

SOUND ON SOUND

The UK's Biggest Selling Hi-tech Music Recording Magazine

November 1998 £3.60

over
300
pages
every
month!

Mackie D8b

The Digital
Desk with a
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Windows 98
What PC musicians
should know

Gary Barlow
At work in his
home studio

**Freelance
Programming**
Making money
from your studio skills

Tascam TMD1000
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win! Akai DPS12
Digital Multitrack

Roland JP8080 Modelling rackmount synth ■ Kinman & DiMarzio hum-cancelling guitar pickups ■ Recording Options
What's inside the SOS Editor's home studio — and why! ■ Music for Computer Games Composer Jeehun Hwang ■ Steinberg
Rebirth v2 software synth ■ 20 Tips On... Sequencing with MIDI guitars ■ Recording 'Millennium' How Robbie Williams'
number one hit was put together ■ Creative Processing Effects from unexpected sources ■ Internet, PC, Apple & Atari News

Now that you've been introduced...



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 - Korg 1212 Digital Audio PCI card
 - MOTU Fast Lane MIDI interface
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CAW SPEC CHECK

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- 64MB RAM (expandable up to 190MB)
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- 24x CD-ROM drive
- 3 PCI expansion slots
- Extended Keyboard & Mouse
- Package Includes:
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 - Adaptec 2940 SCSI accelerator card
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what price 'support'?

Imagine the scene — you've just walked into a clothes shop and seen a suit you like, but you feel you might be able to get a lower price if you haggle. You tell the guy you've seen a similar suit in C&A for rather less, and what's more, theirs comes with a free shirt. What are the chances he'll drop the price to match and throw in a tie as well? Pretty damned slim, that's what; but look how big the profit margin is on clothes. And how much after-sales service does a suit usually need?

The same is true of food — but you try haggling over a Mars bar and see where it gets you! How many technical support calls do confectionery manufacturers get from the public? 'Excuse me, I've just eaten a Mars bar and found it incompatible with a rather large kipper sandwich I had earlier. Should I deinstall the Mars bar by sticking my fingers down my throat or would retrofitting a Twix fix the whole thing?' It doesn't happen — yet in the hi-tech/pro audio music business where we all expect more functionality for less money on a monthly basis, coupled with endless free tech support, it seems nobody will buy anything unless they get a deal! And the really amazing thing is that some retailers seem to be falling over themselves to slash their profits to the bone, just to make a sale.

Now I like a deal as much as the next person (more, probably), but I do find myself sympathising when manufacturers are given flak for not having enough people manning their tech support lines, or for not sending a squad of engineers up to the Outer Hebrides at 20 minutes' notice to fix a piece of faulty budget recording gear, just because somebody has decided to base a commercial studio around it. Admittedly, many of the ads for computer-based systems present the device as professional, CD-quality, all-singing, all-dancing solutions that will satisfy your every need, but anyone who really believes that a grand's worth of computer music gear can replace £30,000's worth of conventional hardware in a commercial recording situation probably deserves the disappointment that is almost certainly coming their way at a brisk trot!

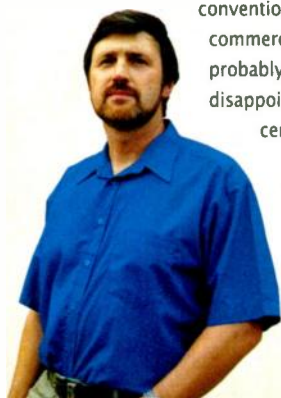
Of course, you can do great work using a computer, but you

have to choose wisely. Whether you buy a Mac or a PC, it's the nerve centre of your studio, so you need to make pretty sure it's the right machine for the job. These days the software you run in the studio often costs far more than the machine it runs on, so skimping on the computer seems crazy, even if it goes against the grain as regards 'deals'. That seductive software ad may include a deceptively basic minimum spec hardware requirement, but invariably you'll need a far faster machine to realise anything like the potential of the software, especially if it includes native effects processing.

As for product support, again it's the things that plug into computers that tend to need the most intensive tech support, but soundcards are getting cheaper all the time — even the ones that mix, provide effects and butter toast. Similarly, software grows more complex with every revision but rarely increases in price, so is there any wonder that tech support is an increasing problem? It's now reached the stage where a £100 soundcard needs a 300 word manual — but how much profit can be spared to provide tech support, especially with the buyer wanting another 20 percent off retail? While I get as uptight as anyone else about something that is brought to market with obvious design problems or inadequate documentation, I can't help but feel sorry for manufacturers caught up in the 'more for less' spiral, who find themselves in the impossible situation where their £100 soundcard requires more tech support time than a 30 grand analogue multitrack did a few years back. Perhaps the only answer to supporting budget gear and software properly is to sell the support separately...

However, there's one product that is constantly being upgraded, is remarkably cheap and comes complete with built-in product support. Yes, you're reading it! *Sound On Sound* is 13 years old this month, and has witnessed huge changes in the world of recording and electronic music. To celebrate, we've done a touch of restyling to 'simplify our user interface'. We all hope you like it. Also, to reflect the growing influence and importance of the World Wide Web, we've introduced a new regular column called Net Notes (p.232) — kicked off this month by our resident PC correspondent Martin Walker — which will explore aspects of the Internet of interest to *SOS* readers.

Paul White Editor



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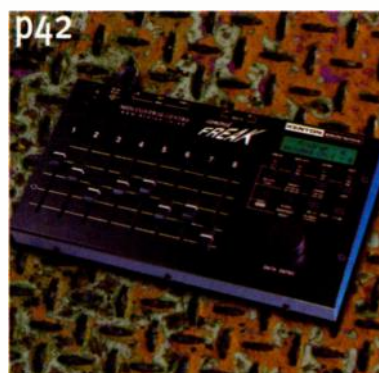
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technique

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The producers of Robbie Williams' recent smash hit single talk about how it was put together.

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Since Microsoft released Windows 98 at the beginning of June, some PC musicians have held back to see how stable it is, while others have taken their chances. Is it the right time to upgrade?

Jeahun Hwang: Composing For Video Games 96

His music for the futuristic shoot-'em-up *Mech Warrior 2* earned him cult status and a heap of 'Best Music' accolades from computer magazines. Jeahun Hwang explains how he got into writing music for games, and how he stays on top of the pack.

Gary Barlow 162

Most people knew that Gary Barlow was the songwriting force behind boy band stars Take That, but his long-established interest in production and recording is less well documented. We pay him a visit at his impressive home studio.

Retrozone: Roland TR626 Drum Machine 258

'80s technology is still out there in abundance and going cheap — and the TR626 is a budget beatbox that has everything it takes to slot into the '90s studio.



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● HHB get around!

Circle 5 nearfield monitors introduced at AES

The Circle 5 nearfield studio monitors, released in the US at the recent AES show, mark HHB's first foray into the monitor market, following the success of their digital audio recorders and line of advanced recording media. Available in both active and passive versions, Circle 5 monitors, say HHB, are compact and competitively priced, and deliver "exceptional levels of accuracy and detail."

The new monitors feature 8-inch bass drivers with synthetic polymer cones in HHB's trademark purple. An extensive programme of research into cone design produced the Circle 5's cone, which is varied across its diameter, the aim being to reduce resonances, in turn producing less distortion in the lower frequencies.



High frequencies are reproduced by matched fluid-cooled, soft-dome tweeters, and the monitors are magnetically shielded for use in modern studios with computer and video screens. The active version of the Circle 5 is powered by a 2-channel amp pack delivering 120W RMS to the bass driver and 60W RMS to the tweeter, and the design features an extra-large toroidal transformer for a low hum field, and long-life capacitors which retain their full capacity over many years.

HHB's Sales Director Steve Angel feels that there's a place in the market for the Circle 5s, even though there are a lot of nearfield monitors out there already: "Many of our customers have expressed the need for an accurate, compact monitor at a price they can afford, and from a company that understands their needs. In the Circle 5, we feel confident that we have met this need." The company recommend the monitors for project studios, nearfield monitoring in commercial studios, MIDI programming suites, multimedia and broadcast studios, post-production facilities, and Outside Broadcast trucks.

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windows of opportunity!

Pro Tools/24 now compatible with Windows NT

The latest version of Digidesign's Pro Tools/24 — v4.2.1 — is now compatible with the Windows NT platform. In addition, NT support for Pro Tools/24 Mix and MixPlus is also available. To coincide with this launch, the majority of TDM and AudioSuite format plug-ins will be compatible with the new NT system right away; the few

that aren't yet compatible are expected to follow suit in the near future. One nice touch is that sessions created on both Mac- and NT-based Pro Tools/24 systems will be freely swappable.

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steinberg's soft touch

New plug-ins debuted at US trade fair

Steinberg unveiled a set of new software tools at the recent Audio Engineering Society (AES) convention in San Francisco. Plug-in technology came to the fore with the new *MultiComp* 5-band compressor for *Wavelab*, VST and DirectX, *Prosoniq's Orange Vocoder* plug-in (distributed by Steinberg), and the *QuadraFuzz* multi-band distortion plug-in, also for *Wavelab*, VST and DirectX. The latter was designed by occasional SOS contributor Craig Anderton, and allows individual distortion of up to four frequency bands. Also on display were *Cubase VST/24* for Mac and *Cubase VST/24 v3.6* for Windows, which will soon be available worldwide, and Steinberg announced *Producer Pac/24*, a package comprising *Cubase VST/24*, *Wavelab 2.0* (Adaptec *Jam* and *Sonic Worx Essential* in the Mac version), Steinberg's *Freefilter* and the *Waves Renaissance Compressor*.

Also new from Steinberg is *Clean!*, a Windows 95/98/NT CD-recording program which, in addition to audio recording and basic editing functions, offers a suite of four real-time audio restoration modules, for de-clicking, de-noising, de-scratching and enhancing recordings. These modules, based on *Wavelab* technology, have been designed specifically to 'refresh' audio recordings whose quality may have suffered from being recorded on vinyl or cassette. Users of fast computers (Pentium II) may be able to run all four processes simultaneously, and *Clean!'s* presets for different sound sources (cassette, vinyl, CD, etc) should make operation easy. Fade-ins and

Fade-outs are easily performed, and *Clean!*, can export a track list as a text file, or let you print it out as a CD cover if required. The program supports all standard CD writers using disc-at-once mode, and IDE burners are also supported. It comes with a free copy of Steinberg's *Wavelab Lite* audio editor.

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● the shape of the future?

Yamaha unveil first instrument to use FSS synthesis technology

Yamaha describe their forthcoming FS1R Formant-Shaping synth module as "the latest development in tone generation". This rackmounting synthesizer, according to the company, "offers a totally new palette of sounds and sonic textures", courtesy of their Formant Shaping Synthesis technology. FSS offers manipulation of formants (the spectral patterns which make up the sounds of human speech) via four front-panel control knobs or via MIDI, and a synthesis architecture which also lends itself to FM (Frequency Modulation) synthesis. Rather than using oscillators and filters to simulate formants, Yamaha have created a system of 16 formant 'operators' (using terminology borrowed from FM), eight of which are voiced, with the other eight unvoiced. The voiced operators produce pitched sounds, while the unvoiced ones produce noise components. The resulting synth, say Yamaha, can create "unique simulations of human vocal sounds, dynamic rhythmic loops, and even emulations of the classic FM sound."

Physically, the FS1R is a 1U rackmounting device with a large backlit LCD, four control knobs, and four jack outputs. It features 1536 voice memories and 512 performance memories, plus four independent programmable effects processors, with a library of 84 preset effects, and a "powerful" filter section. Naturally, *SOS* will bring you a review of this intriguing new instrument as soon as we can.

T Brochure Line +44 (0)1908 369269.
F +44 (0)1908 368872.
W www.yamaha.co.uk



two decks are better than one

High-speed copying with Philips dual CD-R machine

Philips' range of domestic CD recorders has just doubled in size, with the introduction of the CDR765 dual-deck CD recorder. Yes, you read that right: the CDR765 is a dual-deck device, one of which is playback only, whilst the other is a fully functioning CD-R/CD-RW recorder. A full range of digital and analogue connections is provided (co-axial S/PDIF in and two outs, plus two sets of analogue outs), and the two decks can play back continuously or at random. More importantly, it's possible to make bit-for-bit digital copies of CDs from the playback deck to the CD-R deck; not only that, but copying can be done at double speed. So you can master to CD, and easily make copies for distribution or demo. Of course, the CDR765 uses the more expensive consumer blanks, but the machine itself is priced at just £399.



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opcode's VST vision

Limited-edition plug-in pack supports VST format

As mentioned in *SOS* news a couple of months ago, Opcode's *Vision DSP* MIDI + Audio sequencer supports the Steinberg VST format for plug-ins. Now Opcode have announced the release of the *fusion:VST FX* plug-in bundle, which will work with *Vision DSP*, naturally, as well as any other application supporting the VST format. The bundle features VST, Premiere and DirectX versions of Opcode's acclaimed *fusion:Filter* and *fusion:Vinyl* plug-ins, as well as VST-only effects (Chorus, Flanger, Ring Modulator, REZN8 and Panner).

fusion:VST FX, which is set to retail for £179, includes versions for both Power Mac and Windows 95/98/NT, but if you're interested you should get your skates on, because only 2000 units of the bundle will be produced, to celebrate the release of *Vision DSP*.

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Arboretum audio processing software reaches v2

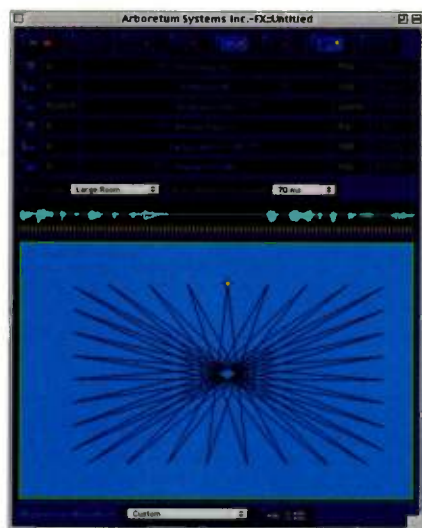
Arboretum Systems have announced the availability of *Hyperprism 2*, the latest version of the company's real-time audio processing software for Power Macs. *Hyperprism 2* features a new vocoder processor, *HyperVerb* (a new sophisticated reverb processor), frequency shifter, *Z-Morph* for talkbox effects, soft-knee compressor, limiter, varispeed pitch-shifter, and an updated Doppler effect. The software has a "new look", although it retains the distinctive blue window user interface, and now offers path automation editing (for control over real-time parameter movements), non-destructive drag-and-drop file editing, and support for multiple simultaneous effects. In addition, a new real-time play-through mode allows you to use your *Hyperprism 2*/Power Mac combo as a stand-alone hardware device; simply route live audio through your Mac's (or PCI card's) audio ins, process on the fly, and play the signal straight to the outputs — no file management, no

hard disk wear and tear. Although no additional hardware is needed, *Hyperprism 2* features direct support for Korg's 1212 I/O card and Digidesign Audiomedia II and III cards without the use of Sound Manager drivers.

If noise removal is useful to you, check out the latest version (v1.1) of Arboretum's *Ray Gun* for the Power Mac and PC platforms. The software's noise-reduction algorithms have been enhanced, and support for Steinberg *Cubase*

VST, AudioSuite and DirectX plug-in formats has been added. *Ray Gun* is optimised for cleaning up problem recordings, whether on vinyl, tape or otherwise. It selectively reduces or removes hiss, hum, crackles, pops and other unwanted audio, leaving the original signal intact. On a Power Mac, *Ray Gun* can operate in real time, just like *Hyperprism 2* — no hard disk space necessary.

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DERBY	Play It Again Sam	01332-348156
DONCASTER	Electro Music Services (EMS)	01302-369999
DUBLIN	Control Techniques Ireland (CTI)	003531-454 5400
DUBLIN	Sound Communications & Electrical	003531-450 7324
DUNDEE	Sound Control	01382-225619
DUNFERMLINE	Sound Control	01383-722273
EASTBOURNE	Bonniers Ltd	01323-639335
EDINBURGH	Sound Control	0131-557 3886
EDINBURGH	The Warehouse	0131-555 6800
FAREHAM	The Audio Connection	01323-235666
GLASGOW	The Warehouse	0141-950 1757
GLASGOW	Sound Control	0141-204 0322
GRIMSBY	PSS Music	01472-343211
GUILDFORD	Andertons Music Co.	01483-456777
HEYWOOD	Wigwam Acoustics Ltd	01706-363400
HIGH WYCOMBE	Percy Priors	01494-528733
HOUNSLOW	Project Music	0181-570 4444
INVERNESS	The Music Station	01463-225523
KIRKCALDY	Sound Control	01592-260293
LANCASTER	Low Fold Audio	01524-847943
LEEDS	Carlsho Academy of Sound	0113-240 5077
LEICESTER	Carlsho Academy of Sound	0116-262 4183
LIVERPOOL	Ad Lib	0151-486 2214
LONDON	Turnkey	0171-379 5148
LONDON	London Microphone Centre (LMC)	0181-743 4680
LONDON	Grady Theatre Services	0181-886 1300
LONDON	Raper and Wayman	0181-800 8288
LONDON	HHB Communications Ltd	0181-962 5000
LONDON	Studio Spares	0171-482 1692
LONDON	Sounddivision	0171-609 3939
LONDON	Music Lab	0171-388 5392
LONDON COLNEY	DM Music	01727-821242
MANCHESTER	A1 Music Centre	0161-236 0340
MANCHESTER	Sound Control	0161-877 6262
MORECAMBE	Promenade Music	01524-410202
NEWCASTLE-UPON-TYNE	Sound Control	0191-222 4175
NEWTOWN	Mid Wales Music	01696-622161
NORTHAMPTON	Willow Communications	01604-21525
NORWICH	Carlsho Academy of Sound	01603-666891
NOTTINGHAM	Carlsho Academy of Sound	0115-9581888
OXFORD	Systems Workshop	01891-658550
OXFORD	PMT	01865-248083
PETERBOROUGH	B&H Sound Services	01733-223535
PETERBOROUGH	The Live Music Shop	01733-555505
PORTSMOUTH	Nevada Music	01705-660036
P...TON	A1 Music Centre	01772-204567
RINGWOOD	The M Corporation (TMC)	01425-470007
RINGWOOD	AJS Theatre & Lighting Supplies	01425-480698
ROMFORD	Music Village (Chadwell Heath)	0181-598 9506
SHEFFIELD	Carlsho Academy of Sound	01142-640000
SHEPPERTON	Marquee Audio	01832-666777
SOUTHEND-ON-SEA	PMT	01702-436501
ST HELENS	Dawsons Music	01744-730424
ST. HELIER	East Coast Music (ECM)	01534-90575
STOCKPORT	Axis Audio Systems	0161-474 7626
STOCKPORT	Dawsons Music	0161-477 1210
STOKE-ON-TRENT	Carlsho Academy of Sound	01782-205100
STOKE-ON-TRENT	Music Control	01270-883779
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TUNBRIDGE WELLS	JB's Music Stores	01892-515007
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WARRINGTON	KGM Studio Specialists	01824-377766
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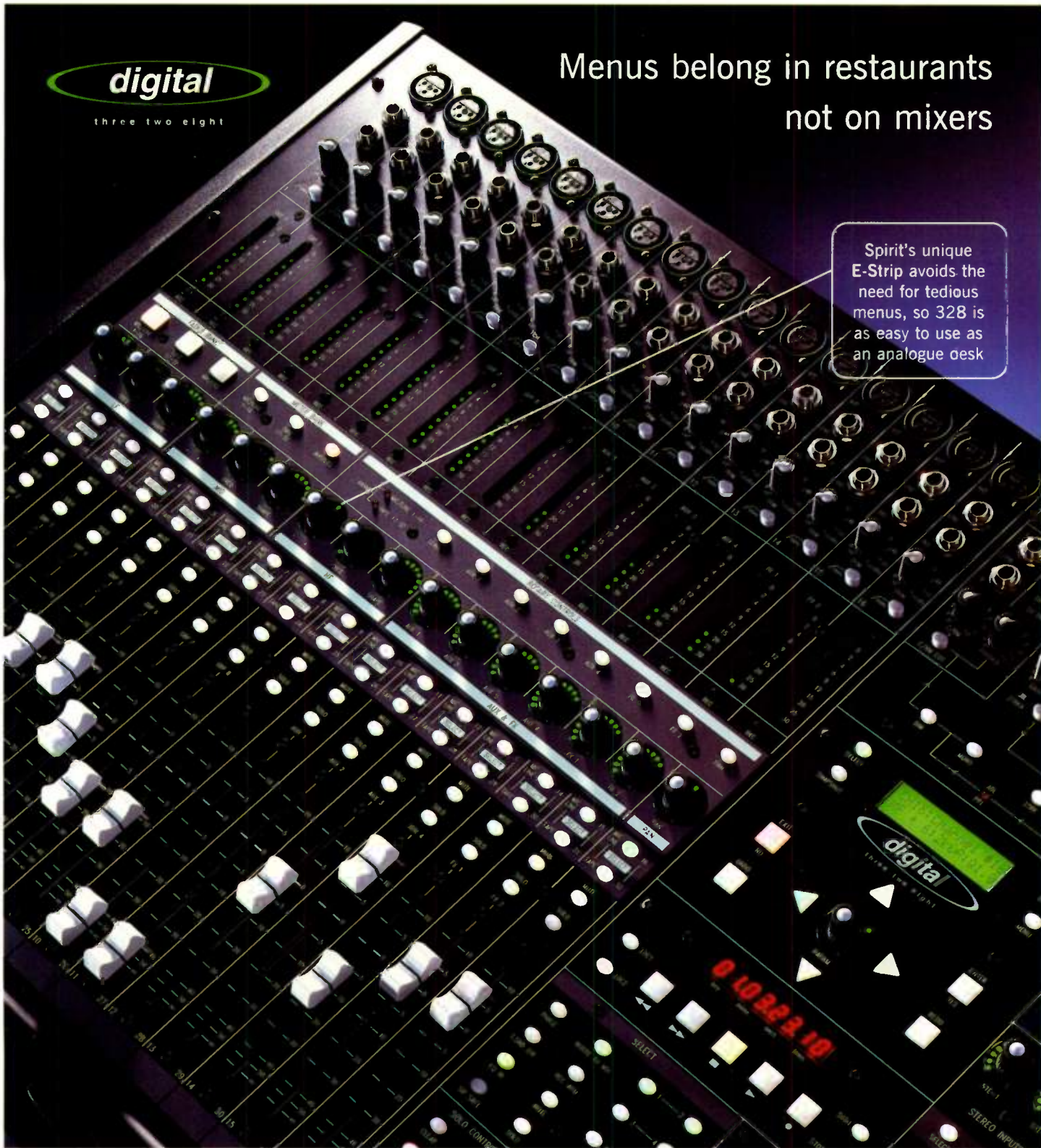
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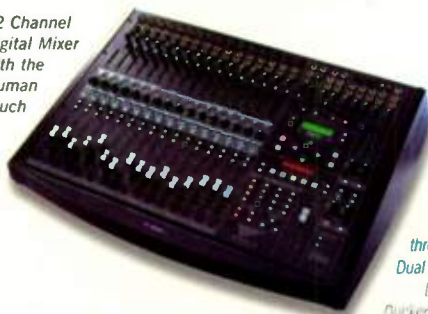
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Check out the Spirit Website:
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WRH

trip the drive fantastic!

Bespoke hard drives from Glyph Technologies

Designed for AV professionals working with digital audio or video, Trip is the blanket name for a new range of customisable 3U rackmounting drives from Glyph Technologies. You choose what goes in the case, whether it's hard drives, tape backup or CD recorders. Users can install their own devices, choose from Glyph's range, or pick a preset configuration. Glyph have anticipated configurations that may have strong demand:

- QuadraBurn Trip is populated with four 4X write/8X read CD recorders, an Adaptec 2940U SCSI card and Prassi CD Rep recording software for PC compatibles. This setup is ideal for small-run CD duplication — four CDs can be burned in 15-18 minutes.
- PT24 Trip, not surprisingly, is aimed at Pro Tools/24 users and includes two hot-swappable hard drives (up to 48Gb capacity each), a tape backup unit and a CD recorder, bundled with DigiDesign's ProTools/24.
- Paris Trip is similar to PT24 Trip, optimised for users of Ensoniq's Paris hard disk recording system.
- Naked Trip is a simple rack with 'narrow' or 'wide' hard drive hot-swap receivers, but no drives, for the user's own choice of hard drives.

We enquired about the cost of these tasty systems, but UK pricing hasn't yet been set. Watch this space.

T Global Distribution +44 (0)1799 584925.
F +44 (0)1799 584094.
W www.globaldistribution.com



roc on the web

On-line future for Roland Owners Club

The Roland Owners Club is to go electronic, and will shortly begin conducting all its functions through the Internet. Subscribing members will be able to obtain technical assistance from other members, as all member enquiries will be bounced to the whole database of email subscribers, allowing individual members to respond to others immediately. There will also be email services for product updates, buying and selling gear, and work opportunities. Members will still be able to obtain samples from ROC's library using their postal copying service, insure their gear through ROC, arrange

personal tutorials, get their equipment fixed by the ROC-Doc, and buy musical accessories at reduced prices. ROC will still be able to offer existing paid-up members most of the original club services, especially if they forward their email addresses to the club.



E members@roc-club.com
W www.roc-club.com

bullets

David Ferguson URL correction

In last month's Interview with film and TV composer David Ferguson, we inadvertently printed an incorrect web site URL; you can check out what David's up to by pointing your browser at the correct address, which is www.davidferguson.com. Apologies for any inconvenience this mistake might have caused.

selection of drum patterns including techno, jungle and funk examples, and N-Dance, featuring "exciting new contemporary dance sounds." All N264/364 purchasers need to do is return the warranty card from their new synth, and Korg will send on the new sounds.

T Brochure Line +44 (0)1908 857150.
F +44 (0)1908 857199.

Free sounds for Korg buyers

Anyone buying a Korg N264 or N364 synth (see SOS October 1996 for a review) for a limited period (which started in September) will be eligible for two free collections of new sounds and patterns/loops. The two sets Korg are offering are Raw Drums, a comprehensive

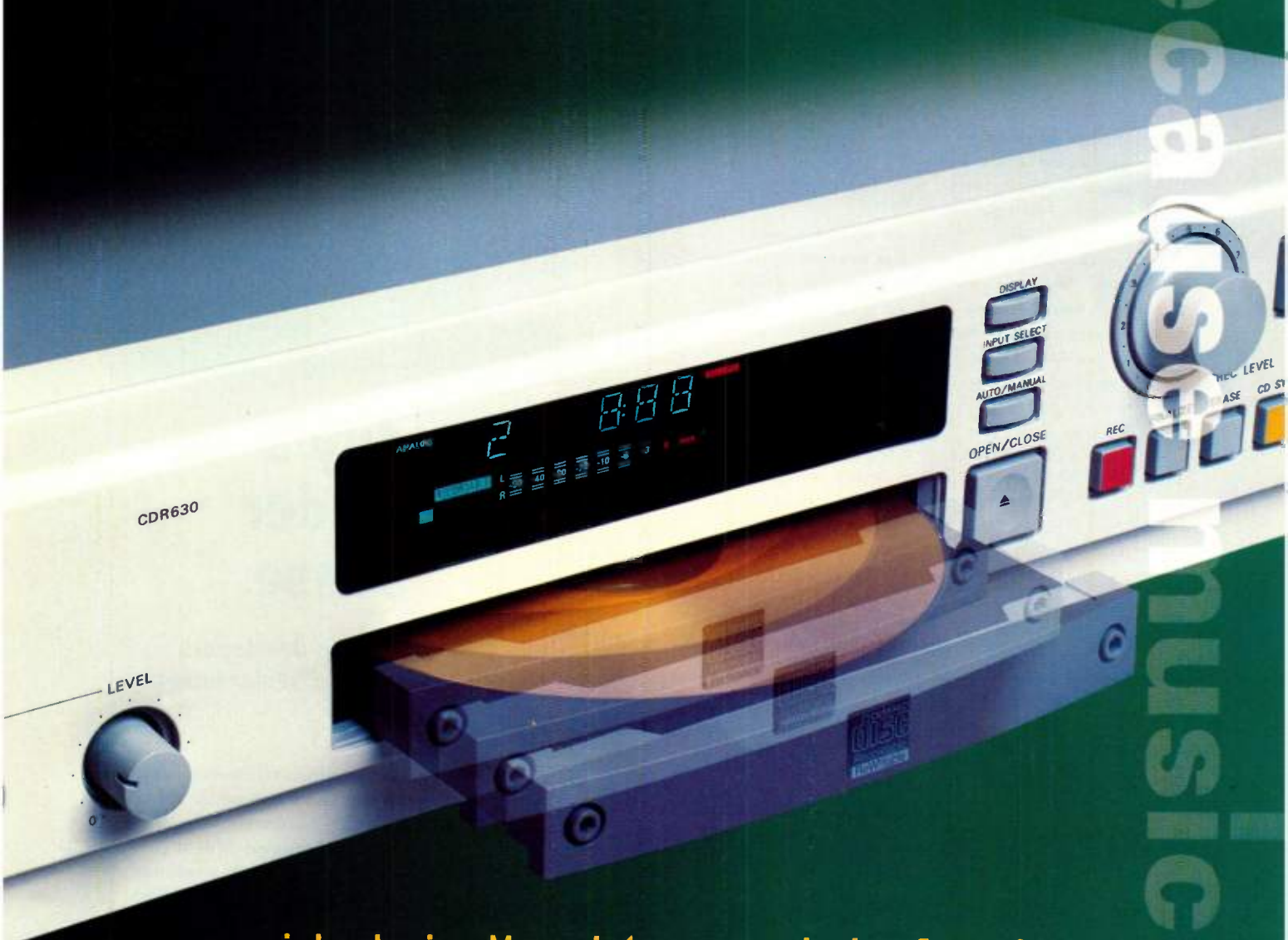
Spirit for Heart & Soul

Heart 'n' Soul, a performing arts company for people with learning difficulties, has used some of their recent National Lottery grant to buy a Spirit 8 mixing desk from LMC Audio Systems. The 32-input desk will form the centrepiece of both the company's new PA system and project studio.

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bullets

Rental firm goes for DACS

FX Rentals have added two DACS MicAmp microphone preamps (reviewed in *SOS* November 1997) to their hire stock of high-quality pre-amps. Frank Oglethorpe of FX said: "We've been asked for the MicAmp on several occasions and after reading the rave reviews it sounds as though people are going to want this unit."

- T** DACS
+44 (0)191 438 5585.
- T** FX Rentals
+44 (0)181 746 2121.

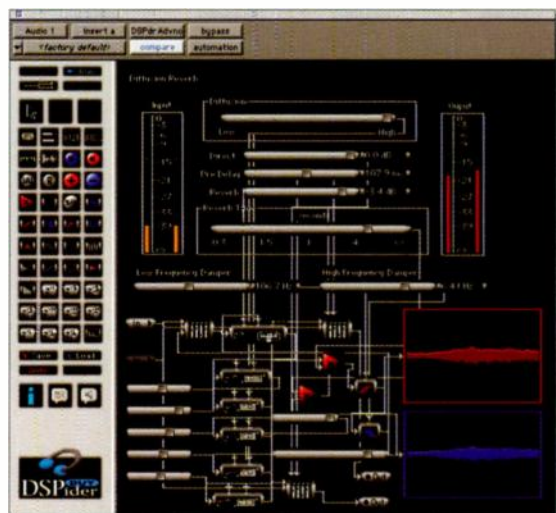
ProTape take on BASF test tapes

ProTape are now UK distributor for BASF



calibration and alignment tapes. As a result, ProTape will be supplying test tapes to other distributors as well as directly to end users. ProTape were also recently appointed UK distributors for KKR monitors, and have supplied Real World Studios in Bath with a pair of Exposé E8s. Finally, we hear that ProTape have merged with Project Audio, and that all business will now be carried out from ProTape's offices.

- T** ProTape
+44 (0)171 323 0277.



duy's spider sense

Spanish developers launch *DSPider* plug-in creator

The San Francisco AES convention was the venue for Spanish company DUY to launch *DSPider*, the first ever plug-in creation tool.

Designed as a Digidesign TDM-format tool, *DSPider* allows users to build their own plug-ins from 40 separate modules that can be linked in any number of ways. Modules range from simple 'operators' such as add, multiply and shift, to multi-functional filter, oscillator, envelope follower, pitch-tracker and delay modules. The latter allow the creation of complex reverbs. Graphic interfaces can be constructed, and modules can be programmed and patched with a simple drag-and-drop procedure.

DSPider comes with a library of over 170 pre-programmed patches, including compressors, reverbs, EQs, limiters, synths and noise-reduction systems, and new patches will be released periodically. The program is currently available only for the Digidesign TDM buss. Pro Tools 4.1 and upwards, full automation and Pro Tools/24 hardware are supported.

- T** Syco Systems +44 (0)171 625 6070.
- F** +44 (0)171 372 7660.
- E** sales@syco.com
- W** www.syco.com
- E** info@duy.es
- W** www.duy.es

doepfer price cuts

German company knock up to £50 off new catalogue prices

A series of modest but welcome price cuts is on the way for Doepfer products. The seventh Doepfer catalogue, out now, and free on request from Doepfer UK distributor EMIS, lists reductions of between £25 and £50 on a range of the company's acclaimed vintage-style electronic instruments:



- The MAQ16/3 analogue-style MIDI sequencer (reviewed in *SOS* July 1993 and February 1998) is down from £549 to £499.
- The MS404 analogue synth expander (reviewed in *SOS* December 1997) now costs £249, from £299.
- The A100 Mini modular system (reviewed in *SOS* July 1998) is down to £649 from £699.
- The A100 G6 base frame now costs £199 instead of £229, while the G3 base frame costs £175, down from £199.



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*This offer is only available with new Apple G3 + Cubase VST 4.0 customers and not for upgraded versions. Details of how to claim your RAM are supplied in the Cubase VST 4.0 box.

digital at the live end

Icon series of digital live consoles introduced at PLASA

Allen & Heath chose this year's PLASA lighting and sound show to launch their new Icon series of compact digital mixers for live sound applications. The first two models in the series are the 10-input, 4-output DL1000 and a powered version, the DP1000.

Both desks feature six mic/line inputs with 4-band sweepable EQ (parametric mids) plus two stereo inputs which can double as mono mic inputs. The DP1000 powered version comes complete with a 600W (into 8Ω) stereo power amp. Other features include:

- The facility to program and recall Song patches containing mixer settings. These patches can be sequenced into a playlist and triggered by a footswitch, push button or via MIDI.
- Special Pause patch to set levels, effects, and so on, for between songs.
- 100mm faders for all inputs and main outputs.
- Key settings such as gain, levels and mutes available on dedicated controls rather than in software.
- Large backlit LCD screen and associated strip of rotary controls, avoiding the need for complex menus.
- Venue memories for storage of amplifier and graphic EQ settings.
- Two built-in effects processors with over 80 presets, including noise gates and compressors.

Allen & Heath recommend the Icon desks for performing artists and live sound venues. Prices start at under £1000, and the first two models should be shipping this month.

The established MixWizard series has also had three additions: the WZ12:2DX, WZ16:2DX and WZ14:4:2+. The DX-tagged desks both feature a built-in Digitech dual stereo effects processor, while

the WZ14:4:2+ upgrades the earlier '+-less desk with the addition of metal jacks, channel 'on' LEDs, test-tone generator and individually selectable phantom power.

T Allen & Heath +44 (0)1326 372070.
F +44 (0)1326 377097.
E pr@allen-heath.com
W www.allen-heath.com

naughty by nature

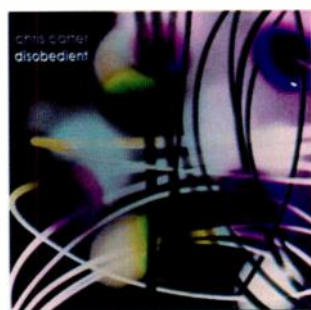
Chris Carter's *Disobedient* recorded at Mute club nights Europe-wide

Chris Carter — one half of seminal electronic duo Chris & Cosey and regular *SOS* contributor — has a live solo album out on CTI (distributed by World Serpent). It's his first brand-new solo release for 12 years, and was recorded during the 1995 Mute subsidiary Blast First's tour of Disobey clubs. The album, called *Disobedient*, features 58 minutes of music recorded at gigs in Manchester, London and Vienna.

Chris & Cosey's web site is also now on line. For the latest news regarding the duo's projects and releases, point your browser at www.ndirect.co.uk/~chris.cosey. Apart from Chris's new album, there is also news of an imminent re-issue of 1987's *Exotika*, the first time this classic album has been available for several years. The plush two-CD package will contain the album itself, digitally

remastered, plus a CD of remixes of album tracks and the five tracks from the long unavailable mini-album *Take Five*. Check out the web site for availability details.

A BM CTI, London WC1N 3XX, UK.



bias's deck deal

Makers of *Peak* acquire Macromedia audio program

Berkley Integrated Audio Software (BIAS), who are best known for the *Peak* audio editing software, are going multitrack with the recent acquisition of *Deck* from Macromedia. BIAS *Deck* is a "dedicated multitrack audio workstation" for the Mac; the most current version, v2.6, works in conjunction with third-party audio cards or with the Mac's own audio hardware. It offers up to 999 virtual tracks, playback of up to 64 simultaneous tracks, real-time

DSP features for every channel, OMS compatibility, support for Adobe Premiere plug-ins and more. BIAS's first upgrade will be to v3.0; this will support the ASIO audio input/output standard used by Steinberg's *Cubase VST*, making *Deck* compatible with any audio card that can be accessed by VST, as well as adding support for VST plug-ins.

T SCV +44 (0)171 923 1892.
F +44 (0)171 241 3644.
E info@scvlondon.co.uk
W www.scvlondon.co.uk

Jaz 2 price cut

Iomega's Jaz 2 high-capacity removable hard drives are now even more affordable, with the announcement of price cuts on both drives and cartridges.

A Jaz 2 internal or external drive will now set you back £299, rather than £399, reflecting a hefty price cut of 25%. The recommended retail price of Jaz 2 cartridges has been cut to £99 for a single unit (a reduction of 20%) and £199 for a 3-pack (a 17% reduction).

Jaz 2Gb drives operate with a sustained transfer rate of 8.7Mb per second, fast enough, say Iomega, to deliver full-motion video directly from the drive. A Jaz 2Gb disk can store more than three hours of 16-bit, 44.1kHz audio, and Jaz 2 drives are capable of reading disks from the earlier 1Gb Jaz drives.

T +44 (0)800 973194.
W www.iomega.com

the great e-scape?

Drake Music software provides supportive environment for disabled musicians

E-Scape is a software tool that's been developed by the Drake Music Project, who specialise in providing musical outlets for people with physical disabilities. Running on the Mac platform, *E-Scape* has been designed to provide a composition and performance environment for all musicians, even those with limited physical movement. Musical scores can be created with the software, or loaded as MIDI files, and each score can contain multiple tracks of notes and chords; notes can be entered into a track with full control over pitch, length and volume. Editing and performance options are provided in a "supportive" way, with control available from mouse, computer keyboard, MIDI equipment, trackball, joystick or one or two switches. The software, which was recently launched at

the *Two Days Later with Joolz Holland* concert at Queen's Hall, Edinburgh, costs £294, and a PC version is currently under development. The picture shows the Drake Music Project's founder Adele Drake, Bonnie Tyler, Simon Ford, Tim Anderson (*E-Scape* designer) and Andy Hardy.



T Expressive Software Products
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F +44 (0)171 241 3644.
W www.cyberivillage.co.uk/acorn/esp

education corner

Confetti School of Recording Technology

Nottingham's Confetti School of Recording Technology has been undertaking refurbishment of its multi-studio complex throughout the summer. Studio One has benefited from the installation of Digidesign's Pro Tools 24, including 888 24-bit and 882 20-bit interfaces and a variety of plug-ins. The Otari Status desk in the studio, which features on-board dynamics processing and moving-fader automation, has also been augmented with an extra 16 channels, bringing the total up to 80. Studios 2, 3, 4, 5 and 6 have all been redesigned, and are now based around Soundscape v2 digital audio workstations with a wide selection of outboard and a variety of mixing consoles, including Yamaha 01, 02R and 03D.

Facilities available to students now consist of a 32-track fully automated studio, four 16-track digital studios, editing suite, computer resource centre, AV classroom area and a student café. January 1998 is a major enrolment time for the school and sees the start of more courses at HNC and HND level in Sound Recording & Music Technology. Courses, which vary in length from eight weeks to two years, are funded by the Further Education

Funding Council, which has a beneficial effect on fees.

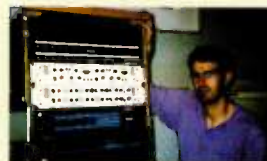
T +44 (0)115 952 2075.
F +44 (0)115 953 6678.
E confetti@btinternet.com

Advantage Training

Advantage Training, headed up by Alan Townsend (who spent 19 years working with Roland UK, was responsible for their product support department and still edits their *PowerOn* magazine) are offering training courses throughout the UK for a variety of hi-tech musical instruments. Courses are already scheduled for the Roland VS880, VS1680, Roland XP-series instruments, the Boss SP808, the Boss GT5, and Steinberg's *Cubase* VST, and others are currently being developed. They'll be held in selected hotels around the country and will last for a full day each, with the course price of £89 to include lunch.

Advantage promise a hands-on approach and aim to explain each instrument, from setting up to power-user techniques, using the experience and insights of manufacturers' product specialists. Contact the company for more info, including course dates and locations.

T +44 (0)1656 773861.
E alan.townsend@dlal.pipex.com



Ian Agate with his gear.

SAE Technology College

SAE Technology College, London, has just invested in a selection of TL Audio Ivory series processors to complement its extensive range of high-quality outboard. The units chosen — the 5013 EQ, 5021 compressor, and 5051 voice processor — have been split between the school's two main studios, which are based around SSL G+ and Neve VR consoles. The College's Head Supervisor, Ian Agate, commented: "Looking around our studios, you'll see that we only invest in equipment that we know has a proven track record and is taken seriously within the industry, and it was clear to us that TL Audio satisfied both these criteria."

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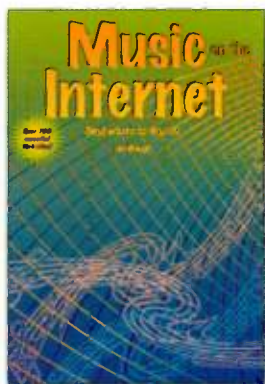
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If you're a musician and new to the Internet, PC Publishing's latest book, *Music On the Internet*, by Ian Waugh, could be just the shortcut you need. It offers background to the Internet, help in using search engines, and points you at many of the current music-specific sites. Over 700 sites are listed, including online magazines, record companies, music publishers, software and hardware developers, and more. So if you're wondering where all the free software is or if you're looking for some way to interact with other musicians, this book will give you a head start. *Music On the Internet* costs £15.95, and is available from the SOS Bookshop.

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9	Computer Hardware & Samplers
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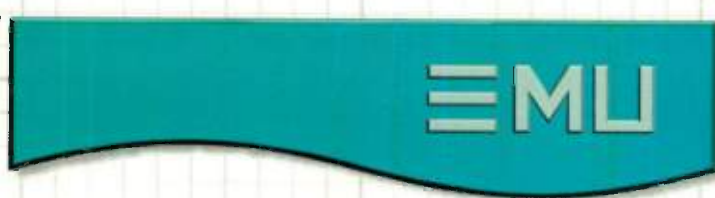
would you warrant it?

New Peavey extended warranties

If you've recently bought (after September 1st), or are about to buy, a Peavey product, you may well be interested in Peavey's new extended warranty. In an offer which seems almost too good to be true, Peavey are extending the normal warranty periods, free of charge, for customers who fill in their warranty card and a questionnaire, both of which will be provided by the authorised dealer selling the product. As an example, guitars, basses, preamps, speaker enclosures, mixers and electronic crossovers, currently covered by warranty for two years, gain an additional three years warranty, while digital effects processors, keyboards and MIDI controllers will be covered for one extra year. Call the Peavey Europe Service Centre on the number below for more information.

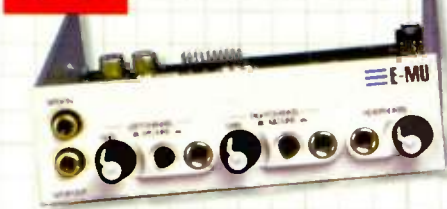
T +44 (0)1536 461234.

A COMPLETE STUDIO IN YOUR PC!



NEW

Audio Production Studio E-Drive



The EMU Audio Production Studio is a PCI based audio system that gives you up to 64 voices of sampling, multitrack hard disk recording and professional real time DSP FX along with all the software that you'll need to get professional results right out of the box.

The Audio Production Studio comes complete with the E-Drive, an audio I/O module that mounts in an empty drive bay on the front of your PC (no more fishing round the back for that lost cable!).



E-Control Mixer

This together with the E-Card gives you an amazing 4 analog inputs (switchable line/ mic with phantom power!), 2 analog outputs, 4 channels of digital output and a separate headphone output!



Soundfont Bank Manager



Audio Production Studio E-Card

- 64 Voice, 32 Part Multi-Timbral Fully Featured 16 Bit Sampler Using the Ever Popular SoundFont® Sample Format
- Full Duplex Hard Disk Recording, with up to 64 Tracks
- Emu E-Drive Audio I/O Module, Multiple Inputs and Outputs
- Fully Programmable Dedicated FX DSP
- On Board Digital Mixing, Multiple Inserts and Aux Sends

System Requirements
Windows 95/98 PC, 133Mhz
(200 recommended) with at
least 24Mb of RAM and
800x600 256 colour monitor.

NEW PRODUCT
£449⁹⁹



TOOLBOX

Audio Edit & Sound Design

- Apple Macintosh G3/660 64/4000CD & Design Keyboard
- Formac 17" Multitouch Display
- Audiolife 24 Mtx Plus System
- ProTools, D-Fi, D-Fi & Blue Peak LE
- External 4Gb Barracuda Hard Drive

£2375
£2870 INC VAT

PROTOCOLS 24

24 bit & 32 track recording

- Apple Macintosh G3/660 64/4000CD & Design Keyboard
- Formac 17" Multitouch Display
- ProTools 24 Mtx Plus System
- Digidesign ADAT Bridge or 882/20 Interface
- External 4Gb Barracuda Hard Drive
- PCI SCSI Accelerator

£6499
£7636 INC VAT

PROTOCOLS 24 MIX PLUS

24 bit & 64 track recording

- Apple G3/3000MHz 128 / 6000 CD, ZIP & Extended Keyboard
- Formac 20" Multitouch Display
- ProTools 24 Mtx Plus System
- Digidesign 888/24 Interface
- PCI SCSI Accelerator
- 2 x 9 Gb Fast & Wide Hard Drives

NEW

£POA

Project Studio 24 bit Card

Digidesign's new multi card card connects to both the 882/20 or ADAT Bridge interface supporting up to 16 in and 32 tracks of audio playback, 4th generation hardware and new Direct I/O connection to the popular Digidesign audio software on Macintosh & Windows platforms makes it an affordable solution without compromise.

FROM
£525⁹⁹
£617 INC VAT



ProTools Plug-ins

Digidesign D-Fi

Add noise, distortion and tape warp simulation. A must for that retro sound. £299 inc vat.

£299

Antares AutoTune

Corrects errors in the intonation of voice or solo instruments. £329 inc vat.

£449

Drawmer Dynamics

Like DS20, DL421/251 brings frequency conscious noise gate, organiser and ultra smooth compression. £399 inc vat.

£459

WavesTDM Bundle

Over 11 in their range including the new Renaissance compressor. £799 inc vat.

£680



F11 SELF POWERED MONITOR

The F11's cabinet design is another Quested first, being made from a new mineral loaded material which offers excellent acoustic properties using a considerably smaller box than would be possible using conventional materials. The design is a self powered two way hi-amplified one, with 165mm bass driver, and 28mm soft dome HF unit. Months of fine tuning have resulted in a speaker which produces a superb sound, totally belying its size. Custom colours can be specified for bulk orders.



NEW PRODUCT
£1149⁹⁹

Ask anyone in the know in the audio industry about who are the foremost acoustic designers in the business, and the chances are that the name of Roger Quested will be top of the list. He has built an unrivalled reputation for himself in a notoriously difficult process which is half science, half art.

Whilst his initial designs were all large bespoke projects for his studio installations, the last few years have seen the emergence of a very carefully thought out, high quality range of monitor speakers, to cater for the demands of the modern speaker market, from the innovative new F11, to the incredible HQ410.

The Quested range is probably the most comprehensive available, covering active, passive and self powered designs, as well as amplifiers and active crossovers, from subwoofers through nearfields to custom built soffit mounting units.

Call Turnkey Professional to arrange a demonstration, a free trial in your own studio, or to enquire about our generous part exchange facilities.

VS2205 SELF POWERED MONITOR



One of the most popular models in the Quested range, the VS2205 is designed as a highly accurate reference monitor, and its low profile and shielding make it ideal for a wide variety of uses. The built in amplifiers separately drive two 130mm bass units and a 28mm ferrofluid damped soft dome tweeter. Switches are provided for input sensitivity and HF and LF equalisation, to compensate for room conditions and positioning.

NEW PRODUCT
£1699⁹⁹

turnkey

In Ireland: **TURNKEY DUBLIN** 01677 9377
34-35 Wellington Quay Temple Bar Dublin 2

turnkey 0171 379 5148

Fax: 0171 379 0093 114 Charing Cross Road London WC2N 0DT E-mail: sales@turnkey.demon.co.uk Web site: http://www.turnkey.uk.com

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34-35 Wellington Quay Temple Bar Dublin 2 **turnkey 0171 419 9999**
Fax: 0171 379 0053 114 Charing Cross Road London WC2H 0DT E-mail: sales@turnkey.demon.co.uk Web site: <http://www.turnkey.uk.com>

EUROPE'S LOWEST

Focusrite FOCUS POCUS!

The magicians in Focusrite's engineering department have pulled the rabbit out of the hat and managed to produce the fabulous new Platinum range, bringing you Focusrite quality and design values at a previously unheard of price!



The first model in the range is the VoiceMaster, an all in one recording channel for getting your signal to tape or disc in as clean and controlled a manner as possible. Both mic and line level inputs are given, followed by an expander/gate, saturation circuit for valve like tones, an opto-compressor, parametric EQ and opto de-esser. Focusrite have chosen to use opto-compression circuits to avoid having to use cut price VCAs at this price point, but have cunningly used an extra photo-resistor in the feedback stage to linearise the gain and avoid the colouration which is normally associated with opto-compressors. Sound on Sound's Paul White said "This must surely become the project studio industry standard."

- Focusrite Quality at a Ridiculous Price!
- Unique Processors for an Individual Sound
- Linear Gain Opto Electric Compression Circuit
- Mic, Instrument & Line Level Inputs

The second model in the range is something of a departure for Focusrite, the ToneFactory actually takes pride in dirtying up your signal! You get instrument, mic and line level inputs making it ideal for either studio users or discerning guitarists, whilst the filters and opto-compressor are along the same lines as the VoiceMaster. Things really get interesting in the Tone Controller section, guitar amp style bass, mid and treble controls are combined with an Overdrive control and brightness switch, producing anything from subtle tape saturation effects to full on crunch! It's all topped off with two bands of parametric EQ and a handy noise gate to clean up any unwanted mess. Great for warming up vocals, screaming synth lines, fat guitar tone and much more.

Too good to be true? We can't believe it either! Check out the Focusrite Platinum range today - we guarantee you'll be impressed.

ULTRACURVE
DIGITAL SIGNAL PROCESSOR

It's a graphic? It's a parametric? It's a gate? In fact it's all three, and a lot more besides - feedback, saturation, compression, limiter, 31 band analysis - a truly programmable, real-time compressor, complete with a subject filter. The Ultracurve employs a true 110dB dynamic range, while the long delay delay creates your own program slope. Business processor at a bargain price!

RRP £349.99
£299.99

STUDIO QUAD 4
4 CHANNEL STUDIO FX

The latest in DigTech's line of four channel effects processors, offering an obvious advantage over its many competitors with only two channels. Effectively it can run four simultaneous effects, as one per mono channel, or two discrete stereo channels. A large LCD 20 bit converter and full MIDI implementation for parameter control are obvious benefits, while automatic input level and DigTech's second generation D-DCI II engine lie deeper beneath the surface, with numerous effects & parameters.

RRP £349.99
£349.99

COMPOSER PRO
WORKHORSE COMPRESSOR

A natural sounding and fully featured compressor, it's a true stereo processor. Built-in gate removes any unwanted noise, while its auto release compression track is automatic, "auto" mode means quick setup a double and side-chain attack means it can be used for de-essing etc. New Pro version now includes threshold tracking, automatic sidechain operation and illuminated controls.

RRP £249.99
£169.99

1201
TRUE STEREO FX PROCESSOR

The 1201 is a full 19" rack unit, featuring true stereo 16 bit processing at 44 kHz, with 4x oversampling converters. The quality of the reverb alone would make it worth the price, but there's lots more - two simultaneous effects are offered, from a choice of 33 including delay, chorus, flanging, tremolo and pitch shifting, "vocoder", karaoke, "to fi" and vocal distortion effects as well as various reverb types including reverb. If one of the 363 presets doesn't suit exactly then using the two parameter knobs will allow you to twist the program until it does, and the addition of 2 band EQ will further tailor the sound to your mix.

RRP £199.99
£80.99

VC3
PRO CHANNEL

Legendary series producer Joe Meek was often asked the secret of his fantastic vocal sound. It was in fact a custom made "black box" of electronics, whose contents he would not reveal during his life. Now JOEMEER bring his designs to life, and with benefits of in addition to the expander and high frequency noise amp, overdrive, Drive, Enhance and Q make the VC3 one of the hottest ways to get your signal down. Incredible low price - order yours today!

RRP £249.99
£159.99

1204
TRUE STEREO FX PROCESSOR

The 1204 builds on the success of the original 1201 by adding MIDI control, 100 preset user presets for storing your own edits, and a two digit LED display. On top of this there is also a rotary selector effect, and a "vocoder" - a front panel 19" input is ever provided for quick and easy setup. Nothing else touches these units at the price - check one out today!

RRP £199.99
£139.99

VC4
ENHANCER

The Joe Meek range has achieved great success since it launch only 3 years ago, with its combination of distortion, noise reduction and reverb. The VC4 is no exception to the formula offering trained control over two channels (stereo linkable) of possibly the best sounding parametric equaliser. Variable Drive, Q and Enhance controls help produce everything from refined definition atmospheric guitar to the ultimate heady vocal sound. This innovative price makes it an unmissable offer!

RRP £249.99
£159.99

XR300
SYNCHRONISER

Long the synchroniser of choice in professional studios, we now exclusively bring you this industry standard unit at an unheard-of price. Features include true SMPTE at a standard 24 frame rates, MIDI clocks / Sync Poppers or MTC for compatibility with all PRO sequencers. Large LED seven-digit display. Ping-pong MIDI input. Sample-and-hold operation. Full 19" rack unit.

RRP £299.99
£169.99

THC-00 RESINATOR FACTORY DIRECT

Freeform Analog Technologies FreeBass has become one of the most successful sound modules ever, and now the range expands further with the THC-00 Resinator and PCP330 ProCoder.



Not one, not two but **three** band pass filters with resonance! And we mean resonance! Feed any mono signal into this unit and get out some of the most wacky and groovy sounds you've ever heard in glorious auto panning stereo. Each of the filters has its own cutoff point which is modulated in a selection of ways, by a combination of the built in LFO, the polarity reversible envelope follower and even an external control voltage. Ideal for processing loops, vocals, or indeed any another signal, for results ranging from the sublime to the extreme!

NEW PRODUCT
£169.99

PCP330 VOCODER

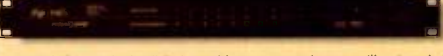


One of the most asked questions in the industry must be "Why doesn't anyone make a vocoder anymore?" - well here it is, with a fantastic feature list, great sound quality and a down to earth price. The carrier can be either an internal VCO or external line input, whilst both line and mic inputs are given for the modulator signal. Eleven filter bands each have their own level knob on the front panel giving true hands on control of your sound, and the silence (unvoiced) control also has an external input if required. The final output can contain any mix of modulator, carrier, vocoded signal and a special filtered version of the signal. Remember, this doesn't only create robot voices, there are thousands of creative uses, and it's also ideal for processing drum loops.

NEW PRODUCT
£299.99

Order now and own an instant classic!

DIGITAL PROBLEM SOLVERS FRIEND-CHIP



In today's increasingly digital world, many people are still using their equipment's analogue ins and outs, because of the difficulty of interconnection and synchronisation. Friend Chip's new sensibly priced digital patchbays and "black box" problem solvers end the misery and make the digital studio a reality! The DigiMax digital patchbay (£299.99) has 8 inputs and outputs (2 each on optical), can accept both AES/EBU and SPDIF signals, and is MIDI controllable. An XLR version (£499.99) is also available for greater AES/EBU reliability. The Audio Time Base (£499.99) is a 1u 19" rack which acts as a master clock source for your studio, outputting: word clock, Digidesign Super Clock and SPDIF. The master clock can be internally generated, or a reference taken from mains, SPDIF word clock, Super Clock, video or LTC (SMPTE). Lockup from timecode is in around 1 second!

Also in the range:

OP - 19" optical patchbay and word clock	£249.99
PRO-COM: SPDIF to AES/EBU and vice versa with 32MB memory	£129.99
D 4:2 COPY CODE: patchbay with 1 optical & 3 coaxial and 32MB memory	£119.99
SP44.1: convert word clock to 44.1 kHz, 16 bit, 1 sec to Pro/MIDI patchbay M4 1 (SMPTE)	£149.99
SP44.1: convert word clock to 44.1 kHz, 16 bit, 1 sec to Pro/MIDI patchbay M4 1 (SMPTE)	£249.99
Super Clock Driver: convert the DigiMax signal to word clock and vice versa, 3 outputs	£119.99
5 band Audio Clock: converts Super Clock to word clock and vice versa with synchronous SPDIF output	£129.99
ADAT Audio Clock: ADAT 19" to word clock, Super Clock and SPDIF clock converter	£129.99
ADAT Word Clock Synchroniser: ADAT 19" to word clock and Super Clock converter with 32MB memory	£199.99
ADAT SPDIF Synchroniser: as above but with control only to SPDIF	£199.99
ADAT MIDI Synchroniser: MIDI to ADAT 19" to word clock and Super Clock converter	£199.99
ADAT 19" to word clock and Super Clock converter	£99.99
ADAT 19" to word clock and Super Clock converter	£49.99

266XL DUAL COMPRESSOR GATE dbx



Two channels of classic dbx compression with new Auto-Dynamic™ Attack and Release controls, program-adaptive expander gates, balanced inputs, precision LED metering and sidechain insert. Front panel selection of stereo or dual mono operation, all in a standard 1U rack design and at an unbelievable price. Now with new auto setup mode!

RRP £249.99
£149.99

PRICES GUARANTEED



CHANSON D'IGITECH..

High quality voice processing is paramount if you don't want to end up being backed by a mutant Mickey Mouse, and Digitech's Vocalist series are the industry standard that others aspire to but rarely match.

VOCALIST ACCESS



19" 1u rack with 5 part vocal harmoniser and built-in reverbs. Easily connects to a MIDI setup and work from a keyboard, sequencer or standard MIDI file. Arranging harmony voices is easily done by selecting back-lit voicing buttons on the front panel to create the desired harmonies.

RRP
£349.99

- Industry Standard Vox FX
- Full Range to Suit Application
- In Rack or Desktop Designs

VOCALIST WORKSTATION EX

Up to 5 part harmonies plus high quality reverbs all in one box. Automatic or manual 'pitch correction' mode allows you to fix out-of-tune notes. The professionals choice for great sounding harmonies in a powerful yet easy to transport design.



RRP
£599.99

VOCALIST PERFORMER

Easy to use with great sounding harmonies for little cost. This box is designed for the guitarist or pianist who doesn't want MIDI but wants 'hands free' backing vocals with no fuss. Create hundreds of harmony styles from 50 different factory presets. Plug this in, choose a harmony and off you go!



RRP
£379.99

STUDIO VOCALIST EX



The new top of the line vocal harmony processor and pitch corrector with 5 independent XLR and 1/4" outputs. Also has 48v phantom powered, high-quality microphone pre-amp all housed in a rugged 2u rack case. Front panel mini keyboard buttons send MIDI and optional digital i/o board available.

RRP
£899.99

DIGITECH STUDIO 100

• Editable digital 20 bit multi FX
• Two effects in series or parallel
• Reverb, delay, flange, chorus, pitch etc
• Rear panel level trim & MIDI & footswitch

RRP £179.99
£149.99

DIGITECH STUDIO 200

• Dual engine FX processor
• 16 Effects Configurable
• MIDI compatible
• 30 bit A/D & D/A conversion

RRP
£299.99

BEHRINGER VIRTUALIZER

• Digital reverb, multi-effects, 10 patches
• Twin 24 bit DSP engines for left & right
• Reverb on demand at early activation
• Vocalist, Leslie, guitar, chorus, delay etc

RRP £169.99
£149.99

BEHRINGER ULTRAFLEX PRO

• Twin built-in 100 kHz Low pass filter
• High mix from 'Enhancer' to 'Exciter'
• Stereo width, XLR & TRS outputs

RRP £169.99
£149.99

DRAWMER MX50

• Drawmer's latest easy to use De-Esser
• HP boost, stereo link & split-band option
• Find precision centre frequency
• Turn threshold knob... Hey presto!

RRP £289.99
£269.99

DRAWMER MX30

• Dual gated stereo compressor
• Gateable release time
• Gain reduction and input limiting
• Easy front panel control

RRP £289.99
£249.99

SPL VITALIZER STEREO JACK

• Channelled controls for stereo operation
• Multiband phase shifters based on polyphase dynamics & hi-draw EQ
• Softlight bass auto compression
• Hiss effect with stereo expander

RRP £289.99
£149.99

DIGITECH TALKER

• Mic or guitar input, footswitches
• Digital 7 channel vocal reverb & FX
• Vocoder, Auto-wah, Ditch style
• Drone pitch, Alt, triad vocoder

RRP £249.99
£229.99

LEXICON MPX 100

• 20 bit Reverb and FX
• Superscans tap Reverb as a top early level reverb
• Full MIDI control
• S/PDIF digital out

RRP
£249.99

LEXICON MPX 1

• 4 Stereo FX - reverb or delay, 30 & 60 sec
• Digital 10 to 24 bit resolution
• 200 presets, 10 user patches, 32 bit DSP
• Cartridge, semi, white, remote, 100%
• Full stereo, mono, input, EQ, auto, reverb

RRP £1499.99
£599.99

TC ELECTRONICS FINALISER+

• 3 band digital compressor, 3 band EQ
• De-esser, Enhancer, Limiter, Expander
• Leveling, sample rate conversion, digital I/O, Auto Mixdown

RRP £1079.99
£1669.99

TC ELECTRONICS FIREWORX

• 24 bit multiFX & AES, S/PDIF & ADAT I/O
• 8 simultaneous effects, real time control
• Digital chucker, ring modulator, delay, vocoder, forward modeling & more

RRP £1569.99
£1299.99

TLA IVORY 5021

• Dual mono compressor with stereo link
• Valve output stage & reverb
• Additional expander / gain
• High impedance guitar jack input

RRP £489.99
£399.99

TLA IVORY 5051

• Channel strip with valve output stage
• Mic, line or DI jack input
• Compressor, expander & 1 level swing EQ
• Reverb VU metering

RRP £489.99
£399.99

TLA IVORY 5013

• Dual mono 3 band parametric EQ
• Valve buffered output stage
• High impedance guitar jack input
• Input & Output trim & EQ bypass

RRP £489.99
£369.99

TLA IVORY 5001

• Quad mic pre-amp + valve gain stage
• 90kHz hi pass filter & phase reverse
• Saturate verses with controlled output
• LED for valve drive level

RRP £489.99
£399.99

TLA IVORY 5050

• Mic, line & DI jack input with HPF
• Manual compressor, GR meter & bypass
• Output attenuator & jack connection

RRP £289.99
£269.99

BOSS SX-700

• Uses some Boss's 2003 30 algorithms
• 128 preset 128 user patches
• 80, chorus, flange, phase, harmoniser
• Pitch, Leslie, auto, reverb & MIDI etc

RRP £289.99
£299.99

DBX 1066

• Dual compressor with True RMS stereo link
• Peak-to-peak limiter
• Expander / ro be gate
• Hard knee or Soft knee
• Sidechain with HPF
• Mix & true VCA

RRP £479.99
£399.99

DUAL MIC PRE

• Focusrite's best ever value dual mic preamp
• 12 channels with 48V phase reverse & 75Hz HPF
• THD only 0.001% L
• Headroom is +25dBu
• Remote mute channel facility

RRP £899.99
£399.99

FOCUS EQ PARAMETRIC EQUALISER

The Focus EQ features ultra high quality mic preamp complete with phono input and phase reverse, as well as line and instrument level inputs, making it an excellent recording channel, or even a top quality preamp for tube or analogue guitar. It adds to a top quality parametric EQ banks, there are also variable high and low pass filters and the EQ and filters each have their own bypass switches. Typical Focus build quality can be taken for granted, as can some of the best sounding EQ you've ever heard. Very limited quantities available for this exclusive deal - order now or miss forever!

Focusrite
UNDER HALF PRICE!

RRP £999.99
£399.99

104 AURAL EXCITER

Unbelievable new low price on the Type C2 exciter from the laboratory of the genius, Aphex, who have pioneered these designs since 1975. The two channel Phase 104 excites high frequencies by generating extra harmonics, it is Aphex's 'Big Bottom' low frequency enhancement which compresses the low end of the mix to increase punch without raising peak levels. Limited quantities only - buy now to avoid disappointment.

ALMOST 50% OFF!

RRP £289.99
£149.99

4 POLE FILTER

The 4 Pole is the legendary Microwaves 1 Wave 24 dB lowpass filter. You are free to apply this filter to any audio signal that you wish to pass into the Filter. So if your favourite mixer or console player lacks that special quality, you can give it a special boost via the 4 Pole Filter. It is the most powerful filter you can possibly get (the only analog filter available today).



FACTORY DIRECT
£269.99

X POLE FILTER

What do you get if you take two of Waldorf's 4 pole filters, put them in a rack and splice it up? The all new X-Pole! Merging all of the 4 Pole's great sound, MIDI and tactile controllability, the X-Pole allows you to mix two more signals independently, or the two channels can be linked together for a stereo signal. To rack design makes for easy integration into your studio. System up your sound today - your hopes need never be the same again!



FACTORY DIRECT
£439.99

NANOVERB FX PROCESSOR

The Latest offering from the invention of digital reverb, superb quality 18 bit reverb and delay in a substantially small package. There are 256 presets in all, arranged in 16 distinctive banks to make you to find just the right effect for your application. True stereo processing, footswitch bypass, clip LEDs for input and output signals. The Nanoverb takes only 1/3 U of rack space and fits in neatly with its other Nano cousins!

RRP £189.99
£89.99

MICROVERB IV FX PROCESSOR

The Microverb IV brings you programmable effects in an unbeatable price. There are 100 preset programs and 100 user assignable patches for mixing all your favorites using the two para-verb effects levels. Processing is true stereo 18 bit, and there's even MIDI control of patch changes and modulation. An FX bargain to be reckoned with!

RRP £289.99
£145.99

MIDIVERB IV FX PROCESSOR

Fully programmable effects have never been so affordable! What's more the Midiverb's clever routing facilities mean you can have two independent effects with their own mono in and out, as well as true stereo processing of multi effects. The MIDI implementation allows control of multiple parameters via MIDI, and the large size screen makes editing simple. Alesis quality can be taken for granted!

RRP £289.99
£189.99

WEDGE MASTER REVERB

The Wedge Desktop Master Reverb from Alesis is unlike any other in that it's designed to be used right in the sweet spot, not in your rack. The Wedge's reverb algorithms represent the finest creations of Alesis' experienced DSP design team, and parameters like Early Reflection shape and stereo depth allow ultra detailed space emulation.



RRP £449.99
£149.99

PRICES GUARANTEED



A DIGITAL HURRICANE IN YOUR PC?



99% of available sound cards use the old-fashioned "DMA" system of recording audio in order to be compatible with Soundblaster games.

With the Pinnacle and Fiji, Turtle Beach abandoned this system in favour of their proprietary Hurricane architecture. Basically, it gives you more tracks than DMA on the same PC hardware, and leads to less driver conflicts.



The Turtle Beach Multisound series has long been considered the "Rolls Royce" of sound cards, from the very first Multisound in 1993, through to the highly respected Tahiti card, and now - the Multisound Pinnacle.

The audio quality of the Pinnacle is beyond reproach, based around a Motorola DSP with 20bit converters on both record and playback, 64x oversampling, and Delta/Sigma converters. An on-board Kurzweil chip provides a top-quality set of synth sounds, which can be augmented with your own samples which can be mapped to a MIDI keyboard via the SampleStore™ control panel. (Up to 48 Meg of samples can be loaded, depending on the size of SIMMs fitted). Create your own drum-kits, mix in break-beats sampled from CD etc... etc...

Other upgrade options include a synth daughter-board (eg DB50XG), cable for MIDI interface, and S/PDIF daughter board allowing direct digital transfer to/from DAT, CD player, MiniDisk etc... (£99 for either card). The Pinnacle is bundled with Voyetra's D.O.P. (Special Edition) sequencer which gives up to 16 audio tracks with digital effects (eg reverb, delay...) depending on hardware specification.

FREE DIGITAL ORCHESTRATOR SE WITH PINNACLE

CUBASE VST
PACKAGE WITH FIJI
£499.99

C-WALK PRO AUDIO 6
PACKAGE WITH FIJI
£549.99

LOGIC AUDIO
PACKAGE WITH FIJI
£599.99

ADD £75 FOR PINNACLE INSTEAD OF FIJI
ADD £99.99 FOR S/PDIF DIGITAL I/O



A PINNACLE WITHOUT SYNTH & SAMPLESTORE ALSO INC. FREE DIGITAL ORCHESTRATOR SE

- 20 BIT DAC / ADC
- Enhanced or Std Duplex
- Sample Store (up to 48 Meg)
- WaveBlaster™ Connector (for DB50)
- Optional S/PDIF Daughterboard
- Kurzweil Wavetable Synth

SOUND FORGE 4.5
PC SOUND EDITOR
ALSO: SOUND FORGE XP - £89

Sound Forge 4.5 (now with AVI and DirectX support) is a full-featured sound editor intended for musicians, sound designers, and multimedia developers using the Windows platform (Windows 95/98/NT). Allows sound file editing, effects, loops and regions, playlists, External samplers and sync to MIDI and SMPTE Time Code.

Multiple window environment allows more than 50 sound files to be open at one time. Supports WAV, AIFF, Creative VOC, VOX, and Sound Designer SD1 files. Drag-and-drop glitch-free editing. Sound Forge is perfect for authoring audio CDs on the PC. Now includes batch converter & spectrum analyzer.

RRP £249.99
£299

PLUG-INS Full range of Sound Forge plug-ins in stock

XF1 - reverb, time and pitch shifting, chorus and delays only £99

XF2 - noise gate, graphic and multiband dynamics, parabolic/metric EQ also £99

Spectrum Analyzer - nuff said £119

Acoustics Modeller - simulates acoustical responses £199

Noise Reduction - £275

Batch Converter - £159

CD Architect - complete red book audio CD burning solution - £299

DIRECTX / VST PLUG-INS

Up this power... the recording system with these real-time plug-ins and Native Audio Processing VST/DirectX - works with any DirectX compatible audio software

Loudness Maximizer - boosts the loudness of recordings	£299
Magneto - adds analogue warmth to digital recordings	£299
DeClicker - Restore your vinyl recordings	£299
Noiser - Easy noise reduction	£299
Spectrizer - spectral enhancer	£299
Q Metric - Analogue sounding parametric EQ	£499
Free Filter - linear phase 30 band EQ	£299
Waldorf D Pole - A virtual D pole filter	£149
Wave Native Power pack: reverb/compressor/maximizer/paragraphics	£379
EasyWaves Bundle - Over/compressor and EQ	£135
SPL De-Esser - Virtual de-esser	£149
Hyperprism - contains 25 effects including reverb, filters etc.	£279
T.C. Native Reverb - quality reverb, wildwest	£329
Fusion Vocode - software vocoder	£125
Fusion Vynyl - add the sound of vinyl to your digital recordings	£79
Fusion Filter - retromatic filtering	£135
VST Mac only	
Free-D - 3D audio simulator	£149
RED VALVE-IT - Valve tube modelling for guitar amp simulation	£299
VoxCiter - vocal processor and ambience	£299
Roomulator - Processing quality reverb	£299
Ambisonic - 3D stereo simulator	£149
Auto-tune - Corrects intonation problems of vocals in real-time	£499

NEW DSP FACTORY PCI CARD

Using sleeking PC recording and mixing card from Yamaha. Using a single card with a new 48 DSP's, Yamaha have captured the mixing and effects processing of their D2R digital mixer to add professional audio mixing capabilities to any PC system. Multiple EQ and quality effects using 24 bit processing. Includes a built-in 24 bit ADC and DAC. Also includes a built-in 24 bit DAC and ADC. Also includes a built-in 24 bit ADC and DAC. Also includes a built-in 24 bit ADC and DAC.

RRP £599.99
£599.99

NEW AUDIO PRODUCTION STUDIO

The makers of the professional choice of samplers finally bring our expertise to the PC in the form of a PCI sampler card. Designed purely for audio production this card gives you 64 voices of sampling, 16-bit resolution, 44.1kHz sampling rate, and real-time DSP effects. Comes with a drive bay interface giving 4 balanced analogue ins 2 out and 4 digital ins. Based with audio mixing and sequencing software this is a complete music recording solution.

RRP £449.99
£449.99

WOT NO SAMPLERS?!

No, we haven't stopped selling samplers or offering you the same great deals as always. See our six page Turnkey Loopstation brochure included in this magazine for all that's good in samplers, library and peripherals.

No brochure? Need another for a friend? Call us now and we'll have one on your doorstep tomorrow!

<p>PEAVEY PC 1600X</p> <ul style="list-style-type: none"> • Hardware real-time MIDI controller • 18 sliders, 16 buttons, 2 pedals, data wheel • 100 Scene memories, MIDI merge, V2 upgrade <p>RRP £349.99 £349.99</p>	<p>CAKEWALK PRO AUDIO 7</p> <ul style="list-style-type: none"> • 8 full size ports & 16 mini ports • Ideal for recording studio & professional users • 14 mini ports, built in PC, 14 ports external ports & 14 ports <p>RRP £269.99 £259.99</p>
<p>TERRATEC EWLS-64L</p> <p>NEW</p> <ul style="list-style-type: none"> • 16 bit full duplex • 64 note polyphony • On-board sample with 1MB upgrade to 4MB • DSP for real-time FX <p>RRP £329.99 £329.99</p>	<p>TERRATEC EWLS-64S</p> <p>NEW</p> <ul style="list-style-type: none"> • 16 bit full duplex • 2MB on board sounds • 64 note polyphony • Free slot for sample RAM up to 64MB <p>RRP £149.99 £149.99</p>
<p>KORG 1212 I/O</p> <ul style="list-style-type: none"> • ADAT optical interface card for the PC or MAC • Stereo Analogue I/O • S/PDIF I/O • Total of 12 ins and outs • Fantastic performance with Cubase and Logic (and others) <p>RRP £599.99 £549.99</p>	<p>MIDIMAN DMAN 2044</p> <ul style="list-style-type: none"> • 20 bit PCI audio card • On-board DSP for real-time FX • 2 can be used together for 40 bit sound for under £2000 <p>RRP £299.99 £249.99</p>
<p>CODA FINALE 98</p> <ul style="list-style-type: none"> • Top notation and score publication program • Build new notation • Even easier to use • Stunning professional output <p>RRP £689.99 £499.99</p>	<p>EVENT DARLA</p> <p>NEW</p> <ul style="list-style-type: none"> • Multiple outputs on a single card • 20 bit PCI audio card • 2 inputs & 2 outputs • Easy to install and runs with all major audio programs <p>RRP £299.99 £269.99</p>
<p>EVENT GINA</p> <ul style="list-style-type: none"> • 20 bit PCI audio card • 2 inputs & 2 outputs • Rugged breakout box with 14 jack connections • S/PDIF input <p>RRP £499.99 £399.99</p>	<p>EVENT LAYLA</p> <p>NEW</p> <ul style="list-style-type: none"> • Reconfigurable multitrack solution • 8 inputs and 8 outputs • Redundant external connectivity • MIDI input and thru <p>RRP £899.99 £899.99</p>
<p>KEYFAX PHATBOY</p> <ul style="list-style-type: none"> • Reversible and time based controller • 13 assignable knobs • Special settings for ReBirth, GS and XG • Works on any device with MIDI controllers <p>NEW PRODUCT £149.99</p>	<p>MOTU 2408</p> <p>NEW</p> <ul style="list-style-type: none"> • 24 track digital recording • 8 inputs on ADAT, TDM and analogue • Connects via PCI card for Mac or PC • 3 can be used together for fantastic audio fidelity <p>RRP £995.99 £995.99</p>
<p>TRAXDATA CDRW4260</p> <ul style="list-style-type: none"> • Re-writable SCSI CDR • Fully tested for reliable Red Book audio mastering • Comes with mastering and back-up software • Transdata SCSI card only (£49.99) <p>RRP £449.99 £379.99</p>	<p>LEXICON STUDIO</p> <ul style="list-style-type: none"> • 24 bit studio quality solution for Cubase VST • Balanced 24 bit stereo input plus ADAT in • Daughter board PC card giving quality Lexicon reverb from the EX250 • LTC ADAT and Sony 9 pin 15pin <p>RRP £2695.99 £2695.99</p>
<p>ROCKTRON PC PREAMP</p> <ul style="list-style-type: none"> • The ONLY PC preamp for musicians • Guitar, bass and 12LR • Warm sounding reverb • HUSH no key reduction • Splitter amplifier • Stereo effect line <p>Factory Direct £199.99</p>	<p>MOTU MIDI EXPRESS XT</p> <ul style="list-style-type: none"> • 8x8 parallel port MIDI interface • 128 MIDI channels • SMPTE to MIDI sync • Mac or PC <p>RRP £369.99 £369.99</p>
<p>PG MUSIC BAND-IN-A-BOX</p> <ul style="list-style-type: none"> • World leading intelligent arrangement software • Full backing band from entering chord letters • Full GSXG compatibility • Can export MIDI files <p>RRP £89.99 £89.99</p>	<p>EVOLUTION DANCE WORKSTATION</p> <ul style="list-style-type: none"> • 32 voice MIDI controller keyboard for PC • Comes with sample based dance music software • Connects directly to your soundcard • 100's of samples included <p>RRP £99.99 £99.99</p>
<p>SONIC FOUNDRY ACID</p> <ul style="list-style-type: none"> • Loop based production tool • Stunning playback shifting ability • Work ranges of any tempo in real time • Comes with 100's of beats <p>RRP £249.99 £249.99</p>	<p>OPCODE STUDIO 64X</p> <ul style="list-style-type: none"> • Serial port MIDI interface • 16" notebook unit • 4 x 16 bit 16 bit SMPTE sync <p>RRP £269.99 £219.99</p>

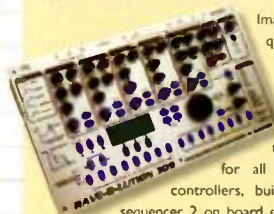
EUROPE'S LOWEST



SOFT MACHINE!

ALSO AVAILABLE WITH ALL 3 EXPANSIONS ONLY £569!

RAVE-O-LUTION 309 DANCE WORKSTATION



Imagine the raw powerful sound quality of Roland's TR909 and TB303, give them 50 times as many sounds, add resonant filters to the drums, and you've still only got half the instrument that is the Quasimidi 309! Knobs for all functions all send out MIDI controllers, built in real-time and step-time sequencer, 2 on board effects processors & EQ, optional rack ears, typical German build quality - far too many features to mention here! The ultimate dance production workstation, must be heard to be believed. "superb bass synth... excellent drum sounds... one of the most immediately useable products on the market" - Sound On Sound.

Call for a free demo CD. Money back within 7 days if not satisfied (ask for conditions).

PRICE NOW INCLUDES AUDIO EXPANSION!

FACTORY DIRECT £499⁹⁹

SYNTH & DRUM EXPANSIONS ALSO AVAILABLE only £69.99

309 AUDIO-EXPANSION



Input/output expansion board now available only £99.99. 2 external outputs through the AES synths. Also comes with new operating system with many new features.

FACTORY DIRECT £99⁹⁹

POLYMORPH SYNTHESIZER

Coming soon, the Polymorph is a four part analogue style synthesiser, with 8 note polyphony, 4 outputs and superb 309 style realtime editing facilities and sequencer & FX. Call for more details.



FACTORY DIRECT £699⁹⁹

ATC-1 ANALOGUE MONOSYNTH

Studio Electronics started out life as a company that serviced and modified old Moogs, moved on to producing remanufactured Mini Moogs in 19" rack form, and then developed the SE1 - a modern Mini Moog whose components were painstakingly researched to provide an instrument that was according to the reviewers indistinguishable from the real thing.



Most recently has come the ATC-1 Tone Chameleon - hand crafted in the USA in the same way as their previous products, but with reduced cost due to less knobs but a vastly increased sound palette thanks to the ingenious use of filter cartridges to emulate the best sounding instruments of yesterday. Editing is a breeze thanks to an individual button for each function, and a large central parameter dial.

Circuitry is analog throughout - right down to the oscillators and the sound generators to say signals. There are 2 LFOs (one typical in Moogs, three analogues) and virtually all parameters can be controlled either MIDI. The ATC-1 is supplied with the Mini Moog filter, and can also be fitted your choice of a TB303, ARP 2600 or Oberheim 3025 filter (only £89 each), and for the filter feedback amongst you, the filter feedback (only £199) takes all 4 filters simultaneously, and the filter type is automatically stored with each preset, waiting the time for switching. The mini panel sports an audio meter, and CV & gate in and out as well as the usual MIDI connections. Incredible reduction on another Turnkey exclusive - quality doesn't have to break the bank!

RRP £895 £469⁹⁹

JV1080 SYNTH MODULE



In the same way as the \$1000 became the industry standard sampler, Roland's JV1080 has become the industry standard synth module. It's not hard to see the reason why - straightforward operation combined with top flight sound quality and a huge range of sounds. But expandability of the machine is where it really comes into its own. There are over 10 different expansion boards, which can be fitted (up to 4 at once), each one with as much ROM as the original machine, covering sounds from Vintage to Orchestral and Classic to World. At Turnkey we have the full range in stock, as well as an unbeatable price on the machine itself.

RRP £1195 £LOW

JV2080 SYNTH MODULE

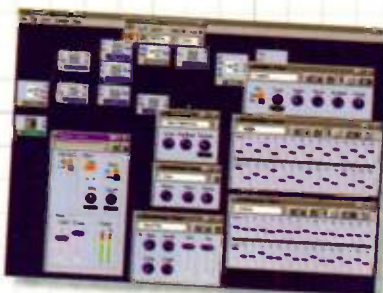
The Roland JV2080 has been the industry standard sound source for home studios and professionals alike. It's superb sound quality, 64 note polyphony and expandability were a winning combination. Now the new JV2080 builds on that success by offering a built-in editing screen, three independent effects processors as well as reverb, delay and chorus, and more! It's 8 of Roland's renowned expansion boards - the potential is virtually limitless! Building on the success of the JV1080, these will be in strong demand - call us now!

RRP £1295 £LOW



Generator 1.5 is a new milestone in synthesiser development. An amazing piece of software that transforms your PC into a professional fully featured synthesiser, without the need for additional DSP hardware.

Draw on a pool of over 150 elementary modules and develop new synthesis structures with power and ease. using the included DirectX Plug-In, digital audio data can be exchanged with an audio sequencer in real time, without any loss in quality.



"A very well designed and comprehensive modular synth system at a bargain price!" - Sound On Sound September 1998

- Complete Virtual Analog Software Synth
- Total Real Time Control and Processing
- Up to 16 Instruments per Voice with up to 64 Voices per Instrument
- Full MIDI Control of every Parameter
- Over 150 Elementary Modules, including Portamento, LFOs, Shapers, Mixers

NEW

FACTORY DIRECT £169⁹⁹

MEGADEAL ALERT NEW LOW PRICE!

FREEBASS TB303 CLONE

If you need the unique sound of an original Bass Line™, but can't afford the inflated prices that go with it, then Freeform Analog Technologies' Freebass is the product for you!



It's the only authentic sounding TB303™ clone on the market, and it's got MIDI! 1U rack with 1 knob per function, all the sound controls of the 303 are duplicated, Cutoff, Resonance, Envelope Mod, Accent, Tune and Decay. Waveform is continuously variable from square wave to sawtooth, and an auto tune button is included to retune the oscillator - no more continual drifting!

On top of this, there's an audio input to the filter stage, allowing you to process any external signal with the FB303's powerful synthesis. The ultimate analog bass machine - this incredible price means there will fly out of the door! Another Turnkey exclusive.

RRP £185 £129⁹⁹

ASRX TURBO SAMPLING WORKSTATION



Ensoniq's most innovative product to date! A totally self contained sampling workstation with 13 velocity sensitive pads for entering beats. The ASRX has 32 note polyphony and is 16 part multitimbral, with a built-in MR synth engine. In addition this workstation boasts resonant filters, up to 16 different 24 bit FX simultaneously plus a global reverb! Hundreds of built in sounds including 909 & 808, 16 track sequencer, built in disk drive, SCSI, Akai, Roland, AIFF, SMF, DOS & WAV compatibility, 2 meg RAM expandable to 32 meg, optional 26 meg ROM dance board & 8 audio output expansion board. Price includes X-Audio Volume 1 sample CD featuring sounds created by top artists!

Limited stocks only on this incredible Turnkey exclusive deal - hurry, hurry, hurry!

RRP £1449 £749⁹⁹

BUY WITH 8 OUTPUT BOARD FOR ONLY £99.99 EXTRA - RRP £179!

DM5 DRUM MODULE

The DM5 offers superb performance features and an excellent selection of drum, percussion & FX samples putting over 540 different studio drum sounds into 16 rack spaces. Inter received in our service unit with automatic effects, it's Expanded Dynamic Articulation feature allows sounds to change volume, tone, and pitch according to MIDI velocity. The Random Sample feature realistically recreates the sound of the drum as you play. The DM5 includes an ultra-fast trigger-to-PD2 converter with 12 trigger inputs, 4 audio outputs and a handy LCD display. The drum sound for you is waiting right here!

Another Turnkey megadeal

RRP £485 £269⁹⁹

SYNTH MODULES



ORBIT PLANET PHATT

Emu have taken their wealth of experience in making modules such as the Pultec, Vintage Keys and Morphous, combined it with the filters from the incredible Emulab 4, 800 19" rack unit innovation, come up with the Orbit and Planet Phatt.

The Orbit is stacked full of classic drum sounds, pulsating basses, ambient pads, as well as a huge variety of hats and effects, while the Planet Phatt brings a new definition to swing. The inclusion of the E4's 16 different types of 4 pole filters mean that these modules have more powerful filtering than any other synth. Finally the BEATS MODE includes a wide selection of loops and grooves which can have their pitch changed without tempo change and vice-versa, and even their sounds too! V2 software now gives improved beats mode and many other enhancements.

Orbit upgrade available for only £69.99.

RRP £895 £549⁹⁹

MORPHEUS SYNTH MODULE

Z-Plane synths, the Morphous offers programmers a potential quite unlike any other synth. At the heart of the Morphous are a set of 14 pole Z-Plane 8 filters that are capable of morphing between one sound and another, allowing you to manipulate sounds in incredible ways. 16 part multitimbral, 32 voice polyphony, 2 on board FX processors all fully controllable over MIDI together with 8 outputs, these will sell fast! Order now to avoid disappointment.

RRP £1195 £399⁹⁹

EUROPE'S LOWEST

SIRIUS DANCE WORKSTATION

NEW

The dance sensation of the year! Following hot on the heels of the award winning Rave-O-Lution 309, Quasimidi bring you the incredible new Sirius keyboard - a complete dance production workstation all in one.

The Sirius features the same acclaimed Analogue Emulation Synthesis as used in the 309, but gives you 3 synth parts with 12 note polyphony as well as the usual drum and percussion sections. But the innovation doesn't stop there, the built in Vocoder can take its modulator and carrier signals from any combination of internal or external sources (or the accompanying gooseneck mic), and for any budding DJ producers, the Sirius can be synced directly to a record deck or other audio source by automatic tempo analysis. Built in FX, a 4 octave velocity sensitive keyboard and a mod wheel that's assignable to multiple parameters simultaneously, round off a tour de force keyboard that is the hottest dance product of 98!

Call now for full details - we're so confident you'll love it, we're offering a 7 day money back guarantee! (Please call for full conditions)

FACTORY DIRECT £799.99

CALL FOR A DEMO CD

Wave Synthesiser

We now offer a new custom range of Wave synthesizers with 76-note keyboards in four colour options - standard blue, red (as shown), Sahara and black. Totally unique sound.

PRICES FROM £6299.99

AN1x VIRTUAL ANALOGUE SYNTH

Exclusive end of line deal on the AN1x - regarded as the best virtual analogue keyboard on the market! Custom designed DSP processors power the high sounding analog modelling algorithms. Factory presets were created by top UK session programmers, while the array of analogue modules creating your own patches is a breeze. With 5 octave aftertouch sensitive keyboard, 10 note polyphony, dual timbre, a ribbon controller, and built in effects, the AN1x is great value even at its original price - this deal makes it unbeatable. Demand will be outstrip supply - get your order in early!

RRP £899 £499.99

KORG Z1

- 13 algorithms, including 8 virtual modelling types
- 12 note poly & 24 filters
- FX: arpeggiators + real time XY pad
- ADAT digital out option

RRP £1699 £LOW

KORG N5

- 64 note poly A2 synth
- 1198 patches + 101 user
- 4/16ths 1st/2nd/3rd release etc
- MIDI syncable arpeggiator

RRP £699 £629.99

STUDIO LOGIC SL880

FREE FROM RACKS

- 88 note weighted master keyboard
- Assignable Pitch bend / Mod wheels
- Edit velocity curves, transpose etc
- Store your settings, MIDI controllers

RRP £599.99 £599.99

STUDIO LOGIC 760

- 76 weighted keys with aftertouch
- Pitch bend / Mod wheels
- Edit velocity curves, controllers etc
- 3 Timbre, splits, layers, multi switching

RRP £449 £429.99

ALESIS QS7

- 76 keys, 64 note poly
- 1618 sound ROM, 640 patches
- Accepts 2 Alesis QuadraCards
- ADAT digital output

RRP £899 £699.99

EVOLUTION MK149

- 49 keys (4 octaves)
- Velocity sensitive
- Pitch bend / Mod wheels
- Octave shift, pedal input

RRP £149 £99.99

ROLAND XP-60

- 64 note poly GM compatible
- 1618 ROM expansion to 10188
- 16 track sequencer with loop record
- Four Sound Palette sliders

RRP £1299 £LOW

ROLAND PC-180

- 49 key MIDI controller
- Velocity sensitive keys
- Data slider, program changes
- Pitch bend, octave shift, pedal

RRP £149 £139.99

ROLAND RD-600

- 88 note weighted piano keyboard
- 64 note poly, 128 sounds
- FX
- 3 band EQ, pitch bend / mod
- 4 controller sliders, TRS output

RRP £1699 £LOW

YAMAHA P200

- 88 key weighted piano keyboard
- Built in stereo speakers
- Successor to the popular P150
- Flat top so your music doesn't slide off!

RRP £1599 £1399.99

QS8 EXPANDABLE SYNTH

The QS8 64 Voice Expandable Synthesizer starts with an 88 note piano weighted keyboard, and a powerful 64 Voice synth engine, powered by 8MB of sound ROM which is expandable to 16MB, either through sequencers, editors, song files, and sample ROMs. Unbelievable clearance deal exclusive to Turnkey - buy now or live to regret it!

RRP £1299 £899.99

QS6 ALSO AVAILABLE only £499 QS7 ALSO AVAILABLE only £699

N264 KEYBOARD WORKSTATION

A brand new 76 note keyboard workstation for under £700! YES - another Turnkey exclusive - hard to believe, but hard to resist! Korg's N264 gives you 64 note poly, 32,000 note sequencer, looped recording, arpeggiator, disk drive, 4 audio outs, 400 programs & 400 combos, together with a full GHI sound set for SHF playback. The sequencer holds 100 patterns which can be assigned to the keyboard for spontaneous dance music. From the inventors of the original workstation. Very limited quantities on this exclusive end of line deal from Turnkey. Hurry, hurry, hurry!

RRP £1499 £699.99

X50 KEYBOARD SYNTHESIZER

Another unbelievable clearance special from Turnkey! Korg's popular General MIDI synth was a best seller at the original price, but at this special offer, stocks won't last long! The X50 is 64 note poly, 16 part multi, with 47 FX types on 2 buses. It has a full sized touch sensitive keyboard with pitch bend & modulation wheels, a built LCD, and there's a special 'Combi' mode to layer presets for some truly huge sounds! Over 500 patches of renowned Korg quality cover the full range of acoustic sounds from drums & percussion to huge synth textures. Very limited quantities - order now to avoid disappointment!

RRP £699 £325.99

KAWAI K5000R

- 2u rack Additive synth module
- Multi FX processors
- 4 part multitimbral
- Optional Micro isomol

RRP £999 £529.99

GUITARISTS - CALL NOW!

0800 328 1659

For a complete range of guitar, amp and FX deals, call our sister company Soho Soundhouse for a free catalogue - great service and great prices!

DTR-1 RACK-MOUNT DIGITAL TUNER

- Oversize easy to read LED meter
- Auto tuning with 3 selectable modes: Strobe, Cent, Hz
- Two tuning inputs to handle tuning of 2 instruments
- Built-in microphone is perfect for tuning acoustic instruments
- 3-Octave reference tone
- Cable check function

RRP £249 £169.99

DTR-2 RACK-MOUNT DIGITAL TUNER

- Rack-mount auto chromatic tuner with large LED meter
- Full 7 octave tuning range
- Auto reference calibration function can automatically calibrate the tuner to instruments that are not easily tuned

RRP £149 £99.99

VG8 GUITAR SYNTH

Unlike a guitar synth which records a just pitch & volume COSM processes each setting and wave form so the VG-8 can preserve & enhance all the subtle nuances of tone & respond to every variation in playing style (gliding, vibrato, etc). Flexibly models a huge range of pickups (& P.U. positions) amps, speakers. Separate Studio quality effects/EQ built-in. Works with any guitar.

RRP £1999 £999.99

YAMAHA G50

- Pitch to MIDI converter
- Works with G1D or B1D pickups
- Neural net processor by Blue Chip
- 128 patch settings, multichannel MIDI

RRP £699 £579.99

ROCKTRON STUDIO HUSH

- Rocktron's famous HUSH noise reduction system in a 1u rack
- Studio version has 2 channels
- Unlimited input and outputs

Factory Direct £169.99

ROCKTRON INTELLIFEX XL

- 1u rack digital multiFX
- 3.4 sec delay reverb, chorus
- Flange, pitch, Leslie, etc
- Effect wet / dry mix control

Factory Direct £499.99

ROCKTRON MULTIVALVE

- Digital multi-FX with valve preamp
- Compressor, 4 band EQ, reverb, pitch
- Delay, Leslie, flange & loads more!
- Rocktron's famous HUSH noise reduction

Factory Direct £599.99

YAMAHA DJX

- Home keyboard for sampling Dads
- 61 keys, 284 sounds, 12 samples, 100 styles
- Arpeggiator, sequencer, sweeps, loops
- MIDI ribbon controller
- Can take batteries
- Awsome SW built in stereo speakers!

RRP £269 £269.99

ROLAND HP136

- 88 key weighted digital piano
- Built in 15W x2 speakers
- 28 note poly, chorus & reverb
- Built in 2000 note recorder

RRP £949 £LOW

PRICES GUARANTEED

DYNAUDIO BM5

- Two way front posed nearfields
- 3 inch voice coil
- 28mm Tweeter
- Lightweight A1 cabs
- 150Wp, 88dB SPL per Watt
- Nominal 411 50-21k Hz
- 3dB



GENELEC 1029A

- Mini active nearfields
- 6 inch woofer, metal dome tweeter
- 45 Watt amp built in
- 400 Hz - 20k Hz, 100dB



TANNOY REVEAL

- Two way nearfields, standard baffles
- 8 inch woofer, 1 inch dome tweeter
- 150W RMS, 88dB SPL per Watt
- 6.5 inch woofer, inverted dome tweeter
- Soft domed tweeter, aluminium casing



SPIRIT 4P

- Low cost active nearfields
- 6.5 inch woofer, soft dome tweeter
- 100 Watt RMS, 88dB SPL per Watt
- Built in 400 Hz HPF, Bass and treble controls



ALESIS MONITOR 1

- Small two way nearfields
- 6 inch woofer, soft dome tweeter
- Rear ported, 411 nominal load
- 60 Watts RMS, 88dB SPL per Watt



ALESIS POINT 7

- Mini two way nearfields
- 6 inch woofer, soft dome tweeter
- Front ported, 411 nominal load
- 60 Watts RMS, 88dB SPL per Watt



KRK K-ROK

- Two way passive nearfields
- 6.5 inch woofer, silk dome tweeter
- Front ported, 811 nominal load
- 150W RMS, 88dB SPL per Watt
- 100 Hz - 20k Hz, 100dB



HARBETH DPM1

- Popular low cost nearfields, Pink cone
- 8 inch woofer, silk dome tweeter
- Front ported, 811 nominal load
- 60 Watts RMS, 87dB SPL per Watt



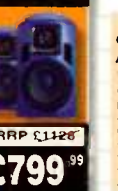
TURBOSOUND IMPACT110

- Passive sub with crossover
- Stereo satellite HF outputs
- 10 inch woofer in baffle design
- 150W RMS, 88dB SPL per Watt
- Two active ranges, 40-110Hz



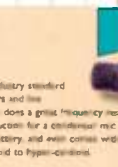
TURBOSOUND IMPACT121

- Portable PA satellite enclosures
- 12 inch midrange, front ported
- 150W RMS, 88dB SPL per Watt
- 100 Hz - 20k Hz, 100dB



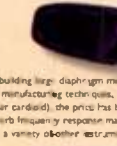
C1000 CONDENSOR MIC

The C1000 has become an industry standard amongst project studio owners and live performers alike, offering as it does a great frequency response, and extra-ordinarily rugged construction for a condenser mic. It can be phantom powered or used with a 9v battery, and even comes with a polar: microphone switch to change from cardioid to hyper-cardioid.



C3000 LARGE DIAPHRAGM MIC

The C3000 uses all of AKG's experience in building large diaphragm mics such as the C12 and C414, but by using modern manufacturing techniques, and only offering two patterns (cardioid and hyper cardioid), the price has been kept to a minimum. Its open barrel and superb frequency response make it ideal for vocals, as well as capturing great on a variety of other instruments.



NT1 LARGE DIAPHRAGM MIC

Rode have quickly made a name for themselves with the NT1, now the NT1 cuts out the frills at an incredible price. The gold plated large diaphragm capsule gives a superb full frequency response, and is great for all round use and particularly gold on vocals.



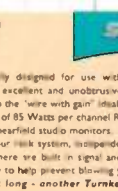
SM58 INDUSTRY STANDARD DYNAMIC MIC

Shure's SM58 has been the industry standard microphone for as many years as we can remember, and even today it's still a great buy. Robust enough to withstand countless heavy metal gigs, versatile enough for a wide range of studio uses, the yardstick by which all other mics are judged, none at an unrepeatable price.



SERVO 170 AMPLIFIER

Samson's Servo 170 is specifically designed for use with nearfield monitors, and does an excellent and unobtrusive job, sticking as close as possible to the 'wire with gain' ideal for an amplifier. It offers a power rating of 85 Watts per channel RMS, making it an ideal partner for most of today's nearfield studio monitors. The standard 2u design means it fits neatly into your rack system, independent left and right volume controls are given, and there are built in signal and clip indicators, together with protection circuitry to help prevent blowing your speakers. At this price, it won't last long - another Turnkey megadeal!



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- TWO Stanton cartridges
- 40mm
- KAM GM7 DJ mixer
- Maxell headphones
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- THE Classic DJ turntable
- 45/33rpm, 15" slip-mat
- Direct drive, instant start
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- 12 ch powered mixer, 8 mix inputs
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- HPF 2 Hz
- Master 7 band graphic EQ
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- 12 mono, 4 stereo inputs
- Stereo (red) and Sub (yellow) outs
- 3 band sweep mid EQ, 3 auxes
- 100mm faders, built in filter



SPIRIT FOLIO NOTEPAD

- Handy miniature submixer
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SPIRIT FOLIO F1

- 14 ch or 18 ch versions
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TASCAM TM-D1000

- 16 ch 4 bus digital mixer, dual panpots
- 128 snapshots, 10 effects, 3 band EQ
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- Dedicated transport controls & tape volume



YAMAHA MX12/4

- 12 ch 4 bus mixer with digital FX
- 7 band stereo graphic EQ
- 3 band channel EQ, 2 auxes
- 8 mix inputs, 4 aux returns



SAMSON SERVO 260

- 2u rack dual mono amp
- 130 Wpc into 4Ω
- LF Damping factor is 100
- Jack inputs, Noise -103dB

SAMSON SERVO 550

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AKG D112

- Industry standard bass drum mic
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- Presence lift for better kick
- Right-angle pickup from clip



AKG D3800

- Handheld dynamic, stage mic
- Hypercardioid pattern
- Broad vocal presence lift
- Triangular body shape



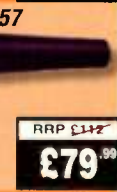
NEUMANN TLM 103

- Large diaphragm cardioid true condenser
- Transformed output, 100V output
- 70dB self noise, 2100Hz response
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- Wooden case, stand clip supplied



SHURE SM57

- Industry standard dynamic cardioid
- 400-15kHz (100dB)
- Stand clip & Case
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- Slim, unobtrusive yet robust design



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- Back electret large diaphragm mic
- Pretty tight cardioid pattern
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- Optional shockmount & accessories



OKTAVA MK219

- The original budget condenser
- Superb 15kHz HPF and 100dB pad
- Bright sound with 40dB gain
- 140dB self noise, smooth response
- Great for drums & vocals



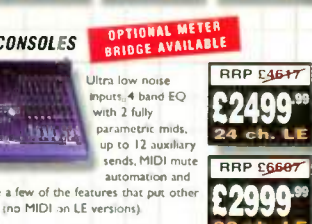
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Soundcraft's Spirit Studio desks revolutionised the project studio market when they were introduced over 5 years ago offering sound quality and features only previously found on desks several times the price. Even then they were great value for money, but because Soundcraft have recouped their R&D costs, and because of our substantial buying power, they are now available at an unbelievable price. No other desks represent such fantastic value for money, just check out the feature list: 'In line' layout means 40, 56 and 72 inputs respectively for the 16, 24 and 32 channel desks, 4 band EQ with 2 mid sweeps, 6 aux sends, 8 true subgroups, direct outs on every channel, LED metering, fader reverse - the list is endless!



GHOST CONSOLES

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paid to play

A PERSONAL VIEW OF SESSION PROGRAMMING

In the sequel to his article last month about being a session musician, **Big George** takes a look at what it takes to be a successful freelance programmer.

The mere fact that you're reading this magazine means that you probably own at least one piece of MIDI equipment. In fact, chances are that you've got a facility capable of churning out hit after hit after hit. But the chances also are that, so far, you're still waiting for your first one to arrive. Now, just while I'm speculating, I reckon that the thought of becoming a highly-paid studio programmer has crossed your mind. It has? OK then — read on.

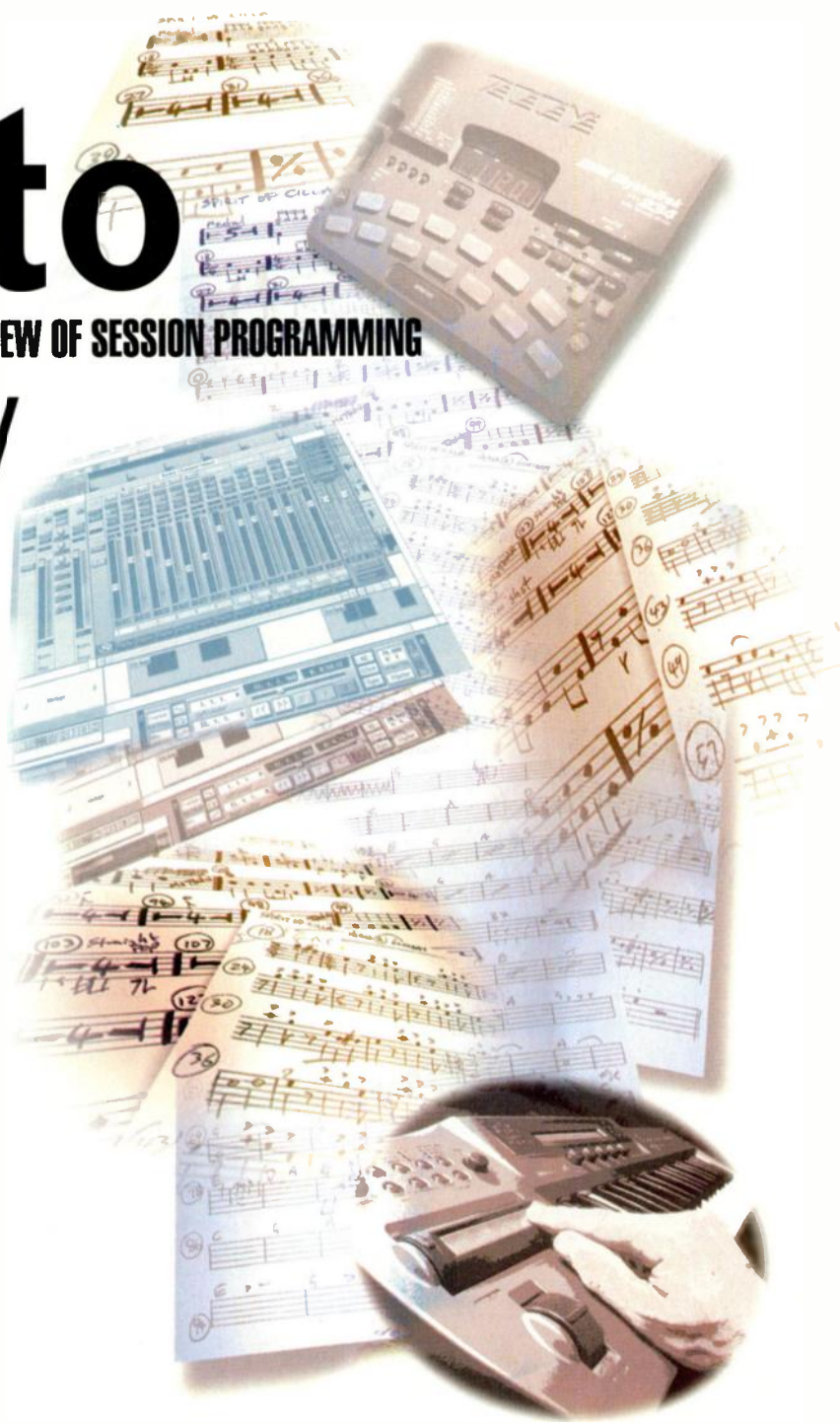
Before we go any further, by the way, this article is *not* going to contain any handy tips on sync'ing MIDI clock to SMPTE frames, or converting a *Cubase VST* tempo map into a *Logic Audio* non-destructive crossfade: it's about how to get through a session and please the client, the kind of things you might have to do, and the kind of things I've had to do in the past...

Once Upon A Time

I first became an unofficial programmer in the early 1980s, when the first generation of LinnDrums hit town. At that time most people (particularly drummers) were terrified of anything new. And the Linn certainly was new — it had real drum sounds that could be programmed to play impossible beats, it didn't need miking up, it wouldn't get paralytically drunk, and it wasn't obnoxious to all and sundry. It was a revolution, followed shortly by the arrival of the Fairlight, which needed a team of boffins just to switch it on and was better at drawing sine waves than it was at creating music. You also needed to be filthy stinking rich to own or hire one. I wasn't, so I waited until the mid-'80s to plunge headfirst into what I thought was the future of studio technology:

the Yamaha CX5, running on the ever-popular MSX computer system (RIP). What a joy that was, laboriously inputting every note manually onto a staff, with playback on squeaky internal sounds. The only job I completed was a string (more like a squawk) arrangement on a pop demo: it took me literally a full working week to do.

The real revolution came when Hybrid Arts, Steinberg's *Pro24* and C-Lab's *Creator* arrived, which was around the same time that the first wave of Roland LA synth modules appeared and Akai brought out the first affordable sampler, the truly revolutionary S900. In my opinion, this was the first and only sampler not to disappoint most of its owners, but back then gear was fully tested before it was put on sale, and our expectations were far exceeded by the bliss of bug-free 12-bit



mono technology. Since then technology has exploded into a million new avenues of ill-thought-out design, which has made the sequencing canvas a multi-coloured mirage of possibility, all too often smudged by bugs and incompatibility. And that's the situation programmers are up to their necks in today.

Making A Living

One of the most ridiculous jobs I ever had as a programmer was with a '60s band who, due to contractual rip-offs, never earned a penny from their massive run of hit records. I'm afraid this is another one of those stories where all identities

must remain anonymous, this time to preserve my health while at the same time being truthful and honest about the sort of thing that can happen.

It all started with a call from a European record company executive, who'd got my number from a disco label for whom I'd been churning out Mediterranean holiday crap records. The chap explained that the job entailed re-recording the less-than-classic hits of the group as close to the originals as possible, so that the record could be released with the label 'The Original Hits By The Original Artists'. Piece of piss, I thought, and the money he was offering sounded great, so I was in.

Anyway, he sent me their 10 original tracks, all of which I had to do from scratch. I had a week of pre-production time before going into the studio to lay them down with the band. The man with the money had said that the band weren't exactly in the best of nick these days. When I met them for the first and only time, on the day they did the vocals, they looked more like World War One veterans in Pringle jumpers. Also, seeing as they hadn't actually played on the original recordings — and, in fact, hadn't actually played anything but Crown Green bowls for the past three decades — I knew it was down to me to do all the playing, by means of (and I quote) "all this new-fangled spaceship nonsense, not like in our day..."

Tools Of The Trade

Buying every new piece of kit is an expensive way to become bugged out of your mind. A programmer isn't there to learn how to use their latest purchase — they're there to structure a rhythm track, or voice a string part, or spin the backing vocals throughout the song, or sync a live performance to a sequencer, or any combination, and more. Some specialise in certain areas — such as high-end synths — and some are hired for their sequencing expertise. As regards equipment, a

programmer could be highly successful with just an Atari 520ST and a Casio FZ1, if they know what they're doing and can predict what the client will need to hire and when they'll need to hire it (mind you, you'd have to have cast-iron balls to walk into Sam West with that setup). It's also possible to have a music shop full of gear and still cock up the simplest of jobs, because you (a) can't get things to work; (b) are an obnoxious ass who is impossible to get along with; or (c) can create your own music but are unable to do the bidding of others.

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- (followed by half an hour of waffle about travelling in the van and how watered-down, commercialised flower-power pop was the defining moment in 20th century music).

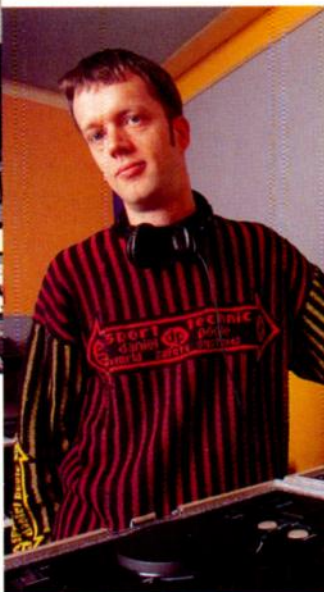
Being afraid of too much hard work, I subbed out the first stage of the process (namely, putting together the bare bones of the songs' structures — drums, bass, basic chords, and so on) to a fellow programmer, as I knew I'd be getting to know these tracks very well by the end of the project, and the later they started to invade my subconscious the better. As I recall, I paid this lower form of programming life a pittance for his time and effort and the cranial damage it inflicted on him. But as things that go around come around, he's my Editorial Directing boss at *Sound On Sound* these days, so no wonder I'm forever doing these kiss-and-tell articles which get me blacklisted from the industry.

But I digress... Out of the 10 pieces of rock & roll irrelevance there was one song of theirs which was just so abysmally recorded, back in the plate-echo-distorted '60s, that it was impossible to recreate through the wonders of new-fangled technology. After a great deal of discussion with the money man, me explaining we could do a better, cleaner version and him saying it had to sound the same, we decided we had to take a chance. (And before you shout copyright at me, first off I'll deny it, secondly the band were morally entitled to something from their past, and lastly don't tell me that every single programmer who has ever been in a studio hasn't at some time sampled from a record without going through the MCPS copyright clearance — though granted, maybe not an entire song.)

So I time-stretched the original by less than one per cent, to make it a couple of seconds longer. I then got the old-boy band to sing along to it, and finally I added even more reverb to the reverb-swamped original and their very matured voices. In the words of everyone in the studio who actually gave a toss, "it sounds more like the original than the original does". To date I've seen the record on sale once, for £2.99 in a petrol station. I bought it and compared it to the original CD and, if I say so myself, I did an amazing job of recreating duff muddy rubbish, tape hiss and out-of-time playing that sounds more like the original than the original did.

How Do They Do That?

Probably the best way of getting into programming is to have a string of hit remixes under your belt and wait for the telephone to ring. And how do you get your first remix? If you know someone putting out a record, ask them if you can have a copy of the vocals and any important musical phrases and riffs, and do a killer mix for no money. Once you've done it, send a copy to the weekend DJ of your choice on BBC Radio 1FM and pray they play it — and include it on their own compilation CD of top tunes, as seen on TV and heard in clothes shops in High Streets across the entire world. Another way is to get into a studio, either as a rep for a company, or a



pizza-delivery operative, but try to arrive at the exact moment there's a problem with the MIDI aspect of the operation. Then you simply fix it, suggest a couple of brilliant ways of improving the process, and before you know it they've asked you to stay. In no time you're producing hit records. Fairy tales? I don't think so — I know two highly successful programmers who were in the right place at the right time and got their first breaks in exactly those ways.

There's another way, although you're not going to like it. About eight years ago it's how I made a couple of grand in under a fortnight (mind you, I've never done it since, as it made me feel dirty). And what is this other way? Karaoke!!!! Yes, I know — even the devil wouldn't condemn the most evil of souls damned in Hades to do it. But if you've never worked under pressure and adverse conditions, it's a start, and you'll need some practice before you get the gig on Madonna's or Björk's next album.

There are two sources of income in this appalling '90s phenomenon. Go to any Karaoke bar and you'll see numerous wannabe singers with a burning desire to go on *Stars In Their Eyes*. They pay good money for their own backing tape of a hit song in their key with their arrangements.

It's also possible to actually make the Karaoke tracks for a company who puts them out. That's what I did, and I'm not ashamed (I actually am, but I had to put food on the table). Before you reject this out of hand, remember that Karaoke is one of the only boom businesses left in today's music industry.

Money can also be made, and programming ►

Marius de Vries (top left) and Peter Gleadall — top-flight programmers now, but both admit to having started work at the right time ie. the mid-to-late '80s, when people who knew what MIDI was really capable of were as rare as nymphomaniac pandas.

It could be you... but seriously folks, karaoke programming is a great way to gain experience.

STUDIO SETUP FOR GRABS
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tion. 60 quid the lot, no questions asked.
ref xxxxx xxxxxx
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site condition, home use only, already a
C £1100. ■ Alan xxxxx xxxxxx
KIE d8b, still boxed, hardly used, no
% unwanted gift. £75 for quick sale ■
xx xxxxxx
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and finished song ideas! Top prices
You too can be a star, just like what I am
finished EQ'd multitrack masters to Ron
oy' McNasty. 32a Factory Arches,
w/ NW1

ENSORQUE TS10 workstation, bit scraped on
farmac one side, luvverly nick, 1100 quid and
cheap at the price. ■ Jon xxxxx xxxxxx
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Should Be So Lucky", "Shaddup A Your Face",
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asked, no worrimean? Will swap for Playstation
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or 235) or other precious metal of you.
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► experience gained, through 'Vanity Production'. There are always people who have written a song or thousand and want to record it in a studio, either with themselves, or their partner, or a session singer performing the vocal part (the session singer can be anyone you know who's prepared to sing 'the Moon in June made me Swoon'-type lyrics without saying they're a pile of crap or, even worse, laughing). Advertising these services in the local music shop and free ads pages is practically guaranteed to bring a response.

Knowing Your Place

A friend of mine (again, no names, no legal aggro) was programming for a songwriting heart-throb who was working on his first solo album. The Star had a number of simplistically chord-structured songs that he asked the programmer to orchestrate. As the process took shape and the original three chords became a cultured, fully-voiced arrangement, including passing chords interwoven with new counter-melodies, the programmer mentioned that maybe he was kind of co-writing the music with the big star. That evening he received a call from the star's manager telling him he'd be paid up to date and was never to go back again, ever. When the album came out, the songs my mate had turned from primitive structures to beautifully crafted pop tunes were there, in his form, without a mention of his name on the sleeve anywhere. Which is how it should be, annoyingly. As it happens, the album sold disappointingly, and what was tipped to be the start of a major solo career has dwindled into the file labelled 'Where is he now and who actually cares?'. Maybe it was the classy arrangements that did for him.

The point is this: programmers, arrangers, producers and soloists are often major contributors to the structure of a song. If you find yourself in this position, the last thing you should do is ask for a co-writer's credit, as you could be out of a job faster than a speeding whippet. If you want a co-writer's credit (and before you let your artistic self-importance get the better of you, think how many instrumentalists have contributed the



Big George's favourite:
the ever-popular
[are you sure? — Ed]
Yamaha CX5 music
computer.

killer hook to a song and received only a basic session fee for their pains), you have got to get the client to suggest it to you. How you go about that depends on you and them. You could try asking how they think the track is shaping up, or what other songs of theirs have the same musical structure, or get them so pissed they'll sign a piece of paper saying you co-wrote everything they've ever written. But don't, whatever you do, think that because you've re-arranged the middle eight and changed the intro you're entitled to a slice of the action. Unfair it may be, but what is it 'they' say about life?

And Finally...

These days there's no strongly defined line between becoming a programmer, composing for corporate/training videos, and producing the backing track for a singer/rapper. It's all MIDI-based, on a budget and needs to be done exactly to someone else's specification, not yours. You don't need a PhD, and, more importantly, you mustn't approach it as a *prima donna* artist. It's all about doing whatever the job entails, as quickly as possible, without too much fuss, and getting paid — because, unlike a lot of other aspects of this business, there's no point in doing it unless someone gives you money. And before you ask how much, there isn't a set rate: ask for whatever you think is the maximum they can afford and accept nothing less than... well that's up to you. If you think you're up to the task, I sincerely wish you a crash-free time. **ES**

"Being a programmer isn't solely about how many cute short-cuts you know for quantising a groove-parametered hi-hat pattern: it's about survival."

Trust Me, I'm An Expert...

Clients fall into two categories. Firstly, people who have a working knowledge of MIDI and have hired you to allow them to concentrate on the creative process of making music, and secondly, people who think that MIDI is a late '70s style of knee-length skirt. Being a programmer isn't solely about how many cute short-cuts you know for quantising a groove-parametered hi-hat pattern: it's about survival. How you deal with the inevitable equipment-failure crisis depends on which breed of client is paying you. If they're one of the first type, you can adopt the 'two heads are better than one' approach. They may have come across this problem before and know the route out of it, and as they're the boss it's expected that they should have a higher grade of intellect than the hired help — although if they make it seem as if a trouble shared is a trouble doubled, don't let

them stand over your shoulder giving you grief. Ask them to give you some space and when they leave the room immediately ring every helpline on the planet (the numbers of which you have in your diary, naturally) and get them to sort the problem. Then, when it's fixed, blame something that was nothing to do with you.

If the client belongs to category two, don't flap. Simply act as if this is all part of the deal. Remember: experts are people that are always aware of the current situation and always know what to do next. Imagine that an oil rig in the Gulf of Mexico catches fire and is burning out of control. The Oil Conglomerate immediately send for the world-famous fire-fighter Red Adair to fix it. When he turns up, he sees that this is a type of fire unlike anything he's ever come across before and he has no idea what to do about putting it out. Do you think he says to the people paying him enormous amounts of money 'er... I dunno what to

do about this blaze... we could start by filling loads of buckets with water and throwing them over it.' NO — he acts as though he's in control of the situation and starts with a set of procedures — any procedures will do; the most important thing is that he does *something*. If what he does makes the fire worse, he'll say he's satisfied that he's eliminated an option that could have been catastrophic later. Eventually he'll either find a way of putting out the inferno or bluff his way through until the fire goes out. And that's what *you* should do. Don't say 'I can't understand why the MIDI click is being recorded to tape across all of the vocal tracks.' Be calm (even if you believe there's a voodoo curse on the session), act as if this is a situation that arises regularly, not a major problem, and as soon as you've traced the source of the anomaly — which is, naturally, no fault of yours — it will be eradicated. It's what's known as being fluent in bullshit, the music industry's native tongue.

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20 tips on...

using MIDI guitar

There is no doubt that the vast majority of people turn to a keyboard to get musical ideas into their sequencer. The ease with which the physical action of a keyboard can be designed to generate note-on, pitch, velocity and note-off information has made it a reliable and versatile controller for the MIDI musician. That is, of course, unless you're a guitarist (or a drummer, saxophonist, violinist...), when that row of black and white keys sitting between you and your extremely sophisticated sequencer can seem more difficult to master than a circuit diagram for the Space Shuttle.

Enter the 'alternative' MIDI controllers which allow you to beat, blow or strum your way to a MIDI-based masterpiece. Guitar-based MIDI controllers have been around for a good number of years and various designs have appeared during this time. The most common form consists of a pickup that provides a means of converting the pitch of a plucked string into a particular voltage and, from this, generation of a MIDI note. The advantages of this approach are that it is relatively inexpensive and can be mounted onto a standard guitar (or bass — see page 218).

There are, however, a number of catches (or design flaws, depending upon your point of view!) with this type of system. The basic process of 'pitch-to-voltage' conversion is not as reliable as the 'note-on, note-off' mechanism of a keyboard. As well as the notes you do want, therefore, any unintended vibrations (commonly caused by fretting or pick-hand movements) will also be translated into some sort of MIDI information. The result can often be somewhat less than musical, as the pickup struggles to convert every buzz and rattle into a specific note. In addition, because the pickup will, by design, take longer to convert the pitch of notes at the bottom of the guitar's range, there can often be a noticeable delay between hitting the string and hearing the generated MIDI note.

Both of these problems have resulted in many guitarists giving MIDI controllers a wide berth. However, with a little care and perseverance, it is possible for even a humble guitar player

All fingers and thumbs in front of a keyboard?

John Walden provides a few pointers to make sequencing using a MIDI guitar controller a less fretful experience.

to exercise some control over his or her MIDI sound module. For those brave enough to try, this list of ideas and tips is intended to get you off to a good start.

1. If you are new to MIDI guitar controllers, perhaps the first thing to consider has nothing to do with the gear, but a lot to do with attitude. Asking a simple question can help at this point. Why do you want to use your guitar rather than a keyboard to generate MIDI data? If the answer is that (like me) you know far more about a fretboard than a keyboard, then ponder the following. Getting a good performance out of a MIDI guitar controller requires a considerable adaptation in playing technique, and many guitarists find this both limiting and frustrating. So which it is to be — spend some time adjusting what you do know to get the best you can out of your guitar, or start with Grade 1 piano lessons? Guitar controllers are not perfect, but with a little effort and a positive attitude, they can provide a viable alternative to a keyboard for communicating with your sequencer.

2. If you have the choice, do not fix your MIDI pickup onto your favourite Fender, Gibson or PRS, particularly if it has a low action to cope with the occasional manic solo. A low action will mean a certain amount of fret noise, and while this is fine for

One of the most recent additions to the field is the Axon AX100 pitch-to-MIDI guitar system from Blue Chip.





normal use, it can play havoc with the pitch-to-voltage conversion process of the MIDI pickup. If you can afford a second guitar for the MIDI pickup, then experiment with the action to achieve a suitable balance between playability and reliable tracking by the pickup. For example, the slightly higher action often used for slide playing might allow you to combine slide and MIDI use on one instrument.

3. Most MIDI pickups allow the sensitivity of each string to be adjusted individually. When installing a pickup, take your time getting an even response. This will help produce a smoother performance with any synth patch that is velocity-sensitive.

4. If you can possibly forgo your 'extra slinky' light-gauge strings, do use something a little heavier (an 11 or 12 gauge set should do the trick) as this can result in more reliable pitch-to-voltage conversion by the pickup.

5. To keep false MIDI triggers to a minimum, a really clean playing technique is needed. Unfortunately, this means that many of the techniques used in rock guitar to add expression (tapping, rapid hammer on/off, and digging in with a pick to produce various harmonic effects) are not suitable for use with a MIDI pickup, and will result in unwanted notes being produced by your synth. Keep your playing clean and simple.

6. A common cause of false notes is re-triggering of a note as the string is released. This can be kept to a minimum by not releasing the string entirely (mute the string with your fretting hand) when you end each note.

7. Experiment with different types of pick to see if you can reduce those unwanted 'glitches'. Using your fingers rather than a pick, or using a felt covered pick intended for bass guitar can help.

8. Consider the sound you are playing and don't overplay. For example, pad sounds are often very full with a wide frequency response, and only a few notes are needed to produce a big sound.

9. Trigger delays can become noticeable at lower pitches on the guitar neck and this can be disconcerting while playing, particularly with sounds that have a fast attack. Use the transpose function in your sequencer (or

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► on the pickup if it has this facility) so you can play bass notes at a higher position on the fretboard.

10. Somewhat unpredictable velocity sensitivity can be caused by poor playing technique. If the pickup allows, reduce the dynamics while recording the part and then edit the velocity data within your sequencer (or copy dynamics from another part in the sequence) to put a little life back into the performance.

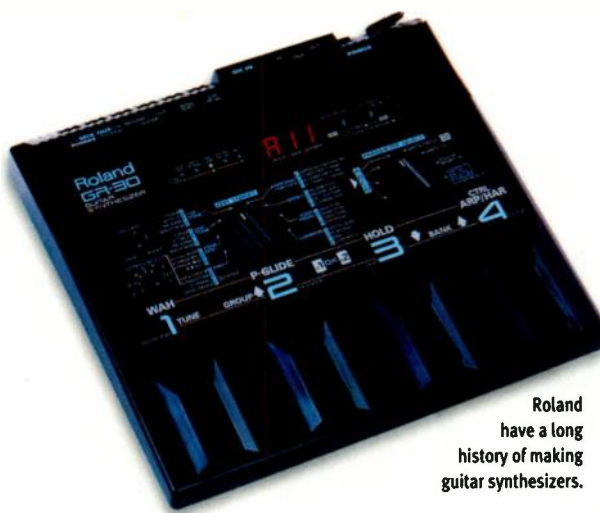
11. Take care to consider the chord voicings that you use and attempt to match the instrument your synth is trying to emulate. For guitar parts this will not be an issue, but if you are trying to create a piano part then consider how a pianist would put each chord together. Users of Emagic's *Logic* sequencer could put the Chord Memoriser function from the Environment to good use here.

12. If your synth allows, and where appropriate to the sound, edit the decay portion of the patch's envelope so that it has a short fade once the 'note off' message has been received (that is, when the string has stopped vibrating). This can result in a much smoother performance and compensate for an uneven decay across different strings.

13. Most MIDI pickups can be used in different modes. In 'poly' mode, MIDI data from all six strings is sent out on a single MIDI channel. In 'mono' mode, by contrast, data from each string is sent on a different MIDI channel. One use of this is that it allows the MIDI data from each string to be recorded on a separate sequencer track. This can make editing easier (and each channel can be combined once the part is in a finished form) and allows experimentation with pre-delays on lower strings to bring them into time a little more tightly.

14. Even after you have done all you can to minimise false triggers by setting up the pickup and adapting your playing technique, a few unwanted notes may still appear. These notes are often of a very short duration and/or low velocity. Use your sequencer's editing functions to select short and low velocity notes, which can then be deleted (or, more safely, copied to a separate track). This can clean up a part considerably. Experiment with different values of note duration (eg. 64th notes) and velocities (eg. less than 10) until you find something appropriate.

15. If, following on from the above tip, you still have a few unwanted notes, then look for and edit 'double notes' in your sequence (where a note has been triggered twice at the same pitch in rapid succession).




Roland have a long history of making guitar synthesizers.

16. Some false triggers caused by the occasional finger, pick or fret noise are often translated as unusually low or high pitches. If you know a part should only contain notes within a certain pitch range then delete notes outside this range. Some sequencers provide a 'pitch limiter' function that can be used while recording and will ignore notes outside a set range.

17. Solo instruments (including many wind instruments) should only generate one note at a time, and you should try to emulate this via MIDI to add a certain realism to the part. As a MIDI guitar controller can generate six notes at once, use of the 'voice limiter' function built into most modern sequencers will help here.

18. If your sequence is MIDI-only, or you can mute any audio parts and still play along to the piece, then try slowing down the tempo of the track by a small amount (eg. 10 percent). This can make getting a clean performance on a difficult part a little easier. Extreme changes in tempo will not work so well with sounds that have a filter effect, as the speed at which the filter is operating will obviously influence how you play.

19. Take care with the quantise functions on your sequencer. While quantising can help overcome trigger delays on lower notes, if you are trying to emulate an instrument being strummed, it can also remove the slight delays between notes within a chord that create the impression of strumming. By contrast, keyboard sounds (like pianos) are generally not strummed(!) and quantising can help improve timing of chords.

20. If the part does not require pitch-bend, then set up either your sequencer so that it filters pitch-bend data out, or your pickup so that it doesn't transmit it. If you do need pitch-bend then experiment with the pitch-bend range of your MIDI sound so that you achieve the most effective control from your guitar. In most cases, the pitch-bend range of the synth sound should match that of the pickup, but it is worth trying a few other settings to see what sort of effects can be produced. 

“...with a little care and perseverance, it is possible for even a humble guitar player to exercise some control over his or her MIDI sound module.”

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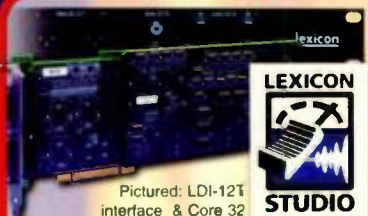


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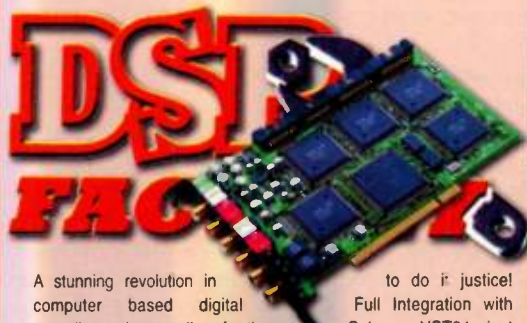
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ROLAND JP8080

Roland have certainly had something of a hit on their hands with the JP8000 Analogue Modelling synth (see *SOS* March '97). Its warm sound, tweakability and ease-of-use have endeared it to many users, myself included. All that was lacking was a rackmounting option — which, true to form, Roland have now delivered. Just as true to form, they have also taken the opportunity to upgrade their newcomer and add a few more tricks into the bargain.

Heavy Metal Heroism

I must firstly congratulate Roland on producing a very solid piece of engineering in the form of the JP8080's casework. The build quality is exemplary. Gone is the bendy plastic casing of the JP8000, replaced by confidence-inspiring metal. The textured blue finish and clear legending are also very appealing to the eyes.

Considerable thought has obviously gone into the physical design, and the JP8080 is equally at home as a desktop device as installed in a rack.

'80s revival



ROLAND JP8080 ANALOGUE MODELLING SYNTHESIZER

Although 6 units in height, it is actually only 9 centimeters deep at its maximum. When sitting on its feet the control panel presents itself at a jaunty angle towards the operator.

A recess in the back panel contains the necessary socketry, all of which points upwards to allow for desktop use. At first I balked at the thought of trying to access these sockets once the device is installed in its rack, but enough space has been left to make this a fairly painless task. The JP is quite sparse on connections: a standard 'Euro' mains connector, left/right audio outputs, mic and instrument audio inputs (more of which later), two MIDI inputs, and one MIDI output. In keeping with the JP8000, Roland have not included a MIDI Thru socket, which I consider to be penny-pinching at its worst in a machine of this price, although a software Thru option does make up for this somewhat.

The JP8080 features the same analogue modelling technology which made its debut on the JP8000, but adds a complement of new and

upgraded features. Let's take a tour of the basic architecture and I'll point out the differences from the JP8000 as we go.

Patchy In Places

The fundamental building block of sound in the JP8080 is a 'Patch'. There are 512 Patches, 128 of which are available for storing your own creations. Two Patches, with an array of performance options secured around them (such as MIDI channel and transposition), constitute a 'Performance'. Patches defined within a Performance are totally divorced from Patches held elsewhere, meaning that you can edit the Patch data within a Performance without affecting any of your other sounds — bliss! Of the 256 Performances in the JP8080, 192 are preset and 64 can be overwritten by the user. The data within the JP8080 is arranged into 'Groups' of 64 accessed by a dedicated Group button. This, together with the 16 bank/number buttons, makes selecting Performances and Patches on the JP8080 considerably easier than on the JP8000.

Roland have finally released the rackmounting version of their much-vaunted JP8000. And what is this? A mic input? **Paul Ward** adopts his best Kraftwerk pose for a spot of modern nostalgia.



ROLAND JP8080 £1099

pros

- Realistic, powerful analogue emulation.
- Built-in Vocal Modulation features.
- Controls transmit as MIDI messages.
- Flexible and inspiring modulation possibilities.
- Immediacy of real-time control.
- External input to filter.
- Memory card slot.
- 'Button-keyboard' preview function.

cons

- Lacks features, polyphony and multitimbrality compared to some of its contemporaries.
- Quirky use of two MIDI inputs.
- No dedicated MIDI Thru socket.
- Sharp learning curve for many of the Vocal Modulator features.

summary

Another excellent synth from Roland, and one that is genuinely enjoyable to use. Vocal Modulator features are more than welcome, but it remains to be seen whether this and the other new features will be enough to compete with the new breed of modelling synths appearing on the market.

SOUND ON SOUND

The two Patches within a Performance may be split or layered across a keyboard, and detuned for a fatter sound. The JP8080 also includes the ability to set all of a Patch's voices into Unison mode, with definable detune, for an even thicker sound — a feature missing from the JP8000. In common with most DSP versions of analogue synthesis I have come across, the results are not as thick as you'd expect from a real analogue, but the effect is pleasing all the same.

Although physical modelling provides the technology behind the front panel, the user is presented with a familiar analogue synth interface. The JP8080 is a 10-note polyphonic, two-oscillator synth — giving it two more notes of polyphony than the JP8000. Both oscillators have the option of sawtooth, square, triangle and noise waveforms (the JP8000's noise waveform was available only on oscillator 1), but oscillator 1 takes things a step or two further, with its 'Super Saw' emulating seven detuned sawtooth waves, and monophonic 'feedback' waveform. Roland have taken advantage of their DSP technology to provide each waveform with further wave-shaping controls. In the case of the square wave, for instance, this takes the form of simple pulse width modulation, whilst the triangle wave can be fundamentally bent and twisted by a wave-shape offset amount (essentially a waveform 'wrap' facility). When passing an external signal through the JP's amp and filter, in addition to losing two notes of polyphony, the use of oscillator 2 is

also lost — seems a fair compromise.

A pair of LFOs are available for cyclic modulation duties. LFO1 has a choice of triangle, sawtooth, square, or random waveforms, whilst LFO2 is a dedicated triangle wave used to impart modulation from external control sources, such as a keyboard's mod wheel. The LFOs may be simultaneously assigned to such duties as filter, pitch, and amplitude, with negative or positive modulation amounts.

That Sync-Ring Feeling

Further waveform-bending features appear in the form of a ring modulator, oscillator sync, cross modulation, and a simple attack/decay pitch envelope.

The JP's filter is a very flexible implementation, with options for low-, band- and high-pass types. The resonance goes all the way up to self-oscillation, just as on an analogue device, and the provision of a 12dB or 24dB response means that a wide range of reasonable emulations is possible, from aggressive Moog leads to those sadly overworked, bleepy-farty TB303 bass lines. Cutoff modulation is available in variable positive or negative amounts from keyboard tracking, the LFOs and the filter envelope.

ADSR envelopes are provided for both amp and filter — far better than all that messing around with multi-stage envelopes.

Panning and level duties are handled by the Amp section, wherein lie the joys of auto-panning and amplitude modulation (tremolo). For overall sound-shaping, a pair of simple bass/treble tone controls apply to the Patch as a whole — not exactly exciting, but welcome all the same.

Next in the audio chain is a simple delay effect, with control over time, feedback and level. A variety of delay types can be chosen, with options for panning and stereo ping-pong delays amongst the offerings. The maximum delay time comes with the basic mono delay of up to 1.25 seconds.

Thirteen different modulation-type effects can be added to the Patch, including various types of chorus and a new distortion effect, which does a pretty good job to these ears. I still very much like the Deep Flanger that impressed me so much on the JP8000. These are preset effects, the only editing options being to synchronise the modulation speed with LFO 1 or an external MIDI clock.

Mono and legato modes are provided for expressive solo lines, and portamento for smooth glides between notes. I still have to gripe about portamento being restricted to a fixed-time setting. An option to emulate Moog's fixed-rate portamento would be near the top of my wish list. In a software-based synth this should not be too hard to implement, surely?

Remote Possibilities

I could go on to describe all of the performance features on the JP8080, but suffice it to say that little has changed from the JP8000. The friendly MIDI-clockable arpeggiator still delights me, and

ROLAND JP8080

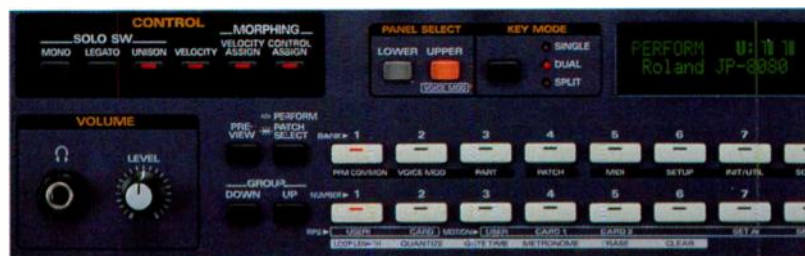
▶ the RPS (Real-time Phrase Sequencer) still leaves me a tad bemused — does anyone make regular use of this feature on their JP8000? Let me know... The relationship between the arpeggiator and the JP's two MIDI inputs needs a little explanation. The idea here is that the JP takes both a MIDI input from a keyboard, attached to the 'Remote Keyboard' MIDI input, and another from a MIDI sequencer, attached to the 'normal' MIDI input. The connected keyboard becomes much like part of the JP8080; its messages being used by the JP to provide control input, which it then re-transmits, interpreted and re-channelised, at its MIDI output. In this way, for instance, the JP can be encouraged to transmit its arpeggios as MIDI data. The drawback to this approach is that the arpeggiator itself cannot be accessed from the 'normal' MIDI input. 'OK', you may be thinking, 'then I'll just plug my sequencer into the remote keyboard MIDI input and access it from there'. Well, this will work, but Roland have poisoned the watering hole by permitting full SysEx reception only on the 'normal' MIDI input! I, like many users, will want to store SysEx data at the start of a song to set up the JP for playback (Roland even encourage this practice in the manual). I fail to see why Roland have taken this step since anyone not wanting to dedicate a keyboard to their JP8080 (and I think this includes most of us) is forced to make provision for both of the JP's MIDI inputs to enable full and proper use of the machine. Frustrating.

Motion control, where movements of the JP's control knobs can be recorded and played back in performance, is also implemented on the JP8080. Roland have upped the number of bars to 99 for the new boy. This is one of the most impressive features of the JP8080, allowing complex tonal changes to happen whilst freeing up MIDI bandwidth into the bargain.

So, if you were expecting the JP8080 to provide a rackmounting alternative to the JP8000, then I can happily report that you will not be disappointed. I A/B'd the two, for safety's sake, and found nothing to differentiate between them. SysEx messages happily transferred between the machines, once I had figured out which MIDI input socket to use (see above)! But the JP8080 has some other fascinating features that the JP8000 lacks, not least of which is the new vocoder. Did I say vocoder? I meant to say, 'Voice Modulator'. I don't



Right: The JP8080's Preview option allows you to 'play' its patch-select buttons as a miniature keyboard.



Left: The JP8080's external audio inputs can be used not only with its well-specified vocoder, but also to modify almost any of its front-panel controls.

know why Roland shy away from using the term 'vocoder', but, in essence, a vocoder is what we have here — and a very good one it is too.

Say Aaaaaah...

This is clearly not the place to go into the theory of vocoder operation, but suffice it to say that this is a 12-band device with the capability to accept both line and microphone inputs, and impart filtering characteristics onto an external signal if required. When operating in Voice Modulator mode, the twelve envelope control sliders double up as cut/boost controls for the formant filters, giving a great degree of control. After the usual obligatory round of 'Sparky's Magic Piano' and 'Mr. Blue Sky', I plugged some drum loops in and discovered a whole world of inspiration for the next album. The results are clean, clear, usable and easy to achieve, unlike those from some older 'classic' vocoders I could mention.

For those who want to get into the details, the JP offers a mind-boggling array of options and parameters to hone the Vocal Modulator to exacting requirements. Roland have provided a logical diagram of the internal structure, which helps out when the head scratching really begins. Options include the ability to switch between front and rear panel inputs for the Carrier and Modulator inputs, to balance the external input with the internally modulated sound, to add delay and ensemble effects, to vary the bandwidth characteristics of the filter banks, and to vary the level and cutoff of the noise element that is added to the modulated sound (to synthesize sibilants). To go into all the detail here would take at least the 12 pages that Roland dedicate to it in the manual. One specific worthy of mention is the internally generated 'Robot Voice' oscillator that can be added to the signal. This comes with pitch and level controls, and is actually quite good, if you like that sort of thing. With so much control at hand, Roland have thoughtfully provided a series of 'Voice Modulator Initialise' functions to get results quickly. These initialisations go by the names of Vintage, Silky, Huskyvoice,

Features

- 10-note polyphonic (8-note when using Vocal Modulator).
- 64 user Performances, 192 preset Performances.
- 128 user Patches, 384 preset Patches.
- Programmable arpeggiator.
- Delay and chorus effects.
- RPS feature for single-finger playback of recorded patterns.
- Single, Split, Dual and Unison key modes.
- Dimensions (mm): 482(w) x 88(d) x 264(h).
- Weight: 4.5kg.

Star Sounds

If you want to hear the JP8080 in all its glory, check out the following Performances:

- P1-11 'Charlots' — Sounds better than the original to me.
- P1-42 'Fanfare' — Turn it up and feel the combined attack of deep, solid bass and searing top end. One to scare toddlers with.
- P2-53 'Unison Bass' / P2-63 'Fat Bass Synth' — Watch those speaker cones!
- P3-26 'Fibreoptics' — A high-pass filter doing what it does best.
- P3-42 'Talisman' — Simply huge.
- Look in P2-80 to 88 for examples of the Vocal Modulator.

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Breakbeats, Robot, Huskyrobot, Standard, Radio and Morph Ctrl, and provide a good starting point for most uses. Roland have also provided a number of Performances with examples of the use of the Vocal Modulator and the filter banks, and refer to these in the manual where appropriate.

In addition to the standard vocoder features, Roland have also added a 'Vocal Morph' option, which puts multiple front-panel parameters under the control of the audio input — much like the 'Motion' control feature. Imagine modulating filter cutoff and resonance by spluttering incoherently into the microphone, or sweeping oscillator pitch for searing sync-lead solos by reciting 'The Rime of the Ancient Mariner'. Virtually all of the JP8080's controls can be set to respond to morphing, in a positive or negative direction and by a definable range. Heady stuff, huh? The control signal is, in fact, derived from frequencies around the 1.2kHz region, or the vowel 'ah' sound, so making noises around this vowel will have most effect. The information generated by the Vocal Morph is also transmitted as MIDI controller data for use in an external MIDI instrument. How musical the results will be depends largely on how much effort you make in setting up the Performance. I have to say that my patience ran out long before I arrived at anything particularly usable.

The manual is pretty good, despite a few 'Japanglish' translations. There are sections dedicated to the understanding of sound and sound-creation tips, which should give even newcomers a good grasp of the basics. Cross-references are included where useful, and reference is made to Patch and Performance numbers where examples can be found.

Before I run out of space, I ought to mention a couple of other new features. The first is the SmartMedia memory-card slot, sadly lacking from the JP8000. Roland offer a choice of 2Mb or 4Mb card for storage of up to 4096 Performances and 8192 Patches, plus RPS patterns, Motion Controls and system settings. These cards are quite tiny, and Roland have included a screw-in bracket to prevent your card being, er, borrowed. Secondly, the Preview feature turns the JP8080's 16 selection buttons into a mini polyphonic keyboard — not the way I'd like to play the next gig, but useful when you're writing a review away from the studio!

Conclusion

This is a machine with depth that belies even the generous amount of controls adorning its front panel. The problem is not how good this machine is, because the answer is 'very good indeed'. The problem is the quality of the machines against which it is now competing. The JP8000 had a fairly easy time of it, but things have moved on apace.

The JP8080's most immediate rival has to be the Novation Supernova, which scores mightily with its three-oscillator (with virtual sync oscillator), 16-voice architecture, more advanced effects, eight-part multitimbrality and eight separate outputs. The JP8080 counters with its vocoder, RPS, Motion Control and assignable control features, but is this really enough? I can't help feeling that this time around Roland are most definitely up against a serious contender.

This is an excellent device, put together well and with enough flexibility to keep you tweaking for months. I certainly had a great time playing around just rediscovering the joys of analogue synthesis, and making a fool of myself with the vocoder. That this is a very capable and powerful machine is beyond question, but this time around I certainly wouldn't buy before I'd checked out the competition. **ES**

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super freak!

Hardware MIDI controllers are a significant trend of recent years. It's as though, after a long period of struggling with parameter-access synth editing via LCDs and interfacing with software exclusively via computer keyboards and mice, beleaguered musicians decided enough was enough. Keyboard surfaces broke out in rashes of knobs and sliders, and more boxes covered in physical controllers began to pop up. It seems we're in the midst of a minor outbreak of such devices: the cheapest MIDI controller box yet to appear, Keyfax's non-programmable Phat Boy, was reviewed in the July 1998 issue of *SOS*, while Peavey's PC1600X is due to hit these pages shortly, and a brand-new controller from Kenton Electronics is the subject of this review.

As well as becoming more numerous, hardware controllers seem to be becoming somewhat more cost-effective: Kenton's Control Freak features programmable sliders and buttons, 128 user Program memories (some filled with overwritable profiles for popular devices and software), a Snapshot mode for easy SysEx dumping of slider positions into a MIDI sequencer, the ability to control sequencers and drum machines remotely, and two quarter-inch jack sockets which can be used to connect foot controllers and which (more unusually) will perform CV/gate-to-MIDI conversion. The Freak will even function as a MIDI analyser — yet it still weighs in at under £250.

Freak Power

The uses of a hardware MIDI controller are numerous: it can access hidden parameters of faceless GM/XG/GS synth modules, make a hardware front end for PC soundcards (which often have fully-specified synthesis engines), help to edit MIDI synths, or be used as a physical mixer for MIDI + Audio sequencers and hard disk recording programs, to name just a few. The Control Freak, as mentioned, comes from the factory with a set of templates for different applications — for example, four AWE soundcard setups for controlling different aspects of the cards' synth, two *Rebirth* setups which bring parameters such as filter cutoff and resonance, envelope modulation and decay under slider control, two Matrix 1000 setups (handy, given that the Matrix 1000 can only usually be edited via computer), and Waldorf Microwave and Pulse setups. There are also a couple of simple mixing setups (one for volume and one for pan) for use with multitimbral synths.

Kenton are adding new templates all the time, but if none exists for what you want to do, the whole

KENTON CONTROL FREAK MIDI CONTROL CENTRE

point of the Control Freak is that you can set up your own. All the sliders, the eight buttons above them, and four extra function keys (which are no different, in their MIDI-assignable mode, to the buttons above the sliders) can be set to transmit any MIDI data of the user's choice. A complete setup is called a Program, and 128 of these are storable on board. At some point, if a lot of new Programs are saved, the factory templates may be in danger of being overwritten, but since the Freak's memory can be saved via SysEx, it should be possible to get them back. A complete initialisation of the unit will also recall the presets, but will nuke user Programs.

Creating a Control Freak Program is more straightforward to actually do than to explain. Setting one up for Kablo's *Vibra9000* Mac-based software synth (*SOS* review coming soon), for example, entailed the following simple steps:

- Finding a list of the controller numbers used for the onscreen knobs in the *Vibra9000* manual.
- Accessing edit mode on the Control Freak, naming the first fader for the parameter it is to control — say, filter cutoff — and storing the name. This name will flash in the Control Freak's display whenever the fader is moved.
- Choosing the Edit Slider Data menu and setting minimum and maximum slider levels for filter cutoff. The full value range in this case is 0-127 (the normal range of a MIDI continuous controller), and normally this would be left unchanged. However, if you're assigning a slider to a synth parameter with a different value range (say, 0-30 or 0-99), it would be sensible to set the slider's upper limit to that parameter's top value, to utilise the slider's full travel.

Gate Smasher

It was quite a surprise to see the jack sockets on the Control Freak configurable as Control Voltage and Gate inputs — such a thing has hardly been seen since the early days of MIDI. However, should you require the ability to control one voice of a MIDI instrument from a pre-MIDI analogue synth or sequencer, this is one of the most accessible ways to do it. The inputs weren't actually designed for CV-MIDI conversion — it's something of a happy accident that it can be made to work. Also, the system offered here by Kenton (who are, incidentally, MIDI-CV conversion experts) will only work with synths operating on the volt/octave CV system, which would exclude certain models from Korg and Yamaha. Setting up is moderately fiddly:

the jack sockets are of the tip/ring/sleeve variety, and the CV input must be connected to the ring, which requires a special lead. Ideally, as well, you'll need some kind of variable resistor in line with the CV input, to allow you to more accurately set up the CV scale so that your playing will be in tune. Scaling can be done using the Control Freak's minimum and maximum slider value parameters, but this is fiddly and the results may not be quite as good as those achieved with the variable resistor just mentioned.

When you've assigned an external input socket to a slider or button, that slider or button is no longer available for front-panel operation — assign a Control Voltage via input 1 to slider 1, and slider 1 no longer operates. The same goes for foot pedals or footswitches assigned to the external inputs.

Derek Johnson & Debbie Poyser take a look at a new programmable control surface which allows you to set up a physical controller for almost any aspect of a MIDI device.



KENTON ELECTRONICS CONTROL FREAK £249

pros

- Fully programmable.
- Reasonably priced.
- Relatively easy to use, with a good Learn mode for MIDIphobes.
- Comes with a decent collection of preset Programs.
- Useful Snapshot and MIDI Analyser modes, plus bonus CV/gate-MIDI conversion.

cons

- Eight sliders sometimes feels limiting.
- Every assignment has to be stored before moving onto the next.
- Using the pedal inputs reduces the available sliders.

summary

A very useful and well thought-out adjunct to any MIDI system, especially those which include software synths such as *Rebirth*, or synth modules or PC soundcards without physical controls. Its programmability means that it can adapt easily to a changing MIDI studio.

SOUND ON SOUND

MIDI On The Couch

The Control Freak even has a MIDI Analyser mode; if the unit is powered up with the Shift button depressed, the display clearly shows incoming MIDI data. Four windows of data reveal: MIDI channel, note number and velocity value; Clock, sequencer status and the presence of SysEx data; MIDI channel, program number and bank number; MIDI channel, controller name and value. Could be invaluable if a MIDI rig needs checking out.

- Selecting, from a list of data types in the display, the type you wish to assign to the slider — in this case, Controller.
- Entering the Filter Cutoff controller number from the *Vibra9000* manual.
- Assigning the selected controller to the slider. This seems a strange step, but a slider's controller can interact with the movements of other sliders, so if all you want is to tweak the one controller with the one slider, you have to make the choice.
- Storing the slider assignment by pressing the Store button, then repeating the procedure for every slider and/or button.

Now that you've got an idea of what's involved in manually creating a Program, let's take a closer look at the Control Freak's features.

Full Metal Jacket

Physically, the Freak is neatly presented: its black, wedge-shaped metal case seems sturdily built and measures approximately six by 10 inches. A sparse back panel features MIDI In, Out and Thru sockets, plus the two quarter-inch jack sockets mentioned earlier. On the control surface, aside from the eight 60mm faders, eight rectangular push buttons and a data-entry dial used for selecting programs, scrolling through parameters and altering their values, there's a group of eight further buttons below a 2-line x 16-character backlit LCD. The top four of these buttons are programmable keys (shiftable, to control two functions each) which also double for Program editing in some circumstances. From the factory, the first three of these keys behave as start, stop and continue controls for a sequencer, with shift functions of MIDI Machine Control start, stop and

rewind, and fast-forward available on the fourth key. In edit mode, the four keys operate as follows:

- Delete/Slider: deletes characters during naming of sliders, buttons or Programs, or selects a slider to have its parameters copied into another Program.
- Insert/Button On/Button Off: inserts characters while naming, and selects Buttons for copying of their on or off functions into another Program.
- Learn/f-key on/f-key off: accesses the Control Freak's MIDI Learn mode (of which more shortly). When shifted, this key selects function keys for parameter copying, just as with sliders and buttons above.
- Exit: exits editing mode.

The four buttons in the next row are dedicated edit buttons and can't be programmed to transmit MIDI data.

- The Shift button shifts the four function keys and accesses their alternative editing features. This button also doubles as an 'accelerate' control: pressing it while moving the data-entry dial increases the dial's increment value.
- The Store/Snapshot/Reset button stores edits, sends a snapshot of the current state of the sliders from the MIDI Out socket, or resets all controller values.
- The Global/left arrow button accesses global MIDI channel assignment, and the internal clock tempo window. The latter sets the unit's tempo when it's being used to control sequencers or drum machines, as well as scrolling back through main parameters while editing Programs.
- The right arrow button scrolls forwards through the main parameter list in edit mode.

KENTON CONTROL FREAK

► Creating a Program with the Control Freak is not complicated, on the whole, as you can see from the *Vibra9000* example, but if you balk even at entering numbers from a manual, the unit's Learn mode is invaluable. Select a slider, send the Freak some aftertouch data (for example) from a connected MIDI device, by simply pressing a key to generate some aftertouch, and the Control Freak assigns that fader to control aftertouch. You'd use this technique to quickly assign any of your synth's editable parameters, even ones which would normally be accessed by System Exclusive, to the Control Freak: if you can get to a parameter on a connected MIDI device, the Control Freak can learn it.

Data Details

Obviously, the Control Freak only has eight sliders, so a maximum of eight MIDI parameters or controllers can be assigned to them in one Program. The buttons, however, can also be set up to transmit MIDI data; there's no effective limit to the data string, so you could transmit single notes or complete chords at the press of a button, if you liked. Similarly, commonly required SysEx data strings — GS Reset messages and so on — could also be assigned to a button. The buttons actually have several states, and can transmit data in several different ways. They can be configured to transmit data when pressed, different data when pressed and then when released, and to send one of two MIDI commands on successive presses.

Kenton's manual also provides some esoteric applications. One fun technique is assigning two controllers to one slider — you could assign any number of controllers to one slider — and inverting the transmitted value of one of those controllers. The example in the manual assigns a straight 0-127 value range to filter cut-off and an inverted (127-0) range to filter frequency: the result is an easy synth filter-sweep effect with just one slider.

OK Computer

If you think that having to stop and save every edit while naming a Program, slider or button and making data assignments sounds vaguely irritating, you're right. This is because the Freak lacks a RAM buffer, and can't hold one assignment unstored while another is made. An on-screen Mac/PC Control Freak editor is being developed as we write, however; watch *SOS's* news pages for details of this software, which should be downloadable, free, from the Kenton web site when it's ready.

Snap Judgement

Snapshot mode is one of the simplest ways of using the Control Freak, providing you first have a Program that operates with your MIDI equipment and a MIDI sequencer. Simply wiggle the sliders until you hear a sound you like on your synth, put your sequencer into record, and press Snapshot. All the current values are now a part of the sequence and will be transmitted to your synth every time you play back that sequence. If an edit needs more than eight sliders and is being edited with multiple Programs, two snapshots, one after the other, can be sent to the sequencer.

Other applications are up to your imagination: SysEx strings of up to 44 bytes (checksums and End Of SysEx commands are managed automatically), NRPNs, program changes and more can be transmitted. The eight sliders per Program is the only real limitation; 16 would have felt much better. The obvious solution, used in Kenton's factory Programs, is to split up controller assignments into groups and put the resulting Programs side by side.

Freaking Out

Bar one or two operational oddities (having to save every edit before moving on, for example) and a slightly obtuse manual (though the hands-on examples are very useful), the Control Freak is relatively simple to use. Anyone who can't stand *any* hex or SysEx can use the Learn mode; the resulting assignments can be a little longer and more comprehensive than if they had been entered manually (for example, Learn mode often inserts a learned event's MIDI channel, which isn't always needed), but so what?

Price-wise, the Control Freak sits neatly in the current crop of controllers between Keyfax's non-programmable, knob-based Phat Boy, at £150, and Peavey's PC1600X (which is equipped with 16 faders and switches), at £349. Once you're sold on the concept of a hardware MIDI controller, which one to go for depends on your needs, but if you want programmability and will find eight sliders (plus 12 buttons) sufficient, the Control Freak is probably the best value, especially given its nice set of operational extras. **SOS**

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RECORDING 'MILLENNIUM'

Since leaving Take That in 1995, Robbie Williams has been working hard to lose his pretty-boy image by reinventing himself as a serious singer-songwriter. This change of direction has already borne fruit in the shape of two smash hit singles, 'Angel' and 'Millennium', plus two solo albums — *Life Thru A Lens*, which made number one in the UK charts, and *I've Been Expecting You*, released at the end of October.

Robbie Williams' recent hit 'Millennium' was co-written by Guy Chambers, a former member of World Party, who produced the track in conjunction with Steve Power. Their collaboration,

he needed somebody to turn up the guitar solos at his first gig. Then we got a 4-track studio together and it developed from there. Eventually I got a job as the engineer at The Pink and, when I was 22, I moved down to London to work at Battery Studios."

One of Power's first projects at Battery was engineering the Billy Ocean album containing the UK number one hit 'When The Going Gets Tough', not to mention five US top ten singles. That album led to numerous other projects including Black's 'Wonderful Life', Blur's first single 'She's So High' and the hit Baby Bird album *Ugly Beautiful*.

Power and Chambers' collaboration on the

Sue Sillitoe
meets the
producers of
Robbie Williams'
recent number
one hit to find
out how it was
put together.
Additional
material by
Matt Bell

tracks

GUY CHAMBERS & STEVE POWER: RECORDING ROBBIE WILLIAMS' 'MILLENNIUM'

which dates back to 1996, when they co-produced *Life Thru A Lens*, is already achieving critical acclaim. Indeed, when *SOS* caught up with Power to discuss the making of 'Millennium' he was still nursing a hangover following the International Managers Forum awards dinner, where he and Chambers won the Producer of the Year award.

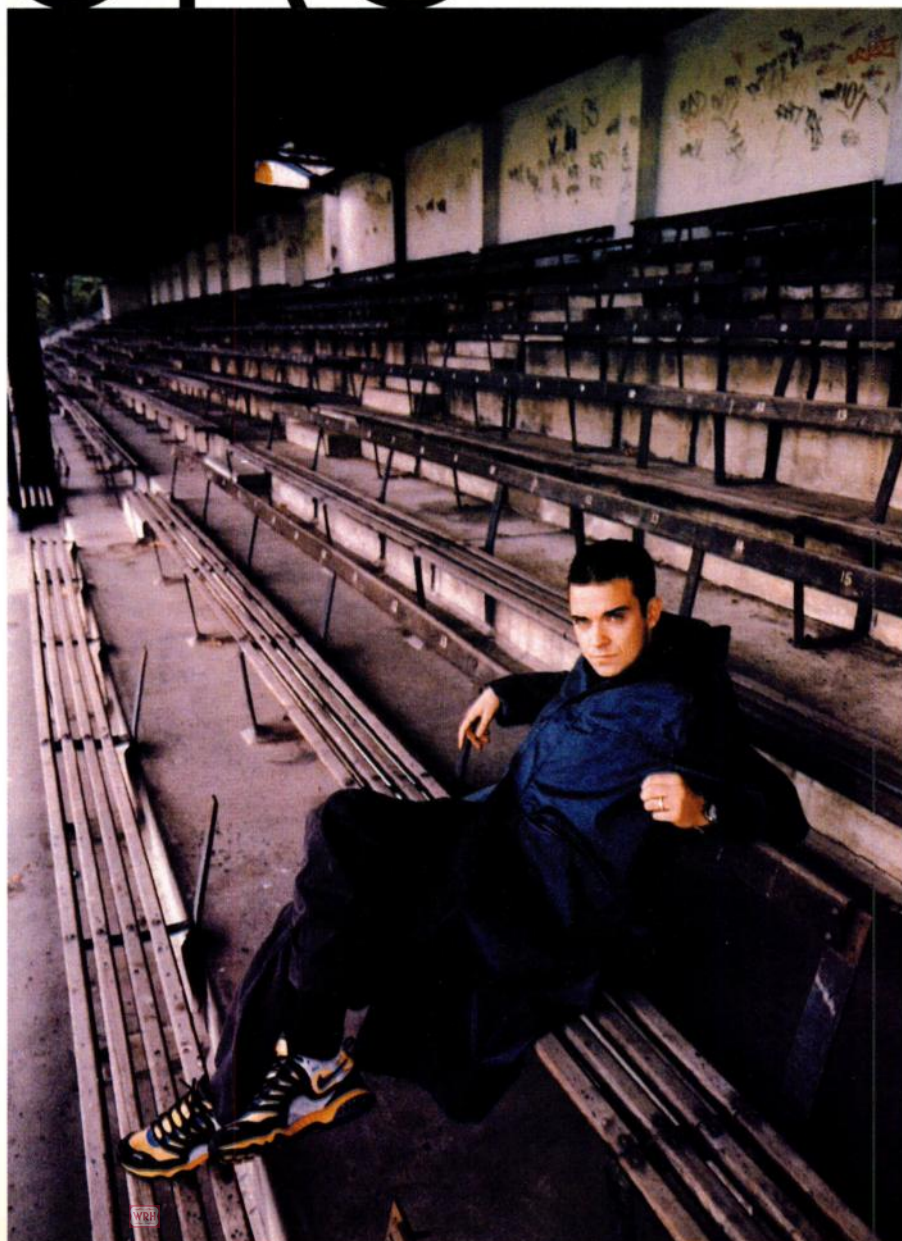
"We got a bit drunk," he explained. "Robbie even came along to present our award. It was good of him to come, especially as he's zooming all over the place at the moment."

Mersey Beginnings

Steve Power and Guy Chambers are both native Liverpudlians and have known each other for many years — according to Power, they met when the then-15-year-old Chambers was chosen to replace him as the keyboard player in a local band.

"I left the band to run The Pink Studio in Liverpool and, after engineering an album for them, the band went on the road with Guy playing my old keyboard parts. Later, when Guy left World Party and formed the Lemon Trees, I helped out by doing a couple of mixes," he says.

Power's own music industry career eventually took him down the production rather than musician route. He says, "When I was 18, I shared a flat with Wayne Hussey and started doing some live mixing for him. I was just helping out as a mate because





Guy Chambers (far left) and Steve Power (far right) receive their IMF 'Producer Of The Year' award from senior IMF members and Robbie himself.

Robbie Williams sessions was actually initiated by Chambers, who didn't feel sufficiently confident to produce Williams' first album on his own. "Robbie was casting around for people to write with after leaving Take That and someone put him touch with Guy," Power says. "The writing was going well, so Guy was asked to produce the album. Guy's got an awful lot of talents, but there are some areas where he clearly thought my strengths filled in his weaknesses! He came to me and said 'Steve, come and help with this; I can't do it on my own'." And the rest, as they say, is history.

Millennium Done

'Millennium', the first single from the new album, was chosen as the trailer because it is quite different from any of the tracks on *Life Thru A Lens*. Power explains, "There are a few tracks on the album that contain a fair bit of programming, to show some musical progression, and this is one of those."

The song was conceived by Robbie Williams, who these days is very much involved in the creative process. Guy Chambers, who describes his collaboration with Williams as a good partnership, says, "Rob steamed in with the words which were written very quickly. It tends to break down that Rob does the lyrics while I concentrate on the music, although he's a clever guy and comes up with a lot of the melodies as well. He tends to make a start and find the general direction he wants the song to go in, then if he gets stuck, I help."

"Anyway, Rob had the chorus but didn't have an obvious title for the track, so I added the word 'Millennium' which worked because it was both strong and topical. Then we needed the football chant — we had a very pretty melody for it, but no words until Rob came up with 'come and have a go if you think you're hard enough'."

'Millennium', which was written over a year ago, was initially meant as just another album track until Williams and his production team spotted its potential as a single.

Power says, "It had the more programming-based feel that we wanted to introduce on the second

album in order to get away from the guitar-based feel of the first album, and it already had the chorus hook, the Bond theme sample, on the demo version, which I remember mixing before last Christmas."

In terms of track composition, Steve Power describes 'Millennium' as 'quite sparse'.

"It's mainly vocals, backing vocals, strings and programmed bass and drums, really, with a few interesting sampled noises. There's also a drum loop that we took off the original demo and that, in turn, came from a sample CD discovered by Nick Hannan, the engineer at Blah Street Studios where the demo was done. We programmed more drum samples on top of the original sample, pretty much echoing what the loop was playing. There are some little bits of programmed percussion on there as well, which are subtle but make a difference. We did overdub some live percussion during mixing at Battery, too; a shaker or a tambourine — I can't remember which — just to give it a bit of extra movement. Oh, and we got a DJ in to put some vinyl scratching on the master tape, but we mixed it out in the end and didn't use any of it."

Blah Street Studios in Hampshire — a facility described by Guy Chambers as 'totally hip and cool' — was used for all the writing, demo-ing and pre-production work on the album. For 'Millennium', the drums, bass and samples for the backing track were programmed and recorded at Trident, while the strings were recorded at Angel Studios in Islington — the same facility used for strings on Williams' first album. The musicians played to the programmed backing track, with a guide vocal over the top.

To program the backing track after the demos were completed, Power and Chambers called in programmer Steve McNichol, who used Pro Tools and Emagic's *Logic Audio* running on a Mac, with Akai S3000 samplers. "Steve programmed up the drums and a bass line," Power explains. "The bass sound was made up from a combination of a synth bass from a Clavia Nord Lead and a bass sample on one of the Akais."

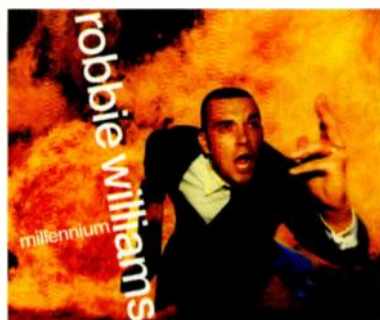
The Bond Connection

Listening to the track, you don't need to be a genius to recognise the influence of John Barry's 'You Only Live Twice', the title song from the eponymous 1967 Bond movie. This begs the question: was the song structured around the sample?

"Well, I wasn't there when it was written," says Power, "but I think the sample was in there from a very early stage. Guy is a big fan of John Barry and it was already on the demo that I mixed."

Guy Chamber takes up the story. "Robbie came up with the idea for the song. He wanted to use the string section from 'You Only Live Twice', but put it to a hip-hop beat. Once we had decided that, it was just a matter of finding a beat that worked — something that we eventually achieved by speeding it up."

Music industry politics being what they are, the actual Bond movie sample didn't stay on the track



RECORDING 'MILLENNIUM'

► for very long because the cost of using it was prohibitive. Power explains, "It was up to Chrysalis Records, Robbie's record company, to find out what the deal would be if we used the original sample. It turned out that we would have to pay a lot of money to the company that originally made the film — I think the figure was around £60,000. In comparison, recording it again was going to cost between £6,000 and £7,000 — so unsurprisingly, we did it again! We used a 26-piece string section, a harp and four French horns. We added the French horn parts and changed the string part a bit, using Nick Ingmann to rearrange them. It's not exactly the same as the original arrangement, which was in the wrong key for 'Millennium', although we did want it to sound like the original sample in the choruses and we did refer to John Barry's original score for that."

Chambers adds that what they were trying to achieve was a highly recognisable pastiche. "It had to be recognisable in order for the track to work," he says.

The pair did consider sampling the orchestra playing to drop into the chorus, but in the end they opted to have the orchestra's performance playing during much of the track; in the choruses, middle eight, and the playout.

Vocal Lines

Robbie Williams' vocal performance was recorded in the peace and quiet of the countryside at Jacobs Studios, a residential facility in the heart of Surrey. Power says, "Robbie rarely does more than three or four takes for a vocal. We used a Neumann 149 — a lovely, lovely mic, that — for pretty much the lot, with a Focusrite Red mic preamp and compressor as well. After doing the lead vocals, we went back to Trident, where the backing track had been recorded, to do the backing vocals. We had three female session singers involved: Nicole Patterson, Beverley Skeet and Claudia Fontaine. There was also a male backing singer, Gary Nuttall, the guitarist in Robbie's band, who sings along in the verses, doing the 'ooo-eee-ooo's."

By this stage, Power says, the multitrack tape was filling up rapidly. "We recorded to 48-track analogue tape. We didn't fill all of those, but we came close. We had about six tracks of backing vocals, and nine tracks for the strings — inputs from a couple of stereo ambient mics, and spot mics for the first violins, second violins, cellos, double basses, French horns and the harp. Then there were the programmed tracks; and when you get into programming, you'll layer about four kick drums to tape! For speed, and to keep the creative flow going, we put them all down to separate tracks rather than spend time deciding which one we wanted loudest when recording. So we had a lot of independent outs from the programmed backing track onto separate multitrack channels, like the programmed percussion and sampled noises. Then there were the unused scratching tracks, and the live percussion — all in all, I think we filled maybe 36 or 38 tracks in total."

Mixing

'Millennium', like the whole of Robbie Williams' second album, was mixed at Battery Studio 4 on an SSL desk. Power explains, "To keep the creative flow going, I tend to record quite quickly, concentrating more on the musicality, parts and arrangement. If at all possible I like to get the balance of the track right in the arrangement, so I record with minimal EQ and processing. The aim is to get all the sounds working together so you don't get any nasty surprises at the mixing stage. If two things sound crap together, you probably shouldn't be trying to EQ them so they'll work at the mix. If they sound crap, just don't put them together in the first place because you probably won't rescue them with EQ."

"Having said all that, I do put the finished stereo mix through an outboard Prism stereo EQ and Prism compressor, and EQ everything at once at the end. But I don't often use individual channel EQ on the desk."

During the actual mix, Power put everything through a Prism Maselec MLA2 compressor and Maselec MEA2 EQ. He adds, "My favourite outboard is an Avalon EQ, which I like because it sounds so expensive! I also used a Fairchild stereo compressor on bass and vocals, along with another Prism MLA2."

"This isn't all my gear, by the way. I pick my mixing studio for the gear I want, and what I can't get, I hire in. I also use Joemeek stereo compressors and Focusrite Red and Blue EQs. I don't like digital reverbs very much, so I only use those minimally. I prefer plate reverbs, which they have at Battery and which were used for this mix."

The track was mastered at Metropolis where very little was done to it — no EQ at all on the radio promo, just a tiny bit of compression. Power adds, "By the time we came to master the single, I'd thought of something that needed a tiny bit more EQ, so I got the Prism out again, but that was it. We varispeeded it as well, at the cut; we sped it up about half a percent, just to give it a bit more edge."

Although 'Millennium' was an obvious trailer for the new album, it didn't give Power and Chambers too many writing or recording headaches. Guy Chambers says, "What's interesting is that this is the simplest song Robbie and I have ever written — only two chords. And it's written in D flat major, which is very unusual in pop music. In all, it took us about four hours to write, but then we always work fast."

"We actually worked much harder on other album tracks than we did on 'Millennium'," Power adds. "With 'Millennium', it was just obvious what we had to do and we didn't need to think about it very much. Actually, compared to the rest of the album, I think it's one of the weaker tracks!"

But despite that, 'Millennium' still made it to number one — which must bode well for other tracks earmarked as future singles. And, more importantly, it must satisfy Robbie himself who, according to Steve Power, is at last making the kind of hip-hop-influenced music he really enjoys. **SCS**



Steve Power with some of his beloved Focusrite processors.

"Robbie came up with the idea for the song. He wanted to use the string section from 'You Only Live Twice', but put it to a hip-hop beat."

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"The external key feature is great for triggering a snare from a contact mic, adding real gated reverb, or tightening up ragged backing vocals. It's possible to tailor drum tones to suit a mix, especially with the Peak Punch button, and a very sharp tone can be had with a fast attack and release. The MX40 is a real winner and at the asking price deserves to be populating everyone's rack."

PRO AUDIO REVIEW (USA) Ken C. Pohlmann:

"Fast and easy to use, the MX40 provides the essential flexibility you need in a gate, it fits four gates into one unit, and it sounds excellent. Whether you need gates to achieve a little silence, clean up a nasty signal, extract out a reliable trigger, or create the ultimate sound, the MX40 quad gate is a great device."

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TRIGGER FREQUENCY

Use this control to point to the frequency you want to trigger the gate. This can be used to help distinguish between a snare and hi-hat, tom-toms versus cymbals or kick drum etc.

THRESHOLD

Sets the level at which the gate opens. All signals above Threshold will pass through the gate, all signals below will be reduced by -20dB or -90dB depending on the RANGE control setting.

RANGE

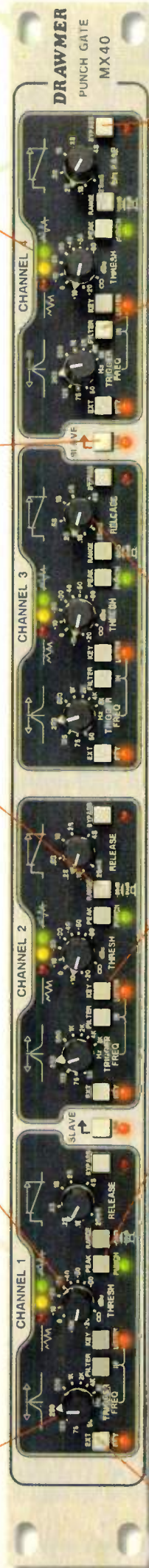
Determines how much of the signal you can hear when the gate is closed. A setting of -90dB is completely silent, whilst a setting of -20dB allows the signal to pass through with a 20dB decrease in gain. The latter may often sound more natural when gating signals with a lot of background noise.

SLAVE LINK FOR STEREO OPERATION

When the channels are linked the lower number in each pair (channel 1 or 3) becomes the master, rendering the control settings for channel 2 or 4 inactive.

GATE STATUS

Drawmer's classic Traffic Light display. Red is below THRESHOLD (gate closed), Yellow is at THRESHOLD (gate opening or closing), and Green is above THRESHOLD (gate open).



EXTERNAL KEY

Allows the dynamics of an independent signal to open and shut one or any combination of all four gates. When no External Key is inserted, channel 1 can be used as the trigger source for all the other channels.

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New Drawmer feature that brings real power and definition to the gated signal. Hear the difference as your drum tracks take on that killer sound and punch through the mix.

KEY LISTEN

Lets you hear only the selected frequency band as set on the TRIGGER FREQUENCY control. Also allows you to hear the EXTERNAL KEY signal, if connected.

RELEASE

Sets how long it takes for the gate to close once signal falls below THRESHOLD. Built-in Drawmer Auto Hold circuits prevent any chatter when signals are on or around the THRESHOLD level.

FILTER IN

This enables/disables the TRIGGER FREQUENCY control.

BYPASS

Effectively a gate ON/OFF switch, this is useful for before and after comparisons.

WALDORF D-POLE

Waldorf already have an excellent reputation for their synths: the Microwave set the scene way back in 1989, followed by the gargantuan Wave dream machine in 1994, and then the Pulse monosynth in 1996. All three of these featured excellent-sounding analogue filter sections, but it was not until the Miniworks 4pole arrived (also in 1996) that the Waldorf filter became available in a standalone module for treating other sounds. Although the 4pole's analogue sound was pleasing, however, many people were frustrated by its multi-level editing — there were simply not enough knobs to go round.

dramatic results, no wet/dry mix control is provided, though a Bypass button does enable you to switch the filter out quickly when required. You could also use it as a channel insert (mono in/mono out), but then many of its stereo options would become redundant.

I found the best option was to patch *D-Pole* in as a channel effect (mono in/stereo out). Waldorf recommend activating the pre-fader send button, and then pulling the associated channel fader fully down to achieve the maximum effect, but of course you also have the option of using the channel fader to control the level of dry sound, and the effect level to adjust the wet level. This allows you to

In a market already awash with software plug-ins, it takes something special to stand out. **Martin Walker** investigates a filter that is poles apart.

filter tips

WALDORF D-POLE FILTER MODULE PLUG-IN

Last year saw the arrival of the Microwave II, the first Waldorf to replace the earlier analogue filter designs with an all-digital version. The big question was whether Waldorf had managed to retain the all-important filter sound when transferred to a DSP chip. Thankfully, this proved to be the case, helping to convince people that digital filtering needn't necessarily mean a cold, hard sound.

It was inevitable that with the current explosion of real-time audio plug-ins, any company who had already cracked DSP filter algorithms would enter the market sooner or later. And so, a year after the Microwave II, Waldorf have launched the *D-Pole* plug-in, the filter algorithm of which is based on that very same synth. *D-Pole* is VST specific rather than a general DirectX PC plug-in (although *Wavelab 2.0* will also recognise VST plug-ins), and in fact Steinberg are marketing it under their banner.

D-Pole is available for both Mac and PC — minimum requirements are a Pentium 133MHz and 32Mb of RAM for the PC, or a 604/120MHz and 24Mb of RAM on the Mac. The protection methods are also fairly typical — an authorisation number to be entered during installation for the PC, and two hard disk authorisations for the Mac (which will thankfully survive defragmentation of your drive).

Operation

Once installed, *D-Pole* can be patched into a *Cubase* VST mix in various ways. If you want to process the overall mix, it can be used as a master effect (stereo in/stereo out). While this provides

leave an element of the straight sound while mayhem breaks loose from the filter output.

Once you have selected *D-Pole*, and clicked on the *Cubase* effect Edit button, an instantly recognisable Waldorf-style front panel pops up, complete with the obligatory red knob for filter frequency. All the variable controls are rotary knobs, controlled by a mouse click and drag (the current value is displayed in a small box above each knob), and just like the *Cubase* rotaries, you get finer control resolution by increasing the radius of the dragging circle. The switches have been cleverly disguised as LEDs — a single mouse

Patched in to an individual Channel in *Cubase* VST, the Waldorf *D-Pole* plug-in provides a vast range of different sounds.



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WALDORF D-POLE

► click both selects and illuminates them. The beauty of a software interface is that providing one knob per function doesn't increase the cost, so there are no multi-function controls at all.

Rotary Club

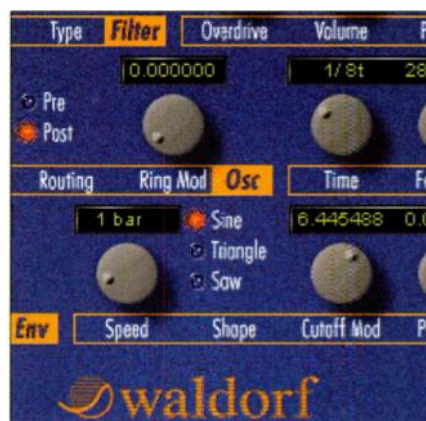
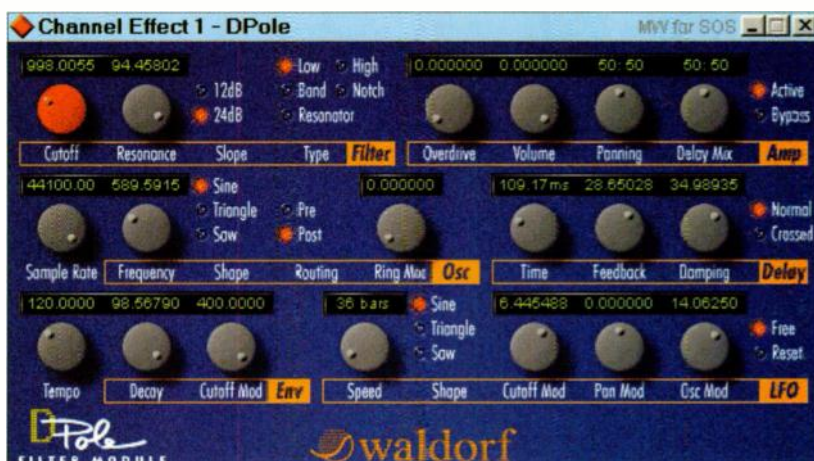
The filter frequency can be varied between 0Hz and 17kHz, and resonance is fully controllable from 0 to 100 percent. Set to 100 percent, any signal input provides sufficient impulse to push the filter into self-oscillation, and this is surprisingly controllable, with none of the hot spots exhibited by many analogue designs, which will happily howl at one frequency but not at others. Slope can be set either at 12dB/octave (two-pole Oberheim-type) or the classic 24dB/octave (four-pole) so loved by Minimoog fans everywhere. There are five filter types: Low, High and Band pass, Notch, and Resonator. The last of these is extremely useful, since it adds a resonant peak, yet still lets the other frequencies through, so that you can hear the original signal with effects on top.

To the right of the filter is the Amplifier and output section: the Volume and Panning controls stay in circuit all the time, but the rest of the effects can be globally switched in and out using the Active and Bypass LEDs. You can increase Overdrive from a warm bottom-end crunch at low settings through to mangled distortion with all 52dB of available gain. This is one area that might be improved — although the sounds are excellent, it is easy to make your speaker cones leap across the room with only a small increase in Overdrive (the manual does warn you to turn down the Volume control first). Also, since the Bypass leaves the Volume control in circuit, it is difficult to balance overall effect output level against the input signal level.

The final knob in this top section is Delay Mix, which provides dry-to-wet control for the delay section beneath. Delay time is fully variable from 90 microseconds through to two seconds, although, like the LFO Speed control, the settings also depend on the Tempo control at the bottom left-hand corner of the panel (see later). Feedback can be set anywhere between +/-100 percent, and Damping is a clever design that provides low pass filtering to the right and high pass to the left (centre position is flat). There are also two switches for Normal feedback (same side) or Crossed feedback (mirrored to the opposite side).

The middle-left section of the panel provides a Ring Modulator with a choice of sine, triangle and sawtooth waveforms, frequency and amount controls, as well as a choice of pre- or post-filter position, depending on the effect you require. Also here is a Sample Rate control, which can be reduced from the current sampling rate right down to 1Hz. This is an easy way to add grit and grunge to any pristine sound, while at very low settings the resultant crackle can be used with a high filter resonance to create triggered sinewave tones.

The bottom section provides an envelope follower, with positive and negative modulation control of the filter frequency, along with an associated Decay time. Most of the rest of this



Above: The D-Pole panel may be tastefully designed, but it can certainly produce extremely rude sounds when required...

Left: This close-up shows how both the Delay Time and LFO Speed are displayed in bars and beats when the Tempo control has been adjusted.

portion of the panel is devoted to the LFO, which again has sine, triangle, and sawtooth waveforms, as well as three separate controls to alter its effect on Filter frequency, Pan position, and Ring Mod frequency. Re-triggering of the LFO can either be Free, or Reset, in which case it will reset to its phase start after any two second silence. This allows you to fudge LFO sync'ing to audio, since Cubase doesn't currently allow MIDI signals to trigger plug-ins directly.

Finally, the Tempo control mentioned earlier can either be set to Off, when normal timing applies (Delay time in milliseconds and LFO Speed in Hz), or to a Tempo between 30 and 300bpm, in which case both Delay time and LFO Speed values are displayed in a combination of bars, beats, or Hertz (at higher settings). It's easier to understand when you've seen it, but very cleverly designed, although the Delay time and LFO speed readouts don't update as the Tempo is changed (which can be confusing at times). If you want your delays or LFO sweeps to sync with the music, you just dial in the tempo of your song, and then everything instantly relates to beats and bars. To round things off nicely, clicking on the D-Pole logo changes the front panel display to a complete description of every control (a neat touch!)

In Use

However closely you have read the preceding sections, nothing will quite prepare you for the experience of actually listening to D-Pole. I was initially a little peeved that Waldorf provided no presets, but once I had worked through the Quick Start tutorial section of the manual I was hooked, and within the couple of hours had saved two

WALDORF D-POLE £149

pros

- Excellent sound.
- Amazing variety of possibilities for sound manipulation.
- Easy to use interface.

cons

- Cubase VST/Wavelab specific.
- Some controls a little over-sensitive in use.

summary

A well-designed plug-in with character and attitude, that will interest anyone with Cubase VST and an interest in sonic manipulation.

SOUND ON SOUND

"The beauty of a software interface is that providing one knob per function doesn't increase the cost."

Specification

- Filter types: Low pass, Band Pass, High Pass, Notch, Resonator.
- Pole Select: 12dB or 24dB/octave.
- Frequency: 0 to 17000Hz.
- Amplifier Overdrive: up to 52dB.
- Ring Mod Oscillator: 0 to 7000Hz.
- Ring Mod Waveforms: sine, triangle, sawtooth.
- Delay: up to 2000mS, or Sync to Tempo, with feedback and damping.
- LFO Oscillator: 0 to 7000Hz, or Sync to Tempo or Audio.
- LFO Waveforms: Sine, Triangle, Sawtooth.
- Envelope Follower: Adjustable Decay, Positive or Negative filter cut-off sweep.
- Sample Rate reduction: down to 1Hz.

banks of 16 presets. Calling the *D-Pole* a filter is a huge understatement. I turned drum loops into vinyl scratches, resonant bleeps, metallic beat clusters, panning polyrhythms, triggered oscillator sweeps, stereo hopping burbles, slow-sliding filter sweeps... you get the idea. Once these controls start interacting with each other, the sky's the limit.

The filter is rich and fruity, and there are also some unexpected sounds available — increasing the LFO speed to its higher regions (several thousand Hertz) produces another effect rather like ring modulation, and with the delay times set very low and the feedback turned up, you can use the resulting metallic overtones in conjunction with other filter and damping settings for unusual robot voice-like sounds.

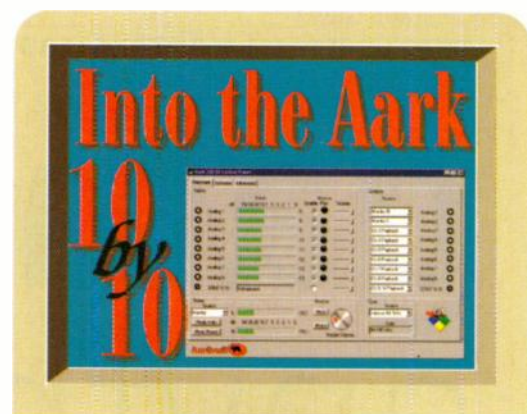
I did experience a few sample overload 'cracks' at more extreme settings, and it would be wise to turn your amplifier down a bit until you become used to the controls. The overdrive in particular is pretty fierce when it cuts in, and I'm sure it would be more useful for Waldorf to implement some sort of automatic compensation to keep the output level roughly constant as Overdrive is varied. I also found it difficult to accurately reset controls to zero — it needs the software equivalent of a centre detent (a right mouse click would be ideal for this), and a double click to allow values to be typed in directly would help too.

Processor overhead on my 166MHz Pentium MMX machine was about 28 percent, and this varied little whatever effects were being used. Although there is a time lag if you move any control rapidly in real-time, you can still get smooth filter sweeps, and of course the standard *Cubase* automation read/write functions can be used to record these and play them back in sync with your tracks. Waldorf are deliberately targeting this plug-in for use with automation, and this is the reason a more general DirectX compatible version is not currently available. However, even without automation there is still a huge amount you can do with the *D-Pole*, and a DirectX version may yet see the light of day if there is sufficient demand.

Summary

Far from being a filter with envelope follower, the *D-Pole* is an extremely versatile module, and the whole is much greater than the sum of the parts. The user interface is generally easy to use, although some controls have such a wide range that the useful section for a particular effect may be crammed into one small area. However, in this respect it felt more like operating quirky hardware, since it seemed to give the *D-Pole* a personality of its own.

The Waldorf *D-Pole* filter module is a classic example of how to get it right. With a separate control for every function, and a well-laid-out front panel, you simply grab and twirl — there are no menu selections, and no scrolling parameters in a virtual window to negotiate. The over-riding feeling for me was not 'it's a shame that it doesn't', but 'wow, it even does that as well'. At £149, anyone who has *Cubase* should investigate this one. **SOS**



Ever wondered why the quality of PC audio recording systems is generally so poor? - One word: Jitter! Now here's the solution: The Aark 20/20 from Aardvark, the makers of the professional digital master clock generator, the AardSync II.

This is a multichannel system with eight 20 bit A/D & D/A's plus SP/DIF i/o - 10 simultaneous channels of record and playback. The software includes standard Windows drivers to fully support Sound Forge, Emagic, SEK'D, Cool Edit Pro, Cakewalk, etc... Plus custom ASIO drivers for Cubase VST. Then the control panel includes comprehensive routing and mixing. It's simple to use, quick to install, and the audio quality will blow you away!



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TURTLE BEACH MONTEGO A3D

game for
anything

Despite the large number of professional soundcards appearing over the last year, there is still great demand for good, audio-quality cards that remain compatible with DOS-based games, and which don't break the bank. Turtle Beach have been producing high-quality soundcards for years. Their new Montego A3D Xstream has 64-voice wavetable synthesis (using 4Mb of your system RAM), 18-bit converters, Aureal 3D positional sound, DOS game compatibility, a Waveblaster-compatible daughterboard socket, and (at some point in the future) an optional S/PDIF interface. In the light of this specification, £120 seems a small price to pay, especially as the Montego is a PCI card which also claims to be an Audio Accelerator.

This last aspect is intriguing, and derives from the fact that there is extra hardware on the card that bypasses the normal DirectSound drivers of DirectX 5.0, thus lowering CPU overhead. There are 16 hardware-based sample-rate converters for processing multiple streams of audio, along with 16 hardware digital mixers. Because of this extra hardware, the Montego can offer full-duplex recording (for simultaneous recording and playback) with independent sample rates. If an application uses multitrack audio, and would normally carry out the mixing using DirectSound, then CPU overhead with the Montego installed should be significantly lower. This applies to any application that comes with DirectX 5.0, such as Sonic Foundry's *Acid* (see review starting on page 176). However, contrary to some rumours, this form of audio acceleration will not help people running DirectX plug-in effects.

Installation

In common with most other PCI soundcards, the Montego is petite (scarcely five inches long), and no-one should have any problems installing it. The circuit board features the Aureal Semiconductor AU8820 single chip PCI audio accelerator, and although there are other, cheaper soundcards that use it, Turtle Beach have also included the SigmaTel STAC9701T chip, which provides high-quality 18-bit converters. There is also a standard Waveblaster daughterboard connector, and three more connectors for attaching the audio output from a CD-ROM drive (lead supplied), modem audio, and

TURTLE BEACH MONTEGO A3D XSTREAM PC SOUND CARD

If you like playing the odd game, but still want quality audio when writing music, **Martin Walker** believes the Turtle Beach Montego could provide the best of both worlds.

auxiliary (for anything else left over). The final connector on the card is labelled S/PDIF interface. The planned add-on board (priced at around £80) provides both digital in and out, although details of its release date are a bit hazy at the moment.

On the backplate is a 15-way 'D'-type joystick/MIDI socket which provides an MPU401 compatible 1-in/1-out MIDI interface, and three 3.5mm jack sockets for mono mic in, stereo line in, and stereo line out. These are incorrectly labelled in the manual, which caused some head-scratching when I first tried to record. Thankfully the card markings are correct. There are no jumpers to set: you simply plug it in and re-boot. Windows 95 discovered the new hardware, and asked for the drivers, which are to be found on the Montego Applications CD-ROM. Drivers are also provided for Windows 3.1 and NT 4.0. Having installed the new drivers, Windows 95 wanted to restart again. On the second re-boot, it installed joystick drivers and the Soundblaster emulation, and then launched automatically into the setup.exe file on the CD-ROM. This first checks your PC for the existence of DirectX 5.0 or later, and then installs all the supplied applications.

Looking round your hard drive after any consumer soundcard has finished its installation can be an eye-opener. Apart from a huge number of new files and folders, you also tend to find things in unexpected places. In the case of the Montego, I discovered a new icon on my Taskbar (the Voyetra System Tray) which launches a Turtle Beach mixer, as well as accessing eight other applications. A further icon had appeared in the Control Panel for the Vortex Control Panel, which changes the many new hardware options now at your disposal.

TURTLE BEACH MONTEGO A3D £120

pros

- Good MIDI wavetable sounds, with up to 64 voices available.
- Hardware acceleration and Soundblaster compatibility is ideal for games use.
- Promise of optional S/PDIF In and Out expansion.

cons

- Auto-muting can be noticeable with quiet music.
- No user access to A3D sounds.
- No fully functional MIDI + Audio software included.

summary

The start of a new wave of low-cost PCI soundcards which prove that musicians and games players needn't spend a lot of money to get good quality sound.

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TURTLE BEACH MONTEGO A3D



Included in the bundle is *MIDI Orchestrator Plus*, a comprehensive MIDI sequencing package which includes piano roll, notation, event list, and even SysEx editing.

A Big Bundle

A variety of software is installed from the Montego Applications CD-ROM. *Audiostation* is the familiar rackmounting suite of mixer, MIDI player, WAV player, and CD player. *Audiocview* is a useful little WAV editor, complete with basic effects, while *Music Games* provides three arcade-style educational teasers — *Musiquiz*, *Note Blaster*, and *Rhythm Master*.

MIDI Orchestrator is a MIDI sequencer that is particularly easy to use, being laid out like an analogue mixer (see above). For more advanced users, *MIDI Orchestrator Plus* is also available, and this has event, piano roll and notation windows. *Grid Jam* is a fun auto-accompaniment program where you select a musical style (anything from hip-hop to waltz) and then a five-piece band plays along while you change key and play solos over the top from a MIDI keyboard. Finally, there is a demo of *Digital Orchestrator Pro* (with the save function disabled), which adds audio recording to the features of the *Plus* version. The full version will be £99.

Audition Time

As always, I started by listening to existing WAV files, to judge playback quality through the D-A converters. The Montego sounded good with a variety of material: compared with the AWE64 Gold, it had slightly more clarity when listening to small details in the mix. I could certainly hear a tone at -90dB level, but it was when comparing output noise levels that the Montego really scored, being subjectively a full 10dB or more quieter than the AWE64 Gold. This shows the advantage of having 18-bit converters.

The A-D side of any soundcard is just as

important for a musician, since this is what determines the quality of your recordings. But here I had a few problems. After sorting out the confusion over the mic and line inputs mentioned earlier, I recorded some music, some test tones, and then carried out my normal measurements for noise. Although the recordings were quiet and clean, the measured background noise levels were higher than I expected at -83dB RMS. I could also hear spurious low-level whistles. On examining the noise spectrum, I discovered a clutch of lines at about 2, 3, 6, and 9kHz rising above the otherwise well-behaved noise floor. Suspecting this to be caused by interference from some other card in my PC, I removed my AWE64 Gold, and also tried re-installing the Montego in another PCI slot, but this did not improve matters. This is just the sort of thing that can happen to any soundcard in a PC — it probably won't happen in yours. Despite this, however, recordings were subjectively clean, and the manufacturer's claim of -92dB is still quite believable.

The Aureal 3D Positional Sound is very good, and allows sounds to be placed on all sides, above and below. You can select either speaker or headphone mode (preferred) using the Vortex Control Panel. The supplied demos show this off to good advantage, with vehicles and bees careering about in 3D landscapes. To my ears, the sounds certainly moved way beyond the normal left and right positions, but the rear sounds weren't very convincing in either speakers or headphones. Apparently many games are already A3D-enabled (including *Battlezone* from Activision, which is included on a separate CD-ROM), and an up-to-date list can be found on the Turtle Beach web site. However, unlike the blanket

Feature List

- A-D/D-A converters: 18-bit.
- Signal-to-noise ratio: >92dBA.
- Total Harmonic Distortion: <0.005%.
- Stereo Crosstalk: 100Hz (-89dB); 1kHz (-90dB); 10kHz (-87dB).
- Frequency Response: 20Hz to 20kHz (+/-1dB).
- Sampling Rates: up to 48kHz in 1Hz steps.
- Synthesizer: 64 voices (32 hardware + 32 hardware-accelerated).
- Wavetable: 4Mb in PC system RAM.
- Onboard MIDI effects: Reverb and Chorus.
- Audio Processor: Hardware enhanced full-duplex for simultaneous record/playback at full bandwidth with independent record/playback rate.

Fostex



D-90 features..

- 8 track digital multitrack with no compression
- 8 track simultaneous recording / playback
- 44.1 or 48kHz (selectable)
- Copy, paste, move & erase editing with undo & redo
- ADAT™ Digital Interface (simultaneous 8 channel)
- ±6% pitch control with no loss in audio quality
- MMC & Fostex Exclusive Message for controlling transport from external MIDI device, e.g. sequencer
- Approx. 30 mins recording to 1.3GB drive @ 44.1kHz
- 9 "Virtual reels" ■ Versatile chase mode
- Tempo mapping - create up to 64 tempo & signature changes per song
- Midi clock with song position pointer
- Analogue & Digital I/O (S/P-DIF & ADAT interface)
- SCSI-2 interface option for fast backup of sessions



D-160 features..

- 16 track digital multitrack with no compression
- 8 further 'ghost tracks' for additional takes
- ADAT™ Digital Interface (simultaneous 16 channel)
- ±6% pitch control with no loss in audio quality
- SCSI-2 interface as standard for: fast back-up
- 44.1kHz & 48kHz sample frequencies
- Up to 99 "Virtual reels"
- Tempo mapping - create up to 64 tempo & signature changes per song
- Midi clock with song position pointer
- MMC & FEX implemented for external MIDI control
- Copy, paste, move & erase editing with undo & redo
- Analogue & Digital I/O (S/P-DIF & ADAT interface)
- Optional LTC Timecode board with Word & Video sync
- Balanced I/O option (+4dBu I/Os on D-sub 25-pin)

Digital Multitrack Recording - you have a difficult choice

Choosing to 'go digital' is fast becoming one of the easier equipment decisions you have to make.

But choosing the right digital multitrack can be a little more taxing as you have to be sure your chosen recorder excels in four critical areas: audio quality, expansion, synchronisation and editing.

Both the Fostex D-90 and D-160 offer industry standards in digital recording. Using both 18-bit & 20-bit convertors, they provide for CD-quality audio with a choice of 44.1kHz & 48kHz sample rates.

And being Fostex, the audio remains uncompressed meaning no compromises.

An ingenious caddy-held hard drive system means that increasing recording

time is simply a matter of popping in a larger hard drive.

SCSI back-up of recording sessions is available too.

Sync facilities are as you would expect from Fostex. Both models are equipped with the ability to chase to incoming MTC; MTC plus S/P-DIF or ADAT™ (optical); or run free after MTC lock.

In addition, timecode sync facilities can be added to the D-160 via an optional board.

Finally, being non-linear machines, full copy, paste, move and erase (with undo & redo) editing is available across all tracks.

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TURTLE BEACH MONTEGO A3D

► stereo-width enhancement of many lesser 3D soundcard systems, A3D is not something that you just switch on or off. Apart from the A3D Player demo, which allows you to change the playback position of any two WAV files, there is seemingly no way for the user to access this feature from other software, which is a shame.

The games support will appeal to many people, since Soundblaster emulation is provided (traditionally an ISA-only feature). You can direct MIDI output from any game running in a DOS window to any Windows 95 MIDI device (using the Vortex Control Panel), as well as running Soundblaster emulation in real-mode DOS. You can also disable the DirectSound Hardware Accelerator for games that don't check available hardware properly — the more processor-intensive DirectSound drivers of DirectX 5.0 will then be used. Having hardware acceleration could give you a system improvement of 3 to 4 percent when running games.

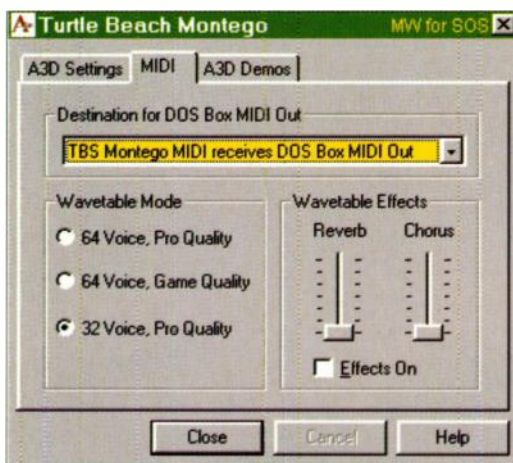
Waves Of Passion

The Vortex Control Panel has three switchable Wavetable modes: 32-Voice Pro quality takes the lowest CPU overhead, 64-Voice Game quality provides more voices, but with increased CPU overhead, and 64-Voice Pro quality takes the highest overhead of all. Both 64-voice modes use 32 software voices added to the 32 hardware ones. The Wavetable sounds themselves were very good, but in the interests of equality, I played a wide variety of dance, rock, and classical GM files side by side on the Montego, AWE64 Gold, and DB50XG daughterboard. I loaded up the 4Mb GM SoundFont for the AWE64, to make the fairest comparison. The DB50XG nearly always sounded best (although, if you like these sounds, you can always plug this into the Montego anyway), but it was a close-run thing between the AWE64 and Montego. Overall, I think the Montego won, with punchier drums and more modern sounds.

Wavetable Reverb and Chorus are also available from the Control Panel — there is an Effects On switch, and an individual slider to control each level, although strangely some effect is still present even with these pulled right down. The chorus was quite subtle, but enriched the overall sound well, without swamping it. The reverb was surprisingly good, although there is only one sound — a hall effect with a long pre-delay.

I did discover that if you changed Wavetable modes while playing back MIDI files several other effects appeared (large room, small room, slapback and echo), but this appeared to be a bug, since when you stopped and restarted the music, the hall effect reappeared. Still, it shows that a future driver set could possibly provide more effect options.

Most people will judge the background noise levels by turning up the speakers with no music playing. This is indeed very quiet, but the secret here is that some sort of noise gate has been implemented (Turtle Beach call it auto-muting). You will therefore hear a faint halo of noise when playing music, but it



Left: The intriguingly named Vortex Control Panel is a standard item for all A3D soundcards, and provides various choices for the A3D Audio, MIDI for DOS games, Wavetable mode and effects, as well as various 3D demos.

Below: The Aureal 3D Positional Audio is well demonstrated by the included demos. In this one, you can move about in a simulated 3D environment, while several bees fly around a hive, to the accompaniment of birdsong and running water.



will be cut off when the final note decays. As long as you are careful to keep levels high, this is a useful feature, but can still sometimes be noticeable during quiet passages of music.

Summary

The Montego will appeal to many people who want games compatibility, without sacrificing good quality sound. The majority of modern games now tend to use 3D digitised sound rather than MIDI (especially now that PCI cards are replacing ISA ones, which increases the possible number of digital audio streams). However, musicians still need good-quality MIDI sounds, and the Montego doesn't disappoint in this department. The 3D sound is good, but can't currently be accessed by the user, although many games are A3D-enabled.

There is little quality competition at £120, particularly when narrowing the search to PCI cards. Creative Labs are poised to release the Soundblaster Live with a similar specification to the Montego, but launch details of this are still hazy at present. Ironically, one competitor is Turtle Beach's own Daytona PCI (now £89), although this only has 16-bit converters and 32-voice polyphony.

Turtle Beach have pitched this model at just the right level and it is already selling in large numbers. When the Montego S/PDIF interface eventually arrives (bringing the combined price to just under £200), it will be a very tempting bundle. If you need a card that will do most things well without breaking the bank, this ought to be on your shortlist. **SOS**

"If you need a card that will do most things well without breaking the bank, this ought to be on your shortlist."

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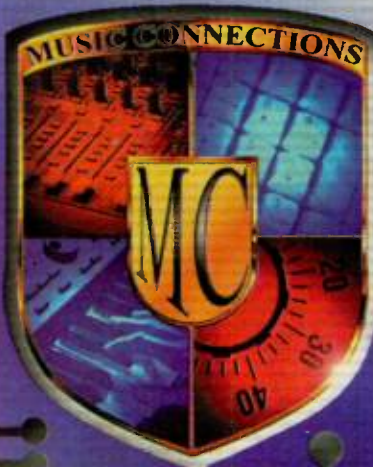
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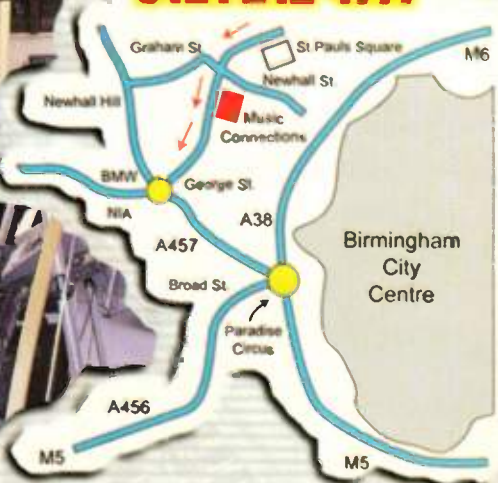
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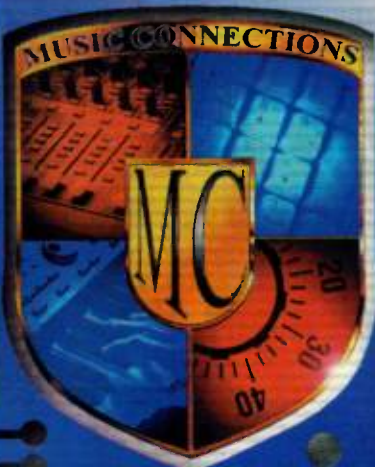
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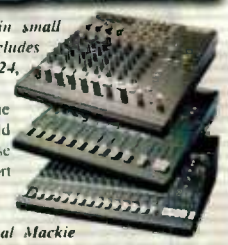
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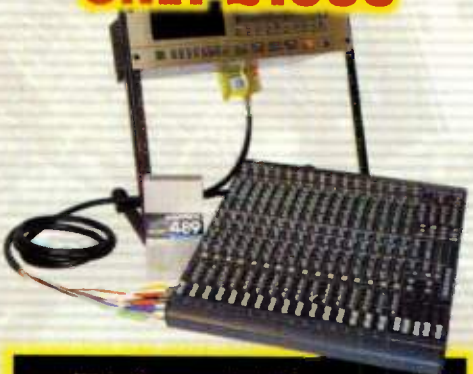
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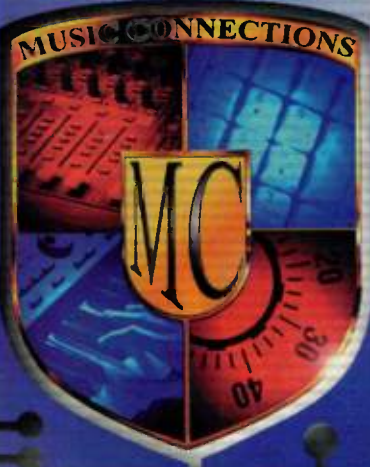


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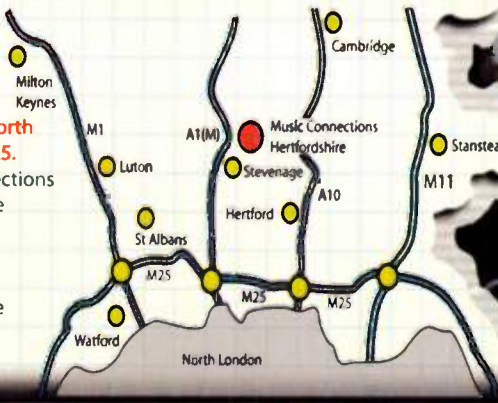
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ALL ABOUT WINDOWS 98

Since Microsoft released Windows 98 at the beginning of June, some PC musicians have held back to see how stable it is, while others have taken their chances.

Martin Walker crosses his fingers and jumps the latest hurdle from Bill Gates.

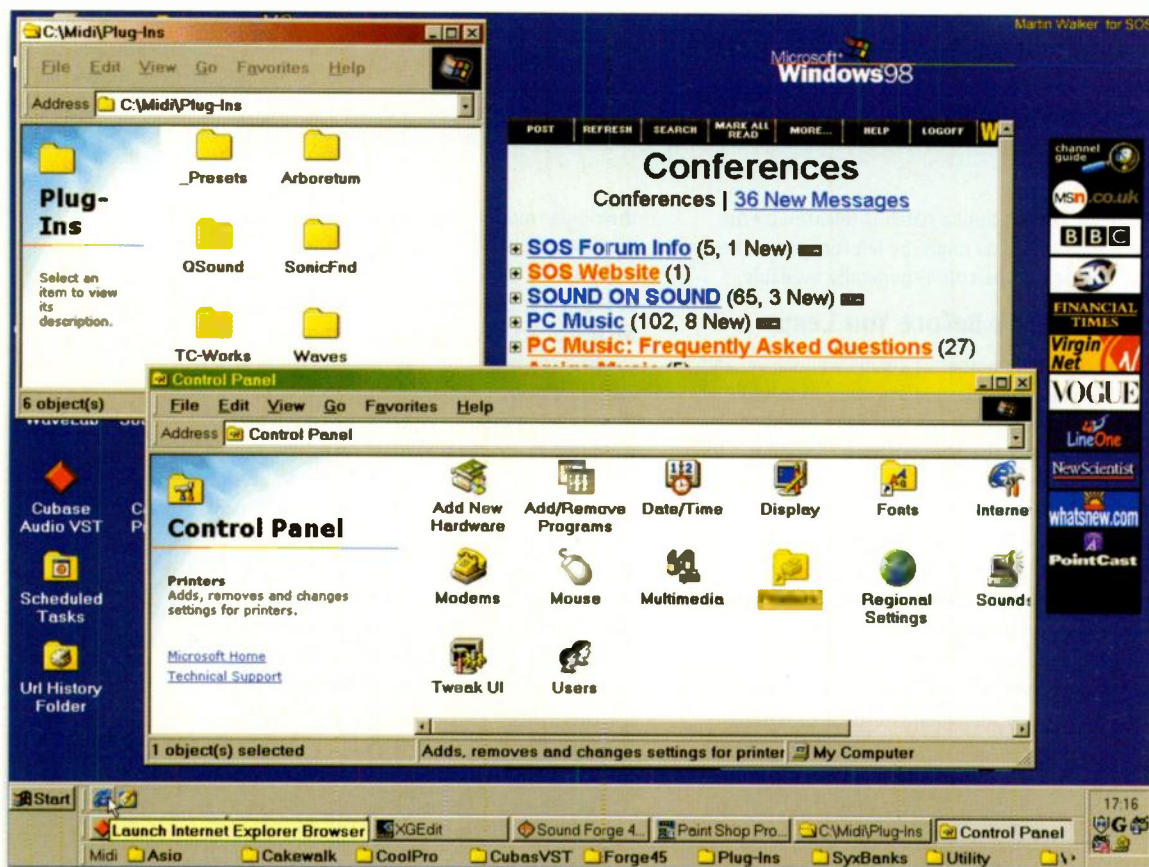
Although most PC industry professionals have been seriously underwhelmed by the great fuss surrounding Windows 98, retailers have been reporting bigger sales during the first few weeks since its release than for Windows 95 — only 22 days after its launch, total worldwide sales had topped the million mark. This is surprising, especially considering that the differences between the two are widely seen as evolutionary, rather than revolutionary.

Even PC suppliers seem to be finding it hard to

come up with a list of exciting new features to help sell the product. To give you an example, one advertiser was claiming "Windows 98 makes your computer work better by integrating tightly with the Internet and providing better system performance and easier system diagnostics and maintenance". Hardly a must-have product! This even extends to its packaging, where the first major claim is "Save time — applications launch an average of 36% faster than on Windows 95". I don't know about you, but the proportion of my day spent launching applications has only ever been a few minutes to the many hours I spend actually working with them.

Because of this, I must point out that this is not going to be a review as such. Far more important than a new paint job and a lot of new bells and whistles, for the PC musician, are the implications of installing a new operating system. This is not

Figure 1: The Ultimate Desktop? Here I am running *Cubase*, *Wavelab*, and *XGEdit*, perusing several folders disguised as web pages, and subscribing to multiple channels of multimedia content. Of course the *pièce de résistance* is that I am simultaneously connected to the SOS forum, so that while I am writing some music I can immediately see whenever a new message appears.



ALL ABOUT WINDOWS 98

► something to be undertaken lightly, since the OS is the core of your PC, and the PC's stability and performance are largely dependent on it. Features that shave a few seconds off a typical dabbler's day will not necessarily improve the performance of a typical MIDI + Audio sequencer — indeed, in many cases they will slow it down.

Bearing this in mind, I have concentrated on those aspects that I think are more relevant to the musician, and particularly issues of compatibility. You might think that pointing out potential problems before going into the new features of Windows 98 is the wrong way round, but it is often far easier to install Windows 98 than to remove it and return to Windows 95. If you do find that your favourite program crashes every time you launch it in Windows 98, you may have no choice but simply

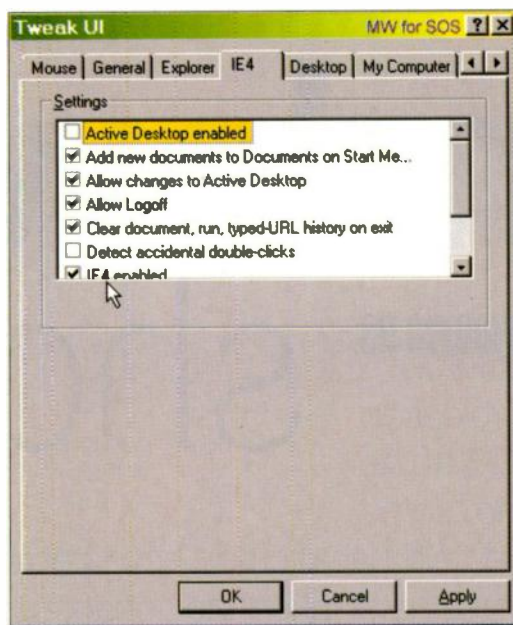


Figure 2: TweakUI (found on the Windows 98 CD-ROM) allows you to selectively disable certain new features, if you prefer to carry on with functionality similar to Windows 95.

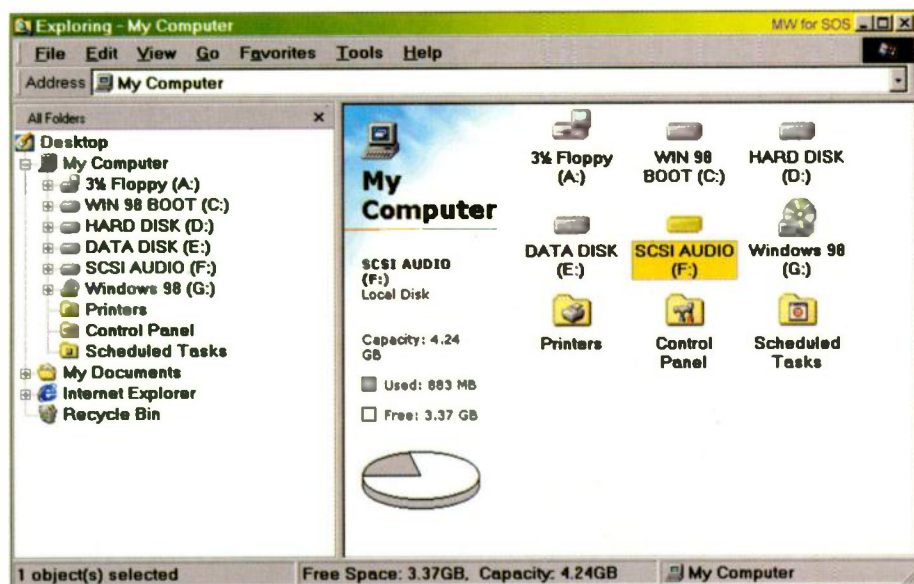


Figure 3: Windows Explorer now has options for a more web-based look, which provides some useful extra information for the selected file, as well as single-click opening.

to avoid using it until a patch is released by the developer, and you might be left for weeks or even months before the cure is generally available.

Look Before You Leap

Judging by the number of emails we receive, and the number of queries we are starting to see posted on the sospubs.co.uk forum, many PC musicians have already upgraded to Windows 98. Thankfully the majority of people are experiencing few hardware problems, but as I have often pointed out in PC Notes, this is never guaranteed. Because of the huge range of components found inside PCs, there is always the possibility that a particular combination will react badly.

One cautionary tale comes from Microsoft itself, who have admitted that some of Windows 98's new power management features require fairly recent BIOS versions. A warning has now been issued recommending that before you upgrade to Windows 98, you should contact your PC manufacturer to find out if you need a BIOS update. Some manufacturers are now warning that

their older models may not work adequately with Windows 98, so checking is sensible.

Windows 98 is shipped with a huge range of new drivers, and in many cases these are all that is needed to achieve optimum performance with your existing hardware (such as graphics cards and SCSI cards). Adaptec claim on their web site that most of their existing products have been tested with Windows 98, and that in most cases you should use the drivers already included with Windows 98. However, those of you with their *DirectCD* packet writing application are warned that version 2.0 should be updated to 2.5 (mentioned in October's PC Notes, and available as a free download to existing owners) before upgrading to Windows 98, as some users have reported spectacular crashes.

Various problems have been reported with hardware drivers if you are upgrading from Windows 95, and I suspect that this is primarily due to incompatibilities between Windows 95 drivers and Windows 98, despite initial assurances from Microsoft that Windows 95 drivers would work. You should be able to circumvent these by always ►

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ALL ABOUT WINDOWS 98

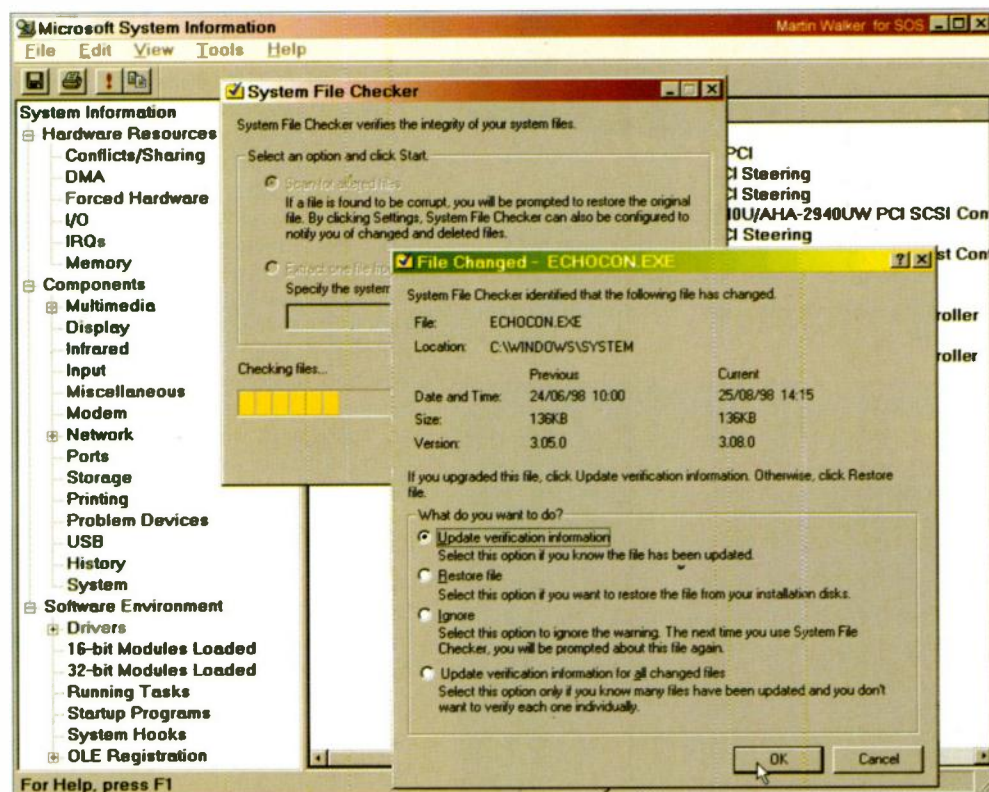


Figure 4: System Information is a big improvement on its Windows 95 predecessor. Here the System File Checker has noticed that my Event Gina soundcard drivers have been updated since the last time it was run — an ideal tool to check whether errant applications have dropped Windows 95 drivers over the top of Windows 98 ones!

MICROSOFT WINDOWS 98 UPGRADE

pros

- Eleven-device MIDI limit no longer applies.
- USB peripherals directly supported.
- Multiple monitor support.
- Extensive range of utilities.

cons

- Internet-based desktop additions irrelevant for most musicians.
- Conflicts with existing software still likely over the next few months.
- Additional built-in functions may slow down music applications slightly.

summary

A useful but largely inessential upgrade that provides a host of new bells and whistles, Windows 98 may however be invaluable if you have a lot of MIDI devices.

SOUND ON SOUND

► attempting to use Windows 98 versions where possible. In fact, I see no reason why updating your hardware drivers to Windows 98 versions (downloaded from the appropriate manufacturer's web site) while still running Windows 95 should cause any problems, and at least then you know that when you carry out the upgrade to Windows 98, there should be no incompatibilities. Some Plug and Play expansion cards have required different settings from those used in Windows 95. Notebook users have also had to reinstall their PC cards before they are recognised by the new OS.

When it comes to soundcards, you should be guided by either the manufacturers' web site, or check directly with the UK distributor. In general, most Windows 95 soundcard drivers should still work quite happily, but a few people might experience odd problems. I didn't personally experience any driver conflicts during the subsequent installation of my software applications, but then I was extremely careful to visit manufacturers' web sites first, and download and install any new drivers specifically for Windows 98, rather than trusting that the Windows 95 ones would work.

On the software front, the most important compatibility checking should be with system utilities. Although Microsoft bundle a variety of these with Windows 98, many people have their own favourite utilities which are either more comprehensive or faster than the equivalent Microsoft version. It is vital to check compatibility before attempting to run any utility that works at a low system level, such as hard drive defragmentation, and particularly those that

operate on the Registry. Thankfully Symantec (who market *Norton Utilities*) have an Internet update system, and all of their existing products can be updated automatically to run happily with Windows 98 — do this *before* you attempt to run any of the utilities. I suspect that other developers may well seize on the opportunity to launch new Windows 98-specific versions of existing products.

Although many applications may run happily with Windows 98, however, this doesn't necessarily mean that their performance will be optimised with the new OS — the optimum settings for Windows 95 won't automatically be the same for Windows 98. After this raft of warnings, let's be more positive, and see just what Windows 98 has to offer the PC musician.

Install Options

The ideal way to install Windows 98 is as the full version, on a completely blank formatted hard

Spec Check

The official minimum PC spec for Windows 98 (as printed on the packaging) is a 486DX/66MHz processor and 16Mb RAM, but Microsoft do seem to be rather optimistic here. Although I have come across 486 owners upgrading to Windows 98, I certainly wouldn't recommend anything less than a Pentium with 32Mb RAM. Many people are probably upgrading in an effort to make their machines run faster and achieve larger number of hard disk recording tracks, but I wouldn't hold out much hope of this. In general, it seems that Windows 98 takes a little more overhead to

provide its extra features and functionality, and owners of slower machines may therefore experience a slightly more sluggish feel. However, anyone with a 200MHz Pentium or faster processor shouldn't notice any slowdown at all.

Where a distinct speed improvement will be found is in the start-up and shut-down times, both for Windows 98 itself, and when loading applications. Some people whose machines were badly set up for Windows 95 may also notice improvements in performance after running the various Wizards, such as the *Maintenance Wizard*, which will automate general housekeeping activities.

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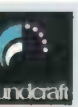
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ALL ABOUT WINDOWS 98

► drive, which will ensure that the install is clean and that all the drivers are the latest versions. However, many (probably most) people will have bought the cheaper upgrade version, which typically costs around £65 and can run from within either Windows 3.1 or Windows 95. In both of these cases, you use the 'Run' command, and type 'D:\WIN98\SETUP.EXE'. This installs Windows 98 over Windows 95, in the same directory, and migrates information in the current Registry about already installed applications and utilities so that it appears to Windows 98.

Apparently one cause of problems to those upgrading over an existing version of Windows 95 happens during this change of Registry information to the new format. Norton recommend using their *Optimisation Wizard* on your Registry before carrying out the upgrade, to remove any 'dead wood' left by cover-mounted CD-ROMs and unwanted applications. If there are any inaccurate or corrupt entries in it, the automatic Windows 98 Registry updater may fall over when trying to convert them.

"The new features seem divided between utilities to sort out problems that you'd rather not have, and new features that you simply don't need."

For this reason, and to avoid potential hardware conflicts, many people also suggest uninstalling your multimedia software and soundcard drivers, and then removing the soundcards themselves, before upgrading and then reinstalling them afterwards. At least then if you do get a subsequent problem during an install you know exactly which component or application caused it.

You may prefer to install Windows 98 in a different directory (c:\Win98 instead of c:\Windows, for instance), and in this case you should run Setup from MS-DOS (make sure that you have CD-ROM driver support — I described this process in a PC Musician feature in the September '97 issue). This does have the advantage of allowing you the choice of saving your existing MS-DOS and Windows 95 system files so that you can uninstall Windows 98 if necessary. If you have enough space on your hard drive, you can also copy the entire Windows 98 CD-ROM to a new folder, and then run Setup from there — you won't then need MS-DOS CD-ROM driver support, and the install will be much faster as well.

A drive Converter utility is installed along with Windows 98, so that you can convert your hard drives to the more efficient FAT32 format (see

later). If you do this, however, it is not possible to uninstall Windows 98 and return to Windows 95, unless you were previously running the most recent Windows 95 OSR-2 release.

If you are installing the full version, you get a Windows 98 floppy Boot Disk as well as the main CD-ROM, and use this to start the Setup procedure. I had the full version, and installed this onto a freshly formatted hard drive. I was very pleased to see that support for SCSI CD-ROM drives is now incorporated into the install procedure — if an IDE CD-ROM is not detected, Adaptec SCSI drivers are installed, and a further search carried out for a SCSI CD-ROM. As usual, you can opt for a Typical, Portable, Compact, or Custom Install. I always opt for Custom, so that I can choose what gets installed, and what I don't want. However, since you can always install extra options later, or remove ones that you don't end up using, the choice is largely up to you. The whole procedure took about 3/4 of an hour.

Internet Explorer

I shall assume that when we talk of 'new' features, we are referring to those not present in the initial release of Windows 95. Some of the features of Windows 98 have subsequently been released either in Service Packs (free updates) or in the more recent versions of Windows 95 that have theoretically not been generally available other than to OEM manufacturers. Microsoft claim three main areas of enhancement for Windows 98: "Performance and reliability", "A new generation of hardware and entertainment", and "Improved ease of use and Internet access". The first of these alludes to the 3000 bug fixes and generally more robust nature of Windows 98 as compared with Windows 95, and the second to a range of new hardware and software drivers.

The last of the three is supposedly because customers have been asking for better integration between the PC environment and the Internet. Perhaps Microsoft are covering themselves here, as this is precisely what has caused so much controversy and legal debate — the fact that *Internet Explorer 4* is not only bundled with Windows 98, but as initially configured is such an integral part of the desktop that it can be difficult to escape from. Many people who took the plunge and installed *Internet Explorer 4* with Windows 95 regretted it, due to the many low-level changes it made to the operating system. Thankfully, however, the general consensus is that since *Internet Explorer 4* is such an integral part of Windows 98, it is much more stable, as well as faster than the previous combination.

I've always previously used *Netscape Navigator* for browsing the Internet, but since *Internet Explorer 4* is such an integral part of Windows 98, I decided to change over. I adapted very quickly indeed, and was even able to import the extensive bookmark file of useful Internet sites from my previous machine (*Navigator* stores this as an HTML page, so if you make this *Explorer's* home page you still have access to all the same data).

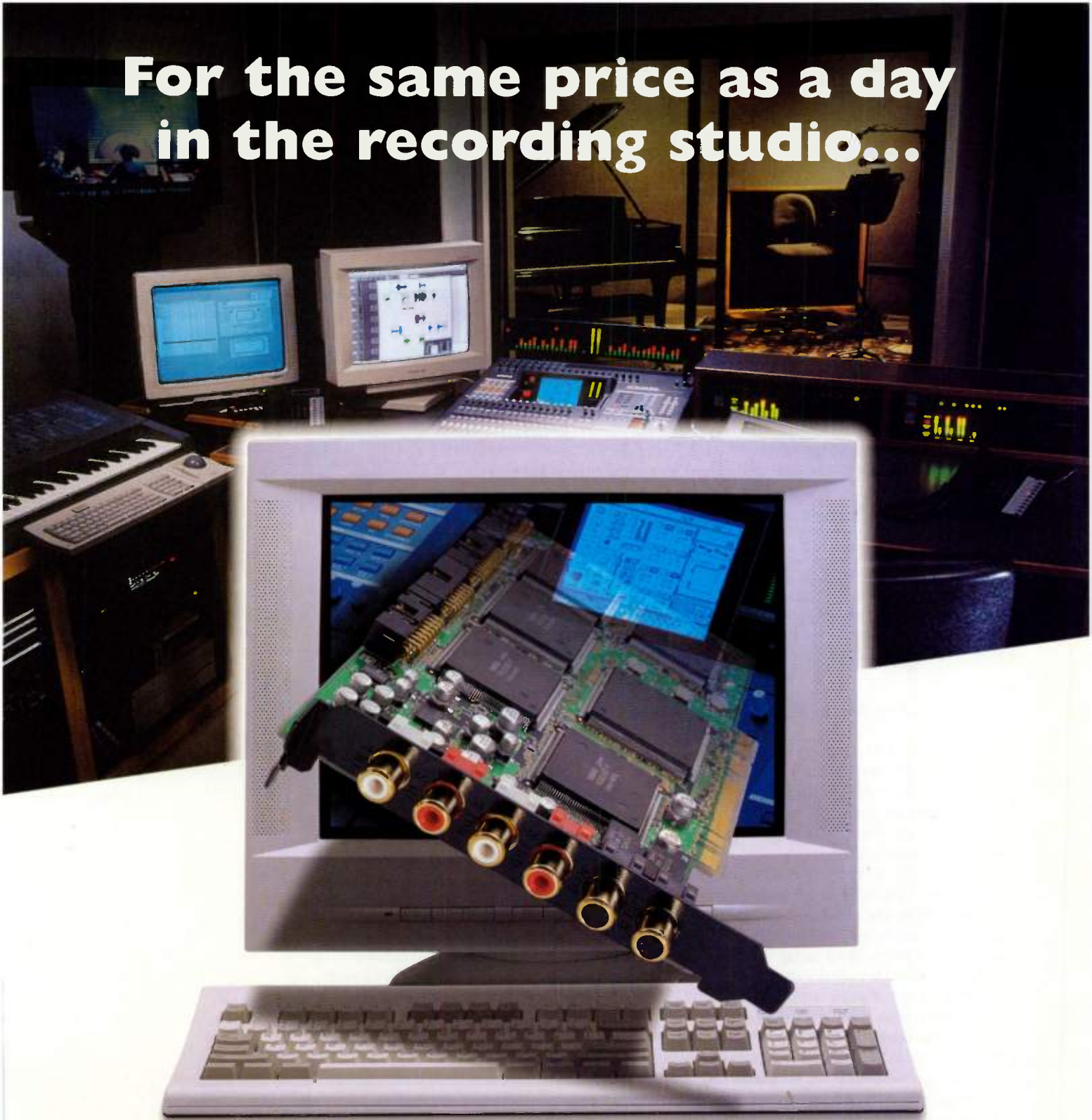
Teething Troubles

By the time you read this, most software developers should hopefully have sorted out any conflicts between their applications and Windows 98 — although some seem resolute in not mentioning Windows 98 at all on their web sites. At the most basic level of system utilities, Symantec's *Norton Utilities* can be updated through the Internet, and Power Quest's *Partition Magic 3* is already compatible, so formatting, partitioning and system fault-finding can proceed as normal.

On the musical front, *Cubase VST* seems to be running with no obvious problems on my PC, although there are no guarantees on the various Steinberg web sites. In fact, some users are claiming more stability than with Windows 95 on their machines. The latest range of *Logic Audio* packages are Windows 98 compatible, and *Cakewalk Pro Audio 7* (and 7.01) seem to be OK as well, although *Pro Audio 6* users have apparently reported a few problems.

Apparently some people have had problems with some DirectShow plug-ins — the only ones I personally had were with Qsound's *Qtools123*, which crashed *Wavelab* every time I tried it (although it worked fine in *Sound Forge*), and Spectral Designs' *Loudness Maximiser*, which crashed in both applications. Let's hope that these isolated instances are resolved by the time that you read this.

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ALL ABOUT WINDOWS 98

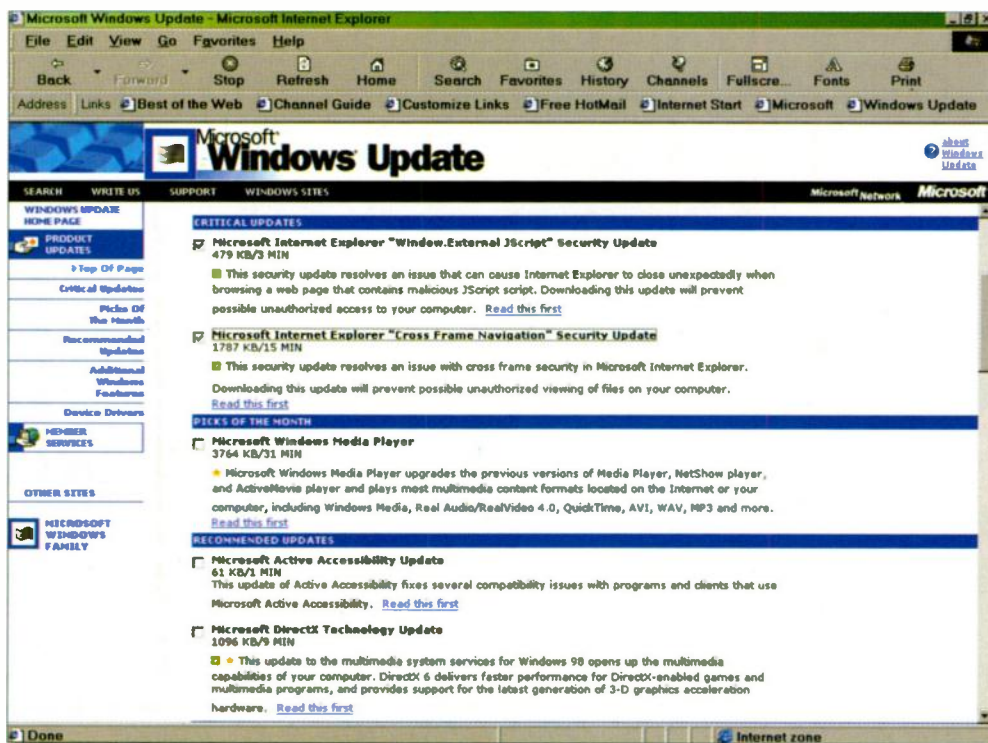


Figure 5: Windows 98 can be updated from the Microsoft web site (there is even a ready-made link to click on in Internet Explorer). You can even launch an Update Wizard, which will automatically scan your PC to see if there are any suitable driver updates available.

Active Phone Bills

Extra Internet integration is provided by the new Active Channels feature, which allows you to subscribe to web sites that will deliver content to your PC on a regular basis. This is fine for those who have free local phone calls, but for most UK users simply doesn't apply.

You can turn the Active Desktop off, as you can the IE4-specific features. To do this, you will need the Windows 98 version of TweakUI, that invaluable Control Panel addition that makes all sorts of tweaks to the registry without having to actually get your hands dirty inside a registry editor. Although not installed as part of Windows 98, you can find it on the CD-ROM, in the 'tools\reskit\powertoy' folder — simply right-click on the Tweakui.inf file, and then choose Install. To disable the IE4 features, click on the IE4 page, and then un-tick the appropriate box (see figure 2) — you will need to log off and on again before the changes take effect. TweakUI can also be used to disable the ridiculous animations for things like menus that wind themselves up and down when you select them.

The Internet experience is now extended to Windows Explorer, which can now also be viewed in a web-page format, complete with background graphics and single-click launching for any file (see figure 3). The background graphic when viewing Windows Explorer as a web page labels the currently displayed folder, as well as providing useful information, and shows a thumbnail of the content of any HTML files.

A Helping Hand

I was pleased to find a lot more helpful utility programs installed with Windows 98; these appear

in the Accessories/System Tools section. *Disk Cleanup* works much like the Norton *Utility Space Wizard*, providing a quick way to remove temporary files and empty the recycle bin. It also has useful options to remove installed Windows 98 components that you end up not using. The latest version of the *Disk Defragmenter* makes use of the fact that Windows 98 monitors applications that you launch, and creates a log file for each of them in the Windows\Aplog folder. When you defragment your drives, *Disk Defragmenter* rearranges the program files in the order they are accessed, so that in future each program will start more quickly. I certainly noticed a significant difference, although it's a good job I did after the half an hour or so that it took to rearrange the contents of my drive!

Drive Converter (FAT32) will change the format of an existing FAT16 drive to give you more efficient use of space, and possibly faster loading of smaller programs. The general consensus

Little Touches

Sometimes it's the little things that can bring a smile to your face. When running Windows 98, I noticed several small improvements that make day-to-day use just that little bit easier. Here are just a few of them:

- Entries on the Start Menu can now be ordered by dragging them to their new positions — this is far easier than previous tricks like adding a number at the start of the name to force it to the top of a menu. Right-clicking on any Start Menu entry also now brings up a new menu of useful options.
- If you do suffer a crash caused by a badly written application, Scandisk is run automatically during the next boot to check

for any possible errors on your hard drive.

- Attributes can now be shown as an option in Windows Explorer — this makes it easy to spot Read Only files without having to open the Properties page.
- Windows 98 will also please those who have been envying the multiple monitor support provided by Macs. You will need a separate graphics card for each monitor you want to connect, but it can make life simpler for musicians — you can view a different application with each monitor, or view a part of a larger virtual desktop on each. It is even possible to use different-sized monitors, and Microsoft claim that up to nine monitors can be supported (though how they expect you to fit nine graphics cards in one PC is another matter!).

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ALL ABOUT WINDOWS 98

► seems to be that for musicians, however, the slightly increased overhead that allows this to take place will degrade the speed for hard disk recording. Possibly the best compromise is to use a separate audio drive (or partition), and either format this as FAT16, or leave it as FAT32 but use a utility like *Partition Magic* to increase the cluster size from 4K to 16K. This should reduce the overhead, and hopefully give you the best of both worlds — more space on your primary application drive, and more speed on the audio recording one.

Maintenance Wizard allows those who leave their PC on 24 hours a day to schedule a suitable time for automatic defragmentation, scanning your hard drive for errors, and deleting unnecessary files. Most musicians will probably prefer to run these tasks as a single batch on demand, rather than dicing with death when routine maintenance kicks in during the middle of a perfect take at 2am.

For those of us who like to delve deeply into the workings of our machines to squeeze out the last possible drop of performance for hard disk audio applications, the System Information tool is a godsend. This gathers together all the technical information that you (or Microsoft) might need for technical support purposes, from the Registry, System.ini, Autoexec.bat, Config.sys, and from the operating system (such as which modules are currently running). This makes it far easier to find out about your hardware resources (IRQs, DMAs and so on) — a Conflicts/Sharing section shows any devices that are in conflict or currently sharing resources.

The Components view shows the status of device drivers and multimedia software, and also provides a driver history. For instance, this showed that when I originally installed my Event Gina soundcard, it got allocated IRQ5, but then after I subsequently installed an ancient ISA MPU401 MIDI Interface, it got moved to IRQ4. This sort of information can be a real help when troubleshooting. The third view is Software Environment, and this shows all the drivers, modules, and tasks currently loaded, including Startup programs (not only those in the Startup group, but those run automatically by the Registry, which you may not even know about).

Along with all the information, there is an additional drop-down menu of extra tools, such as the invaluable System File Checker, which maintains a database of all your system files (see figure 4). Whenever you run this, it informs you of any system files that have changed (after a badly behaved install routine for instance) — you can ignore the change, update the database if you

decide the new file is a more recent version, or restore the original from the Windows 98 CD-ROM. Within the first couple of weeks this detected a Windows 95 system file that one of my applications had installed over the top of the new Windows 98 one. The beauty of the Restore is that it gives you the option of saving a backup copy of the file you are replacing, so if you do run into problems later, you can retrace your steps.

Registry Checker works in both MS-DOS and Windows, and is also run automatically during each bootup, when it backs up the current Registry in a compressed form, and maintains up to five copies. In the event of a Registry problem, it will revert to the most recent backup copy. If there are none, it will attempt to fix Registry problems as well, and will even optimise it if it is getting bloated with unused entries.

Summary

I'm still in some doubt as to why so many musicians are upgrading to Windows 98. The main benefits for us seem to be the removal of the 11-device MIDI limit, and direct support for USB devices such as cheap S/PDIF interfaces, along with more stability and a large collection of bells and whistles. Although the major new features are Internet-based, users seeking the fastest hard disk recording speeds will probably switch most of them off.

Personally I like the new utilities a great deal, but this should not be the main reason to upgrade. During the few weeks that I've been using Windows 98 I've been largely happy with its performance, but have experienced various minor crashes on occasions. Mind you, it still seems fairly stable, although only Microsoft could turn '3000 bug fixes' into a new Windows 98 feature! Microsoft have also gone on record as saying that Windows 98 will be the last version of this operating system, and that their next general OS release will be based on Windows NT. This has many potential benefits for the PC musician — indeed, some are already using Windows NT, and reporting significant speed improvements. However, the biggest disadvantage of the NT platform is that because it was developed primarily for business users, there are far fewer drivers available for soundcards and MIDI interfaces. Most people who have tried have been forced to return to Windows 95, simply because one of their hardware devices hasn't got a suitable driver.

Overall, you may suspect that I am seriously underwhelmed by Windows 98, and you'd be right. I've no doubt that most people will be using it in six months' time, especially when software developers have ironed out any remaining conflicts in their software. However, the new features seem divided between utilities to sort out problems that you'd rather not have, and new features that you simply don't need. Be prepared to spend as much time searching out and switching off unwanted features as you do installing it. If you want to use more than 11 MIDI devices, go for it. Otherwise, weigh up the pros and cons carefully before taking the plunge. **SOS**

Surfin' USB

Along with many other improvements to drivers, Windows 98 now directly supports USB (Universal Serial Bus) peripherals. This finally removes the major obstacle for USB development — although many motherboards had USB circuitry, Windows 95 didn't directly support the standard. For this reason, many PC manufacturers didn't bother to add the sockets that connected USB to the outside world, although most PCs bought in the last twelve months or so will probably have them.

Now, with the arrival of Windows 98, you should finally be able to add up to 127 hot-swappable peripherals in daisy-chain fashion, and take advantage of whatever developers come up with that benefits from a high-speed serial bus, without having to worry about IRQs, DMAs and so on. Sadly, USB peripherals for musicians are still fairly thin on the ground, but things look to be gathering momentum.

Opcode have just announced the DATport, which provides a single stereo S/PDIF input and output on a six foot cable plugging into the USB buss for £169 including VAT. This would seem to be about the cheapest way to add digital I/O, with the added advantage of not needing an expansion card to be fitted (with all the attendant problems that these can sometimes bring). If you have Windows 98, you simply plug it in (no drivers are needed, and there is no need to reboot). Mac drivers are also expected soon, and other models are expected in this new USB family.

Roland have also announced a new USB peripheral, the Audio Canvas UA-100. This provides 20-bit A/D and D/A converters, a fully shielded case with guitar and vocal inputs, a built-in DSP effects processor and a 2-in, 2-out MIDI port. It really does look as if USB is finally going to take off in a big way.

“Personally, I like the new utilities a great deal, but this should not be the main reason to upgrade.”



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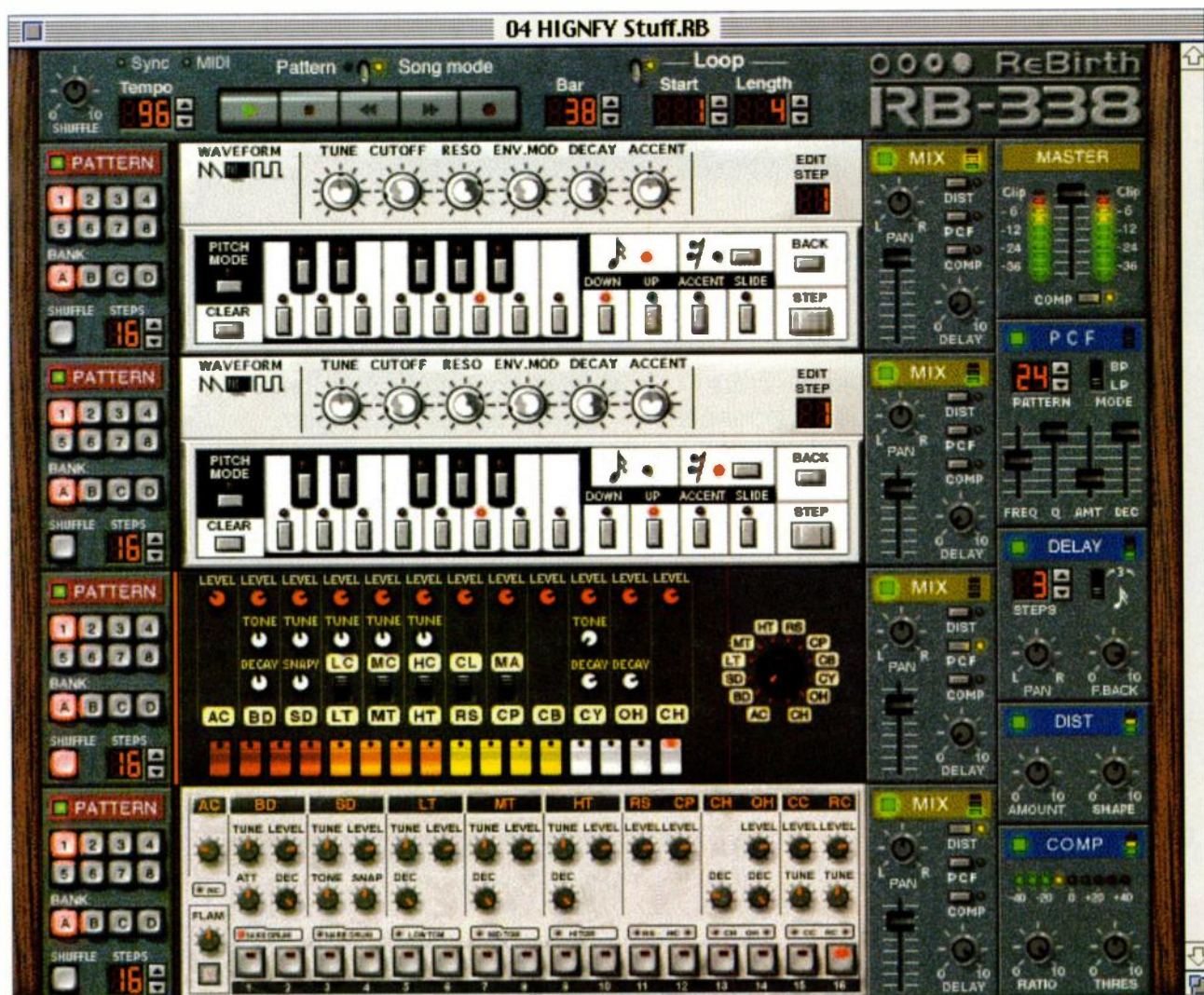


the cool of rebirth

**STEINBERG/PROPELLERHEADS
REBIRTH RB338 v2.0 TECHNO
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FOR MAC & PC**

Modern music software, by and large, is fantastic. It lets musicians create sequences of staggering complexity at the drop of a hat, work simultaneously and easily with both MIDI and digital data, and instantly subject audio to the kind of torturous manipulation that would have taken hours,

Unlike the vintage equipment it emulates, *Rebirth* is getting more sophisticated all the time. **Derek Johnson & Debbie Poyser** catch up with the latest version.



Rebirth main screen with individual mix controls and effect control panels to the right, plus the new gog at the bottom.

The Rewire routing panel in *Cubase VST* patches incoming *Rebirth* audio, on the left, to *VST*, on the right. When a Rewire link is made, a special channel is added to *VST*'s Audio Channel Mixer. It's coloured a distinctive red, but is equipped with all the audio mixing facilities that *VST* has to offer.



day-glo orange: modify it, and it becomes *yours*.

Propellerhead haven't stopped there: *Rebirth* v2.0 for the Mac (see 'Rebirth & the PC' box for PC situation) features that 909 as standard, a compressor, and Rewire, a link between *Rebirth* and Steinberg's *Cubase VST* MIDI + Audio sequencer, which allows *VST* to control or be controlled from *Rebirth*, as well as routing *Rebirth* audio through *VST* mixer channels. It's now also possible to tweak on-screen knobs in real time in Song mode (whereas before you could only tweak them in Pattern mode, unless you were prepared to commit yourself and record the tweaks into a Song). There's a new Shuffle facility, to add a 'triplet' feel, slight refinements to a couple of editing functions, a new Shape parameter for the Distortion effect, and extra 'patterns' for the Pattern Controlled Filter (more later). Finally, sounds from the onscreen 808 can now be selected by clicking on the abbreviation above the step buttons, rather than by turning the instrument select knob with the mouse.

In The Picture

Anyone unfamiliar with the workings of the original *Rebirth* should refer back to *SOS*'s August 1997 review, but for now, before discussing v2.0 enhancements, here's a brief overview of the program.

Each of the graphic representations of 303s, 808 and (now) 909 has its own 'Section' for sequencing purposes; you could think of each Section as a sequencer track with a sound source physically attached to it. Though the 303 synth Sections are

or even days, with a razorblade and tape.

But do you ever really *covet* software in the same way that you covet hardware? Do you regard your music program with the same affection as your Moog Rogue or Fender Strat? Can something which exists only in a computer's virtual environment inspire the same pride of ownership as, say, that small silver box called a TB303 Bassline? If it's called *Rebirth*, maybe it can...

For the uninitiated, *Rebirth RB338* has been called "the ultimate techno software package" and was a considerable software success story of 1997. It could hardly fail, given that it was an accurate 16-bit, 44.1kHz emulation of the sounds and many of the facilities of two vintage Roland TB303 bass sequencers and the classic Roland TR808 drum machine, with a beautiful, colourful graphic interface, all for a quid under £150. MIDI, naturally, came as standard (unlike the originals), sync with any OMS-compatible sequencer was assured, sequences were immediately savable to hard drive, and built-in Delay and Distortion effects were a nice bonus.

With all this fabulousness on offer, you'd think it would be churlish to complain that the super-hip TR808 simulation was not an even hipper TR909 simulation — but some did. So a group of enterprising hackers set about figuring out how *Rebirth* was put together, discovered how to replace its source 808 samples with 909 samples, and even tinkered with the graphics. Instead of getting their knickers in a twist, Propellerhead took a friendly interest in the proceedings, even posting customised *Rebirths* on their web site, and providing DIY instructions! Indeed, v2.0 comes with the necessary bits for customising *Rebirth*. It's like putting shiny manufacturers' stickers on a flightcase (somebody we once knew dismembered Roland stickers to produce the unforgettable 'Ronald Poland'), or spray-painting your keyboard

"Cosmetically, the most obvious change in v2.0 is the appearance of another dinky graphic drum machine: the virtual 909."

monophonic (like their hardware namesake), the 808 and 909 are fully polyphonic. The sequencer is Pattern-based, with up to 16 steps per Pattern (though Patterns of differing lengths can run together) and each Section can draw from its own set of 32 Patterns, which are chained into a Song (with a maximum of 999 Pattern steps, or bars). All the Sections are controlled by a single transport bar.

Programming of Patterns is done in a similar manner to the hardware originals, in that the user specifies which note will play on each step of a Pattern, either while a Pattern is playing back, or without playback. Notes are chosen using the mouse (from the 303 mini-keyboard or the 808/909 step buttons), the computer's keyboard, or a MIDI keyboard. One feature of the real 303/808/909 that's missing from *Rebirth* is the option to record Patterns with different note resolutions: while non-4/4 time signatures can be managed, by

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pros

- Excellent virtual TR909.
- Rewire integrates *Rebirth* very well with *VST*.
- Customisable.
- Useful extra enhancements.
- Still looks fabulous.
- Still sounds great.

cons

- Not all effects available to all Sections at once.
- Rewire and OMS can't be used simultaneously on a Mac.
- Drum machines still mono.
- Patterns stuck with 16th-note resolution.

summary

Rebirth v2.0 is an unmissable upgrade that makes an already remarkable program even more desirable.

SOUND ON SOUND

STEINBERG REBIRTH v2.0

- ▶ changing the Pattern length, you're always working with straight 16th notes (it's possible to enter triplet Patterns on a real-world 303, with the 808 and 909 also offering 32nd-note options).

Rebirth only has one screen, so although Patterns are editable, you don't really see what's going on. However, it's possible to Cut, Copy and Paste data, Shift Patterns or drum parts left or right by one step at a time, Transpose, and Randomise (an entire Pattern, just pitch, everything that's not pitch, or individual drum parts). The Alter function, rather than generating something entirely new, like Randomise, takes notes already entered and jumbles them to create new Patterns.

Each Section has its own Mixer controls: level fader, mute switch, pan pot, Delay send knob, and three switches for the other effects, plus a level meter. Each effect also has a control panel, and

Remake, Remodel

Steinberg/Propellerhead describe modifying *Rebirth* as "not for the faint-hearted". Still, they supply a folder of 'Standard Components', the graphics and audio files that constitute the look and sound of the program, on the CD-ROM. Changing the look of *Rebirth* involves generating JPEG image files of exactly the right size to replace the source image files — retaining, however, *Rebirth's* file naming. Changing the whole thing requires 50+ image files. Substituting *Rebirth* sounds is a little easier. In that new

sound files (AIFF format) don't have to be the same size as the original, but be aware that for sounds with more than one component (nine samples for the 808 snare, for example, which are cross-faded as the on-screen knobs are tweaked), all replacement components must be the same length.

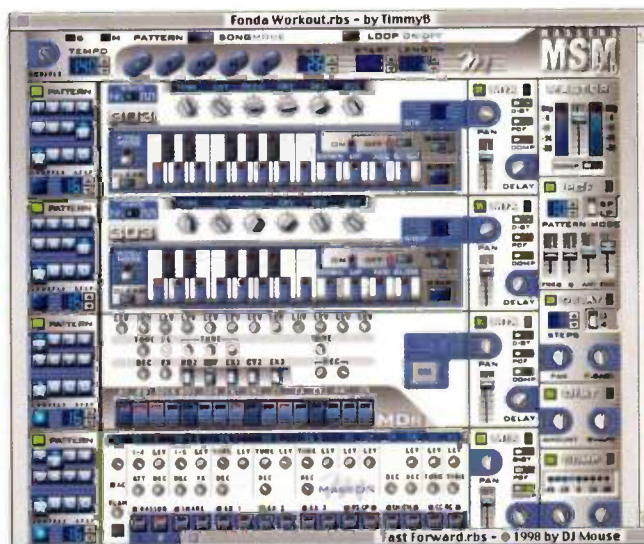
If you produce a mod that Propellerhead like, they'll post it on their web site, but if all this seems too much like hard work you can take advantage of one of the four superb new versions on the CD-ROM.

"*Rebirth* is one of the few software programs that really feels like an instrument."

there's a Master level fader. While not all the physical controls of the original 303, 808 and 909 are recreated on screen, the most important ones are, and their movements can be recorded into a finished Song. *Rebirth* Songs or sections of Songs can be saved and exported as AIFF or WAV files, which is significant for PC users also running an audio sequencer but with only one audio card: exporting a *Rebirth* Song as audio into a sequencer means that these people can still get the *Rebirth* sound into their work. The same would go for those using under-powered computers which won't run *Rebirth* and an audio sequencer together satisfactorily. Of course, the export options also mean that *Rebirth* loops can be beamed into a sampler.

Get On Up... Like A Drum Machine...

Cosmetically, the most obvious change in v2.0 is the appearance of another dinky graphic drum machine: the virtual 909. Comparing the front panel



Just a few examples of the kind of graphic modifications that can be made to *Rebirth*.

of a real 909 with the *Rebirth* version reveals that the only controls left off the *Rebirth* 909 are those related to sequencing, but some have been modified in appearance and slightly in operation — for example, accent. On *Rebirth's* 909 this is available via two different methods: clicking once or twice on one of the 909's 16 step buttons applies one of two levels of accent, which will affect just the selected sound and step, while clicking the AC

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D I S T R I B U T I O N

STEINBERG REBIRTH v2.0

► (Accent) selector activates accent mode, whereupon you can enter an accent on any step of a Pattern, which will apply to all voices sounding on that step. The graphic LED on each *Rebirth* 909 step button glows dimly for the lower accent level and brightly for the higher — just like the original. Flams can be placed on a per-step, per-sound basis, using the Flam selector. A resolution knob varies flam length, and flammed steps glow green rather than red. Other virtual 909 controls are as follows:

- Bass Drum: Tune, Level, Attack, Decay.
- Snare Drum: Tune, Level, Tone, Snap.
- Low, Mid & Hi Tom: each has Tune, Level and Decay knobs.
- Rimshot and Clap: each has a Level knob.
- Open & Closed Hi-hat: these share a Level knob but have separate Decay knobs.
- Crash & Ride Cymbal: each have Level and Tune knobs.

Soundwise, the virtual 909 is as good as you'd expect from the company whose 808 emulation was described as "convincing and successful" and whose 303 sound was acclaimed as "almost identical" and "very impressive indeed". And this was in side-by-side tests with the originals, conducted by long-term 808 and 303 owner Chris Carter. Sadly, we no longer have a 909, but comparing the *Rebirth* one with a set of good 909 samples revealed a striking similarity (as it should, since the *Rebirth* 909 is based on samples). Naturally, the range of tonal control and tweakability is similar to that of a hardware 909.

Wire Drill

If the virtual 909 is graphically the most significant addition to *Rebirth*, arguably the most significant functional addition is Rewire. This pretty much allows *Rebirth* to become part of *Cubase VST* (v4 or later on the Mac), and is fantastically useful to VST owners. The two programs will now synchronise without OMS, and up to 18 *Rebirth* audio channels can be routed through VST's mixer — with access to VST's EQ and plug-ins. *Rebirth* channels can even be converted to audio tracks, giving scope for stacking multiple *Rebirth* Patterns.

Rebirth and VST can work together in a number of ways: you could patch the stereo output of *Rebirth* to two VST mixer channels, the 303, 808 and 909 sections to their own channels, or any or all of the drum sounds to their own channels. As a Section is patched to a channel it's removed from the stereo mix, until all that remain are the *Rebirth* effect and processor 'returns', and drum sounds are removed from the drum machine mixes as they're patched individually. There is one slight anomaly: if drum sounds are routed separately to VST, their audio is not treated by *Rebirth*'s processors. But the advantages of Rewire far outweigh this, since apart from *Rebirth* audio being treatable by everything VST has to offer, one of *Rebirth*'s few real problems can now be overcome: the audio mix of the 808 and 909

Mac System Requirements

Rebirth requires at least a 66MHz Power Mac, with System 7.5.3 or higher and 16Mb of RAM. The more RAM and speed the better, though, especially if you're running VST on the same computer. Apple Sound Manager is also needed; if you're running an older system that lacks Sound Manager, it's included on the *Rebirth* CD-ROM, but note that it's been fully integrated into recent systems. If you're using System 8.1, bear in mind that Apple have reduced the size of their sound buffers, which means that latency has been cut in half. Check *Rebirth*'s manual for details on taking advantage of this.

"Rewire pretty much allows *Rebirth* to become part of *Cubase VST* and is fantastically useful to VST owners."

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STEINBERG REBIRTH v2.0

► Sections is resolutely mono, and passing separate drum sounds through VST's mixer allows the creation of a stereo image of *Rebirth* percussion. People who have multi-channel audio cards running with VST will also now be able to route *Rebirth* sounds to the outside world via that. In addition, starting a VST sequence now starts *Rebirth*, and vice versa.

Version 2.0 is installed as two components: the application, and the *Rebirth Engine*, a shared library file used by both VST and *Rebirth*. The Rewire technology is currently exclusive to Steinberg/Propellerhead, but other developers could adopt it, integrating *Rebirth* with their sequencers. It might even be feasible for virtual synth developers to integrate with VST in the same way as *Rebirth*. Yet another bonus of Rewire is

"Rebirth RB338 has been called 'the ultimate techno software package' and was a considerable software success story of 1997."

that using the two programs together uses less processor overhead than previously, though a pretty tasty computer is still required to run them both with a decent amount of plug-ins.

The downside to Rewire is that it and OMS can't work at the same time on one Mac, so you won't be able to use MIDI remote control (for Pattern selection or knob tweaks) while using Rewire, which is a shame. If you prefer to record tweaks into *Rebirth* using MIDI controllers, you'll have to do it independently of VST.

In Full Effect

New to v2.0 is a simple compressor with Ratio and Threshold controls, plus a level-reduction meter. This isn't a serious compressor, but more of a creative effect tool. It's available to only one Section at a time, although it can be assigned to the master output, becoming a stereo compressor for compressing a mix. Experimentation will probably yield good results, but we didn't find it terribly effective.

Also new is a Shape parameter for *Rebirth*'s Distortion effect. Steinberg say this controls the "character" of the distortion, and at higher settings it certainly produces an even grungier sound. Additionally, Distortion is now available to all four Sections, rather than one at a time, as before.

The Pattern Controlled Filter, introduced in v1.5, has been enhanced with nine extra patterns. This filter is essentially a 12dB device, with low-pass and band-pass options, plus cutoff frequency, resonance, envelope amount and envelope decay

Second Opinion

Although I've been a long-time user of the original Roland TB303 and TR808, I found the transfer to *Rebirth* painless and trouble-free, and for the past year I've used it on pretty much every project I've worked on — so you could say I'm a fan. In *Rebirth* v2.0, the overall sound of the 808 is pretty much the same as in v1: very good, but with subtle differences in tuning and brightness. The emulated 909 also sounds great, and although I don't have a genuine TR909 I have dozens of 909 samples. The *Rebirth* 909 compares very well to most of these, but if you don't think the internal drum samples are up to scratch you can import your own 808 or 909 samples using the supplied *Mod Packer* utility, which is exactly what I did. Although the instructions for performing this are a mite vague, once I had sussed it out it took me about half an hour to make up a new file containing my own 808 and 909 samples. Replacing the internal samples is a lot easier than with version 1.5, and this facility alone

increases the usefulness of the program immensely. In effect you have a sample playback unit on your desktop.

The original *Rebirth* 303 sounded very close to the real TB303, and I can't hear any major changes, although I could detect subtle differences when running both versions side by side. v2.0 sounds slightly brighter and tighter to my ears. The inclusion of a Shuffle feature for each 303 might surprise TB303 purists but I think it's a nice touch. I'm disappointed that the adjustable Pre-Scale and Auto Fill-In features of the TR808 still haven't been included, and although there are some improvements to the MIDI interfacing there's still no way to export (or import) MIDI files of bass and drum Patterns. The big plus for me, being a VST user, is the seamless way in which *Rebirth* interfaces with VST audio mixer channels, giving you the ability to route *Rebirth* bass and drum sounds for EQ and effects processing. I use VST with a Korg 1212 PCI card, and the ability to send *Rebirth* sounds through digital ADAT and S/PDIF channels is a revelation. *Chris Carter*

parameters. There are 54 non-editable filter envelope patterns in total which between them allow the filter to superimpose pumping effects, slow sweeps, and subtle or extreme rhythmic phrasing. The manual provides a list of patterns, so it's possible to get a good idea visually of what each is capable of. Sadly, this effective device is only available for one Section at a time.

Rounding off *Rebirth*'s processing facilities is the Delay effect, which is available to all four Sections at once and remains unchanged from that of v1.5.

Born Again

The v2.0 upgrade costs £39, while *Rebirth*'s full price remains £149, as on its launch. While £39 might seem like quite a lot as a proportion of the retail, the upgrade is pretty much essential, especially to owners of this superb program who also run VST. The Rewire technology will give these people far more than £39's worth of added usability and convenience. And when have you ever seen a TR909 for £39? Of course, aside from these two biggies, the other enhancements are also most welcome. It might, perhaps, have seemed more equitable to charge, say, £20 for the upgrade and raise the price of new *Rebirths* to £170: this way, the developers would recoup their costs, but established users, who've supported the program since its launch, would share the extra cost burden with new users, who haven't. Other niggles are few, perhaps the biggest being that Rewire and OMS can't be used at the same time on a Mac, and that the two virtual drum machines are mono. However, these are relatively trivial points in light of the extra facilities, and they don't damage *Rebirth*'s status as one of the few software programs that really feels like an *instrument*.

Now then, would go-faster stripes look good on our virtual 808...? **EOS**

Rebirth & the PC

At the time of this review, although *Rebirth* v2.0 is available for the PC, it does not feature the Rewire technology; this should be implemented in VST v3.6 and *Rebirth* v2.0.1, both of which are due imminently.

Windows users need an Intel Pentium-equipped PC, running at 90MHz minimum, with Windows 95/98 or NT, 16Mb RAM, and a 16-bit audio card. Obviously, if you want to run *Rebirth* alongside VST, more RAM and more speed is preferable.

information

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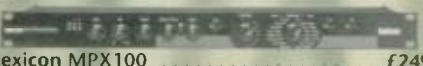
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Paul White SOS June '98



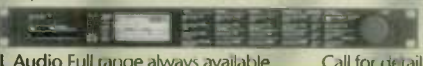
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TASCAM TMD1000 DIGITAL MIXER

The era of the low-cost digital mixer is finally here, and for the first time, it's probably true to say that it's now cheaper to buy a small digital mixer with built-in snapshot automation, effects and dynamics processing than it is to buy a comparable analogue mixer plus separate outboard effects and processors. Even so, it's still early days for digital consoles, so while you may win out in terms of overall value, you might also find you lose when it comes to things like insert points, overall number of analogue inputs and outputs, and simplicity of use. Eventually, when virtually everything is digital, the lack of analogue inputs or insert points won't be an issue, but for the next few years, when analogue and digital will run side by side, it is likely to be a significant cause for concern.

Enter The TMD1000

Tascam's TMD1000 is their first low-cost digital mixer and it's designed very much with the DA88/DA38 user in mind. Though the mixer has 16 input channels, only eight are analogue while the remaining eight are serviced digitally, either via a TDIF interface (eight channels of DA88-format audio) or via a choice of S/PDIF or AES/EBU (stereo only). This makes connecting a DA88 or 38 very simple, but ADAT users or those using computer cards based on the ADAT protocol will need a format converter to make use of the TDIF inputs. Fortunately, Tascam are producing one (more on this at the end of this review).

Of the eight analogue inputs, four have balanced XLR mic amps with globally switchable phantom powering and insert points, while for connecting to stereo digital equipment, there's also one digital input and two digital outs, each with a choice of S/PDIF or AES/EBU formats via phono or XLR connectors (there's also a TDIF out and four analogue group busses, of which more in a minute). The remaining four analogue channels offer mic/line on stereo jacks with no phantom powering. An optional expander card (IFTD1000) is available to provide a further S/PDIF or AES/EBU digital input with sample-rate conversion, as well as a further TDIF input serving channels 1 to 8. As far as I can tell, this means you have to choose between digital and analogue inputs for channels 1 to 8, unlike the Yamaha 03D, where adding an interface card provides access to additional channels.

Curiously, Tascam have decided to adopt what appears to be a nominal -10dBV input operating level, and though the input circuitry can cope with levels of up to +13dBV before the clip light comes on, this is still cutting it fine for use with digital

Paul White studio tests the least expensive digital desk currently on the market and asks, "Is the writing really on the wall for small analogue mixers?"

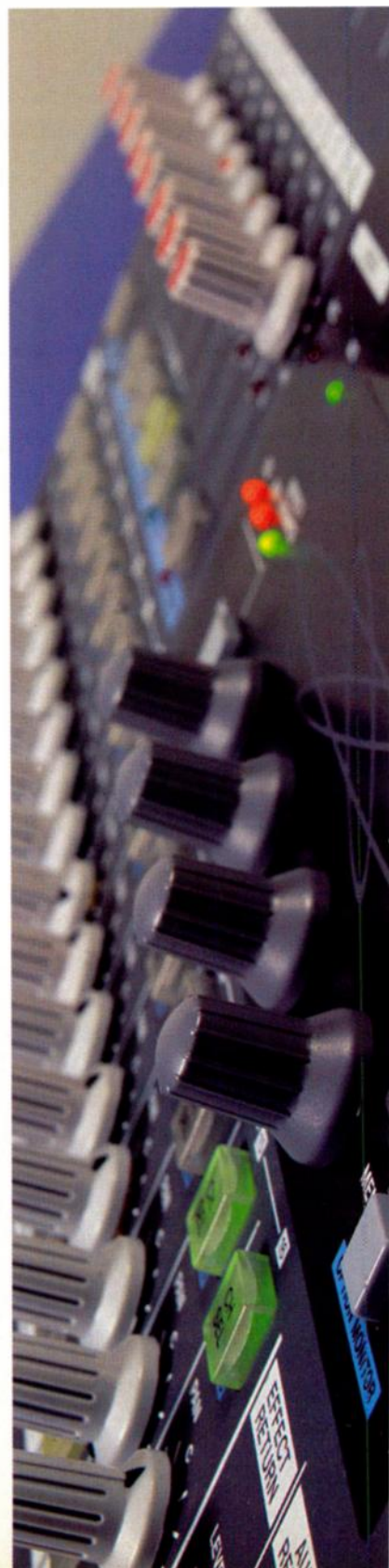
machines with balanced outputs. The Stereo and Monitor outputs, which are properly balanced, fare better, as they are designed to the +4dBu nominal standard, whereas the buss outs seem to be hedging their bets by sitting between the two at a nominal -2dBu. Most bizarre, though is the choice of a -20dBu operating level for the insert points — making them suitable for little except guitar pedals.

Each of the 16 channels is furnished with a 3-band equaliser, and may be routed to the stereo output, to the four group busses or to a direct out feeding the TDIF digital output. There are four aux sends per channel that can be used to address the two internal effects/dynamics processors as well as external effects devices, and it's also possible to assign one of the processors to the stereo output for overall dynamic processing. The four group busses may be used to feed an external multitrack recorder, or they can function as aux busses. One of the compromises made to keep the cost down was to combine the functions of the group outputs and aux outs, so it's up to the user to decide how best to deploy them.

The console has both recording and mixing modes, so it is possible to pre-configure certain

MIDI Machine Control

The TMD1000 includes MMC as standard and this may be used in closed-loop (both MIDI in and Out connected) or open-loop modes (only the TMD1000's MIDI Out connected). A brief visit to menu-land enables the MMC device ID to be selected, while double clicking the Shift key locks the dual function routing/MMC buttons into MMC mode. Track arming is done using the channel Mute buttons in conjunction with the Shift key, and up to 16 locations may be stored in the TMD1000, based on the MTC value read at the MIDI In socket when the Memo button is pressed. These locators may be used for locating an MMC device, and all the usual MTC formats are supported including drop frame. Recalling a locate memory involves holding down Shift and using the Channel Select buttons to recall correspondingly numbered locations.



parameters, such as routing, to streamline operation. As a default, Record mode has the four busses set up as groups feeding the TDIF tape out, while in Mix mode, all four are configured as Aux sends. Stereo external inputs and outputs are provided for the connection of an analogue I/O stereo recorder, and replay from this device may be selected in the monitoring section.

Though designed for both general-purpose mixing and recording, the TMD1000 doesn't have a dedicated tape monitoring section — the user has to arrange this by using the analogue ins as record

sources routed via groups and the digital tape ins as monitor sources routed to the L-R outputs. Mix automation is catered for on board by means of a snapshot memory system, though unlike most other digital consoles, this one doesn't have motorised faders. This means that using it is more akin to a VCA automation system where the fader position doesn't always represent the true state of the channel — though to be fair, it doesn't take much getting used to. One positive aspect of this approach, other than long-term reliability, is that the faders remain silent when you're mixing — some motorised systems can be distractingly noisy.

There's no dynamic automation on board, but all the control operations are sent out over MIDI so they can be recorded to a sequencer. Providing your sequencer has a spare MIDI port (the TMD1000 uses all 16 channels) and that editing automation data isn't too difficult, it's quite possible to use the TMD1000 for fully dynamic automation.

Scratching The Surface

At 19 inches wide and 6U deep, the TMD1000 is about the same size as a typical 16-channel analogue mixer, and rackmounting brackets are available as an option. All the analogue connectors are on the front panel, with the digital and MIDI In/Out connectors grouped together on the rear panel along with word clock in/out phono connectors. Power comes from an external adaptor with a standard push-fit connector, which is just a little too easy to pull out by accident. There are physical faders and pan controls for each channel, group and master output as well as gain trims for the eight analogue input channels. All faders are 60mm types, and the majority of the audio connections are on balanced jacks.

The input and output converters are 20-bit, though the digital signal path can handle up to 24 bits. The signal-to-noise ratio for any line input to the left-right output is quoted as being better than 80dB which, although not outstanding, is quite good enough for the majority of applications, and compares well with analogue circuitry.

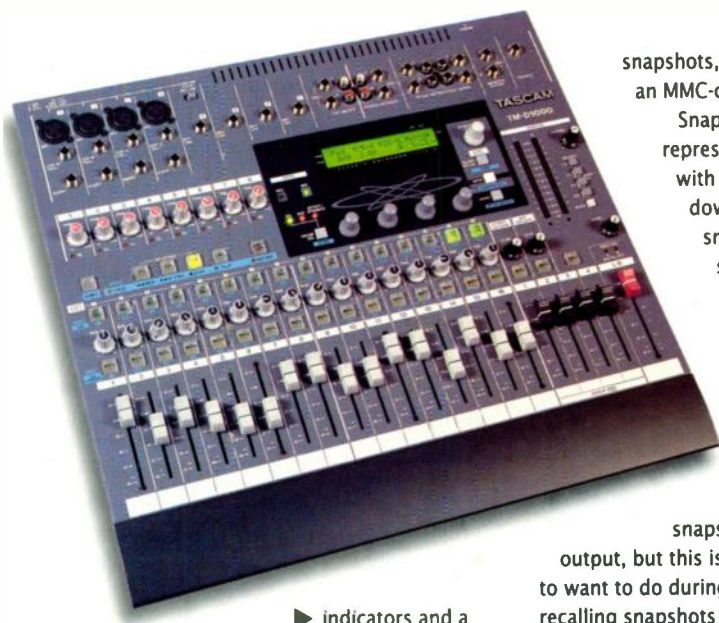
An illuminated Select button is provided above each of the channel Pan controls and there's a Mute button for each channel as well as for the first two Group outputs. Two channels (odd/even pairs only) may be linked for ganged operation by pressing down both Select buttons at the same time. Other than that, there are relatively few buttons, as most facilities are accessed via a menu system.

To the right of the stereo bargraph level meters is a fairly conventional monitor select system that feeds both the headphone output and the monitor output. There are separate level controls for the monitor and headphone outputs, with buttons for selecting L-R, 1-2, 3-4 or Ext as sources. There's also a Mono button.

Most setting up and editing functions are based around a two-line, backlit LCD window with four continuous rotary controls underneath. A fifth rotary control is used for data entry, which also has a push function that does various things depending on where you are in the menu system. This section of the front panel also contains the Record/Mix LED ▶



TASCAM TMD1000



► indicators and a Parameter select box that allows fast access to EQ, Aux or Effect-related functions. Most of the buttons have dual functions accessed by a Shift key located on the left of the front panel, and there's also a row of buttons used for channel routing that, by operating the shift key, can be used to send out MMC transport commands for controlling a remote recorder. Double-clicking the Shift key locks the routing buttons in their MMC transport mode. Two further knobs control the Effect and Aux return levels, while a Solo button above the Group faders gives access to PFL (Pre Fade listen), AFL (After Fade Listen) or SIP (Solo in Place) solo modes. When solo is engaged, the channel mute buttons act as solo buttons and the type of solo is selected in the Setup menu.

Each channel of the TMD1000 is equipped with a three-band equaliser where the high and low bands are variable-frequency shelving filters and the mid-range is a parametric bandpass filter. Each section can be swept over the full 41Hz to 16kHz range, and all provide 15dB of cut or boost. To make an EQ adjustment, the desired channel must first be selected using the Select button. Next, the Parameter Select button near the display must be used to select EQ. This simply steps around the EQ, Aux and Effects options.

There are two screens of EQ parameters selected by means of the Data Entry knob, and once you're in the right page, the four parameters displayed can be adjusted directly by using the four rotary controls beneath the display. A further illuminated master EQ button may be used in conjunction with a channel Select button to switch the EQ in or out without having to revisit any menus.

Automation

As intimated earlier, onboard automation is restricted to snapshots (up to 128), which may be recalled manually from the front panel or linked to MIDI Program Changes. There's also a footswitch jack on the rear panel which may be used in conjunction with a standard momentary action footswitch to step up or down through the

snapshots, or to initiate punch-in/out on an MMC-controlled recorder.

Snapshot 000 is read-only and represents a default, neutral position with all the EQ flat, effects levels down and so on. When a new snapshot is recalled, the new settings can either be implemented immediately or a fade time can be set up to give a smooth transition between snapshots. The manual warns that switching from a Record mode snapshot to a Mix mode snapshot may produce noise at the

output, but this isn't something you'd be likely to want to do during a normal mix. Saving and recalling snapshots is reasonably straightforward and there's a direct recall system that allows the first 16 user snapshots to be recalled using the numbered Channel Select buttons in conjunction with the Escape/Recall key.

Because this isn't a moving-fader system, there needs to be some way to 'null' the physical fader positions with the actual gain setting currently employed by the mixer. A display page has been devised especially for this purpose where all the level and pan pots are represented by asterisks. If the physical control position isn't in agreement with the currently recalled setting, the asterisk turns into an arrow showing which way the control needs to be moved to make it match the recalled value. Once the values match, the arrow reverts back to being an asterisk, and if you go too far, the arrow switches direction.

Effects

Included in the TMD1000 are two digital effects processors that can provide three categories of effect. Type 1 is a stereo effect that can handle dynamics, delay, chorus, pitch shift, modulation effects, de-essing and enhancement. Type 2 is exactly the same but also offers reverb and gated reverb. Type 3 provides single-channel dynamics processing, generally used for applying compression or gating for up to four channels at a time. To use the internal effects via the aux send/return system, the required number of Group busses must be set up as Aux busses. Remember these are assignable, so you have to decide how best to use them.

There are six different ways in which effects can be deployed, the first of which is to use all the processing power to provide four dynamic processors that can each be assigned to any of the input channels. This is a typical application during recording where effects are not required. The second configuration places one effect in the stereo output path while the other is fed from both Aux 1 and Aux 2 (in stereo) via Aux busses 1 and 2. The effect may be returned into the Left/Right mix or the remaining two Groups and there's are two dedicated level controls on the mixer for the Aux and Effect returns. Modes three and four place the two effects blocks in series,

again feeding the effects from Aux busses 1 and 2. The difference between the two is simply the order in which the blocks are connected. Mode six sees both effects in parallel, again both fed from Aux Buss 1/2 and returned either to the stereo mix or Groups 3/4. Finally, all four Aux busses may be committed to feeding one effect from Aux 1/2 and the other from Aux 3/4. In this case, all four busses are used as Aux sends, so the only return option is via the Left/Right mix.

External effects may be connected, but again these use the busses — there are no dedicated aux sends or returns on this mixer, so any analogue effects have to be returned via input channels. Even when using digital effects, you still lose the use of the corresponding busses as these have to be assigned to a digital output.

Setting the Aux send levels involves stepping around the three Parameter Select modes until Aux lights up, then selecting the desired channel using the Select button. The four rotary controls beneath the screen then function as the aux send level and pan controls. These sends may be configured either as pre- or post-fade, though for conventional effects use, they'd normally be post-fade. A degree of editing is possible to the effects themselves, and though there are fewer parameters than on most stand-alone units, all the key parameters can be adjusted. Edited effects may be stored for future use.

TASCAM
TMD1000 £899

pros

- Affordable.
- Simple layout.
- Built-in effects and dynamics.
- Snapshot automation (sequencer needed for dynamic automation).
- Good digital sync and MMC support.

cons

- Only eight analogue inputs.
- TDIF-only digital multitrack input.
- No dedicated effects send and returns for outboard.
- No moving faders.
- Odd choice of levels for insert points.

summary

This is an inexpensive digital mixer, and despite some design and operational idiosyncrasies, it's capable of very high-quality results. Probably most appealing to the user with one digital multitrack recorder (or computer with the right interface) who wants a compact mixer that can also handle a few analogue sources.

SOUND ON SOUND

information

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In Operation

The TMD1000 sounds clean and the EQ is rather less digital-sounding than I have come to expect from low-cost digital mixers, but the menu cruising part of the operating system is slightly non-standard. Instead of cursor keys, the Data knob is used to scroll through pages. When you find the right one, you press the Enter button, then use the data knob again to change the selected parameter. It's only on things like the dynamics and EQ, where up to four parameters are shown at once, that the knobs below the display do anything. An Exit button gets you back out of the menu system when you're done. The Data knob push switch is needed for certain functions, including naming snapshots. You soon get used to the way the TMD1000 works, and the menus aren't too labyrinthine. Also there's a quick access mode for inspecting menu settings where you can look but not change anything.

I have to say I found the effects routing (see box on page 92) unnecessarily restrictive — I can't see why the internal effects (or external digitally connected effects, for that matter) should have to tie up the buss outputs, and I also fail to see why most of the effects configurations have the effects set up with stereo inputs, thus tying up two busses, when most of the time you simply want mono in, stereo out. Furthermore there are no analogue effect returns, which means you have to use input channels unless you have an effects unit with a digital output. On a more upbeat note, the switchable Record and Mix modes help simplify things while the channel Select and routing buttons are extremely intuitive.

Operational niggles aside, the snapshot automation works seamlessly, the EQ is reasonably musical and the quality of the onboard effects isn't at all bad either. Having a word clock sync option means that more serious professional can use this mixer within an existing system, and the profusion of digital ins and outs is to be applauded. The lack of moving faders does make it harder to keep track of where levels really are, but I appreciate that not all things are possible at so low a price. Similarly, onboard dynamic automation is not really an option at this price point, but having the facility to hand over the responsibility of dynamic automation to a MIDI sequencer is welcome.

Opinion

At a little under £900, the TMD1000 costs around the same as a decent 16:4:2

analogue mixer, yet includes snapshot automation and quite respectable onboard effects. What's more, the provision of S/PDIF and AES/EBU ins and outs means that a mix made from a digital source can be fed to a DAT machine or other digital mastering device without leaving the digital domain. To achieve all this at such a low price inevitably means compromises have had to be made, and as is the nature of such things, they'll affect some users more than others. Perhaps the most serious limitation is that the second eight channels can only be accessed via the TDIF interface or via a stereo digital input, so if you only have analogue sources, you only have an eight-channel mixer. I don't see many DA88 owners going for this mixer, as it's a little too basic, though users with a single DA38 or ADAT (using the optional converter) may find it attractive. Tascam's bi-directional TDIF/ADAT converter costs £175 for eight channels, but I'll be most surprised if we don't find these being bundled with the desk at a much lower price.

The automation side of the mixer is relatively simple to use and works very smoothly, despite the lack of motorised faders. Unless you have a sequencer, you're limited to snapshots, but the adjustable fade rate between snapshots makes this a viable way to work for most jobs. If you need full dynamic automation, then you have to record and edit the automation data in your sequencer. The comprehensive MMC spec, which includes an autolocate memory and punch-in/out footswitch, is also a strong plus point.

I suspect that we'll see many sub-£1000 digital mixers over the next few years, but at the moment, Tascam's TMD1000 is the least costly digital desk on the market. It's sturdily built and businesslike, the audio signal path is clean and there's a good compliment of digital I/O, even without the expander card. Word clock in and out, selectable input wordlength of 16, 20 or 24 bits and the ability to sync to both 44.1kHz and 48kHz sampling rates ensures compatibility with more serious audio systems. The real question is not one of sound quality but rather, can this mixer do the job you need it to do? If you have a single DA38 or 88 (or ADAT plus format converter), then the answer may well be yes, and this sector probably includes a number of post-production audio professionals. However, if you need to mix a lot of analogue sources or use multiple digital multitrack machines, then you may find one of the more sophisticated alternatives more attractive. **SSS**

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COMPOSING FOR VIDEO GAMES

► change. So finally I said, 'Look, I'll put some songs together for you that I think might work and if you like them you can use them.'

Jeehun admits this was something of a gamble, since at the time he didn't have any equipment to his name (he wound up selling his only possession, a car he'd bought with his first six months' earnings, to buy a new Korg X2 keyboard workstation so he could commence the task) and he'd also never composed for orchestra. "I had never even composed music that didn't have lyrics!" he says. "But I just did what I thought would work, all on the X2's internal sequencer. *Mech Warrior 2* is set in the future and is basically about clans fighting each other with hi-tech robotic weapons. I was creating lots of tribal sounding music, but also flavoured with out-of-this-world futuristic sounds. After I'd written a few songs I took them in and there was this big meeting with everyone, including the head of the company, where first they played all the music the other guy had done and then they played my music. To my surprise I got a standing ovation!"

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- Studio Electronics ATC1

"This one I use when there's a need for analogue sounds. You can switch from one type of sound to another depending on what cartridge you put in."

- Roland Juno 106

"I used the Juno 106 for *Mercenaries* and a bunch of other titles that needed more industrial types of sounds."

- Tech 21 SansAmp PSA1

"This is great for recording guitar sounds. It has a whole bunch of different guitar distortions and effects and plugs straight into the board — you don't have to go through a separate amplifier, but it creates the sound just as well."

- Alesis ADAT XT

"Occasionally when I have all the samplers filled up and I don't have any more memory I dump them on to different tracks on the ADAT and record them that way."

- Tascam DA30 DAT recorder

- JVC Pro Series Digital S video deck

"I use this half-inch deck to sync up films and timecode."

- Apple Power Mac 4400 running MOTU's *Digital Performer*

"I've been trying various different sequencers to see which one I like the best and, although they all have their pros and cons, I find that *Digital Performer* works really well for what I'm doing."

- Digidesign Pro Tools

"I don't use Pro Tools that much. Sometimes I will if I need to sync up different dialogue and sound effects to the music, but mostly I do the final mix onto DAT and if necessary I'll load that back into Pro Tools to burn CDs."



Activision set Jeehun up with a computer and a small budget for equipment. Using Opcode's *Studio Vision* sequencing software, the X2 and a new Roland JV1080 with the Orchestral and World expansion cards, he scored the entire game.

"I was literally learning as they were paying me," he remembers. "It was the very first time I'd used a computer sequencer: prior to that, I didn't even know they existed! They also wanted me to score the movies — the intro and outro — so I got an old VCR with timecode and pretty much scored everything in real time and then went back over them. It wasn't really the conventional way of doing things and it took a long time, but I worked very hard on it."

His score was unconventional to say the least. Streets ahead of other video game music of the time, it seamlessly blended orchestral and contemporary sounds with elements of both classical music and hip hop.

"I was just trying to be experimental, and as I didn't have any experience writing for orchestra I just built the songs up with the sounds I liked, without adhering to one particular style," he says.

If the music was ahead of its time, so was the game's technology: *Mech Warrior 2* was one of the first ever video games with full Red Book audio. Each track is burnt directly on to the CD-ROM as opposed to being coded as MIDI with sound coming from the player's computer soundcard — the common standard at that time. With a happening soundtrack, superior sound quality and sensational graphics, *Mech Warrior 2* was an overnight success.

"It sold millions of copies all around the world, was named Best Game of the Year, and I got Best Music of the Year in a lot of the game

Jeehun's studio equipment. From left to right: Mackie 8-buss mixer; Denon cassette and CD players; Rocktron Hush II noise reduction system; Alesis Midiverb II; Audix monitors, JVC professional video system, a pair of dbx 160A compressor/limiters, Alesis ADAT XT, Tascam DA30 Mk II DAT recorder; Zip and CD-ROM drives, Apple Power Mac 4400, Kurzweil K2500; MOTU MIDI Timepiece, Roland JV1080 and Studio Electronics ATC1 rackmount synths.

"Activision were literally flooded with e-mail from people commenting on the music, many saying they'd have bought the game just for the soundtrack."

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► publications," reports Jeehun. "Activision were literally flooded with e-mail from people commenting on the music, many saying they'd have bought the game just for the soundtrack."

The Sequel

After the sensational success of *Mech Warrior 2*, Activision offered Jeehun a multi-project deal, affording him the security of a full-time job along with the freedom to pursue other avenues (namely building up his studio and investing in his own entertainment company). His very next title was *Spycraft*, an espionage game written by an ex-CIA agent and an ex-KGB director. "They wanted more of a traditional cinematic score for that one, so I had to do a little more research and stick with purely orchestral sounds."

He immersed himself in classical music and film music and, now using an Akai S2000 sampler as his main sound source, set about emulating what he heard using samples, programming each instrument individually to achieve the maximum realism. "I'd build up the songs with the best-sounding orchestral patches I could find, and then blend in electric guitar, industrial sounds and hip-hop beats. That got a lot of attention, since there weren't many people doing that at that time," he says of some of his early projects.

Building on this foundation, subsequent projects have allowed him to develop what has gradually become his trademark — a fusion of quasi-classical compositional elements with powerful contemporary electronic sounds and rhythms.

Jeehun admits that when he first started he had only a nominal understanding of orchestration and music theory. But as he's progressed, his compositional technique has rapidly become more stylised. "In the beginning I was more concerned with writing catchy melodies, creating cool atmospheric sounds and making the music eccentric — basically making it sound as good as possible, because I felt intimidated that I didn't have a solid training. But nowadays I have a much clearer idea about how I want a specific piece to sound. I know in advance how I want the parts and the melodies to turn out, although I still do quite a lot of experimentation at the end, just to change the mood slightly or take the music someplace further.

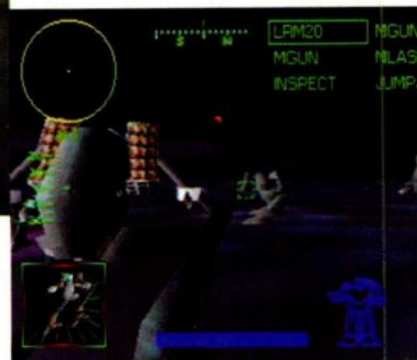
"I always try to write something original," he continues, "but there are only so many notes, and most progressions and melodies have probably appeared somewhere else in one guise or another. One way to compensate for that is to add enough of a different flavour, with unusual arrangements or unconventional instrumentation, and make it original that way."

As well as his Akai sampler, Jeehun now uses two Kurzweil K2500s along with an extensive library of some of the top professional orchestral and choral sample CDs (see *Orchestral Manoeuvres* box). But despite his obvious talent for coaxing realistic performances out of samples, his dream, he says, is to conduct a real orchestra.

Screens Courtesy of Activision



Left: Jeehun's latest project, *Apocalypse*, features a digitised Bruce Willis, complete with receding hairline.



Above: The game which shot Jeehun's music to prominence, Activision's *Mech Warrior 2*.

"The CDs I use are some of the very best available and I use them extensively. Even so, it's not quite the same as a real orchestra. No matter how much the technology advances, you could never get all the detailed expression and intonations that a group of musicians playing together can achieve. Eventually, I hope to conduct real orchestras when I have to do orchestral sounds, but that's something that generally comes with film scoring."

Briefing For The Mission

Writing for video games, Jeehun insists, is not dissimilar to composing a movie score. Technical considerations are the same and both involve providing a continuous bed for the action without detracting from the main event or getting in the way of the sound effects. In a video game, however, the music is paramount in keeping the level of excitement high and helping to drive the player through each scene.

"It's got to be something that people won't get bored with, so you need to be quite inventive with the themes. You have to make them familiar enough to make them recognisable, but involved

Video Games — What's The Score?

Budding video game composers take note.

Whereas just a few years ago scoring for video games wasn't such a difficult area to break into, these days standards are high and competition is fierce. To be considered by one of the main video game companies you'll either need a pretty good recommendation or an impressive showreel (preferably both). Talent and experience are obvious prerequisites, but there are certain other essential requirements, as Jeehun explains:

"For the most part, there isn't really a special training you can get — I'm not aware of any dedicated courses, as such. You do need a lot of equipment and you need to be very familiar with it all. Musicians who are primarily guitar players or real instrument players may have difficulty unless they thoroughly understand sequencers and studio gear.

"Other than the gear you need to actually write the music, you should have a professional video deck and the whole TV setup to check out all the levels of the video game, as well as enough computer technology to be able to link

those up so that you can see the images and get a good feel for the different levels. You also need to be able to produce each song in its entirety and mix it down to DAT, because a game company isn't going to take some riff or an idea that's really cool and take it somewhere or make it sound better. You have to be able to finish it and create a product.

"I'd also say that diversity is pretty important. Video games demand that you make the music add to the experience of playing the game and it's rare that a producer will want just a straightforward genre of music. You're often asked to combine, say, an electronic style with orchestral, or heavy metal with classical, so having exposure to a lot of different styles of music, and having had experience writing in many different styles, will help in the long run. That's the same as in any composing career, be it TV, film, radio or whatever. If you can only write one style or a few styles, you're not going to get as much work. Writing for video games is as complex and demanding as writing for film or TV."

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COMPOSING FOR VIDEO GAMES

► enough so they don't become boring when played over and over again. In each song I'll include a climactic point where the music builds up and builds down again. The idea is that the player feels like there's something going on with the action.

"The music is there to add to the environment of a particular mission or a particular level that you're playing. Sometimes it will just loop; other times it'll go into another track while you're still on the same mission, to add some variety and give a different feel. That way the player feels like something more is happening with the game, even if it's not visually, and that gets them to anticipate a little more."

Each game requires around 40 minutes of music in total: 10 to 15 two- or three-minute songs and two longer pieces for the intro and outro movies. Because the majority of the tracks will be repeated, Jeehun explains that there are certain musical rules that have to be observed. "Each track has to start smoothly, and shouldn't end with a big bang either, so that they blend together when they're repeated and it doesn't sound like there's a beginning or an end," he explains. "In cases where the song changes, such as when the game moves to the next level, then I make distinct beginnings and ends because the player's going to be picking another song after the last one is done."

A normal brief for a video game project is, again, similar to that of a film score. The game is usually finished graphically before the producer and director relay their vision to the composer. Then it's up to the composer to interpret that musically.

"A straightforward project should take about a month or two to score, but that mainly depends on how solid a direction you have, or how quickly as a composer you can come to terms with what kind of music is required," he says. "I've done some film music and it's not that different. They're basically telling you they want it like a certain movie or piece of music and you have to work out what it is about that music they like and try and write something fresh around that."

So using pre-existing music as a frame of reference is okay, but not when it comes down to writing the actual music?

"I prefer not to have to rely on briefs like 'I want this to sound like The Prodigy'. If someone's that specific then obviously I have to write something similar, but I'll usually try and convince them that we should go with something more original," he agrees. "Just because a type of music is commercially

popular it doesn't mean it's appropriate for a game or a film, so I only ever take it in that direction if I really feel it would be fitting."

Apocalypse Soon

At the time of the interview, Jeehun had just completed scoring *Apocalypse*, a futuristic, neo-gothic battle game starring Bruce Willis as the renegade Trey Kincaid whose mission is to save civilisation from the evils of the Four Horsemen [as you do — Ed]. A second character is played by alternative rock artist Poe, whose up and coming single 'Control' is also featured in the game. Due for a Christmas 1998 release, it's the first ever original video game title to feature such a big-name actor, and therefore ends Jeehun's exclusive deal with Activision on something of a high note.

The score is dark and "very industrial sounding", which, as Jeehun explains, posed some new challenges. "I used a lot more samples than I've ever used before — mostly weird sounds from CD-ROMs, but also a lot of vocal samples. Poe's song is in there, and I also sampled her vocals and incorporated them into some of the other tracks. It's the first time I've used vocals to this extent in a game," he says.

In addition, there are plans to develop a commercial soundtrack album based on *Apocalypse* which, in the light of the burgeoning interest in video game music and the current prevalence of movie soundtrack albums, may well strike a chord with more than just Jeehun's hardcore video gamer fans.

"Just because a type of music is commercially popular it doesn't mean it's appropriate for a game or a film, so I only ever take it in that direction if I really feel it would be fitting."

In the meantime, however, Jeehun is turning his musical attention towards film projects. He recently scored the new MGM Goldwyn opening sequence, and is currently in talks with various directors about future movie projects. What with that, and running a nightclub, model agency, talent management, music and film production companies, you'd think he had enough on his plate. But in the true spirit of an entrepreneur, he insists he still has more to achieve.

"I actually restructured my company recently to free up my time a little more so I can concentrate more on writing music," he says. "I'm also trying to be a bit more discerning about my video game projects and just do ones that will stretch me creatively. Right now my passion is to score films, but I'd also like to go back to singing in a band. Those are the two things musically I'd like to accomplish next." **SOS**

The Composer's Legacy

Jeehun's video games

For Activision

- *Apocalypse*
- *Battle Zone*
- *Blast Chamber*
- *Dark Reign*
- *Fighter Squadron*
- *Grand Tour Racing*
- *Heavy Gear*
- *Hyperblade*
- *Interstate 176*
- *Mech Warrior 2*
- *Mech Warrior 2: Ghost Bear's Legacy*
- *Mech Warrior 2: Mercenaries*
- *Shanghai*
- *Spycraft*

For ID Software

- *Quake: Dissolution Of Eternity*
- *Quake: Scourge Of Armagon*

For 3DO

- *Uprising*

Orchestral Manoeuvres

Jeehun's pick of the sample CDs. "I have the *Advance Orchestra* five-CD set, Peter Seidezlick's *Orchestra*, and *World Orchestra*. I use a lot of choirs, so I have the *Choir Colors* and the *Orchestral Colors*. When I need electronic sounds I'll sometimes seek out weird sounds from CD-ROMs, load them into the K2500 and tweak them a little bit. For sound effects I use the *Hollywood Edge* library from the post-production house Sound Deluxe, which is a 30-CD set of all kinds of sounds they've created for different projects."

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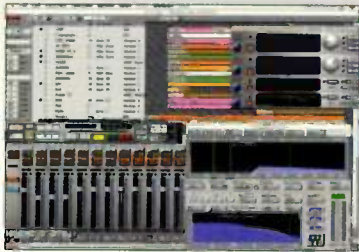
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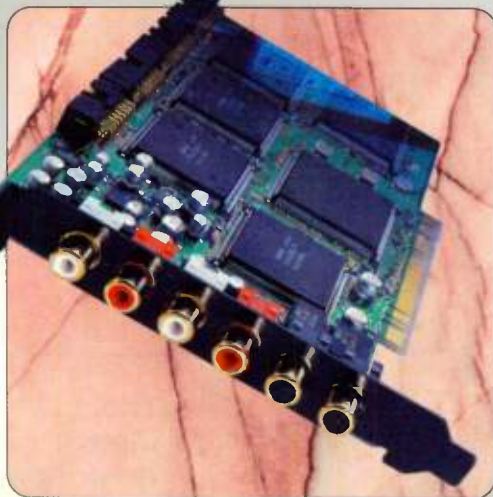
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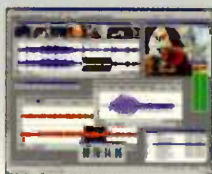


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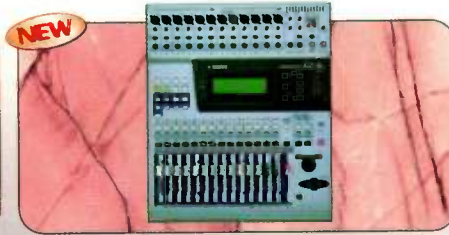


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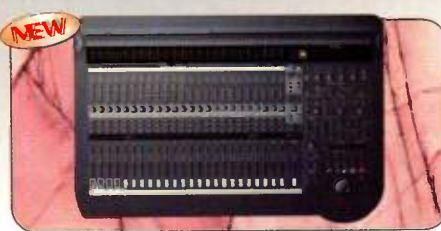
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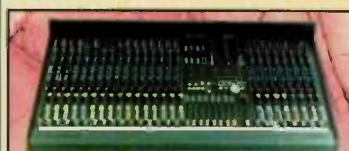


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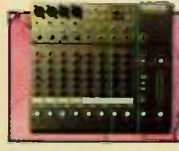
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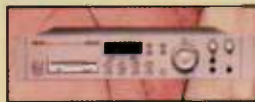
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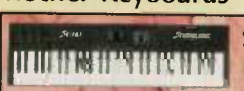
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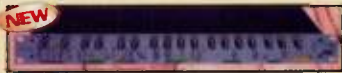


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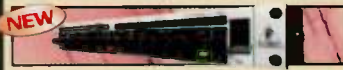


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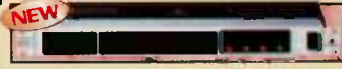
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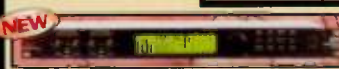
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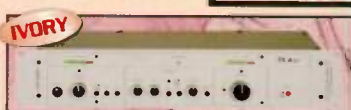
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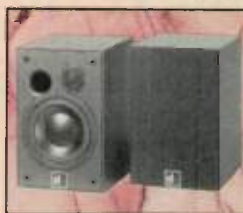
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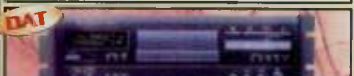


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AUDIO TECHNICA AT4060

Paul White tests a new valve mic that captures the essence of a good vintage design at a realistic price.

valve value?

AUDIO TECHNICA AT4060 VALVE MICROPHONE

Valve mics are very much in fashion at the moment, with many of the more established companies trying to recreate their former glories at affordable prices, often by re-engineering some parts of the design to reduce the build cost. Newer companies such as Rode and Groove Tubes have also made tube mics central to their product ranges, but Audio Technica, who are likewise relatively new in microphone terms, have until now left the valve market to others. Whether the AT4060 is a one-off or the first of a new series remains to be seen, however.

Although the AT4060 looks like a stretch-limo version of Audio Technica's popular AT4033 mic, it's actually very different — the 4033 is a back-electret mic while the 4060 utilises a brand-new, externally polarised, large-diameter capsule. As with all the Audio Technica mics I've tried in the past, they've clearly paid a lot of attention both to engineering detail and to sound quality. Though it offers only a fixed cardioid pattern, the capsule has a dual-diaphragm construction, ostensibly to improve the high SPL capacity of the mic without compromising its high-frequency performance. I would have thought that once they'd gone to the expense of designing a dual-diaphragm capsule, they'd have gone all the way and made the mic multi-pattern, but perhaps they have that in mind for a future model based on this capsule?

As with the AT4033 and AT4050 capacitor capsules, the AT4060 employs gold-coated diaphragms fabricated by a vapour-depositing technique. The capsule is then artificially aged using a five-stage process to give maximum stability over its operating life.

The mic housing follows similar lines to the 4030 and 4050, though the body is significantly longer to incorporate the tube amplifier. The valve, which is a miniature type, is hand-selected and internal anti-vibration mountings are employed for both the valve and the capsule to minimise tube

microphony and handling noise. An AT8447 shockmount is included with the mic as standard, as is a protective case, though a basic screw thread mount is available as an optional accessory. The shockmount is nicely engineered with two inner rings supporting the microphone, these in turn being supported within a single outer ring by means of elastic loops. As with the other mics in the 40-series, the AT4060 features a symmetrical, open-basket structure, all-metal construction and a matt black finish.

Unusually, there are no pad or rolloff switches on this mic — the literature claims that it can handle levels of up to 150dB without either the capsule or the preamp contributing significant levels of distortion. Power for the microphone comes from the included AT8560 1U, half-width power supply (supplied with rackmount ears), which connects to the mic via the included 10 metre 6-pin XLR cable. A regular XLR mic cable is needed to connect the PSU to the mic input of a mixing console or other device. The PSU is as straightforward as the mic — there are no controls other than a mains switch, a ground lift switch and a rear panel 120/230V selector.

Performance

In my view, the best-sounding valve equipment is not usually designed with a view to creating a specific valve sound. When valve mics were first invented, nobody thought about the relative merits of 'the valve sound' because there was no other means of amplification. The engineers did their best to create circuits that added as little noise and distortion as possible, rather than bias the valves to deliver intentional distortion. I don't feel excessive levels of soft saturation are what the valve sound is really about, though subtle harmonic distortion



AUDIO TECHNICA AT4060 £1200

pros

- Beautifully engineered.
- A smooth and classy sound without being too obviously flattering.
- Shockmount included.

cons

- No low-cut switch.
- This level of 'affordable' still means a lot of money to most private studio owners.

summary

A new tube mic that performs with class rather than flaunting an over-emphasised tonality.

SOUND ON SOUND

information

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does come into the picture, as it's inherent in the way valves and their matching transformers work. Indeed, the output transformer required to interface the high-impedance world of the valve to the much lower impedance of a typical mixer mic input often adds as much to the sound as the valve does, so it's hard to pin down exactly where in the circuit the magic comes from. It's also worth remembering that you can design a bad-sounding valve amplifier, just as you can design a bad-sounding solid-state amplifier — simply having a valve on board is not in itself any guarantee of sonic satisfaction.

The AT4060 certainly doesn't seem to have been designed to deliberately hype the sound — its distortion rises to around half a percent only at SPLs of over 130dB, and even at a massive 150dB SPL, the figure is still only around 1 percent. At normal operating levels, it's likely to be much lower. Similarly, the frequency response is notably free from the dramatic bass humps and presence peaks that go hand in hand with so many 'character' microphones. Other than a very gentle level rise below 200Hz and above 2kHz, the response is essentially flat up to 13kHz or so, after which it falls very gently to around 6dB down at 20kHz. This has the effect of lightening the mid-range slightly, which tends to enhance the sense of detail and loudness, albeit very subtly. The AT4060 is also pretty quiet for a valve mic, with a quoted noise figure of just 19dB SPL (signal-to-noise ratio of 75dB at 1Pa at 1kHz), while the sensitivity of -34dB for 1mV at 1Pa is fairly typical of other capacitor mics.

The Sound

So far then, the AT4060 comes over as a very nicely engineered microphone with a more than respectable paper specification, but what really matters is the subjective sound. In comparison with the 4033, the 4060 is similar in character but a little richer-sounding in the lower-mid and bass regions. The top end is both smooth and detailed as well as being very open-sounding. It doesn't scream 'valve mic' at you right away, but that's no bad thing, as too much artificially created warmth can often make the sound seem a little congested. The performance is more like that of a pedigree valve mic — it flatters the sound, but not in an over-obvious way. Vocals sound solid, natural and airy, while plucked stringed instruments come over with plenty of dynamics and life.

Summary

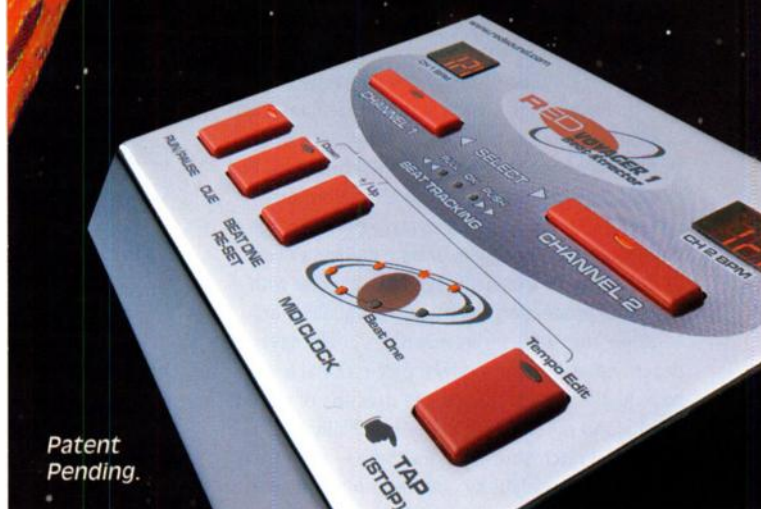
Though not the cheapest of the available valve mics, the AT4060 delivers a very classy sound at a sensible price (while comparisons also serve to show just what an exceptional performer the 4033 is). In these days when some readers are basing their entire studios around a computer costing less than this microphone, it's sometimes difficult to put the term 'affordable' into a proper context, but treated with care, this mic could still be giving you first-class service in 20 years' time, which is a lot more than you can say for your computer! The fixed cardioid pattern is unlikely to be a problem for most users, as the majority of studio vocals seem to be done using a cardioid setting. Having no pad switch is unlikely to cause problems either as the mic has such a wide dynamic range, though a low-cut switch might have been useful when working with a mixer that doesn't offer that facility.

In all, the 4060 is a nice-sounding, beautifully made all-rounder that has the courage to be a little different; most tube mics either mimic existing classic models or adopt a deliberately retro styling. I also appreciate the honest valve sound, rather having overblown distortion thrust upon me as a feature I can't turn off! The AT4060 is most definitely a worthwhile addition to the AT range that anyone interested in buying a quality valve mic would do well to try out. **SOS**

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EVENTIDE DSP4500 ULTRA-HARMONISER/MULTI-EFFECTS PROCESSOR

Eventide's 4000 series of digital signal processors redefined the state of the art when they were launched a few years ago, following in the footsteps of the fantastically popular H3000 range, and continuing to build on the foundations laid by the original classic H910 and H949 pitch-shifters. Although the company started with dedicated digital pitch-shifting machines, they quickly branched out to take full advantage of the signal-processing capabilities of their products. The current DSP4000 series incorporates enormously powerful DSP, capable of providing the full range of high-quality combinations of time-domain effects (including some excellent reverbs), together with dynamics processing and elaborate equalisation.

While the 4000-series machines could never be described as budget models, professional users have justified their cost on the grounds of superb quality and range of effects — especially the wonderful pitch-shifting algorithms — the machines' upgradability, and their phenomenal power and flexibility, which allows an imaginative user to create brand new effects and signal processing all of their own.

The DSP4500

The 4000 series has, until now, included three models: the studio-standard DSP4000, the DSP4000B broadcast-oriented variant, and the GTR4000 version optimised for guitar performance. All models can be enhanced and upgraded with three different sampler cards (providing 22, 87 or 174 seconds of sampling time), and various libraries of factory and specialist preset effects exist on PCMCIA cards. Thus any machine can be expanded to match the specifications of any (or all) others, if required.

The new version of the Ultra-Harmoniser has been badged as the DSP4500 and incorporates the 87-second internal sampler card as standard, plus over 1000 preset effects. This mind-blowing collection includes every effect already available across all the other 4000-series machines, plus 225 brand new effects from guru Scott Gilfix under the title 'Alchemy 101'. (These are also available on a PCMCIA card for existing DSP4000 users.)

Nuts & Bolts

There can be no doubt about the build quality of the DSP4500, which goes a long way towards justifying its relatively high cost. Taking a peek inside the machine reveals that three-quarters of the box's floor area is occupied by a very densely packed SMD

multi?

Eventide, the undisputed masters of digital pitch-shifting, have launched a limited-edition version of their industry-standard DSP4000. Is it just window dressing, or does it have anything genuinely new to offer? **Hugh Robjohns** finds out.

motherboard carrying three smaller daughterboards (the largest being the sampling card). The remaining floor area is occupied by another PCB, just as packed with surface-mount components as the others, and this appears to handle the analogue and digital I/Os. The internal mains power supply is a conventional linear design, switchable for 110 or 220V operation, with an externally accessible fuse holder, and the conventional IEC mains socket. Considering the high standard of engineering of this product, I'm surprised that there's no chassis earthing post, although there are plenty of screws available which could clamp a tag if required.

The back panel of the review model is equipped with a good selection of socketry. Analogue I/Os are catered for with a pair of combi-jack input connectors accepting either 2-pole unbalanced A-type jacks (at -10dBV) or balanced XLRs (at +4dBu), and a pair of balanced +4dBu XLRs for the outputs. Next to these, another pair of XLRs provide AES-EBU digital I/Os and, nearby, a pair of

Eventide's Family Values

If you were to add up the cost of all the constituent elements of the DSP4500 — Studio DSP4000, sampler card, Alchemy 101 effects, broadcast and guitar effects libraries — you'd find the total rather more than the 4500's asking price. So perhaps it's not so surprising that this 'special offer' has been given a 'limited edition' tag, with a distinctive blue front panel, and the claim that it will only be available for around 12 months.

The cynical side of me can't help wondering whether the introduction of a limited-edition DSP4000, with all these extras thrown in at giveaway prices, is an attempt to clear the warehouses of DSP4000 hardware

before the launch of a genuinely new product. No-one would confirm or deny my suspicions, but the fact remains that this new variant represents more processing capability than you can shake a reel of 2-inch multitrack tape at, and provides a greater range of worthwhile and usable effects than any other machine currently on the market. Value for money is a very subjective thing, and I know only too well that you can do an awful lot with the five grand asking price. However, if you're able to contemplate spending this kind of money on a state-of-the-art multi-effects processor, the DSP4500, to my mind, does define the standard and is offered at a very attractive price — at least when compared with other Eventide models!

EVENTIDE DSP4500 £5282

pros

- Eventide's superb pitch-shifting technology.
- 1018 different effects, including Scott Gilfix's Alchemy 101 library.
- An 87-second sampler card built-in.
- Unbelievably powerful and flexible.

cons

- The five grand price tag...
- Frustrating lack of proportional speed control on the data wheel.
- You really do have to read the manual if you want to get the best from this beast.

summary

A state-of-the-art multi-effects processor incorporating Eventide's unsurpassed pitch-shifting algorithms, along with the full gamut of reverbs, dynamics, equalisation and time-delay effects, all at a lower cost than an upgraded Studio DSP4000. This is as good as digital signal processing gets, and there is little to compete in terms of quality, flexibility, or ability.

SOUND ON SOUND

phono connectors accommodate S/PDIF-format digital in and out.

The usual trio of MIDI sockets provided for remote control and data dumps are supplemented by three quarter-inch jack sockets. These provide dedicated connections for a footpedal (a volume-type device for proportional control of effects parameters), a double footswitch, and two contacts of an internal relay which can be controlled by the DSP4500's effects algorithms to trigger external devices. The final socket was blanked off on the review machine, but can optionally be fitted with a 9-pin 'D'-Sub connector configured on manufacture as either an RS232 PC-compatible serial data port, or an RS422 Sony 9-pin-compatible remote-control port. One application for the serial port option is to enable effects algorithms designed and created with the supplied *Algorithm Construction Kit* (for PC) to be downloaded into the machine.

The socketry on the machine is already pretty comprehensive, but there are also an intriguing number of blanking plates dotted about. For example, the analogue I/O section could apparently accommodate two more pairs of connectors, potentially catering for four inputs and outputs, and the AES-EBU section also appears to be expandable for 4-channel operation. I could find no mention of such an upgrade in the documentation, but it would seem that the mechanical hardware, at least, has been built with that capability in mind. Another clue to a future enhancement is a blanked XLR input

socket labelled 'Aux' (but described in the manual only as 'unused').

The front panel of the 4500 is painted an attractive deep blue, but is otherwise identical to the other 4000-series machines. On the right-hand side are a numeric keypad (complete with up/down cursors, enter and clear keys), a PCMCIA card slot, the mains power switch and two user-programmable function buttons. Just to the left of the keypad is a large, weighted knob for adjusting any selected parameter.

The LCD is surrounded by more buttons, the four directly below it being soft keys to perform a variety of functions, according to the on-screen legends. A column of buttons to the right includes keys to set the unit up in the preferred manner, recall and configure programs, edit parameters and confirm selections. There is also a pair of left/right cursor keys here to help navigate around the LCD screen pages. To the left of the display is a programmable Bypass button which is software-selectable for a hard relay or soft electronic bypass, or to provide input muting only — the last being very useful if the machine is used for live performance. The remaining button here provides access to a menu for setting input and output levels, and a pair of input-level 10-step LED bargraph meters completes the tour.

In terms of audio processing, digital I/Os are capable of supporting full 24-bit operation and the internal workings are performed to 56 bits, guaranteeing very high quality and accuracy of effects. Analogue I/Os employ 20-bit converters, giving the system better than 96dB dynamic range



► and 0.005 percent THD (Total Harmonic Distortion). The DSP4500 can be configured for all the common sampling rates — 32, 44.056, 44.1 and 48kHz.

Once the machine is up and running it's remarkably intuitive to drive — at least at the level of locating and tailoring a preset effect — although its vast capability means that inevitably, sooner or later, it's going to be necessary to spend some time browsing the thick ring-bound manual.

Navigating The 4500

Essentially, there are just five simple main screen menu pages to master, and most users would probably only make regular use of two or three of these. The first is the Levels page (selected by pressing the Levels button under the meters), which determines input and output levels, the wet/dry mix, the bypass functions, and the meter characteristics. Once these are set to your 'house standard' it's unlikely you'd need to return to this page very often. Similarly, the Setup page would see little use, as it is concerned with configuring display contrast and brightness, selection of analogue or digital I/Os, MIDI functions, and self-testing functions.

The three main operational menus are the Program, Parameter and Patch pages, each accessed by a dedicated button alongside the display. The Program page selects, loads and saves the effects algorithms, which are grouped into various banks (programs may either be stored internally or on plug-in PCMCIA memory cards). The Parameter menu changes radically between the different selected effects, of course, displaying all the relevant controls — often over several pages for the more complex algorithms.

Virtually every operation on the machine involves the LCD display, so it's just as well that it is clear and easy to understand. There are a number of nice touches, too, such as being able to gang a number of controls together: when adjusting the input levels, for example, toggling through the parameter selection first gives both channels together, then left only and right only. The procedure for entering text (such as when naming a new effect patch) is not quite as worthy of praise, since it involves a lot of tedious scrolling around with the wheel, but there's no easy solution to that one without adding a lot more buttons to the panel. In all fairness, it's not often that you need to enter text strings, and once you've got the hang of the way the wheel system works, it's reasonably quick and simple.

The DSP4500 has 99 internal program banks, each of which can store up to 128 preset effects, and the PCMCIA memory cards can store the same amount again. Unfortunately, there's no built-in search system of any kind to help the user locate specific types of effect, which is a real shame when there are 1000 or more available. However, the manual provides comprehensive lists and descriptions of all the internal effects, and once you know where you're going, finding a specific program is very easy. The left/right cursor keys are used to allocate the data wheel to scroll

through either the program banks or the preset effects within a bank, although a small frustration here is that the wheel has no proportional speed control — each complete revolution only increments or decrements the program banks by one, and preset effects by four, no matter how vigorously you spin the wheel. For those in a hurry, it's also possible to use the keypad to enter a bank and then preset number directly.

Once an effect has been found, a soft key allows it to be loaded and run, usually in under two seconds, and the display then changes automatically to show the Parameters menu page. All the programs I found time to try had comprehensive parameters which were all obvious to adjust and did exactly what was expected, with no surprises. The left/right cursor keys are used to select the desired function and either the wheel or keypad enters the new value, which becomes active immediately.

The Effects

The most crucial aspects of any multi-effects processor are not how well it is built, or how cool it looks, but what it sounds like and how easy it is to use. I've already tried to give some idea of just how intuitive and friendly this machine is. Describing how it sounds is rather more of a challenge!

The DSP4500 comes programmed with 93 banks of programs, with between four and 44 effects in each, giving 1018 effects in all — and that's a lot to get to grips with! Although I couldn't find applications for them all during the time I had the unit, I found that the vast majority were quite useful. Of course, there are the inevitable few 'specials' which are only really of any use in entertaining the drummer while you get on with setting up the studio or console — 'Tribbles' is a particularly good example of this type. There are also a lot of very useful and practical tools such as an MS decoder, chromatic tuner, and metronome.

A number of banks contain effects created or tailored by industry legends such as Joe Satriani, Steve Vai, Trey Gunn and others, and these are well suited to their styles of music and production

Eventide, Heal Thyself!

Powering the DSP4500 for the first time is a surprisingly tedious but virtuous task. The beast takes over 30 seconds to boot up, but during that time it goes through an exhaustive self-test of system ROM, effects presets, and just about everything else it can think of! The DSP4500 is a very serious piece of technology, running on a Motorola 68000 main processor with Motorola 56000 DSPs and an awful lot of custom Eventide chips. With this much hardware there's potentially a lot to go wrong — hence the need for thorough self-tests — but the system has been around long enough now that Eventide can be confident about its reliability, and it certainly seemed to be extremely robust during the month or so I had it for this review. The latest version 2.20 software performed without any obvious bugs, and I only ever had one on-screen warning message of a system problem — and even that didn't seem to affect anything! The manual describes over 50 different error messages of varying severity (mostly warnings and information) which the machine is capable of displaying if it detects a problem during operation. However, only seven are catastrophic enough to require a reboot, and it's very unlikely that any programmed effects would suffer even then.

Patches & MIDI

Perhaps the most powerful aspect of the DSP4500 is the patch editor, where new effects can be configured using a very clever block-diagram style of display and a simple question and answer approach to selecting and interconnecting all manner of processing modules. And the routing does not just apply to audio signal paths, but also to control and modulation signals, so extremely complex patches can be constructed. The range and complexity of the effects this machine is capable of is simply stunning — not just the conventional gamut of time-delay effects, but also the full range of dynamics and equalisation, as well as test oscillators, tuning and pitch recognition, and almost anything else you can think of!

The MIDI spec of this machine is just as

impressive; pretty much any and every aspect of the DSP4500 can be controlled via MIDI. In fact, one DSP4000-series machine can completely control another via MIDI, if desired. Programs can be loaded and saved over MIDI for use with an external sequencer; programs can be changed; effects parameters can be adjusted in real time; events can be triggered; the bypass mode can be altered; and audio levels and mix ratios can be modified. One particularly handy feature I found was MIDI Capture mode, where the DSP4500 can be set up to assign a parameter to any changing MIDI command. All the user has to do is initiate the Capture mode and fiddle with, say, the mod wheel on a keyboard. The system will automatically detect the changing MIDI data values of the mod wheel and assign that control to the selected parameter — it's that simple!

"The undoubted stars are the pitch-shifting algorithms, which are as smooth and glitch-free as it's possible to get."

techniques. I particularly liked the Satriani presets. The undoubted stars are the pitch-shifting algorithms, of course, which are as smooth and glitch-free as it's possible to get. During the review, a mono pitch-shift algorithm was used to salvage a concert recording of a large-scale amateur choir where the sopranos dropped almost a semitone during a short quiet section. Processing just the soloist spot mics and remixing with the orchestra rendered a rather unpleasant few minutes considerably more bearable, and I suspect that only the golden-eared would ever recognise that a pitch-shifter had been used. The quality of the Eventide algorithms is so far ahead of most of the competition that it really does have to be heard to be believed. Other very useful pitch-shifting algorithms lurk in the Mixdown Suite: these are the 'Nemwhippers' — a selection of mono and stereo pitch-shifters which can be set up with defined maximum and minimum points, allowing the data wheel to be whipped from one end to the other without the danger of overshooting. These are great for correcting fleeting out-of-tune vocals on the fly.

While they're not specifically intended to serve as reverb processors, the 4000-series machines have been blessed with so much DSP power that the various reverb programs are remarkably good, although perhaps not quite matching the sheer

technical brilliance of the pitch algorithms. A good range of simple and elaborate equalisers are offered, as are some very nice dynamics processors — some clean and accurate, and some slightly dirty and valve-like. There are dozens upon dozens of guitar-orientated effects, which went down very well with my guitarist friends — everything from subtle enhancement to down and dirty distortion and amp simulations. There was even something for me, with several very usable Leslie effects.

The Bottom Line

The DSP4500 is a very serious piece of kit for the very serious professional, at a very serious price. Built to last and unlikely to ever become obsolescent, this machine does it all — most of it superbly well and the rest stunningly well! In fact, I find it hard to fault in any way at all. It can be a bit complex to program, but that's an inherent side-effect of so much processing power and flexibility, and at least it's logical and manageable with a little familiarity. The huge collection of effects offers enormous variety without too many overlaps, and all provide superb quality and controllability. This is a Ferrari of a signal processor — the kind of machine budding young engineers should have posters of on their walls. Ah well, it's nice to dream.... **SOS**

Information

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Sfida
Creative Learning

you hum it, I'll cancel it!

Don't worry. You haven't picked up a guitar magazine by mistake! There's a perfectly valid reason why this month's *Sound On Sound* contains a review of guitar pickups. If you happen to fall into that half of our readership that our reader surveys tell us are guitar players, then this is one you won't want to miss. The fact that half of you are guitar players means that, statistically, something in excess of a quarter of you must be playing a guitar with single-coil (as opposed to humbucking) pickups on it. In which case, you will already know that computers and single-coil pickups don't make particularly good companions in the studio. If you attempt to use a single-coil pickup, especially with distortion or compression, anywhere near a computer and monitor, the radiated field is picked up by the coil at nearly the same level as the strings, making your guitar totally unusable!

Nevertheless, the uniquely bright, 'open' qualities of the single-coil pickup remain as popular as ever, and consequently there have been many attempts over the years to overcome their inherent susceptibility to induced noise. Of course, you can just mount two smaller coils side by side within a Strat-sized casing and achieve a hum-cancelling pickup which still approximates a single-coil tone as a result of sensing a fairly narrow string area — there are some very nice-sounding pickups which use this method, but no-one would claim that they

KINMAN & DIMARZIO HUM-CANCELLING GUITAR PICKUPS

Computers may have revolutionised home recording, but for the recording guitarist who prefers the sound of single-coil pickups, they have taken the age-old problem of radiated-field noise to a new level. **Dave Lockwood** checks

possess the uniquely airy, open quality of a true single coil (see the 'Genesis of the Humbucker' box, below, for more on this). The second approach is to use a stacked-coil configuration (first patented in 1972), with one coil placed on top of another around a common magnet structure, offering the added benefit to the traditionalist of looking just like a normal single coil.

DiMarzio, the American company that practically invented the large-scale replacement pickup market, was one of the first manufacturers to offer a stacked pickup as a standard production model, in the form of their HS (Humbucking Strat) range in the early '80s. However, the HS pickups failed to satisfy most players (Yngwie Malmsteen being a notable exception). The hum cancelling was certainly effective, but the sound was somewhat flat and lifeless, offering neither the

out a new generation of pickups promising a real solution without compromising the classic sound.

The Genesis Of The Humbucker

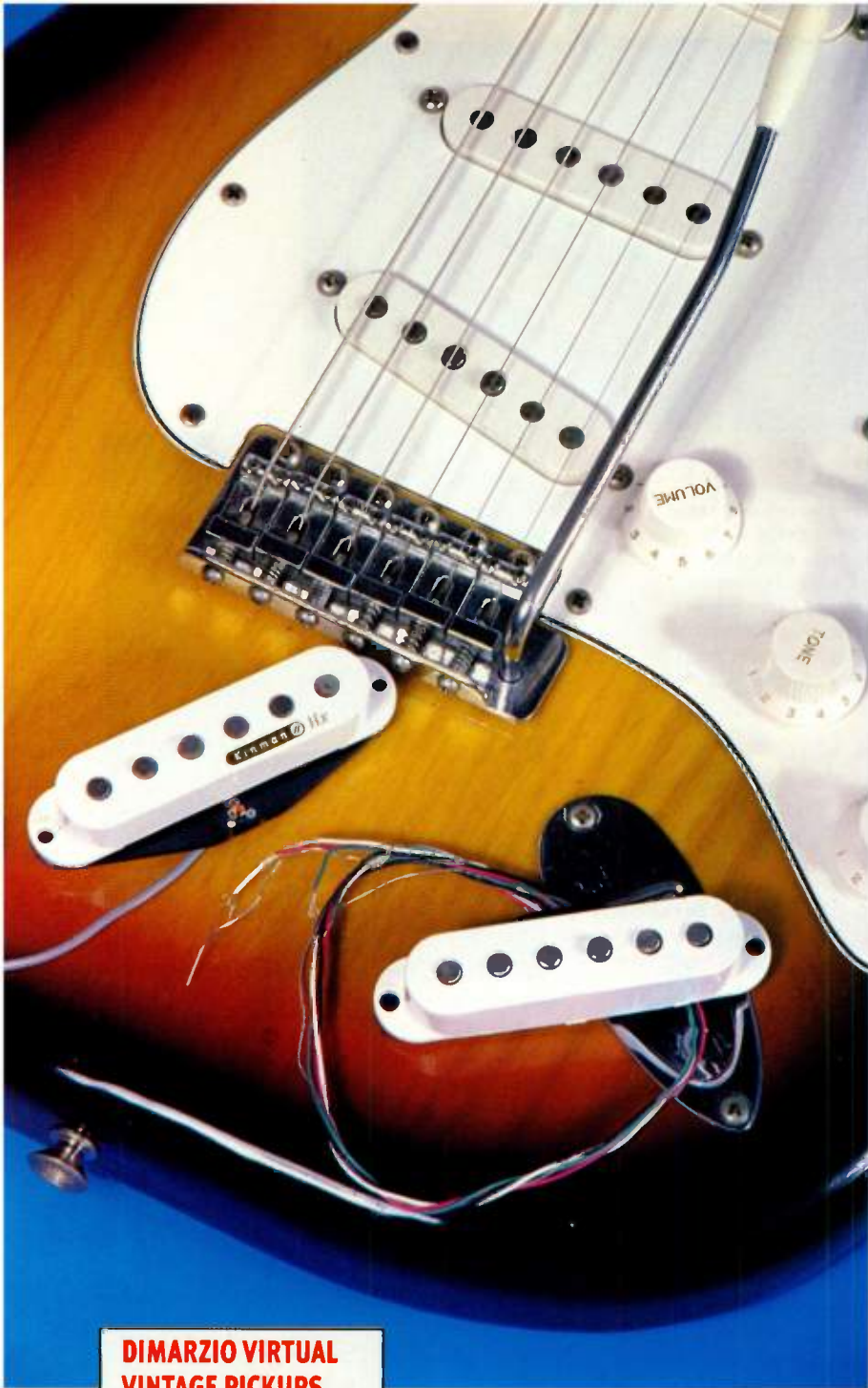
The typical 'Fender-type' single-coil guitar pickup is the simplest electro-magnetic pickup imaginable — economical, easy to mass produce, and more than up to the job of producing a simple voltage analogue of a vibrating metal string. The susceptibility to interference was always a known limitation, but when they first appeared on mass-produced electric guitars from the early 1950s, the world was a considerably less hostile place in terms of stray magnetic fields and RF emissions. Any hum or buzz that you encountered when playing a Strat or Tele could usually be alleviated just by taking one step further away from the source of the problem. Nevertheless, an electric guitar that did not hum, even

when you sat right next to the amp, was obviously going to offer the manufacturer a powerful marketing edge, and in 1957 Gibson introduced their famous 'Humbucking' (or hum-cancelling) pickup. Gibson employee Seth Lover's design cleverly utilised what was effectively two single-coil pickups placed side by side, but wired with the two coils electrically 'out of phase' with one another. The physical proximity of the two coils meant that any noise current induced into one coil was certain to be introduced equally, but in opposite phase into the other, so that it was cancelled out when the two signals were combined. The wanted signal from the string is not cancelled out along with the noise because the

string's vibration is sensed not by the coils, but by its disturbance of the field produced by magnetic polepieces within the coil. The two coils have polepieces of opposite magnetic polarity, making the signals induced into them out of phase with each other, a situation neatly reversed by the 'out of phase' combining of the two coils. The design results from a delightful piece of lateral thinking which truly appears to give you something for nothing, especially as Lover chose to connect the two coils in series, not parallel, thereby gaining a higher output and further improving signal-to-noise ratio, as less gain was then needed in the amplifier.

The downside was that whilst the coils did not hum, they didn't sound the same either. With its side-by-side coils, a humbucker senses a broader area of

the vibrating string, and combining the coils in series raises the inductance and thereby lowers the resonant frequency of the pickup. The net result was a pickup that was punchier and darker than the bright, twangy single-coil sound players and audiences alike were used to, and it was no surprise that it was jazz and blues players, with their generally more mellow tonal palette, who took to it first. Only in the mid-'60s, as the distorted sound of overdriven valve amplifiers became popular, did the humbucker come to be really appreciated, primarily for its powerful output. Whilst the die-hard Strat or Tele player may have looked on with envy at the humbucker's immunity to interference, most felt the tonal and dynamic compromise to be too great to justify the benefit.



DIMARZIO VIRTUAL VINTAGE PICKUPS

pros

- Good immunity to induced noise.
- More authentic sound than previous models.

cons

- Lacks full brilliance of real single-coil sound.
- Requires pot change to maximise performance.
- Unscreened output wire.

summary

A big step forward from previous models, but one that doesn't go all the way. The Virtual Vintages nevertheless offer a valid alternative for those seeking a darker-voiced pickup, combined with a stock appearance.

SOUND ON SOUND

tonal sparkle, nor the dynamics of a proper single coil. Even pickup guru Seymour Duncan's stacks were no more convincing, and for many people that was a sign that the principle itself was fundamentally flawed.

At this year's NAMM show in Los Angeles, however, there were two new stack designs on offer, both making the usual extravagant claim of sounding "identical to a vintage Strat pickup, without the hum". DiMarzio was championing its Virtual Vintage range, using a distinctive new metal shield on the top coil, whilst Australian pickup designer Chris Kinman debuted his 'AVn' (Authentic Vintage Noiseless) stacked coil pickup, also with an inter-coil shield of intriguing design (for more on the theory behind these pickup designs, see the 'How Stacked-Coil Pickups Work... Nearly' box on page 126).

The review models were evaluated by mounting them in turn on the same guitars

(Fender USA '62 Re-issue Strat with rosewood board, and Fender 1971 maple-neck Strat), with the results, using a variety of amps and DI processors, being recorded to multitrack digital tape to facilitate direct comparison. SOS Editor Paul White conducted his own listening tests in parallel with mine, mounting the pickups into his Strat Plus (see the 'Second Opinion' box elsewhere in this article). Both manufacturers recommend that to really maximise immunity to noise, you should screen the whole of the control cavity with metal foil or conductive paint. Whilst this is certainly true, the majority of the noise undoubtedly emanates from the pickups themselves, and in the end I chose not to screen the control cavity for the tests as I seriously doubted how many other people would bother, and I felt it was important to establish how well this 'hum-cancelling pickups but unscreened guitar' combination worked. I did, however, take the sensible measure of adopting a shielded output cable from the volume control to the jack socket on the test guitars.

Both ranges of pickups incorporate a number of models; in Kinman's case, these are defined by the year they replicate ('AVn62' and so on). DiMarzio's pickups are distinguished more by function ('Blues', 'Solo' etc). Both ranges offer direct replacement of a stock Fender pickup, with no additional routing or mounting hardware. Like all stacked pickups, they are a hint deeper than a conventional single coil, but not so much so as to cause any mounting difficulty.

Virtually Vintage?

I was able to test nearly all of the Virtual Vintage models, beginning with the classic stock Fender sound of the DP401. The range consists at present of six models:

- DP401 — the 'basic' Virtual Vintage model, replicating a classic Fender sound.
- DP402 — Virtual Vintage 'Blues'; could be used in the bridge position in combination with the above.
- DP403 — Virtual Vintage 'Heavy Blues'. A hotter version of the above.
- DP404 — Virtual Vintage 'Solo'. Darker and more output than the Heavy Blues.
- DP405 — Virtual Vintage '54'. Brighter — even more vintage than the 401.
- DP406 — Virtual Vintage '54 Bridge'. A touch hotter, just to compensate for the lower string excursion in the back position.

DiMarzio supplies installation notes that recommend the use of a 500kΩ volume pot "for best all-round performance". Don't take this lightly and think that it won't make a difference — it does. On a 250kΩ stock Fender (and clones) pot, even the brightest VV sounds a bit flat and lifeless. The installation notes suggest that you *can* use a 250kΩ volume in conjunction with a 1MΩ tone pot to achieve a "warmer, vintage (1950s) response". I have to say that this didn't work for me — I found I needed at least a 500kΩ and preferably 1MΩ on the volume control to squeeze the maximum amount of

KINMAN & DIMARZIO PICKUPS

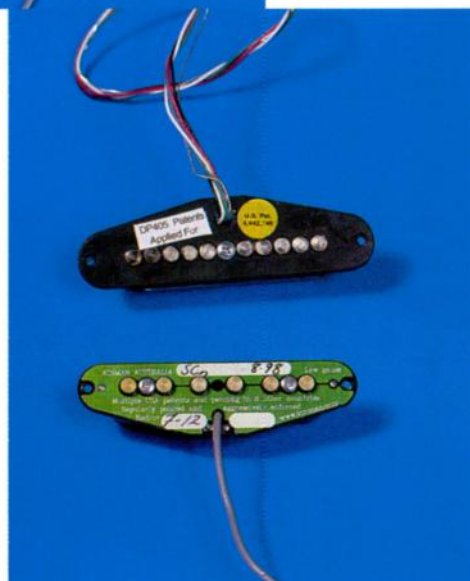
► high-end out of all the DiMarzios, and therefore stuck with this setup for the rest of the testing on the VVs. Both these pot values are readily available from guitar parts suppliers or repairers.

The Virtual Vintages' immunity to unwanted noise pickup is immediately impressive. With the rest of the guitar unscreened, the VVs' unscreened output leads are the limiting factor, and there is still some noise susceptibility if you get too close to any sources of interference. However, they certainly represent a vast improvement over normal single coils in the studio, in this respect. The sound of the DP402 Virtual Vintage Blues pickup in the bridge position was impressively edgy and responsive, with a healthy dose of that characteristic 'wiriness' that a good Strat must offer. Moving forward to the middle and then the neck pickup, the sound was far more recognisably Strat-like than any stacked pickup I had previously tried, and certainly more so than a side-by-side Strat-sized humbucker.

However, the 'in-between' position sounds (ie. bridge and middle, or neck and middle pickups on together) lacked some of the complexity of tone that normally gives these their unique character. Referring back to a real Strat set showed the VVs' combined selections to be both harder and thicker-sounding. The same referral showed the individual pickups, whilst beguilingly sharp, almost glassy, on first listening, to have, in comparison with the real thing, a significantly attenuated high top end. It's almost more Tele than Strat, which can actually be quite useful in the bridge position, but loses some of the essential 'open' character of the other pickup positions. Installing the DP406 '54 Bridge' and DP405 'regular 54' in the middle improved things a touch, bringing back a hint of the characteristically hollow 'cluck' on the 'bridge and middle' combo, but again, reference to the real thing shows it to have a different, darker overall tonal balance. Output on the 54s is roughly comparable to that of a vintage Fender, and on the standard DP401 VV, a touch higher, but there is a hint of reduced dynamics — it just doesn't do as much as a real single coil when you dig in to it hard. Some players could well find this more a benefit than a drawback, particularly in a recording situation, whilst other will be buggy by it — something very much in the realms of individual taste and playing style.



Above: Magnetic screening is used to try to minimise interaction between the coils — while DiMarzio (top) shields almost the whole of the upper coil, with a cutaway on the bass side, Kinman employs a partial shield on both, with the intriguing 'scalloped' design on the lower coil.



Right: Unlike previous 'stack' designs, neither Kinman nor DiMarzio's polepiece magnets now pass through both coils — multiple steel rods being used to form the core of the lower coil instead.

Moving on to the other VV models produced progressively darker, more weighty results. For players using a lot of distortion, the extra output and attenuated high top may prove useful in generating a smoother, more punchy tone. These higher-output VV models are not really all that Strat-like at all, but the sound is certainly a valid alternative to that of a miniature side-by-side humbucker. The DP404 Virtual Vintage Solo (a hefty 8k Ω on the top coil) could well prove popular with those wanting something to sonically rival a humbucker whilst retaining an almost stock, vintage appearance.

Authentically Vintage?

Australian pickup designer Chris Kinman's AVN ('Authentic Vintage noiseless') range also utilises a stacked-coil configuration, appearing, like the VVs, almost totally conventional with the cover fitted. The

KINMAN AVN PICKUPS

pros

- Superb-sounding pickups.
- Excellent immunity to noise.
- Totally authentic sound on 'vintage' models.
- Works with stock volume and tone pots.
- Screened output lead.

cons

- There just aren't any!

summary

Chris Kinman has finally nailed it! This really is a totally authentic-sounding vintage Stratocaster pickup which does not hum.

SOUND ON SOUND

How Previous Stacked-Coil Pickups Worked... Nearly

In essence, the principle behind the stacked-coil humbucking pickup is that it relies on only the top coil sensing the string, thereby producing something like a normal single-coil sound, whilst the bottom coil only picks up induced noise which is used in antiphase to cancel the noise also picked up by the top coil. However, in practice, it is not quite so simple. With both coils in close proximity and wound around a common magnet structure, interaction is inevitable, and the simple fact that the two coils are connected together changes the the DC resistance, altering

the inductance, and thereby the resonant frequency... I could go on, but you've probably got the point! In spite of the efforts of some very clever designers over the years, no amount of innovative juggling with magnet strengths, wire gauges and the number of turns in the coils has seemed able to produce anything closer to the desired result.

The two highly significant differences in this latest generation of stacked single-coil designs lie in the fact that both the new DiMarzio and Kinman designs employ dissimilar coils on the top and bottom of the stack, and both

also utilise magnetic shielding between the two coils to reduce the effects of interaction. In both designs, the magnets (vintage style, lightly chamfered on their top edges, configured south pole up), which in previous stacks passed through both coils, now sit only within the upper coil. The pickups also have something like the normal DC resistance of a conventional single-coil pickup (about 6k Ω for a vintage Fender, rising to about 7.5 for a 'hot' single coil); however, the lower coil seems to measure only around 20 percent of the upper coil, thereby reducing its effect on the overall pickup when connected to the upper

one. What makes this possible is that the lower coil is wound around its own set of steel rods, making it into a sufficiently effective inductor to still pick up the same amount of interference as the upper coil whilst employing a lower-resistance winding (this is vital in order to achieve full cancellation when combined in opposite phase).

DiMarzio's Virtual Vintage pickups incorporate a 'U' section metallic shield (partially cut away on the bass side), within which the upper coil sits. Kinman too shields between the coils, but his design uses a more open structure for the top coil plus the addition of a partial bottom coil shield as well.

Reverse Wound/Reverse Polarity

Many Strat players involved in recording to any serious degree have adopted the partial solution to the noise problem of using a special 'reverse-wound, reverse-polarity' middle pickup (Seymour Duncan's RP/RW seems to be the most widely available). This allows the two classic Strat 'combined pickup' sounds — positions two and four on a five-way switch (often erroneously referred to as 'out-of-phase') — to become hum cancelling, without affecting their sound. The only drawback to this situation is that, when working in an electronically hostile environment, you are limited to just those two sounds, and a good Strat, of course, has an awful lot more to offer than that.

The DiMarzio's four-conductor wiring will

also allow you to integrate a single VV (most likely in the bridge position, for high-gain work) into a guitar which already employs a reverse-wound/reverse-polarity centre pickup, without losing the hum cancelling you already have in the combination positions. By moving the tone control connections to the other side of the pickup selector switch, you can then use the now-free side to 'auto-tap' the VV pickup in 'position two' (solder the pickup's series connection to the bridge pickup position and run a ground wire to the centre pickup position) so that only the top coil is active, effectively leaving you with a 'south-up, conventionally wound' coil, which will work fine in a noise-cancelling combination.

Kinmans will actually take a standard Fender cover (the DiMarzio's are just a shade too fat) if you want to keep an aged vintage guitar looking as close as possible to original. The only giveaway, and even then only to the eagle-eyed, is the unconventional magnet stagger which, like the DiMarzio's, has been compensated for modern string gauges (ie. high D pole, low G and level B). The Kinman AVn magnets are considerably lower gauss than a conventional single coil, however, allowing the pickup to be adjusted much closer to the strings than normal without producing any unwanted effects — no reduced sustain, no pitch warble. There is actually

some useful tonal adjustment available in the height setting (far more than with a conventional pickup), with the overall character of the sound changing from bright and wiry at 2mm to a softer, more woody tone at 4.5mm and beyond. However, output drops off more quickly than normal if you drop them down too far.

Although the AVn pickups are available singly, the Kinman range consists of a number of pre-designated sets (usually with a different bridge p/u selected to balance with the others) to help point the buyer in the right direction:

The Kinman sets tested were:

- AVn-T — 'Traditional Vintage': two AVn-'56s and an AVn-'62 in the bridge position.
- AVn-W — 'Warm Vintage': two AVn-'62s and an SCn at the bridge.
- AVn-H — 'Hot Vintage': two AVn-'62s and an SCn at the bridge.
- CV-HMS — 'Hank Marvin Set, Classic Vintage': two AVn-'59s and an AVn-'63 at the bridge.
- FV-HMS — 'Hank Marvin Set, Fat Vintage': two AVn-'63s and an AVn-'64 at the bridge.

The Kinman models feature a screened single-conductor output cable, and require no change to the 250kΩ volume or tone pots found on a stock Strat, which keeps the installation job within the DIY domain for more players, and



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KINMAN & DIMARZIO PICKUPS

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With the 'maximum vintage' AVn-56s still making their way over from Australia, I began testing with the HMS-V set, consisting of two AVn-'59s and an AVn-'63. In comparison with the stock reference Strat, the sound was slightly darker, and a touch deeper, but there was an openness about it and a speedy attack that marked it out as totally convincing as a single coil in character. I have to admit that these are the first 'stacks' ever to really make me sit up and take notice — for once the manufacturer's claims really did seem to have some substance to them. Adjusted up to about 3.5mm from the strings (measured with the string held down at the twelfth fret), the sound from the neck and middle pickups was superbly bell-like — reminiscent of the highly characteristic sweetness of Seymour Duncan Alnico IIs. The 63 balanced well with the others, and worked well on its own, putting a useful bit of extra grunt into the bridge position. Immunity to noise pickup was spectacular, even without the rest of the guitar being screened (the Kinmans' screened output wire is undoubtedly responsible for this) allowing me to use a high-gain sound whilst sitting directly in front of a 17-inch

"This is a set of pickups that I might well choose to use even if they weren't hum cancelling!"

monitor and with a rack of outboard by my side. Previously, to record with this sound I had to retreat to the far corner of the room and keep the Strat's neck pointed precisely out the window! Even the 'in-between' positions retained enough of the hollow character necessary to make those sounds work properly, but the sweeter, fuller voicing of the pickups doesn't produce quite the same set of cancellations as real single coils, to my ears. Nevertheless, this is a particularly fine-sounding set of pickups, with a valid alternative voicing.

Chris Kinman's AVn-T set, consisting of two 56s and one 62, when it arrived, was even more of a revelation. To my ears, these really do sound exactly like vintage single-coil pickups but without the noise! Reference back to the real thing shows the overall tonal balance to be identical. The same snappy, fast attack, the same crisp detail revealing from note to note whether the string has been struck by pick, skin or nail — the very reason why some of us choose to play Strats and Teles. No hum-cancelling pickup has previously come close to this degree of authenticity — I believe that, for most players, these are probably as close as makes no difference (indeed, I know there are some real vintage Strats out there with pickups that actually sound nothing like as good as this!). The bridge pickup in this set is an AVn62 which has a slightly higher output to compensate for the lesser string

excursion near the bridge. This pickup too is simply gorgeous, offering all the spit and grind of a good Strat — pinched harmonics just whistle off the pick whilst picking up near the neck produces that uniquely sweet, pedal steel-like tone that you can only get from a really open-sounding single coil. Of all the sets tested this was the one that, to my ears, didn't compromise the 'in-between' settings at all. All the hollow character, all the 'ping' and, most importantly, all the *touch*, is retained (provided that the paired pickups are properly adjusted for comparable output). Simply glorious. This is a set of pickups that I might well choose to use even if they weren't hum cancelling!

Like the Virtual Vintages, the other Kinman sets gradually part company with the goal of directly replicating the vintage Strat tone, getting progressively darker and richer. The low-gauss magnets seem to produce not only the expected longer sustain, but also a noticeably 'creamier' distortion, less ragged at the edges and more focused. The SCn 'hot' bridge pickup is the real star here — think vintage P90, but with a bit more 'air' in the sound. They are effective, but if you want a darker-voiced Strat, other options have always been available to you. One other point to bear in mind is that Kinman models are optimised for a specific fingerboard radius — there is a '7-to-12-inch' contour which should be fine for any real Strat, and a flatter '12-to-18-inch' option for modern compound-radius necks.

The Ultimate Challenge

A good single coil is, in my opinion, the most musically versatile of pickups. It can be sharp, or deep; it can be sweet or nasty; it can respond to your loudest or softest touch. To achieve noise-free operation without destroying these subtle nuances of musicality has always been the ultimate challenge to the pickup designer. To my ears, Chris Kinman has finally achieved that goal, and I have no hesitation in recommending his pickups as the only choice for players who want hum cancelling whilst changing the sound of their Strat as little as possible from its stock pickups. However, I recognise that this may not necessarily be your goal — thousands of people play Strats, wishing all the while that they had a bit more oomph and worked a bit better with distortion. If you fall into that category, the DiMarzios, with their treble peak occurring further down the spectrum than normal, could well offer precisely the kind of extra punch you are looking for.

Few products that I have come across have ever fired my enthusiasm quite as much as the Kinman AVn56/62s, perhaps as a result of the 25 or so years I have spent wishing that something like this existed! These pickups do exactly what Chris Kinman says they do. The DiMarzios, whilst apparently seeking the same goal, sound significantly different. As always, let *your* ears be the judge of what's right for you. At least we Strat players now have some real choice in this area — at last, the future can be noise-free for Fender players too! **ES**

Second Opinion

The DiMarzios produced a very glassy, lively sound that was initially quite impressive, but after a short while I realised that the tonal peaks didn't have quite the same character as the classic Strat. This became more obvious on the in-between pickup positions — these sounded quite different to the real thing, but in their defence, they're able to produce a very nice, if slightly brash, jangly sound. The susceptibility to interference was much reduced compared both to the Lace Sensors fitted as standard to my Strat Plus and Fender's own single-coil pickups.

Like the DiMarzios, the Kinman pickups offer a completely traditional appearance, apart from the revised polepiece staggering. When you plug in and play, however, the tonality is so close to what you'd expect from a regular single-coil Strat pickup that it's almost difficult to believe that these are humbucking pickups at all. In fact, the only giveaway is when you suddenly realise your amp isn't humming any more, and even the computer monitor isn't giving you any trouble!

There's no question that the Kinmans came closest to the traditional Strat sound as well as providing the best interference immunity. They have just the right amount of edge and shimmer, and when you use the 'in-between' pickup positions, the results are authentically hollow. All the pickups in this review have their positive attributes, but for sheer authenticity and freedom from noise, the Kinmans are the clear winners. **Paul White**

information

E DiMarzio Virtual Vintage pickups £69.90 each, £209.70 for set of three. Prices include VAT.

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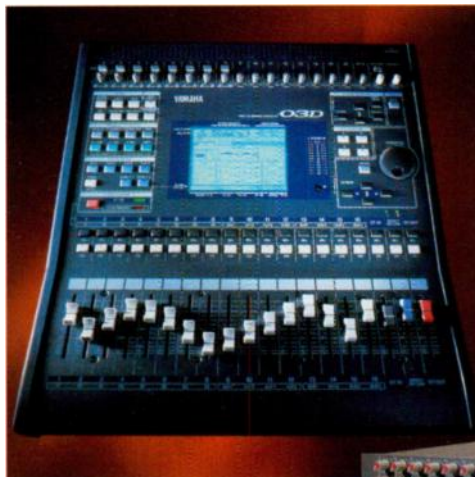
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► The other break with tradition is that I decided not to record through the 03D. It's not that you can't do it, but I prefer the idea of using discrete mic preamps or channel strips and patching them directly to the ADAT inputs, and as my current ADATs are about to be replaced with the 20-bit versions, I have no fear about losing quality at the analogue-to-digital stage. For any mic signals that need subgrouping, such as those from drum mics, I also have a small Mackie mixer connected to the patchbay, and as regular readers will know, a small, well-designed mixer invariably means a cleaner signal path than a large mixer. Working this way, the 03D is always monitoring the tape outs, so there's no routing to change, though I concede that you do have to do more patching when assigning outboard mic/line preamps to the tape inputs. Of course an 03D only has 16 mono analogue ins and one stereo analogue in, so the next point to consider is how I handle my MIDI modules and effects returns.

MIDI Modules

My first solution was to use a Mackie 3204 keyboard mixer feeding into the remaining stereo analogue input. In fact, I used a 3204 plus a 3204 expander unit, so there's a total of 32 stereo analogue channels plus eight stereo effects returns. This is more than adequate to connect all my tone modules and also to leave my four main effect processors permanently connected (via a normalised patchbay) to the 03D's sends, with their outputs directly connected to four of the Mackie 3204's returns. There are also enough spare inputs to handle the audio outs from my Mac systems, for example, the Audiowerk8 card, the Mac's own AV output and my Pro Tools 888 I/O interface. However, Yamaha have just announced a new expander card that fits both the 03D and 02R and provides eight balanced analogue inputs feeding mixer channels 17 to 24 on the 03D, so I'm hoping to fit one in the near future to enable my four main effects units to be returned directly to the 03D rather than via the Mackie keyboard mixer.

The effects requirements for the Mackie 3204 side of the mixing setup are fairly modest, as most synth modules now come with effects built in, and within *Logic Audio* I can also add effects from



Yamaha's 03D digital mixer, left, and Mackie 3204 keyboard mixer, below.



Cubase VST-format software plug-ins. However, it's useful to have at least one hardware reverb and here I'm still using my old Alesis Quadraverb, not because it's the smoothest or quietest machine around (it definitely isn't!), but because it can create certain effects that, as yet, I've been quite unable to emulate on anything else. Figure 1 (previous page) shows how the mixers and effects are interconnected. There's no automation on the

Equipment Choices: Computers & Software

I have numerous old Macs at home, but I doubt that if all their processor clock speeds were added together the result would be close to the speed of one of Apple's G3s, so that's the next thing on my shopping list. Why am I so fanatical about Macs?

with *Logic Audio*. Having come up from an Atari ST, I find the Mac interface more intuitive; I can't recall needing to open the manual very often. It's a bit like cars — they all do more or less the same job, but some will work week in, week out with no

but if you like to tinker and are happy to choose a PC, I'm not going to try to convince you otherwise.

The choice of *Logic Audio* is also largely a simple matter of personal history — I used C-Lab's *Creator* way back. If you're just starting out, however, *Cubase VST* seems to do much the same job in a very similar way these days. Apart from a few minor operational niggles, I'm pleased with *Logic* — it's extremely robust, and now that it can use VST-format plug-ins, it's even better.

I also have a pensionable Nubus Power Mac kitted out with a basic Pro Tools system, which is used mainly for running Digidesign *Sound Designer II* so that I can master albums. A Yamaha CD-R burner lets me make test albums or CD-R masters using *Masterlist CD*, another useful Digidesign program. However, as Digidesign say they no longer intend to support *Sound Designer II*, and as *SDII* plug-ins only work on the Nubus version of Pro Tools, I think I'm going to have to look more closely at BIAS's *Peak* audio editing software...



Logic Audio Platinum.

It's probably a matter of familiarity — I've always used them, it's rare that anything too puzzling happens, and if it does, I can generally fix it. Also, music software is often released in a more advanced form for the Mac — that's certainly the case

more attention than keeping the fuel tank full, while others require you to take off the distributor cap, clean the points, unblock the carburettor jets and tighten the fan belt every few days. I like Macs because they only need petrol,

Equipment Choices: Effects

The 03D mixer has good effects built in, so in theory you could get away without buying any outboard, but for classy reverb, the Lexicon PCM90 is a tough act to follow. Likewise, the Lexicon MPX1 is a really good-sounding true multi-effects unit. The Alesis Quadraverb is used only on

the keyboard mix and I also have an easy-to-use Alesis Wedge processor that I can connect to the Mackie mixer for general reverb.



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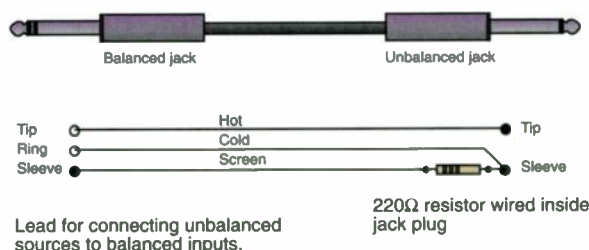
► analogue mixing side of the system, but this doesn't really matter, as I can automate my MIDI and hard disk audio material at source, in the sequencer.

One vital part of the system that isn't shown (because I don't have it yet!) is one of the new Alesis PCI cards that will allow me to transfer data directly between the ADATs and the Mac for editing, via the optical Toslink. To me, this is one of the most powerful features of running ADAT tape alongside a computer — you reap all the benefits of tape-based recording mentioned earlier, but when you do need non-linear hard disk-style editing facilities, you simply pipe the data across to your computer, do what editing you need to there, then pipe the data back again, while maintaining perfect sync. Once I get the optical interface card, I will probably need to add a digital patchbay that can handle ADAT optical connectors.

How Did It Work Out?

After doing a couple of commercial sessions, it seems the system is working pretty well. The shorter signal path clearly works — I've never before produced such quiet, clean recordings recording through a multitrack mixer, though I must stress that absolutely everything is wired using balanced cables, which helps. The small amounts of unbalanced equipment in the system

Figure 2.



(mainly MIDI modules) are wired using specially made balanced-to-unbalanced cables as shown in Figure 2 (above), and every plug and socket (including mains plugs) was sprayed with DeOxit contact cleaner when the studio was wired up to minimise connection problems.

There's a little more patching to do when overdubbing, as you can't just use the mixer routing buttons to move the vocal mic up to the next tape track, but it isn't a problem providing you write notes showing which mic is connected to which preamp. The 03D has turned out to be a lot easier to use than I anticipated, largely because I'm not recording through it, and although it sounds somehow different to an analogue desk, it's very clean without being too clinical. I'm still getting used to the EQ, but I can always patch in

“What I’ve described here is not the definitive small studio system, it’s just something that works for me...”



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Equipment Choices: Synths & Sampler

I am about as bad a keyboard player as King Herod would be a Mothercare manager, so I use guitar or guitar synth where I can. Even so, the sequencer allows me to cheat quite effectively, so I end up inputting (I hesitate to say playing!) quite a lot from the MIDI keyboard (a modest Yamaha SY35) and I have a reasonable choice of modules for sonic variety. My fully expanded Akai S2000 has turned out to be an excellent budget sampler, and now that I have a fast CD-ROM drive for it, it loads sample CD-ROMs fairly quickly. My

favourite sound-creating device, though, is my Wavestation SR. If you haven't heard a Wavestation, you should — it's got a number of flaws and its polyphony is lamentable, but it sounds fantastic.

My most recent acquisition is a Roland JV2080, the idea being to buy some expansion cards for it and then sell off some of my less-used modules to simplify my overall setup. As it stands, it offers good GM sounds plus a fine range of up-to-date S&S fodder, but add the voice expansion cards and it definitely becomes greater than the



Above:
Roland JV2080.



Left: Yamaha
VL70M.

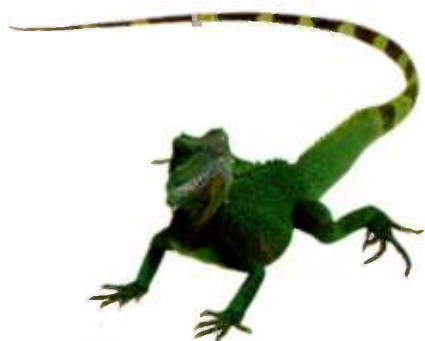


sum of its parts. Waveforms from each of the different cards fitted can be used in combination to produce new sounds, and the large, well-set-out screen means that even I can be bothered to edit things! The orchestral card is particularly impressive and there may even be a piano somewhere in the JV2080 card set that I like more than my old Yamaha EMT10 piano module, which will free up another hole in my rack. However, my Yamaha VL70M physical

modelling module is staying — the expression you can get when using a breath controller is absolutely worth the inconvenience of drool dripping on your Levis! One antique I'd be reluctant to part with is my Kawai K1m — it's a bit gritty and it has no filters, but you can coax some great textural sounds out of it. The disadvantage is that the dynamic noise reduction system required to clean it up costs around twice what the module is now worth!

outboard EQ for anything really critical. There's also no obvious quality loss from using the analogue inputs. As the desk is always in mixdown mode, I generally get a ballpark balance set up by the time recording is finished, which I save as a snapshot (Scene memory) to use as a starting point when doing the mix proper.

Initially, I was worried that plugging the Mackie analogue rack mixer into the 03D's stereo input would add a significant amount of noise, but this doesn't seem to be the case. Unused 3204 channels are muted, which on this model routes them to the Alt output buss, and any hiss from the mixer itself is at a very low level. As usual, most of the noise



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spl

► comes from the synth modules themselves, but since I've got more selective about which modules to use, this is no longer as serious as it once was. I'm also surprised at how clean the Mac's analogue ins and outs can be. You need to keep the levels as high as possible, and it helps to use a gate to keep silences really clean, but for adding the odd track of guitar or occasional rhythm loop to a mix, it's absolutely fine. Even though I have a Pro Tools system that is exceptionally clean, it can't be used for tracks that employ VST-format plug-ins or other native processing functions. The Mac's reasonably clean built-in audio I/O also saved me from having to buy a separate soundcard — something prospective computer buyers should take into account when comparing the cost of new Macs and PCs (the latter always require separate I/O cards, although these may be bundled with a PC when you buy one).

For projects where the system sounds too 'digital', the output from the 03D can be fed through an external processor (such as my Ridge Farm Gas Cooker or SPL Vitalizer) to change its character. Because of the patching system, outboard equipment is easy to hook in, but most of the time, you can work quite satisfactorily using the 03D's own effects and dynamic processors. The compressors don't add much in the way of character, but they do provide a transparent means of gain levelling. I look forward to trying the new digital consoles from Spirit, Mackie Tascam and Ramsa — I anticipate that these will all have very different characters, perhaps more so than analogue consoles.

Summary

What I've described here is not the definitive small studio system, it's just something that works for me, and I know that in time it will change again — it always does. However, I hope that along with the

Equipment Choices: Front Ends

With the type of setup I have I obviously need a few decent mic amps, and the Drawmer 1960 valve compressor just happens to have a couple built in, so it gets used for tracking as well as when mixing. In addition, I'm using a Symetrix dual mic preamp and a Focusrite Platinum voice channel, and of course there are two more mic amps tucked away on the back panel of the Mackie 3204 if I run out. I'd like to add at least one of the Joemeek boxes to my armoury as I really like the sound of their compressors, and the SSM chip-based mic amps are also good performers. A little Mackie 1202 or 1404 is ideal for recording drum submixes, and either is small enough and cheap enough to be considered as a piece of outboard gear.

Most of my analogue outboard is from Drawmer, though I do have an SPL Classic Vitalizer (to my ears, the Classic is the best-sounding of the Vitalizer range) and an SPL De-esser, which are both great pieces of



Ridge Farm Gas Cooker.

gear. Other widgets worthy of mention include the Palmer Junction Box guitar speaker simulator/DI, the Mesa Boogie V2 valve guitar preamp pedal and the Ridge Farm Gas Cooker tube DI box, which is also nice for warming up a sound via insert points. I'm also trying out a Hootersound mic preamp/compressor as an input to the Mac (either via the AV inputs or my Pro Tools interface). Designed by Ted Fletcher of Joemeek fame, this budget box is very simple, but has a good mic amp and a smooth compressor.

Focusrite Platinum.



rest of this series, this month's account will make you think about what you are doing in a slightly different way. Instead of settling for a 'one size fits all', traditionally 'correct' recording system, you'll be able to take into account your own needs and your own way of working, then come up with a system that suits you. With today's equipment, you can make professional-sounding recordings for surprisingly little money, and you no longer need a garage to hold all the gear. At one end of the scale you have the desktop computer system or perhaps an integrated hard disk multitracker, while at the other you have the traditional multitrack tape recorder and big mixing console. In between those two extremes are countless options just waiting to be explored. **SOS**

Equipment Choices: Monitoring, Mastering & Mics

At the moment, I'm using a pair of active Klark Teknik Jade monitors that have given me excellent service for years, and although there are more refined-sounding speakers, these have always given me consistent mixes that don't need much in the way of additional work at the mastering stage. I also have a pair of passive ATC SCM20s in the next room, which are perfect for checking finished masters.

Stereo mastering is generally done using a Tascam DA20, though I also

have a DA30 MkII so that I can clone tapes — and this is also linked to my Pro Tools system. I've found both these Tascam machines to be reliable and have a good sound. I'm also hanging on to my Tascam 32 open-reel stereo machine as it definitely has a different sound to DAT, and occasionally, clients come in with open-reel tapes from which they want to make DAT masters.

Like every other **SOS** reader, I'd like a Neumann U47 or 87 microphone, but I really can't justify

the cost. Most of the time I use a Rode NT1 or an Audio Technica 4033, both of which are superb performers for the price, yet they sound sufficiently different for it to be worth having both. I also have a Russian Oktava MK219, which despite its 'back street' looks, always surprises me with its big, clean sound, and going upmarket a bit, there's a Beyer MC740, which I feel is rather underrated.

Perhaps my favourite dynamic is still the Sennheiser 421, a design that's over a quarter of a century old, but it's still superb for everything from vocals to kick drum. Inevitably, I also have a couple of Shure SM58s, and despite their now considerable age, they still manage to sound warm and classy. I also use a couple of the cheaper Audio Technica back-electret mics, including the ATM 89R, which are actually extremely good all-round



Rode NT1 and Oktava MK219 mic, below.



performers as well as being tough enough for the odd live recording session. But the *pièce de résistance* (or should that be *pièce de Impedance*?) of my mic collection is a Soundfield SPS422 stereo microphone, which is unequalled for capturing the impression of actually being there. The pickup pattern and stereo width can be changed from a remote control box, so you can set up the mic, retreat to your control room and adjust it from there.



Tascam DA20 MkII.

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underfire vol 2 terminalheads

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This cool software program is for fast real-time song construction. Eight tracks audio recording with stunning effects such as filter sweeps, pitch, scratch and automatic time stretching. With more than 2000 quality audio files included, this package is an excellent starting point for the creative DJ.

samplezone pcmix10

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discovering music

Explore the history of music, music theory and musical concepts in an exciting interactive environment with more than 60 high-quality symphonic recordings and 50 video clips. Includes a Glossary of musical terms and a survey of orchestral instruments. You can also write and print your own scores with MusicWrite plus record both. Was £79.95

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A professional teacher introduces basic music notation, theory and playing technique in a series of video clips and exercises. The interactive training system provides analysis and feedback in each lesson. The Keyboard tour lets you explore the history of keyboard instruments in text, photographs, video and sound. From early spinets, virginals, harpsichords to organs, pianos and synths. Also included is a songbook with traditional material which can be printed, a guide to MIDI & synthesis and a Music Quiz. Was £79.95

SampleZone



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save your waves

SOUND FILE PROTECTION SOFTWARE FOR PC

If you have ever been faced with an error message that prevented you loading in an entire track of WAV audio, you will be extremely interested in *Wave Safe*.

Martin Walker explores a world of corruption.

Utility programs tend to appear a little bit boring, until you need the function they provide, at which point they become invaluable. *Wave Safe* is one such program. The potential problem is that any file stored on your hard disk runs the risk of being corrupted, whether due to a glitch when recording, or subsequently when an out-of-control application allows a hard disk write somewhere in the middle of one of your precious audio files. Taking backups is essential, but it's always tempting to leave them until another day, and even backups can sometimes become corrupted as well.

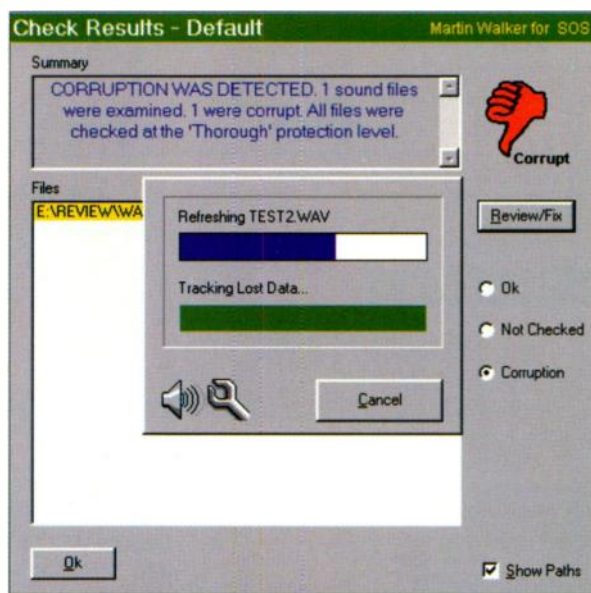
The Problem

There are two main types of file corruption from an audio point of view. Corruption can, of course, occur in the actual audio data itself, but the most annoying problem is when the header area of an audio file gets corrupted. When this happens, you simply get an error message from *Sound Forge*, *Cubase*, *Cakewalk*, *Logic Audio*, and so on, informing you that there is an error, and the entire file refuses to load. Being able to salvage the entire file is not an option without *Wave Safe* unless you have access to an advanced byte-level editor, and know exactly what you are doing.

The Solution

Wave Safe safeguards your audio files by monitoring and reporting on any degradation since the last time you protected them. If it finds any problems, it will produce a salvaged version, and will even attempt to rescue sound files from any damaged media such as chewed-up backup tapes, scratched CD-Rs and so on.

The protection process is fairly simple. Once you have installed the *Wave Safe* program you enter a small window with four tabs. The one labelled Setup allows you to select the protection



If a corrupted file is detected, you can start the salvage procedure by clicking on the Review/Fix button. Here the smaller central window shows a salvage operation in progress.

level (more on this in a moment) and to select the paths that your audio files inhabit. Having done this, you then select the 'All Files' tab, and click on the 'Protect' button. You would normally do this just before making a backup. Once all files have been analysed, a database is created with all the details, against which the files can be checked at any time — most likely when you next reload from the backup — by clicking on 'Check'.

Calistan suggest creating a new database for each major project, and the 'Database' tab takes you to another window, so that you can perform routine maintenance on these. The fourth tab allows you to check and protect Individual Files.

On The Level

There are three levels of protection to choose from. 'Basic' is quickest to run and produces a tiny database, but only stores information about the structure of the file, to allow you to read a file that gets its header corrupted. The 'Regular' option adds protection against audio data loss, which can cause bad timing due to missing sections, or bad alignment, which may cause all data after the problem to be garbled and unlistenable. It takes longer to run than Basic protection and produces a significantly larger database, but is a more secure way to work. The 'Thorough' option analyses the files during protection much more thoroughly (and

CALISTAN SOLUTIONS WAVE SAFE

pros

- Can salvage many damaged files as long as they have been Protected first.
- Free Shareware version for trial runs.

cons

- You still need experience, and a sound editing program, to rebuild damaged sections of audio.

summary

An extremely useful utility program that will pay for itself the first time you get a real problem.

SOUND ON SOUND

Protection Money

There are three versions of *Wave Safe*. The shareware version is freely downloadable from the Calistan web site, or if you don't have access to the Internet, Calistan have very kindly offered to send a free CD-ROM to any reader who sends them a large SAE. This gives you a generous allowance of free protection sessions, along with unlimited checking sessions, including fixing and salvage if needed. The Registered version gives unlimited protection sessions, along with added functions such as adding, moving and renaming databases. Finally, *Wave Safe Pro* offers a number of enhancements for professional use, such as extended support for CD-R, CD-RW, removable hard drives, allowing you to rescue corrupted files that may be scattered across the surface of a disk. As long as you can see the filename, you can attempt to rescue a file that cannot be loaded by other applications, or copied using Windows.

therefore slowly), so that running a Check will discover even tiny areas of the audio data that have been corrupted, often with no obvious audible results. Whilst non-audible corruption would initially seem not to matter, it is a sign that something has gone wrong, so it is always better to discover this at an early stage.

Damage Limitation

If *Wave Safe* finds that a file has been corrupted, you can click on the 'Fix/Review' button to try to repair it. *Wave Safe* then goes through a regime of examining, diagnosing, tracking lost data and refreshing, before creating a salvaged version of the damaged file in a separate directory. It then creates a Corruption/Salvage report of what it found, and what exactly it managed to repair: the reports for a single file may extend to several pages of technical data. These detail every error that *Wave Safe* has corrected, with a few lines at the end with details of any bad areas that remain. These are often the only bits that you really need to study, as the program is not designed to fill in corrupted areas of sound files — to do this you need to load the salvaged file into an editor like *Sound Forge* or *Wavelab*. Actually repairing extensive damage in such an editor is still a skilled operation, but the fact that *Wave Safe* has already reported the location of any damaged areas greatly speeds up the procedure, though unfortunately there's no option to place markers either side of possibly corrupted sections to make them obvious when loaded into an editor.

Conclusions

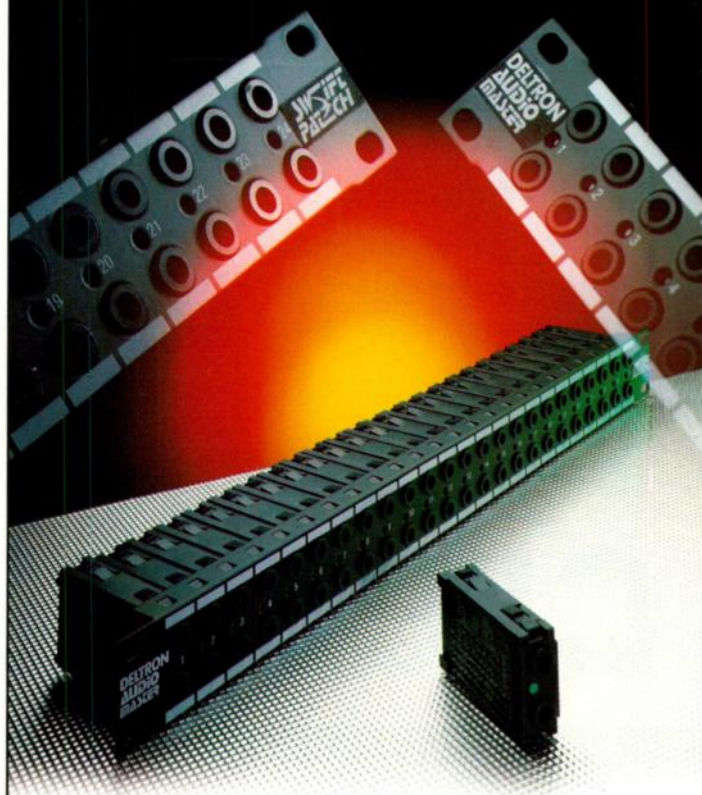
Although unexciting, this type of protection can save the day after an unrepeatable take gets accidentally trashed, and I suspect that loads of shareware versions will be downloaded and subsequently registered. The *Pro* version offers several additional options if you backup to other media such as removable drives and CD-R, and is also well worth considering. I sincerely hope that your data doesn't get corrupted, but if this does happen *Wave Safe* is a valuable tool that can minimise the damage. Try it out for yourself. **SOS**

Information

- E** Shareware Preview Free, *Wave Safe* Registered £65, *Wave Safe Pro* £130. Prices include VAT.
- T** Calistan Solutions +44 (0)171 691 7823.
- F** +44 (0)171 691 7823.
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Paul White risks serious wear and tear to his patch-selection finger by trying out the whole set of Roland JV-series Expansion Cards.



creditable cards

ROLAND JV-SERIES SYNTHESIZER SOUND EXPANSION CARDS

Roland's JV1080 and 2080 really do deserve the title of modern synthesizer classics, not because they offer anything radically new in the way of sound generation, but rather because their sonic repertoire can be augmented by plug-in cards that contain not just new patches, but also new waveforms. These new waveforms may be combined with the existing internal ROM waveforms, or with those from other cards, to produce new user patches. It helps inspire confidence that the same cards may be used to expand the not only the JV1080 and 2080, but also the XP80, 60 and 50, the JV1000, 880, 90 and 80, and the JD990. It's also envisaged that the same card format will be used in a number of future Roland products.

While the synthesizers themselves have been reviewed in *SOS* (see 'Roland Report' box), little coverage has been given to the cards, though in many ways these define the capabilities of the machines they're used in. Currently there are 11 cards in the series, each providing new patches based on new waveforms, as well as, in some cases, additional drum kits. The memory capacity of each card is up to 8Mb, but since the waveform data is compressed (as it is in virtually all modern digital synths), this equates to up to 16Mb of linear sample ROM.

I reviewed a full set of expansion cards in a Roland JV2080, which can hold up to eight at

once. Some patches include reverse waveform playback, which is converted to forward playback on the JD990.

SR-JV80-01: Pop

The Pop card is an ideal starting point for anyone who doesn't want to commit to any of the more specialised expander cards. It offers 224 waveforms and 145 patches, with good examples of all the 'bread and butter' sounds required for most pop arrangement work, including a nice acoustic grand piano, electric pianos, clavs and organs. There's nothing like the choice offered by the more exotic cards, but what's there is extremely good: several acoustic and electric basses, numerous guitars, a set of core orchestral sounds and some extremely musical brass and sax samples. The collection is finished off by a handful of ethnic-type patches and a generous selection of synth lead and pad sounds. This card is highly recommended if you can afford only one or two expansion cards.

SR-JV80-02: Orchestral

I'm no John Williams, but I was seriously impressed by this collection of orchestral sounds. Indeed, few

ROLAND JV EXPANSION CARDS £255

pros

- Greatly extends the sound capability of the JV-series synths.
- Waves from different cards can be combined to create new patches.

cons

- Expensive. The hardware manufacturing cost is low, and the amount of material you get is an order of magnitude less than you can get on a sample CD-ROM for less money. Sales would be far healthier if the RRP were a more realistic £99.

summary

A very convenient and easy-to-install means of adding more sounds to your JV-series synth, but at the price you have to choose your cards very carefully.

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ROLAND JV EXPANSION CARDS

► of the sample CD-ROMs I've heard have bettered it. The string ensembles and solo strings run to 86 patches, covering a number of playing styles, and they all sound wonderful. Some samples you hear sound great in isolation but don't sit properly in an orchestral mix. These, by contrast, are close to perfect. It's the same with the brass and woodwind — everything sounds rich and expansive (or should that be expensive?) And it's all there: harps, hits, classical guitar, flute, timpani — the whole shooting match, right up to wind chimes and sleigh bells. Virtually all the 174 waveforms and 225 patches are pure magic. Unless you never use orchestral sounds, to hear this card is to need to possess it!

SR-JV80-03: Piano

How can you fill a whole card with pianos? Roland's answer is to group together a variety of nice-sounding acoustic instruments, including a stereo grand, and combine them with all the famous electric pianos, the occasional clav, and piano/synth hybrids. Overall, the sample quality is amazing

“The World set is good for rounding out your collection of unusual percussion or adding ethnic instruments to your repertoire.”

given the limited memory space. The keygroups and loops are well disguised, and the subjective quality of the acoustic pianos is superb. If you write mainly for the piano, this board gives you plenty of scope, though if piano isn't your main instrument, you may be better off picking one of the other cards that includes a more limited piano selection.

SR-JV80-04: Vintage Synth

I've owned a Roland Vintage expander module for some time now, so I knew pretty much what to expect here. Unfortunately you don't get the superb electronic drum kits from the module, but the patches are broadly similar and are based on a number of classic synths by different manufacturers, not just Roland. Many different

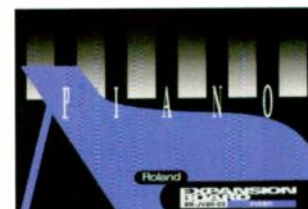
analogue synths are featured on this 255-waveform, 255-patch card, from Wasps to Prophets and Moogs — plus, of course, Roland classics such as the Jupiter 8 and TB303. Numerous digital synths are also featured, providing wave-sequencing patches, LA and FM sounds. No vintage collection would be complete without the Mellotron and here we're treated to a number of sounds, including choir, strings and flute. To finish off, there are a few techno patches and atmospheric pads, as well as the monitor-shattering Earthquake. If you like variety in your nostalgia, this is a card to check out.

SR-JV80-05: World

I'm a sucker for ethnic sounds, so this is the first card I bought for my own machine, and it really does manage to cover a lot of ground, both geographically and sonically, with its 255 waveforms, 255 patches and one rhythm set. Around half the patches are percussion/bell-gong sounds, including thumb pianos and kalimbas, gamelans and African drums. Flutes and pipes are also here in force, though I was disappointed by the rather obvious loops and/or inherent vibrato evident in some samples — notably the shakuhachi and the basic flute. The flute on the orchestral card is much better. However, there are lots of usable and nice-sounding samples, ranging from sitar and tambura to rainsticks and didgeridoos. A few more obviously 'synthy' sounds creep in, but on the whole this is a useful and nicely recorded selection of sounds from all corners of the planet. A must if you write new age music or beds for nature documentaries.

SR-JV80-07: Super Sound Set

The Super Sound Set is another of those cards that provides a selection of sound types, rather than being tightly focused. Pianos and organs feature fairly heavily in the complement of 255 waveforms and 255 patches, and there are literally dozens of plucked instruments, from lutes and banjos to blues guitar and National steel guitar. There's also a fair selection of orchestral sounds, solo fiddles, harpsichords, and a whole raft of synth voices, as well as eight complete drum sets. As a guitar player, I thought there were too many guitar patches (I lost count at 40) but perhaps I'm biased. In general, the sounds are both good and varied, so if you want a bit of everything to expand your basic synth, this is a valid alternative to the Pop and Session cards, especially if your musical tastes are eclectic.



► The most recent synth in the expandable range, the JV2080, can host up to eight expansion cards.

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ROLAND JV EXPANSION CARDS

► **SR-JV80-08: Keyboards
of the '60s & '70s**

More than half of this collection is given over to electric organs, including numerous Hammond B3 examples with various overdrive and drawbar settings. To my ears (which were around in the '60s!) these sound great, and the mod-wheel rotary speed change is also suitably chummy and swirly. After the organ section, which also takes in Farfisas, Vox Continentals and so on, come more electric pianos, clavs, numerous synth sounds, and a good selection of Mellotron samples — you can almost hear the tapes sliding against their gunge-covered drive rollers! This is a good selection of 255 patches and the same number of waveforms, and is described well by its title, but for me the Hammond patches are the real gems.

SR-JV80-09: Session

This is another 'bit of everything' card, perhaps best suited to the user who doesn't quite know what the demands of the next job will be. A nice selection of acoustic pianos and orchestral sounds soon gives way to textural synth pads, wind instruments, a generous selection of accordions (for the German market, perhaps?) and a useful section of acoustic and electric guitar patches. The second part of the card comprises mainly synth sounds, including some distinctive dance clichés and some dynamic pads. To sum up, this is a very varied, generally good-sounding collection, with eight more drum kits as a bonus on top of the 206 waveforms and 255 patches.

SR-JV80-10: Bass and Drums

The first thing to make clear is that we're talking about real bass and real drums, not drum & bass breakbeats! Around half of this collection is made up of bass guitar multisamples from the likes of Marcus Miller, Abraham Laboriel (Senior and Junior), John Patitucci and Bob Wilson. There's a huge variety, from hard and funky to steamy fretless, with the odd acoustic bass and bass harmonic set thrown in, after which it's the turn of the drums. Eight complete rhythm kits are offered, as well as a number of partial kits that can be layered with other patches to form new combinations. Everything from rock to ballad is covered, but there's not much for the techno/house composer — that genre has a card all to itself. As a collection of bass guitar and acoustic drum sounds (241 waveforms and 204 patches), this card is up there with the best.

SR-JV80-11: Techno

This card provides pretty much what you'd expect — tortured synths, cheesy pianos and organs, TB bass sounds and stacky stabs — not to mention a whole bunch of hard-hitting synth leads, squizzy pads and analogue mayhem. Tucked away within the total of 255 waveforms and 266 patches are ring modulator sounds, filter sweeps, guitar effects, FM synths and the odd loop (which you

can sync to MIDI clock). If you get bored with that little lot, you also get eight new techno-flavoured drum kits to play with.

SR-JV80-12: Hip-Hop

In addition to the usual hip-hop fare spread over 255 waveforms and 256 patches, this card provides 40 complete rhythm or phrase loops, mainly of the 'boom, cha, b'boom boom cha' variety, but all very authentically arranged and processed. You also get one or two human beatbox loops, of the Bobby McFerrin type, that actually work really well. Of course, there's the inevitable embarrassing yell of 'Yo', 'Pumpin', or something equally inane, for the benefit of those unable to say such words themselves! Synth sounds are provided in spades, as are processed guitar and drum sounds and, as with the previous card, there are eight more drum kits to abuse. If you like that kind of thing, you'll love this kind of thing.

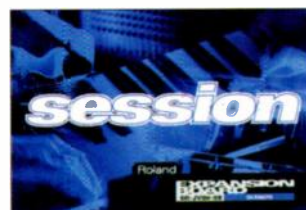
Summary

Considering the limited memory of a ROM card compared to that of a sample CD-ROM, these expander cards, some of which feel to me as though they may have had something to do with those behind Spectrasonics' sample CDs, make a creditable attempt at bridging the gap between a traditional

"The Pop card is an ideal starting point for anyone who doesn't want to commit to any of the more specialised expander cards."

synth and a sampler. They are relatively expensive considering the minimal hardware involved, but, as with a sample CD-ROM, you're really paying for the sounds, not the piece of plastic they come on. Only a few of the sounds are actually disappointing, specifically some of the flute samples with their looped vibrato (this is not a problem on the Orchestral card, however). Other than that, my only real criticism is the amount of sound-type duplication — though not duplication of the sounds themselves — across the Pop, Session and Super Sound Set cards.

The Pop card is an ideal first card for those working mainly on pop and rock, while Session and Super Sound Set provide useful tools for those with a slightly wider musical brief. I can't really fault the Orchestral card at all, and the World set is good for rounding out your collection of unusual percussion or adding ethnic instruments to your repertoire. If your bass player has just left (or, worse still, announced that he's written a song he wants the band to do!), the Bass and Drums card is supremely flexible. My next buy will probably be the excellent Orchestral card, though anyone into dance music would do well to listen to the Hip-Hop and Techno collections, as the sounds provided are pretty much on the ball. **SOS**

**Roland Report**

The JV synths and their relations were reviewed in **SOS** in the following issues:

- JD990: June 1993
- JV1080: December 1994
- JV2080: April 1997
- JV1000: July 1993
- JV880: March 1993
- JV90: March 1994
- JV80: April 1992
- XP80: May 1996
- XP50: June 1995

information

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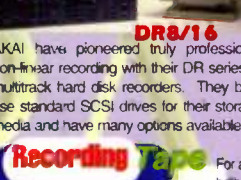


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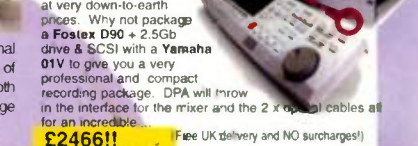


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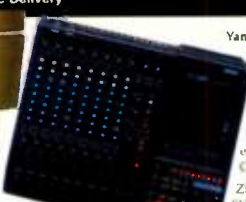
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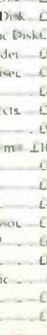
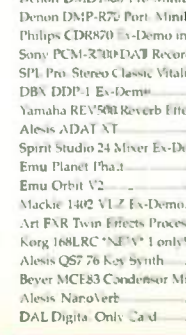
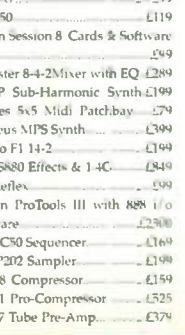
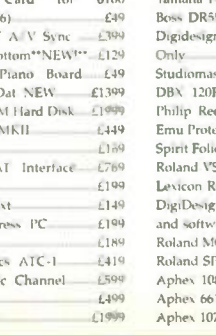
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Audity 2000 Key Features
• 640 Presets
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• 12th order digital resonant and modeling filters
• MIDI clock modulation features
• 24-bit dual stereo effects processor
• 4 real-time control knobs
• 6 audio outputs
• 16 part multi-timbral
• 32 voice polyphony
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route master

An increasing number of mid-market digital recording consoles is now available, such as Yamaha's O2R, Tascam's D8000, Soundtracs' Virtua and Amek's Soho, to name but a few — and this is precisely the market sector Mackie are competing for with their new and long-awaited d8b digital recording console. Although already shipping in the States, the d8b's arrival in Europe has been delayed longer than planned by the CE certification process. However, the approval tests are now nearing completion, and the d8b should be available by the time you read this.

When compared to the obvious competition, the technical design and implementation of Greg Mackie's new desk is rather different to most, and the operational ergonomics make this one of the most analogue-like digital desks I have used to date. Although immensely powerful, the d8b is surprisingly intuitive to master, and I found myself tracking, overdubbing and mixing with little recourse to the Owner's Manual — a rare thing with many digital desks!

The primary function of the d8b is as a 24-track recording console, and that is what this review will concentrate on, although the console obviously also has applications in the broader scheme of things including live sound, theatre, and post-production work. The technology is impressive: 24-bit converters, 32-bit fixed-point internal processing, 48 EQ and dynamics processors permanently available, and Apogee's UV22 dithering process, to name just a few of the highlights.

What You Get

The 'console' arrives in two boxes: one very large and heavy, the other slightly smaller but just as heavy! The larger box contains the control surface — the recognisable part of the mixer — whilst the smaller box contains the host computer. This is an industrial PC (a 166MHz Pentium), but before the Macophiles amongst you turn the page in disgust, I should point out that this CPU runs entirely on Mackie's own proprietary operating system — there is no DOS or Windows anywhere near the hard drive! The CPU is used to configure and control the entire system, downloading software to the DSPs on boot-up, loading effects algorithms when required, and logging the automation and snapshot data. It also provides an alternative

MACKIE D8B DIGITAL RECORDING CONSOLE

You know how it is — you wait ages for a buss, and then eight of them come along at once. **Hugh Robjohns** flags down Mackie's entry into the digital mixing fray.

means of control through a very detailed graphical display with a point-and-click style of operation.

Although not supplied as standard with the system, a normal SVGA monitor, PS/2 mouse and keyboard can be connected to the relevant ports on the back of the PC to provide this graphical interface, which is heartily recommended, although a 17-inch screen is the practical minimum size, as an awful lot of information is presented on it. Although the screen/mouse/keyboard interfaces are not essential — the desk is surprisingly easy to use with just the built-in fluorescent alphanumeric display — the point-and-click graphics on screen provide a very useful overview of the entire console, including the EQ response, and allows very fast visual manipulation of settings on any required channel.

In terms of its fundamental operation, the console is divided into two parts: the left section carries the faders and key channel controls, whilst the master section on the right carries assignable controls for EQ, dynamics and internal effects, track routing, automation, various system functions, monitoring and the alphanumeric display. Essentially, the d8b is a split console with separate sections for recording, monitoring, mix groups and effects returns, all of which are accommodated on just 24 motorised faders by using four separate banks or pages, each bank representing a separate section of the desk.

The first bank is concerned with the main analogue recording inputs — 12 mic/line switchable inputs plus a further 12 line-only inputs — which can be flexibly routed to the 24 tape





MACKIE D8B £8995

pros

- Well thought out.
- Immensely powerful.
- Sounds good — good EQ and dynamics, converters, and mic amps.
- Intelligent use of VDU graphics combined with hardware controls.
- Third-party plug-ins for future enhancements.

cons

- Unacceptable fan noise from PC.
- Aesthetics and ergonomics of the master section slightly dubious.
- External clocking option not yet available.
- Lack of inserts on groups and main outputs.
- VDU/mouse/keyboard not included in RRP.

summary

The Mackie d8b is the closest that any affordable digital console has come to being as easy to use as an analogue console, whilst providing all the power and flexibility of a digital board.

SOUND ON SOUND

track outputs (or the eight mix busses, or L-R stereo outputs). The tape returns are brought into the second bank of faders, which would normally be allocated to the L-R stereo buss as a monitor mix (or alternatively to the eight mix busses for surround work). The third bank of faders handles up to 16 returns from the internal effects processors, plus a further eight inputs accessible through an optional I/O card. Finally, the fourth bank provides eight virtual groups, eight subgroups and eight MIDI controllers. The main stereo output fader is physically separate from the 24 input faders and remains available at all times.

If you add up the input channels you will find that the d8b offers a maximum of 56 inputs (12 mic/line, 12 line, 24 tape returns, and eight alternative returns through an optional I/O card) which is a lot given the relatively small footprint of the console. Clearly, the fader-paging approach saves a great deal of space, but so too does the use of assignable controls for functions like EQ, dynamics and routing, which are handled by a section called the 'Fat Channel'.

The Channel Strip

The channel strip of the console is very simply and clearly laid out (see pic above and close up on page 158). Starting at the top are the pre-fade

input meters calibrated in dBFS (decibels below digital full scale), with a nominal alignment of +4dBu equating to -15dBFS. There is then an analogue gain trim control and (on the first twelve channels) a mic/line switch. Phantom power is provided by individual channel switches on the rear panel adjacent to the mic input XLRs. Since the trim, mic/line and phantom power controls operate entirely in the analogue realm, they don't fall under the watchful eye of the dynamic automation and snapshot memories, and they cannot be adjusted remotely from the graphical display on screen either. For the mic/line channels, gain is adjustable over a 60dB range (0 to +60 or -20 to +40dB for mic and line modes respectively) whilst the line-only channels offer a slightly smaller range of -20 to +20dB. As the trim control is part of the analogue input circuitry, it remains active on the relevant inputs no matter which fader bank is operative.

The remaining six buttons and controls in the channels strip are all part of the automation system, so their settings can be memorised and recalled as appropriate — every switch contains an LED to indicate its status. Below the mic/line switch

MACKIE D8B

► is a button labelled REC/RDY which sends MIDI machine commands to a suitable tape or hard disk recorder to arm or disarm the relevant tracks for recording. The light in the button flashes when the track is armed, but lights continuously when the machine is actually recording. Next down is the Assign button which is used in conjunction with the track routing panel in the master section. The button can be used in two ways, either to select a channel for allocation to specific tracks or buss outputs (by pressing the relevant buttons in the routing section), or to interrogate which channels are already assigned to tracks by pressing the track button and observing which Assign LEDs illuminate. The third button in this upper trio is labelled Write, and this simply enables the recording of automation data for the channel.

All digital consoles use special kinds of control knobs called 'shaft encoders'. These don't have end-stops like conventional controls, and instead simply note the degree of rotation applied in whatever direction. Instead of a pointer, an array of LEDs is used to show the original position of the knob (which can be instantly updated when the function of the knob is changed), and to provide feedback of its movement. There are all manner of engineering designs, each with their own proprietor's marketing name tag, and Mackie have chosen to call theirs V-Pot. Presumably as a means of controlling costs, the V-Pot uses only a 12-segment LED array around the base of the knob to indicate position, and this appears to give it a much more coarse resolution than is actually the case. The inclusion of an additional LED inside the knob is a thoughtful touch — when the knob is centred, this LED lights up, which is helpful, as in this position, the V-Pot itself would normally obscure the user's line of sight. A V-Pot is available in each channel strip, as well as in various parts of the master section, not least the 'Fat Channel' used to control EQ and dynamics functions.

The V-Pot on the channel strip defaults to being a Pan control, but can also be globally assigned to any of the eight mono and two stereo auxiliary sends, tape send level, or tape return level trim (ie. input level to channels 25-48). Immediately below the channel V-Pot, a pair of LEDs indicate which of the four fader pages are currently active. The top LED indicates the first (input) page, the bottom LED the second (return) page. Both lights illuminated mean the effects return page is active, and neither light implies the fourth, groups and MIDI controllers page. Although the first two modes are clearly indicated by the panel legend, there are no obvious markings which give clues as to the other two possibilities.

We now have a group of three more buttons before the fader, the first of which is a button labelled Select. This is used primarily to access the EQ and Dynamics functions for the relevant channel on the assignable Fat Channel in the master section of the desk. The button also plays a role in cut, copy and paste operations, in creating stereo pair assignments and in



The d8b's Master Section (see opposite).

Automation

One of the most critical elements of a desk like this is how easy the automation is to use. I am a firm believer in the benefits of moving-fader automation and the Mackie desk works very well in that regard. The three simple modes are sensible too: absolute for the first pass, Autotouch when it's nearly right but you want to be able to grab something when you notice it, and then Trim Levels for the final bit of polishing. The ability to select only the key elements for automation is also very useful, providing 80 percent of the flexibility on just a couple of buttons. Simple but effective, and perfectly intuitive after the first few seconds of playing with it.

The 'Fader Motors Off' mode is a bit disconcerting. Apparently some people find twitching faders off-putting, but having all the faders sat on the base line with a mix coming

out of the speakers was more than I could cope with!

If you are using the VDU screen with your d8b, you have access to the 'Mix Editor'. This is a software package which allows visual editing and manipulation of automation data, allowing you to create the absolutely perfect automation pass, or to correct those mutes where the drummer always managed to hit the buttons fractionally late... The system is a little too complex to cover in any real detail in the space I have left, but suffice to say it is impressively powerful and is another good reason to invest in a decent monitor for your d8b. A big screen makes a good product really great. You don't have to play Davros (of the Daleks) and use mice and track balls all day — the buttons on the desk do almost everything you would want — but some things (like dragging EQ curves, or setting up groups and stereo pairing) are so much easier on the screen.

grouping assignments.

The last two buttons are the familiar Solo and Mute which are arranged just above the fader, exactly where one would expect them to be. Normally, the Solo is post-fade and post-pan, offering 'stereo-in-place' soloing, but can be changed globally to provide PFL or AFL if required. The Mute button kills the output at the routing section of the signal path but leaves the tape outputs, the solo buss and any pre-fader aux sends unaffected.

Finally, the fader is a full-length motorised 100 mm design which repositions itself according to automation data or when switching between fader banks. They feel fine to operate manually and can be lightning fast if necessary when moving under the automation control, but have the strange characteristic of stopping fractionally short of their final resting position and slowly creeping into position. It is of little significance operationally, but it was slightly disconcerting to see them creep almost imperceptibly whilst 'groaning' quietly!

The Master Section

The master section is, in my view, the weaker of the two main desk elements — not in its content or technical abilities but in its ergonomics. The problem is that the desk is essentially black, and virtually all the buttons are, you guessed it... black. This might look good on a graphic designer's sketch pad, but makes it unnecessarily difficult to find your way around. Sure, the buttons are grouped sensibly enough, and the panel markings are good, but with well over 100 buttons in this section, a little colour would have made the recognition of functions so much easier and clearer!

Whinge over! The master section is divided into 12 logical parts, most of which are instantly recognisable and located where one would expect to find them. Across the top of the master section, directly below the fluorescent display, is the Fat Channel — a collection of four V-Pots and several buttons which works on a soft-function basis according to the screen legends. The Fat Channel controls the various DSP parameters for a selected channel including EQ, dynamics, and internal effects selection and parameters. Since the buttons and knobs relate directly to display messages, the Fat Channel controls are also used in a lot of the housekeeping functions such as file and disk management, synchronisation settings,

naming duties, error messages and so on. To enable easy future upgrading and expansion, and to encourage third-party developers of effects plug-ins and the like, Mackie have given the Fat Channel an open architecture, and some third-party software is already available (such as the *IVL Vocal Studio* which provides specialist harmony, pitch correction and reverb processes).

Below the Fat Channel, the two headphones and Cue/mix sections provide independent cue feeds derived from either of the two stereo auxiliaries (9/10 or 11/12), the control-room feed (but without solos of course), or any other selected auxiliary. This last function is quite clever in that the current monitor fader mix is copied on to the selected auxiliary send controls, allowing a basic cue mix to be created instantly, and requiring only some minor tweaking to produce a perfect cue signal. A V-Pot determines the overall cue level.

To the left of the two Cue sections is the Studio and Solo section. The left half concerns the various solo modes: PFL, AFL, and mixdown. The first two should be obvious, and the last is a destructive solo where the selected channels are unaffected, but everything else is muted. Incidentally, it appears that the solo buttons are always additive and latching. The centre of the section has a large red LED which flashes whenever any channel is soloed, and below this is a V-Pot control. The right half contains four more buttons, the first of which clears all selected solos, and the remaining three allocate the V-Pot functions. The options are Solo Level (ie. the control room level when any solo function is activated), Studio Level (monitoring output to the studio), and Talkback Level (talkback mic level).

Directly below the Studio/Solo panel is the Control Room section with all the normal facilities for selecting monitoring sources (three two-track master recorders, AES-EBU and S/PDIF digital inputs, and the main stereo mix buss), a mono switch, nearfield and main monitor selectors, a dim button and another V-Pot for monitoring volume. The only oddity in this section is the talkback button which routes the internal talkback mic to the Cue mixes — it might have been more logical to have placed this switch with the Cue Mix panels, although it is closer to hand where it is.

Alongside the control room panel is the Buss Assignment section. This is obvious for the main part — simply press the assign button on the appropriate channel and select the desired buss 1-8 output or

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MACKIE D8B

► L-R stereo buss. Alternatively, pressing any of the buss buttons will illuminate the assign buttons on the routed channels. Routing channels direct to tape is rather less obvious and I had to resort to reading the manual. The difference is that this function requires three button presses: first the Route To Tape button is pressed before the Select button on the desired source channel, and then the Assign button on the appropriate tape track output. In effect, this is a built-in patchbay and once its operation is understood, it is incredibly fast and simple to use. The drawback is that the existing tape routing is not obvious from the console itself and it would not be hard to reallocate a track in error...

To the right of the Buss Assignment panel are the Automation and Session Setup sections. The first provides the control functionality for the automation including selecting what is to be automated (faders, mutes, pans or everything), a complete automation bypass mode to disable the system, and a button to disable the fader motors. There are just two automation modes: the Auto-Touch mode automatically write-enables any control parameter when it is manually adjusted, and the Trim Level mode which allows fader levels to be tweaked rather than rewritten. The Session Setup section is concerned with file management and core system functions such as the Digital I/O configuration, meter assignments, downloading plug-in effects algorithms from the host PC, and configuring MIDI parameters.

The largest section is the transport panel which provides a time display, a second numeric readout associated with the snapshot automation controls, and a full set of transport functions for any MMC-equipped recorder (or Sony 9-pin compatible device via an optional Video Sync I/O card). The time display can be configured for SMPTE (HH:MM:SS:FF), or MIDI timecode (Bars:Beats:Ticks) and the secondary display shows either snapshot memories or locator points depending on the selected mode. A 0-9 keypad is provided for data entry and at the bottom of the section a large jog/shuttle wheel allows precise control of suitable machines.

To the left of all this is the master strip with the main stereo output fader at the bottom. Immediately above the fader are a block of four fader paging buttons providing access to channels 1-24 (inputs), 25-48 (tape returns), 49-72 (effects returns) and the masters. Also in this group is a Shift button which permits multiple channel Select buttons to be engaged simultaneously, and is useful in cut/copy/past commands when the settings from one channel are to be copied into several others, for example.

At the top of the Master strip is the Master V-Pot assign section which determines the function of the channel V-Pots. Dedicated buttons select any of the 12 auxiliary sends (1-8, 9&10, 11&12) and the last two pairs have associated Pan buttons to configure the V-Pot to adjust the panning from mono channels onto stereo Auxiliaries. Two other buttons assign the V-Pots to control Level to Tape

EQ & Effects

The EQ on the d8b is really rather nice for a digital console. Peter Watts, who designed the classic Trident consoles of the Seventies and Eighties, is the man responsible. Apparently, the digital algorithms used in the d8b are modelled on the analogue EQ sections of his beloved 80-series desks... They certainly seem to have an ability to add character to a sound as well as just making it louder or quieter at specific frequencies (which is the very pure engineering approach taken on the Yamaha consoles for example). The EQ is a four-band device with adjustable Q over very usable ranges. The system is equipped with A/B memories as well as a bypass so different settings can be compared with the original if required (a facility to morph between settings A and B is also available).

The gating and compression programs are very effective tools too, with a good selection of controls offering sensible ranges. One criticism here though — the default mode for the gate has the range control set to 0dB (ie. it doesn't do anything). It would be far more user-friendly if it started with the range on

maximum so that the threshold could be determined, and then the range reduced if necessary — I found myself cursing at the gate on numerous occasions for not apparently doing anything as I furiously dialled the threshold up and up and up...!

Mackie's onboard effects provide five basic but flexible algorithms for reverbs, chorus and delays (all with their own 3-band EQ) which would be more than adequate for most purposes. As with any digital console, breaking the signal out to external effects processing is not quite as simple as it is on analogue desks, although the provision of 12 aux sends and loads of inputs means that it should be possible to configure even the most elaborate of setups without too much trouble. Patching a classic compressor across the main output or a group is rather more difficult — well, impossible really — but the onboard effects are usable, and I'm sure third-party algorithms such as those already available on the Pro Tools platform will be ported across pretty quickly. I believe there is even a version of the DSP card being developed which will use the same chip as the Pro Tools system to make that conversion easier.

or Digital Trim (tape return levels). Below these selection buttons is the Master V-Pot which provides the auxiliary master control for each selected Aux send, complete with its own solo button. An adjacent button selects the channel V-Pots to function as pan controls.

The Rear Panel

The rear of the d8b is largely self-explanatory — at least at the analogue end. The first 12 inputs feature electronically balanced mic inputs on XLRs with associated individual phantom power switches, plus balanced line inputs on TRS quarter-inch jack sockets. Unbalanced insert points (send on the tip, return on the ring) are also provided. Inputs 13-24 are provided only with balanced line input TRS sockets.

The output section is a similarly conventional arrangement with TRS sockets for the three balanced two-track returns, nearfield and main control room monitors, studio speakers and the

"Although immensely powerful, the d8b is surprisingly intuitive to master..."



two cue mixes. There are also two footswitch sockets for record punch in/out and to enable the studio talkback. The main master stereo mix buss outputs are available on both TRS sockets and male XLRs, and the 12 aux sends are also available on more TRS sockets (irrespective of whether the associated internal effects processing is being used).

On the left-hand side of the console (as viewed from the rear) is a 'card cage' which accommodates the optional digital I/O cards and additional effects

Round the back. Note the empty expansion slots for further DSP cards and I/O options. Blanking panels are provided.

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MACKIE D8B

► DSP cards. The Tape I/O section can accept up to three analogue or digital interfaces (only an analogue card was supplied with the review machine), each of which provides eight channels of record and return signals. The analogue cards use 'D'-Sub connectors employing the Tascam wiring convention, whilst the digital cards (designed by Apogee) combine both ADAT optical and Tascam TDIF interfaces on the same card, complete with a word clock output signal for synchronisation.

The fourth slot in the cage accepts the Alt I/O card which provides eight additional analogue or digital inputs and outputs. Although not available at the time of writing, Apogee have designed a low-jitter clock card which will replace the Mackie one currently housed in the fifth slot. The new card will have word clock I/O, and in addition SMPTE In and Thru connections will be added to the MIDI card in the host CPU. The sixth slot houses the standard stereo digital I/O which provides AES-EBU and S/PDIF inputs and outputs. The outputs are derived from the stereo mix buss and the inputs feed the monitoring selector directly.

The last four slots in the card rack are allocated to DSP effects cards. The console is shipped with one card installed in Slot A, providing two mono-in, stereo-out channels normalised to Aux 1 and 2 for the sends, and returned on FX1/2 and 3/4. Three further cards can be installed to provide a full complement of internal effects processing.

The only remaining connections on the rear panel are to link the console with the host CPU. A 'D'-Sub connector carries all necessary data between the two, and the most meaty connector imaginable conveys the power supplies. Apparently this over-engineered connector became necessary to comply with the FCC and EC regulations for screening, and it certainly looks impressive.

The host CPU is much as any other PC, with the usual IEC power inlet and loop-through for a monitor, plus the chunky fixed power cable to the console. I was disappointed to find that the cooling fan seemed to be a constant-speed device which was unacceptably noisy — a real problem since the power and data cables to the console are only 15 feet long. The rest of the connections include standard PS/2 mouse and keyboard ports, a serial port (to accept a joystick or trackball device for surround-sound panning), a parallel port, a colour SVGA monitor port, and an RJ45 ethernet socket (allowing software upgrades and plug-ins to be downloaded from the Internet — and permitting the connection of other d8b desks). Finally, an adaptor is provided for MIDI input and output on the usual 5-pin Din sockets. The front of the host CPU carries nothing more than a floppy disk drive and a power on-off switch.

Running It In

Powering the d8b up takes about a minute as the system checks itself before downloading the core DSP algorithms from the host CPU to the console. The console always boots to the condition in

which it was last used — useful protection against an unfortunate power-down during a session. There is also an auto-save function which will back up the session data either after every pass of the automation, or after specific time intervals. Loading an effects algorithm takes around 30 seconds, but could be longer depending on the complexity of the algorithm, and the number of effects cards in the system.

Selecting the sample rate of the internal word clock is easy — simply press the General button in the Setup panel of the Master Section, and scroll through to Sample Rate. The two choices are 44.1 and 48kHz, although these will be extended when the Apogee external clock card becomes available. There were a number of minor discrepancies between the manual and the operating software on the machine, but none that couldn't be figured out with a little perseverance. In fact, the manual appeared to be a pre-production version as there were several pre-proofing queries and requests for additional information from the technical authors left in! Even in this form, though, the Owner's Manual is quite superb and extremely readable. It takes you through setting the console up and running a session from the ground up, and although it looks like a daunting prospect, it is very helpful and easy to follow.

Once the basic settings of the desk have been established (normally a once-and-forget task), the session can be started. All session data is stored on the internal hard drive (and/or removable floppy disks). Sessions can contain up to 100 snapshots and 100 locate points, and separate libraries are provided to store or recall useful settings for the EQ and dynamics processors, with factory presets as well as user memories.

Saving and recalling snapshots or locate memories only involves pressing the relevant mode button, followed by a two-digit memory value, and either enter to recall it, or save and enter to store it — all instantly intuitive. It is also possible to set loop points for the locate memories using an obvious button labelled Loop to define the loop-back point — this all assumes a MMC-equipped recorder of course.

Setting levels and optimising the signal path through the machine is as straightforward as an analogue console once you become familiar with the digital metering. Routing the signal through to tape and optimising levels is logical enough once understood, and setting up the monitor mix is back on *terra firma* again. As with any console using fader paging (or an in-line console with



A close-up look at the d8b's channel strip (note the V-Pot a third of the way down).

"The Mackie d8b is an impressive desk by anyone's standards. For me, one of the best things about it is that it feels more like an analogue console than virtually any other digital desk I have experienced to date..."

switched EQ options, come to that), you need your wits about you when it comes to applying signal processing, just to make sure that you are treating the signal you really mean to. It is surprisingly easy to find yourself adjusting the tape send signal when you meant to tweak the monitor signal. This problem obviously recedes with experience of the console, but it is also much clearer if you use the VDU screen — I started without and probably picked up some bad habits.

Verdict

The Mackie d8b is an impressive desk by anyone's standards. For me, one of the best things about it is that it feels more like an analogue console than virtually any other digital desk I have experienced to date (bar Sony's OXF-R3 'Oxford' console — but we are talking third-world national debts for one of those!).

With most of the current crop of digital desks, there tends to be a layer of complexity between the operator and the job in hand which was never there with analogue mixers. Nothing insurmountable, and familiarity allows far greater things to be achieved than ever before, but desks like the 02R or 03D, the Virtua and others just don't seem to be as inherently intuitive as the majority of analogue desks, and I often find myself having to think about how to do something rather than what I want to achieve — with the danger of stunting creativity. The d8b does not seem to suffer from this syndrome to anything like the same degree. You don't find yourself looking at a small LCD screen to figure out where the pans are, or what the EQ is doing — it is all laid out in front of you, and mostly in places where you are used to looking. The VDU screen presents the whole desk in a very traditional way, and can be manipulated in a click-and-drag process, so again everything appears where you

expect to see it, and can be modified very intuitively. That makes a huge difference when the pressure is on and the job needs to get done.

Aside from the fan noise of the host PC, my only real complaint is that the desk is very black! Trendy it may be, but it can become fatiguing to work on after long periods in low lighting. Coloured buttons and a slightly lighter base colour would help here, as would better graphics to differentiate the master section panels more clearly. But these are relatively minor complaints in a sea of positivity! There are a few things the desk can't do yet — the most obvious one being its current inability to resolve to an external word clock, something which completely removes the console from the shortlist of broadcast or video post-production houses. However, these issues are being addressed, and the desk will meet these challenges in the near future.

For the time being, the Mackie d8b is a music recording and production console, and a damn good one. Expensive it may be, and the costs of the VDU, mouse and keyboard must be added on top (as would some form of VDU extender system to allow the host PC to be put away in a machine room). This puts the d8b a few grand above a fully loaded Yamaha 02R, but still substantially lower in price than any other comparable digital desk. At the AES Convention in San Francisco, Mackie were using the slogan "democratising digital", and in many ways they are bringing the qualities and flexibility associated with big-name desks into a more affordable range. The icing on the cake is the possibility of third-party plug-ins, which means that the potential for customising and expanding the capabilities of the desk is enormous. Look what it did for Pro Tools — and, like Pro Tools, I think that the d8b is destined to become an industry standard. **SES**

information

E d8b £8995; all analogue and digital I/O cards £395; effects card £489.

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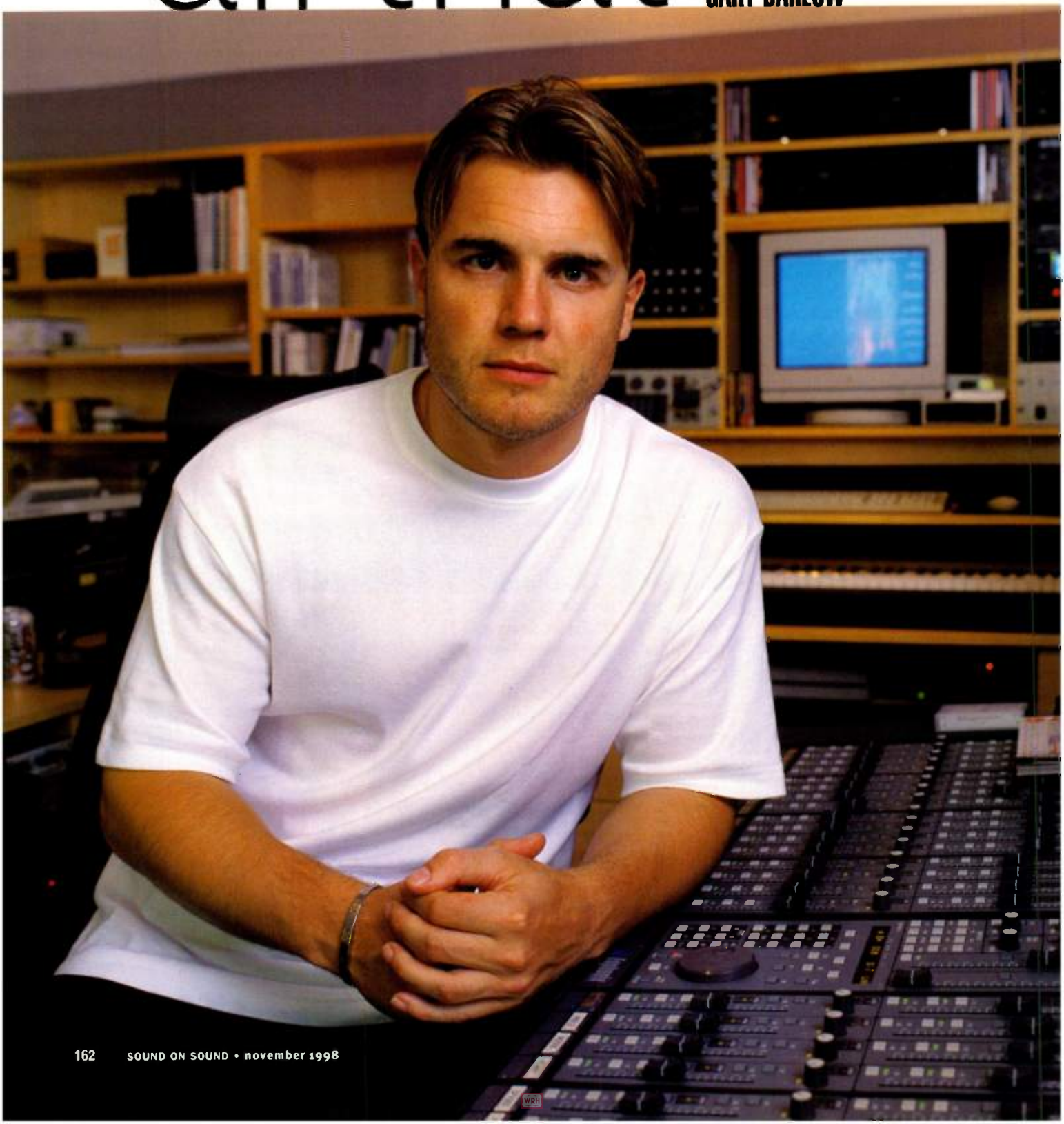
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interview

gary
barlow

goodbye to all that

**RECORDING, PRODUCTION
& SONGWRITING WITH
GARY BARLOW**



Most people knew that Gary Barlow was the songwriting force behind boy-band stars Take That, but his long-term interest in production and recording is less well documented. Now recording and co-producing his second solo album, he looks set to put the memory of his former band far behind him. **Matt Bell** pays him a visit at his impressive home studio.



All photos, unless otherwise stated, Richard Ecclestone

"Are you *sure* this is it?" I murmur uncertainly in the general direction of the passenger seat, whilst craning my neck out of the car window to survey the surrounding North-West countryside, "I think it might have been down that lane there on the left". All of a sudden Richard Ecclestone, *SOS*'s photographer for this particular day's work, brightens perceptibly. "This is *definitely* the place, Matt," he grins, and points some 200 yards down the road, to a double gate in some roadside railings remarkably like the padlocked rusty affair outside which we have come to a halt. This one, however, is freshly painted, and is further distinguished by an attendant gaggle of about 20 teenage girls, patiently waiting for the occupant of the house behind the gates and railings to emerge. Some even vainly clutch what look like gifts.

It may be over two and a half years since the demise of Take That, but Gary Barlow's fans are a terribly tenacious lot.

Hello To All This

Sitting with top-notch freelance engineer Ren Swan in the fantastically well-equipped home studio located at the side of his English country manor house, Gary Barlow, once the sole songwriter in the massively successful boy band Take That, and now a solo artist, has a couple of shocks in store for us. Firstly, despite the oft-ego-enhancing effects of seven years of dealings with the mass-market music industry, teenage adulation on a global scale, and the accumulated proceeds of a respectable brace of self-penned number ones, he's a tremendously nice bloke. Secondly, he is *very* keen to talk to *Sound On Sound*.

"I've always bought *Sound On Sound*, and I've wanted a feature for ages," he explains, beaming us welcome. "Unfortunately, this isn't the obvious kind of thing for a press person to consider, 'cause naturally they don't really know what goes on here. I'm really into talking about gear and production, I love it, and it's a side of me that people don't even know exists."

Ah yes, a distant bell rings... wasn't Gary the one who actually wrote all the songs in Take That? Well, that explains it then; he must have at least a passing acquaintance with the inside of a studio. But surely Ren Swan will be handling all the *real* work? As we while away the afternoon watching

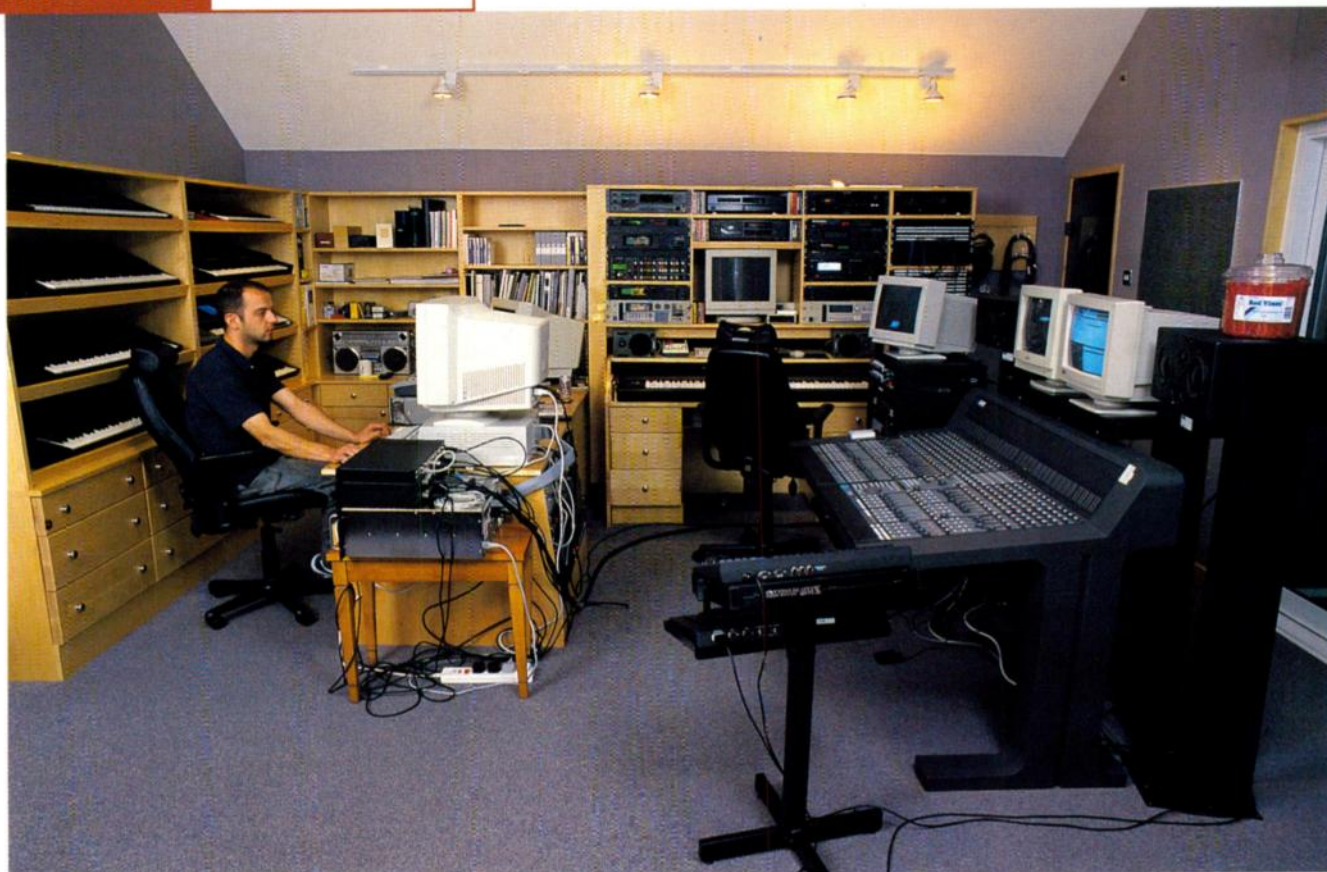
him hard at work on his second solo album, however, adjusting outboard valve EQ here and bouncing a set of finely textured backing vocals through Pro Tools plug-ins there, it becomes abundantly clear. Forget everything you might have thought you knew about Gary Barlow. When it comes to modern hi-tech recording and production, this guy knows *exactly* what he's doing.

Off The Road

While Gary might not yet have succeeded in making many people outside the record industry aware that he knows the difference between, say, an Otari RADAR and an Atari ST, his other talents, those of gifted vocalist and songwriter, have never been in doubt. If by nothing else, his place in the pop star firmament is forever secured by his superb 1995 worldwide number one single for Take That, 'Back For Good'. At the time of our interview, Gary is charging headlong into work on his as-yet-untitled second solo album. At this stage (August 1998), he conservatively estimates that no more than 40 percent of the new record is in the can, but already it seems to be shaping up quite differently to his first post-Take That album. The adult contemporary leanings of 1996's *Open Road* weighed perhaps a little too heavily on Gary's still very youthful shoulders; but then, as Gary's friend and now producer and co-producer Jon Douglas will say later, "Gary's still a young lad; he hasn't started sitting about in his country house with his pipe and slippers on yet, you know. I think on his first album he felt he had something to prove as a solo artist; on this record, I'd like him to be thought of as a bit more relaxed." Certainly, if what we hear of the work in progress is anything to go by, the new 'relaxed' approach is paying off: the song Gary and Ren spend the afternoon working on, 'All That I've Given Away' is, in my opinion, the best thing Gary's written since 'Back For Good'.

I'm Only Here For The Gear

Gary's studio, as should be apparent from the pictures accompanying this article, is pretty impressive. It's not huge, but it's beautifully laid out, being built around a main control room containing a 48-channel Euphonix CS2000 digitally-controlled analogue console, three Macs each running Digidesign Pro Tools systems and Emagic's *Logic Audio*, and two Otari RADAR multitrack digital recorders. A wooden rack packed with synth modules and controlled from a Roland master keyboard takes up most of a wall, while a variety of keyboard synths line another, and racks of outboard — some of which is outrageously expensive — nest lower down, at crouching level. Off to one side is a live room for vocal work, which contains a Neumann MK149 mic and Gary's enormous white Yamaha Disklavier, the impeccably engineered acoustic piano which is also capable of recording all of its outpourings over MIDI. It's clearly not just any old home studio, and yet Gary is as relaxed in it as if it were a



► bedroom containing a couple of second-hand reel-to-reels and a Studiomaster mixer.

Gary's fascination with home recording and production goes back almost as long as his interest in songwriting. Although, like so many others, he was the victim of a sustained campaign of piano lessons when he was young, the first keyboard he owned himself, at the age of 13, was a Roland SH101 monosynth, although he rapidly outgrew it and began playing a Hammond organ. By 14, he was playing in working men's clubs at weekends to save up for a Yamaha DX7. He was hooked. "All the money I earned, I put back into gear. It took me 13 months to get the DX, but it was worth it. I used to go out playing club gigs and get in at two in the morning, and then put on my headphones and play until four... I was mad. That was another good thing about the DX7, though; I could play with headphones and not disturb anyone.

"I earned 140 quid a week, which most people would have thought was a lot of money then, but not if you had a bedroom studio, it wasn't! Studios are like black holes when it comes to money. I got the Roland D50 workstation then, which was brilliant for the time, and bought an Atari ST and *Cubase*. I had a tiny Boss 16-channel mixer, and a Roland TR707 drum machine — that seemed the real deal, then, because it was on *Top Of The Pops* every week!

"I began to write when I was about 14 or 15, and wanted to start putting stuff down onto multitrack, so I got a Fostex 260 4-track. I had a 8-track cassette multitracker for a bit, but then I went back onto reel-to-reel, with a Tascam 24-track. I had that for quite a while, until I worked with a guy called Nigel Wright on the first Take That album. He had two

ADATs; that was when I first experienced digital recording. Anyway, Nigel said that if I had a couple of ADATs, I could record the whole band at my house, and just send the record company the tape. I thought that was a great idea, and the guys loved it, because it was so relaxed; they could just hang out at my place, and it didn't matter if anyone made mistakes when they were singing. I had three ADATs and a BRC. The only bad thing was, you needed to leave them about 30 hours for them to rewind and lock up together. That proved frustrating for singers; for example when I was recording the lads at my house, we'd often have to re-take because the ADATs hadn't started together in time."

Once Take That got their first taste of fame, the everyday pressures of boy-band life made it impossible for Gary to keep up with developments in studio technology. Access to his Cheshire-based home setup was also restricted because of the amount of time he spent in London. "For the first three years of Take That, I was hardly in the studio. Only to write, really. And even that was hardly ideal. 'On Monday and Tuesday, you go home and write some tunes for the album...' I couldn't just turn a key and come out with an album. So what I used to do was, when everyone would get the occasional week's holiday — that's when I would go home and write. I knew that if I didn't come up with the goods, we'd be doing cover versions for our next few singles, which would be the worst thing.

"I didn't have time to experiment with recordings in the studio, either. When I was in Take That, people would say to us 'right, for three hours on the 22nd of May, you're going to do some vocals in the studio... and then you're going

Ren Swan compiling backing vocals on Pro Tools at Gary's studio, August '98. To Ren's left is the corner containing the keyboard synths, where drum programming takes place on the Akai MPC3000. Behind Ren's monitor is another Pro Tools setup for audio editing. At the back of the room is Gary's writing/sequencing/sampling setup, and in the middle is the Euphonix CS2000 desk and Otari RADAR remote control.

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► to fly to Germany! There was never any time to really get involved in things.

"My first proper experience of recording after the band split was in 1996, when [producer] Chris Porter came up to my house for a whole month; after the way things had been before, that was just brilliant. I learnt so much from him at that point, and I started to get back into gear again..."

With his interests in recording reawakened, Gary had his current studio constructed with the aid of Manchester-based hi-tech retailer Sound Control. "It was worth doing, because I knew I'd be spending more and more time here for writing, and I'd always dreamed of having a studio like this."

RADAR Love

As already mentioned, the key elements in the control room of Gary's studio are the Euphonix desk and the Otari RADARs, of which he is very fond.

"I make a lot of my gear purchasing decisions from talking to other people I work with. I usually look at something really carefully before I buy it, especially software. The only thing I rushed into was the RADAR, and that was just because I was so tired of waiting for my ADATs to lock up. I like to ask

myself: what do I need this new thing to do? You've got to have a reason for wanting something; there's no point just buying something for the sake of it."

So what attracted him to the Euphonix? The answers, it seems, lie in the CS2000's instantly repatchable digital routing flexibility, instant recall, and uncoloured sound, although it took producer Chris Porter to bring the latter to Gary's attention. "The main difference was the instant recall. It means I can be working on three or four songs at a time. Something as simple as an EQ move can inspire me, and then all I have to do is press a couple of keys and it's stored. It's also quick to use. I have a lot of musicians coming up here, and it's so fast for getting balances and mixes right... it's just the best desk there is. I also love it because you don't hear it. SSL desks have a sound that I just don't like; they make everything sound very compressed, they almost shave off all the top end. But Chris Porter's mixes on his Euphonix always sounded crystal clear. He pointed out that it was the SSLs that were giving the other mixes the sound I didn't like. Ever since then, I can hear it. I can listen on the radio and I know when something's been mixed on an SSL.

Gary's Gear — Selected Home Studio Favourites

KEYBOARDS/SYNTHS

- Clavia Nord Lead.
- Emu Morphous.
- Emu Proteus 1.
- Korg 01R/W.
- Korg Trinity.
- Korg Wavestation A/D.
- Oberheim Matrix 1000.
- Roland A90 master keyboard.
- Roland D50.
- Roland JD800.
- Roland Juno 106.

"I don't use the Juno 106 much anymore. I used to use it for bass, but it's very uneven, you have to compress it a lot. One note in particular — I think it's a B flat on my 106 — is really loud, so when you hit that note it really blasts everything out."

- Roland JV880.
- Roland JV1080 & 2080.

"They're great. I bought the 1080 first and had all the expansion cards, which I thought were great, but because I liked it so much, I was using it for everything, I was always running out of

polyphony, so I got another one, a 2080, and filled that with cards as well."

- Roland VK7.

"I used to play a Hammond B3 — that's how I started to learn to play keyboards, I could play the bass pedals and everything — so I got a VK7, not convinced it would make the same sound, but it's brilliant. The overdrive is fantastic! Mind you, if I wanted Hammond on something, I'd get a real one in a studio in London and mike it up. There's nothing like the sound of a real Leslie, is there?"

- Studio Electronics SE1.

"The SE1 is only a couple of years old. A lot of people use them for bass, but I prefer them for lead sounds, really high analogue stuff. The only problem is that the longer it's on, the more out of tune it goes. It's the heat of the stuff around it in the rack. I've tried putting a blanking panel above it, but it hasn't solved the problem."

- Yamaha Disklavier.

"This is great for doing MIDI piano

parts; we mic it up, and the pedals move and everything in response to MIDI. It makes a beautiful sound; it inspires you straight away. I do a lot of writing sat here, especially the ballads. There was one track on the last album where I'd just finished writing the lyrics, and to try it out, I played the piano through the whole song, singing the finished lyrics for the first time. I took that recording to Chris Porter and he wouldn't let me redo it! That was how it ended up on *Open Road*; some very sparse drums were added to it, but that was it."

- Yamaha DX7.

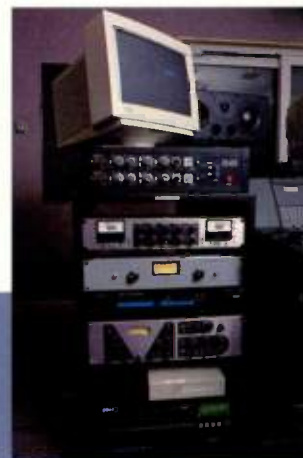
"I've still got my original DX7, but I had to sell my first synth, the SH101, to get that. I'm buying a replacement SH again at last, though! I couldn't bear to get rid of the DX7 ever. I've got such a big library of patches in that as well that I've created myself. I still use it for basses."

- Yamaha SY85.

RECORDING

- Alesis 3630 compressor (x2).
- Alesis ADAT digital multitrack.
- Alesis Quadverb multi-effects.
- Anthony DeMaria Labs Tube compressor/limiter (x2).
- Aphex Xpressor compressor.
- AMEK 9098 EQ.
- AMS Neve 1081 mic preamp.
- Denon cassette deck (x2).
- Digidesign Pro Tools 888 I/O unit.
- Drawmer DS201 gate.
- Euphonix CS2000 mixing desk.
- Genelec 1029A monitors.

"These are my favourite little monitors. I use the big Dynaudios in the wall for proper monitoring, but the Genelecs



The formidable Rack Of Doom (or highly expensive outboard): AMS Neve 1081 mic preamp, Manley compressor/limiter, Anthony DeMaria tube compressor/limiter, Lexicon PCM70 effects, Manley VoxBox voice channel, Otari RADAR digital recorder.



Gary's priceless aid to composition, the circa 1980-vintage Panasonic ghetto blaster.



Keyboards, keyboards, everywhere: (left) Roland Juno 106, Yamaha SY85, Roland D50, and Gary's original pride and joy, the Yamaha DX7; (right) Clavia Nord Lead, Roland VK7, Korg Trinity, Roland JD800.

are great for working at the programming station. They're amazing when you consider their size, and very good as an alternative when you're mixing, because they're quite hi-fi; you get a good sense of how it might sound on someone's system."

- Lexicon PCM70 effects (x2).
- Lexicon PCM91 effects.
- Manley compressor/limiter.
- Manley VoxBox voice channel.
- Neumann MK149.

"I used to have Microtech Gefells, but once I tried the Neumann, there was no going back. There's no better mic for male vocals than this one, it's a

"The RADARs are the other best two things I've bought. One travels with me to sessions elsewhere, the other stays here. They're so quick to use. I can do hundreds of tracks of backing vocals in no time — and it feels like a tape machine to operate, as well. Last week, we did a vocal session in London with Leslie Garrett, the opera singer, for the last track on the new album, 'Yesterday's Girl' — and it was done in two hours! The RADAR was backed up onto an Exabyte, packed into the car, and that was it!

"Basically, though, I think the RADAR is designed with singers and writers in mind. I love the way you can stick the recording bit in a rack out of sight and just forget about it. I can even just set up a mic here in the control room and sing straight to RADAR, controlling it from the remote transport panel myself, even on my own vocal sessions. George Michael did that a lot on the *Older* album, apparently. It's addictive to have control over what you're doing!"

killer. I think getting this was my best buy of all. It certainly beats my old SM58, which is what I had when I started."

- Otari RADAR digital multitrack (x2) & remote.
- Sennheiser headphones.

"Always use Sennheisers! If you do mention these, though, tell 'em to make longer leads, for God's sake!"

- Sony DAT.
- Tascam cassette deck.
- TC Electronic M2090 effects processor.
- Yamaha SPX900 multi-effects.

COMPUTERS/SOFTWARE

- Apple Macs (various types, including G3).
- "I've just upgraded to a G3 Mac with a Chetah drive in it, and it's just a dream. I do a lot of MIDI programming, especially when I'm making demos, and I want to get a million ideas on to the screen, and save them for later. I had loads of problems before, because the old Quadra 750 just wasn't powerful and fast enough."

- Emagic Logic Audio.

"Logic drives me mad; the timing just isn't tight. I still use it for keys, but not for drums. I was getting snares flammig all over the place, in really stupid places, and it's a pain putting it all into Pro Tools to correct it. Often, when we're laying to tape from Logic, we'll delete all the tracks except the one we're laying down. That's often the only way I can get it to be tight."

- Digidesign Pro Tools (x3).

DRUM MACHINE

- Akai MPC3000.

"I still like the idea of drum machines; I really do. When I worked with David Morales, he had an MPC3000, and I asked what it was. He said he did all his drums on it — and if there's one thing I do love about David Morales, it's his beats. He taught me how to use it in an afternoon, and

A Question Of Environment

Though compact, the studio has a definite feeling of having different areas devoted to different jobs. There's the live room for vocals and for Gary to write while at the Disklavier; there is the wall of modules and samplers with a computer for working up programming-based backing tracks or demos; there's an Akai MPC3000 sampling workstation for building up rhythm tracks; and now Pro Tools workstations for editing and compiling tracks, complementing the facilities running under *Logic Audio*. All this, I venture, together with the natural airiness of the room, make it a very pleasant environment in which to work. Gary's response is emphatic and reveals something of his creative process: "This is a *great* room to write in. I've always thought of music as environment-led. For example, if I've finished writing the melody to a song, I'll move out of the studio to write the lyrics, because lyrics

that was that. I bought one as soon as I could. I can actually hear tracks that have been programmed on these things now; they've got such a tight sound, with a real groove. They're brilliant for anything tripletty or swingy."

SAMPLERS

- Akai S1100.
- Akai 3200.

"These have been great, but they seem slow now. I think the time has come to exchange them for the new S6000s."

MISCELLANEOUS

- Behringer noise reduction.
- Dolby noise reduction (x2).
- MOTU MTP AV sync unit.
- Panasonic ghetto blaster.
- See the old tape machine in the corner, the Panasonic? I got that for my ninth birthday, and I still record all my ideas onto it when I'm writing songs. 19 years old, that is. It's the business."
- Powermaster Genesys drives.
- The 'Rack Of Doom'.

"This rack contains all the really expensive stuff; all the processing Ren gets into when he's here — I generally don't use it myself. If I'm just doing vocals, I'll just put it through one of the compressors before putting it to tape. Quite often, whatever I'm recording, whether it's guitars or synths, I bypass the Euphonix completely, just use it for monitoring, and go through this lot instead. I've got a Neve 1081 preamp in there which is brilliant for direct recording, and wonderful on vocals. We'll also often stick things through the Manley EQ when we're track-laying or bouncing vocals in stereo, and that's beautiful. I either compress with the DeMaria or the VoxBox. I prefer to do it like that; use outboard to create a sound I like rather than have the desk force its sound on everything."

SWITCH TO...

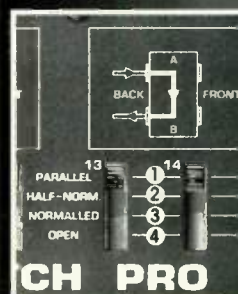
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► are not a musical or technology-based thing. I like it so that if somebody sits down and reads just the lyrics, they'll mean something without a melody going across them. And if I can sit at a table and be happy with the lyrics, then I usually know that they'll sound good in the track!"

Gary prefers to keep technology to the barest minimum when he is writing a song, either by composing at the acoustic piano, or by making use of his synths and technological aids, but in as unobtrusive a way as possible. "I'll just use a piano patch and bass, and a simple kit sound for just the basic rhythm, long before I start messing around with drum sounds and all that," he says. However, due to the complex way his vast array of modules and processors are interconnected, he paradoxically needs to use technology to keep technology out of the writing process: "Logic's Environment page. I have six Environments in Logic to help me route everything. The reason I like this setup is that if I'm writing, and I think 'oh, I can hear French horn part going over that bit' I can press a button and boom! there's my French horn sound; I don't have to mess about setting things up and plugging things in. Most of the outboard is set up in a standard way too, so every time I set up the Euphonix, for example, it'll have compression on the snare, and so on... just stuff you don't want to be bothered with when you're writing, because you have to keep focused on it. Writing's the hard bit; then comes the fun part, which is building it up from the original idea, and making it sound like a record!"

From Idea To Demo & Beyond

To turn a completed song into a finished record production, Gary often enlists the help of other producers, either to co-produce the final track, or to take over all production responsibilities. If the latter is the case, he will always produce his own 'demo' for the producer to give them an idea of what he had in mind for the track. This much-abused term is, however, quite inadequate to describe what Gary puts together for the benefit of his producers: having heard some of his 'demos', I think they are better described as fully developed arrangements, complete with intricate rhythm programming, ear candy, sampled loops, and carefully layered synth textures, frequently underpinned by the acoustic piano. Ren Swan puts it best when he says "For a lot of people, Gary's demos would be releasable on CD as they are." Nevertheless, he prefers to have collaborators help him out: "You never move on unless you work with different people; it's how you grow, and it's also how you learn."

"With the demos, what I always try to do is present not only the song, but the instrumental and structural arrangement, because that, to me, is part of the song. To me, a demo isn't just lyrics and a melody; it's also the string line and a chorus, and where they come in that's important. Also, people frequently have their own ideas about how you should sound. So if you give them a demo



that's too open-ended, you can guarantee that they'll try and take it in a direction that you don't want to go. A lot of producers do feel they have to put *their* stamp on something. It's a waste of time and money, that, and it's a bit soul-destroying as well, especially when you think you had a good song in the first place. If there's a demo, though, they know exactly where you wanted to go.

"That's why I chose to work with people like Grant and Jon for the next album, because they add something to your track without going in and totally reworking everything — they remain sympathetic to what I do. And that's the job of a good producer, I think."

The Producers

Enter Grant Mitchell and Jon Douglas, Gary's chosen collaborators for his next album. The extent of their involvement varies from track to track, as Gary explains: "We're trying all kinds of different approaches to track production for this album. I have done my own productions here, and me and Jonny are doing a couple of co-productions. Jonny has also produced some tracks on his own, and so has Grant."

Grant has worked as Gary's producer before, but Jon, best known for his production work on George Michael's *Older*, was an unknown quantity before this project. Gary: "You just have to try things out, and see how you get along. It's been a great success with Jonny. He's the same age as me, the youngest producer I've ever had, and I really feel we're on the same wavelength. The track that Jon has just finished, 'Lie To Me' is *amazing*; my demo suggested what the song *could* be, but his finished production really takes it up another level."

By way of illustration, Gary plays his demo for this song. And yes, he's right; though it's a polished, accomplished and fully arranged song in this version, the original demo of 'Lie To Me' (a dark, piano-led song about deceiving oneself with respect to the amount of love your partner

Gary's writing, sequencing, and sampling setup: (left rack, top to bottom) Sony DAT, Roland JV880, Korg 01R/W, Studio Electronics SE1, Roland JV2080, Akai S1100; (mid rack) Denon cassette deck, Tascam cassette deck, Apple Mac running *Logic Audio*; (right rack) Denon cassette deck, Oberheim Matrix 1000, Korg Wavestation A/D, Emu Morpheus, Emu Proteus 1, Roland JV1080, Akai 3200; (below) Genelec 1029A monitors, Roland A90 master keyboard.

How Take That Nearly Didn't Record 'Back For Good'

Gary mentions at one point to my amazement that Take That came close to not recording their eventual worldwide number one hit 'Back For Good' — because the record company said the 32-piece string section was going to cost too much. Gary "We'd never had strings on anything we'd done up until then, and I wanted to use them, so me and [producer] Chris Porter did a budget for it, and everyone said that it was too much, and that we couldn't do it."

Fortunately, Gary and Chris gritted their teeth and stood their ground, and managed to arrive at a compromise: "Eventually, it was agreed that we could have the string section if we did two tracks in one day. So, we did that; we did 'Back For Good' and made sure that was OK, and then, admittedly, we had to rush the second one a bit — but we got what we wanted!"

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► feels for you) doesn't hook you particularly. It's good, but not outstanding. Gary explains that Jon has now picked up on a very slight hip-hop feel to his demo, and programmed an almost trip-hop backing, which fits with the downbeat mood perfectly. In keeping with the Massive Attack-style remodelling of the track, Wil Malone, arranger of the thunderous strings on the Bristol threepiece's 1991 classic 'Unfinished Sympathy', has now also been asked by Jon to supply the track with a 'dark' string arrangement. The results will no doubt be interesting...

Preserving The Tone

With so many different types of production going on, I wonder how Gary will ensure that the finished album remains stylistically consistent. This, explains Gary, is where Ren Swan comes into his own. It so happens that Ren is not only engineering for everyone working on this project, he will also play a front-line role in mixing it.

"Ren will have been involved on nearly all of this album by the time we've finished, because he works with Jonny all the time, and he engineered Grant Mitchell's work too — so he's the tie that links everything together," explains Gary. "It's a joy that I've got someone there who's always considering what the last track sounded like, and also wanting the next one to move forward. We work very well together, me and him. I think in another year, *he'll* be producing too."

According to Gary, the technology he now has at his fingertips in his studio has allowed the team to approach recordings more freely than would have been possible several years ago. By way of experiment, a gospel choir planned for inclusion in

"Writing's the hard bit; then comes the fun part, which is building it up from the original idea, and making it sound like a record!"

one track was laid down on one of Gary's RADARS at an evening session in Sarm *before* rest of the track was recorded (traditionally the choir would have been laid to the multitrack last of all). "I just thought 'get the choir on, and that'll start the feel for the track off as I mean to go on'" explains Gary. "Then, digitally, we sync'ed up a band performance on top of the choir recording later. That was a nice way round of doing things; having the choir's energy to play to made the drummer do all sorts of things that he wouldn't have thought of. That's the power of this technology — there are no limits.

"It's also fantastic to be able to run MIDI and vocals side by side. We did this orchestral session ►

On The Up — Jon Douglas

The story of Jon Douglas's rise to production prominence resembles the kind of success story found in Jeffery Archer novels. In pursuit of pop stardom, budding songwriter and enthusiastic home recordist Jon moved to London from the North at the end of the '80s, armed with a Roland D20 workstation and a lot of hope. Buffeted from record company to record company, his money ran out and he had to sleep rough for a while until his luck improved and he landed a ill-paid publishing deal. After what he describes as "four years of writing songs in a studio seven days a week for a pittance", he managed to place three compositions with up-and-coming soulstress Gabrielle, and landed the job of producing the tracks, despite owning "about six drum sounds and a disk for a sampler — but no sampler itself!". Having made a start, doors began to open a fraction, and he was asked to produce female singer Lisa Moorish at Sarm Studios. Amazingly, agreeing proved to be the luckiest of possible moves; Ms Moorish tackled a cover of Wham!'s '80s hit 'I'm Your Man' at the sessions Jon produced, just as one George Michael was settling into the adjacent studio at Sarm to begin work on his *Older* album. Word got around, and before Jon could credit it, Mr Michael had popped in, sincerely flattered, and requested a listen to the unfinished track. In the end, he liked Jon's work so much that he contributed backing vocals; and, more to the point, asked the frankly agog Mr Douglas if he'd mind lending him a hand with the work next door. Needless to say, the presence of the words 'George Michael's producer' on his CV had a dramatic effect on Jon's workload.

Though exceedingly busy working on the as-yet unfinished Barlow album, Jon managed to spare some time to give some insight into his role as Gary's producer. "It's strange, with Gary... I'm trying to go backwards to go forwards," he begins. Asked to elaborate, he explains: "We're hoping to take Gary's record in directions people aren't expecting. I don't want to make a safe record. I want something with an edge. Something with a bit of style that sounds contemporary.

"Gary's first solo album was a very classy, mature-sounding record, with lots of piano ballads. I do want to retain the singer/songwriter feel, but I don't want to make the record quite as serious. The record does sound quite polished, but maybe just not as much as the first one. I mean, with 'Lie To Me', it would have been very easy to do a David Foster [*Celine Dion/Mariah Carey überproducer*] on that song, and make it like Toni Braxton, but our approach was to take it in a different direction, so that it wasn't just normal. Gary's got plenty of time to have the Foster treatment yet; he's still a young lad. I'm not trying to do anything ridiculously credible for the sake of it; all I'm doing is trying slightly different angles on what could be a very traditional song. We're always suggesting alternative ideas, but not ones that are so far out that it doesn't sound like him.

"We've done a couple of tracks together



Gary's producer Jon Douglas.

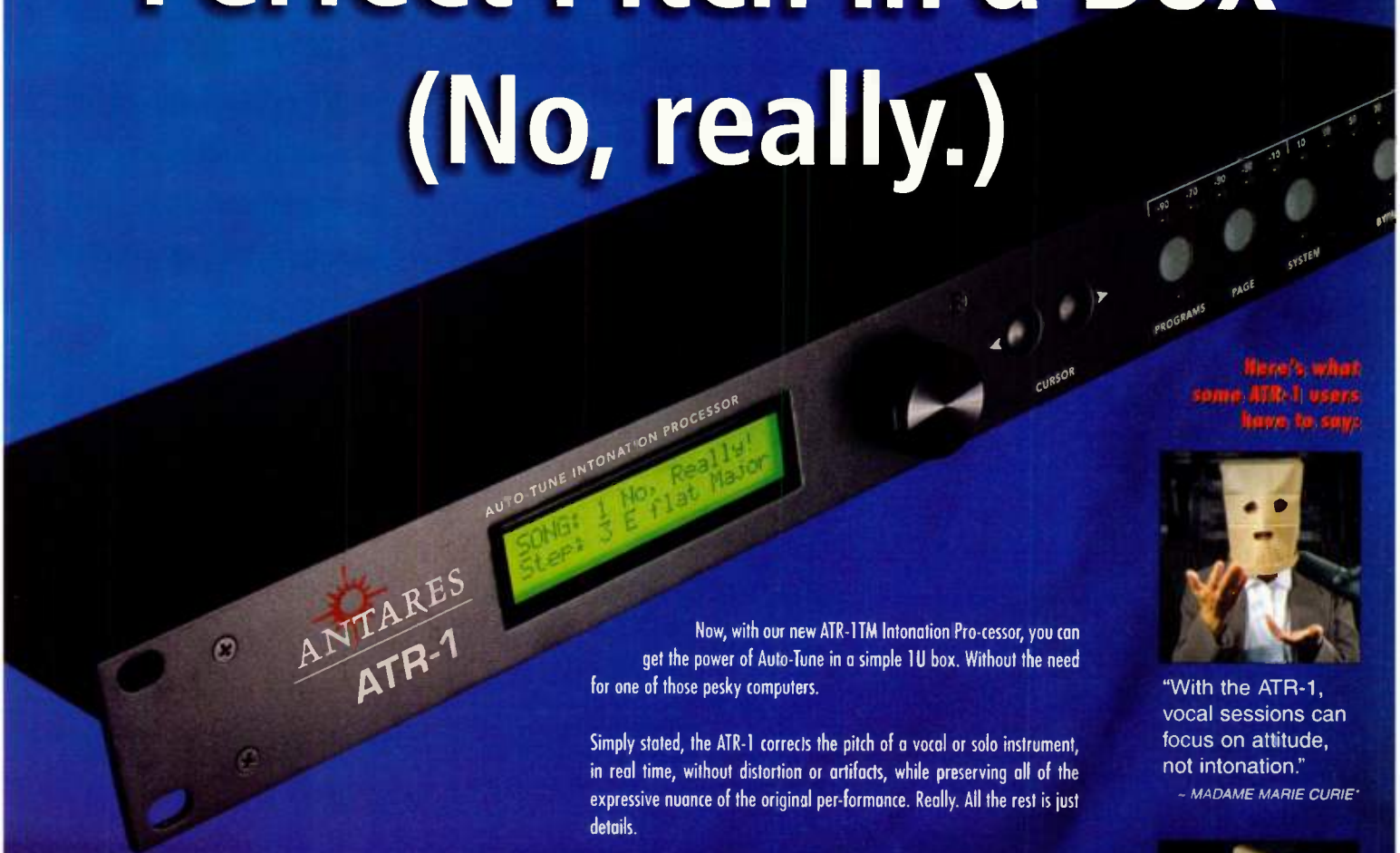
as a co-production, like 'All That I've Given Away' where I've taken most of what Gary's done on his demos and used that. I riddid the drums and the bass, keeping Gary's piano and vocal, and the guitar track."

Jon drew sonic artillery from a wide variety of sources; he is a self-confessed synth and MIDI module lover. "When I came into some money, I went ballistic in Music Control, and bought about 30 synths in six months. My favourites are the Minimoog, EMS VCS3, Octave KAT, and Oberheim 4-voice. I use the Moog for basses a lot, but the Juno 106 is also good for those. I've got too many monosynths, really; I need more polys. I'd like an MKS80 and Prophet VS. And I need to get some of these synths MIDI'd up; at the moment, we're sampling them a lot. That's all right, but I do find there's much less bottom end on sampled synth lines."

"Drums and bass are the foundation to a whole track for me. If I'm working on a keyboard part and I'm not happy with the rhythm track, I'll stop the session and go back to it; I'm always pursuing the perfect feel for a track. Sometimes, when I program drums on my MPC3000, I might spend two days getting them right, almost pre-mixing as I go. Sometimes, we'll just put a stereo pair down, because we don't need to multitrack it! I love the 3000, and know it inside out; I've got thousands of samples for it, and I use the filters a lot for different effects. I've also got an Emu SP1200, which is nice for adding a bit of 12-bit grunge to rhythm tracks."

The sonic wierditude doesn't stop there; Jon's tastes in outboard are equally far-reaching. "Compressors are the main thing for me; I don't think you can have too many. I love old valve Fairchilds and UREIs, and I've also discovered Groove Tubes' mad silver compressor, the CL1s, which is great for really vicious compression. It's what you need if you want to sound like the Chemical Brothers, and really squash your mixes to f**k! But I like digital stuff too: I've been using the new Eventide 4500 effects, as well as a TC Electronic M5000. At the other end of the scale, I love analogue guitar pedals as well, for their noisy old nastiness."

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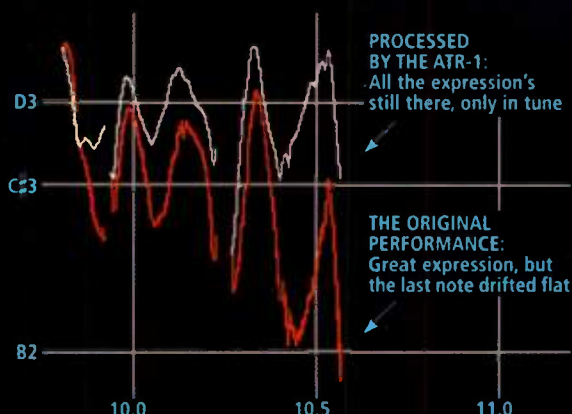
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► for the album closer 'Yesterday's Girl' a couple of weeks ago, where I wanted to try a string intro on the front which was similar to the chorus, but we weren't sure whether it would work out, so we recorded the intro and main track in two pieces, knowing we had the technology in Pro Tools or *Logic Audio* to put the two together later without any audible join. As it turned out, the intro was gorgeous, so we do have to knit them together now. But having the freedom to do that kind of thing is like a new world."

Ren mentions another great advantage of Pro Tools: "There is one *major* reason for having this software, and I think we all know what it is: Antares' *Auto Tune* plug-in. It's extraordinary: such a brilliant program. Before I got Pro Tools, I had the old Spectral PRISMA PC-based hard-disk recording system, and me and Grant used it to comp the vocal to the track 'Wondering', which he produced. Gary hardly needs *any* repitching, but Grant has got such good ears, he can hear when individual *syllables* are a few cents out, and so it took us two days. It took an hour to do the same thing to one of the other tracks with *Auto Tune*."

As the afternoon wears on, Ren and Gary return to work on the catchy 'All That I've Given Away'. This track is a joint Douglas/Barlow co-production, with a scratch rhythm track programmed at Gary's studio (later replaced with one of Jon's before the final mix), and featuring contributions from ace acoustic session guitarist Phil Palmer, strings, and a female backing vocalist. The strident string arrangement is by Gary's long-time arranger Chris Cameron. "Chris will come here, and I'll give him chords to work from, and he then arranges them

on my synths to give me an idea of how they'll sound first. Strings for a track like this need doing properly, with properly voiced parts, otherwise they sound a bit basic, I think. This track'll be ready to mix very soon, after a bit of cleaning up."

Gary and Ren both like to do as much work as they can before a mix, cleaning up all the tracks of the recording and removing all between-verse coughs or heavy breathing so that no noise makes it through to the final mix.

Gary: "Then, when we come to mix, we don't have to do anything but press Play."

Ren: "You push up the faders, and all the tracks sound great already. It also makes sense to take time to do that here rather than in London, where it'll cost you a grand a day for a studio."

Mixing It

Once again, Gary has very firm views on mixing; he hates to leave anything to chance. Fortunately, Ren, Jon and Grant all share his vision, preferring to record sounds to the multitrack that are as close as possible to the finished work, thereby rendering the final multitrack mixdown more of a level-balancing session than a fine-tuning of frequencies.

Gary: "I'm not the kind of person who likes to put things down flat with no EQ and mess with them later; I always want to get it sounding good to start with."

Ren is less damning of the alternative 'sort-it-all-out-in-the-mix' method, but still agrees with Gary: "I think different approaches work for different types of material. If you're doing a house tune or a remix, it's different; you can arrange it as

"With the demos, what I always try to do is present not only the song, but the instrumental and structural arrangement, because that, to me, is part of the song."

The Soul Boy — Grant Mitchell

A piano-playing music college graduate with perfect pitch, Grant Mitchell got his first production work with Julia Fordham 10 years ago, and has made a name for himself at the classy end of the producer's club, most recently doing duties for Connor Reeves. "I guess I'm a soul boy at heart, although I do get to do all sorts of things," he confesses. "Arrangement is really what I'm about; if I could be anyone, it would be either Quincy Jones or David Foster."

Gary called Grant in to work on several tracks, one of which, 'Wondering', is destined for the new album. Featuring a Mitchell backing track, string arrangement (recorded at Abbey Road) and brass, 'Wondering' oozes the class on which Grant has made his name. Breaking off from a hectic mixing session, Grant explained how he tackles productions. "Working for Gary, I got a very accomplished demo of each track. When you're at his level of songwriting ability, you already know what the structure of a song needs to be to make sense, and how to present it. That's half the battle already done as far as I'm concerned. With most of the stuff I do for him, the songs are all there, but perhaps the framework needs a little attention; like maybe the backdrop for the vocals isn't quite right. You don't need to *change* his chords, just revoice them, using different inversions or sounds. The song itself nearly always leads you where you need to go; there's no point, for example, trying to change something that's inherently a ballad

into something else.

"I'm a bit of a chord freak and vocal junky. I love great singers — Gary has a world-class voice — and tuning plays a large part in that too, especially in something that's going to be emotive. If it's 20 percent sharp, it doesn't have the same impact. When it's bang on the money, it connects in a very different way. After all, the vocalist is the interface between the song and people; that's why the vocal framework is so important."

Grant employs a sequencing setup comprising an Apple Mac running Emagic's *Logic Audio* with a Digidesign Samplecell card, and uses mainly samples to build up backing tracks such as the one for 'Wondering'. His most valued synth module of choice is a JV2080 with a full complement of expansion cards. "The internal presets were good, but when I heard the '60s & '70s and the Vintage and Orchestral cards, I had to have them. I use the JV a lot, especially for dummy string tracks. I do have a Korg Trinity as well, and that's very good for sketching out acoustic guitar tracks. But mainly my backing tracks are built from samples, mostly ones I've collected. You can use anything — a classical sample, a jungly drum riff, *anything* — to form the germ of an idea. If there's a sample of a weird little brass figure, for example, that'll inspire me to write other brass parts around it, or a complementary synth part, or a horn part to lock into it, or whatever.

"When I do string arrangements, like on 'Wondering', I try out all the parts on synths so that

I can get a feel for what the completed picture's going to sound like. I like to get a track sounding like a finished record as early as possible. That also helps when someone comes to sing over it, because they can then sing over something that has many elements they can be inspired by, rather than just having to singing to a click! If you're doing a lovely ballad, say, and you want a sense of dynamics and range in it, you really want someone to give you a performance, be it orchestral or vocal, that also has that feel. To do that, you have to create that vibe in the backing tracks, even if it's initially only there in synthesized form.

"I use the scoring facilities in *Logic*, usually playing the parts in live, and tweak them afterwards, so that everything looks acceptable in the Score window. Then I send a printout off to a guy named James Sherman, who conducts it for me. He goes through all the parts and checks they look right, and then sends them off to a copyist. Then we do the session.

"Of course, the end result is similar to the synthesized tracks I start off with, but it's much richer, with a greater sense of dynamics and interplay of timbres. It's the most awesome sound, 32 musicians playing together. People think that many players will cost an absolute fortune, but it's actually extremely reasonable, considering you can get 32 of the best players in the country for 96 quid per person, and they'll play two or three tunes for you in the time that money buys you, provided you've got all the parts ready for them."



Gary in his studio's live room with his principal songwriting tool, the Yamaha Disklavier acoustic MIDI piano, and his favourite Neumann mic.

you mix it, sling all your ammo onto the tape, and sort it all out in the mix. That's challenging too, and the guys who work that way are really good at it. With this sort of stuff, though, you want to know that it's right when you stick it down — or as near as you can get it, anyway."

Although all the preparation for mixing is done at Gary's studio, he never *actually* mixes there. "I just don't feel that this is the right environment for mixing. Mixing is probably the soulless bit of making music for me. It's about buttons and speakers, and that's not the fun part for me... So I prefer to be in an environment where I don't

want to be for very long to do it. London is perfect for that; there's that sense of it being the place you go to work... But because we put everything to tape pretty much as it's going to be, we don't need to take too long over it. But I love tinkering with completed stereo mixes once we've finished them, putting them through plug-ins like DUY's *Shape* and hardware like the Neve 1081 or the Manley compressor to sharpen different aspects of them."

The Way Forward

As our interview draws to a close, Gary refuses to be drawn on a name for the album, saying that not only is it not finished yet, the track lineup may alter considerably before it appears. "There's never a day when you go 'Right, I've finished writing, now let's go and record it' — because that evening you might come up with something that's better than anything you've done up to then. You could be cutting the album and start singing a song on the way home from the mastering house which you just *have* to get on there!"

At present, assuming he comes up with no more killer songs (and he might; as were going to press rumours began to fly that he'd teamed up to write a song for the album with an ex-member of 10cc), Gary's still-untitled album should be out around next Easter. And what of life after this album? Might he consider producing other people?

"Production is something I've really wanted to get into," he admits, "I've just never had the time. But there will come a point where I want to do that; I certainly want to get into making albums and writing songs for other people from home... I don't *want* to be on the front page of the tabloids every week and followed round the streets by a cameraman; I want to just get on and enjoy music. Like now, I've got the time to spend in the studio. I couldn't even have done this five years ago — I'd have had someone on my back pressuring me to get the record out — but I've got the opportunity now. And I've also got the chance to experiment, rather than just being happy with the first thing I do." He smiles. "To be honest, I feel like I'm just starting now." **SOS**

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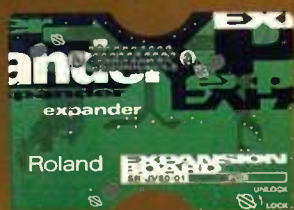
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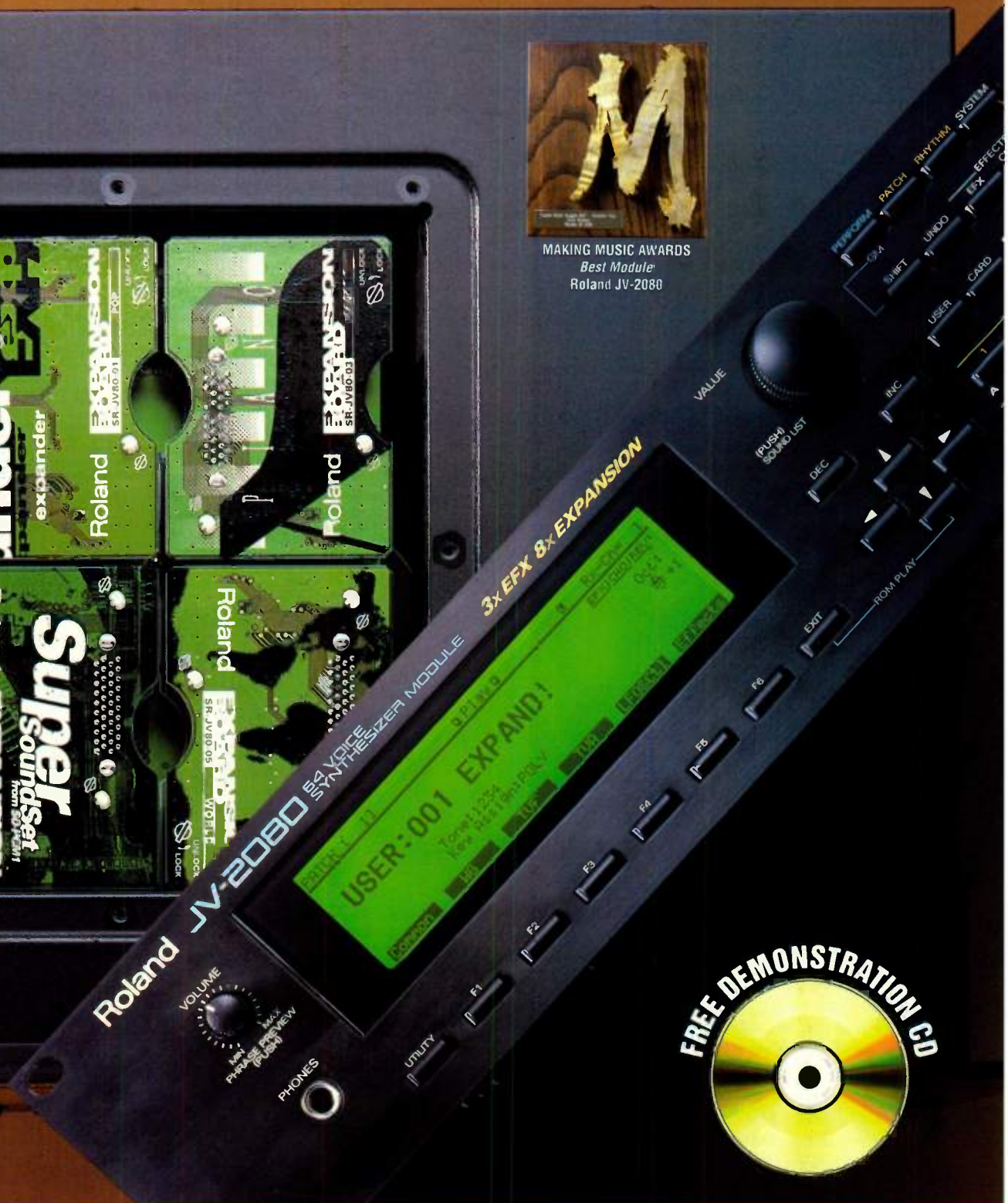
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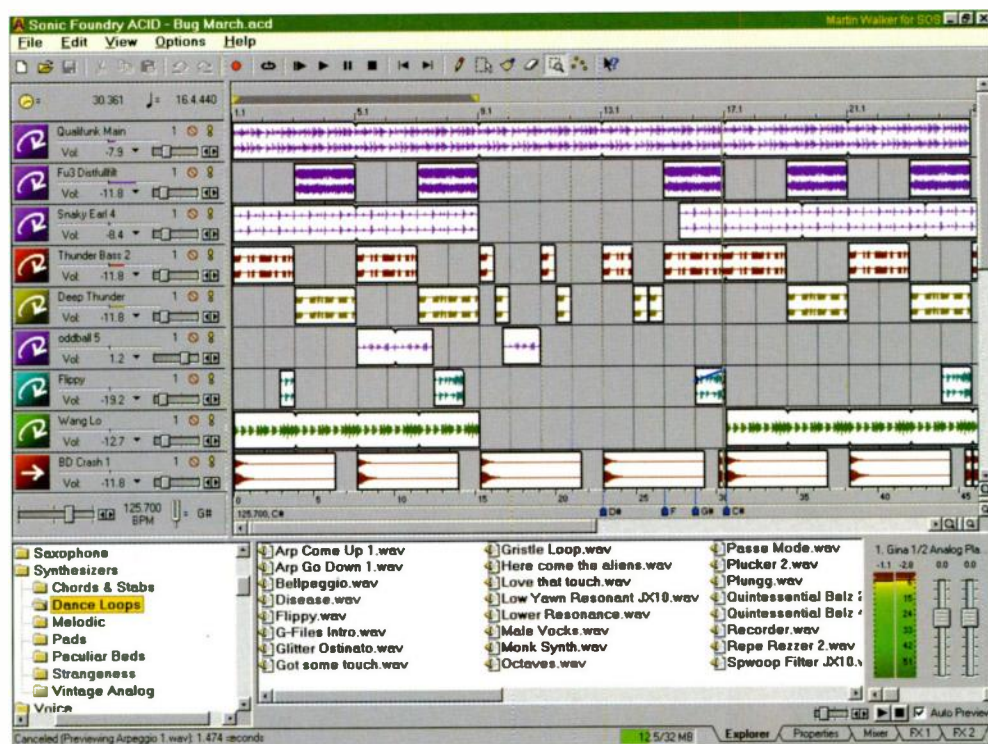
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SONIC FOUNDRY ACID



The *Acid* window, showing the three main areas: the main pattern-based Track View, the Track List to its left, and the Media Explorer, mixer and effects section beneath.

Loop-based sequencing can involve heavy-duty time-stretching and pitch-shifting, but Sonic Foundry aim to change this with *Acid*, which allows you to mix multiple sample loops while changing their pitch and tempo in real time. **Martin Walker** applies the *Acid* test.

chemical works

When you get asked to try acid at a music show, you tend to be wary. But thankfully, the only mind-expanding substance at the Frankfurt launch of Sonic Foundry's new PC software was a cheese buffet! *Acid* is described as a "breakthrough loop-based music production tool", and the emphasis is on creative flexibility and instant results. Supplied with a huge selection of style-based WAV loops and single-shot sounds, you can drag and drop snippets of audio on to a version of the Arrange page already familiar to *Cubase* users.

The clever bit is that *Acid* allows real-time changes to pitch or tempo, so that you can alter the tempo of a whole clutch of different loops to run in sync, simply by moving a bpm slider. You can also change their pitch to create a song structure, while extensive editing options allow you to move, snap to grid, loop and otherwise manipulate your source material, all with unlimited levels of undo/redo. As you might expect, *Acid* is compatible with *Sound Forge* for more extensive editing, and *CD Architect* if you want to burn a CD of your performance. *Acid* will run on a Pentium 133 machine, although you can also take advantage of DirectX real-time effects if you have a Pentium II processor.

Installation

During the installation, you are given the option of installing the latest DirectX Media 5.2a Streaming

SONIC FOUNDRY ACID LOOP-BASED PC MUSIC PRODUCTION TOOL

files, so I opted to do this. Unfortunately, my PC locked up during the procedure, although thankfully nothing seemed untoward after a reboot, apart from several discarded temporary files. Running setup.exe on the CD-ROM a second time produced the familiar Sonic Foundry install page, and after entering the serial number to activate the program, *Acid* was soon up and running.

Apart from the program files, the CD-ROM contains more than 500 loops and other sounds ready for use, including tasters from a variety of other manufacturers' libraries. To speed up loading times you can transfer these to your hard drive, but they can be used directly from the CD-ROM without any real-time performance penalty, since they are normally held in RAM for playback. *Acid* can load in any WAV or AIFF-format samples, as well as its own ACD (*Acid* project) files.

There are three types of tracks: Loops, One-Shot, ▶

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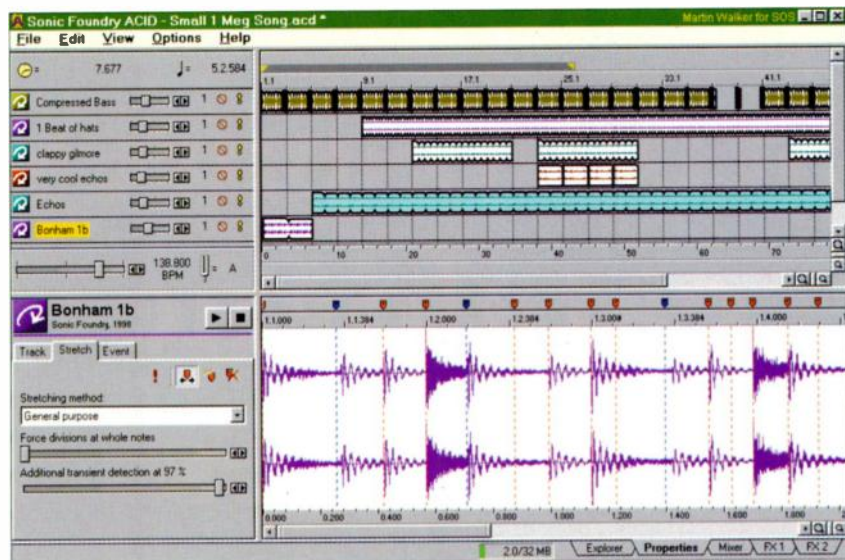
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SONIC FOUNDRY ACID



Opening up the Properties section allows you to tweak the track sample for optimum results. Here the Stretch page shows the markers that are used when time compressing and expanding.

“Sonic Foundry are to be congratulated on a well-written user interface. I found I had

- ▶ and Disk-Based. The most commonly used are likely to be Loops, which, because they are repeated, are held in RAM for faster access. Unlike many other programs, the core engine of *Acid* provides real-time tempo and pitch adjustment, so that any loop can be stretched or squashed to fit the current project. One-Shots, as the name suggests, are normally shorter snippets of sound which are played once, in their entirety. Again these are held in RAM, but, unlike loops, their tempo remains fixed. One-Shots are therefore ideal for incidental sounds like cymbal crashes. For longer chunks of audio that don't need looping (such as vocal lines), Disk-Based tracks are played directly from the hard disk, but can still be time-stretched if required to suit the project.

Although *Acid* is a sequencer, there is a fundamental difference compared to a traditional multitrack MIDI or Audio sequencer, in that each file you load creates and occupies a single track (whether it be Loop, One-Shot, or Disk-Based). This makes it much more like a sophisticated drum-based pattern editor.

Panes And Pleasure

The main display window (see page 176) is divided into three main areas: the Track View, its associated Track List to the left, and the Multi-Function section at the bottom (which we'll come back to later). Much of the creative work happens in the Track View, where it is easy to see your arrangement at a glance. It is normally the largest part of the screen, although you can drag the divisions between the window sections to change the size of any portion to taste. There are also both horizontal and vertical scrollbars with zoom controls (these are identical to those of *Sound Forge*, as are the keyboard shortcut commands).

Along the top is the Beat Ruler, which displays bars and beats. These divisions also appear in the Track View background as a grid, which is very useful when lining up Events (Sonic Foundry's name for any item that appears in a track). Normally the Events will snap to the Ruler marks, but you can also choose any snap value between whole notes and

loaded up a bunch of WAV files and had written a song before I even glanced at the manual — it's that easy to use.”

sixty-fourth notes, as well as disabling it altogether. Along the bottom of the Track View is the Time Ruler with options to display this as Samples, Time, or SMPTE. The lower half of the ruler allows tempo or key changes to be inserted freely at any point (see screenshot on page 180), a feature which overcomes the normal rigidity of the pattern-based approach.

The Track List contains the master controls for each track. On show are the track type and name and three small icons for selecting Mute, Solo, and the playback device (note that you can send individual tracks to different outputs if your soundcard has them). There are also four draggable faders, although only one is visible at a time, and a drop-down menu enables you to select Volume, Pan, or one of the effects busses, to change the global values. At the bottom of the Track List is a draggable slider for overall Project Tempo and Project Key.

The third area is multi-function, with various options selectable by clicking on the tabs at its bottom right. On first loading *Acid* it shows the Explorer (see page 176 again), which displays all valid WAV, AIFF or ACD files on every connected PC drive. The second tab is Properties (see above), and this opens up another window display which allows you to adjust track type, number of beats, root note, pitch-shift and time-stretch. Stretching allows markers to be positioned at the start of each beat in the file, so that it still sounds good when time compressed or expanded. Once you have tweaked and saved a file, it is referred to as 'ACIDised'. All ACIDised loops that have a root note specified will have their pitches shifted to match the Project Key mentioned above.

The third tab accesses the Mixer, where you can set the overall levels of any MME stereo output. Up to eight pre-fade effects busses can be activated from Preferences. Each will have its own ▶

SONIC FOUNDRY ACID £249

pros

- Very easy and quick to use.
- Comprehensive editing facilities.
- Can run alongside a MIDI sequencer.

cons

- Expensive.
- Samples still warble if transposed too far.

summary

An immediately accessible loop-based sample sequencer that does more than most, and can be integrated into a MIDI system as well.

SOUND ON SOUND

“If *Acid* had been released a few months ago it would probably have wiped the field, but now it is not without competition.”

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Set parameters for threshold, ratio, attack, hold, release, and output gain. See the effect of your settings on the graphical display, as well as on the gain reduction and audio level meters, they all interact in real time with your manipulation of the parameters. Start with a threshold setting of about -60dB to clean off the noise in between the vocal takes. You can save your final gate settings as a "gate preset" building block and recall it into any other setup you do.	The effects of the gate settings are visible on the graphic display to help you determine where to set your compressor threshold. Move through all the regular parameters (displayed in real time), like threshold, ratio, attack, release, and output gain. For vocals use a threshold of about -25dB, a ratio of about 3:1 or 4:1, and a slow attack and fast release for the most natural sounding effect. Your compressor settings can also be saved as a building block to be called up into any other preset.	Changes you make to the limiter settings are also seen on the graphical display. You can adjust the level and also the speed at which the limiter lets go of the signal as it goes below the threshold. This is truly smooth limiting, with patented dbx PeakPlus™ algorithms, so rest assured that wherever you set your threshold level, your tape will not distort. And like the other parts of the processor, your limiter settings can be named and saved for later recall.	De-essing works the same way; see the effects of your settings displayed on the graph. Parameters here are the common ones: threshold (800Hz to 8kHz), and amount (%). Other processing includes EQ - both in-path and sidechain - for special-effect types of processing. When you are editing any of the building blocks, its icon is visible on the display, and the parameters are shown on the graph, so it's always easy to know where you are.	You can also work in stereo, or set up a completely different and independent processing chain for the other channel. Optional digital output with the TYPE IV™ Conversion System with TSE™ (Tape Saturation Emulation) provides up to 24-bit output in either AES/EBU or S/PDIF formats with the trademark digital processing of TYPE IV™. The DDP also has full MIDI/Automation capability, with separate midi in and thru jacks.

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► tab, and from here you can choose any DirectX plug-in effect (see right), route each to any playback device, and control their overall level.

Grab A WAV

Most people will start by loading in some of the many demos provided on the CD-ROM. But to discover the program's *pièce de résistance*, the Preview Loop function, click on any of the filenames displayed in the Explorer section. Within a few seconds, any selected file has been loaded and analysed for the number of beats contained within it, the original tempo, and the root note. This is clever enough, but the real-time pitch-shifting and tempo adjustment come into play immediately, and you hear the chosen sound or loop at the current project tempo and key. Not only that, but the loop can be previewed while playing your project. To put this simply, you set up a basic riff, and then point at any WAV file on your hard drive, and it immediately 'joins in', at the same tempo, and in the same key!

Once you have found a suitable loop (or single-shot) sound, you can double-click on it, or drag it directly into the Track View to create a new track. Any WAV or AIFF file that constitutes a track can have any number of events drawn in using a variety of tools.

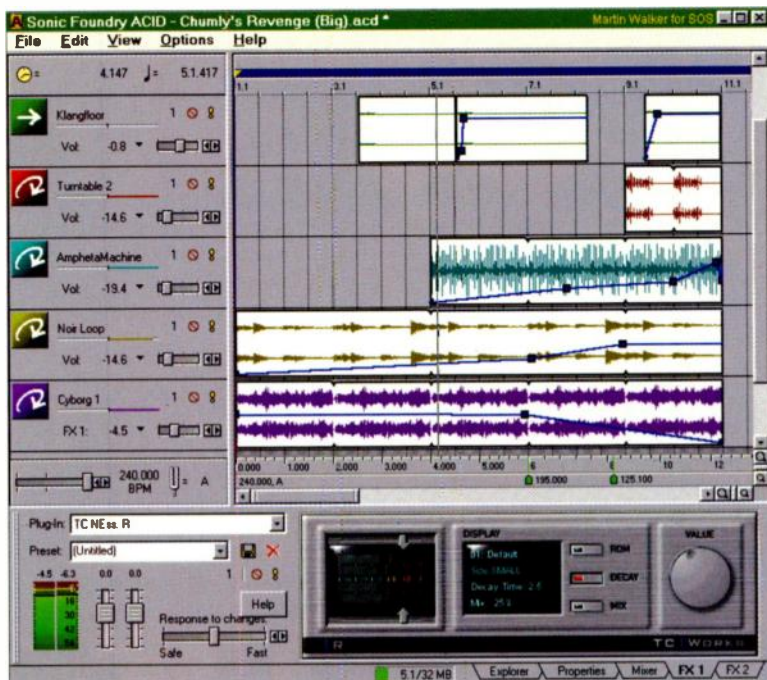
The toolbar at the top of the Track View has the traditional Play, Pause, Stop, Go to Start, Go to End buttons that you would expect, along with Play Looped (you can set a mini-loop of any length anywhere above the beat ruler) and Play All (to bypass the loop). The Record button allows you to create your own WAV files for use within *Acid*.

There are also six tools available from the toolbar.

- The Draw tool is used anywhere on the empty track to add events — as you continue to draw, more duplicated loops appear to fill the space, each showing the actual waveform.
- Select provides rubber-banding for grabbing groups of events for moving elsewhere.
- Paint adds or erases events across multiple tracks, and is useful for quickly adding blocks of new sound.
- Erase deletes events with a left mouse-click, but you can add them instead if you use the right mouse button.
- Zoom quickly changes magnification by drawing a box round the desired area.
- Envelope allows you to add volume, pan, and effects automation using lines overlaid on the waveform (see above). You can add a point, or drag an existing one, and link the points with a straight line (Linear Fade) or two curved ones (Fast Fade or Slow Fade). This automation method uses exactly the same techniques as the fade functions in Sonic Foundry's *CD Architect*.

Forging Ahead

Sonic Foundry are to be congratulated on a well-written user interface. I found I had loaded up a bunch of WAV files and had written a song before I even glanced at the manual — it's that easy to use. The pitch- and tempo-shifting do



sound lumpy when taken to extremes, especially when transposing pitch up a long way (or tempo right down) from the original. However, the marker-based stretching does ensure that the repeated sections are in time with the music, and this effect is obviously less noticeable with percussive material on which much loop-based music is built. In fact, it is possible to treat it as an echo-based effect, rather than seeing it as a defect.

If you run out of processor power, you can mix down multiple tracks to a new loop file, and even render the entire project into a single WAV file which you could then load into another editor, for final tweaks, or even a CD-burning utility. Thankfully, *Acid* is not a closed system, since it can generate MIDI Time Code or MIDI Clock to drive another sequencer, or it can chase to incoming MIDI Time Code from another package (subject to the usual caveats when running multiple applications).

Coming Down

Acid probably owes its origins to the many tracker programs, but it does far more than these. Although it is still easy to produce predictable musical results, the easy addition of tempo and key changes (as well as the option to sync a MIDI sequencer), makes this far less likely.

If *Acid* had been released a few months earlier it would probably have wiped the field, but now it is not without competition. Programs like *Mixman Studio* (reviewed SOS February '98) provide all the fun elements of instant loop-based music-making at a bargain price of £40. Although this is currently a performance-based environment with no editing, it still provides good real-time pitch-shifting. *Acid* is far more comprehensive than *Mixman Studio*, but at £249 it will not be a casual purchase.

Sonic Foundry's latest release is well thought out. It will appeal to anyone who works primarily with loop-based music, and who wants some instant gratification. If this sounds like you, then don't let that money burn a hole in your pocket — let *Acid* do it for you instead. **SOS**

Once you zoom in on the track waveforms it is easier to draw in automation of volume, pan, and the level of the DirectX effect busses. (Here FX1 is currently using the TC Works *Native Essential* reverb, shown in the effect pages at the bottom of the screen.)

Looping Perfection

Although *Acid* claims to guess the tempo of most loops correctly 99 per cent of the time, all of the loops on the CD-ROM have already had their 'hit points' tweaked for optimum stretching when used at tempos other than their natural one. They have also had their root note set, as well as the number of beats and original tempo (using the Properties section mentioned in the main text). This information is stored within the file, and Sonic Foundry refer to this process as 'ACIDising'. If you create your own recorded WAV files, or use those from other CD-ROMs, you can 'set and forget' this information by saving the file again from within *Acid*, so that it will work well in any future project.

information

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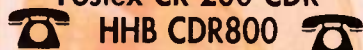
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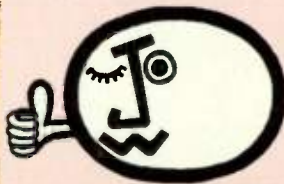
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YAMAHA P200

- to subtly 'tweak' the overall sound in real time if you find any of the voices a touch too bright or dull, depending on your performance environment. Next to the EQ are the two independent effects selectors, one dealing with reverb and the other concerned with modulation. There are three reverbs available, Room, Stage and Hall, and three different types of modulation effect — Chorus, Symphonic and Tremolo. All the selected voices boot up with one or other of these applied, and again, the emphasis is on good-quality effects that are quickly and easily editable as opposed to a vast number of effect options and variants that the average user of an instrument like this is unlikely to need. For instance, holding the reverb select button whilst moving the data entry fader adjusts what it calls 'reverb depth' or ratio of effect input to output. This is the same for the modulation effects; hold the button and move the fader and your electric piano sound disappears in a haze of wondrous symphonic swirl!

The Sound Of Your Voice

The P200 has two main operational states, Voice Mode and Performance Mode. Voice Mode is essentially for when you are using the keyboard in its simplest form, ie. playing single or dualled voices and creating keyboard splits from two individual voices selected from the front panel. Performance Mode allows you to name and store any of these setups and edits in one of its 24 memory locations, accessible from one of two banks each with 12 locations. In keeping with many other keyboards of this kind, each voice has a dedicated select button. No hunting through endless screen pages for the sound you want for P200 users — you simply press the button marked 'piano' and you get a piano sound. Effortless. One nice feature that I haven't encountered before, but which will doubtless be very useful for a good number of users, is the ability to 'lock off' the main control panel, freezing all the buttons so you don't inadvertently change presets with a stray finger during a performance. To unlock the panel, simply double-click on the preset button you have selected and panel operation returns to normal. Pairing (or dualing) two voices together couldn't be easier — simultaneously press the two voice select buttons you wish to use and that's it. The balancing of these



two voices is done by adjusting the data entry fader whilst holding the 'Balance' button, in a very similar way to editing the effect ratios. Creating keyboard splits is just as painless a procedure, and controlling sound levels and split points within that setup is also very simple. For the more adventurous, however, there are a few basic edit pages (including one with a three-band programmable EQ), but overall these pages are ostensibly concerned with utilities such as keyboard sensitivity and MIDI control.

The sounds themselves have definitely been picked to provide a high level of instant gratification for the 'traditional' musician (see Voice List Box elsewhere in this article). As with the operational aspects of the keyboard itself, Yamaha are playing very much towards the conservative instrumentalist looking for a good selection of flexible, quality sounds, rather than encouraging their users to break into exciting new sonic landscapes, and with an instrument such as the P200 this is certainly no bad thing. Yamaha's AWM (Advanced Wave Memory) sound generation system has 16Mb of RAM to play with and it apportions this generously and sensibly amongst the 13 voices. I say 13 because voice 12, 'Bass', actually has two variations, an upright acoustic bass and an electric bass guitar. Both presets are highly usable and convincing, but you have to decide which one you want to assign to the 'Bass' voice select button, and you aren't allowed to option of using both at the same time. This is a bit of a fiddly procedure and you almost get the impression that the 'two sounds — one button' idea was tagged on to the end of the design process when it was far too late to give the electric bass a voice select button of its own!

With the exception of the two main piano sounds, all the source samples within the P200 are recorded ►

YAMAHA P200 £1599

pros

- Fantastically responsive 'real piano' feel.
- Easy to use.
- Sensible selection of highly usable sounds.
- Reasonable built-in speakers make it an excellent 'all-in-one' unit.

cons

- Almost unnecessarily big and heavy.
- Over-simplistic MIDI spec may limit its usefulness.
- Doesn't transmit keyboard aftertouch.

summary

Whilst the band keyboardist with a big MIDI rig might find the control spec a touch limiting, any pianist looking for a great stand-alone unit to use as either a MIDI studio controller or performance-based instrument will find nearly everything they need in the P200. A magnificent performer.

SOUND ON SOUND

Voice List

- 'Piano 1': The 'flagship' acoustic stereo grand piano sound. Flawlessly multi-sampled, responsive and accurate, if perhaps a little bright for some users' ears.
- 'Piano 2': Similar to piano 1, but with slightly more resonance and depth.
- 'Piano 3': Very bright acoustic grand — useful for pop/jazz.
- 'Piano 4': Electric grand with nicely metallic 'twang' to it.
- 'E. Piano 1': Very musical Fender-Rhodes-type sound with sharp attack characteristics.
- 'E. Piano 2': Classic Wurliitzer-style electric piano. Warmth and depth guaranteed when added to any track.

'E. Piano 3': Sparkling DX7-type chorused piano. Celine Dion would love it.

'Vibes': Elegantly sampled and particularly impressive at the bottom end. Patrick Moore-tastic!

'Organ 1': Generic (and highly editable) organ sound, greatly helped by effective use of the tremolo.

'Organ 2': 'Cooler' jazz organ sound.

'Strings': Full orchestral strings. A highly rich and harmonic preset that perhaps lacks realism, but more than makes up for this in emotion and usability. Works particularly well when dualled with one of the acoustic pianos.

'Bass': Switchable between electric bass guitar and upright acoustic double bass. Both are highly usable and effective.

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YAMAHA P200

► in mono, and most have full 64-note polyphony. The two pianos, however, are switchable between mono and stereo operation, and this in turn halves their polyphony (from 64 to 32 notes). The organ sounds are also particularly worthy of a mention as both voice variations are extremely usable and authentic. As with the other voices, users looking for scorchingly hot and grainy rock noises will probably find these samples a touch 'polite', but given that the P200 allows you fairly in-depth editing of the organ samples' parameters — rather like the drawbars on a real Hammond organ — creating and tweaking new and interesting organ sounds is extremely easy. It is perhaps a shame, then, that this level of sound editing is available only for the organ voices and not for any of the other sounds. All the other voices (including pianos, vibes, strings and basses) you have to play pretty much exactly as they left the factory.

Player Piano

Of course these instruments tend to sink or swim on how they sound and respond working solely as a 'piano', and Yamaha have an enormous wealth of experience to draw on in this department. If you asked a hundred pianists their favourite type of piano sound you'd probably get a hundred different answers, and any designer of an electronic piano knows this only too well. The challenge, therefore, is to create a convincing, but at the same time flexible, piano sound that will appeal to the widest range of tastes without putting your foot too firmly in one camp or another with regards to sound type and colour. Yamaha have always had something of a reputation for 'bright' piano sounds, sometimes evoking criticism that their pianos can often sound a bit 'lightweight'. I personally think that Yamaha pianos, both acoustic and electronic, are extremely responsive and sonically very well suited to a wide range of music styles. The P200 manages to continue along these lines and has captured a very clear, crisp and bright piano that works well as a solo instrument, but also stands out admirably when working amongst other instruments in the mix of a full track.

Tonally speaking, it would be fair to say that Yamaha have 'played it safe' in not choosing piano samples with too much character and colour, allowing the user to 'fine-tune' the piano to suit their own needs (this is where the two EQ sections come in handy). The main piano sound (voice 1) has very pleasing levels of natural sustain, the multisampling is utterly convincing, and there is an astonishingly high level of both tonal and dynamic variation between playing extremely softly and giving it a good, hard 'whack'. This is, in part, thanks to the newly designed 88-note weighted keyboard which is extremely comfortable to play, and enables you to coax great performances out of the P200's sound library or your own MIDI setup. This is greatly enhanced by the different weightings used up and down the keyboard, making the lower notes progressively 'heavier' than the upper ones, just like a real piano. If I had to make one criticism it would be that occasionally (particularly whilst playing more

frantic pieces) I felt as if Yamaha had slightly overdone the keyboard smoothness, and it took a little too long for the keys to relocate to their 'up' position, something that may, of course, get better as the new keyboard wears in after more playing.

Overall, however, Yamaha's famous attention to detail certainly makes for compulsive playing, and when you look at the package as a whole, the built-in effects, built-in speakers, and quick access to all the various voices, you'll very quickly be seriously impressed by what it can do for your playing.

Conclusion

With the P200 Yamaha have come up with a musical instrument with a very high degree of accessibility for both the technologically experienced and the technophobe alike. Designed with ease of use and functionality in mind, as opposed to complicated in-depth control and edit features, the P200 will be a godsend for the traditional musician looking for an introduction into the world of MIDI, or the performing keyboardist in search of an all-in-one solution to many of their live requirements.

On the downside, and looking at things from a studio programmer's point of view, it feels as if Yamaha have perhaps simplified things just a bit too much in some respects. The keyboard itself does not transmit aftertouch, for example (although you can program it to be transmitted from one of the foot



That back panel.

controllers), and overall the MIDI control specifications are not as impressive as those of many other dedicated studio/live master keyboards. The result is that I found the P200 to operate slightly more effectively as a 'stand-alone' performance-based unit than as a comprehensive MIDI master keyboard. Having said that, though, there are still a great number of smart design ideas, and it's refreshing to use an instrument that has so obviously been designed by musicians for musicians.

If you overlook the minor niggles and really get to know the P200 it feels as if it has achieved pretty much all it set out to do, which is to provide an extremely professional and playable keyboard coupled with a great selection of highly usable piano and other sounds. I expect this instrument to be a big seller for Yamaha, and deservedly so. Potential owners should regard the P200 as much more than merely a master keyboard with some onboard sounds because it is, first and foremost — as its name suggests — a truly 'Electronic Piano'. Those willing to make the investment are highly unlikely to be disappointed. A word of advice though — it might help to borrow an estate car when you go to collect it from the shop! **EOS**

Which Stand To Deliver?

With any instrument as large and heavy as the P200, how you support the unit on stage or in the studio is essential — after all, the last thing you want is to see your much loved keyboard collapsing in a heap and disappearing into the front row of the audience with a sickening 'thud'! Yamaha themselves recommend their own LP3 as a suitable stand. This has four 'piano-style' legs and makes the instrument look very much like an old Clavinova, but there is really no reason why any good-quality X-frame stand wouldn't do the job just as well, providing it has strong and firm build construction. On a similar note, Yamaha have taken over distribution of 'Ultimate Support' products so there should now be no shortage of good-quality stands and supports for use with the P200.

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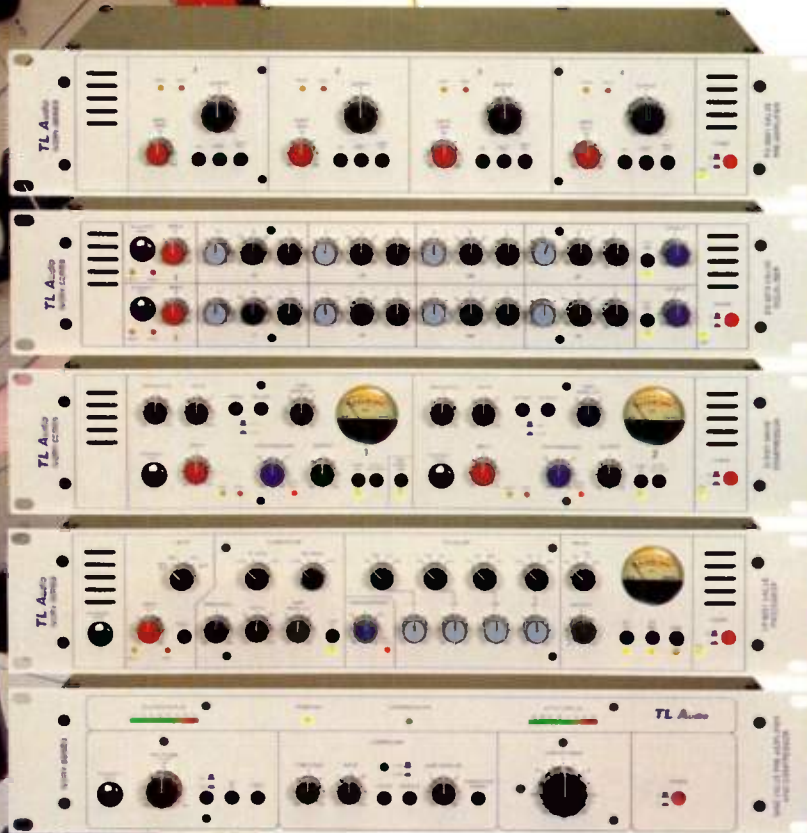
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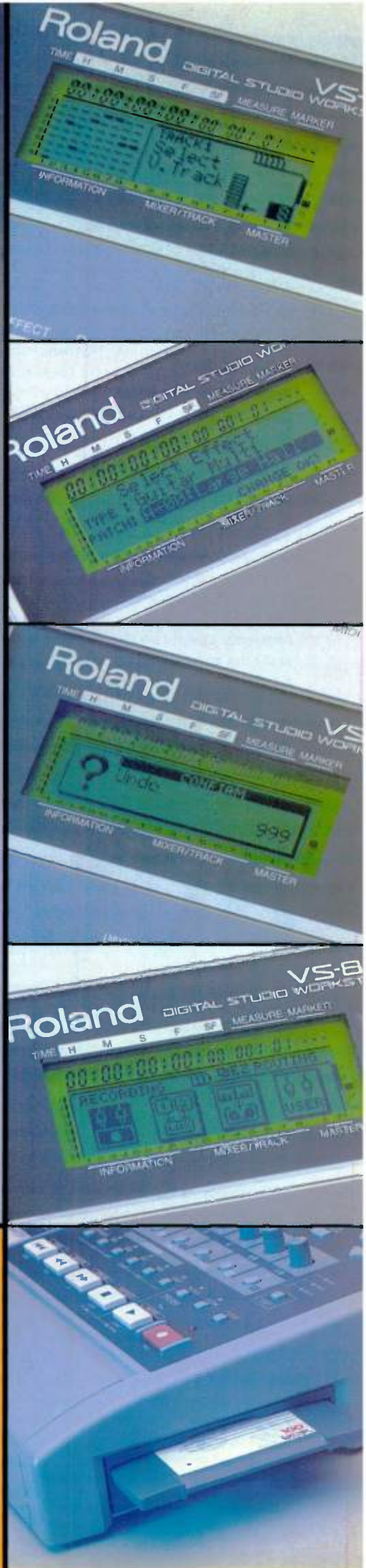
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QUESTED F11

Every monitor manufacturer has at least one nearfield model in their range — and the fashion seems to be for amplified or active designs, providing a very convenient one-stop solution. Although the new Quested nearfield, the F11, is an active two-way design in a compact ported enclosure, however, it is not simply a me-too product. This new model employs an innovative cabinet design, benefits from the characteristic Quested attention to detail, and is priced to compete with the likes of ATC SCM10s, Dynaudio BM6A, and Mackie HR824. In particular, the F11 has been designed to take on the Genelec 1030A...

The Box

One of the most striking things about the F11 is the distinctive blue-grey cabinet — a one-piece moulding of a polyester composite, loaded with glass-fibre reinforcing and a mineral which increases the density and enhances the appearance. It feels cold to the touch and is certainly very dense, which is key to controlling cabinet vibrations. Apparently, Quested are the only company in the UK to use this novel material for loudspeaker cabinets, although there are a few American companies employing it. The polyester resin has about one and a half times the density of conventional MDF and, in the case of the F11, allows a cabinet wall thickness of only 9mm, but a hefty all-in weight of 11.2kg.



active service

The cabinet also features an internal bracing strut running from the rear of the bass driver to the bulkhead at the back of the cabinet. This pressure-loads the driver and adds a high degree of structural integrity. It is also thought to be the reason the bass response of the F11 is as taut as it is — but more on that later! The rear panel houses the amplifier pack, complete with input connectors and the usual controls for power, volume, and tonal correction.

The front of the cabinet features two crescent ports echoing the Quested Q logo; internally, however, these flare into a conventional oval shape. The drivers are standard off-the-shelf units — the 165mm bass speaker is a Vifa design and the tweeter a 28mm softdome Morel unit. Three removable protective wire hoops guard the tweeter, and the 24dB/octave crossover is tuned to 1.5kHz.

The base of the cabinet carries a thin rubber mat giving it a non-slip surface — an excellent idea, but one very few other manufacturers seem to bother with! Hidden under the rubber mat are four pre-drilled (but soft-plugged) holes, which accept bolts for an Omnimount bracket. This thoughtful feature has an entire page devoted to it

QUESTED F11 ACTIVE NEARFIELD MONITORS

Although not very common in semi-pro environments, Quested is a well respected name in professional music studios. The company's new F11 active nearfield monitors are likely to bridge that gap and introduce the Quested name to a much wider audience.

Hugh Robjohns lends them his ears...

in the User Manual, with advice and instructions about the various mounting options.

By the spring of next year a dedicated subwoofer, the B3, should be in production to complement the F11 and provide full-range reproduction. The B3 will be active and employ a pair of 8-inch drivers, but there is no other information available at present.

QUESTED F11 £1149

pros

- Build quality.
- Sound quality.
- Fine, articulate bass.

cons

- Contour controls of limited use.
- Marginal tendency towards brightness in some rooms.

summary

An active nearfield monitor designed to take on the likes of Genelec 1030As: innovative cabinet design plays a big part in helping the F11 produce a remarkably fast and coherent bass. Well-engineered in the usual Quedstedt manner, and with excellent attention to detail, such as the in-built provision for Omnimount brackets. A high-quality reference design which should become an industry standard.

SOUND ON SOUND

The Specifications

The User Manual is well-presented with lots of useful information, but strangely omitting some fundamental data too. I was pleased to see a section on hearing damage and recommended listening levels, an aspect of health and safety which far too many loudspeaker manufacturers ignore. Two pages of the booklet deal with loudspeaker placement. The F11 can only be used vertically, with the tweeter above or below the woofer — partly to avoid degraded stereo imaging, but also because the amplifier heat sinks must be vertical for adequate cooling.

The integral amplifier pack incorporates a 100W module for the bass driver and a 50W section for the tweeter — both pretty standard MOSFET designs developed in-house. The crossover divides the signal before the amplifiers which connect directly to their respective loudspeakers. The amplifiers are fully protected and a green power-on LED on the front panel glows red when the input signal approaches the clipping point.

Strangely, the User Manual does not include a frequency response plot, nor any technical data on the 'Contour Selectors' (switched bass and treble controls). However, this information is available on a one-page spec sheet and states that the HF control boosts or cuts the response above 3kHz by ± 3 dB, whilst the LF switch provides the same below 300Hz. These controls are intended to allow room matching, and to tailor the response to personal taste. The LF cut position will also assist in matching the F11 to the impending sub-bass cabinet.

Rigging And Listening

Connecting the F11 is straightforward, with an IEC mains lead for powering and electronically balanced, paralleled XLR and TRS quarter-inch jack sockets for the audio input (as well as permitting easy daisy-chaining to other F11s in multi-speaker installations). All of these connectors are mounted at the bottom of the amplifier pack, arranged to face directly downwards. This makes plugging a little fiddly, but permits placement very close to rear walls if desired.

The operational controls consist of a rocker-style mains power switch and a detented volume control covering a range of ± 10 dB, both being located on the top plate of the amplifier pack. Two three-position slide switches on the rear panel provide HF and LF contouring, but I found these to be too coarse for trimming the spectral balance of the speaker, particularly at the HF end. According to the User Manual, the boost positions are intended for correction of extreme HF and LF when listening at low levels (primarily for use in installations such as restaurant chains). The LF cut is useful if the speakers end up close to a rear wall, but I found the HF cut dulled the response too much to be any real use in subtle tailoring of the speaker.

My overwhelming impression of the F11 was of a close similarity in presentation to the Genelec

range of loudspeakers. This is an entirely subjective opinion, as I did not have a pair of 1030As for direct comparison, but I felt the F11s were more similar to Genelecs than, say, ATCs or my trusty PMCs. This opinion is based on the clarity and detail of the upper portion of the spectrum — a slight forwardness if you like — and could be interpreted as a tendency towards brightness in rooms which were more reverberant than average. Overall, I found the speaker to be commendably neutral and revealing of minor technical flaws in source material, exactly the way a good monitor should be.

The F11 is rated at greater than 100dB SPL at 1m, and is certainly capable of going very loud — louder than the Genelec 1030A apparently, should that be important to you! However, the loudspeaker always sounded clean, never strained, and was not fatiguing after long listening periods — always a good sign. The manufacturer suggested that the F11 had slightly more midrange energy than the Genelec equivalent, and although I am unable to confirm this the spectrum sounded well balanced to my ears, in my listening rooms.

One of the most impressive aspects of the F11's performance is at the bottom end. Although falling steeply from around 70Hz or so, the lower registers have a very taut and fast character which integrates superbly with the mid and high frequencies. The bottom end gives the impression of being deeper than it really is, with remarkably solid, weighty presentations of acoustic bass instruments. This characteristic is, in part due to the cabinet material and the internal bracing, but also to some modest equalisation in the amplifier pack.

Stereo imaging was precise, with very stable central images over quite a wide listening area when set up as recommended with the axes crossing slightly behind the listener. Another sign of high quality lay in the F11's ability to convey a good impression of depth on suitable material, and the very natural handling of room acoustics. The F11 could also accommodate very dynamic music with ease and always gave the impression of total control.

Summing Up

The F11 finds itself in the midst of some highly respected nearfield monitors, but compares very well. The distinctive and innovative cabinet gives it an advantage in terms of aesthetic styling (to my eyes at least), and the sound quality is certainly on a par with the Genelecs which the F11 has been designed to challenge. In some environments, the F11 could sound overly bright and the HF contour is too coarse to be much help in taming the sound, but in well-damped rooms, the spectral balance is well-judged and the bottom end surprisingly articulate — amongst the best I have heard from nearfields. Definitely a worthwhile addition to the shortlist of recommended reference nearfield monitors. **SES**

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in full effect

CREATIVE USE OF EFFECTS

Along as I can remember, effects have been used in an attempt to improve the sound of music recording and performance. Possibly the first such use was when monks discovered that plainsong, which is the forerunner of all classical music, sounded better when it was sung in a large stone monastery, rather than a small rehearsal room — not that I have first-hand experience of this, you understand!

In the '60s, guitar amps started to feature tremolo, as well as the dreaded spring reverb, which produced some particularly unusual effects if the amp was placed anywhere near the drum kit. Then there came a period when effects were created by engineers using conventional studio equipment in unconventional ways. These tricks created tape echo, phasing, flanging and chorus effects, all produced by varying tape speeds and applying controlled feedback with varying degrees of success.

Today, the recording engineer and producer have a massive array of digital effects with which to enhance (or ruin) the music, but there is still scope for innovation. It's useful to remember that recording is the only situation where the end justifies the means — that is, whatever recording conventions you break are unimportant so long as the CD goes gold (not that it's OK to go out and steal a vintage Neve!). It's also useful to beware of what has become known as 'Babes In Toyland' syndrome, whereby it's considered to be wasteful if not all the available effects are used all the time. In fact, the complete absence of effects can be used as a technique in its own right — see 'Staying Dry' elsewhere in this article.

Some of the most successful effects are the ones which subtly and generally improve the sound without the listener being aware that an effect has been used. Aural enhancers are typical of this category: because they simply enhance the recording without radically changing the character of the sound, they can be used on virtually every track. Flangers, on the other hand, are definitely of the other kind. It may have been innovative when the Small Faces used one on 'Lazy Sunday' and the Eagles put it on the end of 'Life In The Fast Lane', but there seems to be a tendency at the moment for bands to shove the effect onto a protracted instrumental section at the end of every song. The words 'death' and 'done to' spring to mind.

Open The Valves

When we're looking for effects which change the character of the sound, rather than stamping a whole new personality onto it, valve-based processors (employed carefully) can be useful. However, as a valve processor can cost as much as the 8-track hard disk system on which you're recording, this may not seem a realistic option. At this stage, it's useful to remember that lots of guitar amps have valves in and, whilst you might not want to stuff your digital stereo master through a pair of old Marshall stacks, individual tracks might well benefit from this type of treatment. I regularly take vocal tracks which have been recorded using a Neuman U87 and 'posh' desk and feed the signal through a small valve practice amp, picking up the result from the direct-out jack. There can be no argument that the total harmonic distortion figure becomes degraded — I believe the technical term is 'shot to hell' — but engineers who don't know what I've done have complemented me on the live feel, and if the song is largely guitar-based, the processed vocal is so much easier to mix than the clinically clean digital version.

It follows that almost any track can be given the same treatment and similarly, it follows that almost any amplifier can be used as the processor. Every amp will have its own character, and there's no rule that says it has to be designed for guitars (though before plugging anything, particularly guitars, into strange amplifiers, please read the section on 'Staying Alive'). The same can be said

All recording setups incorporate effects devices of one sort or another, but it's easy to end up using them in the same predictable ways. **Roger Jackson** introduces some more imaginative ways to freshen up your productions.

Get that expensive analogue sound — with a cheap cassette 4-track.



Comb-Over

Nothing to do with concealing baldness, but a means of creating stereo from a monophonic source. A comb filter can be used to divide the frequency spectrum into many small bands, and place alternate bands to the left and right of the stereo field. It produces an effect not unlike stereo chorus, but possibly more coherent. It can be used on almost anything from a solo instrument to a full mix, depending on the effect required. A useful feature of this form of stereo synthesis is that it is mono compatible, unlike many time- and pitch-based effects. Some effects units provide a comb filter, but these tend to be in the higher price range. It's possible, however, to produce a crude comb filter with a graphic equaliser, and whilst this might not be so effective on a mix, it can be very useful on guitar chords and

keyboard pads. The best graphics to use are third-octave stereo devices — in other words, the ones with lots of sliders — but almost any stereo graphic will produce some effect.

Connect the mono signal to both inputs of the stereo graphic and then position the sliders as follows. Start with the left channel and the highest frequency band and move the slider to full boost. Then move down the frequencies and cut and boost alternate bands. Moving to the right channel, cut the highest frequency and then boost and cut alternate bands. If you've not made any mistakes, each frequency band should have one side of the stereo boosted and the other side cut, and these should swap over as the frequencies descend. For maximum effect, only the signal from the graphic outputs should be used, so care should be taken to avoid routing the original signal to the mix.

for speakers, and experimenting with different combinations and different instruments can prove very rewarding.

Among my own stock of effects processors you'll find a Bush valve radiogram, a 5W, British-made, discrete transistor amplifier of uncertain origin and purpose (for which I've refused vast sums of hard cash, due to its particularly rich

and individual sound) and a 12-inch speaker out of an old Hammond organ. Basically, by using all this strange equipment to process my recordings, I'm corrupting the sound, but in a way which I find pleasing. This is not an exact science, but one founded on empirical results — that is, if it works I use it again, if not, then all I've lost is a little time. For example, I've found that computer-generated drum tracks can sound fine with clean digital keyboard tracks, but can sound too perfect for mixing with overdriven guitars. My solution is to pass the drum track through the aforementioned transistor amp and the Hammond speaker. The amp imparts a warm, thicker character to the sound, whilst the 12-inch speaker appears to act as a band-pass filter, giving a result which is undoubtedly distorted but much easier to work with in the mix.

The Bush radiogram puts in a lot of service as a guitar amp and, whilst it's not the sort of thing I'd like to be seen with on stage, it produces an unparalleled sound for lead guitar solos. By using the input which was originally intended for the record deck (those things which used to play plastic discs), the sensitivity is such that the guitar will overdrive the amp into gentle distortion. Record-deck inputs have built-in RIAA equalisation, which by a happy accident, seems to suit a Strat on the middle pickup perfectly!

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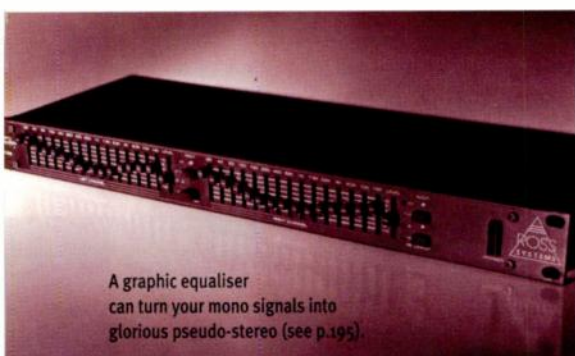
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Get It Taped

There is an argument which says analogue tape is better than digital recording, and the number of studios which are thriving on the use of two-inch 16- and 24-track machines must give a certain amount of credibility to this claim. I prefer to think that each has its merits, and that what instruments are being recorded makes a difference to the choice. If you like the sound of analogue, an old stereo machine is all you need to bounce digital tracks on and off, to achieve tape saturation at a fraction of the cost of a processor which simulates the same thing: simply use one track for timecode and the other for the signal. But tape has even more creative uses, and if you have an old 4-track, or even a cassette multitracker, the possibilities are increased; not only can you get that vintage tape sound, but you can go on location and use real reverb and room simulation.

Let's suppose you want a vocal reverb without digital artifacts, one which will tail away without



A graphic equaliser can turn your mono signals into glorious pseudo-stereo (see p.195).

breaking up, one just like the church hall down the road. All you need to do is record timecode on to track one, leave track two as a guard (particularly important for cassette formats where crosstalk can be a problem), put a mono mix of the backing on to track three and take the machine down to the church hall, along with a microphone and a set of headphones. Record the vocal on track four and then, back in the studio, bounce this track back into the format you first started with. (Of course, if you want the reverb without the tape saturation, you could save time and hassle by just taking your digital recorder to the hall!)

This same technique can be useful for location recording of loud signals, such as guitar solos which rely heavily on feedback and live drum kits, which are problematic in a bedroom or garage studio. With care, the mono mix can be recorded at a lower level next to the timecode track and this will serve as the guard track as well, leaving two tracks free for stereo recording. I've successfully used this method to record live drums to replace a drum machine in a final mix and, as a bonus, found real rooms which were better than anything in my effects units. Using a battery-driven 4-track cassette recorder, I've placed a drum kit in an underground car park for the best large hall



you've ever heard, and also in the open air for a complete absence of room effect.

Mic Me Up, Scotty

Anything which colours the sound of an instrument or voice can be used as an effect, and so it follows that there is scope for innovation in microphone choice and placement. My favourite mic for the last ten years has been a U87, which I'm inclined to use on almost anything and everything — but only when I'm after clean, faithful reproduction. My mic box also contains, at the other end of the scale, a 30-year-old Reslo ribbon mic, which was bought at a car boot sale for two pounds. It's impossible to describe the sound which this relic imparts to the recording, but faithful reproduction doesn't come into it — and yet, if you want that particular effect, there's no other way to obtain it. The moral of this tale is to experiment and to break a few rules in search of that elusive 'something different'.

Try a few of these for starters:

- Use a free-standing PZM boundary mic for recording vocals.
- Use a cheap and nasty crystal mic, heavily gated, on a snare drum.
- Cut a hole in the bottom of a bucket (galvanised metal is best) and place a dynamic mic through the hole from the outside. Point at guitar amps.
- Place a chassis speaker and a microphone in a large cardboard box. Feed almost anything through the speaker to be picked up again by the mic. Produces a surprisingly boxy sound!
- Stand in front of a live drum kit swinging a dynamic mic on an anchored cable like a propeller in front of you. I've never dared try this one, but I've heard the results and they are quite unsettling.

Finally, a couple of things which you can do to a stereo master:

Minidisc: it's a hi-fi component, it's a radio production tool, it's a mastering recorder... it's an effects unit?

“Using a battery-driven 4-track cassette recorder, I've placed a drum kit in an underground car park for the best large hall you've ever heard, and also in the open air for a complete absence of room effect.”

Staying Dry

Most music has some effects; even that which sounds dry will almost certainly have a small room reverb on parts of the mix, so leaving out all effects and reverb will certainly make a track sound different. To get the best out of this technique, as many instruments as possible need to be direct injected to avoid recording any ambient sound from the room, and this means, of course, that computer drums are often more appropriate than a live kit. Guitarists are often reluctant to DI for various reasons, usually associated with the sound of a favourite amp and the fact that it's impossible to get feedback when plugged straight into the desk. However, many amps have a direct output which can be used instead of a mic, preserving the basic sound and permitting feedback, whilst

peeling off the high and low EQ on the desk will help to simulate the effect of a speaker cabinet. Keyboard sounds should be free from built-in effects, particularly reverb and chorus.

Recording live sounds is more difficult, and care should be taken to record in a well-damped and dry environment. Place the mic closer than you would normally expect for studio use, more like a live performance, and use a good pop shield to avoid breath noise when recording vocals. When it comes to mixing this type of track, stereo imaging is all-important. Without the smearing which results from the use of time-based stereo effects, instruments can be placed in the stereo field with great accuracy and to great effect. Pay particular attention to the spread of the drum kit and any extra percussion, to widen the stereo

Staying Alive

All amplifiers have the potential to kill — even if the current is not great enough to electrocute, any electric shock can disrupt the rhythm of the heart and cause death through heart failure. When you consider that the strings on most electric guitars are connected to the circuit ground, and that some old valve equipment runs at many hundreds of volts and features idiosyncratic earthing systems not designed with guitarists in mind, then the need for care becomes apparent. To avoid a bad case of death, get all equipment checked over by a qualified technician prior to use, and then use a transformer-isolated direct injection box between the source and the amp. Under no circumstances should guitars be plugged into microphone sockets which carry phantom power.

Image. The finished result should have more punch and will appear to be louder than conventionally recorded tracks — reverb has the subjective effect of making the music sound further away and, therefore, quieter. Tracks containing reverb can sound fine in the control room yet suffer when played in a large club, which effectively adds more reverb, but a dry track will excel under the same conditions. If you are looking for the ultimate 'in-her-face' mix, which is different enough to catch the attention of A&R people, this could be the way.

In the (good?) old days, when the Beeb wouldn't play cassettes on the radio, we used to put cassette recordings through a graphic equaliser to remove all the hiss and then through an Aphex Aural Exciter to replace the top end, mastering the result on to quarter-inch reel-to-reel. I can't remember ever having one rejected! (For other uses of a graphic, see the 'Comb-over' box.) In fact, the technique works so well that I still use it on digital masters which have a brittle top end. Quite often, the synthesized top end is smoother than the original.

Never being one to shrink from controversy, I'll dare to raise the issue of digital compression. Can you hear the difference between DAT and Minidisc?

Well, in addition to the group which says 'no' and the group which says 'yes', there's now a new group (well, me actually) which says 'yes and Minidisc is better!' The compression technique used by Minidisc looks at the program material and leaves out anything which it reckons you wouldn't hear anyway. It's a bit like when you don't hear the telephone because the stereo's up too loud: it still rings, no one answers it, so it just clutters up the music. I can hear a difference with Minidisc, but to my mind, it makes the music cleaner, more transparent and easier to listen to. This could not only be the mastering system of the future, but the ultimate effects processor for your old DAT tapes! **SOS**

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room for improvement

The purpose of this series so far has been to help you appreciate the role acoustics play in creating a useful mixing environment, and to provide some guidance on improving your own listening space. Though some mathematical concepts have been introduced, I must stress yet again that any major studio design work should be undertaken in conjunction with a good acoustic consultant, who will have the means to measure the actual performance of the room at various stages throughout the project. If you're working at home on a low budget or simply kitting out your garage as a studio, then by all means try applying the principles discussed so far, and if you do intend to go through the maths, consider buying some software to help you. To follow up this series, there'll be a full review of *Acoustic X* in the next issue, and though it costs around £150, it is very quick and easy to use and can be a very educational tool.

In this final part of the series, I'd like to summarise the various stages you need to go through when designing a small studio, and since relatively few structural changes can be made in most home studios, I'm also including a few alternative ways of working that might help avoid problems. Soundproofing is usually the first thing on the agenda, especially in residential areas, and while a complete cure may not be practical because of space or budget constraints, you'll almost certainly be able to make a significant improvement without having to rip the house apart or spend a fortune.

The Source Of Noise

Accepting that you're unlikely ever to get perfect sound isolation in a typical house without major building work, you may be able to meet the problem halfway by generating less noise in the first place. The choice of monitors is important here as this is where much of your noise will be coming from. Nearfield monitors are a good choice for the small studio for a number of reasons. Firstly, the overall monitoring level can be less loud than with a system located further away from the listener, so the effect of the room acoustic is minimised and the overall amount of sound generated is less. Furthermore, nearfield monitors generally produce less deep bass than large, full-range monitors, and

PRACTICAL ACOUSTIC TREATMENT

while bass may be appealing, in a small or untreated room it is likely to be very misleading. Far better to tailor the monitor's bass response to the room so that you get a more accurate picture of what's going on in the mix. As far as noise is concerned, low frequencies cause the most problems, so by cutting down on your bass output, you also cut down on the nuisance factor of your monitoring system. If your system is still too noisy to allow you to work late at night, consider doing at least some of your recording using headphones and save the monitors for when you come to mix.

Noisy equipment invariably causes less unwanted sound leakage if it is isolated from the floor of the room. This can make a particularly big difference if the floor is made of wood. I heard a story about one frustrated project studio owner who replaced his traditional drum kit with a set of electronic pads, only to find that the physical thump of the bass drum pedal still sounded loud and clear in the room below. Try mounting instrument amplifiers on rubber foam or even inflated inner tubes to cut down structurally borne sound. Drum kits are a different matter, and though the amount of sound leakage can be reduced by positioning the kit on a plinth built like a section of floating floor, anyone expecting to get away with Keith Moon impressions in a council house without upsetting the neighbours is doomed to a life of disappointment!

Rock guitars may now be DI'd in a quite satisfactory manner using dedicated recording preamps (such as the Tech 21 Sansamp PSA1 below) or speaker simulators. Speaker simulators plug into the speaker outlet (or occasionally the preamp output) of an instrument amplifier, and filter the sound in such a way as to imitate the

In the fifth and final part of our series on acoustic design, **Paul White** sums up the key stages of designing a project studio and touches on the subject of air conditioning.

If you want the sound of a stack, but don't want the neighbours blowing theirs, try recording through a guitar amp simulator like the Tech 21 Sansamp PSA1.



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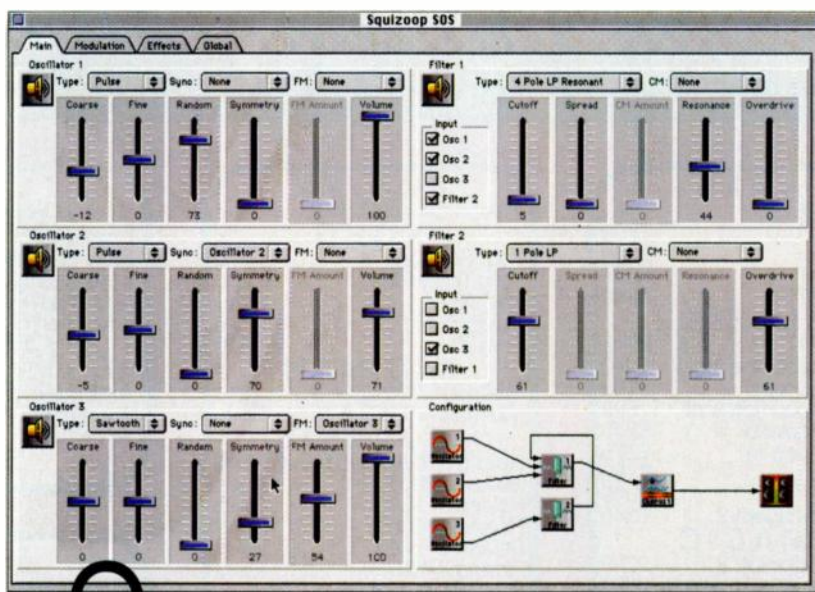
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all in the headz?



BITHEADZ RETRO AS1 VIRTUAL ANALOGUE SYNTH FOR MACINTOSH

Not so many years ago, the concept of doing serious synthesis on a computer, at least outside a university, was something that few musicians would have entertained.

Nowadays, however, there are several software packages out there that prove it can be done, and done well. The *Retro AS1* analogue synth emulator is available only for Macintosh computers, and fast Macs at that, but it is capable of multitimbral, polyphonic operation and can be used from within any sequencer package that supports OMS or FreeMIDI. It can also be played directly from a MIDI keyboard, again via OMS or FreeMIDI, via an on-screen virtual keyboard or from an external keyboard without OMS or FreeMIDI if the Mac has serial DMA support. The amount of polyphony and multitimbrality is determined by the speed of the host computer, and I think you'd need something pretty cutting-edge to achieve the maximum possible 16 available parts and 32-note polyphony. Between four and eight typical parts is a reasonable expectation from an average Power Mac, though the complexity of the voices affects the polyphony, as does the use of FM synthesis.

Retro AS1 comes on a CD-ROM complete with both OMS and FreeMIDI, though you only get a manual for *Retro AS1* itself, and that you have to print out on to over 150 sheets of A4 if you want a hard copy. However, it's a very thorough and well-written manual. Installation of the synth program is simple enough, but you also have to figure out how to configure OMS or FreeMIDI for your sequencer. Personally, I prefer to work without using either of these environments, but there's no option unless sequencer manufacturers produce drivers specifically for *Retro AS1* — there's nothing more Bitheadz can do from their end. Apparently Emagic are working on a driver for *Logic*; for this review, however, I used OMS on a friend's G3, as my ageing 100MHz Power PC wasn't really up to the task of running *Logic* and *Retro AS1* at the same

time, though it could manage *Retro AS1* on its own. Realistically, anything slower than a 166MHz Power PC is unlikely to give satisfactory results.

Once installed, you have a fully configurable, programmable virtual analogue synth that can be operated from a small number of windows containing control panels with movable sliders and patching menus. Thanks to OMS, it appears within your sequencer in the same way as any hardware synth and can be treated accordingly, with the sound output taken either from the Mac's own audio out jacks or via a compatible soundcard such as Digidesign's Audiomedia III.

The Synth

The synthesizer runs at 44.1kHz and produces a clean, 16-bit output. It responds in real time with no perceptible delay, and there's no limit to the number of user presets that can be stored over and above the 1000 patches provided. To prevent it stealing processing power that your sequencer needs, *Retro AS1* also includes a CPU-limiting facility so that you can 'cap' the amount of processor power it takes. What's more, if you want more polyphony than your computer can give, it's possible to write the synth output to an audio file to play back within your audio/MIDI sequencer. On top of this you get a mixer page to balance the levels and pan positions of each part as well as the ability to add basic effects such as reverb, delay and chorus.

Behind the deceptively simple control panels lies a very complex synth that can have up to three oscillators per voice as well as LFOs, and all the usual saw, pulse, triangle and sine waves can be generated along with noise. For greater tonal flexibility, the waveform symmetry can be varied and one oscillator can be used to sync another for that hard-edged phase sync sound. It's also possible to experiment with FM by using one oscillator to modulate the frequency of another, and there's the option to add distortion within the filter.

Paul White revisits his old analogue synthesis days via Bitheadz's *Retro AS1* — but can a computer screen ever be as friendly as all those knobs and faders?

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BITHEADZ RETRO AS1

▶ A synth is generally only as good as its filters and here you get a lot more choice than on a typical 'genuine' analogue synth. Up to two filters can be used per voice, and these may be set to one of seven filter types including 4-pole resonant, low-pass, high-pass, band-pass and notch. The filter frequencies may also be modulated by the oscillators, and one filter can have multiple inputs.

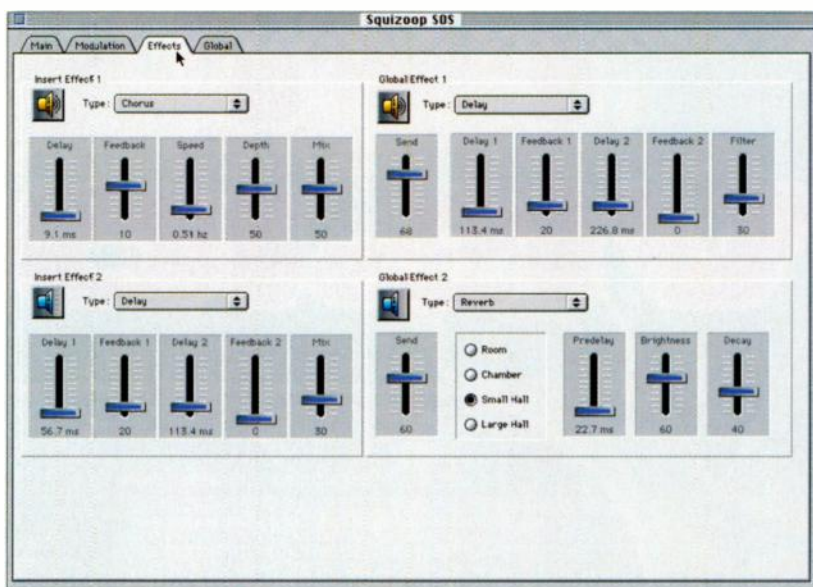
The other key to a flexible synth is the way in which the various blocks can be patched and used to modulate each other. *Retro AS1* certainly doesn't skimp in this area, and it's also possible to assign up to four parameters to real-time MIDI control. Though the synth doesn't have an obvious counterpart in the real world, I found it to be generally comparable with an Oberheim Matrix 1000 in terms of its complexity and flexibility, and though the sound isn't the same, it can be brought very close with a little careful programming.

Because all the parts are mixed down to a single stereo output, the ability to add effects to individual parts is very important, and *Retro AS1* makes provision for two insert effects per part. You can also add two global effects on the mixer page, in much the same way as conventional effects are used via the aux send/return loop on a hardware mixer. The mixer also provides parametric and shelving EQ, and the range of effects includes reverbs, delays, chorus, flange, overdrive and distortion. As if this weren't enough, there's also a flexible arpeggiator that can be 'played' live or programmed via the on-screen keyboard, and this features a number of latch and assignment modes.

The Interface

The software comes as a suite of modules that present the user with different windows depending on the task in hand. The four main sections are the Editor, MIDI Processor, on-screen Keyboard and the Mixer, with further windows for checking the processor usage and the OMS/FreeMIDI routing. Arpeggiator settings are made in the MIDI Processor page, which also handles splits and layers. Sounds are modified or created and saved in the Editor, which itself is subdivided into Main, Modulation, Effects and Global pages. The Global page is where you set up things like part transpose, pan, portamento mode and rate, volume and trigger mode.

When creating or modifying a patch, the Main Edit page allows you to switch on or off the three oscillators and two filters as well as to adjust their parameters via on-screen sliders. You can modify the sounds in real time as a sequence is playing, but even on a G3 machine, I noticed the mouse and slider control got rather jittery as the processor struggled to keep both the synth engine and the user interface happy. As the various synth modules are configured, a block diagram is created in the bottom right hand corner of the Main Edit page with all the patch cords drawn in, but the really frustrating thing is that you can't add a patch lead by simply drawing it in yourself. Instead you have to move to the Modulation page, then scroll through



a menu to select both source and destination. The only exception is the basic oscillator-to-filter patching, which can be done via check boxes on the Main page. You also have to use the Modulation page to adjust modulation amounts and to set the filter or level envelope. This can be annoying when you're trying to set up a filter, as you're forever hopping backwards and forwards between the filter controls on the Main page and its envelope controls on the Modulation page. As you can see from the screen shot on page 200, the Main page provides a lot of control over the oscillators and filters.

In Use

Retro AS1 is a very sophisticated synthesis package and in a review of this length, it's impossible to do more than merely mention some of the features, such as the arpeggiator and the mixer. However, as a picture is worth a thousand words, please see a thousand words on the mixer in the screenshot above!

After I'd played with the sound editing system for a while, it soon became apparent that *Retro AS1* is an extremely powerful synth capable of producing the kind of sounds you might expect from a modular analogue system, and it certainly goes a lot further than most compact analogue instruments. However, programming would have been much easier if the designers had adopted a more graphical approach to patching, for example, with the various synth building blocks presented as icons on a palette so they could be dragged into the configuration window, then connected by dragging cables from one block to another, much as in *Logic's* Environment page. What's more, instead of having to swap pages to get at the relevant sliders for a block, it would have been better if clicking on the desired block in the configuration window brought up the relevant fader panel automatically.

Sonically, I can't fault *Retro AS1* — it's capable of both hard, edgy sounds and sumptuous analogue pads, while the modulation options open up avenues for further exploration of more complex sounds. The filters also sound the part, with the resonant low-pass being particularly rich and fruity sounding. Some of the supplied presets ▶

Retro AS1's effects can be used globally and as inserts on each part.

BITHEADZ RETRO AS1 £150

pros

- Affordable.
- Good range of fully editable high-quality sounds.
- Works within any OMS- or FreeMIDI-compatible sequencer.

cons

- User interface could be improved in some areas.
- Being forced to use OMS or FreeMIDI will discourage some users.

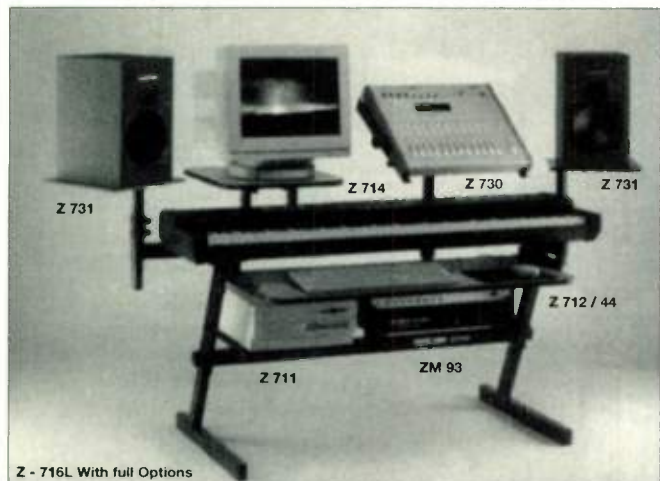
summary

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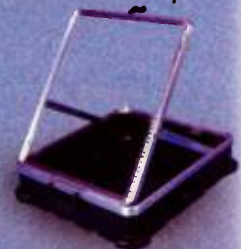


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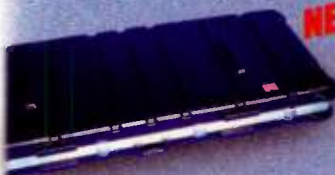
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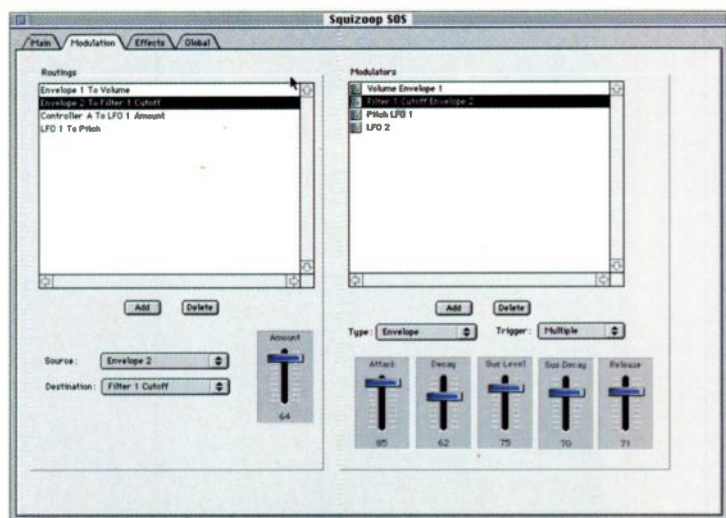
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BITHEADZ RETRO AS1



Sadly, routings are constructed using menus rather than a graphical interface (maybe in the next revision...?).

are excellent, and the beauty of having so many is that even if you're not an analogue synthesis expert, you can usually pick a patch that you like and then fine-tune it fairly quickly.

The Mixer page is extremely useful as it allows you to balance the various parts and add effects. Admittedly the effects aren't anything out of the ordinary, but they are adequate to give the dry synthetic sounds the width and life they need to sit comfortably in a mix.

Summary

Not only is *Retro AS1* an extremely powerful and flexible synthesizer, it is also a useful educational tool that allows the user to explore the kind of sound creation techniques normally restricted to patch-cord modular systems. The sound quality is rather better than that of many original analogue synths, which often tended to be noisy, and the range of timbres on offer is huge. Whether you're into soft pads or hard sync sounds, they're all in here somewhere.

The user interface is perfectly manageable, but could nevertheless be improved considerably by making it more graphical, especially the routing and modulation side of things. I also have to admit that I found OMS to be an unwelcome complication that I'd much rather live without. What's more, when you come to wipe it from your machine, it seems to hang in there with all the tenacity of a starving Tasmanian Devil that's just sunk its teeth into a steak sandwich! I'm not sure I've got rid of all of it, even now. I'll be happier when *Logic* drivers become available, though I don't know which other sequencer manufacturers plan to write dedicated *Retro AS1* drivers.

In the final analysis, even though it could be improved in some areas, *Retro AS1* is a powerful and sensibly priced multitimbral synthesis engine that could benefit any composer working with one of the new models of Macintosh. Even if you only ever use the presets, it's worth the money, and because it includes a comprehensive mixing environment and effects section, the stereo output isn't a limitation. Definitely worth considering if you have a fast Mac with processor power to spare. **SOS**

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DISTRIBUTION

room for improvement

The purpose of this series so far has been to help you appreciate the role acoustics play in creating a useful mixing environment, and to provide some guidance on improving your own listening space. Though some mathematical concepts have been introduced, I must stress yet again that any major studio design work should be undertaken in conjunction with a good acoustic consultant, who will have the means to measure the actual performance of the room at various stages throughout the project. If you're working at home on a low budget or simply kitting out your garage as a studio, then by all means try applying the principles discussed so far, and if you do intend to go through the maths, consider buying some software to help you. To follow up this series, there'll be a full review of *Acoustic X* in the next issue, and though it costs around £150, it is very quick and easy to use and can be a very educational tool.

In this final part of the series, I'd like to summarise the various stages you need to go through when designing a small studio, and since relatively few structural changes can be made in most home studios, I'm also including a few alternative ways of working that might help avoid problems. Soundproofing is usually the first thing on the agenda, especially in residential areas, and while a complete cure may not be practical because of space or budget constraints, you'll almost certainly be able to make a significant improvement without having to rip the house apart or spend a fortune.

The Source Of Noise

Accepting that you're unlikely ever to get perfect sound isolation in a typical house without major building work, you may be able to meet the problem halfway by generating less noise in the first place. The choice of monitors is important here as this is where much of your noise will be coming from. Nearfield monitors are a good choice for the small studio for a number of reasons. Firstly, the overall monitoring level can be less loud than with a system located further away from the listener, so the effect of the room acoustic is minimised and the overall amount of sound generated is less. Furthermore, nearfield monitors generally produce less deep bass than large, full-range monitors, and

PRACTICAL ACOUSTIC TREATMENT

while bass may be appealing, in a small or untreated room it is likely to be very misleading. Far better to tailor the monitor's bass response to the room so that you get a more accurate picture of what's going on in the mix. As far as noise is concerned, low frequencies cause the most problems, so by cutting down on your bass output, you also cut down on the nuisance factor of your monitoring system. If your system is still too noisy to allow you to work late at night, consider doing at least some of your recording using headphones and save the monitors for when you come to mix.

Noisy equipment invariably causes less unwanted sound leakage if it is isolated from the floor of the room. This can make a particularly big difference if the floor is made of wood. I heard a story about one frustrated project studio owner who replaced his traditional drum kit with a set of electronic pads, only to find that the physical thump of the bass drum pedal still sounded loud and clear in the room below. Try mounting instrument amplifiers on rubber foam or even inflated inner tubes to cut down structurally borne sound. Drum kits are a different matter, and though the amount of sound leakage can be reduced by positioning the kit on a plinth built like a section of floating floor, anyone expecting to get away with Keith Moon impressions in a council house without upsetting the neighbours is doomed to a life of disappointment!

Rock guitars may now be DI'd in a quite satisfactory manner using dedicated recording preamps (such as the Tech 21 Sansamp PSA1 below) or speaker simulators. Speaker simulators plug into the speaker outlet (or occasionally the preamp output) of an instrument amplifier, and filter the sound in such a way as to imitate the

In the fifth and final part of our series on acoustic design, **Paul White** sums up the key stages of designing a project studio and touches on the subject of air conditioning.

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- coloration of the speaker. The output is a low-level signal which can be DI'd directly into a mixing console, and one of the great advantages of this approach, apart from the lack of noise, is that what you hear over the monitors is exactly the sound going to tape. While purists still prefer to mic up their amps, some of the modern recording preamps are extremely good. If you must use an amp, try a small valve practice combo, as these often record better (and sound bigger) than a large stack, as well as minimising noise and spill.

Pragmatic Acoustics

While soundproofing follows fairly predictable physical rules, acoustic treatment is less easily pinned down. As we have seen, although there are well-documented physical laws governing the way sound is absorbed and reflected, there are so many variables in a typical room that precise calculation is virtually impossible. Perhaps this is why so many people consider acoustic design to be as much an art as a science. Even if you could be absolutely sure about the acoustic properties of all the materials making up your room, the acoustics would still change significantly once equipment and furniture was introduced into the studio.

There is also disagreement as to what actually constitutes the ideal monitoring environment, but ultimately, we have to keep firmly in mind that the end result of our efforts is likely to be a CD or cassette heard over fairly small speakers in a variety of imperfect domestic rooms or in cars. One thing you can be sure of is that few people will be listening in acoustically perfect control rooms with monitors the size of cupboards. What's most important is that you have a symmetrical room in which the reverb time is well controlled and nominally even across the audio spectrum. Strong early reflections from the monitors should also be avoided.

Choosing Monitors

Although it is important to listen to big-budget commercial mixes over full-range speakers to confirm what is going on right at the bottom of the audio spectrum, a pair of typical domestic hi-fi speakers may well miss out the lowest octave completely. Unless the control room is adequately large and properly designed to handle full-range monitors, therefore, the results are likely to be more misleading than simply relying on nearfield speakers. Even when a mix can be checked on a full-range monitor system, it is still wise to double-check that it sounds good on a typical domestic two-way speaker — hence the tendency to use compact, two-way devices as nearfield monitors. Yet another advantage of nearfield monitoring is that the weaker bass end leaves the vulnerable mid-range more exposed so that any errors or distortions are easier to hear. This is a very important point as the strong bass from full-range monitors can easily overpower and obscure the mid-range.

Whatever the room and whatever the monitor

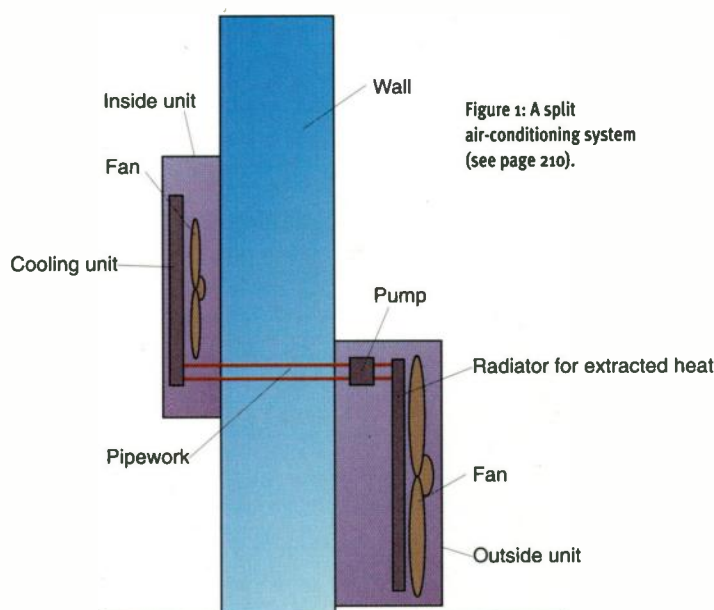


Figure 1: A split air-conditioning system (see page 210).

system used, the way your ears evaluate music varies with time and with monitoring level, so it's essential you have some sort of reference against which to compare your mixes. It's good practice to listen to some known pre-recorded material over the system before mixing. It's well known amongst engineers that adding high-end EQ or processing the sound with an enhancer will tend to make you less sensitive to the actual amount of top end in the mix, so if you don't do regular comparisons with some kind of standard, you could end up with a very oddly EQ'd track. Not all CDs are as well recorded as they should be, but it should be possible to pick out a few that sound good and that cover the styles of music you tend to work on.

Realistic Aims

Commercial control rooms are designed to meet goals which are simply not achievable in the smaller studio or home facility. They have inner shells designed with non-parallel walls, specially-shaped ceilings and carefully calculated trapping. For those of us setting up a budget home studio or small-scale commercial facility, many of these aims simply cannot be realised and we often have to adapt a rectangular room of less-than-optimum proportions. This isn't always as bad as it seems though, because that's exactly the description of a typical living room, and that's where most recorded music is listened to. In reality, most living rooms can be made to sound OK with the right speaker system installed.

There is a school of thought that suggests that most of the acoustic problems of a studio are brought about by the physical needs of the studio space — in other words, a perfectly acceptable room is acoustically spoiled by emptying it of furniture and filling it with gear! This makes some kind of sense as soft furniture offers both diffusion and absorption while studio gear tends to have lots of hard, flat reflective surfaces.

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► With a little thought, however, many of these undesirable effects can be minimised. For example, carpeting the floor will help damp down ringing and shorten the overall reverb time, while a soft sofa at the back will help soak up reflections and damp resonances, as well as giving the clients somewhere to sit. Excess 'liveness' can be cut down by hanging heavy drapes or rugs a few inches from the wall, but don't fall into the trap of overdamping the high end to leave the bottom booming out of control. Possibly the worst thing you can do is to carpet all the surfaces in the room, because then you soak up all the upper mid and top, leaving a room that sounds boxy and muddy.

Bass trapping probably isn't vital so long as you pick a pair of speakers with a smooth bass rolloff and keep some large soft furnishings in the room. Wooden floors and plasterboard-lined rooms also have the natural ability to trap out some of the bass. A monitor design that rolls off gradually below 80Hz or so will work far better in an untrapped room than one that uses heavily tuned porting to prop up the bass down to 50Hz or so but then cuts off rapidly.

There's one important aspect of studio performance that can't be designed in, and that's your own hearing. A good engineer can make effective mixes on the most rudimentary equipment, so long as he's aware of its limitations and he compares his work with a known reference recording from time to time. Try to avoid the temptation to monitor at loud levels for long periods as this not only clouds the judgment and changes the perceived musical balance, it can also cause permanent hearing damage. As a general

rule, monitor your mix at the kind of level you expect it to be played at by the end listener, and restrict loud listening to short periods.

Finding Materials

Many of the materials used in sound isolation and acoustic treatment, such as Rockwool, fibreglass, plasterboard, flooring chipboard, roofing felt, insulation board and timber, can be found at regular builders' merchants. However, items such as barrier mat, half-round door gasket, compression latches, specially perforated peg-board, Lamella flooring, neoprene and acoustic foam is more specialised and so has to be bought via a specialist supplier of acoustic materials. Acoustic tiles can be supplied by companies such as Studiospares, and a trawl through the SOS classified ads often turns up other sources of materials, as well as acoustic consultants. One large UK company worth trying for more elusive materials is Siderise Ltd (+44 (0)181 549 6389), who can also offer advice on installations using their materials. See the information box below for more useful contacts. Other specialist companies may often be tracked down via Yellow Pages. SOS

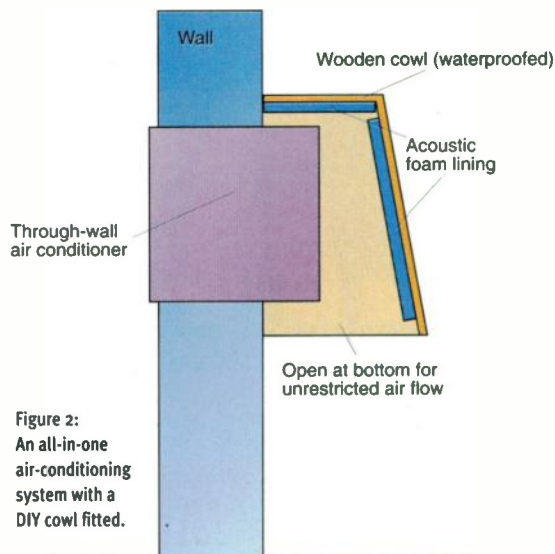


Figure 2:
An all-in-one
air-conditioning
system with a
DIY cowl fitted.

Air Conditioning

Professional studio air conditioning systems are beyond the scope of this series, and in any event, they are not applicable to project studios, because of the sheer volume of ducting, acoustic baffles and acoustically isolated pumping machinery required. Such professional systems can be hugely expensive as well as being bulky, and of course most need to be fitted at the studio building stage. However, some fresh air is needed because a soundproof studio is also, effectively, air tight. Even so, the heat generated by a few racks full of gear in a well insulated room means that air cooling is actually a greater priority than introducing large quantities of fresh air. For small studios, where the doors can be opened from time to time to allow fresh air in, a heat exchanger air-cooling system may be quite adequate.

Basic air conditioning units come in two types: the 'through-the-wall' type and the split system. Both work on the same principle, whereby a fan recycles the room air over a cooled element, the heat being dissipated outdoors. With a split system, the

inner and outer units are connected by small-bore pipework so you don't need to knock a big hole in the wall, but these tend to be more expensive than 'through-the-wall' models and they also need to be fitted by a qualified heating engineer. Figure 1, on page 208, shows a split system. By contrast, the cheaper 'through-the-wall' system is all built into one box, which must be mounted half in and half out of the room via a large hole in the wall. These machines are not designed with sound isolation in mind, so if you do use one, it's a good idea to have a foam-lined cowl fitted over the outside of the unit, taking care to ensure there's no obstruction to the air flow. Figure 2, above, shows an all-in-one system with a DIY cowl fitted. Because of cost considerations, this is exactly what I did in my own studio, and it works fine. What's more, unlike the split system, a 'through-the-wall' unit can be set to change some of the air in the room as well as cool it.

Though a split system always cools the same air, the fact that the inner and outer elements are physically separate and joined only by narrow-bore pipes means that there's

virtually no sound leakage. A further advantage of the split system is that one external unit can feed more than one internal unit, so you could cool both your studio and control room. The actual power of the system depends on the size of room it has to cool and the amount of heat normally generated within the room, which you can estimate by adding up the power requirements of all your bits of gear. Don't forget to add on the power of all the lighting. Whoever supplies/fits your system will be able to calculate the power you need so long as you have these basic figures available.

Large studio air-conditioning systems use large ducts and very low air velocities in order to keep the noise down. However, with a typical commercial air-conditioning unit, the air velocity is comparable to that of a large fan heater, so don't expect it to be completely silent. You can always turn them off for crucial takes. The outside unit can also create fan noise so you should check the specifications of your intended purchase to make sure the air conditioning doesn't annoy the neighbours! To find a supplier, check out Air Conditioning in Yellow Pages.

"A good engineer can make effective mixes on the most rudimentary equipment, so long as he's aware of its limitations and he compares his work with a known reference recording from time to time."

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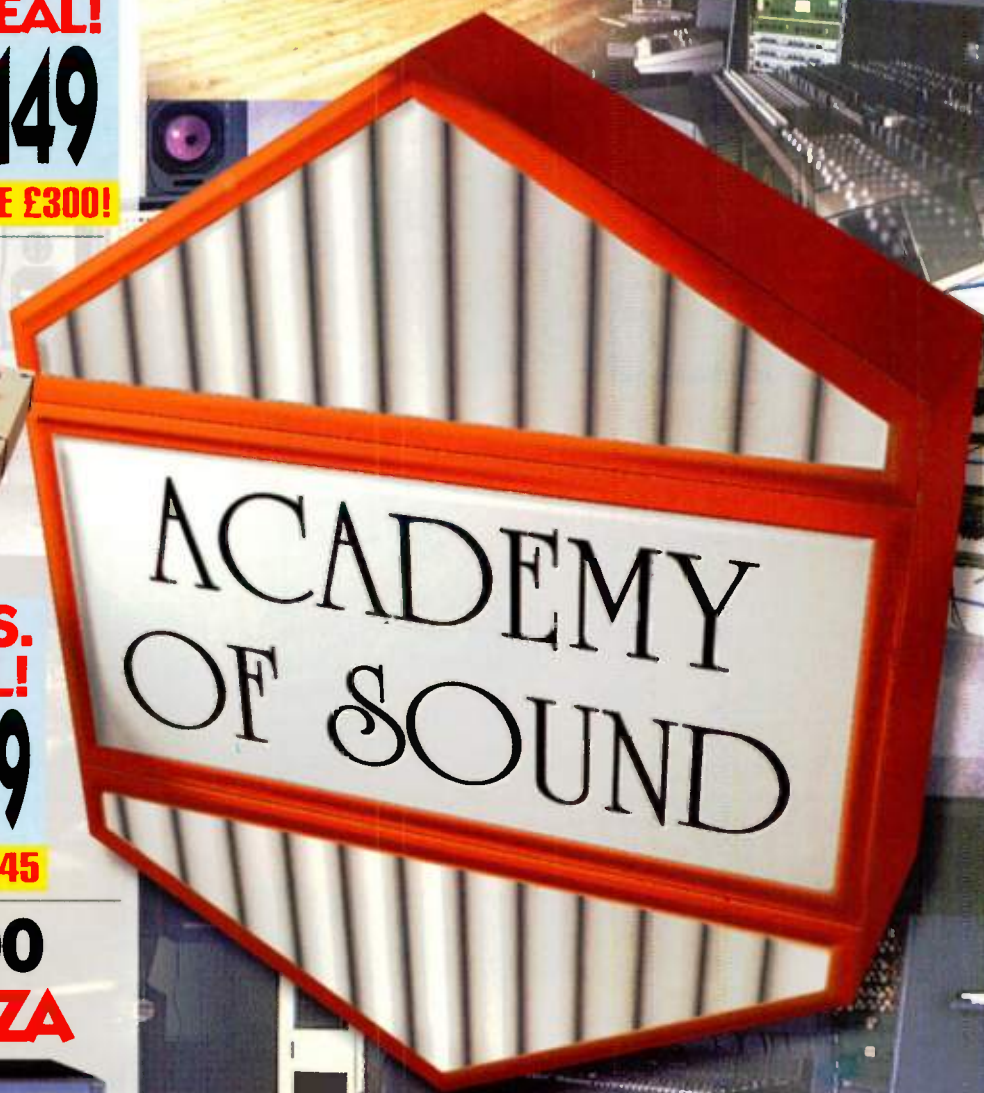
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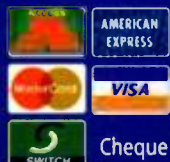
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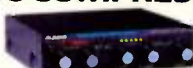
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take it easy

Despite the huge numbers of MIDI + Audio sequencers being sold, it's obvious that not everyone can afford to run many of the professional plug-in effects available. Several companies have now launched 'budget bundles' after seeing a large potential market for entry-level plug-ins that provide the basic functions, but at much lower prices.

Waves have an enviable reputation for high-quality effect plug-ins (particularly in the case of their acclaimed *Native Power Pack* bundle), so their entry-level package was eagerly awaited. Mind you, there is some understandable confusion over just what it contains. First came *EZWaves*, which included *EZverb* and *Audiotrack*. *EZverb* used the same engine as the full-priced *TrueVerb*, but provided only a selection of preset sounds with no user-adjustable controls. This was shipped in two different versions for Mac and PC, but both versions also included *Audiotrack*, a combination plug-in providing 4-band EQ, Compression, and a Noise Gate. However, the *TrueVerb* engine, while giving excellent reverb quality, is not renowned for its low processor overhead. Waves eventually decided to launch a completely new bundle, which is what is under consideration here.

The *EasyWaves* bundle now comprises three completely new plug-ins: *EQ*, *Reverb* and *Compressor*. The graphic front panels are now identical for Mac and PC, and the algorithms are specifically designed for low processor overhead (*EZWaves* registered owners can get a free upgrade to the new version). The PC version will run in Windows 95 or NT, and Waves recommend a minimum of any Pentium processor and 16Mb of RAM. On the Mac you need FPU, or a PowerPC System 7.5 or greater.

Panel Beating

All three plug-ins feature a basic no-nonsense interface, with the minimum of controls. The graphics are decidedly retro, with simulated silver satin-finish aluminium front panels and black mouse-operated rotary knobs. Each plug-in also has a small Undo button in the upper fascia strip, and the Reverb and Equaliser have Clip LEDs, which latch on if internal clipping has been detected (clicking on them resets the indicator). Apart from a bottom fascia strip with the plug-in name, that's it. No presets are provided either, although you could say that doing so would conflict with the aims and immediacy of the 'fast-and-easy' interface.

Reverb

The reverb has four rotary controls: Mix (dry to wet), Reverb Time (0.4 to 10 seconds), Brightness

WAVES EASYWAVES PC DIRECTX PLUG-IN BUNDLE

(Dull to Bright), and Output Gain (0dB down to -24dB). Brightness controls the amount of high-frequency damping, but I doubt that I need to describe the function of any of the others. Processor overhead is extremely low, at about 19 percent with my Pentium 166MHz MMX — as compared with 30 percent for the reverb from the TC *Native Essentials* bundle, and 51 percent for the full Waves *TrueVerb*.

However, overhead isn't the whole story, since the sound of a reverb is very dependent on its algorithms. Comparing the *EasyWaves* reverb with the others at my disposal, its sound is certainly clear, but exhibits rather fluttery and lumpy tails. In context, with music playing, it is very usable, and extremely quick to set up, but left me feeling a bit underwhelmed. Yes, it's certainly far better than *Cubase VST's Wunderverb*, but it is also far less versatile than the TC *Native Essentials* at a similar price.

Waves are rightly renowned for their full price plug-in suites for both Mac and PC, but can they achieve the same reputation at the entry-level end of the market?
Martin Walker wonders just how easy it is.



Equaliser

The EQ plug-in has three bands, each providing +/-15dB of control. Bass operates below about 300Hz, and Treble above 4kHz, while the Mid Control features an additional horizontal slider for continuous frequency adjustment between 300Hz and 4kHz. Processor overhead was a low 12 percent on my machine (similar to the TC *Native Essentials* EQ), and the sound was full and clear even at high levels of boost, although it is fairly easy to run into distortion. I did find the latching action of the Clip indicator a bit annoying — a hold of a few seconds would be far more useful when setting up levels. Otherwise you are constantly clicking to reset it while changing the output level, and even a



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pros

- Exceptionally easy-to-use interface.
- Low processor overheads.
- Good value for money.

cons

- Too few controls to provide much versatility.
- Latching Clip indicators can be annoying.

summary

A useful collection of budget plug-ins for both PC and Mac that perhaps errs on the simple side.

SOUND ON SOUND

normalised file caused it to light up with every control set to 0dB, which seemed a bit odd.

However, the simple interface means achieving your ideal sound is particularly easy. In this respect it is much like using a normal analogue desk EQ, and many people will find this approach a lot simpler than adjusting a set of fully parametric bands.

Compressor

The compressor couldn't be simpler — just two rotary knobs, controlling Compression (from 0 to 24dB), and Mode (from Open to Tight). Waves say that Mode controls the time constants (attack and release), makeup and shape of the compressor (presumably the knee) to make it sound a classic compressor at the Open end, and a limiter at the Tight end. Once again, much like the EQ, I could get a wide variety of effects very quickly, from subtle to extreme, but compared to the TC *Native Essentials* compressor there was much less variety on offer, especially if you want to indulge in the sort of sonic mangling that's so popular in modern music.

Final Word

When I started this review I was expecting to keep referring to the *Native Power Pack*, but although this also features an EQ, compressor, and reverb, the similarity ends there. Waves must be understandably cagey about offending their full-price customers by leaving in too many of the *NPP*'s features, but I'm left in two minds about the *EasyWaves* bundle. At £125, it's certainly good value for money for three plug-ins, and another attraction is the possible upgrade path to the full *Native Power Pack*. However, I do wonder if just a bit too much versatility has been sacrificed.

This doesn't affect the EQ so much, since many people prefer to quickly dial in values, and it does give a clear punchy sound. However, most people already have some basic EQ plug-ins, so it is likely to be the compressor and reverb options that sway them.

In much modern dance music extreme compression and distortion are used, and this compressor doesn't offer many extreme sounds, although it is fine for general-purpose compression. This leaves the reverb, and every musician working with a MIDI + Audio sequencer needs at least one quality reverb. Here, Waves' experience has provided a fairly smooth sound, at a low processor overhead, but perhaps this is not enough. By comparison, the TC *Native Essentials* pack at £149 offers a much more versatile reverb, many more EQ options, including parametric and notch options for all three bands, and the SoftSat soft harmonic distortion option, which is easier to use than watching the *EasyWaves* Clip indicators.

With *EasyWaves*, Waves set out to provide a functional design, fast operation, low CPU requirements, and a simple and user-friendly interface. Despite my reservations, they have achieved all these things. Here, for once, is a bundle that doesn't cost a bundle. **OS**

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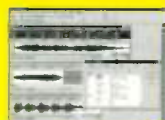
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see bass... hear synth

YAMAHA B1D/G50 MIDI BASS INTERFACE

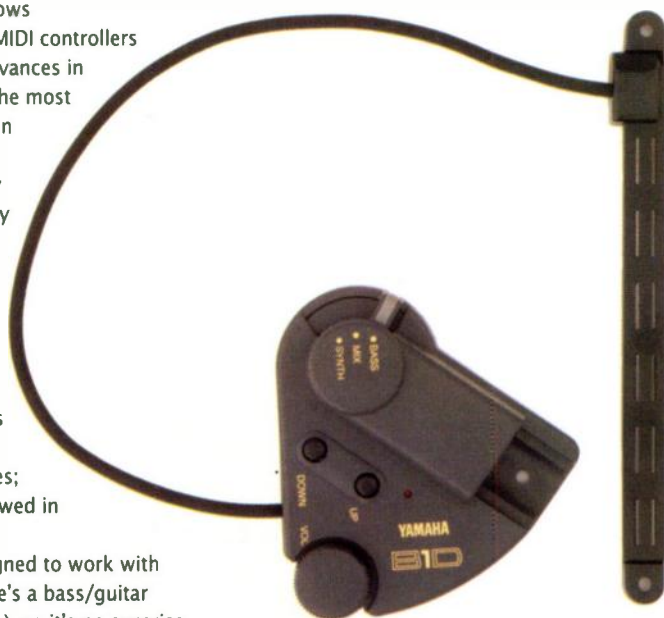
The technology that allows guitars to be used as MIDI controllers has seen some real advances in recent years. Among the most visible developments has been the neural net system that has evolved from research by Yamaha and German company Blue Chip. Yamaha's G50 MIDI guitar interface and G1D divided pickup has been around for some time — *SOS* reviewed it back in December 1996, so check that review out for full details — and Blue Chip are now producing their own interfaces; their Axiom AX100 was reviewed in *SOS* May 1998.

The G50 was always designed to work with basses as well as guitar (there's a bass/guitar switch at the back of the case), so it's no surprise that Yamaha are now producing a pickup specifically for the job. What is a surprise is that the B1D is equipped with six magnet elements (just like the G1D), so it can be used on basses with four, five or six strings.

Fixing The Hardware

Physically, the B1D looks identical to the G1D: the pickup itself is attached by a captive cable to a control box. This features a bass input socket (the signal is sent to the G50, whence it can be routed to an amp or elsewhere), a pair of programmable buttons (used for patch selection, data entry or octave shifting), a three-way selector switch (for choosing bass or synth outputs or a mix of both), and the socket for the multi-way G50 connection cable.

Yamaha generously loaned a 5-string bass for the purposes of this test, but the first thing I discovered was that there was no obvious way to attach the B1D control box to the front of the bass. Yamaha have provided plenty of options for



MIDI guitars have been around for years, but systems catering to bassists are far less common. **Derek Johnson** sets his sequencer's controls for the heart of the bass...

mounting the pickup and control box, from suckers and double-sided tape for temporary use, which leave your guitar unmarked, to velcro and drilled holes for more permanent fixing. I wanted to go for the temporary option, although had I gone for a permanent option, I'm sure I could have got the control box on the front of the instrument (with a slight overhang). Several B1D-toting basses I've seen are so equipped. However, I took a lead from Yamaha's G50 demo video: noted bassist Victor Wootten had his control box stuck to the *back* of his bass. I tried this, and it was perfectly easy to find a space that didn't get in the way of my playing.

If you decide that you must permanently fix the hardware, and are a little unsure about doing it yourself, find a guitar tech and pay him or her to do it for you. You won't be sorry.

Using The System

Once the pickup was mounted, I simply attached the multi-way cable to the G50 (which was patched

Information

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The G50.



into my MIDI system), and started playing. I'm pleased to say that it worked first time, and tweaking string sensitivity helped make it work even better. As with earlier systems, playing should be as accurate as possible to avoid misfiring, but this is made easier by the excellent tracking performance. A delay is present, more so on the E and B strings, but it's barely noticeable once you've adapted to playing with the system. It's even good enough to reliably input notes into a MIDI sequencer, although the G50 generates a lot of MIDI data while tracking playing, and this shows up in a sequence. The G50 also features a monophonic input for pitch-to-MIDI conversion independent of the pickup system; I tried this with a bass, and while it worked consistently, the tracking delays served as a reminder of how things were before this new technology. The B1D/G50 combination is a huge improvement!

The B1D makes it possible for bass players to take full advantage of the G50's comprehensive feature set. Different MIDI channels, and patches, can be assigned to each string,

playing position on a string can be used to change MIDI parameters (filter cutoff, for example), crossfade between two patches, and much more. Attached MIDI synths respond to a full range of velocity and pitch-bend (though the latter can be a little flaky) and, of course, you can play chords. In fact, it's possible to use a footswitch to hold a part on one channel while continuing to play with another sound on another channel. The G50 comes set up to interface with Yamaha's XG family of synths — the MU80

YAMAHA B1D/G50
£179/£550

pros

- Tracks well, even on low notes.
- Reasonably priced.
- Integrates well with Yamaha XG synths.

cons

- Setting the G50 up for use with non-Yamaha XG synths may be a drag.
- Positioning may be problematic with some basses, especially if you don't want the control box on the back of your bass.

summary

Bass players have few options in the MIDI world, so it's gratifying that the B1D/G50 system works as well as it does.

SOUND ON SOUND

and MU100R, for example — and will automatically fill the attached synth with suitable sounds and sensitivity settings. If you don't own one of these, you'll have to set things up yourself, which might be fiddly. It's also worth noting that the B1D pick-up will also work directly with the Axion AX100 mentioned in the introduction, so you actually have a (small) choice of interfaces.

Conclusion

The bottom line is that while guitar-to-MIDI conversion was tricky in the past, bass-to-MIDI conversion was pretty much hopeless. This pickup/interface combination changes the situation and lets bass players enter the world of MIDI with the minimum of hassle. **SOS**

Sound Solutions

Spahnberg

ankowalk

Plug-In Bonanza

The latest plug-in's have arrived. Direct X and TDM. Opcode's superb Filter and classic Vocoder along with Fusion Vinyl are all here at affordable prices. Cakewalk's CFX1 package with compressor limiter etc. Waves high quality reverb and audio processing. Waldorf D Pole and more...inc Q Tools 3d sound processing

Fusion Vocoder Mac/PC	£125.00	Vocode TDM	£239.00	Fusion Filter Mac/PC	£125.00
Fusion Vinyl	£ 79.00	CFX 1	£129.00	Q Tools AX	£179.00
Waldorf D Pole	£149.00	Wavlab Plug-ins	£289.00	Cubase Plug-ins from	£119.00
Easy Waves	£125.00	Native Power pk	£379.00	Sound Forge XFX 1-3	£ 99.00
Acoustics Modeller	£199.00	DSP Bundle PC	£739.00	DART	£ 49.00

Editing Software

Cooled! Pro is fast becoming one of the most respected audio editing package for the PC, with superb noise reduction and fantastic real time preview of most effects it is truly stunning. It even has a 30 band graphic eq with real time preview! A truly powerful package. Sound Forge too is hear along with Wavlab and XG Edit. Gary Gregson's superb XG Editor.

Cooled! Pro	£279.00	Sound Forge 4.5	£279.00	Wavlab	£279.00
XG Edit Registration	£ 25.00	ACID	£249.00	Recycle PC/Mac	£179.00

Software Synthesis and Samplers

A new breed of software has arrived offering powerful synthesis and sampling, the first was ReBirth now in V2 form, one of the latest is Reality a super power synth coming with everything from FM to physical modelling, on top of this it is a mega powerful sampler and offers modulation of samples. VAS (Virtual Analogue Synthesizer) offers some powerful software synthesis at an entry level price

ReBirth PC/Mac	£139.00	Reality	£299.00	VAS	£ 29.95
VAS Modular	£149.00	XPOSE	£349.00		

Hardware

Phat Boy is here, the superb MIDI controller from Keyfax with enough knobs to keep you playing for hours! You want 8 in 8 out on a 24 bit PCI card with external rack unit featuring full size jack and XLR ins and outs together with MIDI for less than £500? Well we've got it. Gadget Labs Wave8/24 and it's only £495!!!

Phat Boy	£139.00	Pinnacle from	£359.00	Fiji from	£229.00
Layla, Gina, Daria from	£269.00	DMAN 2044	£219.00	Terratec EWS64 XL	£379.00
Digital Audio Labs	£99.00	SEK	£99.00	Wavecentre	£429.00
Tango	£99.00	Sonus STUDI/O	£579.00	Yamaha XG from	£ 69.00
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Yamaha SW1000	£449.00	DSP Factory 2416	£599.00	As44 Expansion Unit	£199.00

DMAN 2044 - £219.00

Break Out Box - £45.00

DMAN 2044 Combo - £254.00

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card offering 4 independent in's and break out box. Super clear hard disk of 94db. Multi card driver allows two Mac drivers also available. On Sound card if it's specification it card at a £500 price point.

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for boosting low level signals from source. Two independent inputs, both gain with a frequency response of 5 khz gain controls. An extremely useful unit

SAV Mixer - £255.00

Just what we needed, an ADAT to SPDIF converter with built in Digital Mixer! 24 bit data transfer and 56 bit internal processing make this a powerful piece of kit. Sample rates from 39 kHz to 51 kHz supported, pan and gain controls with 128 step resolution. Also converts SPDIF to ADAT.



Co2 - £45.00

We all know it's Carbon Dioxide but this SPDIF coaxial to optical and vice versa it to be used as a booster for long



little baby ain't gas it's solid. Converts also has a pass through mode allowing lengths of cable.

Flying Cow A/D - £149.00

Flying Cow D/A - £149.00

Flying Cow A/D and D/A converter - £298.00



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- **TRANCEWAVES SOUNDCARD**
- **RED SOUND MICRO BPM**

Red Sound Systems Micro BPM Headphone Amp/bpm Counter

If you saw our review of the Voyager 1 Beat Extractor in the Feb '98 issue, you'll already know what to expect from the Micro BPM — a readout of bpm (beats per minute) derived from an audio input. However, where the more expensive Voyager 1 provided twin channels, and a MIDI Clock out to drive a MIDI sequencer, the Micro BPM

display. The rotary headphone controls beneath this are for Level, High EQ (+/-12dB at 6.5kHz) and Low EQ (+/-12dB at 100Hz). On the bottom panel is a headphone output (quarter-inch stereo jack), and a small slide switch to switch this output between stereo and mono.

In Use

Using the Micro BPM is simplicity itself — using the supplied quarter-inch stereo jack to 3.5mm stereo jack lead, you connect it to a headphone or line output on your mixing desk, and then adjust the level at the input for optimum bpm tracking. Once a suitable signal is present, lock-in time was normally about two seconds from a standing start. A four-digit readout of bpm is displayed (90 to 180bpm, accurate to 0.1bpm), and the Beat LED flashes on each downbeat. The Voyager only had three digits, and so could not display fractions of a bpm as the Micro can. After lock-in, the display will still continually update its tempo reading, and even if the music drops its rhythm temporarily the 'beat hold' function will keep the display readout and Beat LED operational for another ten seconds (to cope with short breaks in the music).

The bpm-counter engine is taken from the more expensive Voyager 1, and works well on material with strong bass and snare drum, but stray far from dance and rock territory and it finds it difficult to cope. After a sudden change in tempo, moreover, it took anything up to 30 seconds to readjust, while it desperately waited for the original tempo to continue.

Red Sound's Micro BPM...
the DJ's friend.

(as its name suggests) strips things down to provide a lower-cost unit with only basic bpm readout, along with a powerful headphone amplifier.

The Micro BPM has a strong metal casing with an elegant rubber 'flock' finish. On the top panel are sockets for audio input (3.5mm stereo jack), and for the line-lump mains power supply. On the front panel (from top to bottom), are a multicolour input level LED, a Beat LED, and a bright red, four-digit bpm

Trancewaves Vol. 1 Wavestation Soundcard

In contemporary music terms, the Korg Wavestation is verging on the antique, yet it still has the capacity to surprise and delight. When the instrument first appeared on the scene, dance music was considerably less advanced than it is now, yet programmer Peter Osborne has managed to produce a ROM card containing a whole new set of 50 fresh-sounding wavesequences and programs designed specifically for the dance composer. One reason the card seems so up to date is that it includes new dance-style sounds, not just rehashes of the existing factory sounds.

As you might expect from the title, *Trancewaves Vol 1* is all about loops — not drum loops but rhythmic, melodic textures and arpeggios that sound every bit as complex and sophisticated as the examples found on better sample CDs. The feel ranges from computer-game frantic to chill-out cool, with patch titles like 'Hold and Evolve', 'Speedway', 'Rezomania', 'Trancendental' and 'Hellbound'. Most of these sound hugely powerful and complex, needing only a bass line and a backbeat to form the basis of a complete track, and they all come with effects programmed in. OK, they're

great loops, but what if they're not in the right key or the right tempo?

Remember these are Wavestation patches, not samples, so you can play them at any pitch and the tempo will always remain constant. What's more, you can use them multitimbrally up to the polyphony limit of your synth. Best of all is the Wavestation's ability to synchronise wavesequences to MIDI Clock, so all you need do is dive into the MIDI menu and switch the wavesequence sync from external to MIDI and you have rock-solid lock with your sequencer. With a sampler, you're limited by how far you can timestretch something to the point it becomes unusable, but you can play these loops at absolutely any tempo and they still sound pristine. *Trancewaves Volume 1* is hugely enjoyable with bags of attitude and a good variety of styles. If you have a Wavestation and make dance music, then this card should be right at the top of your 'must have' list.

Paul White

Information

E £55.00 including VAT.
T Sounds OK
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F +44 (0)1276 682717.

A reset button would have been useful to force it to restart in this situation.

Summary

For four-on-the-floor dance beats, this little box will quickly lock in and provide an accurate tempo readout. The headphone amplifier is powerful, and the Level and EQ controls are useful. At half the price of the Voyager 1, the Micro BPM fulfils a useful function, but is far less exciting, since there is no provision to lock

to MIDI. However, if the excitement is already in the music, and you just want to know how fast it is, then the Micro BPM is a neat and cost effective way to find out.

Martin Walker

Information

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MCD 100

Kurzweil Korrections

I was interested to read Paul Ward's review of the K2000VP in September's SOS. However, I was disappointed to see a few errors creep in.

Paul says that the K2000 can accommodate an internal hard disk of up to 850Mb. This is not true. The K2000 can have an internal SCSI hard disk of almost any size (in Mb) but can only address the first 2Gb (up to the DOS FAT16 limit). The other things about internal hard disks are that the drive must be able to fit physically (be 1/3 high) and not draw too much power (specs published on Young Chang web site).

Paul also says in his review that there are three sound blocks available for the K2000 — orchestral, contemporary and piano. This is not true. The piano sound block is only available for the K2500 —

it is built into the daughter board for the K2500 that you plug the other two ROM sound blocks into.

In his conclusion, Paul says that he hoped the VP would come with the expansion options as standard. Well, they do come as standard on the Kurzweil K2VX, which is a K2000 with PRAM and sound blocks. I thought it might have been helpful to mention that the K2000VP is also available as a rack. Anyway, I'm pleased to see the K2000 being mentioned again in SOS. It is an amazing instrument which is not nearly as popular in the UK as it is in the USA and Europe (pricing structure and UK marketing have a lot to do with this).

Mark Scase
via email

Paul Ward replies Thanks for the comments. It's always gratifying to realise that someone out there is taking enough interest to keep us on our toes! To go through the points you raise: I quote directly from Young Chang's K2000VP

web site where they say that you can "Connect external hard drives up to 2Gb, internal hard drives up to 850Mb..." Prior to the submission of the review I had also checked this with Washburn UK, who confirmed that the limitation is down to internal power consumption, as you rightly suggest. If you feel comfortable with exceeding this size, then that is between you and your beloved K2000, but if an 850Mb limitation is good enough for both the manufacturer and the UK importer, then it's good enough for me — fairly warned ye be says!!

I stand by my comment that the K2000VP should really offer more in the way of expansion options fitted as standard for the price. Your comments about the K2000VX are correct, but the machine under review here was the VP, not the VX. Nuff said. As for the Piano ROM Block, yes, I admit it. My enthusiasm got the better of me and I completely forgot that this option is not available on the K2000 series. In my defence I can only say that I've been around the K2500 for too long!

I'm glad you appreciate SOS's exposure of the K2000. I agree that this is a machine that deserved much greater recognition in the UK, although its price has always been on the high side to make it much of a people's champion. In my opinion, though, this machine has now pretty much had its day, and Kurzweil need to move on to pastures new — and I say this as a committed K-series fan. It'll be a cold day in hell before I sell mine though! ■



The Kurzweil K2000VP:
not cheap, especially if you
add in the cost of the expansion options.

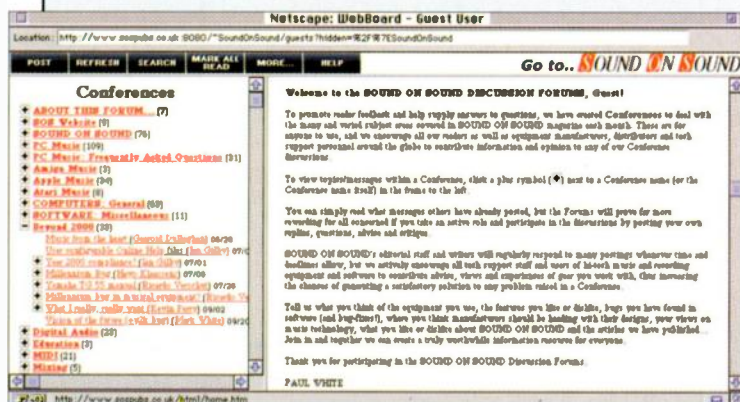
SOS Discussion Forum Now Online

Every month we receive mountains of letters, faxes and email, only a handful of which are published here in Crosstalk. Very often we find ourselves being asked the same question over and over again. So, to promote wider feedback and help supply answers to more questions, we have launched a bulletin-board style Discussion Forum on our web site. As the accompanying screenshot shows, the Forum is split into numerous Conferences, each dealing with one of the many and varied topics covered in Sound On Sound magazine each month: PC Music, MIDI, Recording, Digital Audio, Synchronisation, Top Gear, to name but a few...

The Forum is for everyone to use, and we encourage all readers as well as equipment manufacturers, distributors and tech support personnel to contribute information and opinion to any of our Conference discussions. You can simply read the messages others have already posted, but the Forum will prove far more rewarding for all concerned if you take an active role and participate in the discussions by posting your own replies, questions, advice and critique.

Naturally, SOS's editorial staff and writers will regularly respond to as many postings as time and deadlines allow, but with a worldwide resource of readers and specialists to draw on, the Forum will often deliver a faster response and greatly increase the chances of generating a satisfactory answer to a particular problem or query. Give it a try!

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FLAT NOT FLATTERING

Roger Quedstedt's reputation stretches back to the early seventies. The advent of high efficiency drivers meant speaker manufacturers had the means to deliver new levels of enhanced highs and lows and many went down this route. In contrast Quedstedt installations from Abbey Road to The Hit Factory are still identified by their accuracy and ability to reveal the music's finest detail. In this respect, the new F11 (pictured left) redefines the standard for compact monitors. Whilst many speakers strive to impress with their sound, the F11's offer a level of flatness and accuracy which is unsurpassed in their class.

F11 for ample headroom, and then directly coupled to the drivers (magnetically shielded as standard), which gives an extremely high damping factor for excellent cone control.

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To set a new standard for compact monitors, the F11s had to be different by design - and they are: the F11s are the combined result of Roger Quedstedt's experience, and hundreds of man hours of listening tests. The cabinet is made from a specially formulated and patented mineral loaded material, which is 50% denser than the MDF used by most other speaker manufacturers, and far stiffer. Another advantage of the material is that the entire cabinet is moulded as a single piece, complete with mountings, which together with the increased density and stiffness, cuts down internal rattles and resonances to virtually zero.

But the differences don't end here: the built in active crossover has been fine tuned for a completely seamless crossover point, and subsonic and supersonic filters are employed to prevent any unnecessary frequencies entering the system. Two custom designed amplifiers are used per speaker, with a conservative rating of 150W RMS. These are backed by their own heavy duty power supply



And the result? As shown in the diagram above, design innovation means that the F11's are accurate to within $\pm 2\text{dB}$ over the quoted frequency response range (65Hz - 20kHz), and indeed to an incredible $\pm 1\text{dB}$ over more than 95% of that range. The sound is transparent, detailed, and above all, accurate; and at well under £1,200 a pair, the price of honesty is less than you think.

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Once Bitten

I was delighted to read Gordon Reid's retro on the Bit series of synthesizers (*SOS* August '98), having recently bought a Bit One for £100. I knew it was poor in some areas, but it was cheap and sounds really good. I really want a Synthex, but this'll do for now! I have always admired Gordon's articles on synths over



The Bit One:
a Bit of all right?

the years, I really appreciate his frank no-nonsense approach. It's refreshing when somebody doesn't drool (too much) over some old synth.

Anyway, I'd like to clear up a few points in the article.

- On my Bit One, I can send it an Omni Mode off message and it will then respond only on channel 1.
- I save my patches as audio files on my Mac. 8 bit 11kHz works fine, in fact, it's incredibly reliable compared to other tape-based saving systems I've used over the years.
- My Bit One responds to program changes as well as Note On.

Gordon's article was absolutely spot on: the MIDI implementation is a joke, but the sound is good. I have experienced the weird oscillator problem he spoke of, but I thought one of the voices was broken. Is there anyone out there who could tell me how to calibrate my instrument? There are quite a few web pages, but there is a dearth of technical knowledge.

Thanks again for a pleasurable read, great magazine; keep up the good work!

Tom Mulcahy
via email ■

March Of The Minidisks

It has been interesting to see Minidisks slowly creeping into the professional audio field — even to the extent of field-test

reports appearing now and then in various audio magazines — and I would like to make a comment.

I work as a sound engineer in various studios at a national broadcasting company. I am also currently busy remastering to CD recordings in the sound archives that range from old 78 rpm acetate records, from as far back as 1934, to recent 15ips tape recordings. For the tapes I use SADiE, and for the records *Wavelab*, with various Steinberg de-noising software packages and Yamaha CD writers.

Minidisks have been brought in to our operations on a large scale. Commercial are put on discs in playlist order for broadcast on air, programmes are recorded directly on to MD, also for broadcast, and interviews are done on portable recorders (mainly Sony and Aiwa). Minidisks are also used to compile music playlists, much in the same way as the old carts — except that instead of one track, between 10 and 12 tracks are put on one MD.

Over the last year or so, Minidisks have also been replacing the tapes previously used to make off-air recordings. Sony has a very nice idiot-proof machine for this sort of thing; I have also used the Otari, Denon and Tascam machines. In the areas where a lot of editing is done, Tascam MD801R machines were installed — I find this a better machine than its Denon counterpart, as it does not cut audio when using the jog wheel to do frame-by-frame tracking. This also makes it ideal for removing double breaths and stutters when editing a speech track.

My point in listing all of these uses for Minidisks is just this: I realise that one always wants the best possible sound quality in a recording, but aren't we sometimes ignoring the fact that sometimes one percent less than perfect may be more cost-effective, easier to use and not lead to any noticeable loss?

Willem Lategan
via email ■

Learning Curve

Although *SOS* is sometimes hard for me to get through my local newsagent, it is nonetheless my only primary source of quality journalism, and represents excellent value for money, whilst keeping me informed of current changes and trends in the industry (hi-tech recording is, as you will no doubt be aware, still very much a minority industry here in Australia, due to

the size of the market). The quality of *SOS* reviews has also been instrumental in guiding the purchase of several pieces of my current studio equipment.

It is interesting to note that although there is real growth in the quality of education available to prospective students of audio engineering and ancillary trades here, there unfortunately exists no corresponding real growth in jobs available to the majority of those students. How this will change or affect the institutions providing education remains largely obscure, although the recent introduction of courses such as DJing and Multimedia indicates the need for such institutions to diversify.

As I feel that, in its basic form, the process of recording is still incidental to the performance of music, and that ultimately a knowledgeable and talented musician will enhance his career more than his non-musician counterpart, could it be that one of the major processes of recording of music — *performance* — is largely ignored or regarded only as a by-product by some institutions, in order that they may be commercially viable enterprises? I would be interested in any response by your readership.

Graham Lockwood
via email ■

Board Of The Dance?

This is the first time I have been motivated to contact your magazine, though I have been reading it since Issue 1. My enquiry is regarding Paul Wiffen's Synth School article, and specifically the mention of a dance expansion board for the WSA1. I bought a 'bargain' WSA1 for some 600 quid, and later tried to buy an expansion and S/PDIF board with no luck. I even 'phoned Technics who said no expansion or S/PDIF boards ever existed (I can understand them being a bit churlish after their new flagship sank without trace!). I would like to know if it's still possible to source WSA1 expansions or voice sets so I can buy one.

Gordon Hall
via email

Assistant Editor Sam Inglis replies

When Technics discontinued the WSA1, remaining UK stocks were bought up by Turnkey, but it seems that these have long since been sold off. Perhaps your best bet is to visit the unofficial WSA web site at www.users.zetnet.co.uk/logs/technics/technics.htm ■

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David Ruffy: Ruff Cutz (AUDIO CD)

The last Ruffy sample CD release was some years ago, and was a very decent naturalistic drum CD. You could be excused for thinking a different drummer was involved this time. Underpinning this set is solid white funk, but the production values have been heavily influenced by the ubiquitous (as far as recent AMG releases are concerned, at least) Tackhead. Tackhead were where live hip-hop drumming and hard-as-nails samples first evolved into a genuinely new species of noise, and main man Keith Le Blanc's output has always been warmly welcomed on these pages. Here Ruffy has been co-produced by Tackhead aficionado Lee Groves.

The first fifty-four tracks contain one big backing track apiece. Each comprises many bars of live drumming, often with electronic buzzes, samples and moods interspersed and/or overlaid. Many sound like almost complete pieces of music — you might need to add a bass line, vox, maybe pads and fills and you'd have a song. And there's the rub. With such a large amount of the work done already you have to go along with the prevailing vibe, rather than use the track/groove as an element in your own composition. Around 10 of these tracks are culled from what the sleeve calls "our *Decksplotation* vinyl product", which I guess is a collection of breaks and beats for DJs to mix in with dance

records. You are not allowed to exploit these beats commercially without contacting (ie. probably paying dues to) AMG. Do you need this hassle? Isn't sampling hard enough work already?

So what of the content? Well, the drumming is up to scratch, and the kit sounds are big and live without getting messy. However, the playing often errs on the busy side for my (albeit increasingly mellow) taste. An improbably large range of tempos and styles is covered, from 3/16ths dub, to hard funk, to wall of sound, to frantic house. First up we have a 100bpm heavily compressed and energised heavy beat, with deep clangy snare. Track 2's pattern runs at 135bpm, and sounds very natural apart from the odd 'digital feedback' buzz fill. The drum patterns do sound suspiciously similar in both cases, though. Could they be the same recording with different playback rates and audio treatment? Other tracks variously feature straight drumming, or drums plus noises, or 'larged up' drums (compressed/equalised/varispeeded).

Thereafter, we are treated to a pretty decent set of shorter drum loops and snips, followed by crash cymbals (wot, no kick, snare or hi-hat selections?). The loop tracks are mostly tempo-consistent, containing several bits cut out from longer drum patterns. Thus you might get a beat or two, and several fills or frills to play around with and re-sequence at your pleasure. Tempos and styles cover the same massive spread as the full grooves of tracks 1-54 — even larger in fact, from 75 to 280 (yes 280!) bpm.

There is much cleverness on display in *Ruff Cutz*, with the art of the modern engineer/producer highly visible at times. Unfortunately, the cool thing to do these days is to let the playing speak for itself. Thus, the moments where Ruffy

cuts loose from the dictates of production (like the punky interlude) sound freshest and most lively. *Cutz* is ultimately a misguided product likely to be of limited value to most. You might love it just to spite me — but hear it before you buy it.

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Independence (AUDIO CD)

Now here's an interesting concept. A sample CD that looks and sells itself exactly like a funky DJ remix production kit, but is actually nothing of the sort. I have to say it starts in the most boring way imaginable, with the first 17 tracks taken up entirely with sloppy and uninspiring retro '80s beatbox loops. The producers obviously haven't worked out that the reason the TR808 and 909 drum machines are so popular (and probably over-used) is because they sound great, whereas most of the other drum machines built around that time (TR505 anyone?) unfortunately do not.

There are a few interesting stereo analogue synth multisamples which could prove useful, but then it all goes pear-shaped again in the second section — '70s disco. Instead of looking back across the most inspired beats of the decade we are treated to a series of rather lukewarm acoustic drum kit loops and some heavily effected programmed breakbeats. Admittedly there is much authenticity to these loops and

the single-shot drum samples provided are a good inclusion, but the playing isn't always as spot on as it perhaps could be, the sounds don't exactly leap out of the speakers at you, and I found myself getting quickly bored by it all. There are a few anonymous vocal soundbites, as well as some nice disco bass guitar grooves and a few rather naff DX7 multisamples.

Just when you thought you'd heard it all before and the vinyl scratching on tracks 45-47 draws mercifully to a close, however, the Brazilian drumming section begins and all of a sudden the whole CD moves up a gear. Some of the most exciting, usable and completely authentic South American drumming I have ever heard on a sample CD graces tracks 48 to 62. Sambas, Fiesta rhythms, Guiros and Timbales — all are well recorded and the single-bar loops are perfect for adding a real party atmosphere to any track. Whether used on the dance floor or as part of an ethnic piece, they really shine. The same can be said for the next section 'Bhangra and Oriental style'. Again, there are loads of really great drum and percussion patterns including tablas, bells and chimes all the way from Goa and Tibet. This is one of the strongest sections on the CD, and the glorious sitar samples (grooves and glisses) finish it off beautifully.

The last section 'African Vibrations' is also something of a revelation, not only for the

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► authenticity and great sound, but for the sheer number of usable loops that you get for your money. The whole thing ends with some wonderfully frantic Zulu and Voodoo percussion at 140bpm, and just when you thought you'd been spoilt enough, up pop a dozen or so didgeridoo samples to play with. Ethnic heaven!

For a sample CD that has so much to offer the programmer, it seems such a shame that the producers felt the first half of the disc needed to be filled up with rather uninspired retro kitsch. As a funky remix production tool, I can't honestly see *Independance* setting the world on fire, but if you are looking for some of the hottest Brazilian, Bhangra and African percussion loops around, my advice is to buy this CD, but listen to it from track 48 onwards. *Paul Farrer*

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Wall Of Vinyl

(AUDIO CD)

Regular readers will know that I think construction sets are best left in the hands of six-to-12-year-olds. It was with much surprise, therefore, that I found myself warming, nay positively overheating, when *Wall of Vinyl* hit the turntable. After all, the bulk of this CD is in the one-tune-per-track, full mix plus breakdown products format. But whereas the opening demo on most sample CDs sounds just like that — a demo — track 1 on

Wall of Vinyl makes you wonder whether this isn't a viable music release you've put on by mistake. The vibe is cool, the beats are not quick, and the doctrine of 'less is more' is strictly applied.

Now vinyl, to me, implies scratchy turntable noise, but no sign of same was spotted on this product. Therefore copious amounts of very careful and probably expensive denoising and declicking have been applied to material cut from records, or some new recording has taken place, or both. No matter, these mono beats and pieces kick in clean as a whistle.

Tracks 1 to 60 comprise 'Tunes'. 'Tunes' comprise 'drums' plus 'colour'. Drums are presented in the form of a loop, typically lolloping in a loose-but-tight rare-groovy sort of way. Not hard-edged, but not soft either. Jazzy, soulful, hip-hoppy and, most importantly, very pleasing. Appropriate and associated single drum hits (just enough for you lazy samplists) follow the loop, before the colour bit that winds each track up. This can be any combination of scratching (good stuff, honest) guitar, bass, sax or keyboard. It's as simple as that.

As added extras you get a further thirty-odd beats and breaks (some with effects like filter sweeps), a selection of bass tones, plus some effects and scratches. I should mention that tempos are given, and most hover around the highly nourishing 90-something bpm mark with a few doing just over the ton.

The great thing about these backing tracks is that they are both good and fresh enough to use on a release right away, and anonymous enough for any artist or producer/remixer of stature to stamp their authority all over them. The worst of them sound like they could've come off a *Ninja Tune* CD. And that's a real compliment. *Wilf Smarties*

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The Digital Kitchen's Definitive Grooves

(AUDIO CD)

With The Beastie Boys and Run DMC currently enjoying something of a renaissance, it seems that '80s hip-hop is back with a vengeance, and Voice Crystal (a company perhaps better known for their synth ROM and RAM cards) have brought us *Definitive Grooves*. This 80-track audio CD starts with a collection of 99 breakbeats that all fit comfortably into the rap and hip-hop genre at between 85 and 114bpm. The loops appear as either two- or four-bar patterns, and will be a great help to anyone looking for a large slices of late '80s rap nostalgia featuring, as they do, heavy use of the TR808 and great big meaty kick drums with gated reverbs. If I had to make one complaint, though, it would be that the whole point of being 'retro' is to take established ideas from long ago and give them a '90s spin — but this selection of drum loops, although accurate, musical and above all highly usable, relies a little too much on established forms and patterns.

Following on from the loops is a large collection of individual single-shot drum samples (50 kicks, 50 snares, 50 hi-hats) followed by about 10 tracks of funky vinyl scratching. This is a real high point of the release and makes for a powerful production tool. The sheer number of scratches and effects will doubtless keep hip-hop freaks busy for ages (that's if you don't mind wincing every time you hear the desperately done-to-death 'I know you're gonna dig this')! After the scratching, there are a few

rather bland orchestra and horn hits, mixed in with a few analogue-style brass licks with lots of pitch bend and modulation. Luckily, this section doesn't last very long and it's only a few clicks of the skip button to the Vocoder and Talk Box section. All manner of classic grainy vocoder lines, words and effects have been recorded in wonderful lo-fi for your sampling pleasure and very nice they are too. The producers have wisely adopted a 'warts and all' policy for these sounds, and all the warmth and grit shines through wonderfully. Again, perfect fodder for retro hip-hop and rap tracks and if these samples don't want to make you rush out and buy a vocoder, nothing will.

The tail end of the disc starts with a handful of 'Sexual Female Moans' (otherwise known in the sample CD business as a pathetic, tired and rather sad attempt at filling up disc space and/or amusing bored 13-year-old boys) and some altogether more interesting analogue sine wave samples. The collection of bass samples featured on the last couple of tracks is a welcome inclusion, and covers a wide range of squidgy and familiar sounds, the only problem being that none of them appear as multisamples, therefore limiting their usefulness to about an octave and a half.

Overall, *Definitive Grooves* offers the user quite a lot: tons of really cool breakbeats, great scratching and a vocoder section to die for. What it does less well is fill up the spaces in between all this with the kind of material that most other sample CD producers were doing (much better) nearly nine years ago. If you're looking for hip-hop loops look no further, but as an all-in-one production tool (unless sine waves and moaning women are your thing) approach with caution. *Paul Farrer*

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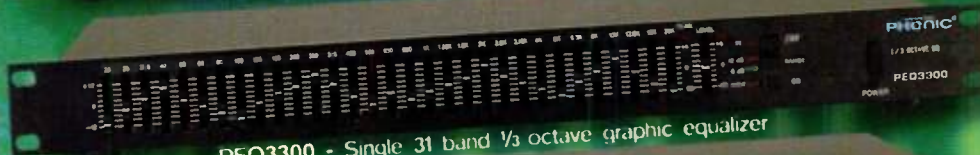


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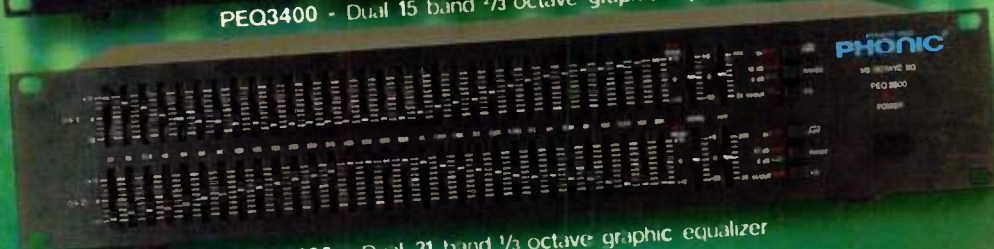


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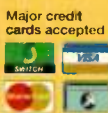
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Martin Walker is the first to take the chair in our new regular column on Internet-based resources for the hi-tech musician. This month, he looks at sites that aim to help you improve the sound of your studio.

Surfing the Net can be a wonderful or frustrating experience, depending entirely on what you find. When you are looking for information on a particular subject, search engines can throw up hundreds or even thousands of possibilities, but despite (or because of) this, you can still often fail to find what you are looking for. Net Notes is a new column that aims to home in on subjects of particular interest to musicians, and it will be chaired by a variety of *SOS* contributors. Although there will be quite a few URLs on offer,

you should also be able to find this column on the *SOS* web site (www.sospubs.co.uk), so you can point your browser there to click on links directly. The beauty of this dual-pronged approach is that you can still browse through this information at your leisure, from the comfort of an armchair, which will keep your phone bill down when you're actually on line.

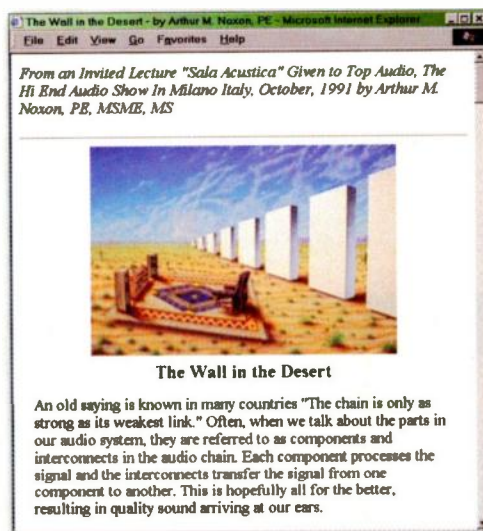
My chosen subject is one that affects us all: getting the best sound in your studio, whether it is a commercial venture, or crammed into a spare bedroom. Series on improving acoustics are

always a popular subject in *SOS* (see the fifth part of Paul White's series starting on page 206), and there is a huge variety of sites which can provide further useful information; much of the material mentioned here is best downloaded to your hard drive to be read at your leisure. If you are comparatively new to the subject, you will find the content of some sites easier to understand than others — they vary greatly in the amount of technical content, but there should be something for everybody here.

hear as the amplifier or speakers. Another more advanced article is 'The Chain is as Strong as Its Weakest Link' (www.tubetrap.com/articles/chain.htm), which takes things further, including an overview on dimensions and floorplans, basic construction, equipment (including suitable lighting design), and control of reflections.

For a more down-to-earth DIY approach to small studio acoustics, BKL Consultants of Vancouver (www.bkla.com) have

Tubetraps have some excellent articles on their site, including 'The Wall in the Desert', which explains how a room changes the sound from your loudspeakers.



The Wall in the Desert

An old saying is known in many countries "The chain is only as strong as its weakest link." Often, when we talk about the parts in our audio system, they are referred to as components and interconnects in the audio chain. Each component processes the signal and the interconnects transfer the signal from one component to another. This is hopefully all for the better, resulting in quality sound arriving at our ears.

Stand And Deliver

Speaker stands can do a lot more than place your nearfield monitors at a suitable height. For a discussion of just what makes a good stand, take a look at www.feist.com/~nihil/stands.html. This is just as applicable for the recording studio as the hi-fi listening room, and site owner Jonathan Atkins also mentions oft-forgotten points, such as the fact that some speakers sound better when their tweeters are slightly above or below ear level, and some stands need filling with sand (or cat litter) to stop them resonating.

Things get a little less cut and dried when you actually install the stands. They are often provided with adjustable height spikes instead of feet, which are designed to give them maximum stability on uneven floors. With a floating floor, the spikes can also have an audible effect due to bass frequencies travelling down the stand and directly into the floor. However, spike 'enthusiasts' claim benefits from coupling the speakers and stands more closely to the floor, so that unwanted cabinet and stand resonances are 'drained away'. The merits (or otherwise) of this are shrouded in pseudo-science, and an

argument against the use of floor spikes can be found at www.feist.com/~nihil/spikes.html — author Doug Purl doesn't leave you in any doubt as to his views.

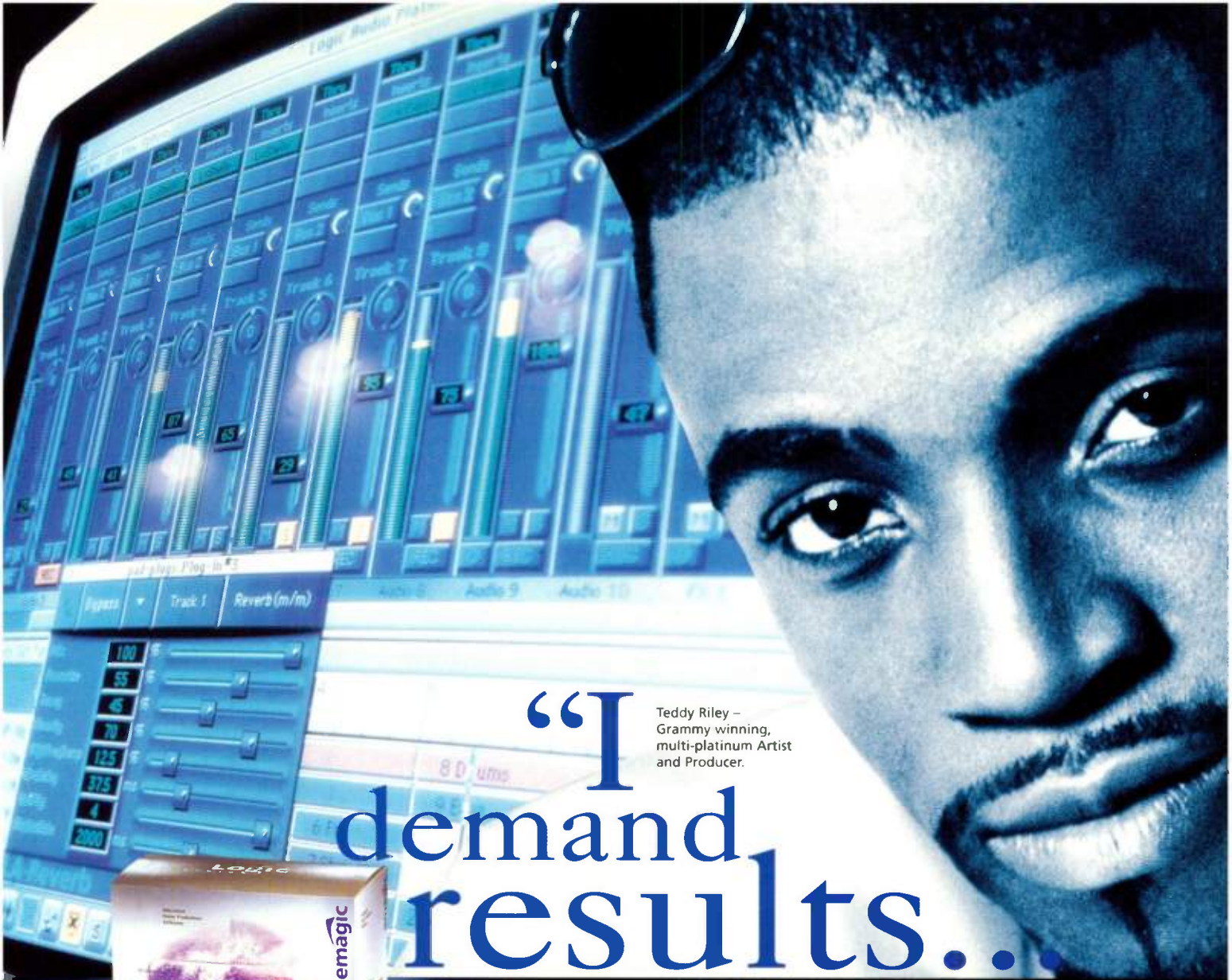
As soon as you place your nearfield monitors on top of the stands, another hotly disputed subject is what should be placed between the two. There is a wide variety of suggested options, ranging from neoprene blocks and Blu-tack right through to a range of fairly sharply pointed cones made of wood, metal or ceramics. Many people who have tried these tweaks have heard subtle but audible differences, but there are again widely conflicting views for the different options.

One persuasive argument can be found on the site belonging to Sonic Design (home.ijusdal.se/sd/sdfeet.html), whose damping feet are claimed to absorb loudspeaker cabinet vibrations before they enter the stand, as well as stopping these vibrations from generating floor movement at the other end. The accompanying oscilloscope traces do suggest that using hard cones as well as spikes can cause speakers to generate harmonically related floor movements, but it is still difficult to judge how much (or how little) an effect these will have on the overall sound from the speakers.

Room With A View

A good starting point is understanding why a room can affect the sound coming from our monitor speakers in such a radical way. A rather fetching description of this can be found on the Tubetrap site (www.tubetrap.com). Expect a review of this company's Studio Traps soon; apart from a lot of useful information on their own products, their web site also contains more general articles that put them into perspective. 'The Wall in the Desert' (www.tubetrap.com/articles/witd.htm) is an article originally given as an invited lecture at an audio show in Italy, and explains why your studio or listening room is the final link in the audio chain, and why it is just as important to the final sound we

some useful sections on their site. There is a Home and Project Studio FAQ (www.bkla.com/studiofaq.htm), and the section on common acoustical problems includes a series of downloadable WAV and AU files which illustrate excess reverberation time, late reflections, and inadequate loudspeaker coverage (www.bkla.com/problems.htm). If you are keen on DIY, then the Recording Studio Design Page (www.mcs.net/~malcolm) has a lot of text-based information, as well as an interesting pair of plan and elevation diagrams for a 'Live End, Dead End' control room design. It is a non-commercial site, and the information has been amassed over 40 years of studio recording and design experience.



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VST Plugin Technology by Steinberg®. DirectX™ is a Registered Trademark of Microsoft®.



The RPG Diffusor site has a downloadable demo of its Room Optimiser software, which calculates the optimum position for both you and your loudspeakers.

A Guest Speaker

Once you realise the importance of the room, it's hardly surprising that accurately positioning your speakers within it is also vital. Chesky Records are well known for their audiophile quality recordings of world, classical and jazz music, and while browsing their site I came across a useful book extract on 'How to Get the Best Sound From Your Room' (www.chesky.com/omaha/chesky/library/rharley696.html).

This covers all the basics, but if you enjoy the more esoteric approach of ultimate hi-fi, you'll love the Cardas site (www.cardas.com) which, apart from the extensive design philosophy of its high-end audio cables, also has a section devoted to speaker positioning in relation to the room. George Cardas claims that very precise speaker placement can open up a whole new dimension in listening, and provides precise details on how to achieve this with any reasonably sized rectangular room. You can find this at 209.3.64.161/insights/roomsetup.html. If you are building a room from scratch, you will also be interested to read details of the Golden

Cuboid room, whose dimensions progress in the Golden Ratio or Fibonacci sequence (5, 8, 13, 21, 34), which should give you the 'perfect listening room'. Apparently, the AES standard listening room is a Golden Cuboid measuring 10 feet by 16 feet by 26 feet.

RPG Diffusor Systems are well known in acoustic circles, and their products have been used in many commercial studios, one of the most famous being Peter Gabriel's Real World. Their site at www.rpginc.com not only contains details of their many products, but a free demo version of their Room Optimiser software (the demo is fixed to room dimensions of 20 feet by 10 feet by 10 feet). This will run with Windows 95 (but not Windows 98, it seems), and will automatically determine the best (and worst) positions for the listeners and loudspeakers (up to 20 if needed), the optimum height for the speaker stands, as well as indicating the position and type (absorbent, diffusing, or combined) of any acoustic treatment needed.

As you might expect, speaker manufacturers can also be a useful source of speaker positioning information. The Hales Design Group, based in

California, manufacture hi-end loudspeakers, and have on their site the 'HDG University' — a useful source of more information about speaker setup, stereophonic considerations, and listening room considerations (including detailed explanations of standing waves, and graphics explaining the difference between reflection, absorption, and diffusion). The site can get a bit technical, but is still comparatively easy reading in most areas. Take a peek at www.halesdesigngroup.com/hdgu.html

Another related subject that causes problems is the positioning of subwoofers, which can often be tricky to balance with the rest of your system. Swedish company Sonic Design have a useful article on this subject at home.ljusdal.se/sd/subplace.html

Acoustics In Recording

Once you have a greater understanding of acoustics, you can also use it to improve the depth and dimension of your recordings, by using various mic techniques. For the beginner new to mic techniques, a section entitled 'Sound Balancing' can be found at Doug Barnes' Music Technology Handouts (www.users.globalnet.co.uk/~bunce/index.htm). In addition to the basics on mic positioning, there is also a wealth of other information on a wide variety of other music-related subjects, including the basics of sound, MIDI (including timecode and controllers), mixing, and record production. These notes on music technology were originally written as handouts for students on examination courses at a further education college in England, and are very easy to read.

For the more advanced recordist, a wonderful source of wisdom can be found at the Digital Domain site (www.digido.com), which is hosted by well-known recording and mastering engineer Bob Katz. Amongst a variety of highly informative articles which cover CD mastering,

compression, jitter, and dither, he has also penned one entitled 'How to Achieve Depth and Dimension in Recording, Mixing and Mastering' (www.digido.com/depthessay.html), which covers masking, the Haas effect, and then goes on to describe various recording techniques suitable when recording acoustic instruments, to achieve front-to-back depth. I am sure that even experienced engineers could learn something from this excellent site.

Cheap Tweaks

If you are intrigued by some of the system tweaks suggested in hi-fi magazines, but can't manage some of the 'exclusive' prices, take a look at the Cheap Tweaks page of the American *Hi-Fi* magazine (www.hi-fi.com/diy/tweaks/). This contains some fun tweaks to try out for a pittance, and although they mainly use items from a large US-based catalogue company, I'm sure you could find similar items in the UK. It is the lateral thinking that appeals to me. For instance, if you want more acoustic isolation, why not try supporting your hi-fi equipment on an inflatable ring originally designed for haemorrhoid sufferers? Another good set of basic tips can be found at www.dreamscape.com/afasoldt/texts/improvesound.html — which provides '10 ways to improve your audio without spending money'.

Finally, if you think that tweaks are for people with too much time on their hands, you'll identify with 'Why rant when you can rave?', found at www.communities.com/people/gordie/Audiophile.html. There's even a 'Fun with Audiophiles' section, with a selection of ways to wind hi-fi enthusiasts up in a big way.

Overall, you can learn a lot from visiting the sites mentioned here, but my 'Site of the Month' award must go to Bob Katz and Digital Domain. Whenever I return to it and find a new article it is immediately downloaded and stored on my hard drive for further study: **SSS**

Used Instruments

Digital

Casio CPS300 (5 octave piano).....	£99
Casio CZ101.....	£99
Casio CZ300.....	£149
Emu Proteus MP1 (Industrial Pm).....	£449
Ensoniq Mirage.....	£249
Ensoniq SQ1 Plus 32 voice.....	£325
Generalmusic 32 Turbo.....	£649
Kawai K1.....	£225
Kawai K1 mk II.....	£249
Kawai K4.....	£299
Korg 707.....	£175
Korg DS8.....	£249
Korg N364.....	£535
Korg Prophecy.....	£399
Korg T3.....	£499
Roland A30.....	£249
Roland D10.....	£249
Roland D50.....	£399
Roland W30.....	£499
Samick KK11.....	£299
Sequential Prophet 2000.....	£449
Yamaha DX21.....	£125
Yamaha DX7.....	£249
Yamaha CS2.....	£349
Yamaha SY35.....	£299
Yamaha SY77.....	£599

Analogue

Fender Rhodes Stage 54.....	£349
Korg DW800.....	£299
Korg PE1000 "Poly Ensemble".....	£99
Korg Poly 800.....	£149
Powertran OPX.....	£99
Roland PC200 (JXP programmer).....	£99
Roland GR33B.....	£99
Roland GR100.....	£99
Roland SH5.....	£699
Yamaha CS5.....	£175

Expanders

Akal 801 (16-bit Sampler).....	£299
Casio CSM10P (Piano).....	£49
Casio VZ10m (1P0 Synthesis).....	£169
Emu Classic Keys.....	£349
Emu Proteus 1.....	£199
Korg 05r/w.....	£199
Korg EX800 (Analogue).....	£125
Korg P3 (Piano).....	£99
Peavey Spectrum Organ.....	£249
Quasimidi Technox.....	£375
Simmons SDE (FM Synth).....	£149
Yamaha P5Cm (Piano).....	£149
Yamaha SU10 (Sampler).....	£149
Yamaha TG33 (Vector Synth).....	£149
Yamaha TG500.....	£299
Yamaha TQ5 (FM Synth).....	£99
Yamaha TX81Z (FM Synth).....	£135
Yamaha TX7 (DX7 expander).....	£89

Sequencers

Alesis Datadisk 8Q (Data Filer).....	£149
Casio S21 (4 Track).....	£75
Kawai 880 (32 Track/Disk).....	£199
Korg 808 (8 Track).....	£59
Roland MC202.....	£249
Yamaha MMF2 (MIDI file player).....	£149
Yamaha QX21 (2 Track).....	£49
Yamaha QY20 (8 Track).....	£199

Drum Machines

Akal XE8 (with 2 cards).....	£99
Korg 00M220 (Latin).....	£49
Linn Linndrum LM2.....	£299
Roland TR505.....	£95
Roland TR628.....	£125
Roland TR707.....	£149
Yamaha RY10.....	£99

Mixers

DynamiX 12-2.....	£149
Phonic BMX88000 8-2.....	£125
Roland M240 24-2 (No eq).....	£349
Studiomaster Diamond 8-2.....	£125
Studiomaster Diamond Pro 12-2.....	£249

Effects/Recording/Amps/misc

Alesis 3630 (Compressor).....	£175
Alesis MC230 (Graphic eq).....	£149
Alesis Microverb 4.....	£125
Alesis Microverb II.....	£99
Alesis Quadverb Plus.....	£225
Alesis RA100 power amp.....	£225
Apex Type C Exciter.....	£125
ART FXR.....	£99
Behringer Protector.....	£125
Boss RD10 (Delay).....	£99
Carlsbro Cobra 50W PA System.....	£199
Carlsbro Scorpion 30W combo.....	£99
Digitech T8R12.....	£225
Drawmer DL221.....	£225
Peavey Q231 (Stereo Graphic eq).....	£125
Phillips Rees MCV MIDI-CV.....	£75
Richard Allen RA8 MMII.....	£199
Samson Servo 500.....	£299
Studiomaster Dual Gates.....	£99
Yamaha MS81 (S/PTE).....	£149
Yamaha MS10m.....	£199
Yamaha R100.....	£89
Yamaha YMC10.....	£49

Computers/Software

C-Lab Notator Alpha.....	£99
Emagic Logic PC.....	£199

EMIS are dealers for:

Alesis ART. Audio Technica, Audix, BBE, BCK, Cakewalk, Casio, Clavia, DBX, Digitech, Dod, Doepfer, Emagic, Emu, Event, Evolution, Fatar, Forefront, Fostex, Generalmusic, Giraffe, Hosa, Isotrack, JBL, JHS, Kawai, Kenton, Korg, Kustom, LA Audio, LEM, Mackie, Midiman, Novation, Oberheim, Op-Code, Philip Rees, Phonic, Quiklok, Roland, Samson, Steinberg, Studiomaster, Syquest, Time & Space, Tune 1000, Twiddley Bits, Ultimate Stands, Viscount, Waldorf, and Yamaha.

A Few Clearout specials:

Roland A90 ex.....	£1399
SPL Stereo Vitalizer.....	£169
Design Lab Prologue+.....	£199
ART FXR.....	£129
Waldorf Microwave 2.....	£749
Clavia Nord Lead (12 voice).....	£699
DBX 262 Compressor.....	£149
Phonic 24:2 Mixer.....	£599

All the latest products:

Clavia Nord Modular
Korg Trinity V3
Yamaha FS1R (FM Synth)
Emu Audio Production Card
Yamaha 2416 Audio Card
Novation Supernova
Roland JX305 & MC505
Oberheim Organs

New low prices on:

Clavia Nord Lead 2
Korg Trinity Plus
Yamaha CS1X & SU10
Emu E6400 & ES14000
Roland MC303
Alesis Effects
Gem Pro Stage Pianos



MAQ16/3 £499

The MAQ 16/3 is an analogue Sequencer with MIDI and CV/Gate outputs. Designed with Kraftwerk, it has 3 rows of 16 steps allowing control over any MIDI event, each row is independent and can have different settings. 32 Sequences can be Memorised.



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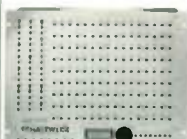
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A-100 Modular System from £649

A real analogue modular system. Systems can be custom built to any Specification from a choice of over 50 Modules from £19 each. Pre-configured Systems are also available such as the 10 module mini system for £649, the 23 module system for £999 or the MIDI system for £1079.

SCHALTWERK £999



The Schaltwerk is a pattern based sequencer optimised for live improvised performance. It has 8 tracks, which outputs MIDI and CV/Gate information. Each track has its own set of switches and LED indicators with dedicated step, mute/demute switches. Each step can be programmed via MIDI and can have different velocities for each step. Each track can work as an arpeggiator, chord trigger or gate. 128 Patterns (of 8 tracks each) and 16 song memory. 184 LEDis and 208 switches with 2 line LCD makes the Schaltwerk the most powerful realtime improvisation tool



Master Keyboards from £499

A range of 4 masterkeyboards all offering 88 note hammer action mechanisms and built into a flightcase, offering the smallest and lightest keyboards around. Starting with the PK88 at £499 designed for simplicity for controlling a piano module, then the LMK1+ at £675 offers aftertouch and wheels, the LMK2+ at £749 offers 4 overlapping zones and then the LMK4+ completes the line up at £999 with advanced functions, 8 zones and 128 memories.

MMR4/4 £99

The MMR4/4 is a 4 in/4 out MIDI patchbay with 4-way merge. MIDI setups can be Memorised into the MMR4/4's non-volatile memory for quick changes. The MMR4/4 is also available in a 1u 19" rack form for £125.

MSY2 £59



The MSY2 is a MIDI to Sync 24 converter. Allowing synchronisation of TB303, MC202, TR606, TR808, CSQ6(X) and any other device that uses the Sync 24 standard. MIDI Start/Stop are also converted.

MCV4 £69



The MCV4 is the most cost-effective MIDI to CV Interface. Dedicated to 1V/octave, but supports V-Trig and S-Trig. Three additional CV outputs are provided for real time control from aftertouch, velocity and any controller.



MS404 £249

A real analogue expander, with MIDI and CV/gate. VCO with pulse width modulation and dedicated LFO that will go into the audio range as well. VCF will self oscillate easily and has its own LFO (that also goes into the audio range). The VCA and VCF can be controlled by velocity, with a full ADSR envelope. External signals can be processed through the filter. All MIDI settings are memorised at power down.



REGEWERK £449

The Regelwerk is a combination of a fully programmable MIDI controller and analogue style sequencer with MIDI (2 in/2Outs) and CV/Gate interfaces (8x CV/Gate sockets), and can actually perform both tasks simultaneously. 64 presets, 64 Patterns and 128 snapshot memories are all battery backed. Can be synchronised to MIDI or Sync 24. can be used as a system exclusive editor as well as controllers and can also process incoming MIDI data in realtime.



MAUSI £99

The MAUSI is a single channel MIDI to CV converter with Sync 24 interface as well. The CV can be set to 1V/octave or Hz/volt (Korg/Yamaha) and the gate can be set to V-trig or S-trig. A second CV output is provided for additional voltage control of a VCF. The MAUSI also generates an LFO and has portamento on board. All settings are memorised in non-volatile memory.

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demo suite one including Yamaha DMR Transceiver ProTools 24, Renaissance & Linnson outboard, Wacko Wave and Ovation Monitoring



demo suite two including Yamaha OJD, Akai DD8 & DL1500 and a Soundscape system



demo suite three including Avid's MCXpress with RorkeData drive array



demo suite four including Avid's MCXpress with RorkeData drive array



training room - permanent 1000 sq ft training & seminar facility



warehouse - our commitment to stock availability across a broad range is unique in the UK



music sculptors - Media Tools specified and built dual 48 track digital mobile system, with continuous recording ability, mic amps, limiters, and footswitchable monitoring. All racks brought out to 96 pin DL connectors.



design - Media Tools specified and built dual 48 track digital mobile system, with continuous recording ability, mic amps, limiters, and footswitchable monitoring. All racks brought out to 96 pin DL connectors.

Events

Wednesday October 14th
An introduction to the Soundcraft 328.
(5pm - 7pm)

Wednesday October 21st
Plug Ins evening. See all of the latest plug ins for
Cubase VST & Digidesigns Pro Tools.
(5pm - 8pm)

Please call to confirm as events are often over subscribed.

12 Flitcroft Street London WC2H 0DT
Fax 0171 497 0690 E-mail: mediatoools.co.uk

0171 379 3555

Pro Tools

24 MIX PLUS

NOW IN STOCK

digidesign

A division of Avid



Launched at the September AES show Digidesigns flag ship Mix Plus system now ships with the equivalent of 7 times the DSP power of ProTools 24 and supports 64 tracks from only two PCI cards

Digidesign ProTools 24 Mix Plus and Pro Control combine to make the most advanced digital audio workstation available. Pro Control is a tactile control surface offering full access to all edit and mix parameters within ProTools software, combined with the power of ProTools 24 Mix Plus the complete system is unrivaled in any area of audio production.

- High Track Count, 64 Tracks of Record and Playback
 - Dynamic Approach to DSP, Huge Array of Plug-ins Available (see opposite page for more details)
 - Multiple VO Options, including ADAT, AES/EBU and Analogue
 - Sync to Virtually Any Time Code or Clock Reference including SMPTE, VITC, Black Burst, Pilot Tone or Even Bi-Phase
- All system are configured to suit your requirements, please call for further information.

The 882/20 interface give 8ch analogue i/o and stereo digital i/o at 20bit.

The ADAT bridge 16ch digital link not only to the Alesis ADAT but any digital console or other product using the TOS link connection.

For 24bit support you can either choose Digidesign's 888/24 interface (8 channels of 24bit balanced XLR AD, 20bit D/A and 8 channels of AES/EBU digital i/o at 24bit), or Apogee's AD8000 modular 24bit A/D, D/A where you can choose the i/o cards for ProTools, Tascam T-DIF, ADAT, AES or 24bit analogue.

Avid MCXpress NT

Digital Video Editing

Avid Entry Edit Solution

- Intel Pentium 386/486/586/68000 & High MHz, Windows NT 4.0 & 3.11/Truevision Display
- Avid MCXpress NT software
- Targa Truevision 1000 card
- Sony DV Camera & Screen

NEW PRODUCT

EPOA

Avid Real Time FX Solution

- Intel P2 300MHz/400MHz/500MHz & High MHz, Windows NT 4.0 & 3.11/Truevision Display
- Avid MCXpress NT software
- Targa Truevision 2000/RTX card
- Sony Professional DV Camera & Screen

The industry leader in digital picture editing, Avid is a name that has become synonymous with video and film. The MCXpress system for Windows NT brings broadcast picture editing with support for professional real-time plug-ins. Systems can be configured to suit your budget. please call for more details.

SPIRIT DIGITAL 328

Digital Mixing Console

NEW

NOW ON DEMO!

With the new Spirit Digital 328 console not only do you get 32 channels each with moving faders, 3 band fully parametric EQ, 6 aux sends and total automation, but there's also 2 built in Linncon effects processors, 2 high quality DBX dynamics units, 16 channels of ADAT & TDM i/o (no need for extra cards), and on top of all this, the desk has 24 bit converters with 56bit internal processing. The design of the console has been refined from other previous digital desks with Soundcraft's reliable but superb Easys processing.

£2999.99

£3523 INC VAT

QUESTED F11

Self Powered Monitor

The F11 cabinet design is made from a new material called material and is self powered & two way biamped, with 165mm bass driver, and 28mm soft dome HF unit. Custom colours can be specified for bulk orders.

£979.99

£1150 INC VAT

VS2205

Self Powered Monitor

The VS2205 is a highly accurate reference monitor, low profile and shielding made it ideal for a wide variety of users. Built in amps separately drive two 130mm bass units and a 28mm ferrofluid damped soft dome tweeter. Switches are provided for input sensitivity and HF and LF equalisation, to compensate for room conditions and positioning.

£1445.99

£1697 INC VAT

NEW

The Quested range is probably the most comprehensive available, covering active, passive and self powered designs, as well as amplifiers and active crossovers, from subwoofers through nearfields to custom built soffit mounting units.

SOUNDSCAPE V2.0

PC Audio Hard Disk System

V2 is a brand new 32bit native version with new software and control of the new DSP features. The new upgrade includes the SSAC-1 Accelerator Card which increases the number of playback tracks to 12 per unit. The original 2 input 4 output configuration can have an additional 8 in/out TDM/ADAT port. Each software mixer channel can have any number of real-time processors (EQ, Compression, Reverb) limited only by the available DSP processing power.

FROM

£1699.99

£1999 INC VAT

emagic Support now for Emagic Logic Audio PC

AKAI DD8

HD Multi-Track Recorder

Akai's new DD8. Records and/or plays back 8 tracks at a time directly onto hard drive, or crucially, 2.6 gig magnetooptical cards. There is really no lengthy backup at the end of a session, or reload at the beginning (of course you can still make a safety copy if you wish to). Sync multiple machines together, use it with the DL1500 remote for DD1500 style SuperView operation and editing, choose from a myriad of expansion options: TDM, ADAT, AES/EBU and analog i/o, digital EQ, Ethernet, SMPTE, MIDI, 9 PIN and Bi-phase synchronization - the list is endless!

£2725.99

£3201 INC VAT

INC FREE 4GB HD, VGA BOARD, 15" MONITOR & KB

DR-16

HD Multi-Track Recorder

First there was the DR-1, then the DR-16, and now Akai bring you 16 tracks of no-nonsense hard disk recording in a single box!

8 inputs and 16 individual outputs are provided making it perfectly suited for full blown multitrack recording. The options available are a video output board to give a full colour display of all the tracks, which makes editing a breeze.

Buy now from Media Tools and we will include a free 4 gig hard drive, VGA board, 15" monitor & PC Keyboard!

£3099.99

£3641 INC VAT

TASCAM TM-D8000

Digital 8 Bus Console

Combining a very elegant user interface with great sounding analogue and digital I/Os, the TDM8000 40 input/8bus console includes full-function machine control section for a variety of industry standard protocols, plus surround sound 5.1 channel panning. The analog inputs can be switched to take TDM, AES/EBU or S/PDIF signals in a variety of channel configurations making it very versatile, needing no additional plug-in cards to accommodate the different formats. 24 long and short throw faders, an integrated fully featured meterbridge and 6 aux send/returners to name just some of the features makes this a welcome addition to the range of low-cost digital consoles.

£5995.99

£7044 INC VAT

ProTools Packages

Here at MediaTools we have over 10 years experience with Apple and audio from the Apple IIe up to the current Power Macintosh G3 computer. Systems can be configured and installed to suit your use, with any choice of Macintosh compatible software, interfaces and drive media.

ProTools Plug-ins

0171 379 3555

TOOLBOX

Audio Edit & Sound Design

- Apple Macintosh G3/266 64000CD & Design Keyboard
- Formac 17" Multisync Display
- AudioMedia III Toolbox Bundle Inc. ProTools, D-Fi, D-Fi & Blue Peak LE
- External 4Gb Barracuda Hard Drive

£2375
£2870 inc VAT

PROTOOLS 24

24 bit & 32 track recording

- Apple Macintosh G3/266 64000CD & Design Keyboard
- Formac 17" Multisync Display
- ProTools 24 Core Core System
- Digidesign ADAT Bridge or 882/20 Interface
- External 4Gb Barracuda Hard Drive
- PCI SCSI Accelerator

£6499
£7636 inc VAT

PROTOOLS 24 MIX PLUS

24 bit & 64 track recording

- Apple G3/300MHz 128 / 8000 CD, ZIP & Extended Keyboard
- Formac 20" Multisync Display
- ProTools 24 Mix Plus System
- Digidesign 888/24 Interface
- PCI SCSI Accelerator
- 2 x 8 Gb Fast & Wide Hard Drives

NEW

£POA

Project Studio 24 bit Card

Digidesign's new audio card can connect to both the 882/20 or ADAT Bridge interfaces supporting up to 16 in and 32 tracks of audio playback. 4th generation hardware and new 'Direct I/O' connection to the popular sequencing/audio software on Macintosh & Windows platforms, makes it an affordable solution without compromise.



FROM £525.99
£617 inc VAT



The only storage solutions for hard disk recording with drive cases to suit all media & 48hr swap out policy.

SONICWORX

Advanced Audio DSP & Rendering Software

Artistic 1.5 is aimed at sound designing applications. It includes Sound Morphing (Complex Enharmonic, Timbral & Spectral), an 18 band Vocoder with HF/Noise synthesiser, De-Reverb, Time-Compression, Expansion Pitch Designer & Drum Loop Juggler.

£211.99
£249 inc VAT

The **Artistic 2.0** software contains tools for post-processing/mastering including: 32 bit band Analyser & Multi-band Compressor, Vinyl Phase Alignment & Ultrasonic Headroom Switcher, Neural De-Clicking, De-Cracking & De-Noising. New Version 2.0 will take additional real-time play.

£424.68
£4999 inc VAT

New **Pandora Real-Time** Plug-in for Studio 2.0 has to be heard to be believed. This software effects level adjustment (no removal of a track) at a rate to mix.

YAMAHA PROMIX 01V

Digital Mixer

Replacement for the Profile 0181 is a single input, plus 8 digital in and out, and optional optical in, with ADAT, TOIF or ASIO/BT format, 4 band parametric for all the main inputs, 2 stereo multi effects processors, mixing faders, & dynamic MIDI automation.

£1190.99
£1399 inc VAT

Built in surround sound mixing, motorised faders with 26 inputs & 18 outputs, the console features 32-bit internal digital audio processing, stereo analog and digital EQ configuration, new 32-bit onboard multi-effects processors with freeze (bypassing) and guitar signal emulation effects, fader and master grouping, surround automation, & MIDI remote capabilities.

£1648.99
£1936 inc VAT

02R Digital Console

40 inputs, 8 bus, console with total automation and mixing faders, 4 band parametric and dynamics for every input and 2 composite on-board mixers with a range of reverb, delay and other essential FX. Optional interface cards allow full digital connection to ADAT, T-DMX and AES/EBU formats for integration of MTR and hard disk systems.

£4599.99
£5403 inc VAT

FOCUSRITE PLATINUM

New Outboard

The **VoiceMaster** is an all-in-one recording channel - Mix and line level inputs, with independent, saturation circuit, for noise like hum, tape-compression, parametric EQ and optical disc output.

£322.82
£379 inc VAT

The **ToneFactory** has four channels, mix and line level inputs with filters and opto-compressor. The ToneFactory version has guitar amp style EQ controls with Overdrive control and brightness switch, along 2 bands of parametric EQ and noise gate.

WALDORF WAVE

Wavetable Synthesiser

A quality, the world's first, wavetable synthesiser, such as Hans Zimmer, Benet, The Orb, Raga Trance, Leftfield, Paradise and many more. Call for a demo.

£5399.99
£6343 inc VAT

WAVETABLE Wavetable Synthesiser also available

Wave Mechanics Pure Pitch

Realtime presenting pitch-shifting plug-in that controls vocal characteristics. £576 inc vat.

£490
£699 Intelligent Devices IQ Leans EQ characteristics which can then be applied to any other audio. £821 inc vat.

£424
£659 Intelligent Devices AD-1 A comprehensive real-time monitoring tool with spectrum analysis, phase scope. £499 inc vat.

£599
£449 Antares AutoTune Corrects errors in the intonation of voice or solo instruments. £527 inc vat.

£399
£299 Digidesign D-Fi Add noise, distortion and tape warp simulation. A must for that retro sound. £351 inc vat.

£1139
£459 Dolby Surround Tools Bundle Produce Dolby Surround mixes with the ProTools and preview the results. £1338 inc vat.

£1139
£260 GRM Tools Vol. 1 & 2 Amazing algorithms developed from government defence work. £308 inc vat.

£659
£459 Line 6 Amp Farm Emulates classic guitar tube amps from a Fender Twin, Marshall JCM800 to Vox AC30. £539 inc vat.

£680
£4999.99 WavesTDM Bundle Over 11 in their range including the new Renaissance compressor. £799 inc vat.

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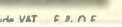
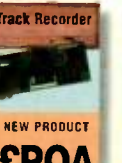
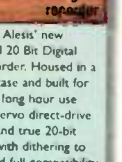
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TRADE ENQUIRIES WELCOME



The iMac has been shrouded in mystery since its announcement by Apple — and some of the puzzles just won't go away, even now the first machines have shipped.

Martin Russ investigates.

On the basis of Apple's advance publicity many commentators bemoaned two things about the iMac: that the built-in modem would be a 33.6Kbaud model, and that the machine would have no expansion slots. When the first production iMacs arrived, therefore, it was a pleasant surprise to find that Apple had uprated the modem to 56Kbaud. Like the prototypes, however, the released iMac still did not appear to have a PCI slot, and Apple made no mention of such a thing. So when I got the email from an iMac owner telling me that the iMac did have a PCI slot, and that Apple had just not told anyone, then I experienced that sinking feeling of being wrong-footed on home territory. I tried to find out for myself — and the answer to the question: 'Is there a PCI slot in the iMac?' seems to be neither yes nor no, but something much less tangible.

In the old days, before the Internet, whenever something

new was released, it would take some time for it to be absorbed into popular culture. Nowadays, within a few hours (or minutes!) of something happening, the Internet is full of detailed comment and analysis. Within hours of the first iMac being sold, the Internet had details about pulling it apart, and putting it back together — complete with the intermediate stuff too. Speed-bumping it (at your own risk, as always) to 300MHz and beyond was discussed, and an astonishingly capable Japanese person managed to rebuild the missing part of the PCB that contained an Apple Desktop Buss socket! The accessible and almost inaccessible RAM sockets, and the video RAM sockets, were examined in depth. But nowhere was there any mention of a PCI socket.

Well, not quite nowhere, because Apple's own web pages contained their own downloadable detailed description of the iMac specifications and technical

information, and this is full of mentions of PCI. Except that the PCI buss is used merely to connect together the processor module with the main logic board. The PCI buss has become almost ubiquitous in just about every computer now, and so the support chips mean that it is a logical choice for just connecting peripheral chips together on a local on-board buss — as in the iMac. So the

'Grackle' memory controller/PCI buss bridge and 'Paddington' I/O controller/buss arbiter chips found in an iMac need not be there because there's a PCI lurking buried, they are probably there because they are low-cost, familiar devices to the Apple designers. The Apple document makes no mention of any extra expansion connector, although there are reports of an expansion slot which although not PCI, might well be some variant of it — after all, the logic goes, since PCI is used to connect the G3 PowerPC processor to the rest of the iMac, surely any expansion slot would be PCI too...

The official line from Apple at the time of writing was that the iMac has USB peripheral sockets, two SO-DIMM RAM sockets and one SO-DIMM video RAM socket. Unofficially, the Internet has details of a way of getting an Apple Desktop Buss connector, a curious technique for hooking in an external monitor (using the internal connector!), rather dubious hacking of standard floppies to suit iMac, the revelation that the CD-ROM drive ought to be removable, since it is the same one found in PowerBooks, and an increasing number of rumours about PCI...

So, it looks like the closed box that was the iMac on release has opened up slightly. The challenge of 'It doesn't have...' and 'You can't...' seem to have brought out a lot of highly skilled and knowledgeable people out of the woodwork to see if

they can. The good news is that this is not the reaction of a market to an obscure, one-off novelty — these people can all smell money, and going by the reception that the iMac has had so far, they are probably right.

I Mac And Music

Before I stop writing about iMac, I really ought to summarise the position with music, MIDI and audio as it stands at the time of writing (although it is moving rapidly even as I type!).

- USB depends critically on drivers. Whatever you buy needs a special driver, otherwise nothing much happens. At the moment, some devices only have drivers for Windows 98, but these should quickly be supplemented by iMac/MacOS drivers.

- USB can also provide some power, which means that USB MIDI and audio devices need not suffer from tiny mains power supplies and flimsy power leads.

- You may well read about something called 'audio-over-USB (AOU)'. This isn't quite what it sounds like — it means that it is possible to use USB to carry digitised audio signals, but the intention is that this is used to connect speakers to a PC using USB, instead of stereo 3.5 mm jacks. There may be future misuses of this in the music world, but the initial launches of USB 'digital speakers' and 'USB digital audio' are not as significant as they might sound on the iMac. The replacement of the iMac's internal speakers with personal stereo extension speakers will be via jacks for the time being — AOU support is coming soon!

- Opcode's DATport provides a very different (and more useful in hi-tech music terms) type of audio interface — between S/PDIF and USB, which means that DAT and CD players with digital I/O may be hooked into an iMac. Gold-plated S/PDIF connectors and support for 48 and 44.1kHz sample rates at 16- or 24-bit depths complete

► the picture. This is different to the AOU facility, and the whole question of supporting these additional types of data on the iMac's USB is still being resolved — which means that the hardware is USB-compatible, but that some changes are needed in the iMac software from Apple to enable audio to be transferred. I spoke to some Opcode people recently, and USB is very firmly on their agenda (I also held a real DATport: £169 including VAT from SCV); they are also working to put iMac USB MIDI support into OMS.

• Roland's SMPU64

64-channel/4-port MIDI-to-USB interface with bundled patchbay software apparently works on Windows 98 computers now, and Apple are working on making it and other forthcoming USB MIDI interfaces work on the iMac. Prices were at rumour/unconfirmed status when I wrote this. SOS reader Gary Hardman spotted one of these whilst in Japan recently (thanks for the info Gary!) and the street price there was apparently something less than £100!

W www.rolandcorp.com/japan/products/dtm/S-MPU64.html

W www.edirol.com/mpu64.html

W www.edirol.com/ua100order.html

• Roland have also announced an 'Audio Canvas' (the approx \$400 UA100) which provides USB access to GM/CS type outputs using analogue and S/PDIF, and also MIDI I/O...

• Copy protection is an unfortunate fact of life for many Mac music applications, and this often takes the form of floppy key disks, Apple Desktop Buss (ADB) or Serial port (printer or modem) dongles. Third-party floppy drives with USB connectivity are appearing, and video adaptor innovators Griffin Technology have announced a USB-to-single ADB adaptor, the \$39 iMate, which looks strangely dongle-like! To be fair, many of the software protection schemes often have options which do not rely on hardware. If I talk to a manufacturer who insists on

Apple News In Brief

• DSP VISION

Look out for Opcode's *Vision DSP*. The latest version goes even further along the graphical, visual route for MIDI + Audio sequencers by developing its modelless (more windows, fewer dialogue boxes and hardly any mouse tools to switch between), compact

and streamlined working methods to produce a very clean, easily learnt, fast environment for making music. ASIO compatibility means that all of those third-party audio cards can be used (like the Lucid PCI 24, Korg 1212, and Sonorus STUDI/O) — and you get real-time VST audio effects

and EQ as well. For an alternative view of sequencing, take a look at *Vision DSP*.

I SCV London
+44 (0)171 923 1892.

W www.scvlondon.co.uk/opcode/
W www.opcode.com



Check out *Vision DSP* at www.opcode.com

copy-protection, I always lobby them for a non-hardware method. Perhaps if we all mentioned this the next time we buy an upgrade...

W www.nashville.net/~griffin/lmate/index.html

• Back to adaptors: The Keyspan USB Serial Adaptor is a USB-to-twin-serial-port adaptor, whilst there is the Keyspan USB PCI card for owners of existing Macs (or PCs) who want to add USB ports. There have also been reports that a Griffin iPort adaptor has been successfully used to connect a MOTU MIDI Timepiece AV, so things are moving on the 'adapt your existing serial-port connected' MIDI interface front too.

W www.keyspan.com

• On the PCI question, I'm afraid that only time will tell. By the time you read this, the iMac will

only have been out for just over two months, and it may take time for the full story about its expandability to come out into the open. It seems that if there is a port then it may only be PCI-like, and this takes us into a realm of special iMac-only cards, which never really took off on previous 'proprietary expansion port' Macs... USB access should provide both MIDI and audio facilities, and so PCI may not turn out to be as important as it might currently appear.

• SCSI support for all those AV hard disks is an obvious no-no. USB and Ethernet aren't particularly well suited to the demands of digital audio storage, but there is a light on the horizon: Firewire, the faster, 'pro' version of USB. Apple have apparently hinted that Firewire support may be available as an add-on to iMac, which could

mean access to external storage at suitable speeds. The Firewire access might well be through the 'PCI-like' socket that may or may not ever provide a PCI port...

• Okay, so you're a non-iMac user who has read so far and is about to say grumpily: 'So what?' The answer is that the iMac is probably a very big set of clues as to where things may be going with future Apple Macs. We may not see SCSI vanish overnight, but the ADB and printer/modem serial ports must surely be in imminent danger, and the kick-start from iMac may well see USB and 100baseT as tomorrow's givens. Six-slot PCI might also be harder to justify if USB or Firewire does take off... And I'd be very surprised if the next Macs are beige after Apple's current advertising campaign! **SOS**

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This month sees a major upgrade of the PC variety, as **Martin Walker** invests in a faster, more powerful machine, as well as installing Windows 98. Things will never be the same again!

Well, I've finally taken the plunge. After much deliberation, I now have a new Pentium II 300MHz machine, complete with separate Ultra Wide SCSI drive for audio purposes. This may not be a cutting-edge processor, but it certainly is the most cost-effective at the time of writing, with each faster model above it jumping in price by about £100 a time. Although I have championed the cause of those with entry-level machines for a considerable time, my ageing Pentium 166MHz MMX machine was not only becoming borderline in some cases for reviewing the latest cutting-edge software for *SOS*, but its Baby-AT motherboard format made the installation of long expansion cards a bit of a nightmare. My new machine (purchased from *SOS* advertisers Red Submarine in York) is housed in a Midi tower case (lots of expansion room) and has an ATX-format motherboard, which can accommodate full-length

(14-inch) cards in each and every one of its expansion slots.

I'm well pleased with the increase in performance, and although I will report in more detail in a future PC Musician feature, for those who can't wait to find out the improvement when running real-time plug-in effects, Waves *TrueVerb* drops from a processor-draining 57 percent (with my 166MHz machine) to 19.5 percent with the Pentium II 300MHz — nearly three times the performance!

The Upgrade Path

In fact, this purchase coincides with the second anniversary of my starting to write for *SOS*, and it's a sobering experience to look back at how my PC equipment has changed in that time. When I wrote my first *SOS* piece, for the October '96 issue, I had a 486DX33 machine, complete with a luxurious 2Mb of RAM and a huge 250Mb hard drive, but this was about at the end of its usefulness, and even in that first piece I was reporting



The new Windows Media Player for Windows 95 and Windows 98 removes the need for lots of separate players, and can be downloaded free from the Microsoft web site.

problems with MIDI sample dump transfers, due to its low speed.

By the April '97 issue I was reporting the purchase of a new PC powered by the Cyrix P166+ processor, with 16Mb RAM, and a huge 1Gb hard drive. I learnt a lot more the hard way about PCs during 1997, and particularly about the lacklustre floating-point performance of this Cyrix chip — following my processor speed tests in the August '97 issue (when running

music software), I hung on to the Pentium 166MHz MMX processor I had borrowed for the tests, for a big jump in plug-in performance. I later upgraded to 32Mb of RAM, and then to a huge 2.5Gb hard drive (funny how each time I got a new drive, it always seemed huge — I remember thinking the same with my first ever 20Mb model). However, the Pentium 166MHz MMX is about the lowest entry-level processor that will run the majority of today's music software, and it's not even manufactured any more.

Each one of my machines had a useful life of about 18 months (although they all worked fine for MIDI sequencing), and then either provided a useful trade-in price when upgrading, or in the case of my latest upgrade, gave me a useful second machine for general word processing, running a software synth alongside the main machine, or as an emergency backup in the admittedly unlikely event of hardware problems with my new machine. If things run true to form, I expect I will be buying a new machine around Easter in the year 2000.

Getting Animated About Windows 98

As a companion to my PC Musician feature on Windows 98 (see page 68), here are my first Windows 98 tips — a brief guide on how to disable some of its more outlandish graphic fripperies that can slow down your PC, many of which control features that are not immediately obvious. Some of them are quite fun the first few times you see them, but all of them add overhead — and the last thing you want when running a MIDI + Audio sequencer is extra animations every time you select a new option!

Most of them can be switched off individually using the General section of the Windows 98 version of TweakUI — simply untick the appropriate option to speed your PC up a little.

However, there is also a global way to disable all but the Mouse hot tracking effects (which do need TweakUI). You can do this in the Display portion of the Control Panel, under the new Effects tab — untick the box marked 'Animate windows, menus, and lists'. While you are here, you may also want to check that 'Show window contents while dragging' is unticked, since this is bound to add overhead every time you rearrange your sequencer arrange and mixer windows. This is what the different options do:

- Window animation: controls those expanding and collapsing effects when minimising and re-sizing windows.
- Smooth scrolling: lets Windows

Explorer slide an area of the directory structure up and down when opening and closing folders.

- Menu Animation: cranks drop-down menus up and down, rather than just letting them appear.
- Combo box animation: smooth-scrolls information when opening the contents of things like the preset list of DirectShow plug-ins.
- List box animation: lets you smooth-scroll through list boxes such as the Wallpaper selection box in Control Panel/Display.
- Mouse hot tracking effects: activates those little tool tips that appear when your mouse hovers over the main window close, minimise, and maximise boxes. One *Cubase* user reported audible VST playback effects when his mouse moved over these!

► Call Me Back When We're Not So Busy

I installed Windows 98 on my new machine (as well as having Windows 95 on another drive in the same case), and since upgrading, I've noticed one very useful feature of *Internet Explorer 4*. This may be present in some previous versions, but I've always previously used *Netscape Navigator*, and so haven't spotted it before. If, like me, you download various large update files using the Internet, this might save you a lot of hassle.

When downloading the huge 3Mb upgrade for Waves' *Native Power Pack* (see the Internet updates box) I foolishly tried to simultaneously open four pages from the *SOS Forum* to read while I was waiting for it to finish, and my system crashed. Nothing new there, but after completely re-booting my PC and logging on again, when I restarted the download, it picked up from where the machine had crashed. Typically, unless you use a dedicated FTP utility for download purposes, any break during a transfer means starting again at the beginning, so this is a huge improvement. If you find that the Net gets a bit 'cloggy', and your download transfer rate is either getting slower and slower, or it has stalled, simply cancel the

download in progress (see screenshot), and then log back on another time when things aren't quite so busy. Then you can continue where you left off, but at a hopefully much higher speed (as long as you don't clear your temporary Internet files in the meantime, that is!).

EZ Does It

Adaptec have just launched a new version of their *EZ-SCSI* utilities — the Deluxe version 5.0, which has three major new features.

Web-CheckUp (Windows 95/NT) connects to the Adaptec web site, automatically determines if your SCSI drivers are the latest versions, and then downloads any updates from the web. I personally find these automated updates a mixed blessing — while I applaud the principle, some updaters are so clever at cleaning up after themselves that if you ever need to re-install the same software, you have no separate update file, and have to log on and go through the same process all over again.

The second new feature is *Disk ImageSaver* (Windows 95/NT) which, as its name suggests, allows the entire contents of a hard drive to be saved to another drive, either as an emergency backup, or when transferring to a new hard drive. *Drive Preparer* (Windows 95

Internet Updates

Event have now posted a new update to the combined Daria/Gina/Layla drivers on their web site, and the new version 3.08 finally cures the recurring problems with Gina S/PDIF input phase — apparently the Gina S/PDIF code has also been generally reworked. Other bug fixes include tweaks to Layla MIDI timing, and a bug fix for its S/PDIF output phase. However, possibly the most important enhancement is that now important phrase 'Windows 98 compatibility'. You can download the new all-in-one driver as a zipped file from www.event1.com

Waves have new upgrades for nearly all of their DirectShow plug-ins, including the *Native Power Pack* (a 3Mb download), *MaxxBass* (1Mb), and *Audio Track* (971Kb), all of which now move to version 2.5. Their advice is to remove any existing versions using the Add/Remove icon in Control Panel before installing the new ones. The place to look (for registered

users) is www.waves.com/main.htm. Apart from a few minor bug fixes (including that dreadful clicking that used to happen when you lowered the bit resolution in the *L1 Ultramaximiser*), performance is significantly improved, the best being with *TrueVerb*, which in my new machine drops from 19.5 to 15.1 percent processor overhead — an improvement of 30 percent!

Microsoft have a new version of their Media Player available from the microsoft.com web site (see screenshot). It will work with both Windows 95 and Windows 98, and supports a much wider range of file types than its predecessor. These include not only local multimedia files like WAV, AU, SND, and MID files (as well as AVI, MPG, MPEG, and MP2 for video), but also new streaming media files direct from the Net, like ASF (Active Streaming Format), and RA and RM (RealAudio and RealVideo). It aims to remove the previous need to download different players to deal with each media file format.

"It's a sobering experience to look back at how PC equipment has changed in two years"

only) provides an easy-to-use partition and formatting utility which can be used instead of the rather bland and uninformative MS-DOS Fdisk and Format commands. All of the old favourites appear as well, such as *SCSIBench 32* (performance utility), *SCSI Explorer* (scans the buss to find any connected SCSI devices and gives a diagnostic report), *Adaptec Backup* (file-based backup utility), and

Easy CD Creator Lite (a cut-down version of the CD-R writing package). Retail price is £55, but *EZ-SCSI 4.02* owners can get a free upgrade (as can anyone who bought version 4.01 after Jan 1st '98) and you can get more details about this from the Adaptec web site (www.adaptec.com). The full URL for the update page is: www.adaptec.com/products/promos/ezscsi50upgrade.html

Keep in Touch

On another happy note, *SOS* have kindly given me my own email address specifically for PC Notes. If you have any suggestions for topics that you would like to see me include in a future PC Musician feature or PC Notes item, drop me an email at pc.notes@sospubs.co.uk. I can't promise to reply to everyone, and I can't realistically sort out individual readers' PC problems, but it will certainly help me to keep abreast of what sort of problems you are having, how you may have already managed to solve them, and just what we need to cover to keep *SOS* the No.1 hi-tech music recording magazine for the PC musician. See you next month! **SOS**



Those folks at Cakewalk have been busy again — by the time you read this version 8 of *Pro Audio* should be available, with support for 16-, 18-, 20-, 22-, and 24-bit audio hardware, recording at up to 24 bits at 96kHz, up to 128 audio tracks, and a new range of MIDI processing plug-ins.



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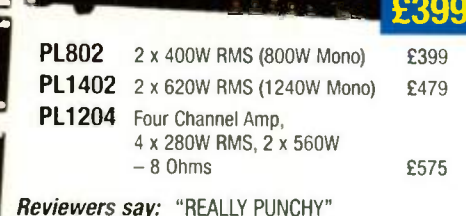
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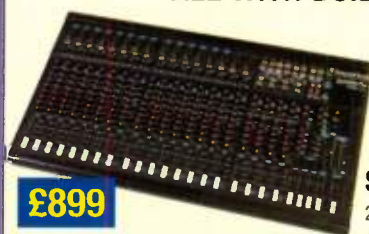
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As a musician with an Atari, you may have a CD-ROM drive attached to your computer. If this is the case, then Floppyshop have just the thing for you: the new *Sounds and Stuff: The Atari Musician's Toolkit* CD-ROM. The disk is packed with public-domain and shareware music software for the Atari, so much so that I can't even summarise it here. Let's just say that there can hardly be a better collection of sample converters, players, editors, trackers, utilities, MOD players, MIDI tools, sequencers, synth editor/librarians and MIDI File players this side of the Internet. In fact, the Internet was searched for the latest versions of the latest titles, making the disk as up-to-date as possible.

Along with the software, there are nearly 1000 16-bit AVR-format sound samples, plus hundreds of files in MOD,

Quartet and MIDI File formats. Samples include loops and single hits, with classic Roland drum machines and synths much in evidence, as well as orchestral instruments and vocal samples.

Much of the software is suitable for all Atari users, but there's also 20Mb of Falcon-specific software. In addition, a range of non-music utilities is included (mono emulators and that sort of thing), as well as a few games. The collection is rounded off with a set of useful text files covering audio and MIDI matters, and even includes a fully working version of Electronic Cow's *Sound Chip Synth* v2.32. One particularly amazing thing about *Sounds and Stuff* is its price: just £25, plus postage (£2 UK, £3 Europe, £4 rest of the world).

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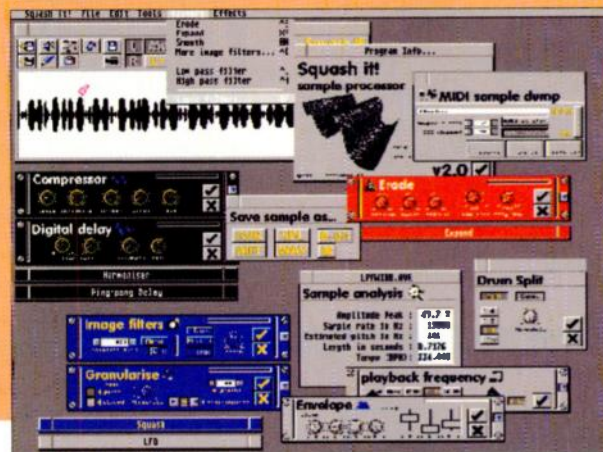
A wander around Electronic Cow's web site turns up brand-new versions of a range of free titles; they're downloadable from the web site, and are also included on Floppyshop's *Sounds and Stuff* CD-ROM. Firstly, there's *Charming Chaos* v0.1, a simple two-part algorithmic/random music program for any Atari that couldn't be easier to use. Each of the software's two parts (labelled A and B) can have its own MIDI channel (or they can share one) and program-change number; there are also volume and pan controls, plus an autopan switch and a global tempo control. Four buttons (labelled A to D) in each part complete the control set, and these buttons are the key to the software's operation: each contains a random note generation algorithm. The more

Anyone For Squash?

Back in May of this year, we brought you advance news of Electronic Cow's forthcoming *Squash It!* sample editor for the ST/Falcon family. As of writing, it's still not quite ready, but is in serious beta testing, with an official launch due at the Atari Computing Convention at Bingley Hall, Staffordshire Showground, Stafford, on November 14 (Sharward Promotions +44 (0)1473 741533). A price has also been fixed: £59 plus £2.50 UK postage. Just to

recap, *Squash It!* allows you to "be more creative with your sample data". Functions include time-stretch, frequency expansion, compressor and gate, harmonise, granularise, digital delay, envelope shaper, low- and high-pass filters, and much, much more. You can load AVR, AIFF, WAV files, or raw sample data, or capture samples from your sampler.

Squash It! is available from Floppyshop, or direct from Electronic Cow.



Electronic Cow's forthcoming *Squash It* sample editor.

buttons you press — thereby activating more algorithms — the more complex the result, with chords and note clusters occurring. Each algorithm is "sort of in-key", which, according to the accompanying text document, is the explanation for the 'Charming' part of the software's name.

The results are fun and suitably random, and the program bodes well for the fully working commercial algorithmic music composition tool Electronic Cow are planning, complete with MIDI file export, load/save, editable algorithms, MIDI clock and "loads of tracks". If you're interested, let the guys know, and they'll be encouraged to keep working on it.

You may already be familiar with *Wibbly Wave*, now at v0.6a. This program is essentially a cut-down version of *Sound Chip Synth*, and lets you generate analogue-style 8- or 16-bit AVR samples that can then be loaded into a sample editor or tracker program. A sound is created using one of four waveforms

— square, pulse, sawtooth and triangle/sine — and the user can add modulation, courtesy of depth and rate controls. One of three preset envelopes (fairly slow attack, sustained period, relatively long decay; fast attack and decay; and flat envelope with a smooth fade) can be selected. Note that you need either an STE/TT or Falcon to play back digital audio; STFM owners can generate samples but won't hear their work till it's loaded into a sample editor.

Lastly, *Wave Dumper* v0.1a is a potentially useful one-trick program: it'll let you load a WAV audio file and send it to your sampler via MIDI Sample Dump Standard. If you need this function in the simplest possible form, look no further. There's even a driver for Akai's venerable S900. **SOS**

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News now of some pretty unmissable offers from HiSoft Systems, especially if you use your Atari for non-musical purposes, or have (or are planning to add) a hard drive to your system. Check out the prices for these classic Atari packages:

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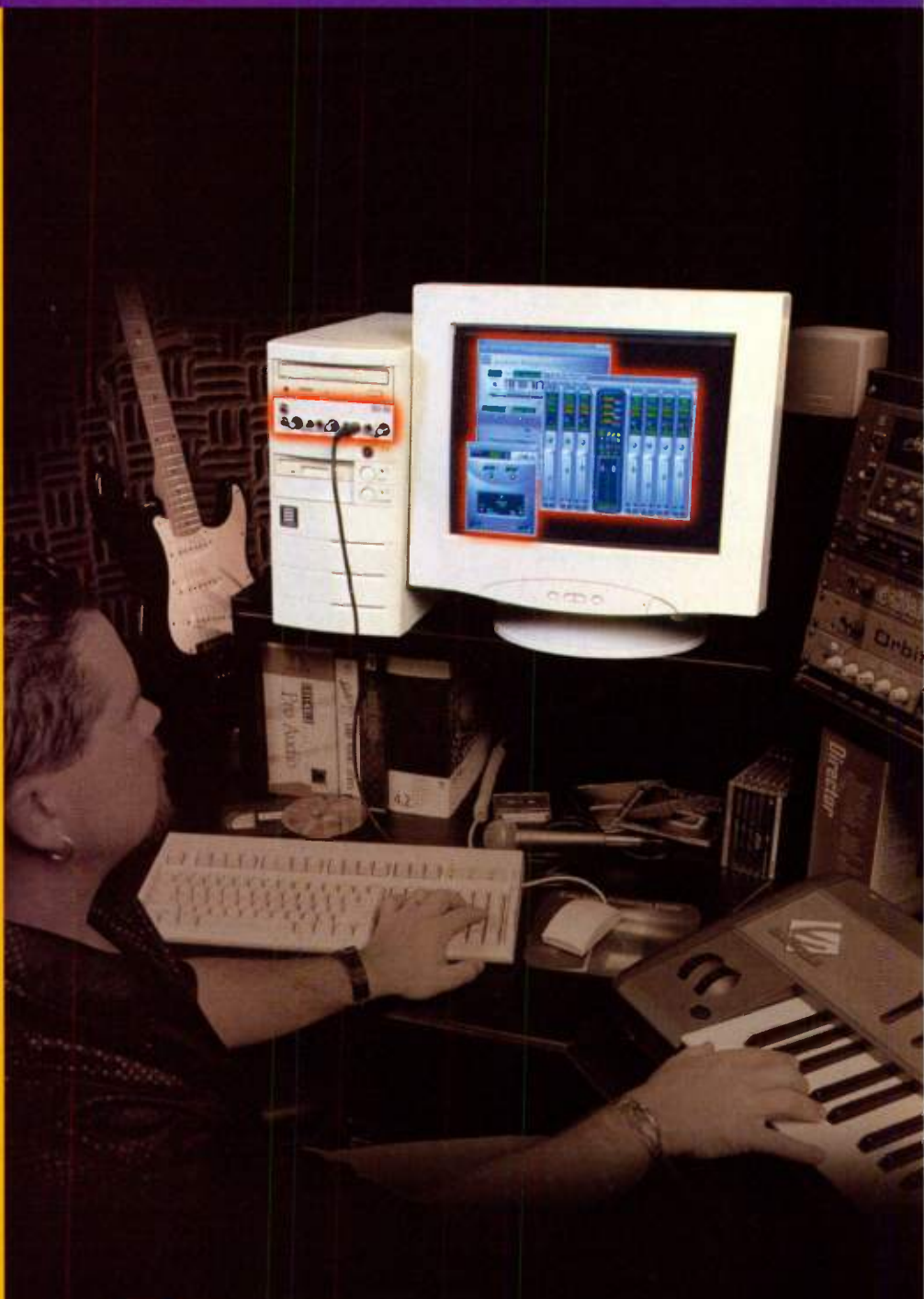
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Casual Observers

Recording Venue: Home.
Recording Equipment: Pentium PC, Soundblaster AWE 32 soundcard with 2Mb RAM, Cakewalk Systems *Cakewalk Pro v2*, Synttrillium *Cool Edit v1*, Steinberg *Rebirth RB338*, Realistic microphone, Cambridge Audio amplifier, JPW Gold mini monitors, JVC turntable, TEAC cassette deck, Sharp CD player.

The Observers are Grant and Ben, both students at Edinburgh University, who write that "the basic thinking behind our music is to try and express snapshots of emotions and experience".

This is a pretty accurate description of their atmospheric sound, which ranges through various sonic landscapes from the underwater experience of scuba diving, to paranoia, contentedness and wistfulness.

The first mix was inspired by sitting at the window watching the world go by, and the stillness of the observer in contrast to the frantic activity of the city street below. This piece

uses a simple vibes/piano chordal pattern as an anchor around which other sounds and samples come and go. Rhythmic snoring every now and then is in stark contrast to the upbeat street noise samples and busy snare pattern, so as a production concept the piece worked well. A big hole in the mix is left by the absence of bass, and so a fatter bass drum sound could have been used or even some bass notes added to the chords to fill the gap between 150Hz and 300Hz.

On the paranoia track I really liked the synthesized fly and mosquito noises, although the repetitive and buzzing pitch drop notes probably aren't intended to sound like insects — probably my own paranoia coming out here! As you'd expect, this piece relies heavily on the voice-in-the-head approach, and a 'they're all crazy' vocal sample pops in and out of the mix regularly. Another vocal sample of someone laughing is cunningly placed low in the mix, while the piece conspires to create a dark soundscape by the total absence of high-frequency content and the use of low-bandwidth reverberation effects.

I have to confess that I was looking forward to hearing the scuba-diving piece, and it didn't let me down. Drones with a hint of high-frequency whistle lead you into the track, and from then on it's a collage of sea, breathing, and bubbling noises created using the Soundblaster and rhythmically assembled to swirl across the stereo image,

with the bubble and pop in time (courtesy of echo and sequencer) to the low-bandwidth thump of a bass drum. The feeling of gliding through the water is provided by a slowly changing string line.

Audio limitations are something The Observers are going to have to live with until they can upgrade their recording set up: in other respects the compositions are both creative and well mixed, showing a lot of promise. ■



Paul Simmons

Recording Venue: Unknown.
Recording Equipment: Pentium Laptop PC running Steinberg *Cubasis*, Yamaha MU10 sound module, Tascam 488 Portastudio, Zoom 1201 guitar effects unit, Yamaha stereo compressor, Fostex A20, AKG C3000 microphone.

Paul has played guitar since 1966, and is inspired by the

great English contemporary blues players of that period like Peter Green and Mick Taylor. Yet the demo is not a tribute to the period as such, because Paul has penned his own material — even though the guitar style attempts to emulate the feel of the '60s heroes.

For recording the guitar he's taken the unusual step of using a Peavey Classic 30 Combo with some very tasty guitars — a Gibson Les Paul Standard and a Yamaha SG 500. The combo was miked using the AKG C3000, and the sound achieved from the humbucking pickups is thick and rich in sustain. Some classic licks are in evidence, but this is not primarily a guitar demo, as the arrangement of the first song shows. The guitar plays the fills and solos but Fender Precision bass guitar, programmed drums and keyboards comprise the main instrumentation behind the vocals.

One of Paul's main obstacles was programming the drums in such a way that the feel was not lost. This he's achieved very well, with a lazy swing on the opening number that's only given away by the even hi-hat dynamic. The drum voices from the MU10 seem well suited to this style of music, with the choice of a heavy kick (possibly EQ'd to add lower bass) and a natural-sounding, albeit compressed snare. The toms occasionally show too much stick and not enough drum, ▶

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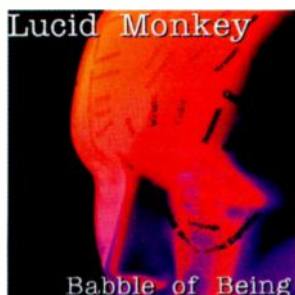
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► which could be the result of over-EQ in the upper mid or choice of drum voice, as it's better on some tracks than others.

Another point to note is the vocal sound, which for some reason gets woolly on the this track, although the first two were fine. I can only guess from hearing a solo vocal phrase near the end that a short reverb has been used which blurs the clarity of the vocals. Otherwise, a fine demo with a nice feel and a mighty fine lead guitar sound. ■



Lucid Monkey

Recording Venue: Home
Recording Equipment: Foxtex DMT8VL digital 8-track, Emu ESI32 sampler, Steinberg Cubase v2, Sony S5ES DAT machine, Yamaha NS10 monitors, AKG C1000S microphone, Alesis Midiverb III reverb unit, Zoom 1201 guitar effects unit.

Using a DMT8VL without a mixer, Stephen Ford of Lucid Monkey mixed direct to DAT via the DMT8's optical out — so he must have been careful with the levels because the result is quite acceptable, given the method used.

Overall, the sound of this CD album suffers from a few obvious production limitations like minimal use of effects, particularly echo, where

they could have used effectively on vocal tracks. Reverb has been used on the vocals and was probably recorded with the singing. If this was the method used then the balance of reverb against dry signal is good, as is the choice of short to medium length reverbs.

The mixes sound very tight, and the combination of MIDI-triggered sources with real instruments such as acoustic and electric guitar is seamless. No compression was used, so I have to assume that the band took care with the level and dynamic throughout on the 'real' instruments and vocals. However, the lack of equalisation does show on the general sound of the mixes, which are bass-light and as a result lack balls. Even a simple LF boost of 3dB improves this considerably, and an additional cut of a few dB at 1.5kHz warmed up the mix substantially.

An AKG C1000S was used for the vocals and acoustic guitar and seems to work well on the guitar, placing it firmly in the upper-mid area when strummed in classic pop mix style! The vocals definitely needed more attention, however. Although well sung by all involved, the lead voice in particular was sibilant in the high-frequency range and lacked warmth. Judging by the rest of the sounds, this could easily be the recording medium used, but I'm sure it could be improved by use of a different microphone technique and the addition of a compressor. The lack of bass energy in the vocal is because the singer is too far from the microphone: standing between 12 and six inches away would achieve a fuller sound. Given the singing style, which moves from quite intimate to full-on within the songs, good microphone technique (ie. moving away from the microphone in the louder sections) would have to be

used in addition to a compressor. Later mixes like 'Not Today' and 'Killer Camera' have an improved vocal sound and overall mix.

The songs are really well put together and performed by all involved in this project, with Guy Morgan on bass and Quinton Quammie on programmed drums providing a fine rhythmic base for the album. Firmly embracing the world of melodic pop, the songwriting shows a few obvious influences from Kula Shaker through The Beautiful South to Erasure, and the band can probably be found gigging in the Cardiff area if you want to check them out. ■

Adrenalin Junkies

Recording Venue: Unknown.
Recording Equipment: Soundcraft Spirit 24:8:2 mixer, Spirit Absolute 4P monitors, Atari 1040ST running Steinberg Cubase, Foxtex D5 DAT machine, Akai S2800 and S3000XL samplers, Presonus ACP comp/gates, Boss SX700.

Girl-power merchant Miss-Chief does most of the work on this two-song demo, with only the



mysterious Chad helping out with the writing. The music is hard electronic dance with plenty of energy, aimed firmly at keeping you out there on the floor.

The opening rasping synthesized bass of 'Red Light/Green Light' moves ferociously between root note D and D sharp, and from the word 'Go' you know exactly what to expect next. Distorted sampled shouts are mixed with spoken samples on the heavier breaks, and sirens used for others. The pace is never allowed to drop with various synthesized loops and portamento sections cleverly arranged to enhance the dancefloor experience. A shame then, that the general quality of the tape was muddy and lacked clarity. I know that clarity isn't always part of the underground sound but this tape definitely sounded better with a healthy 5dB of HF boost. Given the quality of the equipment used, I can only suspect the integrity of the sound sources.

'Prime Suspect' is the title of second mix on offer, and this is technically an improvement on the first, with all the sounds sitting well together in the mix. The wider bandwidth on the bass synth certainly helped, as the kick drum is never mixed that high on these mixes but left to pump away rhythmically in the background. Showing a touch of humour, the vocal sample 'Prime Suspect' is pulled around at the end with a pitch control, while also being treated to a modulation effect of some sort which leads us straight into the broken glass finale.

The sound is aimed at a specific market and has all the elements in place to please fans of the electronica/big beat sound. So with plenty of pundits already expressing praise for this latest offering from Adrenalin Junkies, and some clever marketing, Miss-Chief and Chad should do well. ■

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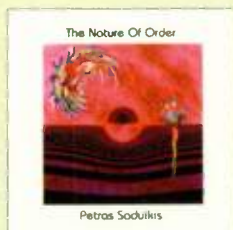


► **Rowena Cairns** Co. Armagh singer-songwriter Rowena Cairns has recorded her debut CD at the Window Box studio run by Sontiche, who have also been featured in this column. The mixes are lightweight, generally using strummed acoustic guitar as a base and building drums, bass guitar and keyboard from there. Piano and strings add some mid-frequency flavour, while the acoustic guitar is EQ'd to sit in the upper-mid area of the mix. I actually thought the piano in the second track 'Something About You' could have been louder, as this EQ'ing of the acoustic guitar left it plenty of space. And, dare I say it, some sparse, earthy electric guitar would have given the production more bite on the opening two songs. The third, 'Heartstring', sounds fine with its heavily reverbed string arrangement, and I especially liked the pizzicato and percussion sections on this piece. Rowena has a fine contemporary voice and Mark Simpson's backing vocals ably support her on my favourite song 'Something About You'. She's also played at The Front Page in Belfast (a venue in which I've also performed, incidentally) and may do so again soon. All fans of singer-songwriters should look out for her set. ■



Richard Hall Some fine electric guitar playing in a classic '80s style on this demo from Richard, knocked up while a student at Leeds University using a VS880. Even though DI'd, both the electric six-string and bass come off very well, with a particularly good overdriven lead sound from the combination of Ibanez guitar and Boss ME8 effects. The DI'd

acoustic comes off worse, with a lack of high frequency and a hard mid sound, which could have been addressed with some HF boost and upper-mid cut around 1kHz. The demo is designed to show off Richard's guitar playing, as he hopes to become a session guitarist (in which case I hope he's read Big George's article in last month's SOS!). The demo also shows that he has a good grasp of the recording process and can program convincing drum parts too. He could only have improved on this effort by milking up a few classic guitar and amp combinations, but as funds and facilities were limited, maybe he can save this for his second demo. ■



Petras Saduikis This CD, entitled *The Nature of Order — Generative Music in the Minimalist Style*, is music indirectly created using *Koan* music software, which mutates or improvises a composition from a musical fragment fed to it. Even with Petras' attempts to buck the trend of most generative music by going uptempo and hence become more dynamic than ambient, the result is still unbelievably mechanical and lacking in dynamics. I would suggest that the pieces could be improved with some more interesting sound sources of a more variable dynamic range, coupled with computer-controlled effects. The recording quality is fine, but then there's little that can go wrong here apart from a power failure! Generative enthusiasts can visit Petras' web site at www.scrollbox.dlrcon.co.uk/ for more info. ■

Session Jamie Sawyer is the man behind the name Session, and this recording of electronic music goes for the more relaxed and atmospheric end of the dance market on the opening mix. Given that mellow is the name of the game here, he's chosen to make the sound a bit hard and spiky — possibly a result of over-EQ'ing. A cut of 4-6dB at 2kHz warmed the mix up and helped bring the sound

back into a more relaxed mode. 'Dark Justice' is the title of the second mix, and this is a big improvement, with some clever use of a phased jungle snare pattern to hold the groove. The strings which follow lacked lower-mid and a boost at 300Hz seemed to improve not just them but the whole mix, adding some definition to the sub-bass notes in the process. ■



Efrem Thomas I'm certainly going to remember this demo for Efrem's hat (see photo) as much as the music! Headgear aside, Efrem's songs are a slice of MOR pop featuring some excellent sax playing on the first number over a fairly standard song arrangement. The singing on the first two songs suffers from being double-tracked, showing up the inaccuracies in the pitching — although on the positive side the melodies are strong, particularly on the second song 'Send Me'. Guest vocalist Amy Martyn, who appears on the fourth song, has an excellent voice that suits the song well and really would have been a better choice to demonstrate the strength of melody in the other songs too. Incidentally side one of the tape seems to lack treble whereas side two is fine, so possibly some fault has occurred during the tape copying. I gave it the benefit of the doubt. ■

Sumo Arseman Technically, the best track on Sumo's tape is the first. Entitled 'Streak', it's a slice of upbeat club funk using, for the most part, guitar, brass and vocal samples. These are well chosen, especially the wah slices placed lower in the mix. Overall, the rhythm track sounds grainy and digital in the top end, and at first I thought something was overloading. The problem is most noticeable on the cymbals, and while there's bound to be degradation in the signal when sampling from vinyl, this is an acceptable part of the process and can be used to creative advantage as part of the 'dance' sound. However, when the treble is boosted on these signals their sonic inadequacies tend to be exaggerated. The second mix has got some good musical ideas and is atmospheric in a tense way, but this time the whole track is

overloaded, and I've got to wonder if there's a problem with the monitoring somewhere along the line which isn't showing the detail in these mixes. ■

David T Dewdney Yet another reader who writes that the sound they create lacks polish and is 'raw', when in fact the general mix and sounds used are well balanced and arranged. This hang up with recording gear is market-driven, and there's certainly nothing wrong with using second-hand or budget equipment as long as it sounds good. Use the best equipment you've got to decide this — your ears! And if my ears don't deceive me, this demo, although heavily derivative of fave artists like Schulze, Tangerine Dream and Kuhlmann, serves as a good introduction to David's creative talents. ■



Yark Yark is the solo project of Edinburgh-based John Burnett and with titles like 'Running Man', 'Moon Warriors' and 'Inferno part 1' we can be in no doubt that he's influenced by movie and video. Musically, he attempts to marry some quite diverse musical styles to create soundtrack style atmosphere on 'The Running Man'. Some, like the fusion of underground beats, movie segments and distorted guitar samples, work well. Others, like the small section of synthesized acoustic guitar, seem out of place against the industrial loops. Many of the rhythm samples use short delays with negative feedback phase to make them sound metallic and robotic in tone which works again in sections, but not all through the piece because of the consequent lack of definition. As an experiment, therefore, the piece works OK, but compositionally the arrangement needs tightening up. All the audio elements for this demo were output straight from an Akai S3000XL to DAT, and the sound quality is fairly sharp in the high-frequency range and a bit muddy in the low frequencies, although I suspect this is more due to the chosen samples than the Akai itself. ■

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ROLAND TR626

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'80s technology is still out there in abundance and going cheap. **Derek Johnson** spotlights a budget beatbox that has everything it takes to slot into the '90s studio.

ROLAND TR626 RHYTHM COMPOSER

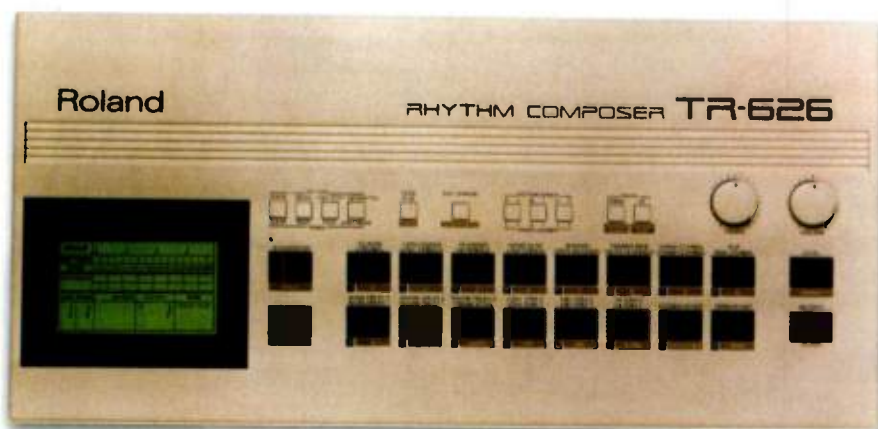
No hi-tech company has a prouder tradition in the art of the drumbox than Roland. Through good times and bad for the drum machine concept they've continued to produce dedicated units, spawning gems such as the TR808 and TR909 in the process, and never putting their name to anything less than a decent instrument for its time. These days the dedicated Roland beatbox torch has been passed to their *alter ego* Boss (with a new Dr Rhythm machine, the DR202, due any day now), while Roland concentrate on perpetuating their time-honoured 'rhythm method' through dance workstation instruments such as the MC303 and MC505 Grooveboxes.

With Roland's catalogue consisting of around 20 machines (give or take a couple), it's perhaps inevitable that some have occupied a historical back seat. Take the TR626, for example — launched in late 1987 to respectable reviews, it didn't set the world on fire, but its unpretentious usefulness certainly didn't do the Roland name any harm either. And now that it's possible to pick one up for around £120 or less, you can buy into the '80s revival very cheaply indeed.

Smooth Operator

The 626 is resplendently beige, and has a smooth, sleek, console appearance that just a few years ago was looking decidedly dated, but which is now showing signs of edging back into hipness (it also matches modern computers and Akai samplers to perfection). The machine's lightness implies portability, and this impression is confirmed by the battery compartment on the underside: insert six AA batteries, and you're on the move. In fact, this was how new 626s were supplied, and though they will, of course, work from the mains, an external PSU was not included as standard. The usual 9V unit costing around a fiver will do the job.

Eleven small, square, self-coloured buttons access various of the machine's functions, while 16 large dark-grey buttons serve as pads (and also double as further editing controls). Neat, flat rotaries control volume and tempo; and pattern programming is accomplished via a custom display (not, sadly, backlit) of a size that still looks generous compared to many current hi-tech instruments! The 626's work surface is decidedly



sparse, with none of the flashing lights, knobs and level controls you'd find on the 808 or 707. It's round at the back, though, that you find one of the machine's greatest assets: no less than eight outputs (plus a stereo out), through which individual kit sounds can be routed for external processing and EQ of your choice. On an instrument which had a price tag of £350, this was pretty good going — how many recent budget drum machines can you name with eight separate outs? This facility is even more relevant now, allowing the '90s weirdness freak to make the very most of the 626's limited 30-sound palette.

Sounds Of The '80s

And what *about* those sounds? Well, what you get is largely confined to the traditional kit, with the addition of a few Latin bells and whistles (see '626 Sounds' box for a full list). They're PCM samples, almost certainly 12-bit, the quality of which is nicely up-front, clean and punchy, though some samples (especially the open hi-hats, cymbals and toms) cut off a bit sooner than modern tastes would prefer. On the up side, they're all tunable by plus or minus seven semitones, and each drum sound can have its own level. All new tunings and levels, however, are 'global' — once a sound has been altered it will play that way in any pattern which includes it, even preset patterns.

Programming, in real or step time, is a doddle even for the relative novice, and anyone who's ever programmed Roland drum machines should

Retro Spec

- 48 preset 48 user Patterns.
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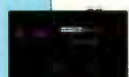
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ROLAND TR626

► be up and running in no time. You can easily switch between record modes with the current Pattern running, and drum notes or parts can just as easily be erased on the fly. The method has more in common with the 626's immediate predecessor, the TR707, than a 909, in that notes are input on the LCD-based grid. Drum-pad buttons 1-14 each access two drum sounds, which you switch between by way of the Inst Change button. Pads 15 and 16 each trigger only one sound — open hi-hat and closed hi-hat, respectively — making a 30-sound total that's not as grand as it used to be, in these days when new instruments such as Quasimidi's Sirius offer 450+ drum waveforms (then again, who really *needs* 450 different drum sounds?). Though the 626's pads are, unfortunately, not velocity sensitive, it's possible to program one of three accent levels separately for every instrument on every step of a pattern. This is a huge advance over, say, the TR808, where setting an accent level on one step of a pattern affects every instrument sounding on that step. Anyone using the 626 as a drum sound module will discover that all the sounds respond to a full range of velocity when triggered from a MIDI keyboard; however, drum patterns can't be written using an external keyboard, so those three preset levels of velocity are all that's available when the 626's drum sequencer is being used.

Thoroughly Modern MIDI

The 626 was launched when MIDI was only three or four years old, yet it has a pretty fair MIDI spec, which even includes recognition of MIDI Song Position Pointers — so that if the 626 is being run in sync with a sequencer, it will pick up at the correct point if the sequence is started from somewhere other than its beginning. Since the TR626 has tape sync sockets, it could happily function as the central sync source in a small studio based around budget MIDI equipment and a cassette multitrack, especially given its compatibility with SPPs. The one caveat must be the bizarre assertion in the manual that the 626's tempo should be kept below 180bpm when using tape sync, since "synchronised playing cannot be done correctly at any setting above this limit".

A nice and unexpected bonus is the ability to dump, via SysEx, the 626's entire user Pattern memory to an external device, making the relatively restricted quota of 48 user Patterns

Trick Of The Dump

As mentioned below, the TR626 has a pair of tape dump sockets, allowing you to save the machine's memory contents to tape, and while this is a cheap storage method, it's definitely not the most reliable. However, there is a rather clever way of using the tape dump sockets: record the output to your computer. Regular SOS readers may

recall Dave Burraston's letter (and Chris Carter's reply) in the *Crosstalk* pages of the August 1997 issue, regarding a technique for recording the output of an MC4's tape interface to a Mac, using virtually any sound recording utility. The recording can be made at 8-bit resolution and data-compressed for maximum

compactness of the final file. Chris found that the most consistent results were obtained by saving the file in QuickTime format, using Dave's recommendations: 8-bit, 22kHz with MACE 6:1 compression settings. Saving in QuickTime format also means that saves should be easily portable between Mac and PC platforms. The same technique, naturally, should be possible with a PC.

much less problematic. There is a RAM card slot, for a card that will store 96 Patterns, 12 Songs (a Song is a chain of up to 999 Patterns) and two sets of drum-voice parameters, but since we're talking about a 10-year old instrument here, there's no guarantee that RAM cards will be easy to find, so the SysEx solution could well be the cheapest one for Pattern and Song storage. Unless you want to wrestle with slow and unreliable tape dumping, that is... (However, see the 'Trick of the Dump' box above for an interesting use of tape in/out sockets on older instruments.)

Missing from the 626's back panel is a DIN sync socket. This socket was included on the TR909, 707 and 727, and allowed certain of Roland's pre-MIDI sequencers and drum machines (such as the TB303 and TR808) to be sync'd to more modern instruments, using the DIN sync-equipped machine as the 'middle man'. But there is one link with the past: a trigger out socket that outputs a +5V pulse. The trigger is generated by the rim shot 'track' of the drum sequencer, so that whenever a rim shot is playing, a pulse is also output from the trigger out socket. Various analogue instruments can be interfaced in this way. For example, Roland produced a number of stand-alone drum sound generators in the mid-'80s, and these can be triggered by a +5V pulse. Some sequencers and drum machines, and the arpeggiators on many analogue synths, can also be clocked by a steady stream of +5V pulses. You can get some funky results if you feed an arpeggiator a pattern, rather than a steady stream, of pulses. (Setting the rim shot's volume to zero when using the trigger out is advisable, unless you're producing turbo-jungle...)

Fade To Beige

I remember being quite excited by the 626 when it was first released. The prospect of both traditional kit and Latin sounds in one machine was enticing, giving the impression that one might be getting what amounted to a 707 and its 727 Latin counterpart in one box — with eight separate outs and a sub-£400 price tag. But the 626 would have had to be even more sub-£400 than it was to be within my financial reach in 1987, and I never got one. Until fairly recently, that is, when I bought my first dedicated drum machine for years, the admirable Boss DR660 Dr Rhythm, and the seller magnanimously threw in a 626 he'd had lying around, *for nothing*. As they say, everything comes to him who waits... SOS

Houston, We Have A Problem...

One criticism that was levelled at the 626 on its launch was that it was a bit on the safe side, with a traditional 'kit' bias that inclined it towards the staid regions of the world of rhythm. If anything, the 'voice grouping' that Roland adopted for the machine tended to reinforce this impression. Despite the fact that 30 sounds are available, a maximum of eight can sound at the same time (8-part multitimbrality). Roland pre-arrange the sounds into eight groups, and those which are in the same group cannot sound at the same time. Group 1, for instance, contains Snare Drum 1, Snare Drum 2, Low Timbale and High Timbale, so there's no layering of the two snares for added impact. The fact that Group 6 consists of Bass Drum 1 and Bass Drum 2 likewise prevents you from using these two sounds simultaneously; neither can a hand-clap sound at the same time as the claves, the shaker, or the mute hi-conga, for example.

Hit Parade: 626 Sounds

- Bass Drum 1 & 2.
- Snare Drum 1, 2 & 3.
- Rimshot.
- Low Tom 1 & 2.
- Mid Tom 1 & 2.
- High Tom 1 & 2.
- Closed & Open Hi-hat.
- Tambourine.
- Cowbell.
- Low & High Agogo.
- Low & High Timbale.
- Low, Open High and Mute High Conga.
- Handclap.
- Shaker.
- Claves.
- China Cymbal.
- Crash Cymbal.
- Cup Cymbal.
- Ride Cymbal.

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FINGERSTYLES NEW from ILIO ENTERTAINMENTS. This approach to creating Acoustic Guitar sample libraries is so inventive, so useful, that you'll wonder why no one had thought of it before. Produced by Dan Portis-Cathers (Spectrasonics' 'Heart of Africa') Fingerstyles consists of Guitar Patterns, Melodies, Cadences and Endings arranged in construction kits which can be assembled and overlain to create complete, seamless tracks. Music styles include New Age, Blues, Folk, Country, Pop, Ballad, Rock, and others - nearly 40 compositions in all, each with as many as a dozen strums, riffs, patterns and melodies. Plus you get a variety of additional strummed chords, including extensions, for more flexibility. The speed with which you can create full-length, ultra-realistic guitar parts is startling. It's the perfect solution for soundtrack composers on a tight schedule, or anyone looking to add rich sounding fingerstyles to their mix. The six string acoustic steel is expertly played and recorded, and each performance is tempo-tuned so you can sequence the patterns with complete confidence. Whether soloed or mixed, you won't believe the realism. A class library designed to inspire and get results. Audio CD: £59.95 (Akai CD-ROM: £149.00).

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HYPNOTICA R710 (Keyboard/USA). Produced by Perry Geyer and Greg Hawkes for East-West. "Fat phase-shifted and ring-modulated filter sweeps, some vibrato tones bouncing through a delay line, Theremin glissandos, chuffing machine clanks, crispy white-noise explosions, distant klaxons buzzing, whirly burlies, carverous whispers - it's all here. The production values on Hypnotica are almost too high. Many of the samples consist of two or three layers of sound, almost like mini-production pieces of the trance/ambient variety. Reverb and chorusing add richness and space to a mix that glistens with high end. Truth be told Dr. Who never sounded this good. AUDIO CD: £59.95

BLACK BUTTA (9/10 REVIEW). Produced by MadJef Taylor for East-West. MadJef Taylor's album credits include artists like Janet Jackson, Michael Jackson, Boyz II Men, New Edition, Karyn White and many of the albums produced by Jimmy Jam and Terry Lewis. This has to be one of the phattest collections of dope beat and hip-hop grooves available anywhere. MadJef has compiled a fresh variety of beats, loops, scratches, bass and lead lines, live drums and fills, kicks, snares, and guitar samples in construction kits with MIDI-files. An absolute must for any Hip-Hop or R&B producer. His unique drum programming will put a groove in your tracks that will give you the edge you need to make great records. AUDIO CD plus MIDI-files: £59.95

ELECTRONICA 7110 - Future Music (UK). Produced by Perry Geyer and Greg Hawkes for East-West. "With a range of tempos from 68bpm to a pounding 214 bpm, the spectrum of applications for these samples is reassuringly broad, and as a mixed mode CD, Electronica not only gives you audio samples - both as loops and individual hits - but also all the loops as MIDI files, allowing you to load the data into your sequencer and adapt or adjust the loops for yourself. The loops are generally excellent, and varied enough, both rhythmically and in terms of effects and production, to indicate that some serious time and effort has gone into this disc. Verdict - There's a broad range of applications for these well produced samples. The MIDI files are a big bonus as well. AUDIO CD & MIDI-files: £59.95

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X-FILES OF JUNGLE Coming soon - X-FILES OF JUNGLE features Drum'n'Bass & Jungle LOOPS & SAMPLES. These Rollercoaster beats will set off your system like nothing else. Super-Fast beats for anyone looking for the underground sound of Jungle or Drum'n'Bass. Loops, Samples, FX - they're all in there. Please call to check availability - scheduled release date of this HOT new title is Autumn '98 (Sorry for the delay - call for latest news). Audio CD: £59.95



STRICTLY HIPHOP From the same team that gave you 'Strictly RnB' & Vinylistics 3 comes the 4th and last CD in the Highly Rated Strictly Series. With the same layout as Vinylistics & the Strictly Discs - loops & samples (no instruments - only loops & hits). You will easily find Loops that you can fill Dancefloors with. This CD gives you Slick RnB, Swingbeat & Rough HipHop loops - and all with variations plus the component drum samples that made the Loop. Another very Black-sounding CD, perfect for injecting Breaks that make Your Ass start to wiggle. Styles range from rough HipHop beats to the slicker R'n'B solo beats. Get it right - get it Black!! Available from Autumn '98. Audio CD: £59.95

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manual, £325 ono = Tim 0171 272 9966 or email heid.cas@yahoo.com
REVEX B77 reel-to-reel stereo tape recorder, varispeed, excellent condition, £650 ono = 01600 713860 (Gwent)
REVEX B77 2 speed reel-to-reel tape deck, light use since new, Revex serviced, 3 months warranty from appointed engineer, £1395 ono = 0121 422 2934 (Halesowen)
ROLAND DM808 8-track portable hard-disk recorder with SMPTE sync, automated mixer and 1Gb storage, doesn't crash unlike computer hard disk systems! £950 = 0171 935 5234 or email clickmusk@aol.com
ROLAND VS880 with effects board, £900, Yamaha QY700 sequencer, £500; both items hardly used = Andy 01992 560341 (Essex)
ROLAND VS880 V-expanded, new & unused with original items, £900 = Paddy 0131 552 8878 or email poc@hgh.co.uk (Edinburgh)
ROLAND VS880 V-expanded, digital multitrack recorder, internal hard drive effects board, complete with tutorial video, immaculate, boxed, £1100 ono; Akai 2800 digital sampler with rackbag, immaculate, £600 ono = 0121 601 8591
ROLAND VS1680 in un-opened box, £1650; Korg 1212 card, £450; Yamaha D1V, unopened with ADAT card, £1050; Boss SE7, £350, all items ono = 0181 340 1230
SAMSON PL2404 24-channel 4-buss mixer, 3-band EQ, 4 aux, £320; LA Audio 4x4 stereo compressor/limiter/gate, side chain, £275, Phonic PCL3200 stereo compressor/limiter/gate, £120 = Paul 0181 516 9018
SECK 12.8:2 mixer, £350, Phonic 8:2 mixer, £100; Aless Quadraverb, £195, Zoom 9120 multi-effects, £195; Korg MR1, £400 ono, all items home use only and in perfect condition = Tim 01474 703304
SECK 18.8:2 mixing desk with flightcase, ideal for both live and recording, £375, Yamaha RX5 drum machine, tunable with 12 outputs, £150 = 0117 972 4966 (Bristol)
16 TRACK STUDIO going for a song, Fostex G16s, Allen & Heath GS316, Lexicon, Drawmer, Alexis, Aphex, outboard gear includes Sony and Aiwa DAT mastering, = 01594 564237/0411 873704 (Glos)
SOUNDTRACS MRX 24.8:16:2 mixing console, excellent condition, private studio, six auxiliaries, £1000 ono = 01889 586069 (Stafford)
SOUNDTRACS MRX 32.8:16:2 studio desk, Tascam 38 half-inch reel-to-reel with loom and remote, good condition, home use only, £3950 ono, will split = 01527 870656 (Worcestershire)
SOUNDTRACS TOPAZ PROJECT 8 32.8:2 mixing desk, with meterbridge and stand, lovely sound, 4-band EQ, 6 aux sends, perfect condition, must sell here £1250 ono = 01275 545688 or email amdisco@globalnet.co.uk (Bristol)
SOUNDCRAFT FOLIO S1 18.2 3-band EQ, 2 aux, swept mids on mix inputs, boxed, mint, manuals, £250 ono = Tony 0976 706766/01705 527162 (Hampshire)
SOUNDCRAFT SPIRIT FOLIO rack Pac with Quick Lok 10U rack, £300 ono, Zoom 9120 multi-effects processor, £80 ono = 01425 461570 (Hants)
SOUNDCRAFT SPIRIT STUDIO LC24, 72 inputs on mixdown, 8 auxiliaries, 3-band EQ with swept mids and lows, never used, still packaged and boxed, £1150 = Dannie 01902 838543/04325 551840 (Wolverhampton)
SOUNDCRAFT SPIRIT STUDIO 32.8:2, 4-band EQ with 2 mid sweeps, 6 aux sends, 8 true sub-groups, excellent condition, home use only, £1700 = 0411 579736/01264 356791 (Hants)
SOUNDCRAFT STUDIO 16 DESK, immaculate condition, 10 hours home use, boxed, manuals, genuine reason for sale, £695 ono = 01772 613878 (Preston)
STUDIOMASTER MIDKDOWN console, 24.8:2, £700 = 01562 515793 (Worcs)
STUDIOMASTER SERIES 5, 24.8.2 6:2 mixing desk, Fostex M80 8-track recorder, Roland 626 drum machine, including looms, £680, all in immaculate condition and home studio use only = Robert 01772 784788 (Lancashire)
STUDIO MIXDOWN GOLD, R8, Atari with Cubase, Sony DTC750 DAT, Aless 3630, Boss SE50, Quadraverb PL, Roland GS6, more stuff, offers = Paul 0171 727 3539
STUDIOMASTER SESSIONMIX GOLD, 16.2, 4 aux, 4 EQ, 16 in, stereo out, good condition, £350 ono; Logic 2.5 for Mac, original box, manual and dangle = Andy 0161 877 1996 (Manchester)
STUDIOMASTER SESSIONMIX GOLD, 16.2 mixing desk with flightcase, mint condition, £300 = Ian 01793 541193 (Swindon)
STUDIOMASTER MIXDOWN GOLD, 24-channel with MIDI mutes, excellent condition, £750 ono = David 01268 590794/0402 343479 (Essex)
STUDIOMASTER 16:8:16.2, 40 inputs, MIDI mute, Fostex R8, remote extension, Klotz loom, demag, tapes, Quadraverb Plus, all boxed with manuals, in very good condition and home use only, £1600; may split = 01683 221263 (Dumfrieshire)
TASCAM DA20 DAT machine, £300; Peavey

NGT2 dual-channel noise gates, £75, = 01908 568854 (Bucks)
TASCAM DA30 Mk2, mint condition, home use professional quality, only 18 months old, £600 = Paul 01705 839357 or email pscb@globalnet.co.uk (Portsmouth)
TASCAM 488 Mk2 portastudio, 8 tracks, boxed with manuals, dust cover, hardly used, £480 = Robin 01277 262771 (Kent)
TASCAM 564 4-track minidisk recorder with one disk, Art MRI reverb and Atan STFM with sequencing software, £700 for the lot plus carriage, = Robin 01305 785675 (Dorset)
TASCAM MM1 20.2 rack mixer, £225, Box of over 100 mono leads, £100, SoundLab DMS15 DJ mixer, £45, US Robotics Sportstar flash 56K internal modem, £75, = 01507 606956 (Lincs)
TASCAM M3500 mixer, 64 channels on mixdown, excellent condition, £1800 ono = Lanx 0976 776978 or email lanx@lanx.demon.co.uk (Peterborough)
TASCAM 644 MIDI studio, 4-track cassette multitrack, 2 aux-sends, 20 inputs, MIDI mutes, internal MIDI sync, in very good condition, best offers, Cubase for Atari wanted, = 01483 423088 (Surrey)
TASCAM 644 8-channel mixer, 4-track high-quality recorder, good condition, manual, boxed, £295, no offers = 0181 866 3523 (Harrow)
TASCAM 688 MIDI Studio, 8-track recording with MIDI sync, mint condition, boxed, with manuals, £600 = Paul 0171 790 1158 or email gantp@marketlan.com
TASCAM SYNCASSETTE 238, Dolby S, mint condition, 3U, 8 tracks, rackmountable, £500 no offers; Sony 77ES DAT, £395 = Shaun 01209 713253 (Cornwall)
TC M2000 reverb, £950; Yamaha D1500 delays, £180 each, Focusrite channel strip, £700; Emu Audity, £750, TC2240 Parametric, £275 = 0121 681 9366 (Birmingham)
VORTEXION VALVE MIXER 3.1, £350 = 0161 861 7261 (Manchester)
YAMAHA CBX hard disk recorder, 19-inch rack module, 1 unit, £250 = 0181 557 3858/0802 447358
YAMAHA NS10M industry standard nearfield monitors, new tweeters fitted, £160; Spirit 4P powered monitors, £400, BSS 2-channel crossover, £100; Aless Midverb IV, £150, Sony R7 digital reverb, £450, Sony M7 sonic modulator, £450, dbx163 compressor, 2 for sale for £150 or £75 each; Custom Studio monitors 2 15-inch bass bins, ATC mids, Audax tweeters, JBL Cabs, ATC crossover, Yamaha P2201 amps, £1750 = 0114 272 0300 (Sheffield)
YAMAHA PROMIX 01, 8 cables, XLR to jack loom, £850 ono = Andy 0161 7735642 (Manchester)
YAMAHA RM800 16.8.2, 6 aux, 4 stereo effect returns, 3-band EQ with swept mid, manual, boxed, home use only, £425 = 01647 231305 (Devon)
YAMAHA 02R, £3650; Roland JV2080, £800; Akai S3000XL, £850; Korg TR Rack, £600; Yamaha 03D, £1600; Akai MPC2000, 8 outputs, 32Mb, £950, Roland VS1680, all boxed as new, = 0181 800 9944/800 1040
YAMAHA 03D plus CDBAT, ADAT XT, very low hours use, HBB CDR800, Tascam DA20 MkII, Spirit 4Ps, Ensoniq MR61, all equipment 6 months old and hardly used, still have boxes and warranties, = 0370 866660 (Birmingham)
YAMAHA 03D digital mixer, 4 months, £1550 ono, ADAT card for 03D, £100; Aless 1622 mixer, £150, AKG C1000s mic, £70, Andy 0121 449 8024 (Birmingham)
Sequencers
ALESIS DATADISK, rackmount sequencer, in very good condition, £130 ono = 01273 690064 (Brighton)
ENSONIQ ASRX turbo groove sampler, dance board, 32Mb expansion, hardly used, manuals, £1000 = Mark (evenings) 01442 264825 (Herts)
QUASIMIDI RAVE-O-LUTION 309, full spec, drums, synth, AVD10 expansion, still boxed, offers around £600 = 01222 765646 (Cardiff)
ROLAND CSQ600 sequencer, CV/Gate, Sony 24 out, £120 = Chris 01232 326093 (Belfast)
ROLAND MC300 groovebox, unwanted present, new, boxed, instructions and packaging, £370 ono = 01792 771737 (Swansea)
ROLAND MCS05, mint, boxed, £500 = Nick 0181 341 7528 or email mukabeh@aol.com
YAMAHA QY20 cracked screen but works fine, £150; Roland CM64 with Atan sounds, £130, Roland CA300 arranger for CM64, £30; Atan MRI reverb, £60; Casio CZ230s, £50; Atan STFM, 2.5Mb, software, £140; Mini 4.2 mixer, £10, £550 for the lot plus carriage = Robin 01305 785675 (Dorset)
YAMAHA QY20 with manual, carrycase, power supply, excellent condition, £140 = 01406 365231 (Lincs)
YAMAHA QY70, brand new, boxed with A/C adaptor supplied, £330 = Herve 01895 624341 (Middlesex)
YAMAHA QY700, immaculate condition,

hardly used, includes flightcase, manuals and disks, £595 ono; self-powered monitors also available = 01923 857696/0411 214914 (Herts)
Samplers
AKAI CD3000 sampler, 16Mb memory, £650; Ensoniq SD1 keyboard, £450, both in excellent condition and boxed with manuals, = 01634 232739 (Kent)
AKAI CD3000 16Mb, 10 outputs, effects board, huge CD-ROM library, £750 = Gareth 01209 831461 or email playdigi@aol.com (Cornwall)
AKAI MPC2000, 32Mb, 8 output expansion, home use only, 4 months old, boxed as new, £775 = Adrian 01223 354298 (Cambs)
AKAI MPC2000, 18Mb, £700; Tascam DA20 DAT, £350, Philips DCC, £100, TB303, case, £600, Ensoniq TS10 workstation, £500, Emu SP12 turbo, £650; V1080, £590, = 01252 377638 (Hampshire)
AKAI S950 fully-expanded, 8 outputs, mint condition, £400 including massive sound library, Atan 1040 ST with monitor, Cubase, £250, Kawa KAR, £150; Roland Juno 106, £600; Fostex X28 portastudio 4 track, 8 channel mixer complete with Sansui MDR75 sync unit, mint condition, £200 = 01423 536597 (Harrowgate)
AKAI S950 sampler, expanded, mint condition, manual, £300; Roland Juno 106 with flightcase, mint condition with manuals, £300 = 01244 348783 (Chester)
AKAI S950, mint, £390, Sony TCD10 Proil professional portable DAT, £900, Sony DTC 1000ES Pro-DAT, mint, £325; Roland SPDL, hardly used, £350, various effects processors = 0121 749 6846 (Birmingham)
AKAI S950 fully expanded, SCSI, £450; Roland D110 with editor, £170; Aless Midverb II, £100, Yamaha SPX90, £170, R1000, £30, Shure SM58, £70, Studiomaster 24.4.2, £500 = 0181 368 0748
AKAI S1000, 26Mb, v4.4, SCSI, 16-bit, 10 outputs, large breakbeat library, £750, Ensoniq ESQ1, 8-track sequencer, £200, Allen & Heath GS3, 16.8:16, MIDI Mutes, £575, Soundcraft Spirit Absolute 4s, £475 = 0966 302290/0181 368 3030
AKAI S1000 8Mb, £800, Aless Quadraverb+, £180, Seck 18.8.2 desk, £1100; Aless Q56 keyboard, £400, Phonic PCC compressor/limiter/gate, £130, Atan 1040ST, monitor, printer, £130 = 01708 763994 (Essex)
AKAI S1100 18Mb, effects board, SCSI, digital out, Syquest 44Mb drive, plus 10 cartridges, £750 = Tony 0181 391 4201 or email tony@blackout.prestel.co.uk (Surrey)
AKAI S2000 sampler, v2.0 software, 32Mb, zip drive, boxed with manuals, £450, Yamaha TG33 vector synth, £100 = Simon 0161 860 6139 (Manchester)
AKAI S2000 32Mb, effects-board, Jaz drive, excellent condition, £750 ono = Lanx 0976 776978 or email lanx@lanx.demon.co.uk (Peterborough)
AKAI S2000 with 32Mb and 8 output expansion board, £700, Yamaha CS1X keyboard, great for techno drum & bass and trance, £450, no offers = 017887 617177 (Suffolk)
AKAI S2000, 18Mb, excellent condition, SyQuest EZ135 removable hard drive, 3 135Mb disks, 3 Time & Space CDs, boxed, manuals, cables, £550 = Tom 01331 463123 (Manchester)
AKAI S2800, boxed with manual, 2Mb effect separate outs, very good condition, £700, Atan Mega ST2, 20Mb hard drive with SM124 monitor, boxed with manuals, £230 = Guri 01462 678685 (Herts)
AKAI S2800 sampler, excellent condition, boxed with manual/effects, separate outputs, unexpanded, 2Mb, latest Q5 waveform display plus 10 sample CDs, £500 = Dale 0161 872 9064/0956 424619 (Manchester)
AKAI S2800, 10Mb, CD-ROM drive, CD-ROMs, SyQuest SCSI drive, cables, £750 ono = Andy 0161 773 5642 (Manchester)
CASIO FZ1, 2Mb, disks, boxed, manuals, £375; Akai S900, manual, disks, £330; Sony TCD D3 DAT Walkman, boxed, manual, £175, T2520FM, 1Mb, manual, boxed, software, monitor, £100 = 01782 810611 (Staffs)
AKAI S3000XL 32Mb, basic machine, good working order, £800 = Nick 0181 341 7528 or email mukabeh@aol.com
CASIO FZ1, 2Mb, software, £300; Roland TD7 drum module, £300, SPX90, £150; McTeah MD16R quirky but awesome drum machine, mint, boxed, £100; KAT D10 MIDI percussion controller, mint, boxed, upgradeable, £175 = 0181 291 3491 or email nicholasrowland@yahoo.com
EMU E-SYNTH workstation, £440 sampler, 2000 internal sounds, Planet Phatt/Orbit, 128-

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note polyphony, 128Mb RAM, 76-keys, semi-weighted, 16 outs, digital rout, 64 6-note filters, 48-track sequencer, 7 weeks old, £2600. [☛](#) 01903 215795 (Sussex).

EMU ESI32, 32Mb, Calamari board, zip drive, sample CDs, £650. Tascam DA20, £350. Aless Quadraverb GT, £150. Yamaha MDF2, £100. 12U flightcase, £50. [☛](#) Stuart 0115 904 3526 (Nottingham).

EMU ESI32 memory expansion, 32Mb, new, £60, Roland JV expansion board and memory cards wanted, cash waiting, Spirit Absolute Zeros wanted. [☛](#) Alan (between 6 and 8pm) 01942 749868 (Cheshire).

EMU ESI32 with turbo board, extra effects, output filters, SyQuest E2135 drive and disks, MIDI and audio leads, boxed with manual, Korg OSRAW, £150. [☛](#) 0117 924 1936 (Bristol).
EMU ESI32, 8Mb, boxed with manuals, very good condition, £500, no offers. [☛](#) 0181 341 0634.

ENSONIQ EPS16+ rackmount sampling workstation, SCSI hard drive, Wavebay disks, huge library, in very good condition, £450, Akai S950, expanded, large library, mnt, £380. [☛](#) Martin 01244 376446/07775 883324 (Cheshire).

ENSONIQ OEX8 output expander for EPS16 keyboard sampler, brand new, boxed with manuals, £150 ono. [☛](#) 0115 982 7281 (Nottingham).

KORG DSM1 4 parts, 16 notes, 16 outputs, synth filter, £350. Korg M1 £425, KPR77, £75, Aless Midiverb 3, £85, Microverb 2, £50, Cubase VST for PC, £70. Yamaha F801, £60. Fostex NM15 mixer, £25. [☛](#) 01703 452980 (Hampshire).

PEAVEY DPM SX sample expander, tatty, no power supply, full working order, £40. [☛](#) Andrew (between 6pm and 9pm) 01703 556788 (Southampton).

PEAVEY SPIX II 16-bit SCSI sampler with 8Mb RAM upgrade, lots of diskettes, ZIP drive and 6 carts, boxed with manuals, £600. [☛](#) Rob 01403 272098 or email rob@western-graphics.demon.co.uk (Horsham).

PEAVEY SPIX/SX sampler, SCSI, lots of disks, zip drive and 6 cartridges, £600. [☛](#) Rob 01403 272098 (Sussex).

ROLAND SP808 groove sampler, mint, boxed, warranty, £750, Roland JX305, £650, Lexicon MPX1, mint, warranty, £500, Yamaha D1500 delays, £180, Yamaha NS10Ms, £195. [☛](#) 0121 422 9605 (Birmingham).

ROLAND SP808 groove sampler, lead, power supply, mint condition, boxed, reluctant sale, £800. [☛](#) Jason 01634 305229.

ROLAND S50 sampling keyboard, large sound library, connection to R8B monitor, £350, Yamaha QX1 sequencer, 8 individual outputs, £150, Boosey & Hawkes tenor saxophone, silver, £350. [☛](#) 01202 695869 (Dorset).

YAMAHA A3000, 32Mb, 4 months old, boxed as new, £850 ono, Atari ST with monitor, £125, Zoom 1201, £65, TR707 and M64C, all in mint condition with boxes and manuals, £125. [☛](#) Marc 01785 715355 (Stafford).

YAMAHA SU10 portable 16-bit sampler, immaculate condition, boxed with manuals, £150. [☛](#) Andrew Lee 01633 892409 or email andrew.lee@ntl.net (Newport).

Drum Machines

ALESIS SR16 in very good condition, manuals, leads, £120 ono. [☛](#) 0115 973 3775 (Nottingham).

ALESIS SR16, boxed with manuals, in very good condition, £100, Kawai K1 keyboard, stand, RAM cards, Atari disks, £200 ono, Roland JV2080, boxed with manuals, in very good condition, £600. [☛](#) Tim 0131 445 3593 (Lithium).

BOSS DR660 drum machine, 255 sounds, effects, £185, Korg M1 synth, 8-track sequencer, £400, Freebass analogue TB303 clone, £95, Behringer composer, £95, all items boxed. [☛](#) Paul 01703 738876 (Southampton).

KAT MIDI DRUM PAD with PoleKat cymbal pad accessory, originally cost over £1000 but is the best percussion controller around, home use only, £525. [☛](#) Paul 01684 561397 or email paul@whites@compuserve.com (Malvern, Worcs).

KORG S3 with dance card, £200, TR707, £100, Korg super drums, £40, MC202, £250, SH2, £250, Macie 1604, £450, Awa XD1100 DAT, £225, JMS MIDI-to-CV, £40. [☛](#) 01132 536601/01924 470384.

KORG S3 rhythm workstation, 2 effects processors, SMPTE read/write with dance cards, £150 or swap for Poly 800, EX800 or Alpha Juno 1. [☛](#) Martin 0181 769 4093.

MPCII 60 drum machine/sequencer, good condition, manuals and flightcase, £980 ono. [☛](#) Shuke 0181 555 0758.

OBERHEIM DMX excellent condition, nice sounds, £195 ono. [☛](#) Nav 0161 205 4839 or email tuneablenoise@btinternet.com (Manchester).

OBERHEIM DX and programmer, I need the space, will split, £350. [☛](#) Graham 07887684041 or email Graham_J_Owen@compuserve.com

(Hampshire).

ROLAND R70, 909, 808, 606, CR78 sounds, all fully-editable, boxed, manuals, as new, £220, RAM card, also available. [☛](#) Andy 01538 755429 (Staffs).

ROLAND R70, boxed with manual, £250, no offers, Roland 626, £100. [☛](#) Jamie 01202 101202 293086 (Bournemouth).

ROLAND R8M rackmount drum machine, good condition with manual, £200. [☛](#) Dave 01959-570867 or email dave@lizardpoint.demon.co.uk (Kent).

ROLAND TR505 MIDI drum machine, £100, Roland Handypad 5, 5 MIDI drum pads and sounds, £50. [☛](#) Ben 0114 272 0300 (Sheffield).

ROLAND TR808 original, perfect condition, groove electronics MIDI interface, manuals, £800. [☛](#) Michael 01323 833619 (Sussex).

Computers/Software

AMIGA A500 1Mb + colour monitor, sampler/MIDI interface, *Musix X, KCS & Track* 24 sequencers, loads of disks, ideal MIDI starter, £100 ono. [☛](#) Joe 0181 769 8410 or email stripejoe@aol.com

APPLE MAC CLASSIC with software, £200 ono, Phonic 8.2 mixer, £40. [☛](#) Shaun 0181 540 4125 (Surrey).

APPLE MAC POWERMAC 7200/90, 561Gb, 4Mb U RAM, second level cache, Apple 14-inch monitor, Deck 2.6, *Sound Edit 16, Clans Works, Photoshop 3, Illustrator 6*, Audiomedia II card, £200. [☛](#) David 0191 373 4340 (Durham).

APPLE MACINTOSH 165c powerbook colour laptop, 8Mb RAM, manuals, system 7.3, £650, Opcode Vision sequencer software, manual, £75, Yamaha MSS1 MIDI, SMPTE synchroniser, manuals, £100. [☛](#) Dave 0151 734 3958 (Merseyside).

APPLE POWERMAC 7200/90, 24Mb RAM, 500Mb disk, L2 cache, VST 3.5, *Recycle, Rebirth, Sound Edit, Bas Peak, Pro Tools*, £500, Mac Quadra 700, monitor, mouse, keyboard, Cubase 2, £200. [☛](#) Leeds 0113 253 6601/01924 470384 (West Yorks).

APPLE POWERMAC 7300/166MHz, 48Mb RAM, 2Gb hard drive, 12X CD-ROM, mouse and keyboard, *Logic Audio, Discovery and Clans 4.0*, System 8.1 and 7.5, £850 ono. [☛](#) Dave 0115 950 7033 (Nottingham).

APPLE QUADRA 650 32/320, 14-inch monitor, hard drive, £400. [☛](#) 01923 234887 or email dave@brunant.demon.co.uk (Herts).

ATARI CUBASE SCORE 2, £125, Cubase 2, £8, *X-ORIE-OR* generic editor, profile generator, £8, Steinberg Port-expander, £35, midimixer, 4x2 stereo or 8x1 mono, £20, concert sequencer, £8. [☛](#) 0117 965 9211 (Bristol).

ATARI FALCON, 4Mb, high-res SM124 monitor, Cubase Score, X Zero, dongles, NVDI, 80w-up screen expander, £250 ono. [☛](#) Rudi 01227 274555 (Kent).

ATARI FALCON 4Mb RAM, 65Mb hard drive, original Cubase v3, boxed with dongle and all manuals, *Clarity* 16-bit sampler package, 44.1kHz C-clock card, new mouse, £350 ono, SVGA, £100. [☛](#) 01225 891570 (Wiltis).

ATARI FALCON 030, £440 RAM, 170m hard drive, monitor, Cubase v3.1 with dongles and manuals, Steinberg 64-track MIDI expander, all items boxed as new, £400. [☛](#) Andrew 01204 406894 (Manchester).

ATARI SOFTWARE CD Recorder Pro, £150, Steinberg Studio module, £30, Steinberg *Cue Trax*, £30, *SP Edit* for Atari Falcon. [☛](#) 0171 251 1920.

ATARI ST, 4Mb, high-res monitor, Logic v2, £200, *Logic PC v2* 54, complete with dongle and manuals, £175. [☛](#) 01482 867132 (East Yorkshire).

ATARI ST sequencer setup, high-res monitor, accessories, leads, ready to plug into keyboard, sampler, used with Cubase, Notator, £140 ono. [☛](#) 01884 257487 (Devon).

ATARI STE 2 5Mb and Atari monitor, Steinberg and office software and extras, £250. [☛](#) Lee 01291 627653 (Monmouthshire).

ATARI 1040 STE with high-res monitor, Cubase v2, £170. [☛](#) Steve 01553 674076 (Norfolk).

ATARI 1040 STE, good condition, hardly used, original box, £70 ono. [☛](#) 01227 363197 (Kent).

ATARI 1040 STE with 14-inch high-res monitor, fully upgraded to 4Mb with Cubase v3.24, good condition, £220. [☛](#) 0181 656 0291 (Surrey).

AUDIO HARD DISK RECORDING SYSTEM, Intel Pentium II, 266MMX, BX board, 64Mb SD RAM, 6.4Gb UDMA33 hard disk drive, 4Mb 3D graphics card, AWE64 Gold, Cubase Score VST, new warranty, offers. [☛](#) 0181 922 3318/0956 560595.

CREATIVE LABS AWE64 Gold PC soundcard, new, boxed, includes Cubase, lots of software and MIDI cable, microphone, £85, Cubas for Atan wanted. [☛](#) 01483 423088 (Surrey).

CUBASE VST24 for Mac, other Mac software and hardware, three tier keyboard stand, offers please. [☛](#) Steve 0181 301 0777 (Kent).

CUBASE 3.0 for Windows, boxed with dongle,

manual, £120, Aless Naneweb, as new, boxed, manuals, £100. [☛](#) Dave Black 07771 832 228
CUBASE VST 3.55, boxed, manuals, dongle, unregistered, £100. [☛](#) Ian 01273 779548 (Brighton).

DESKPRO 486PC, 20Mb RAM, 500Mb hard drive, 12XCD, SVGA 14-inch monitor, Windows 95 with Cubase Score v3 05, *Cakewalk Pro Audio*, Portman 2x4 MIDI interface, 80 MIDI channels, soundcard with 2 MIDI ins, speakers, reliable system, in very good condition, £360. [☛](#) 0181 402 1108/04325 581034 (Kent).

IOMEGA JAZ DRIVE, SCSI, includes 2x1Gb cartridges, boxed, £175. [☛](#) Trev 01422 844049 or email none (West Yorks).

JAZ DRIVE external SCSI, 1Gb with one disk, boxed, £140 or swap plus cash for Roland MCR8 MIDI controller or Goldstar GM49 MIDI keyboard. [☛](#) 01752 562353 (Devon).

MACINTOSH IICx 20Mb RAM, 230Mb hard drive, 14-inch Apple monitor, lots of software, £230 ono. [☛](#) Simon 0121 476 0546/0976 301414 (Birmingham).

MAC 7600 Power PC, VST, *Time Bandit, Recycle, Waves*, phono in/out, £1300, Roland PMA5, GM/GS unit, £250, Volt Pro studio monitors, 35Hz to 20kHz, £400, Micron D60 stereo amp, £150, Mac LCII, £150. [☛](#) Mark (after 2pm) 01924 216047.

MIDIMAN PORTMAN PCP 1X1 MIDI interface, £30, MIDI thru 1X4, £20. [☛](#) 01256 4211347/71157 (Hants).

OPCODE STUDIO 3 MIDI interface and sync for Mac, 6 independent outs, 2 independent ins, software cables, manual, boxed, £100 ono. [☛](#) Andrew 0181 374 7154.

PENTIUM 133PC, 32Mb, AWE32, 14-inch monitor, 1.2Gb hard drive, 32-speed CD, £350, Yamaha SW606XG soundcard with XGSdit, £80. [☛](#) Richard 01384 230446/0121 550 6699 (West Midlands).

POWER MAC 7200 PCI, 90MHz, 96Mb/05Gb 4x4cd with 14-inch monitor, VST 3.5 Score for Mac and Pro Tools v3 also available, £425. [☛](#) Peter 0181 761 0178 or email so@padworld.demon.co.uk

SAMPLER, MIDI and full-size keyboard for CBM64, includes 2 disk drives, monitor and computer, £99. [☛](#) 01478 641652 (Surrey).

SOUNDScape HARD DISK recorder, Pentium PC, 17-inch monitor, time module, plug-ins, £1899, will deliver. [☛](#) Steve 01246 410799/0411 284423 (Sheffield).

STEINBERG CUBASIS 1.6 demo, of Cubase Score 3.04 and WaveLab 1.5, not used at all, will take offers. [☛](#) 01291 341721 263 5575 or email jack@comio.com (Hants).

TURTLE BEACH CLASSIC MULTISOUND soundcard with Enu PreCetus synth, £100. [☛](#) David 0171 272 9297 or email david@huh.u-net.com

TURTLE BEACH Tahiti soundcard CD quality recording and playback, boxed as new, manuals, £150, Yamaha DBX50 synth card, £200, Voyetra v22 professional dual-port MIDI interface card for PC, £60. [☛](#) Jason 01246 434864 (Sheffield).

TURTLE BEACH PINNACLE soundcard, digital I/O, 32Mb RAM, £250, Digital Audio Labs card D+, £150. [☛](#) David 0171 272 9297.

Personnel

A COOL MALE OR FEMALE vocalist wanted by internationally established songwriting/production duo, experience not necessary but a hip vibe, arty attitude and cool head are, photo/letter to 1 Cahill Street, London EC1Y 8PH, Ref Number 1 Productions/SOSA01.

AN EXPERIENCED musician seeks work within a professional music/media company in either a practical or sales/support role. Anywhere in the UK considered. [☛](#) 0181 692 5105.

BLACK MALE VOCALIST required, aged 18 to 21 in the York/Leeds area, needed to front a new Jamiroqua-style group, influences must include Michael Jackson or Stevie Wonder. [☛](#) 01904 340436 (Yorks).

DRUMS & BASS programmer, good, different, needs someone with good keyboard arrangement skills for completion of a project or the start of a new project. [☛](#) 0961 731280.

DRUM & BASS required for new innovative label, if your music is experimental or groundbreaking we want to hear from you. [☛](#) Simon 0161 374 1341 (Manchester).

DRUMMER into drum & bass, trip hop, keyboard player/programmer and sound artist, female or male vocal/sync writer, advanced, professional, ambitious people wanted to establish a progressive electronic band, based in London. [☛](#) 0181 671 4338.

FEMALE VOCALIST and lyric writer wanted for serious recording project, influences include Spice Girls, Mariah Carey, All Saints and Madonna. [☛](#) 0181 922 3318.

INSTRUMENTALIST to form writing team, production/development of new artists, studio facility available, professional and financial commitment required. [☛](#) Steve 0171 381 3889 or email steve1@virgin.net

I AM LOOKING FOR a female vocalist,

co-producer and lover of melody who is into uplifting hard house, funky house and a bit of St Etienne. [☛](#) Jason 0958 414058.

PRODUCTION COMPANY with songs and know-how, seeking the right people to part-finance and work with, aiming towards creating the next big thing. [☛](#) Greg 01737 763191 (Surrey).

TOP CLASS MUSICIANS wanted by guitarist, already under sponsorship and management, applicants must agree to travel to rehearsals/auditions, bassists, vocalists, drummers and keyboardists into progressive rock. [☛](#) 01429 272710 (Hartlepool).

21ST CENTURY MOZART seeks work on TV, film soundtracks, must be heard. [☛](#) Steve 01874 610179 (Povvys).

Miscellaneous

ATARI HIGH-RESOLUTION emulator, converts any TV or colour monitor into high-resolution, complete with instructions, £10. [☛](#) 0181 785 9862.

BOSS GT5 guitar pedal, 6 months old, £400, Apple Laptop 165c, 8Mb carycase, all items in perfect condition, £325 ono. [☛](#) James 0171 561 0175.

CUBASE PC 3.55 with manual, dongle, £145, Aless 3630 compressor, £89, Aless MEQ230 graphic, £159, Lexicon Reflex, £159, Drawmer DS201 noise gate, £139. [☛](#) 0966 463429 (Doncaster).

DENNARD STUDIO TABLE with amp tray and 19-inch racking converters, £300, no offers, Akai EX80C enhancers, EX70c compressors with rack trays, Axeman, Microverb 3, offers, buyer collects. [☛](#) 0117 983 1528 (Bristol).

ELECTRO-VOICE SX200 300 Watt PA speakers, £750, Acoustic Research AR185 studio monitors, £200. [☛](#) 0181 675 0651.

FALCONER STUDIOS will be clearing its tape store, any tapes not collected by 1/11/98 will be disposed of. [☛](#) Darryl 0171 267 7777.

FENDER TWIN, excellent condition, spare valves, £450. [☛](#) 0131 555 1617 (Edinburgh).

FERNANDES TELECASTER, wine red, maple fingerboard, bound body, 1963 Fender Copy, excellent guitar with case, £175 ono, Godin Acousticaster, black, superb thin-bodied electro-acoustic guitar, in-built harp resonators, as used by Dire Straits, £350 ono, Atari Disks, work processor, music kit, games, joystick, mouse, offers, Calrec CM654 studio condenser microphones, 3-way power supply, leads, cased, as used by the BBC, live and studio use, pair for sale. [☛](#) 0120 01453 549504 (Glos).

FREESTYLE 6U rackcase with front and back, £45, combo stand, £20, Yamaha R100 manual, £40, Atari high-res SM124 monitor, £40, Quadra synth Q54 soundcards wanted. [☛](#) 0115 972 8799 (Nottingham).

FULL SIZE Boosey & Hawkes cello for sale, excellent condition, hardly used, £450 ono. [☛](#) 01827 59847 (Staffs).

KAWASAKI Z550 custom motorcycle valued at £2000, will swap or part-exchange for a hard disk recorder or reel-to-reel 16 track. [☛](#) Chris 01484 640866 (Huddersfield).

INSTRUCTION MANUAL for Aless HR16 drum machine and MMT8 MIDI sequencer, £10 plus postage. [☛](#) Stuart 0151 426 5353 (Merseyside).

MG51 MOD GRIP for Roland SH101, grey, £25, D50 ROM cards, £15 each, DX7 ROM cartridges, £20, dual noise gate, £40 ono, Cubas Audio, unregistered, £60, 48x6db ROM drive, monitor wings, *Cool Edit Pro*, £200. [☛](#) 01902 744293 (Wolverhampton).

MOTU MIDI EXPRESS XT, 8 in, 8 out, PC and Mac compatible, still boxed, Windows and Mac software included, will accept, £250. [☛](#) 01222 765646 (Cardiff).

PRO HEAVY DUTY FLIGHT CASE will fit D50 or smaller keyboards, £35. [☛](#) 01933 418094 or email lee@computalynx.co.uk (Northants).

RECORDING STUDIO for sale, large five room in NW1, call for further details. [☛](#) Mr. Lee 0171 267 1928.

ROLAND JV1080/2080XP sounds, 128 vintage, dance techno patches, 2 lts, all on disk, £15. [☛](#) Kes 01208 873649 (Cornwall).

SANSAMP PSA1 guitar rack-preamp, industry standard recording preamp for guitar, the best speaker simulation I've heard plus great amp simulation, £390. [☛](#) Mike 01234 364199 or email mike@temp.demon.co.uk (Bedford).

SEQUENTIAL CIRCUITS DRUMTRAKS, Linn chips and quadruple memory, very good condition, £200, DR660 sounds effects ROM, £10, Electro-voice SX200 speakers, new, £800, Five Star flightcase for M1, £75. [☛](#) 0181 675 0651.

SOS MAGS from March 1989 to July 1996 including three years worth of official SOS binders, £80 for the lot ono. [☛](#) evenings 01270 581235 (Cheshire).

TOSHIBA SP370 direct drive, turntable, SME 3009 arm, JVC X1 cartridge, Shibata stylus, £150, Topward oscilloscope, 3 beam, 20MHz, hardly used, very clean, £200. [☛](#) 0116 243 4338 (Leicester).

TECHNOTRONICS OCTILIGHTS 2k stage lights, £150 each, Sony MZ1 portable Mini disc

wanted. [☛](#) 01803 882772 (Devon).

2K PA SYSTEM, great sound, phone for full details, originally cost over £10,000, will sell for £6,000, don't want to split. [☛](#) 01204 882189 (Bury).

12U DENARD 19-INCH lifting trolley, racks with castors, super-strength version with adjustable height, £95. [☛](#) Ian 0121 249 0598 or email jon@artisans.demon.co.uk (Birmingham).

18U RACK CABINET, flexible configuration, studio use only, £100. [☛](#) Guy 0171 221 8440 or email guy@spangle.nirect.co.uk

YAMAHA MODIF, boxed with manual and PSU, good working order, buyer to collect, £125. [☛](#) James 0117 908 5482 or email james@occam-dm.com (Bristol).

Wanted

ALESIS ADAT v4 or more recent, must be in good condition, compressor also needed, cash waiting. [☛](#) Chris 07970 110531 (Shropshire).

AKAI S950 EDITOR. [☛](#) 01736 787565 or email bwanrick@netcomuk.co.uk (Penzance, Cornwall).

ANATEK WIND MACHINE breath controller, up to £25 pad, (mine died!). [☛](#) Paul 01684 561397 or email paul@whites@compuserve.com (Malvern, Worcs).

ANY MAKES OF KIT SYNTHS wanted, Maplin, Formant, ETI etc, will consider non working ones. [☛](#) 01942 814818.

CALREC Mk4 Soundfield microphone wanted in top condition. [☛](#) (day) 01494 787416 (Bucks).

CUBASE V3.0 for Atari STE wanted, must be original or able to run export drive for extra parts, please help. [☛](#) David 01223 246514 (Cambridge).

DIGITECH DSP128+ effects unit, manual and Seck 18.

Smarter merge units

You can't combine MIDI signals just by joining the wires together. Merging MIDI datastreams is a job for a microprocessor. There is one at the heart of each of the five models in our range of MIDI merge units.

These intelligent devices can handle all types of MIDI data, including *MIDI Time Code* and *SysEx*. Many automatic features enhance performance and convenience.

The compact low-cost **Little 2M** merges two sources. It is powered via one of its MIDI IN lines, so it needs neither batteries nor an external adaptor.

The classic mains-powered **2M** merges two sources. It has thru ports for both inputs and two copies of the merged output.

The **3M**, which is also mains-powered, merges three MIDI datastreams. It has thru ports for two of its inputs.

The **5M** merges five sources, while the **9M** can impressively handle up to nine! These models are supplied with mains adaptors.

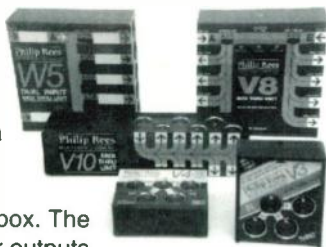


Little 2M MIDI Merge Unit	£39.95
2M MIDI Merge Unit	£69.95
3M MIDI Merge Unit	£99.00
5M MIDI Merge Unit	£125.95
9M MIDI Merge Unit	£169.95

Low cost thru units

Some MIDI gear may lack thru sockets. Chains of more than three MIDI devices can suffer from data corruption. You can solve these problems at low cost with Philip Rees' MIDI thru units.

The **V3** is a battery powered 1-into-3 thru box. The **V4** has four outputs and is line-powered. The **V8**, which has 2 inputs and 8 outputs (in 2 banks of 4), is supplied with an external ac adaptor. The **V10** is a mains-powered 1-into-10 unit. The mains-powered **W5** has independent source selection for each of its 5 outputs.



V3 MIDI Thru Unit	£12.95
V4 MIDI Thru Unit	£19.95
V8 MIDI Thru Unit	£35.95
V10 MIDI Thru Unit	£39.95
W5 Dual Input Thru Unit	£55.95

MM5 - bursting with doodahs for the performing musician

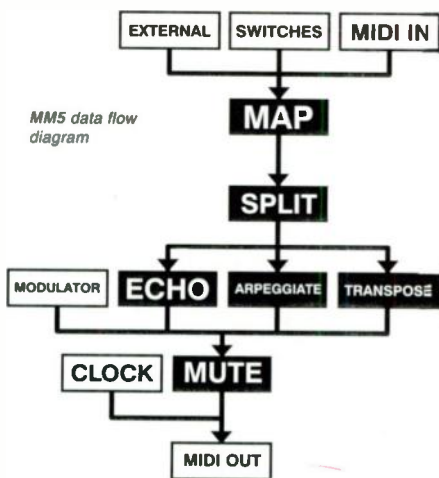


The **MM5 Advanced Programmable MIDI Foot Controller** can generate, process and monitor all types of MIDI data.

It has a well-structured set-up programming system. The five sturdy pushbuttons are configured to provide sixteen Banks of four programmable velocity-sensitive Switches.

The Switches can be made to hold single MIDI messages, sequences of MIDI messages, and even multiple sequences.

MM5 can generate modulation on any MIDI controller. It can act as a MIDI clock source. You can call up chords and arpeggiation. You can connect and empower two external volume pedals. It can process or mute the data it receives. Echo, harmonisation and transposition are provided. You can set up to four keyboard splits and map MIDI velocities, Controllers and Program numbers.



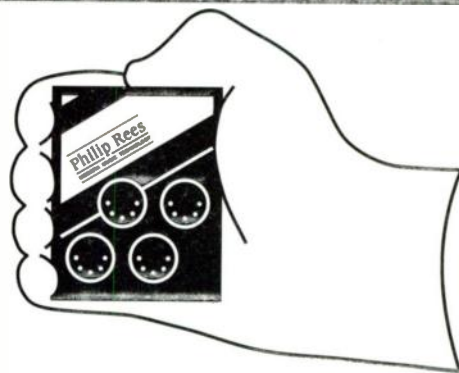
You can read the bank names, setup menus and other indications on the large six-character alphanumeric LED display.

The neat, rugged steel case (355mm x 160mm x 50mm) includes a compartment for an alkaline PP3 battery. Alternatively, you can use an external mains adaptor.

The **MM5** comes pre-programmed with six Banks of demonstration settings, which illustrate various uses of the **MM5**.

In a comparative review, *Future Music* magazine awarded the **MM5** 10/10 for value!

MM5 MIDI Foot Controller £199.00



Functional simplicity

Talented tape sync

You can use the **TS1** to synchronise your MIDI sequencer to any decent analogue tape machine.



The **TS1** can generate and recognise the usual four SMPTE formats. The **TS1** will convert SMPTE to MIDI Time Code (MTC). Alternatively, you can use the **TS1** by way of its Song Position Pointer/SRT format.

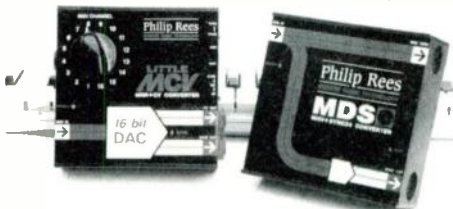
The **TS1** merges MIDI data received with its own sync data. You won't need to swap around the MIDI wiring, as **TS1** has four MIDI ports and automatic signal routing.

The **TS1** has a built-in mains power supply.

TS1 MIDI Tape Sync Unit £99.00

Affordable MIDI control for your non-MIDI gear

Little MCV will let your MIDI system control your analogue synths. It can generate control voltages for the 'one volt per octave' (log.) or the so-called 'volts per hertz' (linear) systems. The gate can be set to five volts positive, ten volts positive or S-trig. It has *MIDI In*, *CV Out* and *Gate Out* ports.



Classic drum machines and sequencers, such as the **TB-303** and **TR-808** are equipped with Sync24 ("DIN Sync") inputs. When connected up via **MDS**, they should start, play in time, and stop automatically by remote control from MIDI master equipment. Both of these easy-to-use devices include integral mains power supplies.

MDS MIDI to Sync24 Converter.. £69.95

Little MCV MIDI to CV Converter.. £75.95

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MODERN MUSIC TECHNOLOGY



The above is a selection from the range of popular MIDI accessories, which are made in England by Philip Rees. Prices are quoted as a guide to UK retail prices including 17.5% VAT, valid at the time of going to press. All our products carry a full UK manufacturer's five-year parts and labour guarantee.

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Roland RD600	£129	£48.58
Roland XP80	£129	£48.75
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Korg SG Pro X	£154	£58.12
Korg Pro X	£220	£105
Kurzweil PC88	£149	£56.25
Yamaha P1200	£139	£52.50
Yamaha EX7	£189	£71.25
Yamaha EX5	£139	£52.50
Yamaha ANIX	£74	£28.12
Yamaha CSIX	£49	£18.58
Fatar Studiologic 760	£42	£16.12
Fatar Studiologic 1100	£79	£29.83
Fatar Studiologic 880	£59	£22.50
Alesis OS6	£59	£22.50
Alesis OS7	£84	£31.67
Alesis OS8	£99	£37.50
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Roland MC505 New	£94	£35.62
Kurzweil Micro Piano	£39	£14.83
Roland SP808	£109	£41.25
Roland JV 2080	£99	£37.50
Roland JV 1080	£79	£30.00
Roland SC88 Pro	£69	£26.25
Roland MC303	£42	£16.12
Roland PMAS	£39	£14.83
Yamaha FS1R Synth 'NEW'	£69	£26.25
Yamaha MU50	£39	£15.00
Yamaha VL70	£39	£15.00
Yamaha SU10	£30	£11.20
Yamaha RY20	£38	£14.20
Yamaha OY700	£79	£30.00
Yamaha MU100	£84	£31.67
Yamaha OY70	£42	£16.12
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Emu Audity 2000	£129	£48.75
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Korg XSD Keyboard	£299
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JX305



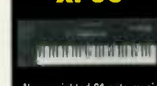
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Akai DPS 12	£179	Spirit Folio SX	£37.50
Korg D8 Digital 8 Track	£99	Mackie 1604	£47
Philips GDF 870	£49	Behringer Eurodesk 24.8.2	£33.75
Tascam DA20	£59	Behringer Eurodesk 24.8.2	£129
Roland VS180 Fully Loaded	£139	Behringer 26.4.2	£48.75
Roland D50 + SCSI	£149	Tascam DA30 II	£14.83
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Fostex D4	£29		
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Our monthly offer list is now legendary. Here are just a few of our once in a lifetime bargains.

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Fostex D5 DAT Player	RRP £949	£475
Fostex DMT8 Digital 8 Track	RRP £99	£599
Fostex X14 4Track	RRP £149	£99
Joe Meek VC3 Compressor	RRP £249	£149
Korg D8 Digital 8Track	RRP £849	£599
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Korg X5D Keyboard	RRP £599	£299
Korg X5D Module	RRP £499	£249
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Mackie 1402 Mixer	RRP £499	£345
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AKAI

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NEW ALAI S3000 RRP £1780	NEW ALAI S3000 RRP £2770	
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Akai DPS12

digital recorder

Personal digital multitrackers are becoming more and more common these days, from budget 4-track machines to semi-pro 16-tracks; and they record to a wide variety of formats, including Jaz cartridges, Zip disks, Minidisks, internal and external hard drives, and even providing CD archiving facilities. The idea is to package both an all-in-one studio mixer and a multitrack digital recorder in a small, portable box, which can be taken to gigs for live recording or sit neatly on the desktop, cutting down on studio space, mixer-to-recorder patch leads and hernias.

Akai first established themselves as manufacturers of digital recorders with their professional DR range, comprising the DR4, DR8 and DR16. Since then, they have introduced the DPS12 (reviewed in *SOS* in March '98), which comes with its own in-built 20-channel mixer and subscribes to the 'stand-alone unit' school of design rather than the DRs' rackmounting approach. It's also highly affordable, selling in the shops for a mere £1299. Thanks to the generosity of Akai UK, however, one *Sound On Sound* reader will soon be getting an even better deal — an expanded DPS12 for nothing more than an envelope and a postage stamp.

The DPS12 comes as standard with

either a removable Jaz drive or an internal 4Gb hard drive. Our prize is the 4Gb version, and comes complete with the optional effects board. The DPS12 packs a lot of processing power, much of which can be accessed via the large Jog/Shuttle control and viewed on the generous backlit LCD display. The recorder is awash with editing features including copy, cut, paste, discard, move and insert, allowing more than enough track editing choices. With 256 levels of undo, even the wrong choice can be put right at a later stage. Similarly, there are a possible 250 virtual tracks enabling even the most stringent perfectionist enough chances to get their part right. Elsewhere on the DPS12 there are 12 physical faders, plus an additional master fader, allowing full hands-on mixing for all 12 tracks when needed. 12 pan control knobs are also provided, one for each of the fader channels. EQ is available on all 12 channels when set for 2-band high and low, or on six channels when set for 3-band parametric.

The DPS12 comes with a wide range of interfacing options including a SCSI port to allow connection to external media, optical digital in/out sockets, and MIDI in and out/thru, allowing fader movement to be recorded as continuous controller data for sequencer playback. The



DPS12 records without using data compression at sample rates of 32kHz, 44.1kHz or 48kHz, and can record up to eight tracks simultaneously.

So, expect one lucky person soon to be placing an ad in *SOS* Readers' Ads section selling their redundant reel-to-reel and 20-channel mixer — and that person could be you. To be in the running for this magnificent prize, simply answer the questions on the entry form, construct a fiendishly clever and yet amusing tie-breaker, and then post your work to us at the address below. Make sure your entries arrive before the closing date of **Friday 11th December.**

Prize kindly
donated by Akai UK
(0181 897 6388).

questions

1. How many channels does the DPS12's mixer section possess?

- a. 12 ☐
b. 20 ☐
c. 200 ☐
d. 2 ☐

2. Which of the following sample rates is not supported on the DPS12?

- a. 48kHz ☐
b. 44.1kHz ☐
c. 24kHz ☐
d. 32kHz ☐

3. How many levels of undo are available on the DPS12?

- a. 258 ☐
b. 257 ☐
c. 256 ☐
d. 255 ☐

tie-breaker

Whilst there are many 4-track, 8-track and even 16-track digital studios on the market, Akai chose 12 tracks for the DPS12. In no more than 30 entertaining words, explain what's special about the dozen.

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Name

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Daytime tel. no

Would you like
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Post your completed entry to: **SOS Akai DPS12 Competition,**
Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.

the small print

1. Only one entry per person is permitted. 2. Employees of *SOS Publications Ltd*, Akai UK, 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. Prize winners must be prepared to make themselves available in the event that the competition organisers wish to make a personal presentation.



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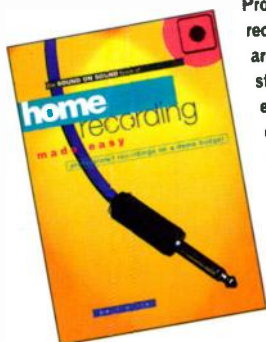
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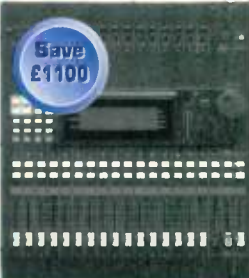


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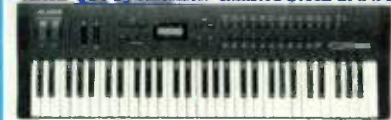
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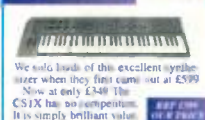
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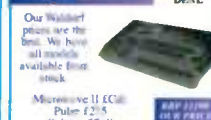
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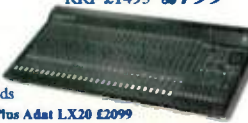
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DANCE MUSIC PROGRAMMING SECRETS NEW

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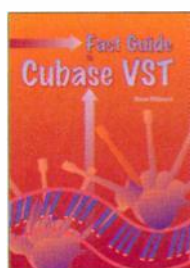
The first hands-on book dedicated to dance music — over 470 pages! The art of programming brilliant

contemporary dance music, Drum 'n' Bass, Techno, Garage, and Ambient Hip-Hop etc, are all introduced within the context of *Cubase* commands and features. However, you don't need to own *Cubase* to learn from this amazing book, as most of the tips here can be used with any sequencer. The accompanying CD (PC & Atari) is packed with MIDI Files, plus audio samples for Drum 'n' Bass, groove templates, and demos of leading music software. The book also includes chapters on: Bassline & Rhythm programming styles, *Cubase*'s Logical Editor & IPS, *Cubase Audio* and getting your creations distributed and sold. If you're into dance music sequencing, this book's for you!



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FAST GUIDE TO CUBASE VST NEW

by Simon Millward

This 350-page book provides essential information for quickly getting into Steinberg's *Cubase VST* (PC/Mac) MIDI sequencing and audio recording package.

The book covers all the important aspects of the program, including Audio and MIDI recording and Virtual Studio Technology. Installation and setting up of *Cubase VST* program are explained with detailed information on how to record, edit, process and mix digital audio, and how to use EQ and effects. Several Steinberg and third party plug-ins are explored, and the book shows how to get the best from processing techniques such as compression, gating and limiting. Projects and tutorials describe valuable insights into how best to use *Cubase VST* for specific tasks, with plenty of time-saving shortcuts revealed.

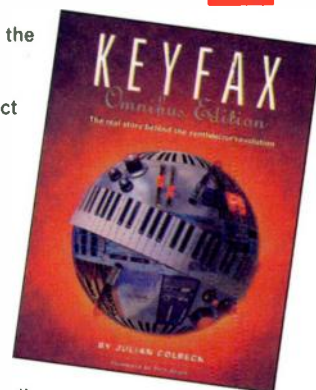
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KEYFAX OMNIBUS EDITION

by Julian Colbeck

The logical culmination of all the author's previous *Keyfax* books, featuring a product directory of over 1000 hi-tech instruments that changed the face of synthesis. All models are listed with concise reviews, specifications, and an indispensable price guide to 'used' models. The main feature of this book is the author's list of 'Hot 100' instruments, profiling the companies and designers, sales figures, scandals, set backs, and triumphs. An essential purchase especially for synth collectors.



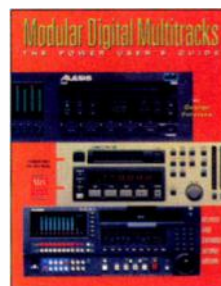
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MODULAR DIGITAL MULTITRACKS: THE POWER USER'S GUIDE NEW

by George Petersen

This book tells you everything you need to know about modular digital multitrack (MDM) recorders such as ADAT and DA88. Featuring unbiased reports and advanced operating techniques you'd never find in the manual. A must for anybody who owns a digital multitracker or is considering buying one. It also covers handy fault diagnosis and remedies, making this book an ideal reference for the secondhand purchaser on the lookout for the best used machines around.



MDMs covered include: Alesis ADAT (Type 1&2 models), Akai, Tascam, Sony and Yamaha.

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THE COMPLETE CUBASE HANDBOOK 3RD EDITION

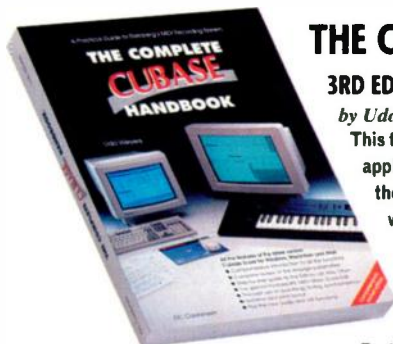
by Udo Weyers

This third edition offers over 420 pages packed with real world applications and down to earth explanations of how to use all the powerful features offered by *Cubase* in all its many forms, with particular focus on *Cubase Score*. The book addresses all three platforms (PC, Mac and Atari) and differences between versions are covered in the appropriate sections. The Audio versions of *Cubase* are dealt with in separate chapters, along with VST (though we'd recommend B374

Fast Guide To Cubase VST for more in-depth coverage of the

VST functions). If you've misplaced your manual or can't decipher Steinberg's original, then

The Complete Cubase Handbook is a not-to-be-missed purchase for users of this highly popular software.



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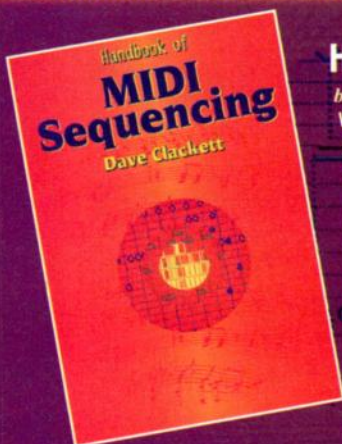
HANDBOOK OF MIDI SEQUENCING

by Dave Clackett

Written by leading MIDI song producer Dave Clackett of Hands On MIDI Software, this book will be of particular interest to musicians using General MIDI/GS/XG equipment, but all the examples are relevant whether you use a hardware based sequencer or an Atari, PC, Mac or Amiga. There are sections on synchronising to tape, standard MIDI files, copyright, transcribing from record, and a chapter on using MIDI files live. With a help section, a glossary and appendices on General MIDI data, it's a book no MIDI musician can afford to be without.

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and has packed his book

with loads of superb information, diagrams and hints to take you from basic principles through to trouble shooting when things go wrong. Absolutely essential!



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Topics include: mixing basics, real world applications, hooking things up, mixing tips, block diagrams and a glossary.

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HOW TO SET UP A HOME RECORDING STUDIO

by David Mellor

If you are thinking of setting up a home studio, a project studio or a DJ studio, this book is the place to start. It takes a highly practical

'nuts and bolts' type of approach to help you produce an efficient and productive studio. It covers soundproofing, keeping the sound in and the noise out, acoustics, studio layout, and studio equipment, and advice on the kit you are likely to need. The book ends with an invaluable questions and answers section, a glossary of terms and a list of contacts.

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HOW TO GET THE MOST OUT OF HOME RECORDING

Julian Colbeck's superbly presented set of videos which no home recordist should be without. Have you got the full 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.

Running time: 1 hour 10 minutes
Format: VHS(PAL)
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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.

Running time: 1 hour 45 minutes
Format: VHS(PAL) HiFi Stereo

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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.

Running time: 1 hour 30 minutes Format: VHS(PAL) HiFi Stereo

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Recorded and compiled by Stephen Court and Alan Parsons, *Sound Check* has become an international reference for producers, musicians and sound designers. The new version features all the test signals and reference recordings (made at Abbey Road Studios) of the original — including pink noise bands, 1/3rd octave bands, sine and square wave spot frequencies, sweep tones and SMPTE timecode utility tracks — plus some new operatic vocal and music items, to a total of 99 tracks.

The major innovation offered by *Sound Check II* is that it is available in a special package that features a built in mic and spectrum analyser, for use with the CD's 1/3rd octave tracks. The package is thus a compact and convenient method of measuring frequency response, whenever and wherever you may need to.

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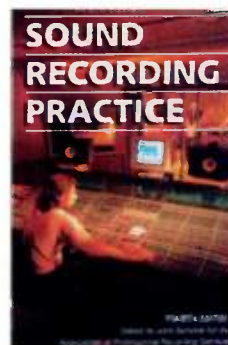
Do your mixes sound great in your studio but still sound a bit dull on other people's systems? What you may not realise is how much your room can affect the sound you hear from your monitors. There have been lots of articles in this very magazine over recent months explaining what you can do to solve acoustic problems, but do you really know where your problem frequencies lie? This is where the Sound Check CD with built in Spectrum Analyser comes in. The CD (recorded at Abbey Road) contains 31 one-third octave tones, which are played through your studio monitors. The analyser (which is built into the double-sized CD case) is placed between the monitors where your head would normally lie. As the CD plays through the tones, the easy to read LED level meter tells you the response (in dBs) at that frequency, and whether it is higher or lower than it should be, allowing you to make room adjustments where necessary. The size of the analyser means you can move it around and get a response reading from anywhere in the room, which is invaluable when setting up a studio room, as it lets you know the best place to situate your monitors. The Sound Check CD + Spectrum is a great way to improve your sound for a lot less than a new pair of monitors!

SOUND RECORDING PRACTICE (4TH EDITION)

by John Borwick

This now classic text reaches its Fourth Edition, and has been enlarged and revised to cover up to date developments in the recording industry. The contents of this supreme 600+ page book are too diverse to summarise in such a short space. Suffice

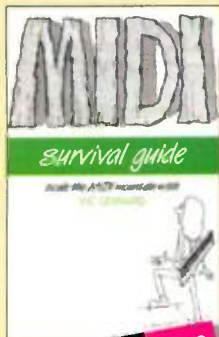
to say that every serious recordist, whether amateur, semi-pro or professional should have a copy of this book.



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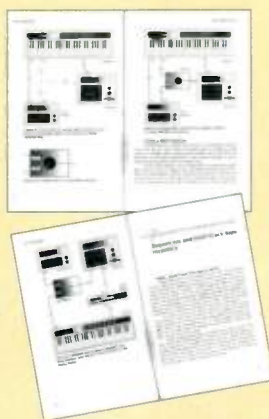
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MIDI SURVIVAL GUIDE

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; transferring songs between different sequencers, getting the best out of general MIDI, and how to understand MIDI implementation charts.



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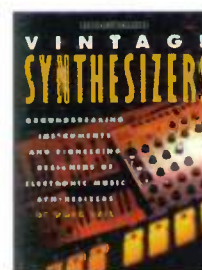
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by Mark Vail

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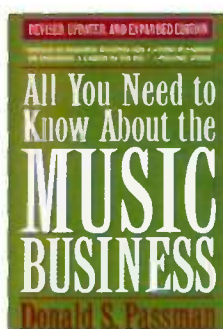
overviews of important instruments. Mark Vail's book could be the most entertaining and useful synth book yet — check out the definitive history of the Minimoog, complete with pre-production



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by Donald S. Passman

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by Rob Young

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Basic MIDI concepts are covered, along with advice on setting up a MIDI-based home studio. More advanced discussions cover specific types of MIDI messages and what you can achieve with them. All the techniques in the book are illustrated on a supplied floppy disk.

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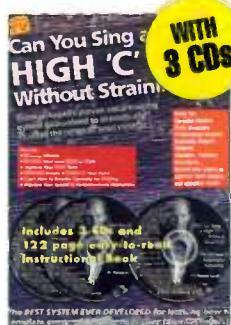


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Written & compiled by Annie Gunning

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 highly useful book.

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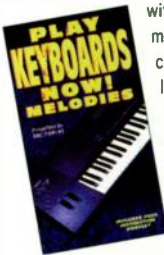
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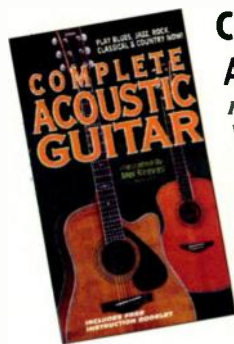
COMPLETE ACOUSTIC GUITAR

Presented by Mel Reeves

Whether you only know a few chords, or are already proficient, this easy-to-follow video will show you all of the main guitar styles, as performed on the acoustic guitar. As well as learning tips and 'tricks of the trade' Mel Reeves will show you 6 great instruments, step-by-step and

take your playing to new heights. Plus, open tuning, the capo, high-strung guitar, reading music and more! Styles include: Guns 'n' Roses, Bon Jovi, Hendrix Blues, Mississippi Blues, Django Style Jazz, Nuits En Moscow, Classical, Romance, Carter Style, Buffalo Gals and Bottleneck/Slide Style.

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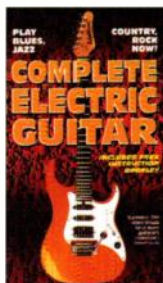
A guide to hard rock/heavy metal techniques for guitarists of all levels. The video covers rhythm, soloing, and technique. All of the techniques, solos, etc are clearly demonstrated. No need to read music.

Free booklet contains tab, chord and scale diagrams.

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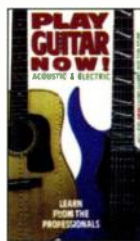
rock and fusion and much, much more. Plus the clearest possible guide to chord and scale construction, tonal centres and working out parts for yourself. Includes free instruction booklet.

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An easy-to-follow video to take you from the basics to a full rock solo. Covers tuning, chords, fingerstyle, 12 bar blues, barre chords and rock soloing for both electric

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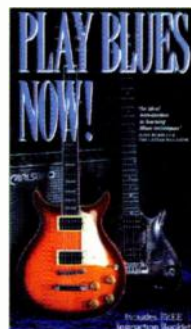
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Presented by Mel Reeves

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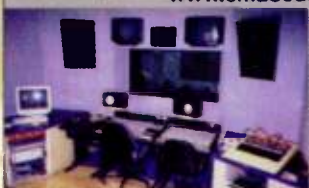
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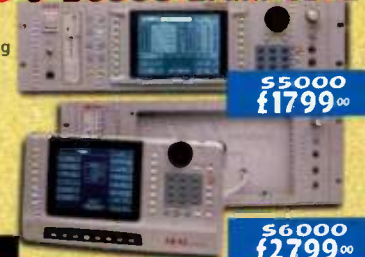


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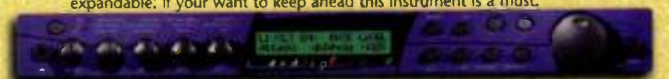
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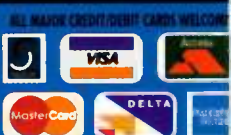
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Neil Watkinson
doesn't care
whether your
studio is analogue
or digital, big or
small, so long as
he can hear the
words...

So, you've got a dozen 24-track analogue machines costing 50 grand each, and a fully-automated tea-making jet console with flying faders and radar nestling in your gigantic cockpit of a control room. You've got hundreds and hundreds of valve microphones with vocal enhancers that melt the listener, pumping bottom end due to the complexity of all those signal processors and effect boxes. But so what?

I'm sick and tired of reading about such studios and the engineers and producers who run, operate or own them. Who do they think they are? "Analogue is better than digital," they say, "Especially if you run it at 15ips during the second verse, and then increase the machine to 30 as the bass drum rolls off at the third beat on the chorus. You would never be able to create an effect like this if you were recording on digital equipment." Well, flaming hooray! I'm never going to be able to try it unless I win the lottery, am I? And even if I win it right now, by the time I'd built my new studio and installed all the necessary equipment, would I really be bothered to try to produce an effect that probably takes 50 hours to put

together and takes up about one second of one song?

I run a small digital based studio. It has an 8-track recording facility and I master to DAT. I have a handful of outboard equipment — the usual effects, compressors and mic preamps (you know, the kind ordinary people have).

I am about to transfer the studio from my conservatory into an outbuilding. That's right, I used to do all my recording, mixing and mastering within one room. Traffic used to pass within 50 feet, and my dog was housed right outside the window. I had one microphone, one effects unit, one compressor and one mic preamp (and that's all). Using this setup I recorded many artists and produced many albums which, I might add, are on sale up and down the country. I recorded vocals on their own, acoustic guitars, penny whistles, violins and mandolins, miking live whilst the dog was barking and lorries were passing, and when I listened to the finished master through my sensitive £120 Beyer headphones, not a bark or rumble was present — and I can supply a previous CD to prove it.

So what I'm getting at is this: my studio cost me around five thousand pounds to install, was in a room surrounded by glass, and suffered noisy distractions from animals and traffic outside. Yet I still managed to get a recording in which I could actually hear what the singer was saying and tell what the song was about. So how come you can buy a record that has been recorded in one of the best studios in the country, mixed by six different people, been enhanced then enhanced further, and yet you still can't

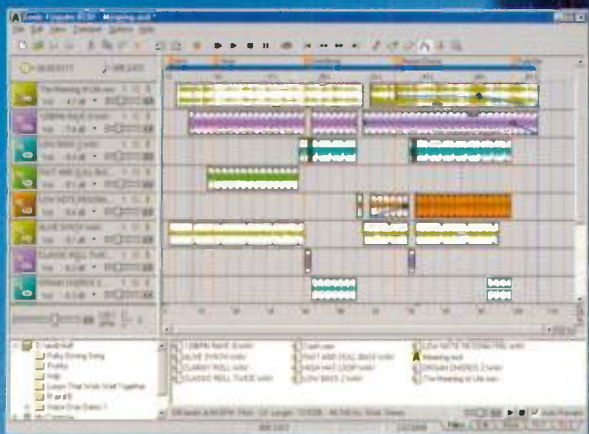
tell a bloody word they're singing?

Do the other studios not *have* good monitors and speakers, do they not have a hi-fi handy to play back a mix — or is it just that the words in these songs are meaningless? If they are then they shouldn't have bothered to write them in the first place. You don't speak in sentences that don't make sense, do you? If you did, people would say 'what did you say?' or 'what a dippo'.



Big time producers and engineers out there — answer my question! Are we supposed to tell what people are singing or are we not? If we are, then turn them up during the final mix, instead of trying to concentrate on what Hertz the ride cymbal will change its tonal content. If you're finding this difficult, come to my studio and I'll show you how to mix them. **SOS**

If you'd like to air your views in this column, please send your ideas to: Sounding Off, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambs CB3 8SQ. Any comments on the contents of previous columns are also welcome, and should be sent to the Editor at the same address. Email: soundingoff@sospubs.co.uk



features

- Multiple track looping & editing
- Change loop tempo or pitch on the fly
- Auto matching of loop tempos and pitch
- Includes loop library with 100s of loops
- Add volume, pan & effects level automation for each track
- Unlimited loop tracks (based on system RAM)
- Real-time tempo adjustment
- Tempo maps 16 and 24-bit audio support
- DirectX Audio Plug-In support for multiple real-time effects
- Multiple time stretching algorithms for a variety of material
- SMPTE timecode generate and chase
- Snap to grid
- Unlimited undo/redo
- Multiple sound card support
- Direct output to .WAV file
- Multiple audio output support

Sonic Foundry presents

ACID

Make changes to tempo or pitch on the fly

Matches loop tempo and pitch to a project in real time

Totally cool track mixing capability

Multiple track looping and editing

Includes hundreds of stylish loops or bring in your own

Volume/pan/effect envelopes per track

Master or slave to SMPTE timecode, whatever works for you

Multiple audio outputs

Save your funky fusion as .WAV or .AIFF

Wired for Windows 95 and Windows NT

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a breakthrough loop-based music production tool

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