say that when you are recording, who needs them? Recording is a painstaking business and your full attention should be on the music and the sound, not on the visual and operational demands of a computer. Akai have made a bold decision not even to provide LCD graphics on the DR8. The only information this machine will give you is a timecode readout and the occasional couple of words in its fluorescent display. Anyone who criticises this machine for not having a 'better' display has probably missed the point.

ADVANTAGE HARD DISK

First of all I should recap on the basic advantage of hard disk recording over tape, because this is vastly more important than however many detailed features an individual piece of equipment provides. Hard disk recording offers virtually instant access to any of the audio on the disk; there is no forward or rewind time. The value of this cannot be underestimated. In the studio, so much time is wasted simply locating from one point of the audio to another. If this time could be bundled up and sold at an hourly rate, it would be a resource of considerable value. Hard disk recording gives you this time for free.

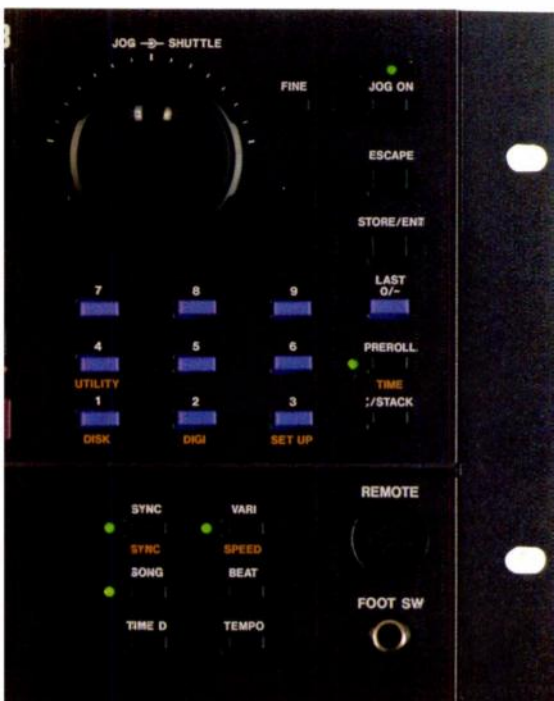
The other advantage of hard disk recording is that it can be non-destructive. In other words, you don't have to erase something to record something else — an edit or drop-in, for example. You can always go back and change your mind. In some

Some

AKAI DR8 HARD

systems, this 'infinite undo' capability is actually counter productive, because you end up putting off all the major decisions until some unspecified later time, and the disk quickly becomes full of takes that are no good, and you haven't been able to bring yourself to throw them away. Sorting them all out later will, of course, be a total nightmare. Akai have arrived at a very reasonable compromise for this, as we shall see shortly. But before I move on, let me stress that these advantages are *huge*, and everything else is just icing on the cake.

The DR8 may be supplied with or without hard disk(s). Of course you'll need one to begin recording, but you may want to source your own drive rather than buying it from your audio retailer. The DR8 I tested had a Micropolis 1 Gigabyte AV drive fitted internally. To date, Micropolis are still the only hard disk manufacturer who can be seen to be making efforts to satisfy the needs of the audio and video community, although other drives may be equally suitable. The usual equation of roughly 10 Megabytes storage per stereo minute applies, so a 1 Gigabyte drive will give around 200 track minutes, or 25 minutes of 8-track operation. Some of the rated capacity is taken up by the disk formatting, so you should anticipate a little less. Since the DR8 can work with drives up to 4 Gigabytes in size, then duration of recording for most purposes should be reasonably



setting up an auto punch-in just to fix the end of a vocal line (although you can do so if you wish). When you execute a manual punch-in, the in and out points are automatically stored, so you can repeat the operation quite easily as many times as you need to. Punch in and out are both silent and gap-free, by the way, and there is a jack for footswitch operation of the punch-in function.

One feature of the DR8 which most tape multitracks don't have is the ability to assign any input to any track, which you may find useful depending upon the nature of your studio set-up. This includes the digital inputs, which the DR8 has as standard. Stereo digital input and output is available on both SPDIF phons and AES/EBU XLR connectors, which should keep both semi-pro and pro users very happy. There is also a house sync input, so the DR8 can keep pace with any digital system, no matter how big. Sampling rates are selectable from 32kHz, 44.1kHz, 48kHz, and 44.056kHz for NTSC video synchronisation.

I said that recording with the DR8 is similar to tape multitrack recording, but we must not overlook those important hard disk advantages.

AKAI DR8 £3289

PROS

- Far too many to mention!
- Impressive varispeed range (-41.3% to +58.3%).

CONS

- Some 'early version' software niggles.
- Backup takes a long time (as with other systems).

SUMMARY

Multitrack recording made easy. A possible ADAT killer?

Like It Hard

DISK RECORDER

adequate. The DR8 is a normal SCSI device, so you can connect up to six disks in series, plus another six if the (optional) additional SCSI bus is fitted (and you can afford it!). As yet, 'overflow' recording is not possible, so when one disk is full, you must manually select another disk and recommence recording.

RECORDING

You can connect the Akai DR8 to a mixing console in the normal way, but it can just as easily be treated as a sort of 'ultra-portastudio'. The jack inputs on the rear panel have a sensitivity switch and you can even connect a dynamic microphone, although you wouldn't expect to get the same performance as on a mixing console mic input. There are eight level controls on the front panel, which are actually a bit of a pain in a normal studio configuration since you don't need them. Even if they are not required, you still have to be aware of the levels to which they are set, and it's not all that easy to tell unless you look very closely at the tiny dot that shows which way the knob is pointing.

As with a normal multitrack, recording is done by arming channels and pressing Rec and Play buttons simultaneously. Like ordinary tape recorders, but unlike a number of hard disk recording systems, the DR8 has instant, on-the-fly, punch-in capability so you don't have to go through the rigmarole of

Who, for instance, hasn't screwed up a punch-in and erased part of the good bit along with the bad? With the DR8, all you have to do is press Undo and no-one but you will ever know it happened. If you wish, you can even use the Undo button to compare your new take with the old one very easily. The other main advantage is in the DR8's Take function; this lets you record up to five takes, compare them at leisure, and then select the best. This would be ideal for recording a difficult vocal track line by line, or for punching in a particularly difficult section. However, I did find that if only part of a take was good, it was a rather more troublesome procedure to keep it and junk the rest, although it is certainly possible to do this.

The Take facility demonstrates very well the compromise Akai have reached between totally non-destructive recording and editing, and the morass of takes and out-takes that can build up when everything is kept. With the DR8 you record something, check it, and then commit to it. You quickly find that you don't keep material that isn't up to standard, and you never regret getting rid of it. In many ways it's the perfect compromise between tape and infinite-undo hard disk recording.

OVERDUBBING

The instant access provided by a hard disk recorder is a dream come true for overdubbing. Adding extra tracks to what is there already is a process of shuttling backwards and forwards through the

"The DR8 is so quick and efficient as a multitrack recorder that I would still like it even if it didn't offer any editing capabilities — but it does, and they are good."

Akai DR8

▶ track, a verse here, a chorus there. What you need is an autolocator, which comes as an accessory to most multitracks. Not here — the Akai DR8 has a 100-point autolocator built in. Numeric keys 1 to 9 offer direct locate functions. Press two keys to store the current time as a locate position, press one key to get back to it. If you need more locate points then the curiously named Stack key becomes



The large bargraph peak indicators display the individual levels of the eight hard disk tracks, as well as aux send levels, bus levels, and stereo master outputs.

involved, but it's still pretty easy. Locate points can be set on-the-fly and you can set a pre-roll time so that the DR8 will play from a point slightly earlier than the locate time, as any pro would expect.

One of the things we have become used to with previous hard disk recorders is that they take a little time to respond. Amazingly, the DR8 offers instant start, even from an optical disk (which typically has a slower access time than most hard disks), so you can hit Play and be off straight away, with no time spent waiting for the machine to fill its buffer memory from the disk. I imagine that a short section of audio must be loaded into RAM whenever possible. The DR8 does take a little longer to start up if you fast wind, rewind (yes, an optional throwback to the days of tape!) or locate and suddenly hit Play, but I can almost forgive Akai for not giving the DR8 clairvoyant capabilities. It's still very quick off the mark.

EDITING

The DR8 is so quick and efficient as a multitrack recorder that I would still like it even if it didn't offer any editing capabilities — but it does, and

they are good. In multitrack recording it is common to want to use the same section of audio in several places throughout a song (eg. chorus). These days this is usually done with a sampler, but it's much quicker to achieve using the DR8. Simply mark the in and out points, then use the Copy function to repeat the audio as many times as you like. Naturally, copying identical audio data doesn't take up any extra disk space.

Finding the in and out points of a desired section of audio is done with the DR8's jog/shuttle wheel. You can scrub the audio in the same way as you would on an analogue reel-to-reel tape recorder, or a top of the range megabuck hard disk recorder like a DAR SoundStation or AMS Neve AudioFile. Unfortunately, Akai haven't quite got it right in the scrub department yet, since duplicating reel-to-reel style scrubbing in a software environment is a far from trivial task. The scrub function does work, but I found that each time I rocked the jog wheel back and forth, its position would change with respect to the audio. This is precisely what you don't want to happen, and I found that I was never quite sure I was hitting the right spot. Perhaps I've been spoiled by my experiences with the top systems? Despite this, it is still very easy to audition and adjust the in and out points, so I don't want to seem too critical. It's a lot better than some equipment I have tried, and there is almost certainly some scope for Akai to improve it in the next software update.

Checking that your in and out points are in the correct place is straightforward. Once you think you have your mark, press the To key to listen to the few seconds of audio leading up to the mark, or the From key to hear from the mark. You can scrub and audition any combination of tracks, by the way. Once you have marked out a section, press the In to Out key to hear it in isolation.

When you have the section you want precisely located between the in and out points, there are several things you might want to do. It could be a vocal, for instance, with some breaths or other noises you want to silence. Select the Erase function and it's done, leaving everything else in place as it was before. Suppose you wanted to get rid of some audio and close up the gap, then choose Delete. What if you want to copy the backing vocal of the first chorus to all subsequent choruses, but it is spread over four tracks? No problem, just choose the Copy function and select the tracks you want to operate on. You can move

MIXING AND EQ

The DR8 incorporates a digital mixer which can accept an additional eight channel inputs on top of what you have already recorded. An optional card, which I didn't have for testing, provides EQ as well. Although the built-in digital mixer is fairly easy to use and offers snapshot automation, I can't say that I am all that interested in a mixer that can't perform fades, and this one can't. Having said that, the mixer would be very useful for monitoring if the DR8 was being used as a standalone recorder (as mentioned in the main text), perhaps on location. The mixer can also be used for internal bouncing down of, say, six tracks to two.

Two auxiliary sends are also available and could be used to add reverb or other effects. If some of this comment sounds negative, don't let it put you off the DR8, because it has so much to offer in every other department.

SYNCHRONISATION

With the optional IB 802T SMPTE reader/generator card installed, the DR8 can synchronise to timecode and operate as a slave or code-only master. ('Code-only master' is where transport commands are not issued to slave machines, so a tape recorder or VCR would take some time to catch up.) All timecode types are available, including drop frame at both 29.97 and 30 frames per second. I synchronised the DR8 as a slave to my Fostex RD8 ADAT multitrack and sync, although not phase accurate, was excellent with a very fast

response. I would have liked to see a VITC reader included, so that the DR8 could lock to a video in still frame mode, but perhaps I'm just being greedy?

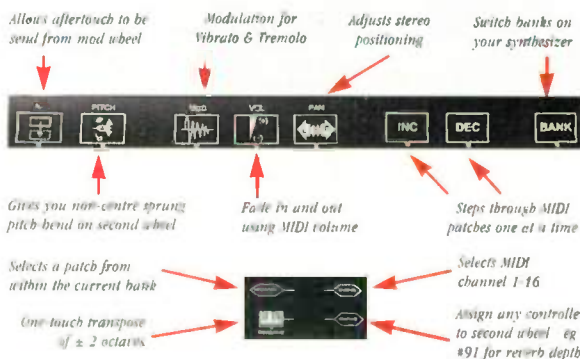
With the optional IB-803M MIDI interface card installed, the DR8 will synchronise to MTC (MIDI Time Code) and will respond to MMC (MIDI Machine Control) commands. It is also possible in Song mode to create a tempo map and have the DR8 output a MIDI Clock signal and Song Position Pointers (for people who haven't discovered MTC yet!).

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Akai DR8



The DR8 uses familiar tape transport controls, whilst retaining all the advantages of a random access system.

A SMALL PROBLEM...

There is no relationship between the time shown on the DR8's display and the position of the audio stored on the disk. You can start recording at 23:00:00:00 quite happily if you wish. If you record a number of songs on the same disk, which is very easy to do with the relative/absolute time feature, you might record audio anywhere between 00:00:00:00 and 23:59:59:29 — in a notional 24-hour period in other words. So what happens if you forget the start time? How do you find the audio on the disk? There is no answer as yet, except to make sure that you use the locate facilities while recording, which will remember the start time for you, or get a notebook and write them down!

USING OPTICAL DISKS

If you are doing dialogue recording to picture with your DR8, then you will probably only be recording on a single channel. In this situation you have a very good chance of being able to play back the other seven tracks when recording on optical disk. Try this in stereo however and you may be disappointed, even with the (optional) additional memory card. An optical disk is probably best thought of as a fairly quick and convenient backup

medium, rather than for primary recording. It might be better to think of the DR8 as 'optical ready', because a new generation of bigger and faster optical disks will be with us in the not too distant future, which should more closely resemble hard disk in terms of access times.

With the right hard disk, of course, you can record and play back any number and any combination of the eight tracks.

- ▶ audio in a similar way (using the Move function), and there are other useful options, as follows:
 - Copy the specified section to any track. Material at the destination is overwritten.
 - Copy and Insert the section to any track. Subsequent material is moved back.
 - Move the section to any track. Material at the destination is overwritten.
 - Move and Insert the section to any track. Subsequent material is moved back.
 - Insert a blank section of a specified length and move the subsequent material backward.



The mixer controls are logically grouped together on the lower front panel section.

- Erase the specified section.
- Delete the specified section and move subsequent material forward.
- Slip the material forward or backward to the edit point. Slip would be used, for example, if the guitarist played ahead of the beat for a few bars. You could simply slip the offending section back in time.

One option that isn't present (but I bet Akai will

have it ready by the next software update) is Copy and Append. One thing the DR8 isn't all that good at, compared to a computer-based system like Digidesign's *Sound Designer* and Audiomediam II card, is stereo editing. Snipping out sections of audio to compile a finished master, perhaps a CD master or an extended version of a song, is a slow and painstaking process on the DR8. I would like to be able to mark out a section of audio on two tracks, and copy it to a new pair of tracks, placing it exactly at the end of any audio already on those tracks, or with a definable silent period in between. I know you're going to do it Akai, but how long will it take?

During overdubbing and editing there is an important accessory that doesn't appear in the Akai catalogue — a notebook. When you work with a computer system you don't need to take notes, because the software will allow you to enter any information you need directly onto the screen. But since the DR8 doesn't have a screen, you will have to improvise. As I said earlier, I don't mind at all not having to look at a computer monitor for hours on end. Keeping a note of locate points is a small price to pay.

APPLICATIONS

There are a number of potential applications for a hard disk recorder:

- Stereo recording and editing.
- Audio-for-video.
- Multitrack recording.
- Use with a MIDI sequencer system.

As I have said already, I don't feel that the DR8

is quite ready to be an effective stereo editing system, although you could manage it if you had to. Aside from lacking the one editing command that I think I would need most, there is no crossfade function on the DR8. The butt splices it provides are very clean, but variable crossfades are a necessity for all but the simplest stereo editing work.

The DR8 could be used for audio-for-video work. An optional SMPTE sync card is available, and it will indeed slave to timecode of all varieties very satisfactorily, with or without an offset. It will also output timecode, allowing it to function as a code-only master. Whether you would want to use the DR8 in preference to a computer-based system would be up to you and whatever working methods that you can devise. For recording music to picture I would say yes, it will do the job very well, and once again you are freed from the distraction of a computer monitor (and how many computer-based hard disk recording systems offer a drop-in footswitch?). For synchronising dialogue, I would also give it the thumbs up, and the Take function

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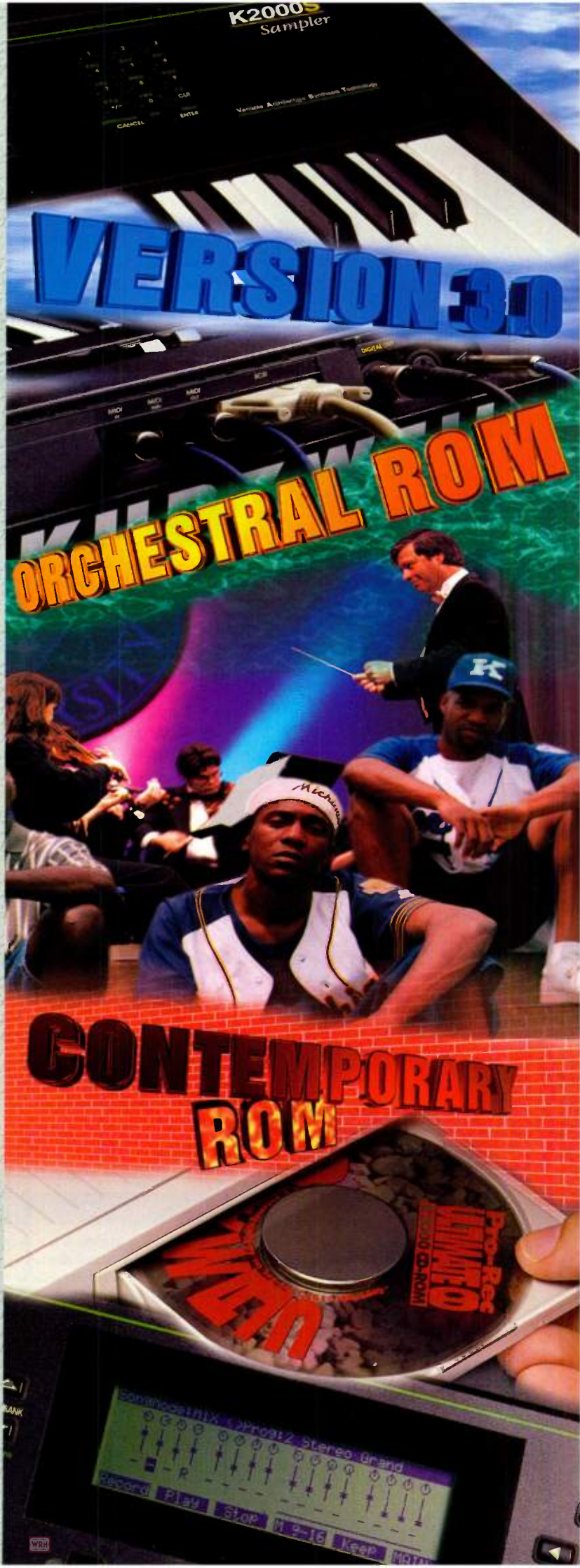
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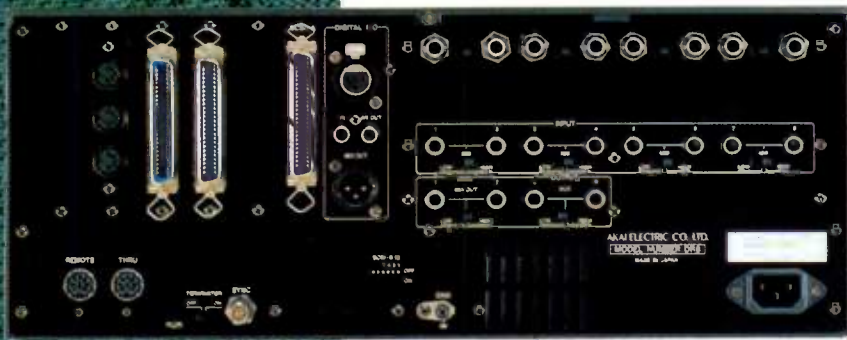
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Akai DR8

► could be a real advantage, although you will have to consider that out-takes are discarded, which is something you would probably not want to do when recording an expensive voice-over artist. For spotting sound effects to picture, I am not so happy. This type of work almost demands that you can see audio segments on a screen, moving past a virtual playback

been brought into play, they will experience none of the slow down effect that working with tape brings. The DR8 will spring into action almost as quickly as the most responsive sound module. What's more, you don't have to move away from your sequencer to operate the DR8, since it will respond to MIDI Machine Control (MMC) commands, and with the right sequencer you will be able to arm tracks for record and punch-in/out from the screen of the computer. You can forget it's there, and you don't even have to feed it with tape!



The busy rear panel houses comprehensive analogue and digital connections, plus SCSI drive connectors and expansion slots (far left).

head in time with the picture. Yes you can do it with the DR8, but other equipment will do it better.

The *raison d'être* of the DR8 is, I feel, multitrack recording, and it is so good at this that you can entirely forgive its perceived limitations in other areas. You could have one (or more — you can synchronise up to seven) of these machines in addition to a computer hard disk editor, which you would use when appropriate.

You will also be very happy with the DR8 as an accessory to your MIDI sequencer system. If I have been thinking of the DR8 as an alternative means of multitrack recording, I am guilty of forgetting that many modern musicians don't even have a multitrack recorder, and probably don't really want one. A sequenced MIDI system has a lot of advantages as a means of music production, not least of which is zero rewind time. Link up a multitrack and you are immediately reduced to working at the pace of the slowest, and usually you will have to perform all the locate functions on the multitrack and use the sequencer as a slave. The DR8 puts an end to all this; MIDI sequencer users will find that they can dump tracks to the DR8 and free up their synths, samplers and effects for yet more wondrous sounds. And even when the DR8 has

DRAWBACKS?

Are there any drawbacks to the Akai DR8? Well yes, with all its undoubted advantages comes a distinct disadvantage. Since the recording medium is fixed within the machine, no matter how big a hard disk you have there is a definite limit on the amount of audio you can record. With an ADAT or DA88, when you have filled one tape you just slot in another, and if you had infinitely deep pockets you could have infinite storage. With the DR8, even a thousand pounds worth of AV drive with 4 Gigabytes of storage would only give you around 45 to 50 minutes of 8-track audio, as compared to an ADAT tape costing around £10. Of course you could always back up the contents of your hard disk to DAT, and with the latest software you can back up to multiple DAT tapes, but that takes time — an immense amount of time. Undoubtedly when the planned ADAT card becomes available, you will be able to back up all eight tracks much more quickly to ADAT — but what if you didn't want the expense of one of those as well? The alternative is to use optical disk as the recording medium (instead of hard disk), and Akai specify 4-track simultaneous record and 8-track playback with an additional memory card and a suitable optical disk drive (see the side-panel on optical disks). Three 1.3 Gigabyte optical disks could hold enough material for a CD project, at a cost of around £150 for the blank disks. It's still a high price to pay compared to tape, but we are now talking about a practical compromise, depending on the nature of your application.

In the end it comes down to a similar argument to the great ADAT/DA88 debate: if you want compatibility with other musicians, you buy an ADAT; if you want to record for more than an hour on one tape, then you must buy a DA88; other factors weigh much less than these simple points. If you want cheap and limitless storage, then you have to buy a conventional digital multitrack. But if you want the immense advantages of 8-track random access recording that the DR8 offers, in a standalone unit, then at the moment there are very few alternatives. SOS

WHAT A DIN!!!

Without a doubt the DR8 is the noisiest piece of equipment that has ever entered my studio, excepting the loudspeakers of course! (I refer to extraneous noise here, not recording quality, which was perfectly fine.) I suppose it depends on the hard disk drive you use, but the one in the review sample rattled nearly as much as a small child rummaging through my latin percussion collection. The low frequency vibration also penetrated the two layers (each of chipboard, carpet, and underlay) on top of my floorboards into the bathroom below. So don't expect to use the DR8 in the same room as a microphone!

THREE IRRITATIONS...

- The legend around the fluorescent meter display is so hard to read. The eight meters corresponding to the eight tracks (on the far left) do not line up with the Record Ready buttons, so it is difficult to see which is which without squinting.
- Suppose you have more than one disk: you record some audio on a disk with one of the higher SCSI addresses, you finish work and switch the machine off for the night. Early next morning, you switch on the machine in a bleary-eyed state and select the drive you had recorded onto, hit Play and... *nothing!* The audio is still

on the disk and there is a simple procedure available to reload the directory from the disk into the DR8, but should you really have to? Shouldn't the DR8 do this automatically when you select a disk?

- The size of some of the buttons doesn't always correspond to their relative importance. For instance, you will be using the Edit button a lot on the DR8, yet it isn't made any more distinctive than a number of less significant functions. Still, I don't think this will hinder anyone's operation of the DR8 once they have become used to it.

FURTHER INFORMATION

- E** DR8 (with no drive) £3288.83 inc VAT.
- A** Akai UK Ltd, Haslemere Heathrow Estate, Parkway, Hounslow, Middlesex TW4 6NQ.
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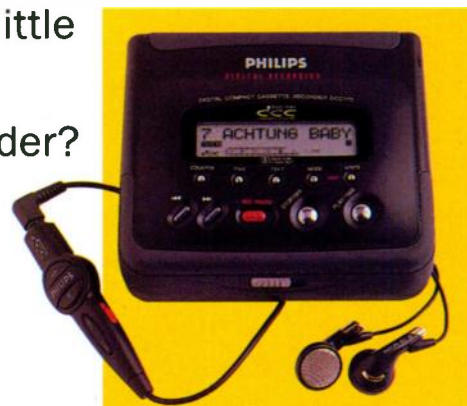
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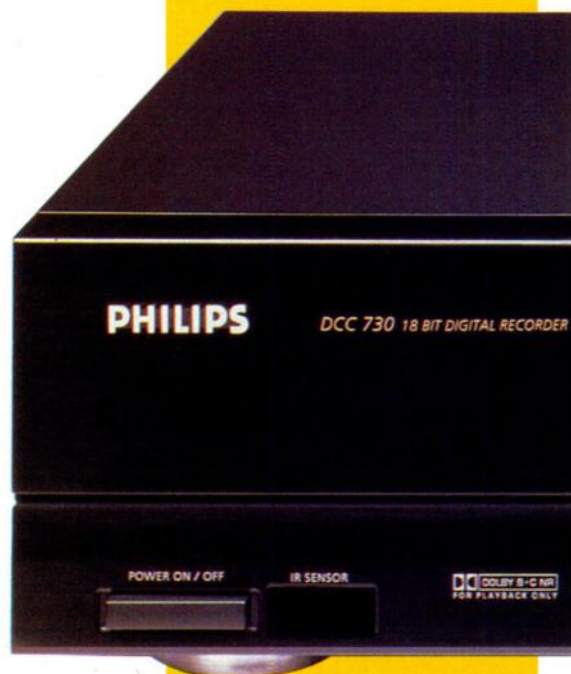
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Steve Reich's latest composition, *City Life*, is an eclectic blend of classical music and sampled urban sounds, all played live.

A few days after the UK premiere, PAUL TINGEN talked to the acclaimed avant-garde composer about his inspiration for the piece, and its realisation on stage.

Steve Reich

CITY GENT

Saturday morning, May 13th 1995. the foyer of a hotel in Central London. American composer Steve Reich was in a good mood, clearly driven by a great passion for music and all the paraphernalia that comes with it. He had reason to be cheerful — three days earlier, his most recent composition, *City Life*, had been received by a wildly enthusiastic audience at its UK premiere, performed by the London Sinfonietta at the Queen Elizabeth Hall.

Featuring a string quartet, six wind instruments, two pianos, three percussionists and, unusually, two sample players, *City Life* is undoubtedly Reich's most approachable work to date, and arguably his best. All five movements of this 24-minute composition are centred around samples. New York street and radio sounds (such as car horns and door slams) provide a backdrop to the first movement, while a pile-driver (second movement), speech samples (third movement) and a heart beat (fourth movement) finally lead to the slow and lushly orchestrated drama of the fifth movement, which features samples taken from the New York Fire Department's internal radio, recorded during the crisis of the World Trade Centre bombing in 1991. Reich explains that this is his piece of reckoning with New York City, his home for many years, and a place he finds increasingly intolerable to the degree that "I'm reaching the point where I want to get the hell out of New York and move to Vermont, where I normally only spend my summers. I go out on the streets with ear plugs now, because the street noises are so loud that I feel that my hearing is adversely affected by them. With all that going on, I thought, 'hang on, why not bring it into a piece of music?'. Yet at the same time, I did not want to use it with a John Cage attitude — let's take this and see what happens. I wanted to really inlay the street sounds like a mosaic into the piece, and be very exact with it."

MUSIQUE CONCRÈTE

Reich points out that the application of everyday sounds has, in fact, a long history within the classical music tradition, most strongly exemplified in the *musique concrète* movement of the beginning of this century: "*City Life* is part of a kind of thinking that has been going on for at

least a hundred years. In the old days, when composers didn't have electronics, they would imitate storms in other ways — programmatic music has been with us forever. In the first half of this century, Gershwin used car horns, Varèse sirens, Antheil an airplane propeller, and later there was Cage, who used radios and all manner of incidental noises." Even though Reich also cites the application of samples in rap and rock music as other examples of the desire to include everyday sounds into music, it is clear from his education that his first frame of reference is the classical music establishment (see the 'Reich Stuff' box for a brief overview of the composer's achievements).

Reich is renowned for using a variety of compositional techniques, and *City Life* represents a culmination of these (see the 'Speech Melody' box). However, he is keen to point out that the new work differs from his previous two sample-based compositions: "The first big difference is that whereas *Different Trains* and *The Cave* are run with tape, *City Life* is played entirely live. With *Different Trains* I was building up not only many samples, but also many overlaid string quartets. You're really hearing between 12 and 16 players at the same time, and the only way to realise this was to use tape. With *The Cave*, the players had to stay in sync with the video images, so players are hearing a pre-recorded sampled string track to which they play, and that keeps them in sync. For *City Life* I thought to myself: 'wouldn't it be nice to use the sampling keyboard as an instrument and forget about the tape?' So my first idea for the piece was to have an ensemble of musicians and two sample keyboard players all playing live, and this would give that little flexibility in tempo which is normal in music.

"The second and really big difference is that the speech samples become only the germ of a piece, rather than what the piece centres around, so the music really takes over. The sample 'check it out', for example, is the basis of the first movement. It's



a Spanish-American clothing salesman, just near where I live. I use it loosely, sometimes varying the speed of the sample, sometimes it comes in before or after the beat. It's really a bit of colour that comes in, even though it has suggested the main musical motive: 'tatata.' Then in the second and fourth movements there's no speech at all. I used other sampled sounds that I could do musical things with. In the second movement there is a pile-driver, and car alarms, so you get this kind of Einstürzende Neubauten-type effect. These sounds both act as a drummer, keeping time, and as a sound effect. In the fourth movement, a heartbeat sound fulfils these functions.

"In the third movement the samples take over. The movement begins with speech samples alone,

played by the two keyboard players. I live opposite the City Hall, where a lot of demonstrations are held, and I recorded these speech samples at a black demonstration, things like 'it's been a honeymoon' and 'I'm fired up'. This speech samples-only section is reminiscent of the tape pieces I did in the '60s, *It's Gonna Rain* and *Come Out*. yet they're played live. The samples are broken up and playing in a rhythm that comes from West Africa. The other players then join in, playing the same rhythm, but displaced like a canon or a round, something that I used to call phasing. They build this big texture and you feel like you start 'hallucinating' these musical patterns, like in *It's Gonna Rain* and *Come Out*."

Steve Reich



Steve during rehearsals for *City Life*, seated behind the Yamaha PM3500 front-of-house console.

INSANE

Queried about why he's so fond of using samples in his pieces, Reich answers that it's the 'documentary' aspect that appeals to him — the possibility of bringing real-life events into his work. Reich prefers real-life to synthetic sounds, and it's for this reason that he's not too keen on synthesizers or samples of musical instruments. (He uses the latter only to pad out orchestral parts when necessary, or to cue real musicians, like in *The Cave*.) "Singing and talking are very different things. When people say things in a certain situation, that's a photographic reality which you cannot repeat on stage. It has to come from the moment it was actually said, when it has the emotions and the inflections of the reality at the time. So you can't repeat talking in a piece in the same way as you can repeat singing. The only solution is sampling."

Reich's preference for using sampling in a documentary fashion resulted in him walking

around the streets of New York armed with a Sony professional walkman, and a Neuman KMR81 shotgun mike sticking out of an attaché case, trying to be as invisible as possible: "I didn't want to enter into what was happening. The grainy quality of many of my samples simply has to do with the way I record them, simply to analogue cassette using Dolby C. For example, the demonstration in front of the City Hall I recorded from the loudspeakers of the PA system. New York is grainy and gritty, and I liked the fact that my samples are like that. We cleaned them up a little bit, boosting the voices around 2.5 to 3kHz, but basically they are location recordings, and you don't want to make them perfectly clean. They're not studio recordings."

Back in his New York apartment, Reich transferred the chosen samples to one of his five Casio FZ1 keyboards: "Casio gave them to me back in the '80s, but I have to admit that they're getting on a bit, so I'm considering buying a Yamaha KX88, and then using the Casios simply as external controllers. The FZ1 has a 35kHz sampling rate, so my recordings lost a little bit in the transfer to the Casio, and when I had finally finished the piece, I had to deal with the reality that no-one else has these Casio samplers, and what's more, they don't have enough memory to hold all the samples for the five movements for the piece."

As a classical composer, who scores his pieces for any ensemble that will play them, Reich was confronted with a rather unique problem. Sections of pieces like *The Cave* or the *Counterpoint* series were simply mixed down to DAT, which could then be played back anywhere in the world. For *City Life*, however, Reich had to find a data storage

THE REICH STUFF: A LITTLE HISTORY

Steve Reich studied music at the Julliard School of Music and Mills College with famous classical composers like Darius Milhaud and Luciano Berio, and later became part of the so-called 'minimalist movement' — a step away from serial and atonal music — along with composers such as LaMonte Young, Terry Riley and Philip Glass. His use of simple, repetitive and tonal motives, the application of shifting and layered rhythms (often inspired by African and Gamelan music) and his early tape loop pieces (such as 1965's *It's Gonna Rain* and 1966's *Come Out!*), all had a strong influence on rock musicians of the '70s and '80s. Brian Eno's minimalist ambient style is the most obvious example, as are his collaborations with Robert Fripp (*No Pussyfooting*) and David Byrne (*My Life In The Bush Of Ghosts*).

While he is widely considered one of the world's most famous contemporary 'classical' composers, this

paradoxical and seemingly contradictory position that Reich holds on the international music stage illustrates the fact that he is still busy crossing boundaries, exploring new musical areas, and generally inspiring a largely stagnant classical music scene to move on to new things.

Reich has always had a keen interest in music technology, as was demonstrated by his early use of tape loops, amplifiers and swinging microphones. Some of his earlier pieces include electronic keyboards, such as *Four Organs* (1970), *Music For Mallet Instruments, Voices and Organ* (1973) and *Variations For Winds, Strings and Keyboards* (1979). Later, he wrote three pieces that featured one player who was required to overdub himself on tape and then add the last part live, whilst playing to the backing tape: *Vermont Counterpoint* (1982) for 11 flutes, *New York*



Steve Reich's *Electric Counterpoint* (1987).

Counterpoint (1985) for 11 clarinets, and *Electric Counterpoint* (1987) for 11 electric guitars and two electric basses. The *Counterpoint* pieces are characterised by pulsating, vibrating, repeating musical fragments, as if Reich is trying to imitate a looped digital delay or the spring vibrato found in old-fashioned guitar amps. All three emerged from the composer's desire to write for a soloist, yet avoid the traditional soloist and accompaniment structure which he dislikes so intensely.

format for his samples that was as universal as possible: "MIDI is such a success because all machines understand it. All manufacturers quickly agreed on a common protocol and stuck by it. But with sampling, the situation is insane. The closest you can get to a lingua franca is the S1000 protocol. So I sent my Casios over to Germany and an engineer there converted them to the Akai S1000 format. I decided not to convert it to the S3000, because that again could cause problems, as the S3000 can read the S1000, but not necessarily the other way round. If you write things on a S1000 everyone can read it, and this is the reason why I've decided to get the old S1000, with the new RAMs."

FAUST

Reich elaborates on the sampler theme by stressing that he used the Casios only for non-musical samples. Despite his earlier professed dislike for synthetic sounds or sampled musical instruments, he uses the latter when he's orchestrating a piece. His tools of the composing trade are a Macintosh Quadra 650 computer, with *Finale* and *Performer* software, and Digidesign's SampleCell: "What SampleCell gives me is the orchestra in the box. I have inside my hard drive every instrument that I would ever need. This is really the most superior way of working. I also have a little Mackie 1202 12-channel mixing desk, which is fantastic, so I can route my two SampleCell cards and also have my mike inputs. I don't have any effects boxes at home, because my attitude is that what I'm doing is making models. I'm making a mock-up of the final piece, and I don't want to spend time perfecting the sound. It's why I don't mind using orchestral samples at this stage."

Reich explains that the reason he used the Casios for the non-musical samples was because "I wanted other people to be able to play these samples. This is one of the areas where technology can work both positively and negatively. In the old days when I composed, I overdubbed the parts onto tape. I played and sang every part in every piece. I wanted to make sure that I really had it right, even though it may have sounded ridiculous. My version of *The Desert Music* was like a bunch of chipmunks singing the piece, but the conductor can feel the gesture and go: 'aha, that's what he wants'. It says more in terms of nuance than any kind of markings that you can give with notation."

"When computers came along, I no longer had to play all the parts. It went faster, but sometimes I wrote parts that I could have written a little better had I actually played them. Also, when working with computers it's tempting to just get very mechanical and cut-paste when you want a repeat. This can be a convenience, but it's also a bad habit. In my pieces there will often be small differences in the repeats, and this works better when I play the parts myself. Working with computers really is a tension between using the advantages, and watching out for the Faustian deal that says: 'hey, it's easy, come on, do it'. So, for *City Life* I preferred to do things the hard way again, and played the samples in order to know how the parts

SPEECH MELODY: DIFFERENT TRAINS

City Life, explains Reich, is the third piece that uses sampled sounds, especially speech, as the basis for a composition, the two former pieces being *Different Trains* (1988) and *The Cave*, Reich's large-scale multimedia event from 1993 (see feature in October 1993's *SOS*). Written for string quartet and taped samples, *Different Trains* is one of Reich's most challenging works. It is based upon the trains that were used to transport the Jews to the Nazi extermination camps during the Second World War. The composer collected train and speech samples, some of them from Holocaust survivors, to form the foundation of the piece, the most original aspect being the way in which the approximate pitch of the speech samples are used. It's a compositional process that he also applied to *The Cave* and to a lesser degree *City Life*, and that, he says, forced him to develop new ways of composing.

Reich: "I call it speech melody. Usually when I have a series of harmonic progressions that go around in a cycle, and which a jazz musician would call 'changes'. That's like the coat hanger to hang the piece onto. When working with samples, it's completely different. *Different Trains*

isn't a narrative in the strict sense of the word, but it does paint a historical picture. I recorded people talking about their experiences, isolated the fragments that caught my ear, like 'nine-teen-forty-one', took them to the keyboard to see what the notes and phrasing were, and wrote them down. So the first thing I had was about five pages of music notes consisting of loads of little speech motives. Then the idea was to do two things at the same time: tell the story and make sure that the change of key and tempo would make musical sense whilst I was moving from one sample to another.

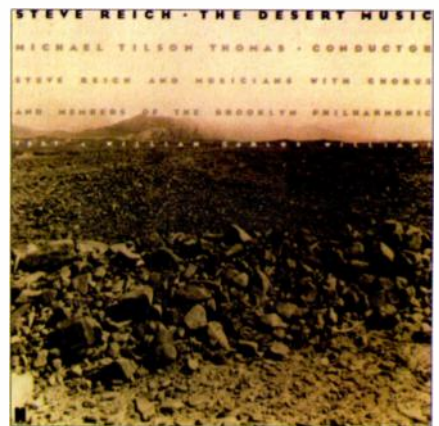
"It's a very limiting way of working, but I thrive in those kinds of tight limits. I had to find harmonic solutions that I would normally never have come up with. Musicians develop habits — they often use certain keys, I often move in thirds in the bass — and you like them, yet you have to fight against them as well. Well, if you solve a problem like that and you like it, then it becomes a new part of your vocabulary that you can use in pieces that have nothing to do with speech samples. So it was a way of getting pushed into new direction, and I really like that."

feel for the players. I will do the same for my next piece, *Proverbs*, which is for ensemble and six voices — no samples. I have already bought the AudioMedia cards to be able to play and sing the parts first, and sequence them later."

FISH IN WATER

An important aspect of making the samples playable for the ensemble keyboard players was both the mapping of the keyboards (during the London performance, two Yamaha KX88s and one SY77, all linked to the S1000) and the scoring of the parts. Reich explains how he went about this: "If samples had a pitch, I would naturally try to put them at the appropriate pitch. There was, for example, a really nice Porsche car horn in the piece that was pitched at E flat, so I would put it where the E flat was. If there was no pitch, then I would put it where it was most comfortable for the player hand-wise. I wrote the parts down as a conventional music score, and would write things like 'door slam' or 'car horn' next to the notes, so that the players wouldn't be surprised. In the end, they simply had to sit there and play the parts as if it was a normal piano score. That's the beauty of putting sampling into classical music ensembles, you simply write out the part, program the keyboard and the publisher sends them the printed music and a computer disk."

Reich was also concerned with cutting the sample at the right place and adjusting the velocity — both essential for timing and groove. Although he cut the samples himself at his home studio, he spent considerable time during the rehearsals for the UK premiere of *City Life* making sure that "the



Desert Music (1985).

Steve Reich

REICH TALKS TECHNOLOGY

"I think that when you're working with a computer — any technology, as a matter of fact — you find it a blessing and a curse. Anybody who's involved with technology — Laurie Anderson talks about this — hates it, because it holds you down. Something is always going wrong, the rehearsal is always late because there's something that doesn't work in the technology. All of a sudden you get a crackling or buzzing noise out of your board. There's always a problem. I often wish I could smash it with a hammer. Yet on the other hand, you keep buying these new boxes. You can achieve magic with technology, and you get addicted to it."

► sensitivity that we gave to each individual note was right. Basically you want to give the player some freedom with the velocity, because you don't want his performance to sound like a MIDI tape, but you don't want too much freedom either, because that can make the piece sound unsteady. And you want the relative loudness of the notes to be right, so that they fall into the beat, rather than drag it or push it. These things weren't entirely sorted out for the French and German performances, and I learnt from that. I spent the first rehearsal in London with only sampler 1, sampler 2, the director and a technician, making sure everything worked perfectly, because the samples are the motor of the piece."

The one aspect of the composition that Reich did not have control over was the performance itself, and the expression imparted by the players. As it was, the London Sinfonietta gave *City Life* a very memorable first performance, creating a genuine swing in certain sections, especially the mesmerising opening, and it is in this context that Reich expresses his satisfaction that European classical music ensembles have finally learnt to 'groove': "When I came to Europe in the early '70s I felt like: 'hey, fantastic music tradition you have here, but in terms of what I'm trying to do they're completely stupid, they have no idea of what it is I'm coming with, and I'd like to teach them a new way of playing music'.

"Ten years later when Pierre Boulez's prestigious Ensemble Inter Contemporaine played *Desert Music* I thought to myself: 'great prestige, and these people can play 17 over 6, but can they play 4 in the space of 4?' In other words: can they really lay it down? I realised that the European ensembles were finally starting to get there, because they were burning. Especially now that the young classical musicians are now listening to jazz and rock 'n roll, and are familiar with computers. There's a new breed of 'classical' musician that can really swing, whereas with the old breed they were huffing and puffing and putting their head in the sand. The attitude problem that used to ignore people like Charlie Parker or Miles Davis is disappearing. All I can say about it is that composers who are like that have some kind of an emotional problem."

Reich touches here on the ever increasing crossover that is happening between different forms of music. Although his days of playing at festivals on the same bill as Tangerine Dream or Kraftwerk appear to be over, he nevertheless signals a new awareness within the classical music tradition of the possibilities opened up by rock music, and more especially those offered by music technology. "Sampling", he says laughing, "— I thought they invented it for me personally, it allows me to use these real-life sounds that classical music has used for a long time, and fit them into the sonic mosaic with real precision. Sampling can have a huge effect on classical music. I may be the person who does it the most, but I don't think I will be the only person. We're like fish swimming in the water and right now part of that water is the whole sampling technology — it's creating all kinds of new music."

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MIDI

PART 1

basics

WHAT IS MIDI?

MIDI is essentially a communications protocol or common language that enables any MIDI-equipped electronic instruments to be linked together in a musically useful way. The data that makes this possible is in digital form, hence the acronym MIDI (**Musical Instrument Digital Interface**). Don't worry if you don't know how digital data works — it doesn't know how you work either, but that doesn't mean you can't work together!

MIDI compatible instruments and other MIDI devices are connected to each other via standard MIDI cables, with 5-pin DIN plugs on either end. There are a few simple rules determining what should be plugged where, but what would really help at this stage would be to talk more about this mysterious 'musically useful' information that MIDI instruments send to each other. In reality, there are many types of MIDI message, and to try to grasp them all at once would probably give you a headache, so what I'm going to do is cover the essentials first (and if I have to bend the truth occasionally to keep things simple, it won't do you any lasting damage!).

Electronic keyboard instruments are, by definition, electronic, which means that the sound is created by circuitry, not by something being hit, bowed, or blown. Whereas a piano key activates a mechanism which hits the string, the keys on an electronic MIDI instrument generate electronic signals to tell the internal circuitry what note to play and how loud to play it. When a key is depressed, a signal known as a **Note On** message is transmitted, and when the key is released, a **Note Off** message is sent. The actually key that you depress dictates which musical note will be played, and the loudness of the note depends on how hard the key is hit — which is really the same thing as saying how fast the key is pushed down. This speed, or **velocity**, is read by circuitry within the keyboard and used to control the volume of the sound being played. The term 'velocity' is one piece of MIDI jargon that crops up quite regularly.

To recap so far, the main parameters of a musical note played from a keyboard are: which note it is, when it starts, when it stops, and how loud it is. There are other things that you can do to a note, such as bending the pitch or adding vibrato, but they'll keep for now...

If pitch, Note On, Note Off and Velocity information all exists in the form of electronic signals, it must be possible to send these signals along a piece of wire and use them to control the sound generating circuitry in another electronic instrument, and it's precisely that concept which is at the heart of MIDI. (It might occur to you at this stage that you could send the same signals directly from a computer and cut out the middle man — but that avenue of exploration comes later, when we look at sequencing.) The main point to get across to new users is that MIDI is not a means of transmitting audible sounds — it is a means of transmitting instructions or messages. A good analogy might be to compare MIDI data with a written musical score; the score only tells

PAUL WHITE kicks off a new series for newcomers to MIDI.

You might imagine that most SOS readers already have a pretty firm grasp of MIDI, but new readers are joining us every month. Furthermore, there are those amongst our existing readership who mainly record using traditional multitrack methods, and they too could benefit from a refresher course in MIDI practices. One of the problems is that many of the musicians who could reap the benefits of MIDI are frightened off by the jargon — and there's also the underlying suspicion that MIDI has something to do with computerising and dehumanising music. Furthermore, it's not always clear what MIDI can actually help you achieve. But before looking at all the great things you can do with MIDI, is it true that MIDI is complicated?

Technically, MIDI is quite complicated — but then the same is true of TV, telephones, cars, and the insides of your hi-fi system. Even so, most of us take these things for granted and use them without giving a second thought to what really makes them tick. The ease of use of something doesn't necessarily relate to the complexity of the technology that makes it work, and that's certainly true of MIDI, because although it does provide the scope for you to do complicated things if you wish to, you can choose to approach it on your own terms and make use only of the facilities that you need.

MIDI MODES

Most MIDI instruments can be set to receive on any of the 16 MIDI channels, but there is also a setting called Omni mode, which allows the unit to respond to all incoming data, regardless of its channel. Some MIDI equipment, especially older models, tends to default to Omni mode when first switched on. Although this is a trifle tedious, it isn't really a problem so long as you remember to reset the instrument to the desired MIDI channel before you continue. If the instrument is set to receive on separate MIDI channels, then it is said to be in Omni Off mode.

It is also possible to tell an instrument whether to play polyphonically or monophonically, and while polyphonic operation is by far the most common requirement, mono operation has certain advantages, not least for guitar synth users. In Mono mode, a single polyphonic synth can be made to behave as several single-voice synths, each voice being on a different MIDI channel. If you have a MIDI guitar, it makes sense to set up the system so that each guitar string controls its own single synthesizer voice on its own MIDI channel. Not only

does that make the note allocation mirror that of the guitar (where each string can only be played monophonically), but it also allows independent amounts of pitch bend to be added to each string.

The four possible combinations of Omni On/Off and Poly/Mono operation form the four modes of MIDI operation and are defined as follows:

- Mode 1: Omni On/Poly
- Mode 2: Omni On/Mono
- Mode 3: Omni Off/Poly
- Mode 4: Omni Off/Mono

Most of the time, players using keyboards will use Mode 3, which is the default mode for the majority of MIDI instruments. In Mode 3, the instrument works polyphonically and responds only to notes sent on its chosen MIDI channel (or channels, in the case of a multitimbral instrument).

Mode 2 is the least useful mode — indeed, I've never met anyone who's found any use for it at all! Stories abound that it crept into the MIDI specification as the result of a misunderstanding, so if your synth doesn't support Mode 2, don't feel you're missing out.

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MIDI basics

► the performer what to play, it doesn't have any influence over the sound of the instrument. What's more, you could read a score written for violin and choose to play it on a piano. MIDI allows us to play any piece of music using any sound at our disposal.

If we plug the MIDI Out of the keyboard we are physically playing (the **Master** keyboard) into the MIDI In socket of another MIDI instrument (the **Slave**), then the slave is able to play the notes as performed on the master keyboard. This simple arrangement is shown in Figure 1.

MIDI CHANNELS

In a basic MIDI system, the way the instruments are linked means they all receive the same MIDI information. In order to allow the master instrument to communicate with the slaves on a more selective basis, the **MIDI Channel** system was devised. There are 16 MIDI channels available, numbered 1 to 16, and they work in a very similar way to TV channels. Most people in the UK receive four TV channels (forget Sky just for now), yet all four channels arrive at the same aerial and reach the set down the same piece of wire. Which one we actually watch depends on which TV channel we select on the set.

With MIDI, the information sent down the MIDI cable can be transmitted on any one of 16 channels selected on the master keyboard; similarly, the sound modules may be set to receive on any of the 16 channels. If we, for example, set the master keyboard to transmit on MIDI channel 1 and connect up three different MIDI modules set to receive on channels 1, 2, and 3, only the first module set to channel 1 will respond. The others still receive the information, but the MIDI data tells them that the information is not on their channel and so they ignore it. Of course, you can set all your modules on the same MIDI channel and have them all playing at once, if you want to.

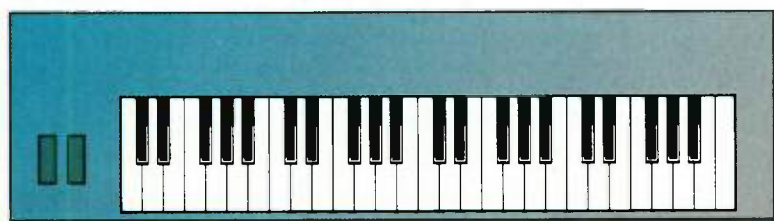
Putting it briefly, by switching channels at the master keyboard end, up to 16 different modules (set to the 16 different MIDI channels) can be addressed/played individually, even though they are all wired into the same system.

MULTITIMBRAL APPROACH

We've already discovered that a MIDI sound module is essentially a MIDI instrument without a keyboard, but many current MIDI modules actually contain the equivalent of several MIDI instruments, each of which can be addressed on a different MIDI channel. These are known as **multitimbral** modules, but the instruments inside are not usually quite as independent as they appear; for example, some parameters may affect all the voices globally, or the sounds may all be mixed to a single stereo pair of audio output sockets. Even so, it is always possible to change the relative volume levels of the different instrument voices and to change their left/right pan positions.

Why should you want a multitimbral module, after all, you only have one pair of hands? If you're playing live, then you probably can't take full advantage of multitimbral modules (though you could use them to assign different sounds to different regions of your keyboard), but if you want to add a sequencer to your setup to allow you to make multitrack MIDI recordings, just one multitimbral module can provide you with a complete backing band or orchestra, including the drums. Before multitimbral sound modules appeared, you needed a different MIDI instrument for each of the parts you wanted to sequence. ►

Slave Keyboard
set to receive on same MIDI channel
as master keyboard is sending on



MIDI In

Master Keyboard



MIDI Out

Notes played on this keyboard are also
played by the slave instrument

Figure 1: Simple
master/slave MIDI setup.

Great — but why would I want to do that? Well, when playing live, the ability to link a second instrument via MIDI means that the sounds of both instruments can be played without changing keyboards. Not so flash as wearing a gold cape and standing in front of tiered banks of Moog synths, perhaps, but far more practical. Indeed, only the master synth needs to have a keyboard at all — the other MIDI devices can simply be sound modules, which certainly saves on space if you have to drive to a gig in a Metro, and it saves money.

To understand how the control of multiple modules is possible without them all playing at once, all of the time, the concept of MIDI channels has to be introduced.

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MIDI basics

“Like note information, control information may also be transmitted down a MIDI cable — simply move the control wheel on the master, and the slave instrument will respond.”

On top of that, all MIDI sound modules have what is known as a ‘maximum polyphony’ — the maximum number of notes that they can play at any one time. This being the case, if some of the MIDI channels are already playing very busy parts, you might find that trying to play yet another part on top causes some of the notes to drop out or be cut short. The bottom line here is that the more polyphony you have (64-note polyphony is typically the maximum for modern modules), the better — especially if you’re in the habit of writing complex pieces of music where lots of sustained notes overlap.

Drum machines may also be used as MIDI modules, even though they have their own built-in rhythm sequencers. It is possible to access their sounds externally over MIDI, each drum sound being ‘mapped’ to a different note on the keyboard. Some MIDI drum modules, such as the Alesis D4, are specifically designed with no internal sequencing capability, just sounds.

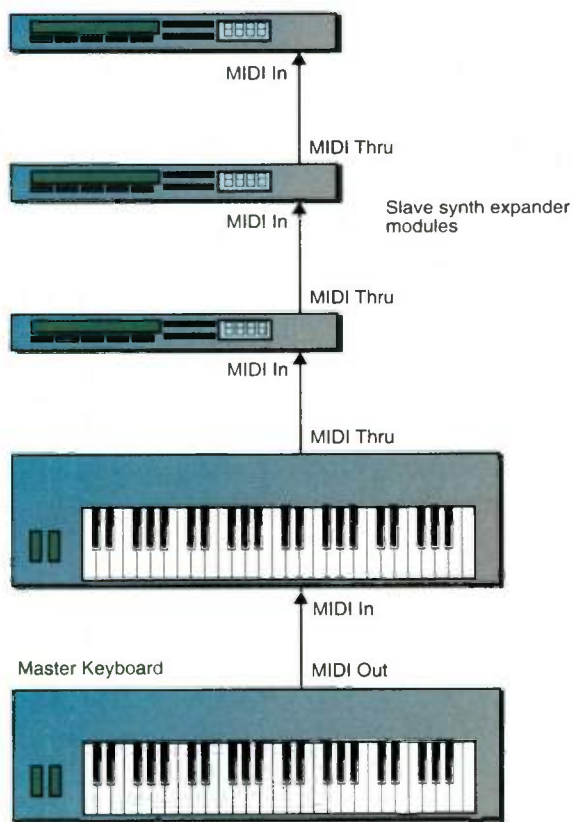
MIDI CONNECTIONS

Most MIDI instruments have three MIDI sockets, labelled **In**, **Out**, and **Thru**, though some older models may not have all three. The master

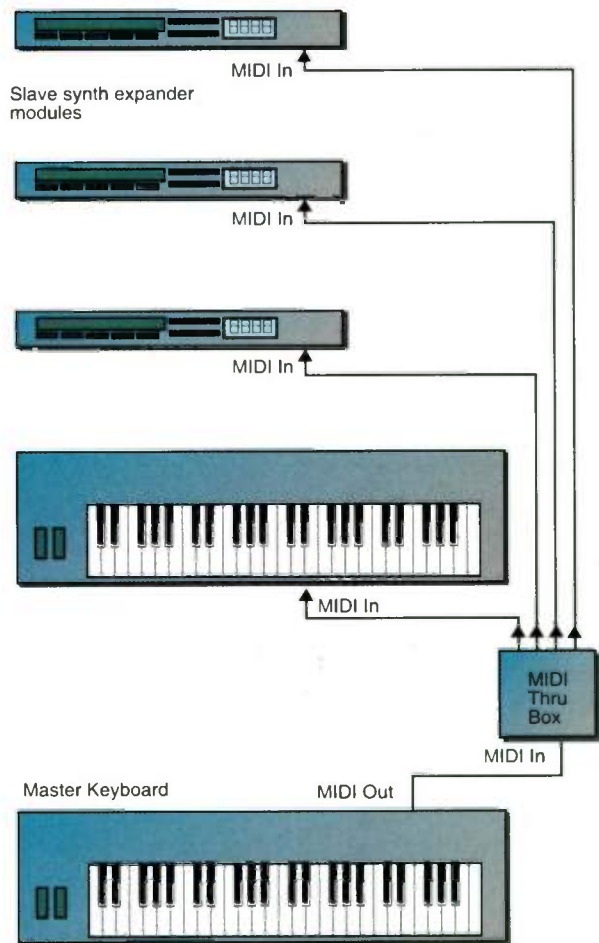
instrument always sends information from its MIDI Out socket, which must be connected to the MIDI In socket of one of the slaves. The MIDI Thru of the slave is then connected to the MIDI In of the next slave and its Thru connected to the In of the next one, and so on... What we end up with is a daisy-chain and, in theory, this can be indefinitely long. Not so in practice, however, because the MIDI signal deteriorates slightly as it passes through each successive instrument. After passing through three or four instruments, the MIDI messages may start to become unreliable, resulting in notes which stick on or refuse to play at all.

A better way to interconnect multiple instruments, in anything other than the smallest MIDI system, is to use a so-called **MIDI Thru box**. This takes the Out from the master keyboard and splits it into several Thru connections, which then feed the individual modules directly. Figure 2 shows the standard method of daisy-chaining, followed by the same system using a MIDI Thru box instead. In practice, many people use a combination of MIDI Thru boxes and short daisy-chains of instruments.

The MIDI Outs of the slave units are normally unused during performance, but they are useful



MIDI daisy chain using individual MIDI In and Thru sockets



Connecting multiple MIDI instruments using a MIDI Thru box

Figure 2: MIDI daisy-chaining with and without a MIDI Thru box.

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MIDI basics

▶ when you want to hook up your keyboard to a MIDI sound editor or librarian program, running on a MIDI-equipped computer.

PROGRAM CHANGE

So far, I've explained that MIDI operates on 16 channels and can be used to send note information from a MIDI-compatible master instrument to a MIDI-compatible slave, but there's a lot more useful information that you can send over MIDI.

Today's synthesizers are programmable, and they have memory banks full of sounds (often called 'patches') from which you can choose. MIDI provides direct access for up to 128 patches, sometimes numbered from 0 to 127 and sometimes from 1 to 128. The buttons that are used to select the patches on the master keyboard also enable Program Change information to be transmitted to the slave synthesizer modules, so now we can play the modules remotely *and* we can select the sound or patch that they will play. These Program Change messages may also be used to switch to different effects patches on a MIDI effects unit that responds to MIDI Program Changes (most units do). In the case of a MIDI instrument that offers more than 128 sounds, the likelihood is that these sounds will be organised into banks, each bank containing no more than 128 sounds. The MIDI protocol now includes the facility to switch from one bank to another, though some older instruments have non-standard bank change systems which are usually explained in their respective operation manuals.

PERFORMANCE CONTROL

A typical MIDI synthesizer has two control wheels mounted to the left of the keyboard, and though these are often assignable to allow them to control various different effects, one is generally used to control pitch bend while the other controls vibrato depth. These controls work by generating electronic

signals which, in turn, control the circuitry that creates the sound. And, like note information, control information may also be transmitted down a MIDI cable — simply move the control wheel on the master, and the slave instrument will respond.

Time to introduce a possible pitfall. MIDI instruments can often be 'scaled' so that, for example, the maximum travel of the pitch bend wheel might cause a pitch shift of as little as one semitone or as much as an octave. It is important to ensure that any instruments likely to play at the same time are set with the same scaling values, especially for pitch bend, otherwise when you try to bend a note on the master keyboard, the sound coming from the master keyboard might go up by a third and the sound from the slave by a fourth — clearly not desirable. Similarly when you're working with a sequencer, it makes sense to set up your instruments so that they all have the same pitch bend range.

Another useful MIDI controller is **master volume** — most modern instruments respond to it while some older ones do not. On an instrument that transmits master volume information, turning up the master volume slider will send the appropriate control information over MIDI and the receiving slave instrument (providing it understands master volume) will respond to it. In fact, when you get into MIDI you'll find that there's a whole list of controllers that can be used to add expression to your performance, including sustain pedals, vector joysticks, sostenuto, and so on. You'll find a list of the controllers to which your MIDI instruments can respond in their respective manuals, and you'll notice that the controllers are divided into two types: switch controllers which are either on or off, and continuous controllers which allow something to be varied. For example, a sustain pedal is a simple on/off switch, but a volume control is a continuous controller. Because of the structure of MIDI data,

"If you want to add a sequencer to your setup to allow you to make multitrack MIDI recordings, just one multitimbral module can provide you with a complete backing band or orchestra, including the drums."

MIDI JARGON BUSTER

MIDI	Musical Instrument Digital Interface.
MIDI Clock	Series of tempo-related electronic timing markers embedded in the MIDI data stream.
Note On	MIDI message sent when note is played (key pressed).
Note Off	MIDI Message sent when key is released.
MIDI Module	Sound generating device with no integral keyboard.
Multitimbral Module	MIDI sound source capable of producing several different sounds at the same time, controlled on different MIDI channels.
MIDI Channels	The 16 channels over which MIDI information can be sent.
MIDI Mode	MIDI information can be interpreted by the receiving MIDI instrument in a number of ways, the most common being polyphonically on a single MIDI channel (Poly-Omni Off mode). Omni mode enables a MIDI instrument to play all incoming data regardless of channel setting.
MIDI Program Change	Type of MIDI message used to change sound patches on a remote module or the effects patch on a MIDI effects unit.
MIDI Controller	MIDI message sent in response to movement of certain physical controls on the master keyboard (or other master MIDI instrument).
MIDI Thru Box	Device which splits the MIDI Out signal of a master instrument or sequencer to avoid daisy-chaining.
MIDI In	Socket used to receive information from a master controller or from the MIDI Thru socket of a slave unit.
MIDI Out	Socket on a master controller or sequencer used to send MIDI information to the slave units.
MIDI Thru	Socket on a slave unit used to feed the MIDI In socket of the next unit in line.

REAL TIME MESSAGES

Before MIDI arrived on the scene in 1982/83, attempts were made to provide tempo-related clock systems to allow devices from different manufacturers to be synchronised together, but quite often they used different numbers of clocks per bar which meant some form of converter box had to be employed. MIDI uses 96 clock pulses per 4-beat bar (or 'whole note', as the Americans like to call it) so any piece of MIDI gear that can send or read tempo information will sync to any other. If the tempo of the master machine is speeded up, its MIDI Clock rate speeds up accordingly, so the slave tempo is forced to follow.

Even when the master machine is not playing, it is still sending out MIDI Clock data at the current tempo, which means that any connected slave device knows

exactly what tempo to take off at when it receives a Start command. The Stop command will cause both the master and slave machines to stop running, and a further command, Continue, allows the machines to continue playing from wherever in the song they were stopped. Start always causes the master and slave to start from the beginning of the song.

If you're wondering how the machines know whether they're supposed to be the master or a slave, it's because they can all be switched for internal sync (master) or external MIDI sync (slave) operation. Any machine switched to external MIDI sync can be used as a slave. As with MIDI note information, the MIDI connection runs from the master's MIDI Out to the slave's MIDI In.

you'll find that the maximum range of any MIDI parameter or controller is usually from 1 to 128. In other words, a continuous controller really provides you with 128 small (but separate) steps.

MORE ON MIDI

So far I've only touched on the basics of MIDI, and much of what MIDI can do has been left unsaid for the time being. Even so, with what you've learned so far, you should be able to start putting MIDI into practice. However, there is time to introduce just

"...when you get into MIDI you'll find that there's a whole list of controllers that can be used to add expression to your performance..."

one more concept, and that's the idea of **MIDI Clock**.

Some MIDI instruments, like drum machines, have a built-in sequencer which allows drum patterns to be set up and played back at different tempos. Such instruments both send and receive MIDI Clock data, a series of electronic timing markers which go down the MIDI lead along with the other data. Think of it as the electronic equivalent of the sprocket holes at the edge of a cine film and you'll soon grasp the idea. MIDI Clock is very useful as it allows us to synchronise two or more MIDI devices together. For example, a drum machine could be slaved to a second drum machine so that both play together, allowing you to use sounds from both machines. And as we shall see later, MIDI Clock is what allows us to synchronise sequencers and drum machines together or to sync sequencers to tape recorders. Also associated with MIDI synchronisation are commands for starting and stopping things like drum machines and sequencers, and these are known as MIDI Real Time messages (see box).

SOS

There'll be more about MIDI Clock when we delve into the basics of sequencing next month.



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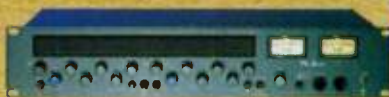
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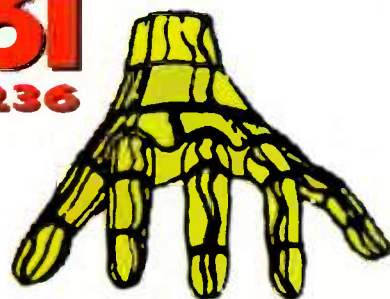


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A GUIDE TO CHEAP SECOND-HAND EQUIPMENT

PART 2: If you're on a budget, there's nothing to beat buying second-hand. DEREK JOHNSON and DEBBIE POYSER trawl the Reader Ads to highlight more of yesterday's forgotten gear that's worth a closer look.

If you caught the first part of this short series in last month's *SOS*, you'll know that we picked out a few favourites from the mountain of second-hand MIDI gear that's available, inclining rather towards those instruments which we've noticed at very low prices for the facilities they offer. The aim of this exercise is simply to point out that if you're prepared to use gear that's not currently fashionable, you can assemble a killer setup for not too much money. This month, the list continues...

SYNTHS

• AKAI AX73/VX90

Although these instruments serve to highlight Akai's rather undistinguished history in synthesis, they are especially interesting when considered in tandem

with Akai's *real* strength — sampling. If you possess an S612, X7000, S700 or S900 sampler, you can take advantage of the synthesis sections of both the AX73 digitally-controlled analogue keyboard synth and its rackmounting brother, the VX90, to further mould and process your samples — an option which could be fun if you're looking to extend the potential of an older sampler. If you haven't got an S900 full of samples to process, Akai's short-lived entry into the synthesis market

Sonically, the AX73 and VX90 are useful, if not tremendously exciting (though quirkily enough, genuine voltage-controlled oscillators are used, rather than the more modern digitally-controlled equivalents) — and the on-board stereo chorus helps to make the most of what's there. Note that although neither instrument is multitimbral, it's very easy to set upper and lower keyboard splits.

• ENSONIQ VFX/VFX SD/VFX SDII

Ensoniq can certainly never be accused of standing still when it comes to releasing new synths. Since the launch of their first, the ESQ1 (mentioned in Part 1 of this feature, in last month's issue), this American company has released new machines regularly without succumbing to the temptation of spinning off countless cheaper (and possibly

ENSONIQ VFX/VFX SD/VFX SDII



Polyphony: 21-note.
 Multitimbrality: 12-part.
 Sequencer: 24-track, 26,000 notes, expandable to 75,000 (VFX SD and VFX SDII only).
 Patch Locations: 60 ROM, 60 RAM.
 External Storage: Cartridge, SysEx, Disk (VFX SD and VFX SDII).
 Keyboard: 61-note, velocity- and poly pressure-sensitive.
 Synthesis Method: Sample + Synthesis, plus Transwave Synthesis.
 Target Price: VFX £300-350; VFX SD £400-450; VFX SDII £450.
 SOS Reviews: VFX June/July 1989; VFX SD II September 1990.

AKAI AX73/VX90

Polyphony: 6-note.
 Multitimbrality: None (keyboard split available).
 Sequencer: None.
 Patch Locations: 100.
 External Storage: Tape.
 Keyboard: 73-note (AX73).
 Synthesis Method: Analogue subtractive.
 Target Price: AX73 £250-300; VX90 £100.
 SOS Review: VX90 June 1987.



is a little less attractive, although the AX73's rather generous 73-note, velocity-sensitive keyboard makes it a good bet as a master keyboard with a basic synth thrown in.

inferior) machines from each new generation of technology.

Between the ESQ1 and the VFX came just one synth, the SQ80, which, while a good buy in itself on the second-hand market, is really just a worthwhile improvement on the ESQ1. The VFX, however, is a different kettle of waveforms. Utilising what Ensoniq termed Transwave Synthesis at the time, and hailed by reviewers of the day as the most serious competition Japanese manufacturers had had for a long time, the VFX is

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*- Charlie Brewer, Chief Engineer,
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► at heart a sample plus synthesis (S+S) machine, like the Korg M1 or Roland D50. Nevertheless, the VFX's Transwave Synthesis actually moves sample-based technology into the realm of wavetable synthesis, with cross-modulation possibilities producing results not a million miles from those possible on a PPG. In simple terms, this means that rich, constantly-evolving sounds with great depth and variety can be produced with relative ease. Also ahead of their time were the VFX's 21-note polyphony and comprehensive effects section. All this combines to make a synth which was pretty sensational on its release in 1989 at £1350, and is very worthy at current second-hand prices of around £350.

One strange feature of the original, sequencer-less VFX was a front panel moulding that seemed to serve no purpose, except to remind the potential user that there was no disk drive on board. All became clear some six months later with the release of the VFX SD workstation, featuring (surprise surprise) a disk drive, a fully-functioning 24-track sequencer of no mean power, and an extra set of audio outputs. Later, due to customer demand, the SDII emerged, with an added chunk of new piano waveforms.

The VFX did acquire something of a reputation for its tendency to crash unexpectedly, but it's now been around for so long that if you *do* find an instrument in good working order, the chances are that it'll stay that way.

• EVOLUTION SYNTHESIS EVS1

A strange instrument, this — a British-designed synth module that attempted to offer stabs at several different synthesis systems, in a low-priced

At the heart of the EVS1 are 28 algorithms. The first 12 use stacks of four oscillators (sine waves) in familiar, four-operator FM fashion, with four more algorithms offering a gentler, 'phase modulation' stack of operators, and four combining elements of FM and PM. The remaining algorithms aren't so straightforward, but again offer stacks of waveforms, with the novel difference that each 'oscillator' in an algorithm can be any sampled waveform from the 32 stored on the EVS1. Some of these algorithms come in FM-like stacks, and other options add ring modulation, simple additive synthesis, and a crude stab at wavetable synthesis. Reviewers of the time commented on the 'analogue' feel of the EVS1, which rather belies its totally digital pedigree. So, still a good buy for the impoverished — though do check out the sounds first, to make sure you get on with them — and one to look out for if you're a die-hard programmer looking for a new sound.

• KORG 707/DS8

There aren't too many keyboard synths to be picked up on the second-hand market for 175 quid, and Korg's 707 is one of the most worthwhile machines around at this price. With an appealing design, heavy on space-age curves and buttons that look something like plastic teddy bear eyes, the 707 offers an early version of Korg's implementation of FM synthesis. Though the 707 was obviously intended to be a lightweight instrument (it even features guitar-style strap buttons at either end for on-stage use), as a synth it is far from unsophisticated.

EVOLUTION SYNTHESIS EVS1

Polyphony: 16 voice.
Multitimbrality: 8-part.
Sequencer: None.
Patch Locations: 80 ROM, 20 RAM.
External Storage: SysEx.
Keyboard: None.

Synthesis Method: Digital, emulates various systems.
Target Price: £100-125.
SOS Review: August 1990.

KORG 707/DS8

Polyphony: 8 voice.
Multitimbrality: 8-part.
Sequencer: None.
Patch Locations: 100.
External Storage: RAM card.
Keyboard: 707 48-note velocity- and aftertouch-sensitive; DS8 61-note velocity- and aftertouch-sensitive.
Synthesis Method: Four-operator FM.
Target Price: 707 £175; DS8 £250-350.
SOS Reviews: 707 March 1988; DS8 March 1987.

package — £299 on its release in 1990. One of the forward-looking features of the EVS1 was the inclusion of free Atari ST editing software — and you needed it, too, since one of the backward-looking features was the provision for only 20 user-programmable sounds. Make sure this software is included in the package if you purchase an EVS1, since editing is not merely inconvenient, but simply not possible without it.

What are we to make of the EVS1? It didn't really take off (though it apparently sold reasonably well), was the company's first and last synth, and, fashion being what it is, now changes hands for around the £100 mark. But with 16-note polyphony, 8-part multitimbrality and sampled drum sounds, the EVS1 is sufficiently well-specified to more than justify its currently low price tag.



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Alesis Quadra Synth Keyboard
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Roland JV1080 Module
Roland JV880 Module
Roland CS88 Module
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Whereas FM gained a reputation for inscrutability on Yamaha's range of instruments, Korg aimed to provide a more user-friendly, approachable editing interface with the 707 (and the slightly older DS8, of which the 707 is a cut-down version). General opinion is that Korg succeeded, and the use of familiar analogue-style terminology has fooled the unwary into thinking the 707 was a two-oscillator analogue synth.

Both the 707 and DS8 feature three real-time 'quick edit' performance sliders (in addition to pitch bend and mod wheels), although only on the 707 are edits made in this way storable as a new patch.

Though the DS8 was more expensive (and therefore presumably more desirable) than the 707, we still think the 707 is a much better bet — for one or two operational improvements, the nicer cosmetic styling, and perhaps most importantly, the price! If you're really lucky, you might even pick up a 707 in one of its alternative colours — blue, white and red 707s were available in addition to the more sober charcoal grey.

DRUMS

• AKAI XE8 DRUM EXPANDER

Akai's XE8 drum sound module was released, at £499, to reasonable reviews in the latter part of 1988, but after just 12 months, it had gone the way of

much hi-tech gear, and was appearing in the discontinued sections of various synth emporiums at around £200, complete with two sound ROMs. This lack of popularity could be put down to such factors as the paltry 16 on-board sampled sounds and the pair of rather unhelpful two-character LED displays. However, the 16-bit sounds are customisable to a satisfying degree — drum sounds can be tuned, reversed, and have tuning 'sweeps' (a kind of pitch envelope) imposed upon them. This starts to make the current street price of around £120 or so look rather more attractive, as does the fact that an additional 16 sounds can be accessed from a ROM card at a time. The sounds of the XE8 were described by reviewers of the time as most suitable for electronic dance — so it could be well worth considering if you work in that field. Eight individual audio outputs gave additional flexibility, and Akai supplied the XE8 with two ROM cards — make sure these cards are present if you decide to pick up an XE8.

• KORG S3 RHYTHM WORKSTATION

While Korg are arguably one of the most respected synth manufacturers in the world, their drum machines have never achieved the same kind of status as their keyboards. One of the most notable Korg drum machines to have slipped through the net is undoubtedly the S3 Rhythm Workstation. Announced way back in 1989, but not reaching the market until around the same time as the launch of the T-series keyboards in 1991, this machine was

an adventurous beast which might be better described as an S+S-based drum synth with on-board sequencing, effects and synchronisation — hence the 'workstation' tag. Like Yamaha's RX5 (mentioned last month), the S3 feels like a flagship machine, and was priced accordingly at a princely £899. Now, barely four years later, it can be spotted in *SOS* Reader Ads for very much less — a recent price we found was a jaw-dropping £165, though a more realistic price would probably be £200-250. Don't assume the S3 was a turkey; it simply suffered from a distinct lack of promotion, and was overshadowed by Korg's more high-profile keyboard instruments.

An almost bewilderingly long list of features necessitated a two-part review of the S3 in at least one of the music magazines of the time, but since we can't go that deep, how's this for starters: 75 16-bit PCM waveforms, a sequencer section sophisticated enough in its approach to allow you to use it as a hardware sequencer with external instruments, the

KORG S3 RHYTHM WORKSTATION

Pads: 8.
Outputs: Stereo, plus four individual outs.
Sounds: 75 waveforms. 7 bass drum heads; 5 bass drum shells; 8 snare heads; 7 snare shells; 2 closed hi-hats; 2 open hi-hats; pedal hi-hat; 5 tom heads; 2



tom shells; crash; 2 rides; side stick; stick; 2 conga heads; 2 conga shells; conga palm; conga slap; conga mute; 3 timbale heads; 3 timbale shells; timbale side; hand clap; cow bell; tabourine; agogo; 2 bongos; maraca; 2 cabasas; shaker; pot cover; synth bass; 5 waves.
Patterns: 100 patterns, 30 songs.
Target Price: £200-250.

ability to read and generate SMPTE time code, a well-specified 16-bit digital effects processor, and a total of six audio outs. We said earlier that the S3 might be better described as a drum synth — this is because, like the M1, D50, and any number of S+S synths, it allows you to, for example, create new

AKAI XE8 DRUM EXPANDER

Pads: None.
Outputs: 8.
Sounds: 16. 3 snares; 4 kick drums; 3 hi-hats; 2 toms; ride & crash cymbals; handclaps; percussion (plus 16 on card).
Patterns: None.
Target Price: £100-125.
SOS Review: December 1988.

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Boss DR550	£99
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▶ drum sounds with a combination of an attack portion from one sound and the decay portion of another. Accordingly, many of the 75 samples are of either attacks or decays, and this allows for considerable creative potential — in fact, there are 80 preset and 80 user timbres, which are roughly the equivalent of patches on a synth. Two waveforms can be assigned to each pad, and velocity switched or crossfaded. Waveforms can also be tuned over an unusually wide range (plus or minus two octaves in semitone steps). Finally, a comprehensive (eight-stage)

company's 909 and 808 models currently sit atop the list of most sought-after drum machines, despite the fact that it's more than 10 years since both rolled off the production lines. While 909s easily command second-hand prices of £750 upwards, one of Roland's more recent (and undoubtedly more powerful) machines, the R8, can be picked up readily for around £250, little more than a third of its original asking price on its release in 1989. Bear in mind, too, that Roland's PCM card set, which provided extra sounds for the R8 and R8M (the R8's rackmount brother) included a so-called 'electronic' card featuring all the sounds of the 808. Try to make sure any machine you buy includes as many cards as possible, remembering that you'll only be able to use one at a time on the R8, as it has only one slot, compared to the three available on the R8M.

The R8 Human Rhythm Composer, as Roland termed it, impressed on its release with the pleasing quality of its wide selection (68) of 16-bit PCM sounds. These can be altered quite drastically by way of the comprehensive editing facilities: for starters, each sound can be tuned over an *eight-octave* range, in tiny steps of four cents each. You can also take advantage of Roland's 'Nuance' parameter, which provides a degree of control over where a given instrument appears to be hit — tweaking 'Nuance' would allow you, for example, to have your snare sound as though it's being hit dead centre, much closer to the rim, or somewhere in between. Not quite Korg Wavedrum, but we're getting there...

Roland's 'Human' designation is explained by the array of options for 'humanising' your drum patterns, including 'feel patterns', which could be

ROLAND R8/R8M/R5

Pads R8 16 R8M none R5 16

Outputs: R8 eight plus stereo outs; R8M six plus stereo outs; R5 four plus stereo outs.

Sounds: R8 68 — too many to list individually, but they include nine Kick Drums, 14 Snares, a variety of Cymbals, 13 Toms, an 808 Clap, assorted Latin Percussion, Sound Effects and Reverse sounds. R8M 68 (ditto); R5 68 — a different set from the one on the R8/R8M, but covering broadly the same ground, with the addition of some bass sounds.

Patterns: R8 and R5, 100 programmable, 32 preset. Target Price: R8 £220-280; R8M £250-300; R5 £150.

SOS Reviews: R8 February 1989; R8M April 1990.



amplitude envelope can be applied to each sound. In all, the S3 is sophisticated and relatively recent technology going for a knock-down

price — if you can find one.

• ROLAND R8/R8M/R5

When it comes to drum machines, Roland need no introduction. Few musicians can be unaware that the

CHEAP EFFECTS

What would you say if we told you that you could build up an impressive multi-effects/processing rack consisting of a digital delay, digital reverb, compressor/gate, noise reduction, enhancer and parametric EQ for just £300? You could, with Akai's EX-series of half-rack 'personal recording tools' — and the same story can be repeated with similar processors from other manufacturers. When looking for second-hand effects, many people don't consider (or haven't heard of) the various ranges of miniaturised effects and processors released during the mid-to-late '80s. As well as being unbelievably cute, these processors are also pretty well-specified, and fit in nicely with the recent trend of manufacturers beginning once again to build individual effects, rather than multi-effects units.

The unrivalled flexibility offered by a rack full of stand-alone devices should not be underestimated. Effects can be patched in any order you choose,

without restriction. If you've always wanted to put reverb through overdrive or distortion, Boss's Micro Studio Series will let you. Modern multi-effects units, on the other hand, frequently offer a preset chain of effects, and in some cases, the editable parameters or sound quality are restricted the more effects you choose to use. The only requirements for using a full set of mini processors are a patchbay to aid rapid and convenient patching, and decent-quality patch leads to avoid unnecessary signal degradation. The £300 price example above is no invention — the full set of EX processors, including power supply, was spotted in a recent SOS Reader Ad. Prices for similar units from other manufacturers rarely exceed £40 or £50 per unit, although digital reverbs and samplers do tend to be somewhat higher. The only problem is likely to be assembling a full set; you might find you have to pick up one or two at a time from different people until a given

collection is complete. Below are the full ranges from some of the names to look out for:

ACCESSIT

- Dual Sweep EQ
- Compressor
- Noise Gate
- Stereo Spring Reverb
- Micro Power Amp
- Dual Mic Amp
- RIAA Amp
- Power Supply

AKAI EX SERIES

- EX65D Digital Delay
- EX90R Digital Reverb
- EX70C Compressor/Gate
- EX75N Noise Reduction
- EX80E Enhancer
- EX85P Parametric EQ

BOSS MICRO STUDIO SERIES

- RSD10 Digital Sampler/Delay
- RPQ10 Preamp/Parametric EQ
- RGE10 Graphic EQ

- RDD10/20 Digital Delay
- RPH10 Phaser
- RBF10 Flanger
- RCL10 Compressor/Limiter
- RCE10 Digital Chorus Ensemble
- RRV10 Digital Reverb
- RPS10 Pitch Shift Delay
- ROD10 Overdrive/Distortion
- RPW7 Power Supply

YAMAHA 100 SERIES

- A100 Power Amp
 - MV100 Mic/Line Mixer
 - R100 Digital Reverb
 - DR100 Reverb
 - Q100 Stereo Graphic EQ
 - GSP100 Guitar Processor
 - BSP100 Bass Processor
 - DP100 Stereo Limiter/Noise Gate
 - PW100 Power Supply
- Yamaha also sold a pair of \$100 monitor speakers to go with this system.

Similar ranges were also made by other manufacturers, including Alesis and fellow American company Valley People.

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KORG DSS1/DSM1

Sample Time: 5.5 seconds at 48kHz, going up to 16 seconds at 16kHz.
 Sample Rates: 16kHz, 24kHz, 32kHz, 48kHz.
 Polyphony: 8-note (16-note for DSM1).
 Multitimbrality: None (4-part for DSM1).
 Keyboard: 61-note velocity- and aftertouch-sensitive.
 Outputs: Stereo.
 Target Price: £350.
 SOS Review: DSS1 April 1987.



► that Korg launched their only dedicated sampler, the Steve Winwood-endorsed DSS1, at an original price of £2259. It was termed by Korg a 'Digital Sampling Synthesizer' and in effect, it comprised a relatively sophisticated sampling section welded to what was essentially the synth section from Korg's own DW8000 keyboard (the DW's waveform generators were replaced

by samples). With the DSS1, you can create hyper-customised samples in a way only really achievable these days on a synth like the Yamaha SY85, which has on-board sample RAM and allows you to treat samples through its synth section.

The DSS1 lets you both make samples and synthesize with them — and nor is sampling the only way to create waveforms for the DSS1. You can actually *draw* your own 512-segment digital waveforms (rather laboriously, it must be admitted) using a data entry slider and the display.

There's even a true

Including as it does *two* flexible and comprehensive onboard digital delays, the DSS1 really is a sampling/synthesis system of rare power and potential, and with recent prices as low as £350, it could be an interesting addition to your sonic arsenal.

However, be warned that there is a price to pay. Failings include the limited basic sample memory (256K, which yields a reasonable 5.5 seconds of sample time at 48kHz, going up to 16 seconds at 16kHz), a long-winded operating system, very slow disk drive, and, sadly, a lack of multitimbrality. Korg did release two memory upgrades — a 2X expansion, and an 8X expansion which also added a SCSI port and speeded up the disk drive. Needless to say, if your appetite is whetted by this assessment of the DSS1, try to find a machine with upgraded memory.

A little over a year after the release of the DSS1, a rackmounting brother, the DSM1, followed. This unit offered quadruple the memory and double the polyphony of the DSS1, as well as adding four-part multitimbrality and 16 individual audio outputs — a strange move, considering the four-part multitimbrality! The DSM1 also lost the neat digital delays of its keyboard counterpart. If you can find a DSM1 these days (they come up rather infrequently, to say the least) you probably won't find one at anything like as low a price as the DSS1, probably due to the above enhancements.

The DSS1 was acclaimed by contemporary reviewers as a powerful sound designer's tool. These days, it's rather a curiosity, but an appealing one — after all, where else can you get sampling and synthesis in the same box for this kind of money? If you *are* smitten with the idea of the DSS1, try not to pay much more than our price guide — it is an instrument with great potential, but it also demands lots of operator input.

SEQUENCERS

• KAWAI Q80

Kawai's late '80s flurry of hi-tech equipment included such gems as the K1 synth and the R50 drum machine (see Part 1 of this feature in last month's *SOS*) — and a hardware sequencer, the Q80. Though nothing really novel stands out about

KAWAI Q80

Tracks: 32.
 Note Capacity: 26,000 notes.
 Resolution: 96ppqn.
 Storage: Floppy disk.
 Target price: £150.
 SOS Review: February 1989.



additive synthesis function using 128 harmonics — surely one of the few affordable ways of performing additive synthesis these days, barring purchasing a Kawai K5.

FANTASY GEAR LEAGUE

SAMPLE SETUP 1: AROUND £500

- Korg 707 — £175
- Roland R5 — £150
- Roland MSQ700 — £100

This really is a cheap setup! If you don't think you'd like the idiosyncratic MSQ700, substitute the Kawai Q80 for an extra fifty quid (or check out last month's suggestions for more affordable sequencers).

SAMPLE SETUP 2: AROUND £750

- Ensoniq VFX — £300
- Evolution EVS1 — £125

- Akai XE8 — £125
- Kawai Q80 — £150

SAMPLE SETUP 3: AROUND £1000

- Roland VFX SD — £400
- Akai VX90 — £100
- Akai S900 — £450
- Roland R5 — £150

We know we haven't mentioned the S900 so far (it's a bit too popular and too well-known to need any help from us), but it's an ideal partner for the VX90, which can be used to process S900 samples further.

SAMPLE SETUP 4: AROUND £1500

- Akai AX73 — £250
- Korg S3 — £250
- Akai S900 — £450
- Korg DSM1 — £350
- Kawai Q80 — £150

This is a bit of an oddball setup, best suited to an adventurous, sound-designer type. In addition to the intriguing DSM1, there's that S900/AX73 combination for more sample processing fun and games, plus rhythmic bliss from the Korg S3.

this unit, it's comprehensively and solidly specified, and offers the convenience of a 3.5-inch floppy disk drive. In addition to sequencing duties, the Q80 is also well suited to the odd bit of MIDI SysEx storage, as it has 64K of internal memory set aside specifically for SysEx data (separated into ten files). All the functions you'd expect of a hardware sequencer are present, and the provision of two MIDI Outs gives you access to 32 fully independent MIDI channels. One of the programming features, 'Motif', is very neat. Up to 100 drum machine-like patterns can be inserted anywhere you like in a song — and any section of a song can itself be turned into a Motif. The use of Motifs makes the construction of finished tracks a fast and intuitive process.

At a second-hand price of around £150 or less, the Q80 is a neat, smart-looking sequencer with enough features to satisfy even the more demanding musician.

• ROLAND MSQ700

Between the heyday of Roland's classic MC4 and MC8 analogue sequencers, and the introduction of the MC500 series of powerful MIDI sequencers came the eight-track MSQ700. Released virtually at the dawn of MIDI — and contemporaneous with the similarly-styled TR909 — the MSQ700 offers a hands-on approach to sequencing seldom seen on MIDI sequencers since. Although MIDI

data *can* be recorded in real time, the MSQ700's limited memory (a mere 6500 notes) means that step-time recording will help to make the best of what's available.

Actually, it's the step-time record that sets this sequencer apart; working with the MSQ700 has an MC202-like feel to it (check out the MC202 Retrospective elsewhere in this issue) except that there are eight tracks. Look at the 700 as more of a fun tool than as the centre of your MIDI system, and you won't go far wrong — its novel approach to note entry could well help you to produce something a little different from your normal work.

As with the majority of Roland hardware sequencers, a tape sync facility is provided (though without Song Position Pointers), and since MIDI had only recently been introduced, Sync 24 and DCB connections are provided to maintain backwards compatibility with non-MIDI equipment. Not bad going for a device with a typical second-hand price of around £100. The 700's little brother, the MSQ100, is, sadly, not in the same league — unless you're desperate, there's not much call for a one-track MIDI sequencer these days...

ROLAND MSQ700

Tracks: 8.
Note Capacity: 6,500 notes.
Resolution: 1/32nd note.
Storage: Cassette.
Target price: £100.



SOS

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- Project Music, 433 Gt West Rd, HOUNSLOW, Middx, Tel: 0181-570 4444;
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- Sound Control, 61 Jamaica Ct, GLASGOW, Scotland, Tel: 0141-204 0322;
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- Sound Control, 10 Moseley St, NEWCASTLE, Tel: 0191-232 4175;
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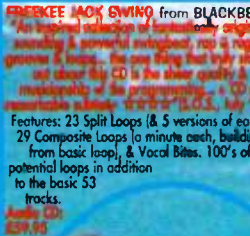
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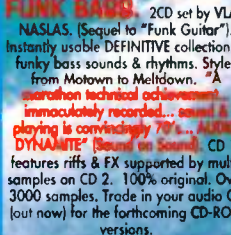
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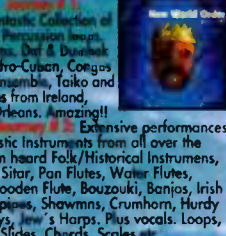


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**PART 2: SIMON MILLWARD
completes the construction
of a Cubase Mixer Map
for Yamaha's popular
SY85 synth.**

In the June issue we discussed the background to and completed two groups of objects for the SY85 Multi Edit Mixer Map. Before tackling the creation of the remaining objects, let's take a look at the finished product we are aiming for (Figure 1).

Remembering that the Mixer Map was originally prepared for Bad Apple Sound Studios, note that I have fulfilled part of the original brief — namely, that the Mixer Map should be a single screen affair. *Cubase* provides a total of 128 objects for any one Map and this SY85 Map uses them all. Hence, some things had to be omitted; there are only eight channels of Tune objects and there are no Dry Output or Effects Send switches. Also, squeezing 128 objects onto one screen is not an easy task — things have to be carefully sized and positioned. To see all the objects at once, you must select 'Hide Transport' in *Cubase's* Windows menu.

So this is the layout we are aiming for. Let's move straight on to creating our next group of objects, the Tune dials.

CREATING TUNE DIALS

Go into the Mixer window by double-clicking on a Mixer part and use Setup Mixer Maps to load in the first two groups of objects we created in Part One [SOS June 1995]. The file should have been saved as 'SY85M116.MIX'.

Create a new object with the New Tool to

MAP

CREATING A CUBASE

open up a fresh Object Definition box. Name the object as 'TUNE', enter 'MIN 1' and 'MAX 127' in the VALUE section, then deselect all boxes in the SHOW section, select the 'dial' OBJECT TYPE and select SysEx from the MIDI MESSAGE Status pop-up menu. Edit the message to read: **F0, 43, 10, 29, 00, 01, 00, 03, 00, XX, F7** (see Figure 2).

As explained in the first instalment, this corresponds to Parameter number 3 (8th byte) of Instrument number 1 (6th byte). The XX is the variable in the message which will change according to the movements of the object. The limits of the variable are specified in the 'MIN' and 'MAX' of the VALUE section. (Refer to Multi Parameter Change table 2 on page 7 of the SY85 MIDI Data Format manual for details of all Parameters.) When satisfied with the entries return to the Mixer window by clicking on OK. If all is well, you will find a new Tune control on your screen.

Remember that the Device number of the SY85 (in MIDI 1 of the Synth Setup menu) should be set to 'ALL'. Verify that the Tune object has the desired effect on the SY85 and then proceed to copy the object for Instruments 2 to 8. Due to limitations in the total number of objects available, only channels 1 to 8 will be equipped with a Tune control. Each time copy from the previously created object, update the object Name to Tune 2 to 8 and update the 6th byte (Sub Group number) of each SysEx message to consecutive Hexadecimal numbers, from \$02 to \$08. Finally, go back into the Tune object created for Instrument 1 and tick 'Name' in the SHOW section of the Object Definition box. Go back to the Mixer Map window and, if necessary, line up and size the eight new Tune objects. Remember that you need the Edit Tool (pointing arrow) to select and move the objects, either individually or en masse, using a stretch box.

NOTE SHIFT OBJECTS

Next in line are the Note Shift objects. These are created in a similar way to the Tune objects. Once again, use the New Tool to open up a fresh Object Definition box. Proceed as above except that the OBJECT TYPE should be a Numerical Display box and the SysEx message should read: **F0, 43, 10, 29, 00, 01, 00, 04, 00, XX, F7**. Copy the object for the other 15 Instruments, updating the Names and SysEx message Sub Group numbers for each object. Note that the numbered values shown in these objects will not match the display values on the SY85. The central position (ie. no Note Shift) will be represented by a value of 64 on the Map objects, +12 semitones will be 76, -12 will be 52, and so on...

EFFECTS SENDS

Next up are the Effects Send levels. Open a new Object Definition box using the New Tool. Name

REFERENCE

MIDI MIXER MAP FOR THE YAMAHA SY85

the object as 'FX SEND', enter 'MIN 0' and 'MAX 127' in the VALUE section, deselect Name in the SHOW section, select a 'dial' OBJECT TYPE, and enter the following SysEx message on the MIDI MESSAGE line: **F0, 43, 10, 29, 00, 01, 00, 07, 00, XX, F7**. Click OK and verify that the object addresses the SY85 in the desired fashion. Copy the object for Instruments 2 to 16, updating NAME and MIDI MESSAGE (Sub Group Number) for each object. Finally, tick Name in the SHOW section of the left-most object.

BANK & PROGRAM CHANGE

The creation of the Bank and Program Change objects requires a little more thought. Bank Change is usually specified as MIDI Controller 0 and Program Change has a MIDI Status of its own. However, for the purposes of the SY85 Multi Mixer Map, I decided that it would be better to continue to use System Exclusive. This would mean that all data sent out of the Map would be directed only to the SY85 and there would be no interference with other units in the MIDI system,

even if they were on a common MIDI Out.

So let's create the Bank Change objects. Open up a fresh Object Definition box using the New Tool. Name the Object appropriately ('BC1' for example), enter 'MIN 112' and 'MAX 119' in the VALUE section. Deselect the SHOW section, select a Numerical Display OBJECT TYPE, select SysEx in the MIDI MESSAGE Status pop-up menu and then select Proportional mode (Prop.) Group 1 in the MASTER section. Edit the MIDI message to read: **F0, 43, 10, 29, 00, 01, 00, 01, XX, F7** (see Figure 3). Click on OK to return to the Mixer Map window and then size and position the object appropriately. Copy the object for Instruments 2 to 16. Update the Sub Group number (the 6th byte) to read consecutive numbers between \$02 and \$10. The MASTER section Group Number should also read consecutively from 2 to 16 for each object. The Master function allows the chosen object to control any other objects which have the same Group number. The reason for this becomes clear later on. Finally, rename the left-most object as 'BNKPRG' and tick 'Name' in the SHOW section. This will serve



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CREATING A CUBASE SY85 MIXER MAP

► to label both the Bank and Program Change objects.

To create the Program Change objects for the Mixer Map proceed as follows: open up a new Object Definition box using the New Tool. Name the object as 'PRG1', enter 'MIN 0' and 'MAX 127' in the VALUE section, deselect Name in the SHOW section, select a Numerical Display OBJECT TYPE, select SysEx from the MIDI MESSAGE Status pop-up menu and select Group 1 in the MASTER section (see Figure 4). Edit the MIDI message to

Note also that numbers 112 - 115 displayed on the Bank Change objects actually select SY85 Internal Voice Banks I - IV, while 116 - 119 select SY85 Card Banks I - IV. If you are not using an SY85 memory card, you could change your Bank Change object range to 112 - 115.

OTHER PARAMETERS

Before tackling the Instrument 'OFF' objects of the Map, there remain a few other important parameters of the SY85 which we need to include. These are the Effect Type selectors, the Wet/Dry Mix controls, the Local On/Off switch and a Master Tune.

To create the Effects 1 Type Selector, open a new Object Definition box using the New Tool. Name the object appropriately, enter 'MIN 0' and 'MAX 90' in the VALUE section, tick Name in the SHOW section, select a Horizontal Fader OBJECT TYPE and enter the following SysEx message on the MIDI MESSAGE line: **F0, 43, 10, 29, 00, 00, 00, 02, 00, XX, F7**. Note that the Sub Group number (the 6th byte) is \$00 in accordance with the settings found in table 1 on page 6 of the SY85's MIDI Data Format manual. Sub Group \$00 is for functions 'common' to all 16 Instrument channels.

Click on OK to go back to the Mixer window. The new object needs to be squeezed into the gap to the right of the eight Tune Objects.

The Effects 2 Type selector is created similarly, except that the OBJECT TYPE should be a Vertical Fader and the SysEx message should read as follows: **F0, 43, 10, 29, 00, 00, 00, 03, 00, XX, F7**. This object is slotted in at the extreme top right corner of the screen, as shown in the finished Mixer Map (Figure 1).

The Wet/Dry Balance objects for Effects 1 and 2 are listed in table 1 as Parameter numbers 31 and 32. The objects for these should be created similarly to the above Effects Type selectors, except that the object ranges will be 'MIN 0' and 'MAX 100' and the SysEx messages should read as follows: for 'WetDry 1', **F0, 43, 10, 29, 00, 00, 00, 1F, 00, XX, F7** and for 'WetDry 2', **F0, 43, 10, 29, 00, 00, 00, 20, 00, XX, F7**. Position the new objects as appropriate.

The data for the Local On/Off is found on page 14 of the MIDI Data Format manual. This is an SY85 System function. For those readers not already familiar with this function, Local Off disconnects the keyboard from the sound-making part of the instrument. This part of the instrument will still respond to all data it receives at the MIDI In and the keyboard itself still outputs MIDI data. The Local Off would normally be used when the MIDI note data from the keyboard is being directed back to the synth via the MIDI Thru of a sequencer.

The Local On/Off function can often be addressed with MIDI Controller number 123 but, for the purposes of this Map, I have chosen to use a SysEx message which performs the same function. The Local On/Off is Parameter number 4 in the

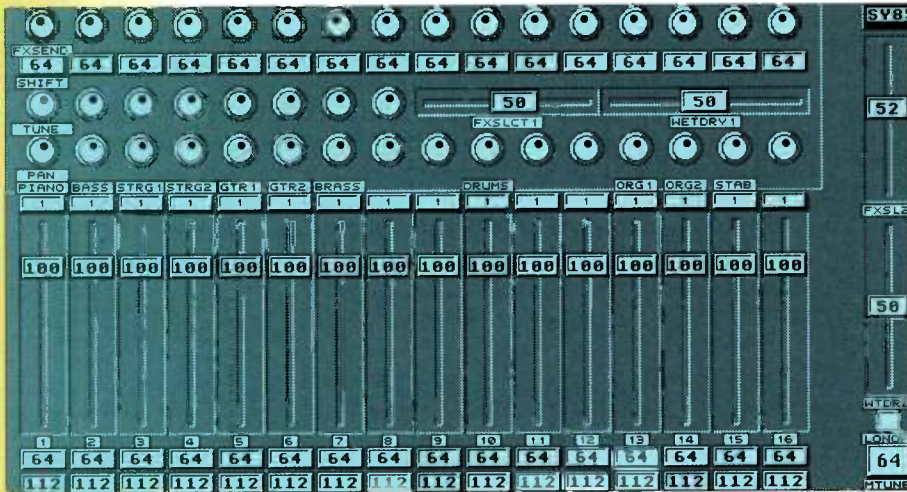


Figure 1

read. **F0, 43, 10, 29, 00, 01, 00, 01, 01, XX, F7**. Verify that the object is working correctly and, as with the Bank Change objects, copy the object for Instruments 2 to 16 updating the Names, SysEx Sub Group numbers, and the MASTER section Group numbers accordingly.

Test these last two groups of objects by moving all the Bank Change objects with the Play Tool. As it is moved, each Bank Change object should act as a master to its corresponding Program Change object, which should be seen to move in proportion to it. The reason behind this was to correct the fact that when a Bank Change alone was sent to the SY85, the display changed to the chosen Bank number but the current buffer remained on the previously selected Bank and Voice. The new arrangement was considered to be better than having a Bank Change which, in an audio sense, appeared to have no effect.



System table. As usual, open a fresh Object Definition box using the New Tool, Name the object appropriately, enter 'MIN 0' and 'MAX 1' in the Value section, tick Name in the SHOW section, select a switch OBJECT TYPE and enter the following SysEx message on the MIDI MESSAGE line: **F0, 43, 10, 29, 04, 00, 00, 04, 00, XX, F7**. Click on OK and test the object.

The Master Tune function is also found in the System Setup table on page 14 of the SY85 MIDI Data Format manual. Open a fresh Object Definition box using the New Tool, name the object appropriately, enter 'MIN 1' and 'MAX 127' in the VALUE section, tick Name in the SHOW section, select a Numerical Display OBJECT TYPE and enter the following SysEx message on the MIDI MESSAGE line: **F0, 43, 10, 29, 00, 01, 00, XX, F7**. Click on OK and test the object. The latter two objects should be positioned in the lower right corner of the now rather full Mixer Map window.

CREATING THE SWITCHES

And now for the creation of the 16 'OFF' switches. As usual, open a fresh Object Definition box using the New Tool. Name the object appropriately, enter 'MIN 0' and 'MAX 1' in the VALUE section, deselect

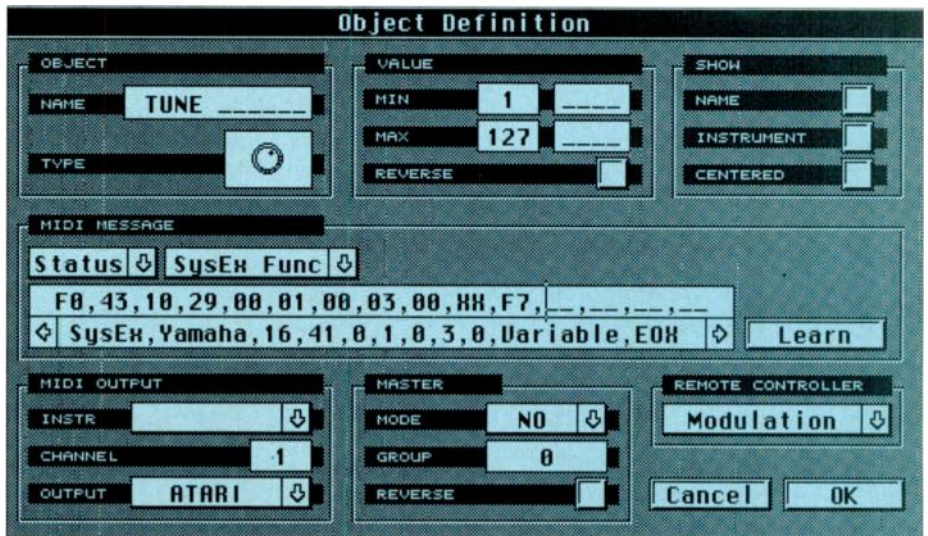


Figure 2.

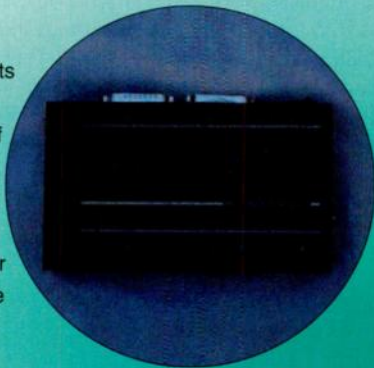
Name and Instrument in the SHOW section, select a Numerical Display OBJECT TYPE and enter the following SysEx message on the MIDI MESSAGE line: **F0, 43, 10, 29, 00, 01, 00, XX, F7**.

These switches will have two positions but will only send out a meaningful message when in the 'off' or '0' position. The 'off' position will correctly address Parameter 1 in the 7th and 8th bytes. The 'on' or '1' position will have no effect, since the 7th and 8th bytes will read \$01 (MSB) and \$01

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CREATING A CUBASE SY85 MIXER MAP

► (LSB), a Parameter number which does not exist. The Bank and Program objects will switch the Instrument back on as soon as either is moved. In fact, the Program objects should be viewed as the 'on' part of the 'on/off' arrangement.

There are two reasons for adopting this arrangement. Firstly, as mentioned in the first part of this series, Parameter 1 is multi-functional (see

Instrument will finally be switched off, after having first been switched on by the Program object. If they are in the 'on' position (when they will send out a dummy SysEx message), then the Instrument will remain on the Voice selected by the Program object. If you're confused after reading this, don't worry; I was even more confused trying to work that one out in the first place! The logic of the affair will become apparent when you start using the Map. All you have to remember is that all 'OFF' switches must be manually put to their 'on' position after the Instrument has been switched on using the Program objects.

Next, test the first 'OFF' switch and then copy as usual for the other 15 Instruments. Position the 16 new objects just above the Volume faders.

After all that mind-bending I'm sure there are readers asking why we needed the 'OFF' switches in the first place. The answer is quite simple. If you are using the SY85 on a common MIDI Out with other instruments, then MIDI note data sent to a drum machine on MIDI channel 10, say, will also be received on Instrument 10 of the SY85. One solution would have been to simply turn down the Volume on the offending SY85 Instrument. The problem is that the polyphony of the SY85 would

still be taken up by the incoming data. The only solution is to switch the Instrument off.

FINISHING TOUCHES

It is now just a question of creating a Text object with which to title the Mixer Map. Open an Object Definition box using the New Tool and select Text in the OBJECT TYPE menu. The actual text of the object will be whatever is entered into the NAME section. I have named mine simply as 'SY85'. Note that when a Text Type object is chosen, the 'MIN' and 'MAX' of the VALUE section become 'FILL' and 'BORDER'. The pop-up menus found therein specify the background colour for the text and the

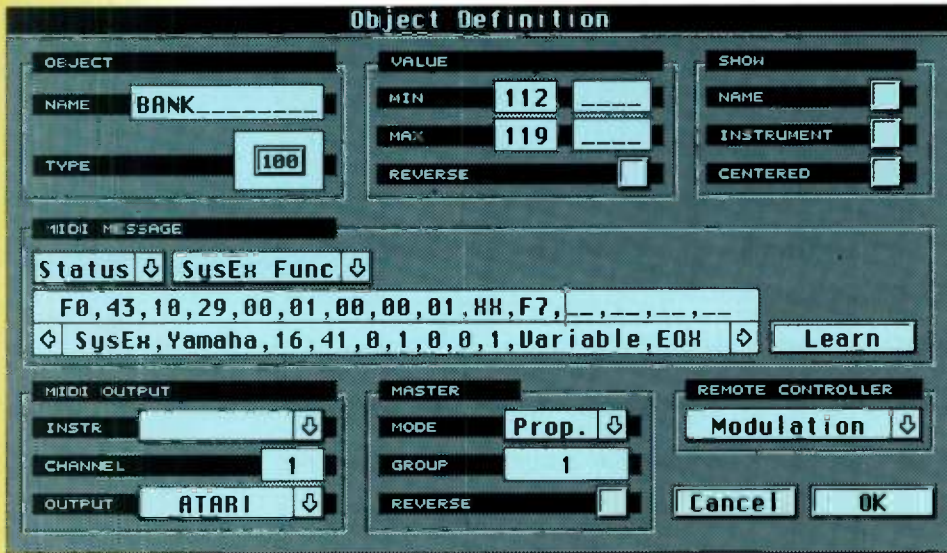


Figure 3.

table 2 on page 7 of the SY85 MIDI Data Format manual). We cannot address the 'on' function in bit 7 without also affecting the Voice number in bits 0 to 6. This would result in the fact that each time we switched on an Instrument it would also transmit a single unchanging Voice number. The Map would quickly become awkward to use.

The second reason is to retain the operational logic of the Mixer Map when using Snapshots. The 'OFF' switches will be sent out last of all when a Snapshot of the whole Map is recalled (since Cubase sends out data from the objects in the order in which they were created). During the data transfer, if the switches are in the 'off' position then the SY85

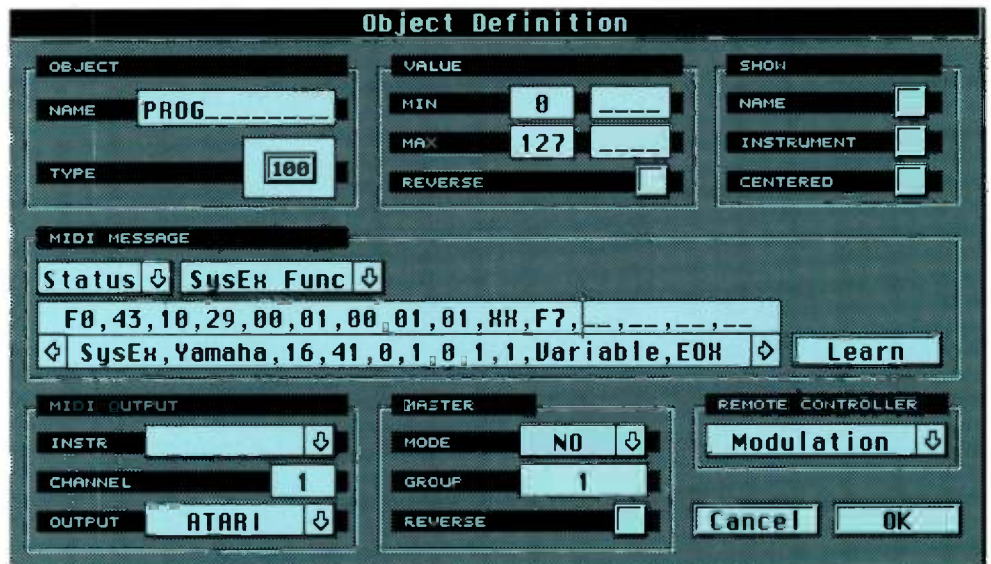
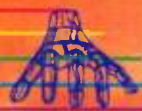


Figure 4.

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CREATING A CUBASE SY85 MIXER MAP

► style of the border which surrounds it. This is worth experimenting with, since a good looking Mixer Map makes it a pleasure to use. My own title, for which I chose a black background, ended up in the top right corner of the Map (see Figure 1).

If you have not already done so, all the objects must now be squeezed and sized onto a single screen. In order to make this possible on a standard size monitor screen, I had to remove the Transport Bar, as already mentioned. I also used 'Options' and 'Align' from the Local menu to add the final touches

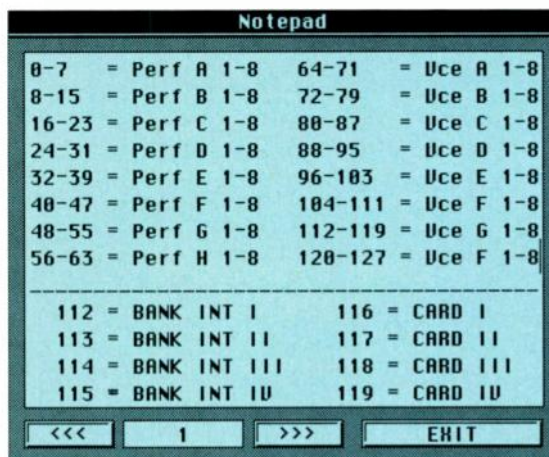


Figure 5.

to the Map. I chose a 'Grey Background' and 'Framed Text' from the Options menu and, when I was sure of the positions of the objects, I 'locked' them so that they could not be moved accidentally. I would suggest that you do the same. When you are fully satisfied with the final result, resave the map under the same name, 'SY85M116.MIX'.

USING THE MIXER MAP

After all that effort a few hints and tips on using the SY85 Mixer Map would seem appropriate. Firstly, as a matter of routine, initialise the Map by moving all the objects to the settings of your choice and then take a 'Snapshot'. A Snapshot stores the current settings of the objects and is taken simply by clicking on the camera icon next to the Local menu. Name the Snapshot as 'INIT' and recall the Snapshot each time you load in the Map for the first time. The 'INIT' Snapshot ensures that the settings on the screen match those within the SY85 before editing commences. At this stage it is a good idea to ensure that you understand the 'OFF' switch arrangement with Snapshots, as explained earlier.

The Map was intended to provide a quick way to set up the SY85's Multi Edit parameters and to have an improved overview of the current status. It is important to understand the Mixer module to get the best out of the Map so, if you haven't already done so, read the Mixer Module chapter of the *Cubase* manual thoroughly. Although the Map is reasonably adaptable to the various ways of working with the Mixer Module, please bear in mind the following: System Exclusive data takes priority over all other MIDI data, so the SY85 Multi Edit Mixer Map is best used for static mixes. Large

amounts of SysEx sent out as part of a dynamic mix could easily lead to delays in the note data. In addition, if you record a static mix into the Mixer part using a Snapshot with the 'Write' function, there will be a short delay on most *Cubase* setups while the data is being written to memory.

No doubt you will have already noticed that the values of the Bank and Program Change objects displayed on the screen do not reflect the way they are displayed on the SY85. This was, of course, impossible given the design and multi-purpose possibilities of the Mixer Module. A cross-referenced chart of some kind would be useful for finding Voices. This could be achieved in some kind of printed format but it could equally be entered into *Cubase's* own Notepad (see Figure 5).

The Map itself could be used effectively in several working modes. For example, to set up the SY85 Multi Instruments to various working Voices, Levels, and Pans prior to commencing the session. Equally useful would be the building of an arrangement little by little using *Cubase*, with the Arrange and Mixer Map windows both open on screen. To achieve this, simply size the Arrange window to fill half the screen vertically, then open up the Mixer Map window with the SY85 Multi Mixer Map loaded, and size and position this to fit alongside. You may then switch from window to window with one click of the mouse without closing the Mixer Map. The current MIDI channels may be chosen and parts played in on the Arrange page, while the choice of Bank, Program, Volume etc may be selected on the Mixer Map window.

Finally, the SY85 Multi Mixer Map could be used to fine tune all the details of an SY85 Multi Edit setup after the arrangement has been recorded. Snapshots could be used to compare (or safeguard) different settings as they are created. For example, I set up a mix of a MIDI File version of 'Sledgehammer' in the space of about 10 minutes. By naming each track in the Instrument Column of the Arrange page after I had loaded the MIDI File, I was then able to go to the SY85 Multi Mixer Map with the various Instruments suitably labelled on each channel of the virtual mixing desk. This made the search for sounds a whole lot easier and ensured a clearer overview of just what was happening with the entire mix. A bass sound at the wrong octave was quickly adjusted using the Note Shift control, a stereo muted guitar effect was quickly panned on the appropriate pair of channels, and the Volume settings of most of the Instruments were adjusted in a matter of seconds.

Those readers who make time to create the Mixer Map should find the creative potential of the SY85 in Multi mode considerably heightened. In addition, you will have probably greatly enhanced your expertise and understanding of *Cubase's* Mixer Module.

SOS

FURTHER INFORMATION

- A** Copies of the finished Mixer Map are available from Club *Cubase* Direct.
- T** 0181 650 3571.

"The Map was intended to provide a quick way to set up the SY85's Multi Edit parameters and to have an improved overview of the current status."

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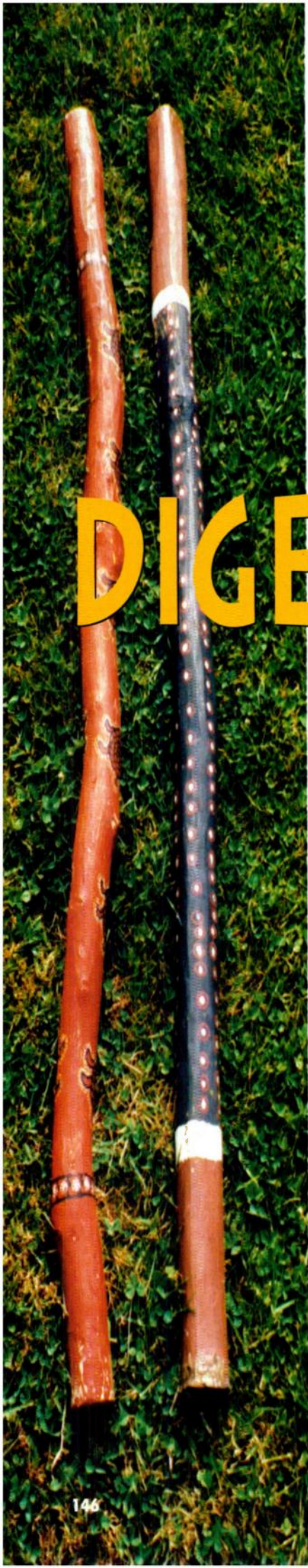
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Digeridoos aren't exactly at the centre of mainstream British rock and dance music, but they do seem to be increasing in popularity, and are turning up in all types of contemporary music from the obvious World and Ethnic genres to pop.

Should you want to incorporate the sound of a didgeridoo into *your* music, the easiest way is to use a sampler. There's no shortage of available didgeridoo samples — but it can nevertheless be a problem finding a sample that fits in with your track. For a start, didgeridoos are monophonic, single-pitch instruments, and if you move a sample more than a couple of semitones away from its original pitch, its artifacts start to show. On a typical sample CD, you might find a few example phrases, but the chances are that they'll be in the wrong key, unless you're prepared to write your song around the sample.

wah-wah pedal to add articulation, and a short delay with lots of feedback at the end of the chain to create the tube resonance. By fine-tuning the delay time, you can tune the pitch of your virtual didgeridoo — but sadly, the real problem is that this 'virtual' didgeridoo sounds nothing like the real thing! As an avenue for exploring new and interesting sounds, this simple setup is great, and you can get some very useful results — but don't let me or anyone else kid you that it will sound like the real thing. Actually, since then, I've created a patch in an Emu Morpheus that gets a little closer, but the didgeridoo is such an overtly organic instrument that any electronic approximation is destined to be pretty rough.

The direction of this article took a radical turn when I picked up a tape in a music shop on how to play the didgeridoo. I reckoned that if I could

DIGERIDOODLING

HOW TO MAKE YOUR OWN DIGERIDOO

PAUL WHITE explores the outer limits of physical modelling on a budget that wouldn't even buy you a decent pair of shoestrings!

A more major problem is that didgeridoos tend to be played very rhythmically, and while it is possible to use a basic drone underneath your tracks, it's always better if you can find a rhythm that compliments the rest of your composition. In short, samples are fine if you're prepared to work around what's available, but if you already have a song and you want a didgeridoo part that's going to fit perfectly, ready-made samples are always going to be a compromise. So — what's the alternative?

PHYSICAL MODELLING

When I first came up with the idea for this article, I thought I'd have a go at creating the sound of a didgeridoo by means of physical modelling techniques, using a synth as a sound source, a

make a simple didgeridoo, I could squeeze enough of a note out of it to sample the result before I ran out of breath. Thereafter, I decided to abandon my physical modelling research in favour of building a physical model. The results of my endeavours would never have made it onto these pages if they hadn't been very successful, cheap to implement, and relatively easy to achieve.

CONSTRUCTION

Before you can start learning to play the didgeridoo, you obviously need an instrument. This is where my teaching tape came in handy, as it suggested beginners start by using a length of plastic pipe. I've found that 1.25-inch or 1.5-inch plumbers' waste pipe works best, and a length of around one metre seems to suit most people. Once the pipe has been cut to length, all you have to do is create a mouthpiece, because the sharp end of the tube can leave your mouth looking as though you've been attacked by a maniac with a pastry cutter. The traditional method is to dip the end of the tube in melted beeswax until you've built up a rim of around an eighth of an inch thick, and although you can experiment with candle wax,

THE DIGERIDOO

A traditional didgeridoo is generally made from either a hollow branch or from giant bamboo. I've seen commercial models made by cutting a branch in half, carving out the inside, and then gluing it back together — which is probably quicker than the traditional way of waiting for termites to do the job for you — but for learning purposes, the plastic waste pipe version described in the text plays well, and sounds surprisingly good. The size of pipe you use

will depend upon the size and shape of your mouth. The larger bore pipe produces a deeper tone, but for me, the narrower pipe is easier to play, and has a brighter, more interesting timbre.

As well as being a fine-sounding instrument, the didgeridoo is considered to be very therapeutic, so if you're one of those people who likes to smoke lentils and go 'Om' quite a lot, this is definitely the instrument for you.

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Table with 3 columns: Model Name, RRP, Axis. Lists various microphone models and their prices.

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Table with 2 columns: Model Name, Price. Lists ALISIS Monitor Ones, DYNAUDIO BM10's, QUESTED H108's, SOUNDRAFT Absolute 2's, TANNAY System 6 NFM II.

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Table with 3 columns: Model Name, RRP, Axis. Lists options and accessories for DR4 and DR8.

Amplifiers

Table with 2 columns: Model Name, Price. Lists ALESIS RA100 65wpc, ALESIS Matica 500 250wpc, ALESIS Matica 900 450 wpc, SAMSON Servo 150 50wpc, SAMSON Servo 240 80wpc, OMNIPHONICS Footprint 50wpc.

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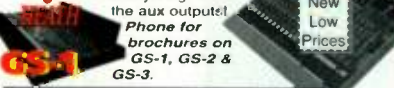


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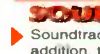


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Soundtracs Topaz 24:8 (Inc MeterBrg) 3288, Soundtracs Topaz 32:8 4228.

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E-MU

ESI-32 Pro Sampler

Table with 3 columns: Model Name, RRP, Axis. Lists ESI-32 2Mb standard, ESI-32 2Mb + SCSI port, ESI-32 8Mb + SCSI + 270Mb.

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EQUALISERS

Table with 3 columns: Model Name, RRP, Axis. Lists Amek/Neve 9098, MTA Signature Series stereo EQ, AMEK 9098 Rupert Neve EQ, DBX 2x15/1x31 banded graphic, BEHRINGER PEQ305 parametric.

ENHANCERS

Table with 3 columns: Model Name, RRP, Axis. Lists BBE 462 Sonic Maximizer, APHEX Type C2 'Big Bottom', BBE 362 'Sonic Maximizer', BBE 362NR 'Sonic Maximizer', BBE 462 'Sonic Maximizer', BEHRINGER 'Dualtex II', BEHRINGER 'UltraTex II', BEHRINGER 'Basifex', BEHRINGER 'Edison', SPL Stereo Vltalizer (jack version).

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HOW TO MAKE YOUR OWN DIGERIDOO

▶ you'll find that it softens as you play, and eventually falls off. I found a more permanent solution was to use Rapid Araldite smeared onto the rim of the pipe, and then warmed over the stove to make it runny. Keep rotating the pipe as you warm it, and you should end up with a smooth mouthpiece as shown in Figure 1. Any small bumps can be sanded off after the Araldite

was something disturbingly reminiscent of a flatulent goat that had been force-fed on a diet of sprouts and cider for the previous fortnight! Fortunately, salvation came to dinner, in the form of John Harris (aka the Demo Doctor) and his wife Judy, who, it turned out, had been learning the didgeridoo too. After a few pointers (see the 'Circular Breathing' box for more details), I had it cracked, and since then, progress has been rapid.

PLAYING

Before you begin playing your didgeridoo, it helps to do a few face-stretching exercises, including a minute or two of spluttering and whinnying. This makes you look a real prat, so it's best to do it in a credibility-proofed environment! If you now transfer your gently spluttering lips to the mouthpiece of your improvised didgeridoo, you should find that you get a

note. If you're having trouble, try using less air than you might imagine, and also try the mouthpiece to one side or other of centre; most players seem to use the side of their mouth rather than the exact centre. It is important to make sure there's a good seal between the mouthpiece and your mouth at all times.

Once you have the basic drone, you can modulate the tone by moving your cheeks as though you have a mouthful of mouthwash which you're sloshing from side to side. The sound will be instantly familiar, and by pumping your cheeks rhythmically, you should be able to play a bar or two of rhythm before you start to collapse, with stars rapidly invading your darkening field of vision.

Further tonal articulation can be produced by playing a simple drone and then moving your mouth as though you were trying to describe the filter section of the latest analogue synth to someone — with just a little practice, you can get quite a neat filter sweep sound going! Other traditional Aboriginal techniques include doing animal and bird impressions while droning, and even speaking words as they play. Most of these techniques can be explored in a rudimentary way without too much effort, but just to make sure I stay on the right side of those who can play the didgeridoo properly (I don't want another stream of abuse like the one

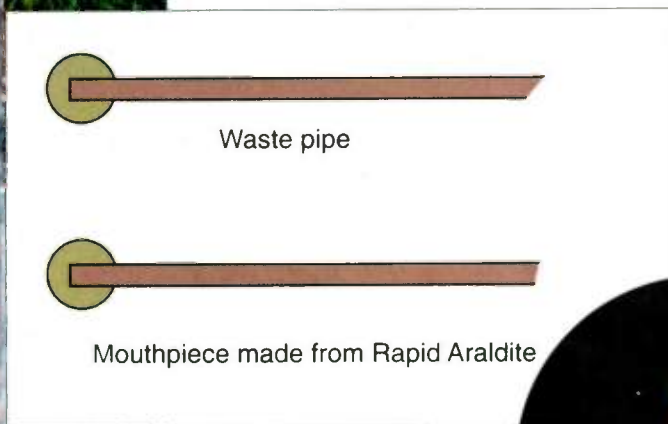


Figure 1: Cross-section of the pipe, showing how the mouthpiece is constructed (see neighbouring picture).



has hardened, and the resulting tone you can get out of your plastic didgeridoo is easily good enough to record.

I've already mentioned that pitch can be a problem for didgeridoos. Ideally, you need a whole set of didgeridoos, but I tried to make a tunable version using a length of 1.25-inch pipe for the mouthpiece end, and then fitting a sliding section made from larger 1.5-inch pipe, which enables the length to be fine-tuned. A couple of elastic bands wrapped around the thinner pipe stop the thicker one from falling off — Figure 2 shows the arrangement I used. A further benefit of the sliding system is that when you start, your lips seem to work better at some frequencies than others, so you can adjust the length of the pipe to make your didgeridoo easier to play.

Once you have your instrument, the first hurdle is to get a note out of it, and while everyone else, including my seven-year old daughter, managed to produce something recognisable within a minute or two, all I could get out of the thing

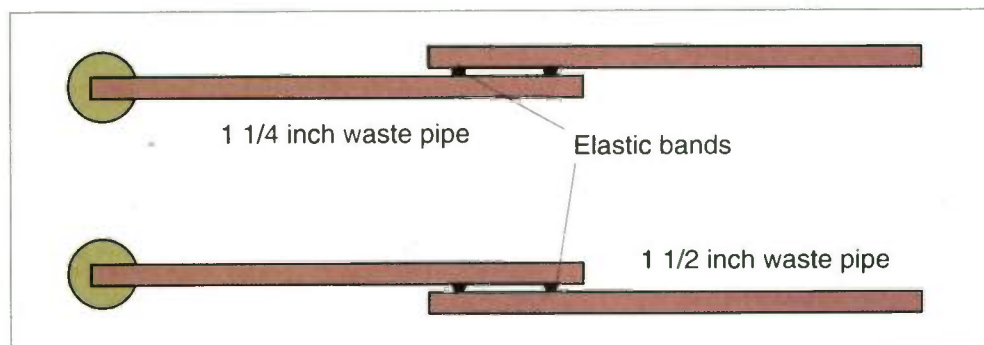


Figure 2: Cross-section showing the sliding tube arrangement.

CIRCULAR BREATHING (AND HOW TO CHEAT)

Most people can, with very simple instruction, get quite impressive and authentic sounds out of a digeridoo — what takes the real practice is learning the circular breathing that keeps the thing going. Fortunately, technology can help here, because if you're going to sample the result, looping takes the place of circular breathing. All you have to do is play long enough to complete the drone or rhythmic phrase you need. With one breath, you shouldn't have much trouble getting a 20-second drone going, and most sampled phrases need only be a couple of bars long.

One myth that needs to be dispelled is that circular breathing means breathing in and out at the same time. What really happens is that you use your cheeks as bellows to squeeze out air at the same time as you snatch a quick breath through your nose. The trick is to keep the lips vibrating as you do this, but like most things, you practice and suddenly, when you're about to concede that it's quite impossible, something clicks and you can do it. While it can take less than an hour of practise to get recordable sounds out of a digeridoo, it took me probably three or four hours, spread over the period of a week or so, to get the circular breathing right. When you finally get it, the joy is every bit as great as when you learned to play your first F major chord on the guitar without fret buzz.

Because the tone changes when you switch from releasing air to drawing it in, your breathing should be synchronised with the rhythm of what you're playing, and though you'll invariably find yourself with either too much or too little air in your lungs after playing for a minute or so, a few more days of practice will smooth this out.

I got from the bagpipe proponents a few months back!), I ought to make it clear that there is more to serious digeridoo playing than this. Before moving on, I must warn you that learning to play the digeridoo is pretty antisocial — it's not the noise that upsets people, but the spit dribbling out of the end of the tube and the slime running down your chin. Perhaps that's why the Aborigines seem to play mainly at night...

RECORDING

The digeridoo is at its best in a live environment, and will sound most impressive if you can arrange it so that the tone produced is reflected back at you. If you don't have a live room to record in, try playing facing a window or hard wall. Set up a mic a couple of feet in front of the instrument, pointing towards the open end of the pipe, and experiment by moving the mic slightly to one side or the other to see how the tone is affected. Once the levels are set, try turning on your recorder and just playing a series of drones and rhythmic phrases to see what you come up with. After a few minutes, you should have something worth sampling, though if you are working on a specific song, get the backing track up on headphones and jam along to see what you can come up with.

Once you've got something worth sampling, transfer it into your sampler and try to find a loop point that leaves you with a whole bar, or two-bar section. If you're playing rhythmically by pumping your cheeks, you can usually loop 'on the beats' to avoid obvious seams, but if you need to resort to crossfade looping, that should still work OK. On long, non-rhythmic drones, crossfade looping is very helpful, but still try to keep the looped section as long as possible, so that you can capture the movement of timbre that characterises the digeridoo.

To enhance the sound once you've sampled it, try adding a bright reverb, and maybe a subtle echo delay. You can boost upper mid frequencies with EQ to bring out the raspiness of the tone if you need something that cuts through your mix, but avoid over-equalising as you would with any other natural instrument. Who knows, you might get more interested in the digeridoo as an instrument, in which case I'd strongly recommend you buy a tutorial tape. The one I have is called *Digeridoo — How To Play*, and it's by Alistair Black.

505

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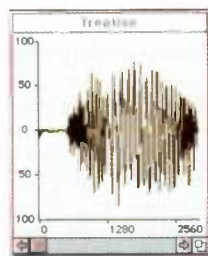
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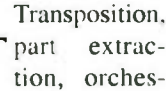
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Software : Samplitude Pro
 Author : SEK 'D
 Computer : PC Windows
 R.R.P. : £249.95 inc VAT

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* Contains musical fonts in both TrueType and Adobe Type 1 (ATM) format

Software : Musicator 2.1
 Author : Musicator A/S
 Computer : PC Windows
 R.R.P. : £299.95 inc VAT



Software : MIDIQuest
 Author : Sound Quest Inc
 Computer : PC, Mac, Atari, Amiga
 R.R.P. (PC) : £235 inc VAT
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HOT PRODUCTS FOR SUMMER 1995

DEMO DOCTOR

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CATHERINE FRANCIS

Recording Venue: Music Technology Department, York University (engineer Tim Banks).

Recording Equipment: 2xAlesis ADAT, Alesis BRC remote controller, Soundtracs Solo 16:8:2 mixing desk, Atari 1040 computer running Cubase 3.1 software, Lexicon LXP15 MultiFX effects processor, ATC 350 powered monitors, Neumann U87 mic.

Catherine is part of the growing Christian music scene that has spawned such events as the excellent Greenbelt festival, where she has performed solo in past years. Her songs are piano based, and while there are obvious comparisons with Kate Bush and Tori Amos, Catherine does have her own musical point of view. The connection with Tim Banks, a student at York University's Music Technology Department, provided the ideal opportunity to record her songs at a higher standard than had previously been possible using a 4-track.

A natural room sound on the Roland FP8 piano is a good choice, although the actual piano sound is somewhat unconvincing due to the lack of sustain on the notes. As you'd expect, the vocals have come out a treat using the Neumann, although they are treated with too much reverb. I would suggest that mixing the main vocal up front and pretty dry, and leaving the backing vocals soaked in reverb, would convey more of an intimate performance. Catherine also asks if a compressor

should have been used. It would certainly have helped control the louder sections of vocal (more noticeable on the second song), and I'd recommend an over-easy compressor with a 4:1 compression ratio and a fast attack.

A compressor with a graphic EQ side chained to it would control the bass end of the vocal, helping to avoid microphone popping, but I find it quicker to learn where popping occurs and flick the LF EQ down for a fraction of a second on the mix.

Better still, with a desk that has MIDI muting, you can split the vocal to two channels and get the computer to jump between the EQ'd version and the non EQ'd version on the mix. Finally, why not avoid it altogether by using a pop shield of some sort on the vocal mic?

Track two goes for a bigger production sound that includes pad chords, electric guitar and drum samples alongside the piano, but the arrangement could have been built up further by adding extra instruments to the piano theme as the song progressed.

I felt that the production demanded a classic live drum room sound, as the drums were very dry and somewhat over-equalised in the treble area. The rhythm section arrangement could also have been aided by a more groovy bass line, as the chordal and bass change on every bar made the track sound rather pedestrian. □



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ALTEREAL

Recording Venue: Home?

Recording Equipment: Tascam 8-track recorder, Fostex 2440 mixing desk, Amiga 1000 Texture/Sound Quest sequencer, EPS Ensoniq sampler.

Altereal is the first solo release by Canadian composer/bassist Emeric Donath, and shows a compositional depth that I thoroughly enjoyed. The music works with industrial collages via the use of samples and programmed sounds, but holds on to a tortured strand of melody in the form of vocalist Jahlin.

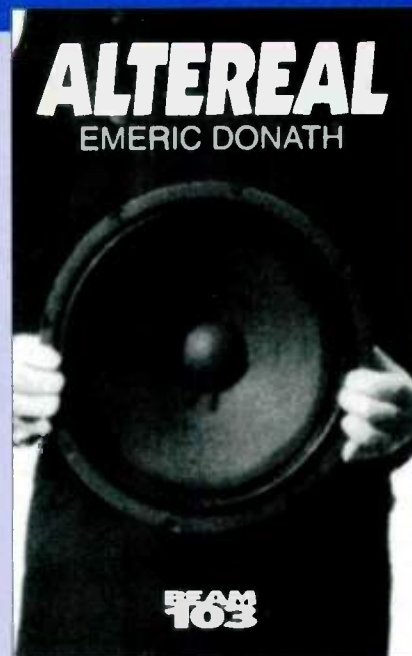
The vocals are, in fact, quite varied. For example, the opening song features singing that's not a million miles away from David Byrne in style, but has been treated with modulation and an empty factory reverb that makes it sit well with the music. In contrast, the vocal style of 'Savage People', the second song, is definitely in the reggae dub tradition, and is backed by a more standard funk workout.

The engineering tends towards a muddy sound

picture by using too many effects, especially modulation, but the ideas are good. A random trumpet placed towards the back of the mix and treated with a lot of short reverb seems to work well, and compliments the dry vocal for 'Savage People', yet heavy chorus on the Chapman Stick really just blurs the definition of what should be punchy funk chords.

My favourite instrumental track, entitled 'Imax Landscapes', took a looped, synthesised percussive theme which sounds like tuned cowbells in the upper register, but African percussion in the lower. A fat, eastern-style flute enters from nowhere and grows in level. Treated with copious amounts of echo and with a little use of the mod wheel, it moves into controlled distortion before gradually fading out in a most effective manner.

All the compositions are fairly short and don't overstate their theme. With just a little more attention to the engineering, Emeric could have a recording of release quality. □



SCOTT DARLINGTON

Recording Venue: Home.

Recording Equipment: Tascam 238, Atari computer running Cubase software, Akai 5950, Seck 18:8:2 mixing desk, Lexicon LXP 1 reverb unit, Alesis 3630 compressor, Sony DTC 77ES DAT, JBL Control 5 monitors.

After a breezy opening, we're into some guitar-based pop from Scott and pal Rob. The songs and melodies are strong, with a definite leaning towards the likes of The Byrds, and with the lightweight production sound of say, The Beautiful South.

I was particularly impressed by the clean guitar sounds, which have the lower mid qualities of the '60s guitars, particularly considering the fact that they were recorded using a Rockman. However, you can hear the obvious Rockman sound on the distorted guitar and some of the clean guitars—particularly on the melody guitar ploy of track two. On the Les Paul this sounds megafat and very American.

It's a shame that the recording set-up doesn't allow for real drums on tracks one or two, but by the third track I'd say that there's been an equipment upgrade of some sort. The rather polite drum machine sound has been ousted by some fine drum samples,



number with some fine strumming, a catchy chorus and some backing vocals for good measure. The bass programming and sound could really let down this style of music, but it certainly sounds as though Scott has got it together—it sounds like a

Fender Precision sample and its rounded tone is the perfect foil for guitar-based music.

Although the recording is not release standard (better reverbs and sounds could be achieved), it is a fine enough demonstration of the songs to deserve 'Top Tape' □

top tape

and a rhythm section that Massive Attack would have been proud of. It's a shame this pokey little gem, intriguingly entitled 'Flyface', is an instrumental and not a song.

Instead of carrying on in this vein, the lads return to a pleasantly lightweight acoustic

THE CEREBRAL CORTEX

Recording Venue: Home.

Recording Equipment: Atari 1040 STE computer running Cubase software, Tascam 424 Portastudio, Alesis Midiverb II reverb unit, Pioneer cassette deck.

It was the softly spoken, menacing vocal on the track 'Chicken Town' that first caught my attention. Emphasised by the slapback delay, the vocal is left dry and well up front, but gives the actual voice a little space of its own in the mix. To the sound of a breakbeat and groovy bass (a bit low in the mix), occasional guitar chord stabs with a very thin sound punctuate the droning mid-range pad. The thin sound, strong in the upper mid range enables the sound to sit well against the lower frequency sound energy of the drone.

On the second and subsequent tracks, the vocalist moves towards a more natural singing style. I didn't find this as effective as the whispering, due to the lack of body in the vocal sound itself. The third track, for example, uses delay to sink the vocal line into the instrumental balance, leaving the sampled, spoken voice



much louder in the mix. Even if this is a mistake, it sounds like the right approach for this gloomy musical collage. □

ROGER NEWPORT

Recording Venue: Home.

Recording Equipment: Fostex R8, 812 and X30, Kenwood DX7 DAT, Yamaha K-340 cassette deck, Zoom 9030 multi effects unit, Alesis Quadverb Plus reverb unit, Tandy PZM microphone.

If we had a prize for the most amusing letter, then Roger Newport deserves it. His song titles rather sum up his outlook on life, with songs like 'Nightclub Man' (dedicated to every bloke who thought that nightclubs were a good place in which to pick up girls), "Beanfeast Blues" (the after effects of vegetarian food, Guinness and curry)—I could go on, but instead will move sharply to the music itself!

'Nightclub Man' centres around the male nightclub stereotype and features a rather '80s-style club mix—heavy on the bass, Madonna-style. His spoken lyrics hold few surprises, and although fun, I can't help feeling this style has already been adequately covered by Zappa's 'Dancing Fool'. However, there are some well recorded guitars, which make a surprise heavy metal appearance—file under Nostalgia.

The lack of subtlety on the reverb comes through on the 'Beanfeast Blues'. If I could only believe that he meant to make it sound as if the listener were actually outside the venue (courtesy of a room reverb), but I can't. The combination of recorded farting in the musical pauses set up by the blues format are lamentably sad affairs, with only a lightweight rasp of sphincter and a really forced guff. I demand an immediate remix—after the requisite mixture of curry and Guinness, of course! □

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► A gentle offering of New Age/relaxation compositions from **ROBERT L HENRY**, but fortunately without the rambling to which New Age instrumentals are often prone. Alas, some of the tracks must have been recorded at a very low level on the cassette (peaking at -10dB), and so can not be heard at their best, but the remainder are generally well balanced. Sonically, the bass end lacks warmth, but the mid-range sounds, such as the synthesised choirs, compensate by adding the necessary mellowness. Occasionally, it would have been nice had the the choirs been substituted for strings instead.

With several festival appearances coming up this Summer, you may well catch the members of **4 by 3** strutting their stuff on stage—or should I say strutting their computers and DAT alongside



guitar, bass and drums?! Their sound is very current, and well suited to the late night, sweaty dancing of the festival scene. It is nice to hear the Roland Juno 2 put to such good use, and vocalist Philip adds an unusual touch to the start of the second track, as he mimics this vintage synth's opening filter. 4 by 3 seem to

merge U2 with trance dance and lightweight techno, but a stylish extended lead guitar break, also on the second track, shows that Pink Floyd are clearly a major influence on this group. Overall a fine demo—catch them live if you can.

Gerald Patient of **OKTOBER PROJECT** is another man who likes to take his studio out on the road, and I can imagine it is a thrill to hear these synthesised instrumentals belted out of a large PA, especially if you like techno. All the sounds have been well chosen, and the occasional eastern-style vocal sample is excellent—it makes its point without dominating the mix. You can't really go wrong with a Novation BassStation, and the bass end of these tracks is well balanced and full without booming. Gerald also makes good use of effects; echo and modulation in particular.

ALAN RANDALL is heavily influenced by film score composers, such as Nyman and Sakamoto, but also inspired by Chick Corea—a heady cocktail! This solo project features a Korg O1W/RD and a Roland GP 16 which handles most



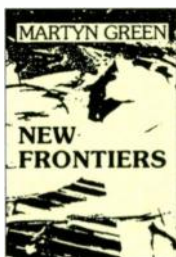
of the guitar effects on the album.

My favourite piece is 'Sleepless Dreams PT 2', with its haunting and evocative use of heavy reverb on synthesised voices, bells, cymbals and gongs. The Alesis D4 hi-hats and cymbals could be louder on this, and indeed all the tracks, as they occupy a higher frequency range than the bells which Alan seems fond of placing in the upper-/mid-range.

My main criticism would be the length of the first composition, 'Sudden Departures', which at 10 minutes and 23 seconds really needs to be edited down for demo purposes.

Generally, Alan handles the playing with ease, and the technical side of the recording naturally follows with some fat sounds and a good balance.

More instrumental compositions featuring the Korg O1W/FD and its sequencing capabilities are offered by **MARTYN GREEN**. Using the Korg's



ability to play several songs in sequence, Martyn put blank bars between the compositions to get the timing exact, and just pressed play to record all the pieces for side one of the tape. He does mention, however, that it took him several hours to get the levels right! Such dedication to the task has

brought rewards in the form of a clean recording that makes the most of the available internal effects and uses no external effects units at all. The playing is excellent, and the MOR compositions as good as the ones you find on the keyboard demos themselves.

UNDERWORLD: I should point out that there is already a pro band using this name, so Wayne (instruments) and Nick (vocals) are going to have to change it for legal reasons. With titles such as Odin, Monei and Futuresight you can probably see where they're coming from lyrically. The darkness in the words is reflected in the music and choice of melancholic melody, sometimes reminiscent of a less rocky Killing Joke. Drum sounds and programming are excellent—I especially liked the use of a slapback delay on the snare and kick drum, giving both rhythm and texture. A string synth is often up front in the mix, while vocals are recessed by echo and reverb to give them a grand but bleak atmosphere. A little more thought in the string arrangements, and more guitar would improve the overall sound mix.

Keiran's home-recorded demo, **THEREMIN**, appears to have been produced some time ago, but in spite of this, it still manages to sound current as dance material. I feel that the arrangements are generally too long—afterall, you can only listen to four looped chords for a limited period of time, even when the bass and

drum percussion backing is dubbed in and out. The second track starts in a promising way, with chords made up of harmonics building a panned and echoed pattern, but after three minutes, you're beginning to hope for more than just heavy flanging. Basically, Keiran is full of good ideas, but just need to be more disciplined in the management of his material.

More dance material, but this time it's not aimed at the underground scene. Most of the sounds used by **CONTROL Z** are instantly recognisable, and the sampled snatches of female vocal do little to relieve the lack of originality in the music—maybe some extreme use of effects would have created a more original atmosphere. In their defence however, Control Z have recorded their demo very well, and Leszek Gasior, the man behind the project, obviously has a solid grasp of arranging and production using sequencers. Given a different production brief and access to some more sounds, it would be interesting to see what he could come up with.

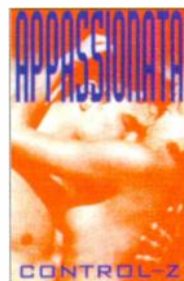
Laughingly entitled **'THE GOD-LIKE GENIUS OF GAVIN LEIGH'**, this tape includes tracks entitled 'Mostly Mortal', 'The Good, the Bad and the Unbelievably Desperate', and 'Halo On Fire'.

Sadly, Gavin didn't include a lyric sheet, but the almost whispered style of singing still manages to convey the pensive musing of the first song. Gavin aspires to creating music where the passion and emotional content comes first, and the quality of the equipment second. The latter doesn't have to negate the former, you



know Gavin, although I agree that one can be at the expense of the other for some musicians. Best song: 'Halo On Fire'.

FRANCESCO CARPENA is a drummer-composer (his words) looking for a record deal. Naturally the rhythmic programming is pretty good on his demo, but the lack of singing is a distinct drawback if he's aiming for a deal in the pop/rock/dance market. Technically it's another clean-sounding, well-balanced demo that uses the internal effects on the sound modules, and doesn't suffer overmuch as a result. Indeed, the Korg M1 short room reverb used on the third track, '52 Sinclair Street', sounds great on the piano, but the same effect is a little too much for the bass. As Francesco doesn't own a multitrack, it is obviously difficult for him to incorporate a singer into the mix, but to give a general impression for demo purposes, a singer could be recorded live direct to DAT. □

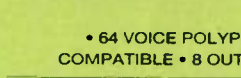


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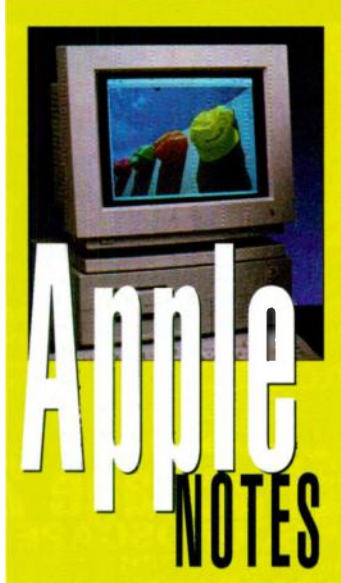
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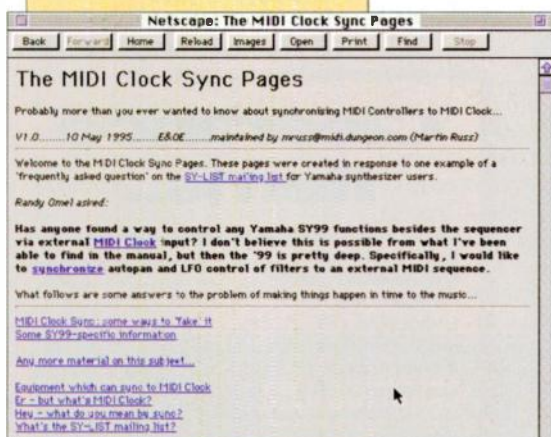
POST CODE



MARTIN RUSS explores ways of transferring 16-bit audio files from the Mac to a synth, and reveals what's new in the Mac music world.

ON THE NET

After all the hype about the Internet and the World Wide Web, I thought that it was about time to add my own contribution!



If you want to glimpse inside my own busy world, then try WWWing to <http://www.dungeon.com/midi/>. There's only a couple of Web pages to read at the moment, but I'm always working on extensions in the background. Unlike many other people's home pages which seem to consist of nothing but links to other pages, I have included one page which actually provides some real information! It's called 'The MIDI Clock Sync Page', and it provides a few pointers to techniques for synchronising LFOs with MIDI Clock. Well worth a visit.

Apple Notes recently received an appeal for help from a confused reader, Alastair Hearsum. He was attempting to transfer audio samples from his Power Mac 7100 to his Kurzweil K2000 synth using the K2000 v3.0 software, which allows you to import AIFF format audio files. Alastair was trying to figure out how to use his Mac's built-in audio facilities to make samples, and then transfer them to the K2000. He had found a utility which could convert from the 'snd' format audio files that the Mac produces when you use the Sound control panel to sample audio, into the AIFF files which the K2000 transfer required. Sadly, he could only obtain 8-bit quality, 22kHz samples, which sound muffled and grainy in comparison to the 16-bit, 44.1kHz samples that you might expect if you read the Power Mac's specification sheet. So what was going wrong?

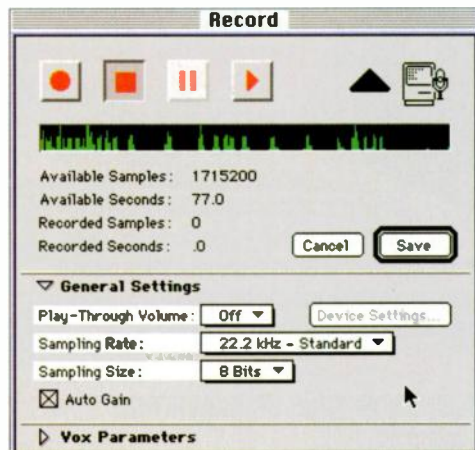
After some investigations, I tracked the problem down to the Mac's built-in System functions. When recording 'snd' files via the Sound control panel, this only stores the data as 8-bit, at a maximum recording rate of 22kHz. This is probably for historical reasons connected with the origins of the Macintosh, since 'snd' files are intended to be played across the complete Mac range of models, and so they default to the underlying minimum standard: 8 bits at 22kHz. The actual hardware for recording and playing back sound files varies from Mac to Mac. The latest 'AV' and Power Macs have 16-bit, 44.1kHz record/replay capability, but they can also sample at well below this, as Alastair has discovered.

What is needed is a program or utility which can record directly to an AIFF file format in 16 bits, thus making the most of the Power Mac's available sound features. There are several public domain and commercial applications which will do this: *SoundEffects* is a shareware example which also allows quite a bit of sample processing, and Opcode's *AudioShop* can sample at 16 bits for around £150. Alastair wrote back to me and said that he was now using *SoundEffects*, and he also pointed out that the documentation on writing your own plug-in audio processing modules (not TDM, unfortunately!).

However, after working my way through the relevant chapters of *Inside Macintosh* (see 'How It Works'), there may be another option. Since it is possible to write other drivers for the Sound control panel (it should have just the 'built-in' microphone input displayed normally), then it may be possible to define a driver which will use higher bandwidth, and perhaps 16-bit data. Writing sound drivers is well beyond my current knowledge of the Mac, but it looks like it ought to be possible. Has anyone ever seen a sound driver that works at 16 bits on those Macs that can cope with it? Let me know if you have...

TIP OF THE MONTH

Using *RAM Doubler* had been remarkably trouble-free for me, so it came as no surprise when I found



As you can see, *Sound Effects* knows that my Mac IIsi can't record at 16 bit resolution!

one of those incompatibilities that you always hear about, but never seem to suffer from personally. In my case, it all happened when I upgraded from *Galaxy* to *Galaxy Plus* editors. Suddenly, instead of my sequencer and my editor living quite happily in the same machine, I got an automatic reboot whenever I started up the universal librarian application at the same time as my *Vision* sequencer.

Opcode suggested increasing the amount of RAM allocated to the two programs (I was allocating 2.5Mb to *Vision* and 4Mb to *Galaxy*), but increasing *Vision*'s share of the RAM to 4Mb had no effect. So that's when I started trouble-shooting...

The major problem with trying to figure out why a MIDI or music application is misbehaving, is that you can't just restart with all the extensions off (you hold the 'Shift' key down whilst restarting). This may prevent all the extensions from being installed, but it also prevents any *MIDI Manager*, *FreeMIDI* or *OMS* extensions being installed as well. The trick is to use something like *Extensions Manager* (from Apple, and included in System 7.5, although I prefer the one that came as an accessory to System 7.1 — see November 1994 Apple Notes for more details) to turn on extensions one by one until the problem reappears.

The order in which you load extensions depends on their importance. In most cases, you should enable the MIDI driver first. So I tried enabling just *OMS* and testing — *Vision* loaded okay, and trying to run *Galaxy Plus* did not give the usual 'ping' as the Mac rebooted! I then added in virus protection, the VRAM speed-up tweak. Each time I added in a new extension, I re-tested the *Vision/Galaxy Plus* combination. All went well until I installed *RAM Doubler*, and then we were back to the crashes.

At this point you might be tempted to stop, ring the software supplier and complain. But actually, there's quite a bit more to do before you re-enable all the rest of your extensions. For example, how do you know that there isn't another incompatibility in all the untested extensions? In my case, I disabled *RAM Doubler* and continued adding extensions and testing *Vision/Galaxy Plus*. All went well until I enabled MacTCP 2.0.4, and then we were back to the automatic reboot syndrome again! When I removed MacTCP, all was well again.

So there were at least two incompatibilities on my particular Mac (a IIsi); yours may well be very different. But the technique is still the same — you provide

bounds for the problem by isolating its causes, and then you ring up the software support people. In my case, I emailed the results to Opcode. I have not yet received a reply, but at least I now know how to run my sequencer and editor/librarian simultaneously!

HOW IT WORKS: MAC AUDIO

The sound output of the Mac is capable of a wide variety of different methods of sound production. These range from rather crude square waves, through to sample replay at 16 bits, in stereo, and at 44.1kHz sample rate or beyond. The basic sound generation is handled either by a combination of a VIA chip and a Sony chip (in 'classic' Macs), or an Apple Sound Chip in Mac II and later models. In classic Macs, the sound circuitry is tied to the video circuitry. Since you can fit 370 sound samples into a video frame, and the frames repeat at 60.15 frames per second, this gives a sampling rate of just over 22kHz. This is where the underlying 22kHz sample rate comes from for 'snd' format sound files.

The Mac Toolbox ROM Sound Driver routines provide three basic types of sound production method. Although these are called 'synthesizers', they aren't exactly what most readers of *SOS* would expect! The simplest of these synths produces

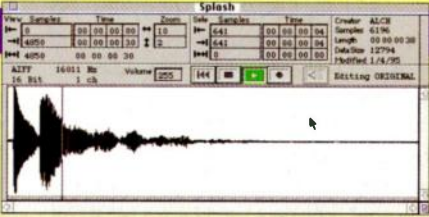
'snd' resource. It allows up to 512 samples in the waveform table for the 'free-form' synth, as well as higher sampling rates.

The Mac's 'snd' files come in two main forms. Format 1 files are used to control any of the three types of synthesizer — they contain information on the sounds and the notes to be played, and so a single 'snd' resource file can be used to play a complete sequence of notes just by passing the resource handle to the SndPlay Sound Manager call. Format 2 'snd' files only work with the 'free-form' sampled sound synthesizer, and define only the timbre of the sound — the application needs to control the pitch and duration of the notes which are played. The 'snd' audio files are Mac-specific and always seem to store their data in 8-bit form.

In contrast, AIFF files are designed for exchanging audio information across different platforms, and so are not based around the Macintosh hardware or software at all. AIFF stands for Audio Interchange File Format, and it is a variation of the IFF files used for some graphics formats. Like many modern file formats, the actual content of an AIFF file is not fixed: instead it is made up of 'chunks', and these chunks contain either information on the type and format of the data in the rest of the chunk, or

APPLE NEWS IN BRIEF


- Opcode's *DigiTrax 1.2* Digital Audio Recording program is now native for Power Macs. You need an AV Mac, Power Mac, or a Mac equipped with an ARTA (Apple Real-Time Architecture) compatible NuBus audio card in order to record and manipulate up to six audio tracks in a 'studio-like' environment. Contact MCMXCIX on 0171 723 7221 for more info.
- Apple should be releasing *ClarisWorks 4.0* in the UK later on this year. Lots of new features should make this an even more essential purchase for just about any Mac user. There's even HTML support for making your own WWW pages!
- Yamaha continue to give away very useful software! The latest is the *Tiny Wave Editor*, intended for users of the CBX D5 and CBX D3 hard disk recording systems. It offers on-screen cutting and pasting, as well as time-stretching, audio reverse, normalising, and sample rate conversion using an FIR filter. Contact the Yamaha-Kemble Information Line on (01908) 369269 for more information.
- After System 7.5, the forthcoming new System, codenamed Copland, and likely to be known by the



much more predictable name of System 8.0, has started to undergo the 'sneak preview' stage that seems to be the way that software is hyped these days. Mac Developers have been shown early versions, although the full release will not be ready until at least mid-1996. Expect major changes to the look of the interface, including much more sophisticated Open/Save dialogue boxes, and lots more built-in customisation as standard. Multi-tasking, although partially present, will apparently still only be fully implemented in System 9.0, codenamed Gershwin — and that will be some time in 1997.

new 'Audio to MIDI', and 'MIDI to Audio' conversions do exactly what they suggest — convert a monophonic digital audio track into MIDI information, which can then be edited, and then convert it back to audio with the changes incorporated. This allows users to manipulate the audio information as if it were MIDI

- Opcode's recently announced *Studio Vision Pro* version 3.0 has some fascinating new features. As well as the new DSP menu and functions, the



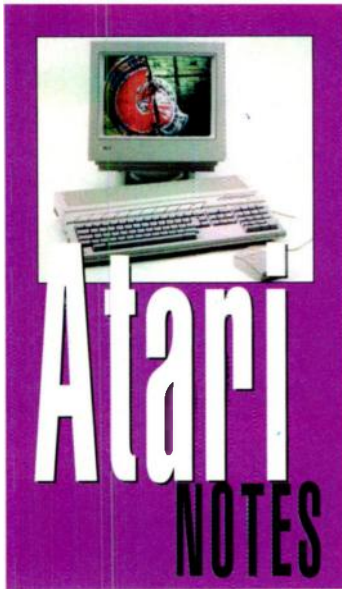
data. The screenshot shows the audio original, the extracted note information, and the pitch bend information. Check out a demo as soon as possible!

square waves — you just specify the pitch and the duration, although you can also programme a complete sequence of notes. The 'four tone' synth is more complex; it plays back looped single or multi-cycle waveforms in up to 4-note polyphony. There are only 256 sample points in the loop, so the length of samples is very short, but producing four sounds at once is quite processor-intensive, especially for Macs which do not have the Apple Sound Chip. Finally, the 'free form' synth just replays a single sample, although this time the length is limited only by available memory.

The Sound Manager replaces the ROM-based Sound Driver in more recent Mac systems. It supports the same synthesizers, but also provides a way of specifying sounds with a resource: the

control information. AIFF files can contain a number of different types of chunk. The 'Common' chunk describes parameters like the length and sample rate of the sample. There are also 'Sound Data' chunks, and specialist chunks which can hold markers, additional parameters, MIDI information, AES/EBU format audio data, and other application-specific information. The audio data can be up to 32-bit, and is stored as linear, 2's complement data. Although 32-bit data uses four bytes per sample, the format allows less bytes to be used for smaller numbers of sample bits: three bytes for 24-bit, and two bytes for 16-bit (or less) audio samples.





Need to expand the MIDI side of your system? VIC LENNARD looks at the current situation, including a couple of new boxes...

It's an unfortunate fact of life that the idea of multitimbrality hadn't been thought of back in the early '80s, when MIDI was first created. The serial nature of MIDI has been well documented, as have the delays that can occur through the stacking up of MIDI events at a MIDI Out. The limitation of 16 MIDI channels can be felt as soon as you have a couple of multitimbral sound modules; two such devices require 32 independent MIDI channels to function properly. The solution is to provide more MIDI Outs.

As soon as sequencer manufacturers began to be aware of this drawback, add-on devices started to appear with extra MIDI Ins and Outs, as well as other features. The cartridge port tended to be used, as a device could then either incorporate or hold a copy protection dongle. C-Lab offered Unitor, while Steinberg designed Midex+. Both units offer a number of extra MIDI ports (Ins and Outs), plus a SMPTE timecode generator and reader for sync (the standard Midex excludes the SMPTE feature).

C-Lab also designed the rather flawed Xport device, which provided three extra MIDI Outs from the ST's serial port. This led to a number of very similar boxes that provide a single extra MIDI Out from this port, including Club Cubase UK's



ModemMIDI and 16+ both offer an extra MIDI Out from the ST's serial port.

modules are particularly bad at coping with lots of data at their MIDI In. A module has to process this data *before* it can realise that the contained information is of no use at all because it's on a different MIDI channel to those it has been set to receive.

A MIDI patchbay solves this kind of problem, but also puts a hefty dent in your bank balance. Even a single additional MIDI Out (which will set you back around 30 quid) can help, in that it provides you with 32 MIDI channels, and two independent MIDI signal paths.

PARALLEL PERFORMANCE

But a single MIDI Out provides scant satisfaction for anyone with even a fairly modest MIDI setup, and none of the serial port devices work with the Falcon. The solution is to use the most standard socket on the ST, namely the parallel printer port. This has lots of advantages in terms of speed and reliability, and no drawbacks, aside from the inconvenience of continuously plugging and unplugging leads if the MIDI expansion unit lacks a printer thru port.

Two non-sequencer manufacturer devices currently exist: SoundPool's MO4 and the Friend•chip MM1.

SOUNDPOOL MO4

SoundPool will be well known to many of you as the company behind Steinberg's Falcon add-ons: the FA8 eight-analogue output unit and the FDI Falcon Digital Interface (both mentioned in July 1994's Atari Notes). SoundPool actually sell their own versions of the Steinberg boxes — SoundPool's are green while Steinberg's are red in colour.

The MO4 is a neat little box, being smaller than a cigarette pack. Requiring an external 7.5-volt power supply, it connects to either an ST or a Falcon through the printer port. Unfortunately, there's no printer thru port, so the



SoundPool's MO4 — four additional MIDI Outs means 64 extra MIDI channels...

ModemMIDI and Hands On MIDI Software's 16+. Both of these are still available, and work with a number of sequencers, including *Cubase*, *Creator*, *Notator*, *Breakthru Flus* and Hollis Research's *Trackman*.

ADVANTAGES

I could probably write a book on the advantages of adding to the ST's single MIDI Out, but the main reason is to have enhanced control over the path travelled by MIDI events. For instance, let's imagine that you're using an organ patch with heavy modulation, or a lead synth sound with lots of pitch bend. All MIDI data flows to every device in a standard, single-MIDI Out system — and tests have shown that multitimbral sound

ABOUT THE AUTHOR

Vic Lennard has been an Atari enthusiast since 1987. He is currently editor of both *Atari World* and *Mac Action* magazines, runs Club Cubase UK along with Ofir Gal, and is author of *The MIDI Survival Guide*, available from the SOS Bookshop.

above-mentioned hassle of changing leads comes into play. A tenner or so will buy you a switch box, and this is probably essential, unless you want to run the risk of fracturing some of the parallel port's solder joints.



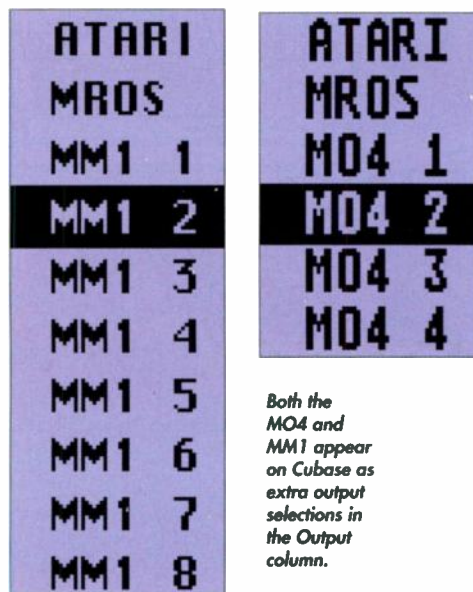
The MM1 comes complete with a desk accessory for printer port control.

Currently *Cubase*-specific, the MO4's included floppy has the necessary M•ROS driver, a small file that effectively 'tells' *Cubase* to send data to the printer port if requested. How? By making the relevant selection from *Cubase*'s Output column. Using this along with the ST's MIDI Out gives you 80 MIDI channels at a cost of £149.

FRIEND•CHIP MM1

You know what they say: owning multitimbral sound modules means never being able to say you've got enough MIDI Outs! Even with five outputs courtesy of the MO4, you may *still* find that you need additional MIDI hardware, such as Switch and Thru boxes.

This is where Friend•chip's MM1 comes in. This eight-MIDI Out device also connects via the ST's printer port, and adds an extra 128 MIDI channels to your setup. It is fairly small (about eight inches by five), and requires a 9-volt AC adaptor for power.



Both the MO4 and MM1 appear on *Cubase* as extra output selections in the Output column.

The MM1 has three modes. Bypass allows for normal use of a printer connected to the thru port at the rear, MIDI is the standard mode that gains the extra outputs, and Control allows you to switch between MIDI and printer via an included desk accessory. Neat.

ST and Falcon installations are provided on the disk, both of which are for *Cubase*. Again, the MM1 appears as extra outputs in the pop-up menu of the Output column on the Arrange page.

At £299, the MM1 isn't cheap, but as the only alternative is a patchbay (with all the complexities and problems one of these adds), and the MM1 appears to behave impeccably, you now have a decent option.

WHY ONLY CUBASE?

Anyone reading this may feel that I am biased towards *Cubase* (after all, I do co-run Club *Cubase* UK!) — but the only software driver supplied with both the MO4



Friend•Chip manufacture the StarPort for Geerdes, but the MM1 is technically and physically identical.

and MM1 is solely for *Cubase*, and the units will not currently work with any other sequencer. That is not to say that these MIDI expansion boxes *can't* be used with any other program, simply that no-one else supports them, apart from Geerdes who have a custom version of the MM1 called the StarPort. This is technically identical to the MM1, but has a software driver for the Geerdes sequencers.

Emagic has partially solved the problem by providing the Log 3 (a four-MIDI output device) with the *Notator Logic* pack, but they don't support any parallel port devices at the moment. As all of the named companies are based in Germany, perhaps this will change in the future...



CONTACTS

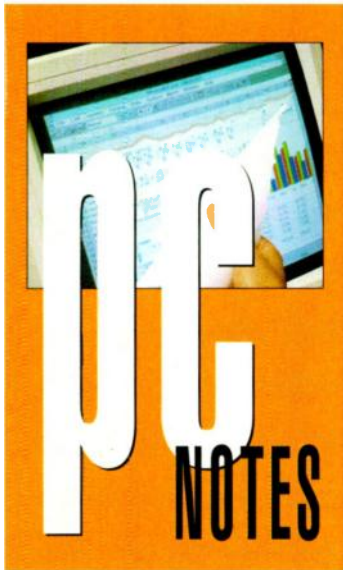
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BRIAN HEYWOOD
brings you the latest
PC soundcard
developments, and
reports back from the
recent APRS and
Multimedia shows...

The heat generated by Stephen Bennett's hard disk recording article in SOS's June issue shows some of the pitfalls of basing your technological outlook on anecdotal evidence — it's very easy to say that a piece of equipment is good or bad from the advice of existing users. I once suggested in a jocular article a new disease called 'vendo-centricity' to explain some computer users' bizarre claims that their chosen platform is silicon heaven.

However, it's not difficult to see why this should be so when any computer system still costs a relatively large amount of money. Few things are more certain to make you feel like an absolute prat than spending a large sum of money on a system and then having to admit, as Stephen did, that "crashes are a regular occurrence".

You may think that I'm being a bit smug, because I've been using a SADiE system for three years and a Soundscape SSHDR1 for six months with nary a crash, but all my chickens came home to roost when I tried to upgrade one of my studio PCs from a trusty (but tardy) 486SX/33 to a racy 486/DX4. Basically, the thing refused to work, and though I did finally track down the problem to a dodgy processor chip, I managed to waste a week of precious time in the exercise.

So, what's the solution? It would be nice to consign all this technological baggage to the nearest skip. But when it comes down to it, the facilities you gain from technology are so useful, that going back to the 'old ways' doesn't really appeal. The best way to protect your sanity is to act like an optimist, but think like a pessimist. By all means, look at what you can get out of the latest gadgets, but expect the worst and you won't be surprised. And once you've got something that works, think very hard before you change it.

OUT AND ABOUT...

It's nice to get out of the studio every now and then and meet old friends (and maybe make new ones) at the various shows that litter the summer months. I dropped in on two shows this month, the Audio Technology and

Multimedia shows to see what was new and exciting.

The APRS show — Audio Technology '95 — was a fairly quiet affair this year. The only real excitement was generated by Yamaha, who launched their new O2R ProMix digital mixing system [as reported on page 24 of this issue — Ed]. The only computer interest in this product is the potential use of a personal computer — sadly, only an Apple Mac for the foreseeable future — to archive the ProMix O2R's internal settings via MIDI.

The Multimedia show was also fairly quiet, and most of the interesting new releases were concerned with the use of live video on the PC. For instance, Vine Micros (01843 225714) were showing a budget video editing system which allows you to use your PC as a video edit controller, handling two or three domestic video machines. Vine also previewed a device for 'printing' video to tape from your computer monitor, and announced a new non-linear video editing system that will retail for less than £1,000.

MORE YAMAHA NEWS

Yamaha's foray into the world of PC soundcards wasn't on display at the APRS show, but their two new cards deserve a closer look. The extremely well-specified SW20 card has some interesting features, such as a phantom-powered microphone input and a RAM wavetable, in addition to the OPL4 ROM sounds. Gamers will presumably be content with the 100% games compatibility, but those of a musical bent will no doubt be more interested in Yamaha's reputation for sound quality. Other features include a number of built-in DSP effects (including reverb, chorus, pitch-shifting and surround sound) and a programmable DSP, giving the possibility of future software upgrades to add more effects.

CYBERSPACE CORNER: REAL-TIME AUDIO ON THE NET

While it's not really a multimedia medium (yet!), the Internet's World Wide Web (WWW) does have the potential to become a 'real-time' conduit of audiovisual information. The main problem is the lack of bandwidth — by which I mean the amount of information you can stuff down a wire! For example, a net surfer with a 14.4 Kbaud modem will have a maximum data throughput of around 1.5K per second. Since CD-quality audio requires around 175K of audio to be transferred per second, you can see that there is quite a shortfall.

Even systems like Cerberus, with clever compression schemes, still can't hope to give anything like real-time replay, so getting audio from the net is very much a matter of downloading an audio file and then replaying it. This means you have to be pretty sure

you want to hear a sound bite before you spend the time (and phone charges) to download it. One company that is working on getting around this problem is Progressive Networks, based in Seattle in the US. Their Real-audio system allows voice-quality audio to be played in real-time using any modem that is capable of a connecting to the WWW at a minimum of 9600 baud.

The quality isn't brilliant on my 14,400 baud Sportster modem, but undoubtedly it will get better as the speed of the modem links improves. If you want to check out the system, you can register to

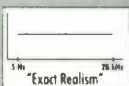


The Real-audio system allows you to hear audio (like this Mötley Crüe interview) in real time.

become a beta tester of the Real-audio player software by pointing your web browser at: <http://www.realaudio.com/>

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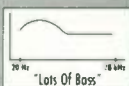
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► If you already have a soundcard which can handle a WaveBlaster-type daughter board, the DB50XG board provides a cheaper alternative to the SW20 ISA-based card. Although the former doesn't have the RAM wavetable of the SW20, it does have a comprehensive filter section, and three independent DSPs to allow editing of the onboard sounds — for example, you can apply effects and filtering to individual drums in any one of the 21 internal drum kits.

Both packages will come bundled with software including *CakeWalk Express* and applications specific to each of the cards. Priced at £149 for the SW20 and £129 for the DB50XG daughter board, these look like extremely competitive products for the PC-based musician. For more detailed information, call Yamaha's brochure line on 01908 369269.

It is interesting that Yamaha have chosen to enter the soundcard market so soon after the introduction of VL technology into their musical instrument

taken the audio replay sections off their popular UltraSound Max to give an 'output only' soundcard.

You can use the card as a 'stand-alone' MPC sound card if all you want to do is add 16-bit digital audio replay and a wavetable-based MIDI synth to your MPC Windows set-up. This could be a very attractive option if you already have the facilities for recording high-quality WAV files (say a hard disk recorder like SADIe, Soundscape or Session 8), or if you just want to be able to play MPC sounds on a PC (say as part of a display system). The fact that the card doesn't have an external MIDI or CD-ROM interface means that the card should be simpler to install, and less prone to the kind of clashes that you can get in a PC using lots of other expansion cards.

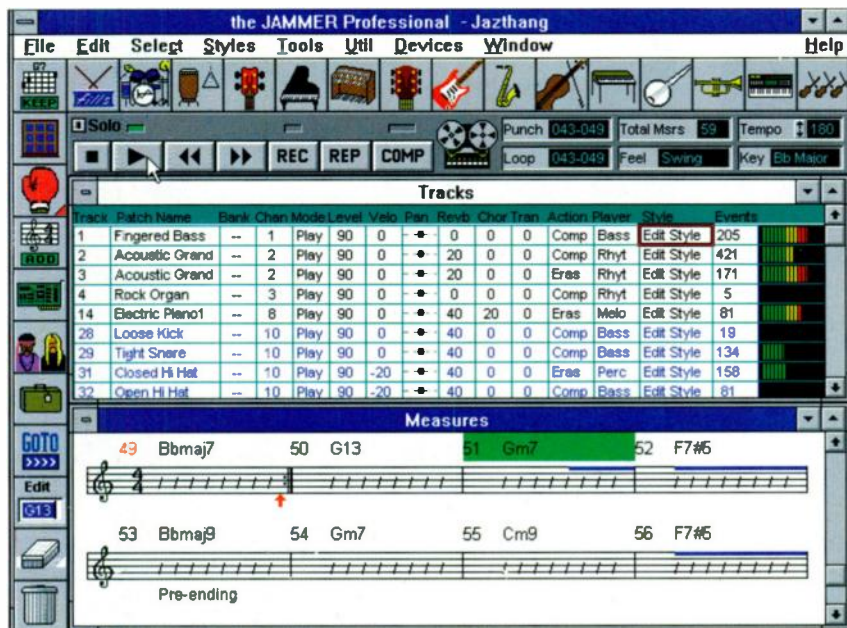
The card comes loaded with 512K of RAM which can be upgraded to 1Mb by the addition of another chip. The digital audio replay is 16-bit stereo, and allows sample rates up to 48kHz. The card has a single line input and output on the backing plate, which both use the familiar 3.5mm stereo jack connectors, allowing you to 'daisy chain' the card with your existing soundcard. As the ACE only has a line level output, you must either use powered speakers or an amplifier, but this is a positive advantage if you want to use the card in a recording environment, since the audio quality will be improved. The only additional feature I'd like to see is the ability to connect the audio output of an internal CD-ROM directly onto the card. The RRP of the card is just over £115, but you should be able to find it for less than this if you shop around. For more details about the ACE, contact Koch Media on 01252 714340.

THE JAMMER

Et Cetera Distribution now have stocks of the new version (2.0) of *The JAMMER Professional for Windows*, a combined 256-track sequencer and auto-accompaniment application that allows you a lot of control over how your music will sound. Unlike *Band In A Box* (at least the version I have), *The JAMMER* lets you select and 'freeze' the computer-generated backing for different sections of the song, allowing you to mix and match styles, and select between the program's efforts for a particular section of the backing tracks. Other advanced features include melody and harmony generators, and advance information suggests that there are over 200 new styles. Both melodies and chord sequences can be imported as MIDI files, and can even be modified by the program to introduce variations into the original material.

When your piece is complete, you can use the application to generate a standard MIDI file, print out a lead sheet with lyrics (ie. a chord chart) or simply play the song using your PC's soundcard or external MIDI devices. *The JAMMER* can send MIDI clock, so you can even synchronise external MIDI devices to it, or, if you have enough MIDI ports or *MIDI Master Plus*, you can record the result on another sequencer. To find out more, contact Et Cetera on 01706 228039.

SO



The Jammer Professional for Windows combines the attributes of an auto-accompaniment package with that of a fairly basic 256-track sequencer.

range. I wouldn't be surprised if a little further down the road Yamaha were to release at least one soundcard that uses their VL 'physical modelling' technology to give the first major advance in MPC soundcards since the introduction of wavetables. With any luck, the new Yamaha cards should shake the increasingly boring PC soundcard market.

ACE IN THE GRAVIS PACK

While we're on the subject of soundcards, if you've ever fancied having a play with a soundcard that has a RAM-based wavetable without going to expense of getting a Turtle Beach Maui or SoundBlaster AWE, you might like to consider looking at the new UltraSound ACE from Gravis. The card has been designed to allow you to add RAM-based wavetable technology to your PC if you already own a perfectly adequate 16-bit Windows MPC soundcard. Gravis have essentially

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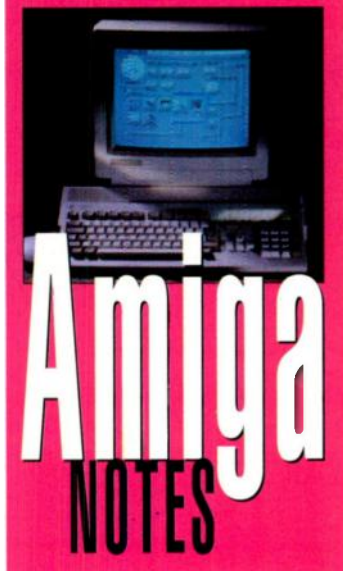
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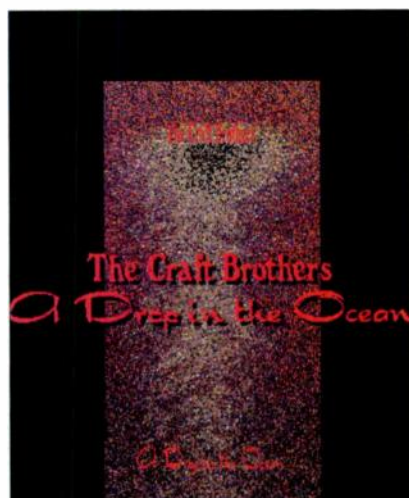
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PAUL OVERAA's
 monthly look at the
 Amiga scene kicks
 off with the latest
 Escom news...



The Craft Brother's Drop In The Ocean CD was sequenced using Amigas running Music X!

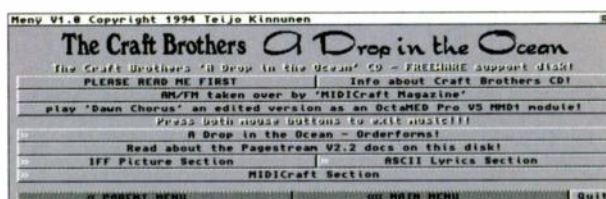
Amiga users in general are clearly over the moon about Escom's rescue package [see last month's *Amiga Notes* — Ed], and all the signs are that the recovery of the Amiga in the marketplace will be swift. Escom have a factory in China set up for Amiga production, and have said that the existing range of machines will be back on the shelves within three months (in time for those all-important Christmas sales). With around 250 UK retail outlets likely to come on stream (Escom have recently purchased the Rumbelows chain), and the company stating that they are very happy to sell through independent retailers, the Amiga's future looks much safer than it has done for ages. The situation concerning Escom's CBM UK connections, however, is still unclear at the time of writing (the end of June). It seems as though a new UK company called Amiga Technologies is being set up, but nobody is saying whether all, some, or none of the existing CBM UK staff will be moving to the new company. By this time next month, of course, all will have been revealed!

There's no doubt, incidentally, that Amiga software developers are very enthusiastic about the overall situation. New products (previously frozen until the Commodore fiasco was sorted out) are being dusted off and readied for release. There are a number of new Amiga books already in the pipeline as well. The race now is to get all of these into the shops over the next couple of months, so that there will be plenty of new products to sell with the new machines.

AMIGA CD NEWS

There have been a couple of quite different CDs released recently that are likely to be of particular interest to Amiga musicians. One is a CD-ROM sound/music collection, called the *Terra Sound Library*, which provides a ready-made selection of Amiga-oriented music material.

Needless to say, there are an awful lot of sound samples (about 265Mb) on the disk, with everything from short dings to larger pieces grabbed from the soundtracks of motion pictures and TV series, such as *The Muppets*, *Star Trek*, and *Monty Python*. There are also hundreds of MIDI files, utilities (including player and composer programs), and a collection of demos on disk. If you are new to the Amiga music scene, and are looking for a way to build up a sample library quickly, this disk is certainly worth examining. The *Terra Sound Library* costs £19.99, and is available from PD Soft (Tel: 01702 466933).



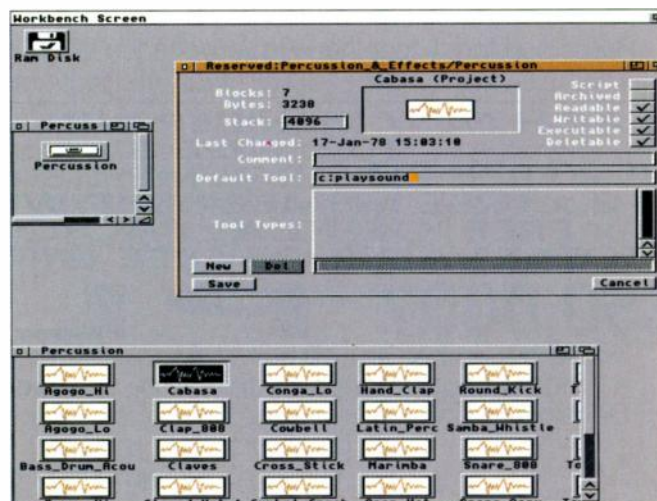
The Drop In The Ocean support disk provides useful background information for Amiga musicians.

The other disk with a strong Amiga connection is an audio CD produced by Kevan and Gareth Craft. As well as being the authors of countless tracker module songs, PD utility and sample disks (and publishers of *MIDICraft*, the disk-based magazine), Kevan and Gareth have now found time to produce an audio CD called *A Drop In The Ocean*. This 12-track offering of original material shows exactly what it is possible to do with Amiga sequencing software — all tracks on the album were sequenced using Amigas running *Music X!* *A Drop In The Ocean* costs £10.99, and a public domain support disk is also available, containing song lyrics in various forms, docs, and pictures, along with an *OctaMED* version of one of the CD's instrumental tracks. You can obtain more details from Seasoft Computing on 01903 850378.

SAMPLE PLAYING BLUES

I've had a couple of letters recently from people wanting to know how they can make their IFF sound samples play by double-clicking on their icons. The first thing you need is a 'command style' sample-playing program. I use *Playsound* which is part of the software that comes with Ramscan's *Audio Engineer* package, but there are various pd utilities (for example *SuperSound*) which can also be used.

The idea is to place the sound playing program in your c: directory and then make that sound playing program the default tool for all of your sound sample icons. To do this, just select each icon, pick Information from the Workbench's Icons menu, type the player program name into the requester that appears, and save the changes. If you do that for all your sound samples, you'll be



To get sampled sounds to play from their icons, make the player program the icon's default tool

able to open your samples window and play any of them just by double-clicking on their respective icons. This is far more convenient and flexible than loading samples into a menu-based player program, especially if you have a hard disk machine, because the number of samples that you can access in this way will be limited only by the capacity of your hard drive!

MUSICAL AREXX

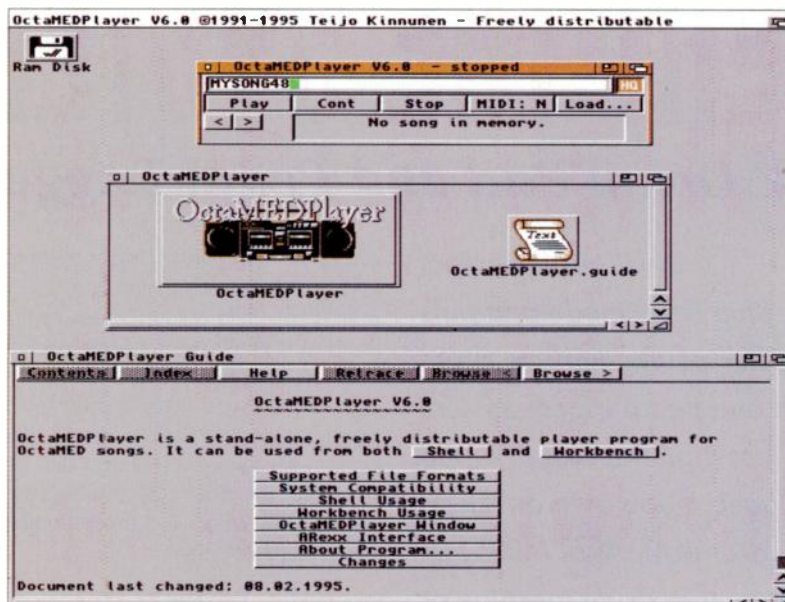
Now that ARExx is part of the Amiga's system software, its popularity is growing, so I thought it would be useful to mention one music-related use of this scripting language that would be quite easy to experiment with — namely the remote ARExx control of *OctaMED* tracker song modules. The freely-distributable *OctaMEDPlayer* program which comes as part of the *OctaMED Pro* tracker sequencer package includes a set of ARExx commands suitable for almost all music and multimedia control applications (see the 'OctaMEDPlayer ARExx commands' below for details).

To start the *OctaMEDPlayer* program running from within an ARExx script, the AmigaDOS Run command can be used. You do, however, need to follow this with a WaitForPort command, because the loading of *OctaMEDPlayer* takes time, and it is necessary to pause the script until the player is actually up and running (otherwise its ARExx port will not be found). The following script fragment asks ARExx to start up the player program, executes the WaitForPort utility and, once *OctaMEDPlayer* is active, logs into its communications port:

```
address command 'run OctaMEDPlayer'
address command 'WaitForPort OCTAMEDPLAYER'
address 'OCTAMEDPLAYER' /* speak to player program */
```

(note that the port name for the *OctaMEDPlayer* program is, as you might expect, called OCTAMEDPLAYER).

From this point on, all commands for external programs will be sent to the *OctaMEDPlayer* utility. So if, for instance, the *OctaMEDPlayer* program was in the c: directory, and we wanted to load an



OctaMED module called 'mysong' from drive df0: it would be done by issuing the instruction 'loadmod df0:mysong'. This could then be played simply by issuing a 'Play' instruction. Put all this together, and you end up with a script looking like this:

```
address command 'run c:OctaMEDPlayer'
address command 'WaitForPort OCTAMEDPLAYER'
address 'OCTAMEDPLAYER' /* speak to player program */
'loadmod df0:mysong'
'play'
```

And that's basically all you need to tell the *OctaMEDPlayer* to load and play a song module. Try running this script with your own songs, and, once you're happy with the basic ideas, start experimenting with some of the other commands that are available. Because of its small ARExx instruction set, the *OctaMEDPlayer* program is extremely easy to learn how to control — so if you are new to ARExx, and fancy playing around with some example scripts that actually do something useful musically, this utility provides a very good place to start!

OctaMED Pro's player program provides a good place to start learning about the remote control of programs using ARExx.

OCTAMEDPLAYER AREXX COMMANDS

- **PLAY** Plays the current module.
- **PLAYALL** Plays all songs of a multi-song module.
- **CONT** Continues playing.
- **STOP** Stops playing.
- **LOADMOD** Loads a song module.
- <filename>
- **SONGNUM** Selects a multi-song module song number.
- <song number>
- **GETSONGS** Returns the number of songs in current module.
- **QUIT** Closes down the *OctaMEDPlayer* program.

AMIGA NEWS IN BRIEF

• TRUE FAITH

It's not just Escom who have shown faith in the Amiga of late. Paradigm Data Systems are fully convinced that, as it is relaunched, the Amiga will quickly again establish itself as the only real 'power' computer available at an affordable price. They are, in fact, so confident about this that they're launching a new division dedicated purely to Amiga software development. With the emphasis on both games and creative applications, the company are keen to establish contacts with professional programmers, PD authors, graphics artists and so on, with a view to nurturing new and existing talent. If this

sounds like your cup of tea, why not contact Paradigm on 01633 450292 for further details.

• IMAGINE THIS!

Imagine v3.2 is now available, and subscribers of the constant upgrade program (priced at £99) should already have received their new version. Both *Imagine* and the 'constant upgrade program' are available from Creative Technology (0181 7158866).

• ZAPPO CD-ROM PRICES ZAPPED

Indi Direct have slashed the price of their Zappo CD-ROM unit from £199.99 to £159.99 — and they are also packaging

the new VII.2 software with each unit now sold. These types of cuts are in response to the dropping prices of CD-ROM drives in general, forced about mainly by pressure from the PC marketplace. This is good news for Amiga owners, who in the main have been paying more than they should for CD-ROM drives. More details from Indi on 01543 419999.

• CYBERVISION CLOSE TO RELEASE

Phase 5 have announced that their 64-bit CyberVision graphics board will hit the Amiga marketplace shortly. It's a Zorro III card with a high-speed 64-bit blitter, and could well be the fastest Amiga graphics card yet produced. Thanks to

the driver software, CyberVision is said to integrate totally with the Amiga's operating system, allowing true 24-bit screen resolutions (up to 1600 by 1200 pixels). One special feature of this card is that it has hardware support for Planar to Chunky conversion (it is this conversion task that effectively slows down many other graphics cards).

Two models are being supplied: a 2Mb version which will cost £329.95, and a 4Mb offering which comes in at £439.95. Both products are being supplied with *Photogenics Light* — a special version of Almathera's brilliant *Photogenics* package. For more details, contact Gordon Harwood Computers on 01773 836781.

BEAT THE SYSTEM

DIY Drum Pad and Pedal Triggers

PAUL WHITE enters Blue Peter mode and puts together a fully working drum pad and pedal trigger system for less than the cost of a pint of lager. If you own an Alesis D4, drumKAT, Akai ME35T or any other drum machine or percussion controller that accepts external pads, you can't afford to miss this.

A deeply anonymous guitarist once said that drummers are the kind of people who throw their used underpants at the wall and wear what doesn't stick. It came as no surprise, therefore, that an equally anonymous drummer later described guitarists as the sort of people who throw their used underwear against the wall and wear it whether it sticks or not. Neither of these statements has a direct bearing on the rest of this article, but with a subject as ruthlessly practical as this one, I thought it might help get you into the right frame of mind!

The great thing about the Alesis D4 drum machine (and similar devices) is that you can plug in your own drum trigger pads and bash away just like a real drummer, instead of having to enter drum parts from a keyboard (which is

almost, but not quite, as hard as trying to enter keyboard parts from a set of drums!). The less than great thing is that decent commercial drum pads don't come cheaply, and if you're not likely to need them very often, they probably don't come very near the top of your Christmas list. The alternative is to build your own — but before you protest that DIY isn't your thing, the projects described here are very simple, they work, and they're ridiculously cheap to put together.

THE DRUM PAD

I know that everyone hates cutting circles out of wood, so the drum pads can be made using old table mats or large drinks coasters. It doesn't really matter what shape they are, so long as they are big enough for you to hit. The pickup is a piezo transducer available from Maplin Electronics for little more than the cost of a Mars Bar, and to make the playing surface a little more comfortable, a piece of thin rubber matting (from a car mat or a vandalised hot water bottle) can be stuck on top using contact adhesive. The pickup is best fixed with silicon rubber, but contact adhesive will do at a pinch.

One problem common to all piezo drum pads is that when you hit one, the vibration may cause the one next to it to trigger. I got around this by using foam rubber spacers (one to two inches thick) to support the playing surface. The base of the pad is another table mat, and if you plan to leave them loose on a table top for playing, I'd recommend you fit stick-on rubber feet to prevent them slipping. If you want to mount several pads on one board, put another thin piece of foam rubber beneath the pad bases and your board to

MATERIALS

PAD

- Piezo pickup YU87U (Speakers and Sounders section of the catalogue — Tel: Maplin Credit card sales on 01702 554161).
- Rubber mat.
- Table mats (two per pad).
- Foam rubber.
- Contact adhesive.
- Silicon rubber adhesive.
- Jack socket.

Hinge.

- 10 or 12mm ply.
- Rapid Araldite for rubber stops, striker and wood.
- Jack socket.
- Large eraser.
- Spring.
- Strap.

PEDAL PAD

PEDAL

- Piezo pickup YU87U (Speakers and Sounders section of the catalogue — Tel: Maplin Credit card sales on 01702 554161).
- Foam rubber.
- Contact adhesive.
- Silicon rubber adhesive.
- Jack socket.

- Piezo pickup YU87U (Speakers and Sounders section of the catalogue — Tel: Maplin Credit card sales on 01702 554161).
- Quarter-inch neoprene foam.
- Table mat or quarter-inch plywood square.
- Contact adhesive.
- Silicon rubber adhesive.
- Jack socket.
- Insulation tape.
- Half-inch ply.
- 3 by 3 timber.

provide further isolation between adjacent pads.

You do need to be able to solder a couple of wires onto a jack socket, but you don't have to solder leads onto the transducer, because the ones recommended come with the wires already attached.

BEATERLESS PEDAL

Moving onto the pedal, this works on exactly the same principle, except that instead of hitting a pad, a rubber striker hits the back of the transducer directly. This time you *will* have to saw some wood, though the actual dimensions of the pedal are not critical, providing it's comfortable to use. The moving part of my own pedal is about 10 inches long by four inches wide — 10 or 12mm ply is ideal. The pedal should have around one inch of travel, and a strap should be fitted as shown in the diagram to prevent the pedal opening too far. I used a piece of plastic packing band from a parcel to make a strap, but you could use leather, fabric, or even a strip cut from a Squeezy bottle if you're after true authenticity.

The choice of spring is important, as it should be quite weak; the one used on the prototype was obtained from a hardware shop, and is around 1 inch in diameter and 4 inches or so long when uncompressed. At a pinch, you could probably make your own from piano wire; as long as it is able to return the pedal to the starting position fairly smartly, it will do the job. Because I counterbored the wood using a 1-inch wood bit, the ends of the spring are quite secure without the need for further fixing.

The piezo transducer is glued brass side up to a small piece of foam rubber, and arranged

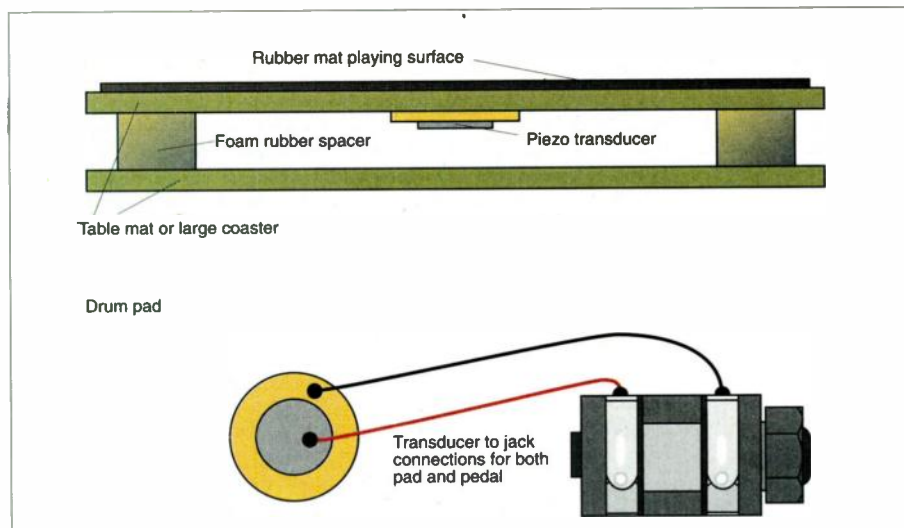


Figure 1: The DIY drum pad.

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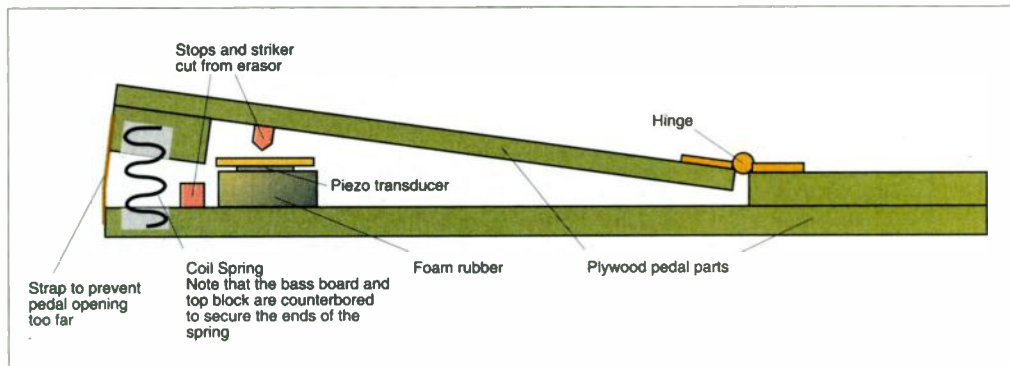


Figure 2: The Bass Drum pedal.

▶ so that when the pedal is fully depressed, the transducer and foam are pushed down around an eighth of an inch. The output from the piezo transducer depends on how hard it is struck, so both the pad and pedal are velocity-sensitive. For best results, you may have to adjust the sensitivity of your drum machine or trigger unit, and if you're still not getting enough output, try sticking a drawing pin into the end of the rubber striker. Figure 1 shows how both the pad and pedal are put together, and as you can see, neither is a great feat of high technology. To prevent the pedal slipping, you may want to fit a couple of spikes. If you're really sophisticated, you could buy a pair of 'fit-it-yourself' hi-fi speaker spikes, but if you're into low-tech solutions, bang a couple of nails through the base board, so that the points just protrude!

BEAT IT

Because the pedal described above doesn't have a beater, it inevitably lacks the responsiveness and bounce of a real pedal hitting a real drum, and while this may not matter to the keyboard player wanting to enter the odd drum part, it might not be considered 'fast' enough by drummers. In this case, a pad system that can be played using a conventional bass drum pedal may be a better option.

The pad shown in Figure 3 is based on the same piezo pickup used in the drum pad and pedal, and, again, may be used with just about any pad-to-trigger converter or drum machine with trigger inputs. Because the pad has to withstand the full force of a mechanical pedal, the transducer is mounted rather differently than in the previous examples, but in constructional terms, there's nothing too challenging.

A simple half-inch plywood base is used; this provides an anchor point for the pedal, and also gives the required stability. On my version, the base measured around nine inches wide and 14 inches long, but this measurement isn't critical. I was taking no chances with the wooden frame, so I used a couple of bits of 3 by 3 I had lying around, and fastened them together with glue and screws, strengthening the corner with a

gusset made from 3/4-inch timber! Again, the dimensions aren't critical, as long as the top of the upright post comes a couple of inches above the spot where the beater hits.

The pickup pad needs to be fixed to the upright post, so that the beater hits it as near to dead centre as possible, and to afford the piezo pickup some degree of protection while not sacrificing too much in the way of sensitivity, I opted to glue it to a square of quarter-inch ply, and sandwiched this between two layers of 3/8-inch neoprene foam. Once

glued to the post, I decided to take no chances, and wrapped a few layers of plastic insulation tape around the post to make sure nothing worked loose. This also protects the neoprene, and if the tape starts to wear out, it's easy enough to replace.

Tests using my drumKat MIDI drum controller confirmed that the sensitivity was adequate, and because of the layer of foam in front of the pad, the overall

feel was surprisingly close to that of a real drum. Left to its own devices, this pad system will tend to creep along the floor when in use, so it would be wise to fit a couple of spikes to the front edge. No mounting details have been provided for the jack socket, as the user may want to try different options. For example, the jack socket could be dispensed with altogether and a captive lead substituted. The final touch is a spray of matt black paint — unless you want to go for the hand-waxed pine look.

SOS

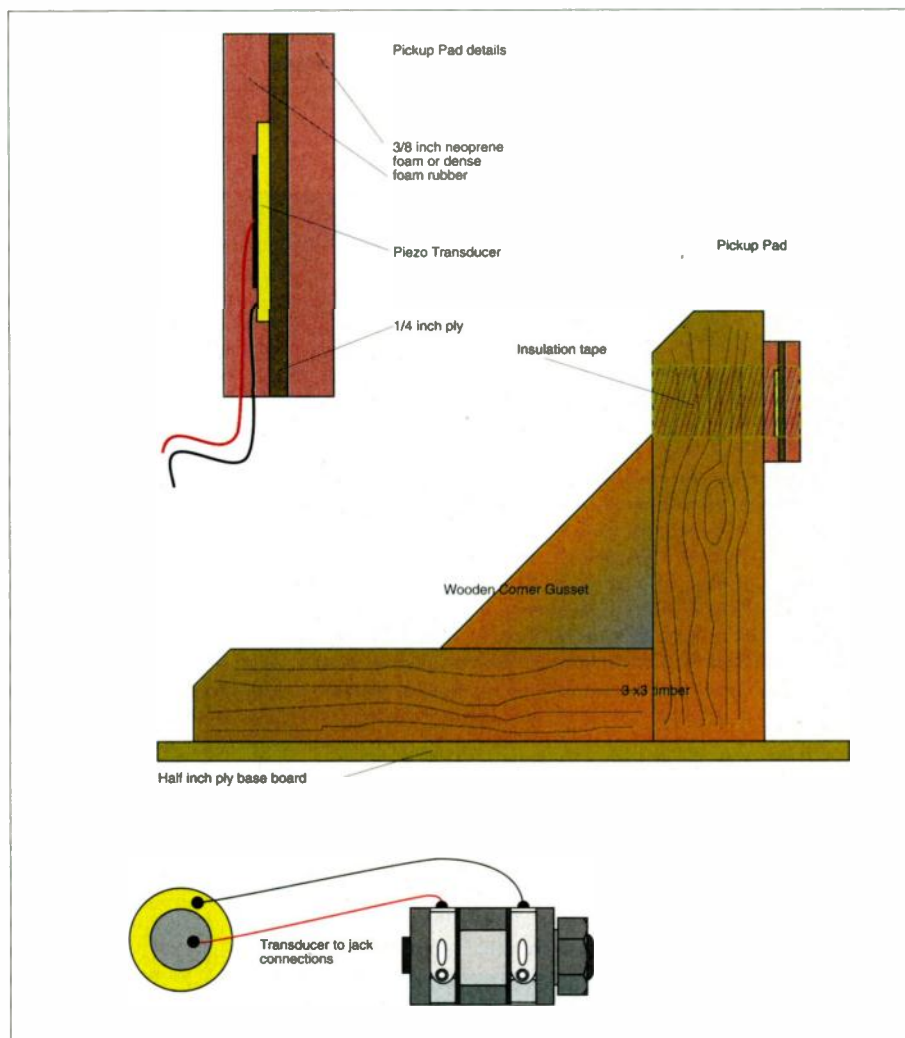
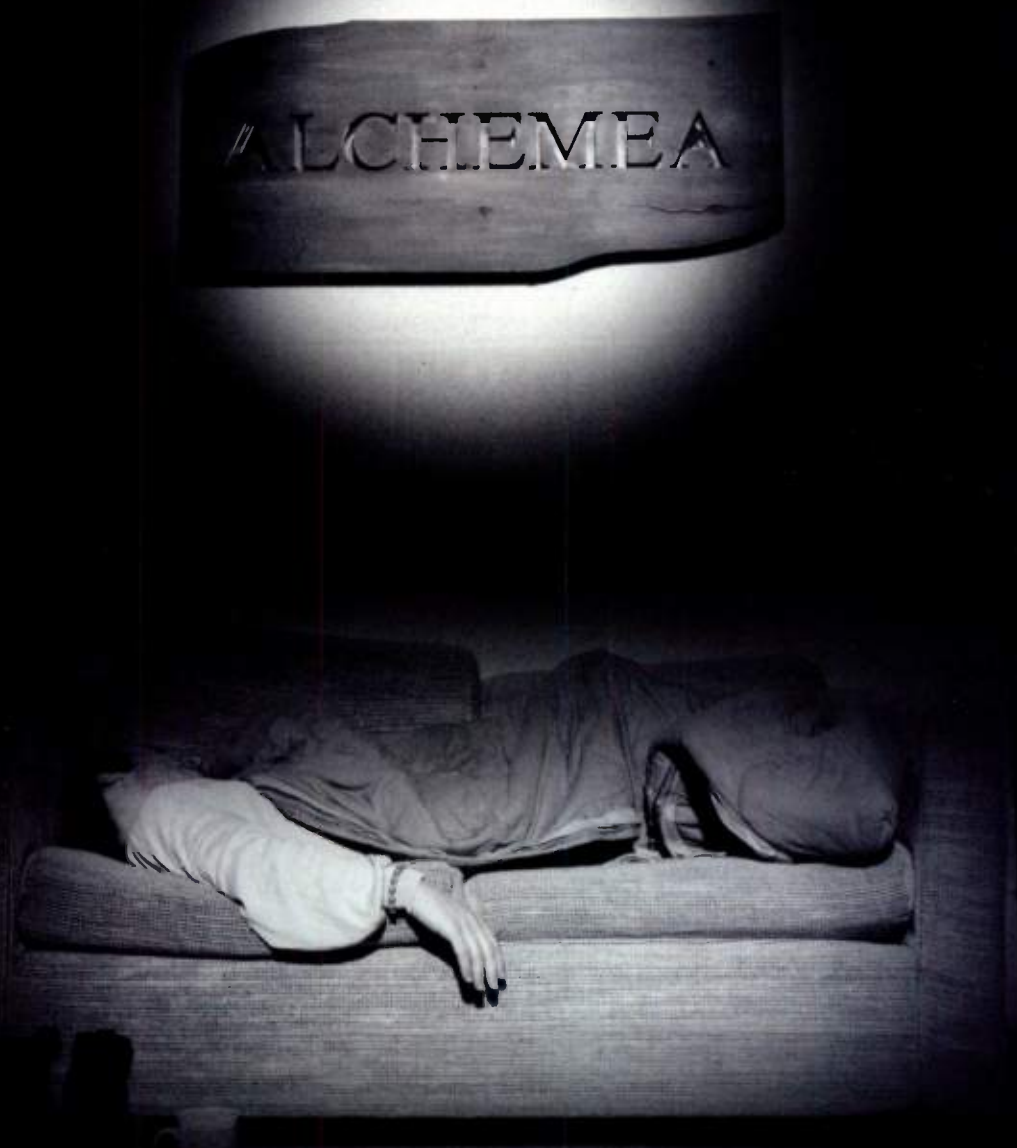


Figure 3: The Pedal pickup pad.

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Small is Beautiful

ROLAND MC202 MICROCOMPOSER

Almost overlooked in the rush of people desperate to get their hands on a Roland TB303, the MC202 is just beginning to find favour with the all-analogue dance crowd. TOM CARPENTER explains why he's never forgotten the diminutive MicroComposer.

The Roland MC202 hardly goes down in synth history as a classic resplendant in the Analogue Hall of Fame on a golden pedestal, but it is a great bass machine, and an excellent source of standard analogue bleeps and squirts. It is a synth that has only recently become appreciated, mainly by those in the dance sector. Users have included The Human League, Vince Clarke, Bomb The Bass and K-Klass, although I doubt it ranks as a

favourite even amongst these self-confessed analogue fanatics.

The MC202 was in production for a mere 17 months, having been released by Roland at the same time as their SH101 synth, back in 1983. The 202 could be described as a keyboardless expander version of the SH101 (assuming you ignore the small, rubbery, Casio VL Tone-like attempt at a keyboard), but unlike the 101, the MC202 includes a two-track sequencer. One of these tracks can play the internal synth section, while the other track (or both tracks) can run external synths via the 202's CV and Gate sockets.

The MC202 can be run off batteries and used with headphones, so it's ideal for working on your latest track whilst you're on the move. Does this make it one of the earliest 'walkstations'?

One of the problems with analogue synths is that they take up so much space for just one (often monophonic) sound. Buy another analogue synth and it's 'hell, where do I put this?'. Most end up on their side, propped up against the wall. Compared to such outsized analogue beasts, the MC202 is conveniently sized. It takes up no more space than this copy of *SOS*, and sits nicely on top of my master keyboard.

THE SYNTH SECTION

The MC202's synth section is almost identical to the SH101's, except that you lose the noise source (shame), and the LFO only has a triangular wave shape (only a problem if you want obscure sounds or effects) — but you do gain LFO delay. Other than that, the 202 has all the same synth controls, laid out in the same logical fashion — the signal is generated on the left by the VCO, moves through the mixer and the filter in the middle, then leaves through the VCA and envelope on the right-hand side.

The controls on offer include triangle LFO with delay, pitch modulation, a 2/3/4/16 octave switch, pulse-width modulation (either manually, via an envelope, or by LFO), sawtooth, a sub-oscillator (a square wave one octave down, and narrow pulse-widths one or two octaves down), a 24dB low-pass resonant filter (with envelope, LFO, and key-follow modulation), a single ADSR envelope, and a choice of a gated or enveloped VCA.

The MC202 will never give you the versatility of a modular synth, and it may not have character like, say, a Minimoog, but it is a cut above the Roland SH09, Moog Prodigy or Korg MS10 for bass. The MC202 sounds very similar to the SH101, as the circuits they have





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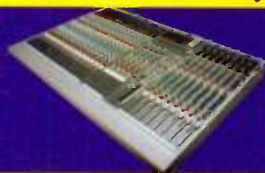
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ROLAND MC202 MICROCOMPOSER

▶ in common are almost identical. Like the SH101, the MC202 is an instant bass machine, producing sub-sonic power which can send your bins shaking with its throbbing, warm pulse-width bass, or the dry-sounding 303 sawtooth sound with a touch (or loads, if you desire) of resonance. You can also obtain the traditional range of lead synth sounds.

THE SEQUENCER

The other half of the MC202 is the sequencer, or, as it is correctly termed, the 'MicroComposer'. The sequencer has two channels, and can store 2600 notes in volatile memory — batteries must be fitted to preserve the sequences! Alternatively, sequences can be backed up onto tape.

Entering and editing sequences is daunting at first, but after a read through the manual and a few trial runs, it becomes clear enough — and it's certainly easier than programming

the Accent can effect either the VCF cut-off and VCA (volume), or just the VCA. This is when you can make the MC202 sound like the TB303, which is expensive, and yet primitive by comparison (see the 'TB Or Not TB' box for more on making the 202 sound like a 303).

Notes can be recorded in real time from an external 1-Volt-per-octave keyboard plugged into the MC202's CV and Gate inputs, following the MC202's metronome. If a mistake is made, or editing is needed, notes and whole bars (or several bars) can be inserted, deleted and copied. Finally, the MC202 has a tape sync in and out, so you can record a sync signal, and synchronise the 202 to your multitrack.

INTERFACING

The MC202 can be synchronised to other Roland equipment, or a suitable MIDI converter that can handle Sync24. The 202 has one Sync24 input, but was designed more to be the master of your setup, having two Sync24 outputs. This is fine if you like programming the MC202, which, although it's easier than on the TB303, can still be a pain.

The MC202 has two sets of CV and Gate outputs; one set can play an external synth, while the other will play the same pattern as the internal synth. CV and Gate inputs are also provided, for recording sequences in real time from an external source, but problems will be experienced using these to play along in real time with another sequencer (via a MIDI-CV converter, for example). The CV and Gate voltages are processed by the MC202's micro-processor, stored in the memory, then played as notes by the 202's own synth. This all takes a finite amount of time, and the response time of the Gate is fairly sluggish; long enough that most people cannot live with it. Also, due to the CV being converted into digital data by the processor, the CV is quantised into semitone steps — so smooth pitch-bend is not possible. Finally, the MC202 has a meagre three-octave range via its standard inputs.

Fortunately, it is possible to have CV and Gate sockets fitted to a MC202 which bypass the processor completely, and trigger the synth section directly. It is also possible to have filter cut-off and portamento control inputs fitted for additional direct manipulation of the internal synth.

PRICES

It wasn't long ago that you could pick up an MC202 for around £100. Few people knew what the MC202 was capable of, and thought that it was just a dodgy sequencer with a dubious built-in synth and a horrible rubber keyboard. However, time passes, and word of this competent little SH101 expander has spread. Now, MC202 prices have caught up with those of their keyboard counterpart, and the MC202 can sell for £200 to £250. They are not in short supply, but are now in demand, like SH101s.

Just about all the MC202s I've come across have been in good condition. Maybe as they do not have a 'real' keyboard, they are not abused like most synths. But as with all second-hand equipment, check that all the sliders and knobs work correctly, and are not too worn or crackly.

If you come across a MC202 whose sequencer does not appear to work, do not despair! If CV and Gate input sockets have been fitted to bypass the sequencer section of the MC202 and tap directly into the analogue circuits, you can use the synth via a MIDI-CV converter, but you lose the on-board sequencer. In this case, check to see if this sort of retrofit has been carried out — if so, that's why the sequencer's not working. Of course, 202s with this retrofit do give you the opportunity to haggle with unsuspecting salespeople; "Oi mate, it don't work. I'll give you a tenner."

So remember, if you have difficulty in finding a TB303 (or just can't afford one), or if you like the sound of the SH101, but want to save some space, try the MC202. I think you'll be pleasantly surprised.

SOS

"Like the SH101, the MC202 is an instant bass machine..."

a TB303. The LCD display is also helpful, displaying note numbers, gate and step times, and other useful information.

To enter a sequence, you just select channel 1 or 2, go into pitch edit mode and enter the notes on the MC202's rudimentary 'keyboard'. You then enter step edit mode to alter the step and gate times of each note. The step value determines, in musical time, when each note is played, while the gate value represents how long the note will play for. The step or gate times can be anything from a whole note down to a 32nd note. Rests can also be entered.

Portamento (the correct, but less cool term for slide) and Accent can also be entered whilst in step edit mode. The Portamento time and Accent level are varied by two knobs, and

TB OR NOT TB: THE MC202 VS. THE TB303

Everyone loves the sound of the TB303 Bassline synth. It does have a certain something that you can't quite put your finger on. But you'll be lucky if you can find one for less than £500 — and that's a lot of money for a synth with only 10 knobs.

This will probably upset the bassheads and 303 purists out there, but few people realise that you can get the MC202 to produce a sound which is very close to that of the TB303, and probably closer than most of the 303 clones on the market. Believe it or not, it's true.

It's just a case of good programming. Don't use any control on the MC202 that the 303 doesn't have. For example, avoid the LFO, the pulse-width, and the

sub-oscillator with shorter pulse widths — and don't use the square and sawtooth waveforms together, as you can only have one or the other on the 303. In addition, don't use envelope modulation or key follow on the filter, and keep sustain to zero. You must also make sure the release time is set to the same as the decay (the 303's decay works more like release), and try to keep the decay and release times short, as the maximum time offered on the TB303 is short in comparison to that on the MC202. Finally, use plenty of slide (portamento) and accent!

If you're still not happy with the results, there are a couple of possible reasons why. Firstly, people love the sound of the 303 because it is such a bugger to

programme. Because of this, people often come up with excellent (and sometimes strange) basslines by pure accident. The other possible reason is the distinctive slide. But hey, the MC202 has portamento too. Just programme a few slides into your MC202 sequence, and hey presto — it's a TB303!

"But the TB303 still has that certain something", I hear you cry. Well, perhaps, but get your MC202 sequence down onto CD, and no one will know the difference except yourself. Given that you can buy two or three MC202s for the price of one TB303, I think it's worth considering — and remember, the MC202 can do much more than just emulate the ubiquitous silver Bassline.



Here's your chance to win this neat, British built 8-buss recording console. In spite of its compact, in-line format, the GSI compares well with its mid-market competition offering full length Alps faders, three-band EQ with sweep mid on all the main mono input channels, two-band EQ on the four stereo channels, four stereo Aux returns, three Aux send controls routable to five Aux busses, full 8-track routing on both mono and stereo channels, eight mic/line switchable mono inputs, global phantom power, master stereo insert points and MIDI In, Out and Thru sockets. And try saying all that without taking a breath! The GSI's advanced features include MIDI muting and MMC MIDI Machine Control, usually found only on more up-market consoles.

Also, unlike most other small mixers, an 8-channel expander module is available for the GSI, which duplicates its first eight channels, providing eight more

mic/line channels and eight Tape Returns.

So, whether you're keen to make high-quality 8-track recordings at home, or you just find the

compactness of the GSI attractive for live recording — answer the following questions, complete the tie-breaker and return your form no later than **September 15th** and you could be the lucky reader to win one. Of course if your entry isn't chosen, don't despair — the GSI is excellent value at only £1056.33, so you could always save up and buy one!

**Prize kindly donated by Harman Audio
Tel: 0181 207 5050.**

Closing date: Friday 15 September 1995

ALLEN &

HEATH GSI

RECORDING CONSOLE

the small print

1. Only one entry per person is permitted.
2. Employees of SOS Publications Ltd, Harmin Audio, and their immediate families, are ineligible for entry.
3. No cash alternative is available in lieu of the stated prize.
4. The competition organisers reserve the right to change the specification of the prize offered.
5. The judges' decision is final and legally binding, and no correspondence will be entered into.
6. No other correspondence is to be included with competition entries.
7. Please ensure that you give your DAYTIME telephone number on your entry form.
8. Prizewinners must be prepared to make themselves available in the event that the competition organisers wish to make a personal presentation.

QUESTIONS

The GSI is:

- a. A split console
- b. An in-line console
- c. A virtual console
- d. A spring reverb unit

2. What does MMC stand for?

- a. Magnetic MIDI Control
- b. MIDI Machine Calibration
- c. MIDI Machine Control
- d. MIDI Management Centre

3. What type of EQ does the GSI have on the main input channels?

- a. Three-band with sweep mid
- b. Swept band with three mids
- c. Four-band, fixed frequency
- d. A bakelite knob labelled 'Tone'

4. What function of the GSI can be automated via MIDI?

- a. EQ
- b. Faders
- c. Aux Send levels
- d. Mutes

Name

Address

Daytime tel. no

TIE-BREAKER

If the GSI had to be given a name rather than a number, what would you call it? (10 words maximum)

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Post your entry to: **SOS GSI Competition, Sound On Sound, Media House, Burrell Road, St Ives, Cambridgeshire, PE17 4LE.**

READER ADS


HOW TO BOOK YOUR READER ADS

Fill in the form below, up to 28 words (one per box) and post to:

Reader Ads, Sound On Sound, Media House, Burrell Road, St Ives, Cambs PE17 4LE
Your ad will appear in the next available issue after receipt.

PLEASE NOTE

We are inundated with Reader Ads, and whilst we endeavour to publish ads in the next available edition of the magazine, space restrictions mean that this is not always possible, and there may be a one or two month delay. Therefore, if you wish to *guarantee* that your advert appears in the next available issue, may we suggest that you call our Hotline on 01480 461786 and use your credit card to book yourself a Classified Lineage advert — your ad will then appear in the Classified Ad pages, and not in Reader Ads. This costs a mere 75 pence per word (inc. VAT), and the minimum number of words is 12 (£9.00 in total).

☎ 01480 461244 (office hours) ☎ 01480 461786 (24 hr answerphone) 

READER ADS PHONE LINE

0891 424024

Call in your Reader Ads on our special telephone line. It's quick, convenient and easy to use; all you need do is follow these simple instructions:

- Fill in the form below so that you know what to say and don't waste time on the phone line.
- Dial our Reader Ads number **0891 424024**
- You'll be asked for your name, address, and telephone number.
- Then you'll be asked which Classification you want for your ad — from the same categories as printed on our form below.
- Wait for the prompt, then read out your ad, as clearly as you can, spelling any technical words.
- Your details will be played back to you and you'll have the opportunity to correct any mistakes.

Your advertisement will then appear in the next available issue of *Sound On Sound*. Calls are charged at 39p per minute cheap rate, 49p per minute standard rate.

Livewire Communications Ltd CB2 5LR

If you prefer, you may post us your Reader Ad. Fill in the form below (up to 28 words, one per box) and send to:
Reader Ads, Sound On Sound, Media House, Burrell Road, St. Ives, Cambs PE17 4LE.

WARNING: Always check when buying secondhand music software that you are not buying a pirate copy; ensure that all disks and manuals are included. We reserve the right to refuse or amend ads, especially if we believe they offer pirated software, pirated MIDI files or pirated sounds. We accept no responsibility for typographical errors or losses arising from the use of this service. *Trade ads will not be accepted.*

PLEASE NOTE

Please indicate which one classification you would like your ad to appear in.

- KEYBOARDS SAMPLERS DRUM MACHINES WANTED MISCELLANEOUS
 SEQUENCERS RECORDING PERSONNEL COMPUTERS/SOFTWARE

NAME _____ ADDRESS _____

Reader Ads will only be accepted if the name and address details are completed.

KEYBOARDS

AKAI S1000KB keyboard 8Mb SCSI 100's of samples, £1,850 ono; Korg M1, home use only, £695. ☎ Tim 0181 292 3408 (North London).

ANALOGUE CLEAROUT Yamaha CS01, £60; Jen SX1000, £125; Transcendent 2000, £150; Atari STE 1Mb including Cubase, £160; Fostex 2016 line mixer, £130; Tascam Porta 1 4-track, £135. ☎ 0181 467 5800.

ANALOGUE SPARES! SH101 modulation grips, £40; M16C memory card, £45; M256E memory cards, £35; Akai S1100 (2Mb), v2.9 direct-to-disk, (boxed) £1,850; S1100EX (boxed), £850. ☎ 01226 206767.

BOSS DR SYNTH DS330 sound module, editable sounds, boxed as new, with MIDI cables, £220. ☎ 0181 852 9368.

BOSS DS330 DR SYNTH Boxed, with manual, PSU and Atari Editor. £200. ☎ 0181 509 3471 (London).

CASIO CZ5000 VGC with manual, £250; Atari 1040ST with Pro 24 software, as new, £150; 1992 Premier 5-piece, black with Paiste hi-hat and crash, £250. ☎ Chris 01473 230660 (Ipswich).

CONTROL SYNTHESIS Deep Bass Nine Module, emulates TB303, 2 months old with box, manual & guarantee, £400 ono. ☎ Rich 0117 949 2989 (Bristol).

CONTROL SYNTHESIS Deep Bass Nine. As new. £300. ☎ Chris 0113 263 3179 (Leeds).

DOCTOR T Sequencer wanted in exchange for pedalboard, 2 octave, portable with case. ☎ 01327 341319.

ELKA EK44 FM Synth, £200; Oberheim Matrix 1000 rack synth, £150; 3 tier A-frame keyboard stand, £50; Casio MG-510 MIDI guitar, £200; All ono. ☎ 01522 549257 weekends.

ENSONIQ TS12 Workstation, 3 months old, 76 weighted keys, 24-track sequencer, 2Mb sample RAM, SCSI option, as new, £1,300; buyer collects. ☎ 01522 544307 after 7pm (Lincoln).

FATAR STUDIO 90 plus 88-note weighted master keyboard with built-in aluminium flight case, piano sustain pedal and manual, excellent condition, might deliver, £590. ☎ 01482 587432 (Hull).

FATAR STUDIO 90+ master keyboard 88-note weighted, nearly new, £450; Roland SCSI sound card for PC GM/GS. £250. ☎ 01392 421336 or 01582 765481.

FENDER RHODES Mki Stage 73 £350. Very good condition. Also Carlsbro Cobra 90 keyboard amp, very good condition, £120. ☎ Richard 01792 458807 (Swansea)

GEM S2R boxed, as new, with Turbokit, £900, will consider part ex for Roland A80, Roland RA90, Elka MK88, Elka DMP18, Cubase v3. ☎ Mark 0191 488 2751.

JEN SX1000 monophonic analogue synthesizer, two keys need attention, £70 ono; Yamaha DD14 Digital drum pads with pedal and sticks, cost £200 accept £120 ono, fully boxed, manual, ex cond. ☎ 01226 713444 (Paul).

JX3P W/flight case, £350; CS01, £95; CS5, £220; and other analogue synths. ☎ Tom 01372 745494 or 0956 381695.

KAWAI K1R Synthesizer module and Steinberg Synthworks editor, mint condition, boxed with manuals, both as new, £225. ☎ Andy 01484 647131.

KAWAI K4 synthesiser, good condition with extra sounds (Atari), manual, PSU etc, £380; Viscount EFX 1, multi-effects unit (MIDI, reverb, delay, pitchshift, etc) £135. ☎ 01933 678608.

KAWAI K4 Keyboard, mint condition, boxed with manual, excellent sounds, drums, resonant filters etc, £380. ☎ Martin 01244 376446 eves (Chester).

KAWAI GMEGA Module 32-part multi, 384 editable sounds inc house/dance/analogue type. 14 drum kits, 808 samples, editable effects, perfect condition, £360 inc postage. ☎ 01925 754831.

KORG DW8000 Groovy analogue, full expansion giving 512 patches onboard, plus much more. Home use

only, immaculate, £450; Akai ME30PII MIDI patchbay, £110; Casio MT70, £65. ☎ 01329 663048.

KORG M1 Sounds 200 brand new, still wet programs, fantastic filter sweeps analogue fat basses on MIDI file, £30. ☎ 0121 443 1922.

KORG M1 with flightcase and 5 extra soundcards, reluctant sale, mint condition, bargain at £700. ☎ Steve 01223 812808

KORG M1 with manual, flight case and RAM card, excellent condition, £600. ☎ Jon 0181 749 4789.

KORG M1 Workstation, excellent condition, manuals etc, as new, £700 ono. ☎ Richard or Steve on 01603 720017 (Norwich).

KORG MINI 700 boxed, £120; Korg Micro Preset, £100; Jen SX1000, £100; Korg DW800, £350; Korg CS60, £280; Roland CSQ100 sequencer, £100. ☎ 0114 248 2760.

KORG M1/R as new £450 ono; Yamaha QY10 with custom case, £95 ono; Alesis Microlimiter, £75 ono. ☎ Steve 0171 594 7523 work.

KORG M3R Rack mount module, absolute bargain at £280; Casio CZ21000 synth, £95; Alesis SR16 drum machine, £140; or the lot for £500. ☎ Ade 01782 321120 after 6pm.

KORG MS20 £390; Korg monopoly, £400 ono.; Akai 2Mb board for S1000, £75; Sieko MIDI recorder, £60 ono; Poly 800, £150, all mint condition. ☎ 01782 49019 (Stoke).

KORG MS20 and MS10, VGC, with box, manuals, patch cords, plus groove electronics MIDI to CV with Korg HZV and 1V/Oct scaling, all for £450. ☎ 0191 537 4817.

KORG MS20 2 oscillators, patchbay, manuals, fantastic condition, £295 ono; Roland MK550 with PG300 programmer, manuals, brilliant sounds, unison and solo modes, £350 ono; Boss RCF10 Flanger, £50 ono. ☎ 0117 986 7537.

KORG 01W/FD and 600 extra sounds, part exchange for Casio FZ1 or £1,000. ☎ 01269 871014 (Llanelli).

KORG 03/RW Sound module, 32 voices, FXs, VGC., boxed, manuals, £420; Spirit Folio 18:2 rackmount mixer, boxed, VGC., manuals, £400. ☎ Paul 01227 361089 work (Kent).

KORG 05RW excellent half rack GM module. As new, boxed, £370 including postage. Yamaha FX500 half rack multi-effects module, £175. ☎ John 0115 941 1185 (Nottingham).

KORG POLY 6 synthesizer. Excellent condition. Complete with manuals and tape of original patches. £200. ☎ Paul 01377 270897 (E Yorks).

KORG POLY 800 synthesizer £95. ☎ Dean 01473 272051 (Suffolk).

KORG POLY 800 MkiII analogue synth with built-in effects, superb, £195; Yamaha TX7 with 500+ sounds on disc, £150; Yamaha SY35 multitimbral synth, boxed with manuals, immaculate, £350. ☎ John 01728 648213 (Suffolk).

KORG PS-3100 Modular analogue synth system, hundreds of knobs, patchbay, amazing sounds, recently serviced, valued around £1,400 offers. Will swap for MAC colour powerbook with software. ☎ Chris 01563 533965.

KORG T1 Mint condition, with hard case and sample disks, £1,200. ☎ 01206 384143.

KORG WAVESTATION £625 ono; Two Bass Stations, £250 each; Midiverb II, £130; Quadverb plus, £150; D110 and PG10 Programmer, £200; Cheeta MS800, £60; Akai XE8, drum modules, £75 each; Rockman Dist. £75. ☎ Dave 0141 639 6337 or 0141 633 3881 eves.

KORG WAVESTATION A/D 2 analogue VPs bal O/Ps, vocoder etc, boxed with PGM card, manual, Atari editor, excellent condition! £1,000. ☎ Simon 0171 923 1459.

KORG WAVESTATION A/D Roland MKS70 and PG800, Roland JX10, Akai S900 and 300 disks, Yamaha TX-802, Simmons SPM-8:2, Midiverb II bulldog 17 unit shockmount rack, flightcase and more, private sale. ☎ 0191 281 9795.

KORG WAVESTATION SR Rack module, immaculate condition, £650; Alesis D4 Drum module, £250; Roland Vintage synth, expansion board, £170;



Sound On Sound

readers' tape exchange

DUB FOUNDATION PART 1

by Universal Sound. Serious dub roots to inspire

and elevate. Strictly conscious vibes, dub reggae inna roots warrior style. 1995 sessions, direct from Lionheart sound studio. 45 mins approx, 9 tracks, CrO2 tape £3 (inc p&p) from: *Lightships*, 4 Rossiter House, Sennen, Cornwall TR19 7AD.



UNDER EVERY SKY

by Morgan Bryan. Over 1 hour of filmic, atmospheric, ambient instrumentals on CD, for just £9.99.

Cheques to: *Morgan Bryan, Dox Music, 28 Joseph's Road, Guildford, Surrey GU1 1DW.*

MAX TRAX EP by Ardcore Choonz. Fast hardcore ragga techno and commercial dance tunes with remixes. 4 rockin tracks, on vinyl, 20 mins. Cheques only

for £2 to: *Lee Ascroft, 48 Gilnow Road, Bolton, Lancs BL1 4LJ.*

IT'S ONLY MONEY by The Fosters. Debut cassette single 'It's Only Money' c/w 'It's A Heartache' CrO2 tape, available by mail order only. £2.50 (+ £1 p&p) payable to: *Quadriga Music Ltd, 79 Wharfedale Gardens, Thorntay Heath, Surrey, CR7 6LE.*



WAITING EP by All Living Fear. Exeter-based gothic stylists now release their first studio-recorded 4-track EP. 20 mins, cassette £2.95 to: *Fetish Records, PO Box 29, Exmouth, EX8 2YU.*

RUSTLES AND WAVES by Noctern. Innovative ambient music, 2 tracks, 37 mins, CrO2 tape —5.

Cheques to: *Andrew Gooding, 95 Hambro Road, London SW16 6JP.*

HANGOVER by Hangover. Nice boy punk rock, 3 songs of home recording in the vein of Green Day and Superchunk. 6ish mins on cassette for a breathtaking

£1.50 (inc p&p). Cheques to: *L Bodnarchuk, Flat 3, 102 Fitzroy Avenue, Belfast BT7 1GX.*



CURVES AND JARS by Barry Lewis. "Fractal Dice Music". A series of fractal studies, containing melodies generated randomly by dice algorithm.

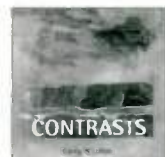
Computer music with a friendly face. 20-track CD, £11.75 (inc p&p) from *MPS Music and Video, Rosegarth, Hetton Road, Houghton-le-Spring, Tyne & Wear DH5 8JN.*

MEMORY LOSS EP by Prole Synthesis. Hard underground dance music. 5 heavy-duty acid and industrial-strength techno tracks. 25 mins, on 12-inch vinyl, £3.50 (inc p&p) to: *R Anderson, 7 Nunnington Terrace, Armley, Leeds, LS12 2PH.*

WEB OF DECEIT by Jimmi Cranch. 8 songs, all live takes, recorded live to DAT. Blues/rock and roll ballads, 30 mins. Great for driving — get one in

your car today! Send POs for £2 (or blank tape of your choice plus postage return) to: *Jimmi Cranch, 67 Hunts Drive, Writtle, Essex, CM1 3HQ.*

THIRD EYE by Third Eye. Positive, potential trance, ambient and experimental. The future now 37 mins, 6 tracks, CrO2 tape, £3.50 (inc p&p). Cheques to: *D Appledore, Rotor Studio, 7 Pendennis Close, West Byfleet, Surrey KT14 6RX.*



CONTRASTS by Carey Nutman. A mix of contrasting electronic studies, some serious, some not, composed between 1989 and 1993. 11-track CD,

£11.75 (inc p&p) from *MPS Music and Video, Rosegarth, Hetton Road, Houghton-le-Spring, Tyne & Wear DH5 8JN.*

IN THE LAP OF THE GODS by Merge. Progressive techno with heavy-riffing synths in the style of Tangerine Dream, Schulze, Kraftwerk, The Orb, Pink Floyd. ▶

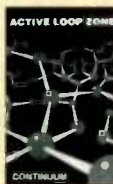
readers' tape exchange phone line service

Now you can listen to selected entries to the Tape Exchange before you consider purchasing them, with the aid of our new phone line service. It's quick and easy to use — just follow these instructions:

- Decide which tape you'd like to hear play through, and note which number (from 1-10) has been allocated to it.
- Dial the SOS Tape Exchange phone line number: **0891 424025**.
- You'll be asked to press the button marked with a star on your telephone. This will tell the phone line whether you have a touch-tone telephone or not.
- If you have a touch-tone phone, you will be able to select the tape you wish to hear simply by pressing the number on your telephone which is allocated to that tape on the Tape Exchange page. You may interrupt the tape at any stage by pressing any other key on your phone; you will then be returned to the main menu to make another selection if you so wish.
- If you do not have a touch-tone phone, you will hear the ten entries listed in sequence. Remain absolutely silent until the one you wish to hear is mentioned, "then simply say "Yes". The track will then play through, after which you will be returned to the main menu to make a further selection if you wish.

Although all entries to the Tape Exchange must now be made on the new redesigned entry form, entries can still appear in the magazine without appearing on the phone lines — there's a box to tick on the form if that's what you'd prefer.

Calls are charged at 39p per minute (cheap rate) 47p per minute (standard rate).
Lewins Communications Ltd CR1 3JR.



1 CONTINUUM by Active Loop Zone. ALZ have gigged with Zion Train, Children Of The Bong, Timeshard and µ-Ziq. This is an excellent 90-minute 12-track CrO2 cassette of ambient

dub trance. Only £4.75 from: *Rick Lomas, 48 Old Mill Gardens, London Road, Berkhamstead, Herts, HP4 2NZ.*
• Well-produced trance with superb analogue-style effects (mostly produced using the filters of the group's Akai 2800). The stated dub influence is not actually that evident — this is pretty much undiluted techno, but very accomplished.



2 REALMS OF THE CLOUD KING by The Amulet. 57 mins of fantasy rock, 11 diverse tracks, each one an emotional trip from acoustic to full-blown, with atmospheric keyboards, soaring guitars, and powerful

vocal. CrO2 tape, £5 from: *Two Rivers music, May Cottage, Church Lane, Hampton Bishop, Hereford HR1 4JY.*



3 MORNING FLIGHT by Brian Marshall. Nine very melodic tracks, featuring voices, guitar, piano and synths. Laidback grooves, subtle and memorable themes. Evocative,

atmospheric, relaxing, uplifting. A must for any collection. 45 mins, CrO2 tape, £5 to: *Brian Marshall, Sutton Court, Tenbury Wells, Worcs WR15 8RJ.*



4 THE VIEW FROM MY WINDOW by Emily's Chair. 4 songs, 26 minutes, CrO2 tape of ambient music tinged with moments of serenity and intensity. Cheques for £3.50 payable to: *Jeff Knightly, 14 North Road, Bosham, Sussex PO18 8NL.*

• Laid-back rock with washes of keyboards. The tape's been well produced, and the colour cover is very attractive, but the tape's slightly hissy in parts. Worth a listen though.



5 MAGIKO by Aquabats. Natural ambiances with improvised percussion, voices and flute makes earth music. 73-minute CD £10, CrO2 cassette £6. 14 excursions. SOS Demo Doctor's top tape, March '95. Like nothing you've ever heard before. Cheques to: *Aquabats, 6 Peel Place, Oxford OX1 4UT.*

• Highly unconventional improvised recordings based around unorthodox ethnic percussion, ambient 'found' recordings, flute, and vocal chants. Intriguing and diverting, and superbly recorded.



6 THE THORN by Kate Campbell. 4-track CD, 20 mins. Heart- and soul-baring songs, extensive radio play and

considerable following. £4 payable to: *Kate Campbell, PO Box 407, Cambridge CB5 8BY.*

• Folk-tinged MOR rock centred on Kate Campbell's powerful, expressive voice. Interesting blend of instrumentation,

including acoustic guitar, programmed drums, sax and mandolin.

7 TRANCE FOR A PROBLEMATIC WORLD by DSP. Trippy tribal trance dance. C60 CrO2. Dolby 'B' £3.50 each (inc p&p) from: *C Medd, Jah Cottage, 2 Kirby's Lane, Canterbury, Kent CT2 8AG.*

8 RAW ELEMENT by Mankhwala. 8 Ambient global techno grooves. Six choice tracks on a CrO2 C40. The real stuff — highly original, unusual rhythms. £4 (inc p&p) from: *A Scott, c/o 13C Goldsmith Rd, Hove, East Sussex BN3 1QA.*

• Evocative electronics blending North African samples (percussion and chants) with synths.



9 SHABDA by Marcus Corbett. Highly original acoustic guitar-based hybrid folk with atmospheric strong tunes.

Indian-influenced vocal, genuine accompaniment, piano, flute, and percussion. 10 tracks, 53 minutes. CD £9.99, TDK SA cassette £7.50 from: *Marco Music, 25 Dorchester Court, London SE24 9QX.*

• Beautifully packaged and produced CD featuring the unconventional folk style of Marcus Corbett. Vocals delivered in Indian style but to a backdrop of off-the-wall acoustic guitar.

10 EAGLE EYE by Earthflow. New age songs of nature and dreams. Haunting, evocative soundscape of eagle, sea, river, wolf, spirit, land, beyond. Soothing, powerful. 7 tracks, 55 mins. CrO2 tape, £5.50. Cheques payable to: *S Davies, 4 Oakwood Park, Nutley, East Sussex, TN22 3NB.*

PHONE NOW! 0891 424025

Over 100 copies of demo tape sold through this column. Free T-shirt to first 10 orders received. 50 minute-CD, £10 to: **Ian Pearson** ('Merge'), 78 Elgar Road, Reading, Berks, RG2 0BL.



COMING OUT by Red Ash and the Love Commandos. 10-track, 49-minute CD. "Not a different kind of cider — it is Red and

there's a fair bit of (indie) rock in it. £6 (inc p&p). 14-day money back guarantee. Cheques to: **M. Rigler**, 35 Beresford Road, Poole BH12 2JR.

THE STORM WITHIN by Secret Archives of the Vatican. Dark ambience based on 12th century Japanese court music. Isolationist electronics. Beautiful, strange world music. C60, 12 tracks, CrO2 tape, colour cover, £5. Cheques to: **Vince Millett**, 3 Royal Circus, London SE27 0LT.



EYES ROLLED BACK by Harmonic 288. 45 mins of ambient dubscares and organic textures. 7 tracks, CrO2 tape, £3, available from: **Chris Harrad**, 85 Canbury Park Road, Kingston, Surrey KT2 6LQ.

HALF LIFE by Phil Cory. 8 guitar/guitar synth rock songs influenced by Lou Reed, Steve Reich, Pink Floyd, 40 mins playing time, £3. Cheques payable to: **P Cory**, c/o Helen, 20 Freemans Close, Hungerford, Berks RG17 0QR.



WARPED CD by Various. Over 77 mins of various indie, grunge, pop, ambient and techno artists.

20 tracks for £5. Beautiful colour sleeve. Cheques/POs to: **Purge Records**, 38 Chancery Lane, Nuneaton, Warks CV10 0PD.

GUILT EP by Viral Technology. Vicious techno metal. NIN, Krupps, Ministry, KMFDM with attitude. ADAT-recorded, DAT-mastered, pro-duplicated, CrO2 tape, 3 tracks, 15 mins, £2.50 from: **P Davies**, 13 Burnham Way, London W13 9YE. All previous titles now sold out — thanks!

THE DREAM by White. New age synth music on C60 Eight great tunes and a new cover, £7. Cheques to: **DJ White**, 53 Listowel Road, Kings Heath B14 6HH.



NIGHT OF PASSION by Ricky Fentone and the Flat Top Cats. Country rock blues mix. 32 mins, 10 tracks, Fe tape, £3. Cheques to: **Harvey**, 9 Kingsbury Place, Cwmaman, Aberdare, Mid-Glamorgan CF44 6LH.

FRINGE FIDDLER by John and Nina Bennet. Viol n, vocals, bodhran and keyboard. Popular classics and folk. Family fun music making, 48 mins playing time 19 tracks, CrO2 tape, £4.80 (inc p&p) Cheques to: **John Bennet**, 6 James Road, Wellingborough, Northants NN8 2LR.

7 TRACKS TO HARD DISK MELTDOWN by Remote Control. Second demo tape with dance, techno

and experimental tracks. 30 mins, CrO2 tape with Dolby. Send 10 Dutch guilders to: **Vincent Cuijpers**, Stiemensweg 193 PO code 6591 MD, Gennepe, The Netherlands.

SONG FROM THE BEST INTENTION by Various. First compilation from Infectious Brother Arts, includes work by Aphasia, Secret Archives, and more. CrO2 tape, 60 mins, 15 tracks. £3 to: **AA Elsdon**, c/o 486A Brighton Road, South Croydon, Surrey CR2 6AP.



DREW by Drew. Commercial pop 48-track pro studio recording from singer/songwriter, 55 mins playing time. 12 tracks, CrO2 tape, professionally duplicated. £5. Cheques to: **Quidoza Music**, Flat 3, 105 Onslow Square, London SW7 3LU.

OVER THE LIMIT by Frank Torpey. Original guitarist with 'The Sweet'. 10 tracks on CD featuring Terry Sullivan on vocals. No frills rock/blues. guitar-based £8 (inc p&p). Cheques payable to: **FE Torpey**, 8 Hawthorn Drive, North Harrow, Middx HA2 7NX.

FRACTAL LAND by The End Quartet. New CrO2 tape, colour cover, 30 mins, string quartets with a difference. Cheques for £3 to: **AA Elsdon**, c/o 486A Brighton Road, South Croydon, Surrey CR2 6AP.

MAGIC MALVERN by Paul White and Mike Simmons (The Lentils Of Delirium). Guitar and synth instrumentals (thrash metal-influenced new age). 58 mins, 12 tracks CrO2 cassette, professionally duplicated with printed sleeve. All proceeds in benefit of local community care (via Malvern Arts Workshop). £5.75 (inc p&p). Cheques to: **Jan McGuffie**, Malvern Arts Workshop, Worcester Road, Malvern, Worcs WR14 1NY. Production details included.

LAF by LAF. Original and innovative pop music played on real instruments. Five go mad in the spare bedroom. 51 minutes playing time, CrO2 tape, £4 from: **Phil Matthews**, 8 Stanstead Road, Mickleover, Derby, DE3 5PP.



NATURAL INSTINCT by Elegant Simplicity. New album of prog rock in the vein of Camel Oldfield Ozrics Porcupine Tree. Other albums available. Fe tape, 56 mins, colour cover, digitally mastered, £2.50 to: **Steve McCabe**, 27 John's Avenue, Lofthouse, Wakefield, WF3 3LX.

SET ME FREE by Solid State. 12-inch 4-track vinyl EP. Happy house jungle rhythm by John Bunyan and Craig Easterbrooks. 22 mins, glossy cover, £4.99 payable to: **Bayslip 251 Austin Crescent**, Plymouth PL6 5QT.



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The SOS Readers' Tape Exchange provides an enormously successful service for readers, allowing them to advertise tapes, CDs, or records of their own music in their favourite hi-tech recording magazine. Every month we devote a section of the Reader Classified pages to the Tape Exchange. Here, you can advertise your own material to other readers, free of charge. Not only can you discover what others are up to, the service opens up a whole world of new music that you certainly can't find in local record shops. Furthermore, the service provides a source of new material for the attention of producers and record companies. With the aid of the Phone Line service, you will now also be able to hear a selection of the tapes featured on the pages before you commit yourself to a purchase.

Ads are usually run for three months before re-application is necessary, but this may change at the discretion of the magazine publishers. SOS makes no guarantee as to the quality of the music sold through it. Material will normally also be run on the Phone Lines for a three-month period, but this is subject to demand for the service, and is at the discretion of the Publishers. SOS reserve the right not to run material considered unsuitable for inclusion in the Tape Exchange.

It would be appreciated if anyone wishing to use the Tape Exchange page and Phone Line service could send a copy of their material to the SOS offices. Space permitting, we run mini-reviews of tapes that we find of particular interest. If you would like us to advertise your material, please bear in mind that:

1. Tapes should be recorded to the best possible standard and duplicated on good-quality cassettes.
2. Although pricing is up to the individual, your work is more likely to sell if realistically priced.
3. Cost-effective duplication can be undertaken by many companies, the more astute of which advertise in SOS's Classified pages!
4. Unless your tapes contain all-original material, in order to sell your tapes legally to others, you must obtain copyright clearance for any cover versions recorded. This costs a lot less than you might think, and can be arranged through the Mechanical Copyright Protection Society (0181 769 4400). SOS cannot be held responsible for any violation of Copyright law. Note also that MCPS-protected material (for example, cover versions) cannot be aired on the SOS phone lines. The Phone Line service is strictly for the use of amateur musicians, and material will only be placed on the phone lines if the musicians who have sent it are the owners of both the song copyright and the sound recording copyright.
5. If possible, include a sheet with your tape giving recording and equipment details, as other readers are sure to be interested.
6. If you're concerned about the security of your studio (because of publishing your address), use a Post Office box number, or sell via a relative or friend's address.
7. Use the form provided on the Tape Exchange pages or a photocopy. See the sample entry for the format to follow. Please keep your entries to a maximum of 40 words, and include the following information: Tape title and artist name; style/type of music; playing time; number of tracks; tape type, e.g. Chrome (Type II) or Fe; price; address. Send to SOS Tape Exchange at the Free Classifieds address. **TAPE EXCHANGE ADS WILL ONLY BE ACCEPTED IF THE TAPE EXCHANGE FORM IS COMPLETED IN FULL.**

SAMPLE ENTRY: *The Lentils Of Delirium* by Paul White and Mike Simmons. Hybrid ambient synthesizer and thrash metal guitar music. 56 mins playing time. 10 tracks. CrO2 tape. £4.95. Cheques to: **Dept PW1**, PO Box 30, St Ives, Cambs PE17 4XQ.

If you wish to have your material included both in the **Tape Exchange** and on the Phone Lines, please read and fill in the declaration carefully, and, if you are in agreement, sign and date in the space provided.

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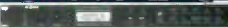
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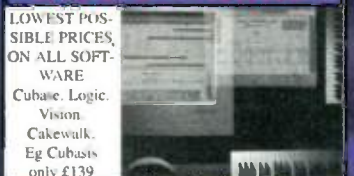
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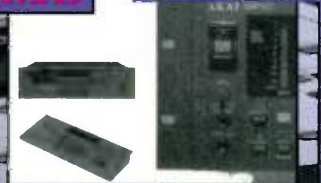
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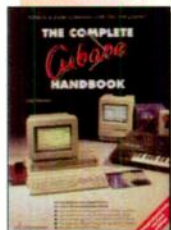
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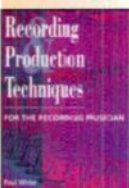
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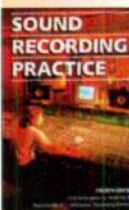
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by Paul White
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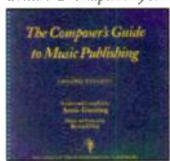
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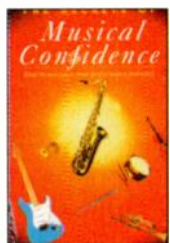
written & compiled by Annie Gunning



This book has been produced by the Association of Professional Composers and examines the business of musical copyright and music publishing from the composer's point of view. It aims to educate composers of all kinds of music in the operation of the music publishing business to help them obtain, negotiate and benefit from publishing agreements and avoid expensive mistakes. Apart from publishing, the book also covers copyright legislation, performing and mechanical rights, the royalty administration societies, music in film, broadcasting, theatre and ballet and commissioning agreements. There is also advice for composers setting up their own publishing companies. An exhaustive and useful book.

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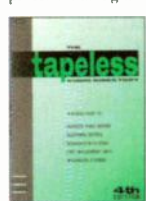


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Music Business

ALL YOU NEED TO KNOW ABOUT THE MUSIC BUSINESS



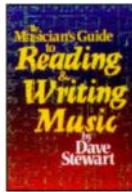
by Donald S. Passman
This book is a must: the author manages a portfolio of high profile clients and teaches music business law at the University of Southern California, and has produced a clear overview of the music business. He starts at the beginning of your career, with advice on choosing a manager, lawyer and agent, and moves through getting a record deal, songwriting and music publishing and finishes with details of copyright, mechanical royalties, songwriter deals, films and more. An exhaustive and entertaining read. 415 Pages.

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HOW TO PITCH AND PROMOTE YOUR SONGS

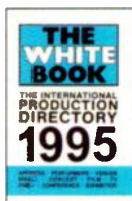
by Fred Koller
The title is self-explanatory: if you've got the songs, and you want someone to hear, publish and/or record them, then this book could save you a lot of grief. There's a lot of sensible information about the music biz in general, plus a few (American-biased) words about setting up as your own publishing business.
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THE MUSICIAN'S GUIDE TO READING & WRITING MUSIC



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THE WHITE BOOK INTERNATIONAL PRODUCTION DIRECTORY 1995



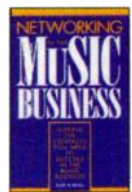
This is the latest edition of the essential source of contacts for artists, performers, venues, services and facilities associated with music, concerts, shows, festivals, film, TV, video, conferences, exhibitions and corporate hospitality - there's even a comprehensive international section. The layout is logical and an index makes finding an easy task - altogether an indispensable 864 pages. The new edition once again comes with a complementary copy of *The Little White Book*, which distils the contents of the larger volume to a pocket-sized list of names and phone numbers.
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THE SONGWRITER'S MARKET GUIDE TO SONG & DEMO SUBMISSION FORMATS



From the Editors of *Songwriter's Market*
If you've got the songs and you've got the contacts, this book will help you to choose a format that will get your demo heard as well as overall packaging and presentation and dealing professionally with publishers, A&R reps and other industry people. Plenty of example documents (lyric sheets and letters) are given, and the book is nicely rounded off with a glossary and index. Hardback.
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NETWORKING IN THE MUSIC BUSINESS



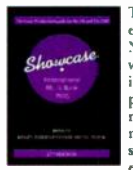
by Dan Kimpel
Think of this book as a popular psychology course for musicians. If you feel you could benefit from developing a positive attitude to getting ahead in your area of the music business, then *Networking* is for you. There's nothing like it for there, sensible advice: it's often enough to have talent. To be successful, you'll need to persevere, have good "people skills", and exercise good networking skills. Success depends on what you know, who you know, and perhaps most importantly, who knows you. An essential book, and a snip at £11.95. Hardback.
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SONGWRITERS IDEA BOOK



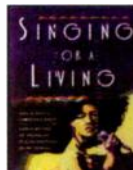
by Sheila Davis
If you want a textbook, this is it: 250 pages of serious, intelligent insight into songwriting. Loads of good advice and a friendly tone make this a useful read to anyone, whether beginner or seasoned pro. The focus is firmly on lyrics rather than music, and the prominent references to poetry terminology shouldn't really be a surprise. Use Davis' 40 strategies and you could soon be "designing distinctive songs". Hardback.
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SINGING FOR A LIVING



by Marta Woodhull
The title says it all. If you're already a singer, this book gives you everything you need to know in order to exploit your talent further: looking after your voice and voice exercises, business advice and marketing and audience interaction are all covered in this straightforward book.
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by Paul Zollo
If you're just starting out as a songwriter to haven't progressed very far, perhaps you have questions about the art and business of songwriting that you can't find answers for. Chances are, they're covered in this book. Over 200 of the questions songwriters most often ask are answered in this book. There are 11 chapters, covering subjects such as lyrics, theory, song structure, collaboration, demos, publishing and the music business. Some answers - such as "What makes a professional-sounding demo?" are actually mini-articles - and an index allows you to target subjects without wading through the text. A friendly, informative read.
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The new Musicians' Directory from Arc Publishing aims to provide all things to all musicians: whatever your style of music, the comprehensive listings offer you the contacts you need, whether it's labels, studios, venues, music shops or management - and that just scratches the surface of the dozens of topics covered by the book. Apart from being a directory proper, the Handbook also includes a selection of useful articles, including subjects such as how to be a session player (by SOS's very own Paul White), music publishing, releasing your own record, copyright protection, accounting, legal advice and more. The Musicians' Directory offers over 380 information-packed pages for little more the price of a new CD.
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MUSIC BUSINESS



AGREEMENTS
by Richard Bagehot
Written by a practising music business solicitor, "Music Business Agreements" can be seen as a legal textbook for the UK music industry. Don't let the formal tone put you off: this book is a mine of information with reference to real-life problems and examples, and a helpful question and answer appendix. Expensive, but invaluable. 522 Pages.
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SONGWRITER'S WORKSHOP



Edited by Harvey Rachlin
If you want to work systematically at improving your songwriting skills, then try this book: it's divided into four individual "lessons", each of which is backed up by audio material on cassette. This allows you to listen in the car or walk around with your personal stereo and still absorb useful information. The four sections are: On Songwriting by Janis Ian (yes, the Janis Ian); Making Demos by John Barilla; Understanding MIDI by James Becher; and The Art of Pitching Songs by Teri Muench (ex-A&R director with RCA and publisher). Also included is an intro, a quick and breezy glossary and an index. Includes two cassettes.
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your personal stereo and still absorb useful information. The four sections are: On Songwriting by Janis Ian (yes, the Janis Ian); Making Demos by John Barilla; Understanding MIDI by James Becher; and The Art of Pitching Songs by Teri Muench (ex-A&R director with RCA and publisher). Also included is an intro, a quick and breezy glossary and an index. Includes two cassettes.
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88 SONGWRITING WRONGS & HOW TO RIGHT THEM

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This is a real workbook for songwriters, dealing with both the craft and art of songwriting. Song structure, rewriting, matching lyrics to music, collaboration, making the right demo, pitching the final result, and business matters.
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Instant access to Yamaha's neat little Vector Synthesis sound module. Loads of examples, well illustrated. 115 pages.
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This weighty book offers an accessible and straightforward way into the SY77; sequencing is covered in depth followed by SY77-specific arranging tips and techniques - how to get the most out of the SY77's sounds and polyphony. 354 pages.
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A two-part work, the first part covering all operational aspects of the RY30 drum machine and the second uses the audio tape and musical examples to show what the RY30 is capable of, using the preset patterns to create a variety of classic tracks. 299 pages, two cassettes.
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YAMAHA SY55 GUIDE

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A good helpful look at this arguably overlooked instrument; technicalities are explained in context of music throughout. 153 pages.
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SOS Book Shop

MIDI

MUSIC TECHNOLOGY REFERENCE BOOK

by Peter Buick & Vic Lennard

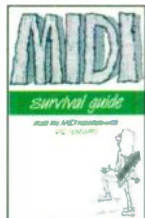


Written by Peter Buick and Vic Lennard (author of SOS's Atari Notes column), this book offers information at your fingertips and is an indispensable reference source for the musician or sound professional in the recording, broadcast, live, video, computer, multimedia, post

production and theatre industries. It includes comprehensive MIDI spec, General MIDI, MTG, MSC, and SysEx information. It also includes charts, check lists, useful hints, tips, and ideas, plus a glossary, list of contacts and a comprehensive indexed, it is also organised into convenient sections. 150 Pages.

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MIDI SURVIVAL GUIDE



by Vic Lennard
Whether you're a beginner or a seasoned pro, the 'MIDI Survival Guide' shows you the way. No maths, no MIDI theory - just practical advice on starting up, setting up and ending up with a working MIDI system. Contains over 40 cabling diagrams, and how to: connect synths,

sound modules, sequencers, drum machines and multitracks; how to budget and buy secondhand; using switch, thru and merger boxes; transfer songs between different sequencers, get the best out of general MIDI, and understand MIDI implementation charts.

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MIDI FOR THE PROFESSIONAL

by Paul D Lehrman and Tim Tully

Co-written by SOS contributor Paul D Lehrman, this substantial, exhaustive work covers pretty well any aspect of MIDI that you could think of. As an overview of what MIDI is and does in 1994, this 239 page book couldn't be better.

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MIDI SYSTEMS AND CONTROL

By Francis Rumsey



This revised edition has been expanded in an number of topic areas, to provide even more comprehensive coverage of every area of MIDI. Contents include: an introduction to principles and terminology; MIDI (timecode); librarians and editors; different approaches to sequencer software design; practical systems design.

CODE B007AM **£19.95**
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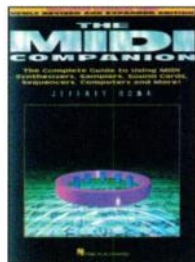
A BEGINNERS GUIDE TO MIDI

by RA Penfold

The title says it all: all aspects of MIDI are explained, and many common beginner's problems are discussed.

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THE MIDI COMPANION



By Jeffrey Rona
A breezy run through MIDI that would suit the absolute beginner, this book is well-illustrated, clearly expressed and explains the technical bits in as close to non-technical language as the

subject matter allows.

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MIDI: A COMPREHENSIVE INTRODUCTION

by Joseph Rothstein, Product Review Editor, Computer Music Journal

Series Editor: John Straum

MIDI - Musical Instrument Digital Interface - is the data communications system which enables music equipment, computers and software from many different manufacturers to exchange information. Since its introduction in 1983 the impact of MIDI on the design and operation of synthesizers has been dramatic, yet to date, information about it has been scattered, but this book fills that gap, providing a practical guide for readers seeking a thorough discussion of the basic principles of MIDI.

Computer Music and Digital Audio Series
238 Pages, numerous figures 1992
0-19-816293-6 Hardback.

CODE B215 **£25.00**
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

PRACTICAL MIDI HANDBOOK (3rd Edition)

by RA Penfold

This book is completely updated, and features a section on General MIDI. It provides a "straightforward, non-mathematical introduction to MIDI", and features a full glossary of MIDI terms.

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Synthesizers

THE MUSEUM OF SYNTHESIZER TECHNOLOGY



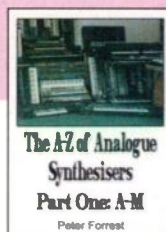
by Martin J Neucomb

If you liked our feature on the opening of the Museum of Synthesizer Technology in October, but haven't got the time or the cash to visit in person, then the next best thing has to be the museum's guide book. This 118 book is printed on

glossy paper and contains full-colour pictures of a large selection of exhibits from the museum, together with some descriptive text and company backgrounders. The text reads a little like a fanzine, but the hardcore synth fanatic will want this book for the pictures. In these pages you will glimpse instruments that you are unlikely ever to experience in the flesh: an exceedingly large Roland System 100 modular set-up, an EMS Synthi 100, an ARP 2500, a large Emu modular and what must be the comprehensive collection of Moog equipment anywhere. The Museum of Synthesizer Technology book is yours for £24.95, plus postage.

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THE A-Z OF ANALOGUE SYNTHS PART ONE: A-M



by Peter Forrest

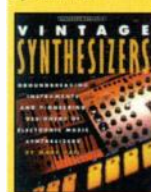
The author has aimed to make his book a complete rundown of all the major analogue synths and keyboards ever made, and on the evidence of this first volume, he seems to have succeeded. The book is useful and detailed, and shows evidence of

the massive amount of research and effort put in by Peter. He gives pocket company histories and detailed data on the instruments produced - but note that a few entries for a few particularly obscure instruments and companies are limited due to lack of data. The book also provides a comprehensive overview of the qualities of various instruments; charts and tables assess second hand values and maintenance levels necessary to keep a given instrument playable as well as such intangibles as sound quality, collectability and user interface. The A-Z of Analogue Part One, which is limited to 8000 copies worldwide, also features 96 colour pictures of classic instruments.

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VINTAGE SYNTHESIZERS

By Mark Vail



This well-illustrated, 300 page book covers synth history, interviews with designers and overviews of important instruments. Mark Vail's book could be the most entertaining and useful synth book yet - check out the definitive history of

the Minimoog, complete with pre-production designers' sketches. While not strictly a buyers' guide, there is a comprehensive section to sourcing, valuing, upgrading and servicing classic instruments.

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KEYFAX 2

by Julian Colbeck

1989 version of tKeyfax provides individual summaries and specifications of the last of the great mono synths digital pianos, and classic polysynths like the Roland JX10 and Prophet VS -forerunner of the S322 and Wave Station. Early Keyboard and rack-mount samples are covered in this indispensable guide. Still a great buy.

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KEYFAX 4

by Julian Colbeck

The new Keyfax book (1993) is the most comprehensive guide to professional keyboards yet compiled. Keyfax 4 spotlights synthesizers and expander, and MIDI keyboard controllers. From classic analogue machines right up to the latest synth/sampler hybrids. Reviews include technical tour on a practical, need-to-know basis. Everything you need to decide which instrument is best for you.

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KEYFAX 5

by Julian Colbeck

The latest instalment in the intrepid Keyfax series offers potted specifications and concise mini-overviews of digital pianos, home keyboards, General MIDI modules, stage organs and computer sound cards. Look out for company backgrounders, contact details and cross-references to earlier Keyfaxes.

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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

Drum Machines

THE COMPLETE GUIDE TO ALESIS HR-16 & MM-T8



by Craig Anderton

The 182 pages of this book more than live up to the term 'complete'. Covers the operation and application of both these units far more straightforwardly, and in much greater depth than any manual ever could. So, if you've just bought a used

MMT-8 or HR16 without a manual, don't worry because we've just reduced the price of this great book yet again! Even if you have a manual and think you know everything, you'll be surprised what this book can teach you. If you own a different make of drum machine or sequencer, together, you'll still learn a lot about the practicalities of MIDI-to-Tape Sync, integrating drum machines and sequencers into your MIDI system, and how to inject feel into sequenced music. This is an essential addition to any MIDI enthusiasts bookshelf - buy it today before stocks are completely exhausted.

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WAS: £9.95 **OFFER PRICE: £5.95**
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DRUM PROGRAMMING - A Complete Guide to Program and Think Like a Drummer



By Ray F Badness

Coming from a publisher that has a good range of real drum texts, we'd expect this book to be a little different. And it is: it gives plenty of insights into how real drummers approach their job, and there are plenty of example patterns to help

translate these ideas to a drum machine.
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DRUM MACHINE RHYTHM DICTIONARY

By Sandy Fildstein

For use with Roland drum machines or any grid-based pattern system. First 75 pages on programming huge range of rhythms in rock, latin, jazz and funk styles. Remainder analyses styles and patterns of world's top drummers - Phil Collins, Billy Cobham, Steve Gadd, Stewart Copeland, etc. Highly recommended.

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By Siegfried Hoffman

Looks at how drummers compose rhythm patterns to add emotion, swing or groove. Contains examples for you to programme into your drum machine or sequencer.

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260 DRUM MACHINE PATTERNS

By Rene-Pierre Bardet

Even more drum pattern styles (paso doble, charleston, etc)

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DRUM MACHINE PATTERNS

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200 drum patterns and breaks presented in one-measure grid notation. Funk, R'n'B, ballad, pop, reggae, afro-cuban and many other styles.

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Takes concepts behind Music In Sequence and applies them to all-time favourite classical music scores. Authors show how to make fresh, exciting interpretations of classic scores. Info on reverb and effects, interpreting scores, editing synth voices. Highly creative—an ideal workbook for the music classroom. Covers Medieval, Renaissance dance music, Bach's Toccata in D minor, Vivaldi, Purcell, Handel; opera excerpts from Rossini, Verdi, Borodin; Mozart, Schubert, Tchaikovsky, music from Carmina Burana; Debussy, Satie, Steve Reich's Piano Phase and more. Highly recommended.

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MUSIC IN SEQUENCE

by William Lloyd & Paul Terry

Still one of our best-selling books. Easy to follow, practical guide to making real use of your sequencer, written by people who really understand music and how to create it using today's technology. This brilliant, unique book carries the SOS seal of approval.

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1000 KEYBOARD TIPS



by J Dreksler & Q Harle

The hi-tech musician's guide to the basics of music, scales, chords and harmonies. 256 pages covering chord relationships, improvisation, suggested drum machine patterns, plus comprehensive chord table. Too good to miss!

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SOLID GROOVES

By Dieter Peterini & Herb Quick

128 pages dealing with both bass and drums, the "heart" of the pop group, together. Although written primarily for drummers and bass players, anyone interested in understanding rhythmical music in popular styles will find this book invaluable.

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COMPLETE KEYBOARD CHORDS



by Warren Nunes & Steve Doherty

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Computers & Music

MULTIMEDIA ON THE PC



By Ian R Sinclair

If you want to know what multimedia is and what it can offer you, then this is the book for you. Much of the information is general enough for everybody, but as the title suggests, the book is aimed at PC users. The book explains the installation and use of a CD ROM drive and a sound card and covers all key concepts behind multimedia. As an added incentive, if you buy this book, you can send away for a free copy of Picturebook, a multimedia authoring package.

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Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

COMPUTERS AND MUSICAL STYLE

by David Cope, Professor of Music, University of California, Santa Cruz

Series Editor: John Strawn

Professor Cope provides a step-by-step description of the way in which he analyses and replicates musical style by computer. He demonstrates his results in the style of composers such as Bach, Mozart, and Prokofiev with compositions which sound entirely new and yet somehow familiar. Musicologists, theorists, and composers will find this work to be both ground breaking in its quality and thoroughness, and composers may also find a method to assist them with their own compositional processes.

Computer Music and Digital Audio Series
262 Pages, music examples 1992
0-19-816274-X Hardback.

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MULTIMEDIA ON YOUR PC

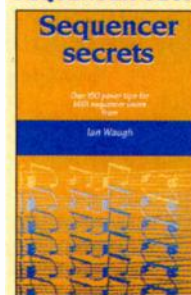


by Francis Botto

A practical guide to multimedia specifically on the PC. Botto's book is once aimed at users, educators and developers, and comprehensively discusses the hardware required to take advantage of multimedia in a PC environment as well as the hardware and software necessary in a multimedia authoring situation. The book is provided with comprehensive appendices covering a glossary and comprehensive product and manufacturer lists.

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SEQUENCER SECRETS



Ian Waugh

Ian's book aims to "go beyond the manual" in telling you how to get the best from your sequencer. The book features 29 hands-on sequencing projects and is suitable for use with all software sequencers. The book hopes to help you optimise your MIDI system and use your sequencer to create all sorts of useful effects. A troubleshooting section helps you track down stuck notes, double notes and so on.

CODE B299 £6.95
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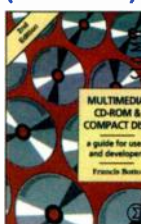
COMPUTERS AND MUSIC

By R A Penfold

2nd edition. Covers hardware and software applications. Excellent glossary of jargon, and now bang up to date.

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MULTIMEDIA, CD ROM & COMPACT DISK - a guide for users and developers (2nd Edition)



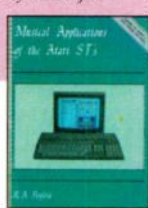
by Francis Botto

Practical guide to CD ROM and interactive multimedia aimed at both users and developers. Virtually all platforms and technologies are covered in this book - CD-I, CD ROM, CDTV, Macs, PC clones etc - and a comprehensive range of appendices include a glossary, and lists of development tools, manufacturers, and existing CD ROM titles. All aspects of system development - from image capture to sound - are covered.

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By R A Penfold



Includes a general introduction to MIDI, a handful of MIDI add-on circuits (Thru box, MIDI switcher and so on), plus a collection of programs, in Fast BASIC, that allows you to use the ST's internal sound generator and create little MIDI applications.

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by V Capel

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LIVE SOUND MIXING

by Duncan R Fry

This is a hands on, friendly introduction to all aspects of mixing live. It hails from Australia, and is an SOS Bookshop exclusive. The author is an experienced live sound engineer and has packed his book with loads of information, diagrams and hints to take you from basic principles through to trouble shooting when things go wrong.

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PUBLIC ADDRESS LOUDSPEAKER SYSTEMS

by V Capel

All aspects of PA speaker systems are covered in this book, including low-impedance matching, 100V systems, transmission lines and how to install inductive hearing aid loops. At the heart of the book is the Line-Source Ceiling Array, a system that is claimed to improve clarity, even coverage and reduce feedback. Full step-by-step construction and installation details are given.

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A comprehensive collection of simple MIDI projects, including CV and gate converters and a MIDI Thru box. A lot of the book is taken up with interface various obsolete computers to MIDI (Spectrum, CPC464, Commodore 64, BBC B, ZX81 and so on), but the general information is basically sound. Could prove a boon to musicians who are really broke!

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By R A Penfold

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by R A Penfold

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by R A Penfold

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YAMAHA QY20 MUSIC SEQUENCER VIDEO MANUAL



by Tom Robinson
 Yamaha's popular QY20 portable sequencer's sound source is a deceptively simple device to use; if you think you might like some insight into getting that little bit extra out of the device, then look no further. Produced in co-operation with Yamaha, the video features mobile

musician Tom Robinson showing you how to get the best from this portable marvel. Tom, who has used the QY20 extensively as a writing tool on the road, says: "I never leave home without it".
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SOS Videos

STEINBERG CUBASE



This manual, the first in a series, is presented by Chris West, Steinberg expert. It's very much a practical, 'get up and running' video, showing the novice user exactly how to install and begin using Cubase, whether they're running the program on an ST, Mac or PC computer — there's even a basic background on using the computers themselves! All of

Cubase's controls are shown, explained and demonstrated in depth. Once you're familiar with the basic controls, Chris takes you slowly through recording your first session, followed by overviews of the various edit screens. It's rather like having an expert tutorial that you can run again and again in the comfort of your home, until you can use Cubase like a true pro.

Topics covered include: the main screen, customising names and outputs, copying and pasting between arrangements, MIDI filter, cycle mode recording, the tool box, all edit screens.

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CUBASE 2.6 FOR WINDOWS BASICS

Practical guide to Cubase for Windows covers all the basic functions, ideal for the new user and those who need added insight into this complex system.

Contents: Basic MIDI, Value Selection, Arrangements, Arrange Window, Transport Functions, The Inspector, The Toolbox, Quantisation, Grid Editor, Step Recording, and much more.

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Composer Don Muro presents six lessons that demonstrate how to create a multitrack sequence, how to correct wrong notes, how to correct rhythmic errors, how to correct dynamics, how to change synth programs, and how to change tempos. *The tape is not dedicated to any one sequencing package - the information is valid no matter which sequencer you use.*

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BAND IN A BOX 6.0 BASICS FOR WINDOWS



Designed to get the new user, and those less familiar with Band In A Box, up and running quickly and easily. Experienced users can also benefit from the in-depth tutorials which cover Basic MIDI, MIDI Connections, Custom Patch Maps, Screen Layout, Juke Box, Printing, Recording & Editing Melodies, Importing & Editing Styles, Drum Editor, Masks, Assigning Instruments.

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CAKEWALK 3.0 For Windows

A collection of three videos on the Cakewalk Professional system for Windows, covering just about everything you would need to know to become totally proficient with Cakewalk. If you own Cakewalk Home Studio — no problem! The videos cover everything Cakewalk Home Studio is capable of and more...

BASICS
 Basic MIDI, Step & Realtime Recording, Playback Features (on the fly), Editing Features, Graphic Views, The Inspector Menu, Menu Overview, The Control Bar.

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ANALOGUE HEAVEN



Remember our feature on the opening day of the Museum of Synthesizer Technology which we ran back in October 1994? Wish you'd actually been able to attend? Well, now you can have the next best thing: the museum has released a fascinating 50 minute promo video that features footage shot on the day as

well as a lightning tour of the facility. The program is hosted by SOS contributor Julian Colbeck. The tape opens with synth pioneer Bob Moog making the inaugural speech and officially opening the museum, followed by a nostalgic run through one of his old modular systems. Analogue Heaven makes diverting viewing for anyone interested in vintage synths, represents good value, and offers the perfect companion to the Museum's guide book, also available from SOS Bookshop.

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YAMAHA PSR6000 ELECTRONIC KEYBOARD VIDEO MANUAL

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EMAGIC NOTATOR VIDEO TRAINING MANUAL



This video manual is detailed and helpful, and is presented in a most friendly and approachable manner by session musician Tim Walter, whose tone throughout the video encourages and inspires confidence. If you are new to Notator and are still in awe of its power, this is the video to bring you down to earth. An introduction and 28 tutorials take the user from the

absolute basics - including plugging in the dongle - to working with Lincor and SMPTE, and synchronising to video. As well as actual recording of MIDI data and sequencing, comprehensive coverage is given to using the score layout and printing facilities that are so much a part of Notator. Topics covered include: sequencing pace, score editing, lyrics and text, graphic arranger mode, hyper edit, the printer page, using the part box.

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THE EMAGIC LOGIC TUTORIAL VIDEO VOLUME 1

Produced by Emagic themselves, this video once again sees Tim Walter (featured on the excellent Notator video) in the tutor's chair. There are plans for a series of videos which become ever more detailed and informative, but for now Volume 1 takes you through the first steps of getting the software up and running, and covers virtually all the controls you'll need. This video is valid for all versions of Logic, whether being run on an ST, Mac or PC. Presentation is rather intriguing, with a mobile camera that helps to hold the interest more than the average training video and some interesting graphics that aid comprehension and help to quickly find specific tutorials and bits inside tutorials. Contents as follows:

- Tutorial 1: The Arrange window and basic sequencing
- Tutorial 2: Playback parameters & Toolbox
- Tutorial 3: Controlling MIDI data flow
- Tutorial 4: Manipulating sequence data
- Tutorial 5: Moving around in Logic
- Tutorial 6: Windows and key commands
- Tutorial 7: More sequencing
- Tutorial 8: Score
- Tutorial 9: Looking at the Event List
- Tutorial 10: Editing the Event List
- Tutorial 11: Using the Environment
- Tutorial 12: The best of the rest (HyperEdit, Matrix Editor, Cycle Mode and more).

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BOSS DR-5 DRUM MACHINE

Presented by Nick Cooper (Roland UK Product Specialist) this video covers all the functions of the DR-5 in a clear and concise manner. Produced in association with Roland UK & USA. By using the information gathered from Roland 'helplines', particular attention has been paid to the areas that many users find most difficult in. This makes it of interest to beginners and experienced users alike. Nick imparts the information with ease and a professional manner, making it enjoyable and entertaining.

CODE V043 £19.99
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YAMAHA QY300 VIDEO MANUAL
 Complete overview of Yamaha's new QY300 sequencer/sound source. Presented by Joe Ortiz of Heavenly Music, the video offers a hands-on tutorial on what is potentially a very powerful piece of hardware. Starts off with a runthrough of QY300 features, followed by a clear, step-by-step tutorial that introduces you to creating your own sequences and styles. As a bonus, the video comes with a free disk loaded with 6 new QY300 styles and 6 demo sequences.

CODE V025 £19.99
 Running time: 69 minutes Format: VHS (PAL)
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HOW TO GET THE MOST OUT OF HOME RECORDING 3 TOP CLASS VIDEOS

A superbly presented set of videos which no home recordist should be without. Have you got your set yet?!

LEVEL ONE



This well presented video explains how to set up and operate a simple cassette-based multitrack home studio. It clarifies all the basic terminology and demonstrates the recording of a song from beginning to end, covering how to record guitars, keyboards, vocals and drum machines; which microphones to choose; how to patch in effects units and use them well; what makes a good arrangement; what makes a good mix; plus what to master on to and why.

Full of professional tips and clear examples, this superb video offers the musician with no recording experience a fast route to successful operation of a simple home studio.

ORDER CODE V005 £24.95
 Running time: 1 hour 10 minutes
 Format: VHS (PAL) HiFi Stereo
 Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

LEVEL TWO



This is, in our opinion, the best ever guide to the equipment and skills needed to produce high quality results from a home studio. Full of clear examples and graphic information, the video majors on effects and how to use them well. It also covers the do's and don'ts of track bouncing; microphones and mic techniques for

different applications; getting the most out of multi effects units; plus an analysis of guitar effects with top session guitarist Milton MacDonald and an enlightening interview with ace producer Alan Parsons.

Writer/presenter Julian Colbeck packs the programme with professional tips, allowing musicians of all kinds to get the most out of their home studio.

ORDER CODE V006 £24.95
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LEVEL THREE



This video is packed with information and professional tips on advanced MIDI applications in the home studio, including interfacing with sequencers, which sync code is best for which application and why.

Hit producer Martyn Phillips (Erasure, London Beat) discusses modern recording techniques, and top programmer Paul Wiffen examines the opportunities and benefits offered by hard disk recording. It offers practical advice on sampling - how to save time and tracks; plus professional tips on advanced arranging and mixing techniques, including spectrum mixing.

ORDER CODE V007 £24.95
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 Format: VHS (PAL) HiFi Stereo
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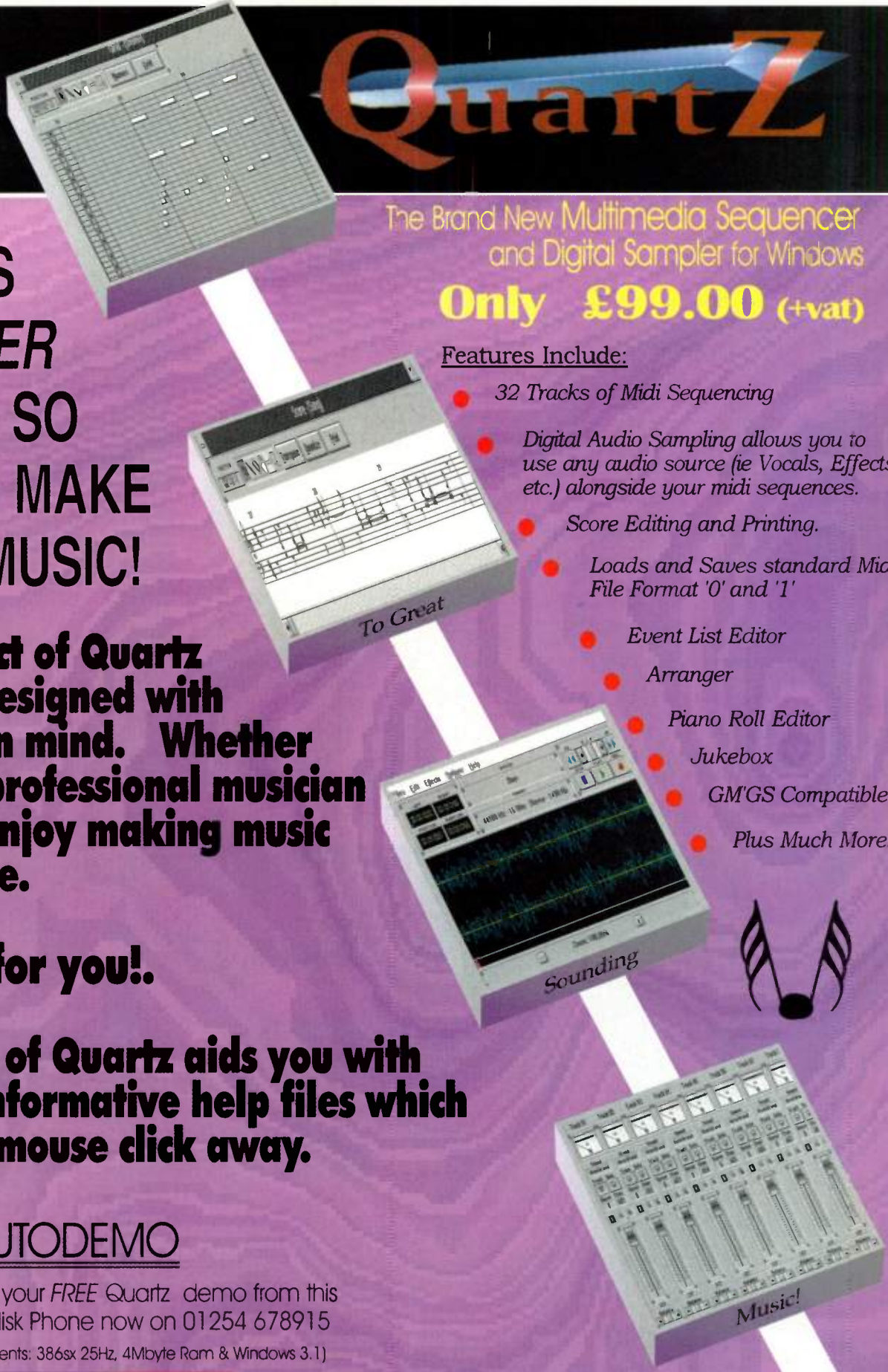
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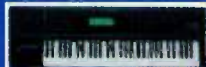
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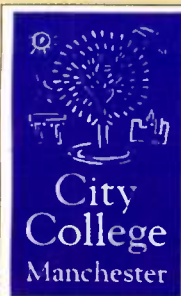
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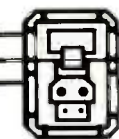
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PRODUCTION

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By Sue Sillitoe



**PHIL
DA COSTA**

they are *not* learning how to be musicians in the traditional sense, and as a result their compositions can appear to lack a certain musicality.

Maybe a traditional grounding is not needed to make computer-generated dance music, and if dance producers and remixers are creating music that the public enjoys listening to and wants to buy, who has the right to criticise? One thing that should be considered though, is that there is still a definite role for older producers in the dance market, because their experience is invaluable when it comes to recording 'live' instruments.

There is a definite skill involved when working with singers and instrumentalists. A good producer has to act as an interface between the artist and the tape recorder, and coax/encourage/drag a great performance from that artist. Many of the younger producers who started out at DJs and remixers don't have a strong background in production. They haven't worked their way up through the ranks of

relevant skills, and have no experience of this type of recording. Also, in many dance tracks and remixes, vocals are often so oversimplified that they sometimes become nothing more than a repetitive phrase or riff. When a track is remixed, the remixer may change the whole backing track, restructure the vocals, alter the tempo, and even change the key, resulting in the vocals becoming so divorced from the music that the two elements are no longer dependent on each other.

If you want to create a cross-over hit, you often need a more emotionally stimulating vocal and lyric as well as a great backing track. Record companies now recognise this, and tend to employ separate producers and remixers. They get the more experienced producer to record a good vocal track and then rely on the DJ/remixer, who usually understands the current dance floor trends, to come up with the backing track to launch the record via the clubs into the charts.

There is no moral to all this, but there is a conclusion — a little more understanding and teamwork — something that was advocated by many producers and remixers at the RePro Remixing seminar, held last year. In theory this is a great idea, but in practice the more 'traditional' producer and the remixer/DJ have too little in common for it to work successfully. For the time being at least, dance music will continue to be split between two people in two different studios, producing music in totally different ways, but who are both ultimately working towards the same basic goal — a hit record. SOS

Years ago, kids became interested in making music by picking up an instrument and learning how to play it. Not only were they learning the rudiments of melody, chord structure and composition,

Why do mainstream record producers regard young remixers with such suspicion, and why do thrusting young remixers regard producers as such boring old farts? Engineer/producer Phil Da Costa thinks the answer lies in the different approaches to making records held by producers and DJ/remixers alike.

but through playing with other musicians, they were learning how to be musicians themselves. They would form bands, play gigs, and maybe even get as far as a record deal, all from the initial desire to play an instrument.

Today's kids, however, have a choice. They can either learn to play an instrument, or with a relatively small outlay they can buy a computer, some sequencing software and a sampler, and learn how to create tracks. By experimenting on computers and DJ decks, they are certainly making music, but

tea-boy, tape-op, assistant engineer and so on, in a studio where they can learn by watching more experienced people at work. As a result, their general production skills are not as finely tuned as they might be.

Getting a good vocal from an artist is something that really has to be learned through experience, so it's no surprise that when a remixer from a club background is asked to produce a vocalist, they often come unstuck — not because they don't have the talent, but because they have never had the opportunity to learn the

Most recently, Phil Da Costa has been concentrating on his production, remixing, and songwriting career. He has produced singles by Ipsi Facto (Debut/Skratch), Jenny Jay (Indisc/Arcade) and remixes for Imagination (Berwick St), Conrad (Indisc/Arcade) and Jannicke (MD Records, Norway). Latest productions include two tracks on the new Jaki Graham album *Real Life* (Avex/Pulse 8) and five tracks on the *Technoclassix* album (Avex). Comfortable working in any style of music as an engineer, producer or remixer, Phil is busy with his latest project — his own 24-track pre-production studio.



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