SOUND ON SOUND

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

This Month's Top Tests

- Yamaha W7 Synth Workstation
- Korg X5 Synthesizer
- Boss RV70 Digital Reverb
- Ensoniq Soundscape PC Sound Card

Yamaha ProMix 01

HOW GOOD IS THIS DIGITAL MIXER FOR THE MASSES?

Emu ESi32 Sampler

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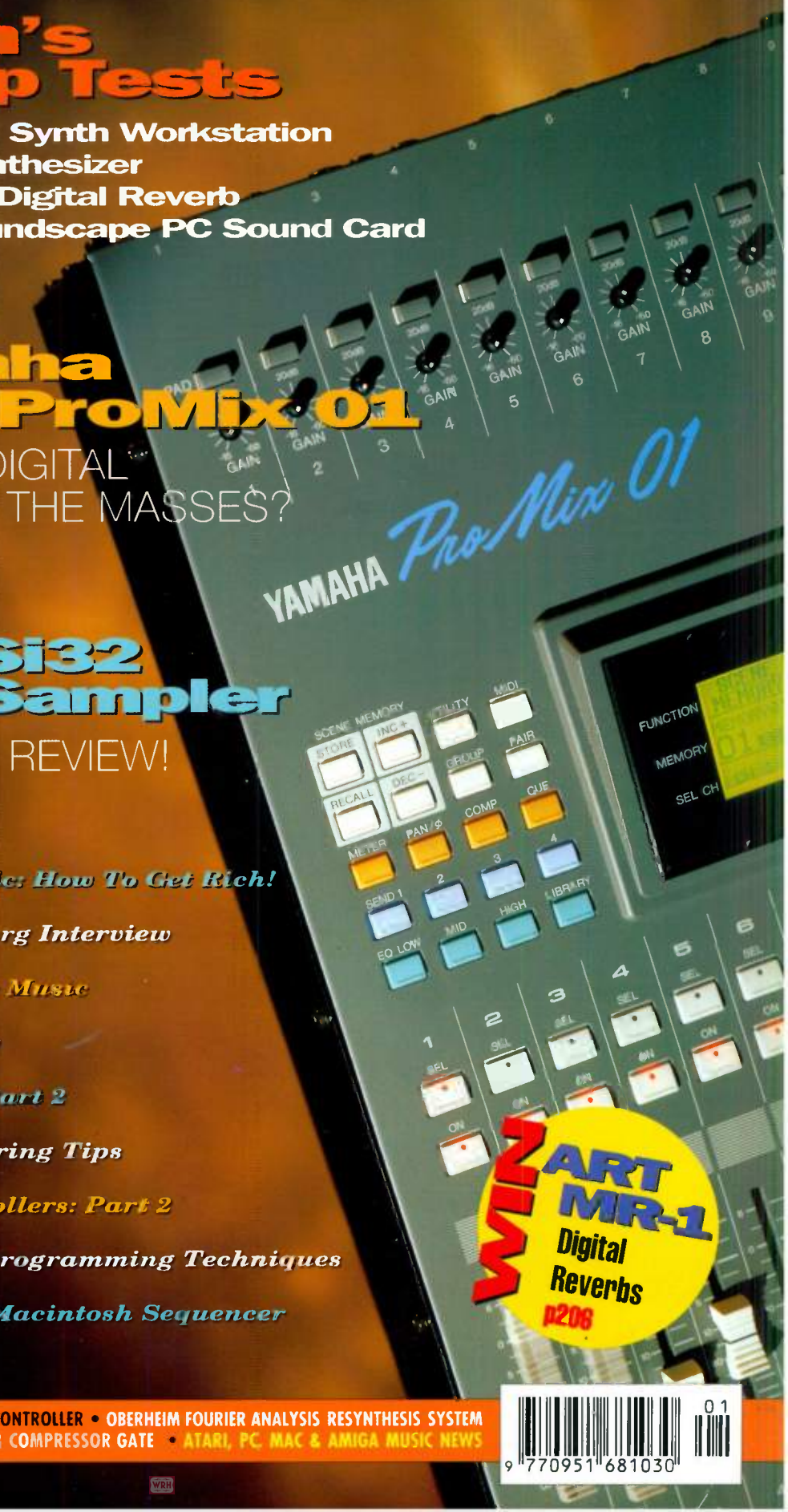

Copyright-Free Music: How To Get Rich!

The Karl Steinberg Interview

Buying A Mac For Music

Frontline Assembly

Tangerine Dream: Part 2

Vocals & Monitoring Tips

Using MIDI Controllers: Part 2

Korg Wavestation Programming Techniques

MOTU Freestyle Macintosh Sequencer

NEW ART MR-1 Digital Reverbs p206

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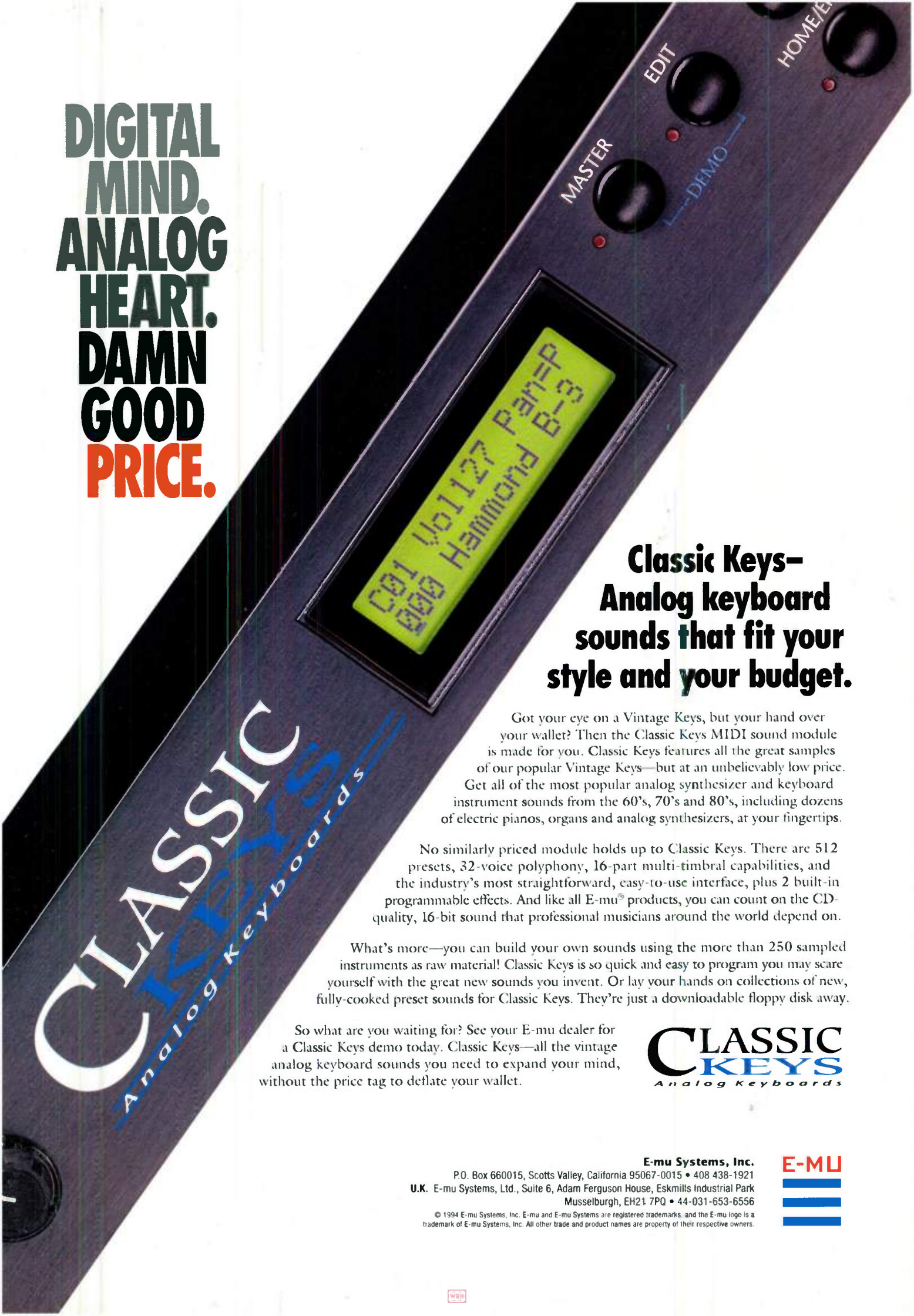

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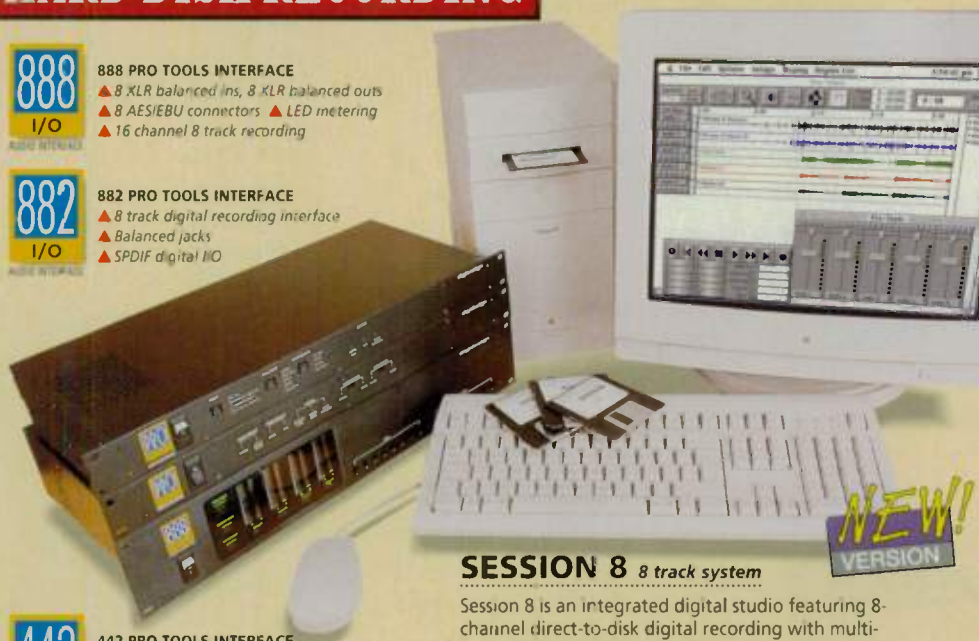

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leader

Do it Yourself!

Civilisation is generally regarded as a good thing, bringing structure and organisation to the more practical aspects of life — manufacture, transport, commerce, religious jihads, and so on. But I must confess that it also worries me. Social concerns are nothing new — we're all familiar with global warming, the tragic implications of a production-driven society, and shopping in Oxford Street within three months of Christmas — so I'll skip those. But what I find really disturbing is that although we, the human race, can build electron microscopes, manufacture complex polymers, and put a man on the moon, we can achieve almost nothing from scratch individually, because the sum total of knowledge behind even the simplest things we take for granted is nearly always too vast for a single mind to comprehend. Take plastic bags; the chemist who cooks up the plastic probably knows little about how the raw materials are produced, or how to design the machines that turn his goo into sheets and those sheets into bags — and even if he did, he probably couldn't design and build the fax machines, phones, test equipment and computers that he uses every working day. We all rely on each other's skills so completely that any other way of existing seems unthinkable.

Back inside the cosy microcosm that is the recording studio, musicians have traditionally been in control of all stages of the music-making process bar building the tape recorder — indeed, early studios merely provided a record, in the purist sense of the word, of what was essentially a live musical performance — but the rapid rise in the complexity of the technology that we rely upon to actually *create* our music (as opposed to merely recording it) is already shaking the foundations of musical self-sufficiency. I'm not suggesting you build your own computers or mine your own mineral wool for sound insulation, but it is worth pointing out that you probably depend on other people's efforts far more than you realise — the majority of us rely to some extent on other people's sound patches, samples and even (shudder shudder) MIDI song files. Even if you claim not to use other people's sounds or patches, every S+S-style synth comes loaded with waveforms that are somebody else's idea of what we need. The way we work is insidiously bent in new directions by the software packages that we use for MIDI recording, forcing us to conform as members of a musical society. No matter how well you know a sequencer package, the way it is structured must affect the way you use it — witness the almost total demise of natural tempo changes and the profusion of 4/4 rhythms that came about once the sequencer tightened its grasp on the pop music market. And after all, if we all have the same gear, there's likely to be a lot of similarities in the ways we use it. A pivotal point of society in general is that some degree of conformity is essential to its survival, but music is and always has been an art form that is constantly pushing at boundaries and seeking new means of expression. Music has to be free to be confrontational, radical, aggressive, subversive — things discouraged in other areas of society. Wouldn't it be tragic if we allowed all our sophisticated hardware and software to institutionalise our creative endeavours — to literally capture our imaginations?

Paul White *Editor*

SOUND ON SOUND

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Emu Systems ESi32 Sampler p54
Emu's announcement of this sub-£1200 EIIIX rocked the sample world's foundations and has left other manufacturers reeling! In this exclusive hands-on review, we find out just how good a deal it is for so little money...

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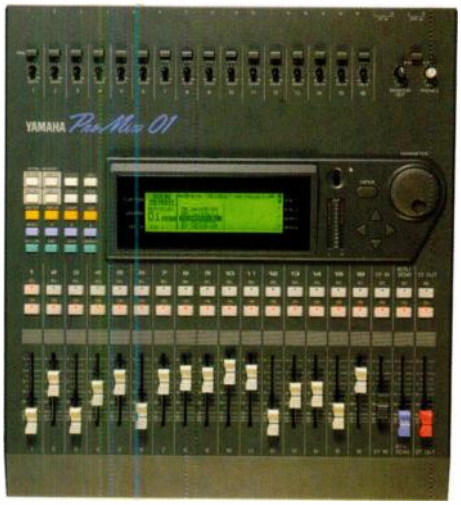

Yamaha ProMix 01 Digital Mixer p62
Finally... the long-awaited hands-on review of this mouth-wateringly attractive, moving fader-equipped digital mixer for the masses. Did it pass our rigourous test department? Turn to page 62 to find out....

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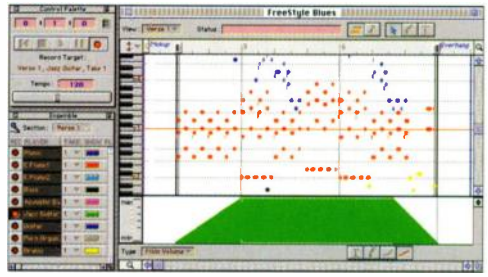

MOTU Freestyle Macintosh Sequencer p118
It's new, it's different, and this freedom-invoking Mac sequencer from MOTU offers a fun way to make music.

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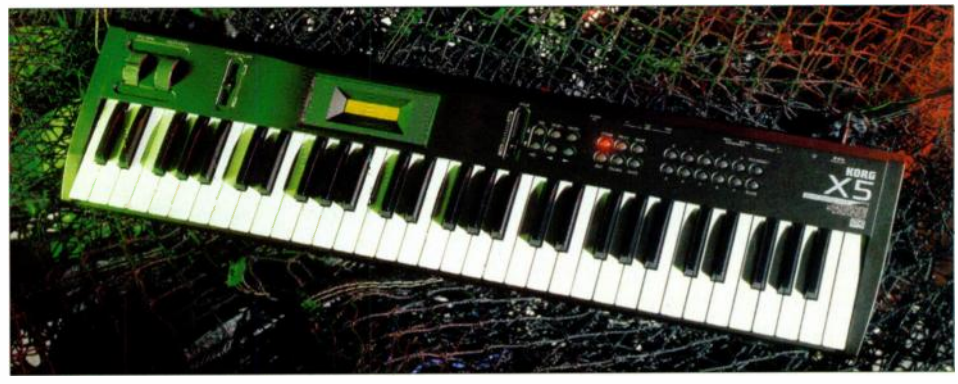
Producer Paul Staveley O'Duffy states why the music biz needs a more flexible approach to A&R.

WIN
Win fabulous ART MR1 digital reverbs
PAGE 206



Korg X5 Synthesizer p82
It may look similar to a Kawai K1 but does Korg's new keenly-priced baby have the right mix of features and sounds to make waves in a crowded market?

Crosstalk

Send your letters, tips and comments to:
The Editor, Sound On Sound, Media House, St Ives, Cambridgeshire, PE17 4XQ.

THE NOT-SO-GENTLE TOUCH

Is there any way that I can have aftertouch fitted to my Emu Emax II sampling keyboard?
Paul Kilvington
Stockport, Cheshire

Martin Russ replies:
Customisation can vary from being a 'last resort' for a rare or much loved instrument, to a 'wouldn't it be nice if' enhancement. Unfortunately, the

cost of making major modifications reflects the large amount of time that needs to be spent doing research into the problem, producing the solution, testing it and eventually fitting it. Essentially, connecting an aftertouch-sensing system into a keyboard not designed for it can be a recipe for trouble.

There are two main components of an aftertouch sensing system: the mechanical interface that translates your pressing down on the keys into an electrical signal, and the MIDI interfacing — ie. how you integrate the pressure messages into the instrument.

There are quite a few ways of sensing the pressure — the obvious method is to have a long bar of conductive plastic underneath the key, and use the key pressure to alter the resistance of this plastic. When the system senses a change in the plastic's resistance, it alters the amount of the effect being governed by aftertouch (pitch-bend, LFO modulation, and so on) accordingly. Most current keyboards use this method. But just adding a pressure sensor is only part of the story. The keyboard itself needs to be designed to work with a sensor — it has to be more rugged to cope with the extra wear and tear caused by leaning on the keys more heavily, for example. If the existing keyboard is not suitable, then changing it brings in lots of new problems — like fitting a differently-sized keyboard into a snugly fitting plastic case, such as the one the Emax II has!

On the MIDI side, you need to be able to add the pressure information from the pressure sensor into the instrument's MIDI In, and so some sort of 'merge' box is needed. But in order for the same pressure information to appear at the MIDI Out, you need another 'merge' box.

My first port of call was Emu (031 653 6556), where Dave Bristow, the R&D guru, was very helpful, but explained that adding aftertouch is not a factory upgrade, and so any modifications would be a specialist customisation. Next, I tried ringing an Emu-authorised service centre, but they said that their contract with Emu restricted them to doing approved servicing and upgrades only.

I asked Kenton Electronics (081 337 0333) about the MIDI merging problem, as they specialise in MIDI add-ons for many older analogue instruments. They said that they did not normally do this sort of customisation, and that the development of the dual MIDI merger box and the replacing or modification of the keyboard sounded like it could be a very costly job.

This left only the serious 'customisers'. The expert at the Synthesizer Service Centre (071 586 0357) was cautious — he mentioned the difficulty of doing any customisation on something in a plastic moulded case which leaves very little room for any add-ons. So when he said things like 'prohibitively expensive' and worried about doing two merges neatly, it looked rather unpromising. I then spoke to Trevor Learoyd at the Northern Synthesizer Service Centre (0532 568877), who told me that that they had done a couple of Emax IIs already. Although he was confident that they could do it, he also warned that such modifications can be very expensive.

So the score looks something like: 'can't do' — 3; 'wouldn't really like to take it on' — 1; and 'can do, but it'll cost you' — 1. When the only two sets of people that I would send a keyboard to for customisation both tell you that it will be expensive, then you know it will. Of course, if the price of adding aftertouch is comparable with buying a good master keyboard with weighted keys, then I would go for the master keyboard every time!

SAMPLE CDS: NO SELL OUT

It has come to my attention that advertisements for sample CDs are regularly appearing in many of the 'Readers Ads' sections of some magazines. The resale of any such items is prohibited by law, and we would therefore kindly request that the *SOS* team ensure that such advertisements do not appear in the future. We have arrangements with all the producers of these CDs, and their record companies, that authorise us to sell work produced by their artists. No-one else is authorised to sell or re-sell Vince Clarke's work, for example, and it is clearly stated on the CDs that this is expressly prohibited.

I'm sure that all of you at *Sound On Sound* fully understand the importance of observing people's copyright whenever possible, and that you will comply with my request. This will avoid us having to take any further unnecessary action in the future.
Matthew Wilkinson
Advanced Media Group (AMG)
Surrey

Managing Editor Debbie Poyser replies: *This is a situation that even the SOS staff were surprised to discover. Readers should be aware that they are apparently* not *permitted to treat sample CDs as they do other audio gear, and sell them on once they have finished with them. This could cast rather a different light on the relatively high selling prices of many sample CDs...*

MACKIE RE-DEFINES THE 8·BUS CONSOLE. MORE FEATURES. MORE HEADROOM. LESS NOISE.

If you've been searching for affordable recording consoles that truly do justice to the new generation of digital recording media, your search is over. A complete mixing system,

Mackie's 24•8 and 32•8 are expandable in groups of 24 channels. And all 8•Bus models are level and mute MIDI automation ready.

Because 8•Bus consoles have 20dB of gain above Unity (and mix amp architecture that resists overload), **Trim** is a "set-and-forget" control.

Flip works with the MIX-B section to double inputs during mixdown.

6 mono **Aux Sends** from 4 controls. All are Pre/Post Fader-Mute switchable. Aux 3&4/5&6 can tap their signal from the MIX-B/Monitor section.

4-band equalisation. True parametric **Hi-Mid** with 1/12 to ultra-wide 3-octave bandwidth (previously found only on far more expensive desks), comprehensive 500Hz to 18kHz sweep (15dB boost/cut). Sweepable 45Hz-3kHz **Lo Mid**, shelving **Hi** EQ at 12kHz, shelving **Lo** EQ at 80Hz & 18dB/oct. **Lo Cut filter** @75Hz.

–20dB activity LED's "staccato" effect is so distinct that you can tell vocals from instruments. +20dB **OL LED**.

Triple bussing! All 8•Bus consoles have **24 Tape Outputs** (3 sets per bus) so you can "send" an output to your choice of tape tracks without re-patching. For example, Sub 1's output appears at Outputs #1, #9 and #17. All outputs are **switchable** between "pro" +4dBu & "semi-pro" –10dBV in banks of 8.

Sealed rotary controls resist contamination.

Optional MB•32 **meter bridge.**

Mackie's famous **discrete mic preamps** with –129.5dBm E.I.N. & awesome headroom.

Elaborate monitoring including **two separate headphone sections** with multiple sourcing & solo, individual **Studio & Ctl Rm** level controls, **Talk back** with built-in **mic, MIX-B & Solo** sections.

Optional **stands** available for all models & 24•E Expander.

Constant loudness pan controls' active buffered circuitry & special pot design provide up to 74% more attenuation than comparably-priced consoles.

MIX-B bus is a "channel strip within a channel strip," with its own **Level, Pan, Source** and **EQ** options. During mixdown, Mix-B **doubles your inputs** (for example, 64 on our 32x8x2 **32•8** shown above).

All channel inputs include **mic preamp** with +48VDC phantom power, bal./unbal. **line input, mic/line** switch, **direct out** & **channel insert**.

Mackie **24•8** (24x8x2) is expandable in groups of 24 channels (complete with tape returns) via our **24•E Expander.**

In-place stereo solo on all three console models lets you solo any channel(s) to the main L/R LED meters at the touch of a button. All solo assignments in **true stereo perspective** even if you have a source panned hard right & an effect panned hard left.

Mackie **16•8** (16x8x2) is perfect for video post and scoring applications.

Tape returns are **switchable** between "pro" +4dBu & "semi-pro" –10dBV operating levels.

Exceptional specifications including 0.0014% THD (1kHz @+4dBu, main outputs), –95dBu output noise (master fader up), 10Hz-120kHz (+0dB/–3dB) frequency response, –129.5dBm mic E.I.N. (20Hz-20kHz, 150), –83dBu mic C.M.R.R. and 91dBu crosstalk (line in to adjacent ch.).

Compare with your own ears to appreciate our custom design.

Mackie exclusive, **accurate-taper 100mm faders** with extra resistive elements closely approximate the logarithmic taper of mega-expensive consoles. Our faders let you do precise fade-outs all the way down to silence (versus conventional D-taper faders that give up at about –20dB).

MACKIE.

Mackie Designs Inc • Woodinville • WA • USA • Represented by Key Audio Systems Ltd.
Unit C • 37 Robjohn's Road • Chelmsford • Essex • CM1 3AG • England • 0245 344001 • Fax: 0245 344002

Crosstalk

BLAST FIRST?

I am currently trying to make sense of the mountain of advertisements for PCs and multimedia kits. I have read all the reviews, and these suggest to me that the SoundBlaster AWE32 is the most versatile soundcard on the market at the moment.

Unfortunately, the computer companies I have contacted so far are charging between £1800 and £2000. This package includes a 486SX33 processor, 8Mb of RAM, a 540Mb hard drive, a local bus, 1Mb of Video RAM, Colourjet printer, speakers, the Soundblaster AWE32 card itself, Creative Labs software, a 1-year on site warranty, and various windows and DOS software.

My budget of around £1600 falls short of the lowest quote by £200. This situation could be rectified, I am told, by buying the same processor with what I perceive to be an inferior soundcard (Highmead's Fountain F16 16-bit stereo audio card) which is compatible with the SoundBlaster Pro and Sound Galaxy cards.

Eventually, I intend to use the PC as the basis of a home studio, with the possibility of incorporating a hard-disk recording facility at a later date. So, if I buy the processor with the Fountain F16 soundcard, will I be seriously limiting my options further down the road of MIDI music-making, considering that it is difficult, expensive and problematic (in terms of warranties) to upgrade the machine at a later date by replacing the soundcard?

I would be very grateful if you could help me out with this tiresome conundrum.

P.S. I have just had some good fortune in finding two Roland MC202s. Is there a MIDI/CV converter which has two or four CV (mono) inputs to convert the sound into MIDI, and hence process it into the PC? Obviously, money is still a big concern.

Colin McKee
North Stainmore, Cumbria

Brian Heywood replies: *Buying a PC is indeed a minefield, with a lot of conflicting advice flying around. While I can't really point you to a particular manufacturer or model, I thought that it might be useful to list a few points that you ought to consider when buying your PC.*

The most important part of your computer system is the Cental Processing Unit, so buy the fastest one you can afford. It may be worth saving on one of the other components if it means that your investment is longer lived. Audio technology is moving at a rapid pace, and you may find a year down the road that there is something better, cheaper or faster than what is available today.

Don't bother looking at a DX2, DX3, or DX4 486 machine. These PCs work by respectively doubling, tripling, or quadrupling the processor clock speed on the PCs CPU. While this can be effective for calculation-intensive processes, music applications spend most of their time shifting data between disk, memory, and some external interface (MIDI or soundcard). The speed of these operations is governed by the speed of the I/O bus rather than the processor, so a 50MHz PC could outperform a DX2 66Mhz PC.

Another way of improving the performance of a windows PC is to get an accelerated video card. A lot of any PC's time is spent updating the screen, and an accelerator card will remove some of this load from the PC's main processor, allowing it to spend more time on other tasks.

You say that 'eventually' you want to use the system as the basis of a home studio. In this case, it may be worth buying a cheaper soundcard to test the water. It's no use buying a super-duper hard disk recording system only to find out later that all you really need is a sequencer. You could buy something like a Gravis Ultrasound card (don't forget the MIDI interface), which allows you to play with digital recording, MIDI, and sample editing. At a later stage, you have the option of upgrading, or even replacing the card with the hardware that you decide you need from experience.

Consider buying a SCSI-based CD-ROM drive — you'll pay a little more, but have the facility to connect other SCSI devices to your PC. I personally use Toshiba CD-ROMs connected to Future Domain SCSI cards. Since SCSI device prices are getting lower all the time (Yamaha's CBXD5 hard disk recorder is now priced at around £1500), it's worth considering — you may find that SCSI opens a lot of options for you in the future.

I personally would avoid buying a SoundBlaster 'clone' for musical applications — they are firmly pointed at the games market, which has an entirely different idea as to what is acceptable quality. Look at soundcards from Gravis, Turtle Beach, and Roland, since these companies have a feel for musical applications — and the former two also have some very cost-effective models. As I said above, don't expect to get the 'correct' soundcard from day one.

When getting a quote for your PC system, make sure that you tell the retailer that you want to use the system for music (in writing, if possible). If the system subsequently turns out to be unsuitable for your purposes, the dealer will then be obliged to exchange the system for a PC that is suitable, or refund your money.

Buying a PC can be a hassle if you are looking for the lowest possible price. Often, it is best to go for a system supplied by a 'reputable firm' than go for the lowest possible price and then have support problems if something goes wrong. Certainly, the 1-year on-site warranty is something worth insisting *on. Good luck!*

Editorial Assistant Matt Bell adds: *Following the article on buying a Macintosh computer for music (starting on page 74 of this month's* SOS*), watch out for a forthcoming piece on what to look for when buying a PC for home studio applications...*

On the MIDI/CV converter front, Kenton Electronics' Pro 2 offers you MIDI control over two Control Voltage instruments. If your heart is set on four CV outputs, Kenton also make the Pro 4, which despite the name, can be suitable for controlling up to 10 pre-MIDI devices. For further information, check out the reviews of the Pro 2 and Pro 4, which appeared in SOS *in August 1992 and September 1994 respectively.*

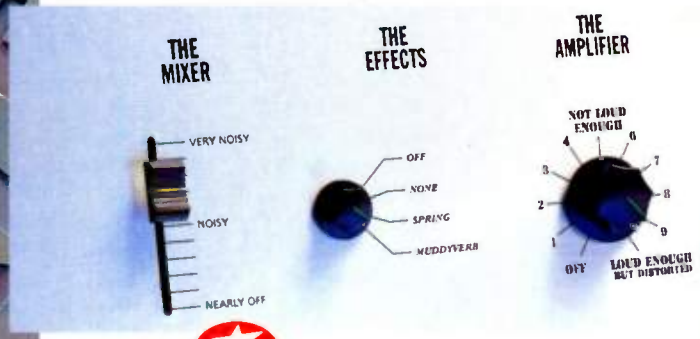
Kenton's Pro 2 offers MIDI control of two CV devices.

However, do note that the Roland MC202 can be problematic when driven via a MIDI/CV converter — the response to CV/Gate signals can be sluggish, and the pitch bend (due to limitations of the original MC202) only operates in increments of one note. However, help is again at hand — Kenton also sell a MIDI retrofit kit designed especially for the MC202. This not only rectifies the problems mentioned above, but also gives you MIDI control of the filter, which would not be possible by simply attaching a MIDI-CV converter. If you're handy with a soldering iron and a drill, you can buy the kit and carry out the retrofit yourself — the kits are available at £9.40 each. Alternatively, you can leave it to Kenton, but this costs more — £37.60 per MC202. The Pro 2 MIDI/CV interface costs £189.99, and the Pro 4 £446.50. Kenton Electronics can be contacted on 081 337 0333.

...while the Pro4 gives you the option of expanding your pre-MIDI arsenal to 10 instruments.

THERE'S ONLY 3 THINGS WRONG WITH MOST POWERED MIXERS

SPIRIT POWERSTATION



Why Do You Need a Powered Mixer?

You don't – if you want to keep carrying a separate mixer, reverb unit and power amp to all your gigs. Let's face it, it's enough hassle setting up instruments and mics without worrying about another set of leads. PowerStation gives you everything you need between stage and speakers in a single, rugged package.

Why Compromise?

At Spirit we believe that quality doesn't have to carry a price premium. However, designing PowerStation gave Spirit's design guru, Graham Blyth, greater challenges than mere affordability. In 25 years of mixer design Graham had steered clear of low-cost powered mixers, because he didn't want to be associated with the terrible reputation many had for poor audio and build quality. However, when we told him that PowerStation had to be a tool that audiophiles would be proud of he soon changed his mind! Read on to find out how he designed a console that gives you performance, power and change in your pocket.

With PowerStation Graham Blyth has excelled himself: a new pre-amp design that will take any signal you throw at it, plus a subsonic filter to tackle rumble without stopping you using bass EQ. On-board digital effects are by Lexicon – the choice of large studios around the world. Even the power amp is an audiophile's dream, really meeting its specifications to deliver 300 watts (peak) x 2 of pure Spirit sound*.

So what's missing? Just the hiss, muddy reverb and distortion that you'd expect to find on a powered mixer at this price. Read on to discover how it's done.

Bullet-Proof Mic Pre-Amps

With gain ranging from 0 to 60dB Graham's new **UltraMic™** pre-amps give you even more signal handling capacity to connect signals ranging from low output dynamic mics to active DI boxes without fear of clipping. Just as important, at -129dBu EIN their noise performance exceeds that of many so-called professional mixers.

High Pass and Subsonic Filters

A new no-nonsense 100Hz High Pass Filter with an 18dB/octave cut-off means you can tackle low frequency rumble even more effectively. An additional 40Hz subsonic filter across the outputs lets you create bass-heavy mixes without overloading PA cabs with frequencies they can't handle.

Mono and Stereo Inputs

You won't just be using mics on stage, so we've given you two full-spec stereo line input channels in addition to the 8 mono mic/line channels – ideal for keyboards and samplers. We've also included a stereo return, a 2-track tape return and inserts on the mono channels.

LEX Appeal

Lexicon effects have pride of place in the effects racks of studios around the world. A carefully selected range of breathtaking effects algorithms adds a final polish to your music.

British EQ

Everyone knows British EQ is the best. PowerStation's mono inputs use Graham's acclaimed *3-band EQ*, with *swept mid* for the fine control over your sound that's not available with simple tone controls.

7-Band Graphic EQ

Don't believe manufacturers who tell you that their simple graphics will solve feedback problems: to isolate the 'ring' at exact frequencies really needs at least 27 very steep, close-spaced filters. Instead, PowerStation's graphic EQ has been designed as a *creative* tool to give you a brilliant sound whatever the room acoustics. 6dB of cut or boost is available for precise fine tuning of your sound.

The Right Controls, for Real Control

New 60mm channel faders offer smooth response, and 100dB of attenuation for *complete silence* on fade outs. Custom-designed controls provide an even spread of gain, ensuring that you will never get annoying leaps in level with even the smallest adjustment.

Flexible Routing

Configure PowerStation to exactly your requirements. Aux 2 can *either* be routed internally or to an external processor and Aux 1 is switchable pre/post fade too, for pre-EQ stage monitoring or more effects.

We've even given you a comprehensive patchbay above the master section. This allows you to bypass the power amp to drive a bigger PA, feed another mixer into the power amp, or even route external signals (or the aux outputs) through the graphic EQ.

Power Amp

Most powered mixers deserve their reputation for using poor quality power amps that don't actually meet their power rating specifications. PowerStation, whose 300 watts (peak) x 2 stereo amp*, designed by UK power amp guru Douglas Self, offers both audiophile performance and enough power to blow your socks off. Road tested around the world for a year, we can guarantee this amp *exceeds* its specs.

Rugged Good Looks

PowerStation is built like a tank. Period. A hinged cover protects the mixer from beer, dust and roving hands that shouldn't be playing with your knobs. Rack ears are available too for rackmount use.

Spirit by Soundcraft
Harman International Industries Ltd.,
Cranborne House, Cranborne Industrial Estate,
Cranborne Rd, Potters Bar, Herts EN6 3JN, England.
Tel: +44 (0)1707 665000 Fax: +44 (#)1707 660482

SPIRIT
By Soundcraft

H A Harman International Company

For free brochures and a booklet written by pro-audio journalist Paul White on how to get the best from your mixer in a variety of situations, simply complete and return the coupon to the address shown.

I am interested in: Power Station colour brochure ☐
Information on other Spirit consoles
Live ☐ Recording ☐ Full Range ☐

Name .....

Address .....

.....Post Code .....

What application will you use your powered mixer for?

.....

What instrument(s) do you play?

.....

What magazines do you read?

.....

Tick here if you do not want to be kept on Spirit's mailing list ☐

SOS

* 265 watts RMS x 2, continuous into 4Ω

WRH

Shape of THINGS TO COME

By Derek Johnson.

THEY'VE GOT THE POWER

The newest addition to Soundcraft's Spirit line of fully-featured, affordable mixers is the Powerstation. The name is the giveaway — the new desk welds powered mixer options onto the now-familiar Spirit format. Specifically, Powerstation offers 300W a channel of stereo amplification, eight mono and two stereo input channels, two effects sends, three-band EQ with swept mid, seven-band dual graphic EQ, HPF on input channels, subsonic filter on outputs (to protect speaker cabs), 48V phantom power, insert points on mono channels and main outputs, separate power input for external sources, dedicated record outs and tape return, a dedicated mono output, and it can be free-standing or rackmounted. The biggest surprise is the inclusion of a digital effects unit from none other than Lexicon. A simplified set of controls gives you access to a range of quality reverbs, delays and special effects, together with preset 'bright' and 'dark' controls. It goes without saying that the Powerstation features a rugged build — we've seen it — and you can expect the package to remove about £1327 from your pocket.

Spirit have also introduced a pair of 100W monitors; the Absolute 2 (£258.50 a pair) monitors also offer a frequency response of 45Hz to 20kHz, a low-loss reflex enclosure and a crossover designed to achieve the shortest possible group delay times for "optimised stability of room imaging."

A Soundcraft Electronics Ltd, Cranborne House, Cranborne Industrial Estate, Cranborne Road, Potters Bar, Herts, EN6 3JN.
T 0707 665000.
F 0707 660482.

AKAI SAMPLER PRICE CUTS!

There has been some unprecedented activity in the sampler market in recent months, so it should perhaps be no surprise that Akai are addressing the situation with some positive action. How does a price cut of as much as 20% across the now-established S3000 range sound? As of January 1, the following prices will be in effect:

- S2800, standard model, £1299.
- S2800i, with 8Mb and SCSI, £1799.
- S3000, standard model, £2299.
- S3000i, with 8Mb and SCSI, £2799.
- S3200, with direct to disk recording, SMPTE, SCSI, digital I/O, £3499.

A Akai UK, Haslemere Heathrow Estate, The Parkway, Hounslow, Middx TW4 6NQ.
T 081 897 6388.
F 081 759 8268.

FILES IN A FLASH FROM VISCOUNT

The new Viscount RD800 Data Filer/MIDI File player is now available in the UK from Turnkey. The RD800 records straight to disk from your sequencer or plays back Type 0 and 1 MIDI Files from double or high density MS-DOS format disks. The device also features 1Mb (expandable to 4Mb) of non-volatile 'Flash RAM', that behaves like a virtual disk, maintaining your files even when the RD800 is switched off. Other features include tempo change, channel mute and external sync. The RD800 costs £459 including VAT.

A Turnkey, 114-116 Charing Cross Road, London WC2H 0DT.
T 071 379 5148.
F 071 379 0093.

KEY AUDIO TO DISTRIBUTE QUASIMIDI

Following the successful launch of Quasimidi's Quasar rack synth, Key Audio Systems have been appointed UK distributors for Quasimidi products in the UK — you should now be able to check out the Quasimidi range in a wider selection of retailers.

Coincidentally, Quasimidi have announced a range of new products. The first out of the bag is the Technox rack synth, which is supplied with special waveforms designed for dance and techno music production — it even includes 24 drum kits including classics such as the TR909, TR808, CR78, and so on. Technox also features:

- 21 note polyphony
- 16-part multitimbrality
- 6Mb sample ROM
- Two digital effects processors
- Arpeggiator with portamento
- RRP of £749 inc VAT.

A Key Audio Systems Ltd, Unit D Chelford Court, Robjohns Road, Chelmsford CM1 3AG.
T 0245 344001.
F 0245 344002.

SIMPLE SAMPLER FROM ROLAND

There's yet another new sampler launch this month from Roland, after we brought you news last month of the £425 MS1 Micro Sampler. Roland's latest offering in the sampler stakes is the £899 JS30 sampling workstation. This keyboard-based instrument has been designed, say Roland, for 'instant phrase, groove, and real-time sampling/remix applications", and offers, according to the company "uncommonly easy operation". The JS30 uses the same sampler chip as the high-end S750, so sound quality shouldn't be an issue, and the basic model comes equipped with 1Mb of memory, giving up to 22.5 seconds of sample time at 44.1kHz (45 seconds at 22.05kHz), though it can be exapnded to a maximum of 4Mb of memory. Where the new sampler seems to be different is in its simplified user interface and range of facilities, including automatic assigning of samples to the JS30's 12 trigger pads, the availability of all editing functions from the front panel, and an internal mixer (with fader controls) which allows the samples assigned to each pad to be mixed without the necessity to connect an external mixer.

Other features include independent Mic In and Line In jacks for sampling, a built-in SCSI port (good at this price, and meaning that the JS30 will be able to take advantage of SCSI hard drives and CD-ROM sample libraries, including Akai format), and the somewhat strange facility, in this day and age, to store the JS30's parameters and waveform data to cassette tape (there is no floppy drive). The JS30 also has a built-in Beat Per Measure adjust function, allowing tempos of different samples to be matched and quickly adjusted, good for live DJ and club work. In addition, a tempo can be tapped in as a 'master template', to override a new sampled phrase, even when its tempo is unknown. An RPS (Real-Time Phrase) function allows the JS30 to record the playback order of multiple samples as a phrase; up to four phrases can be stored in memory, and data can also be sync'ed to MIDI clock. All sample data can be loaded in real time while playing.

Presumably Roland have noted the continuing popularity of their now-discontinued W30 sampling keyboard, still widely used by gigging DJs and musicians, and see the new instrument as a successor. At any rate, the JS30 further muddies the water in the lower-priced sampler market, following the launch of Emu's ESi32 and a price cut or two over at Akai... We'll bring you more news and a picture of the JS30 as soon as we can.

A Roland UK, Rye Close, Ancells Business Park, Fleet, Hampshire GU13 8UY.
T 0252 816181.
F 0252 812879.

SON OF DA30

Tascam's new DA30 MkII supersedes their original DA30 DAT machine, but rather than simply updating the old model, they've effectively produced a brand new machine and finished it in black to boot. Cost-wise, the DA30 MkII is positioned nicely at the top end of the semi-pro market and at the lower end of the pro market which should ensure wide sales across the board — the DA30 MkII costs £1299 including VAT, £200 less than the now discontinued DA30, with an optional hard-wired remote control available for £49. The audio path supports switchable 44.1kHz and 48kHz record rates using the now familiar 1-bit AD/DA topography, but 32kHz long play mode is available — you get four hours on a 120-minute tape. A parallel port provides the facility for external control of all major functions.

Both balanced XLR and unbalanced analogue inputs are provided, while on the digital front, SPDIF and AES/EBU are supported. One of the distinguishing features of the machine is the large data/shuttle wheel, the inner portion of which may be used to enter program numbers for fast search or to change the ABS time display when editing IDs. The outer ring of the wheel provides variable speed audio cueing in both directions up to a maximum of 16 times normal play speed. As you might expect from a pro DAT recorder, the DA30 MkII is not afflicted by SCMS, and may be rackmounted without the need for an adaptor kit.

Unlike many DAT machines, the DA30 MkII is physically quite large, which leaves room for sensibly-sized, well-spaced buttons and controls. Cassettes load via a motorised drawer and the tape transport is both fast and positive. The display area is also large and clearly set out with peak metering, and a Margin facility shows how close the input signal peaks have come to clipping. A powerful headphone output with separate level control is also provided.

For a full review of this machine, you'll have to wait until next month's *SOS*, but from our preliminary tests, the DA30 MkII seems a real studio workhorse DAT machine, offering professional interfacing in both the analogue and digital domains. The sound quality stands up well against the best-specified DAT machines, while the inclusion of a shuttle facility certainly makes cueing a lot easier. *Paul White*

A TEAC UK, 5 Marlin House, The Croxley Centre, Watford, Herts, WD1 5YA.
T 0923 819630.
F 0923 236290.

THE CHEAPEST PORTASTUDIO YET?

TEAC UK have announced the relaunch of the entry-level Porta 03 4-track Ministudio. Priced at an amazing £199 including VAT, the Porta 03 features a 2-channel mixer section, a 4-track recorder and a 4:2 cue mixer for mixdown and monitoring. It runs at standard tape speed and uses Dolby B noise reduction. All in all, a painless and affordable way to check out what a cassette multitrack can do for you.

A TEAC UK, 5 Marlin House, The Croxley Centre, Watford, Herts, WD1 5YA.
T 0923 819630.
F 0923 236290.

Shape of THINGS TO COME

Kurzweil's K2000 sampling/synth workstation now has the benefit of V3 software. Improvements are centred around disk and memory management: users can now load and save individual samples, keymaps, programs, effects, setups, and songs, or any combination of 'objects', from any location in internal RAM or on any drive. The sequencer has also been improved, offering 32 tracks, linear, pattern and drum machine recording, auto punch in/out, real-time software slider and pan knobs. Contact UK distributors Washburn for full details.

T 0462 482466.
F 0462 482997.

To keep up with increasing demand, FX Rentals has commenced a £100,000 purchasing programme, acquiring five more Tascam DA88s — their total is now nine. Other purchases include a Sony 7030, Roland JD990 synth, Roland JV80 synth, Kurzweil K2000 sampler with 32Mb RAM, 32Mb Akai S3200 sampler with SCSI, an additional Akai S3000 sampler, a 32-channel Mackie mixer and a 900W C Audio power amp. Computers and video are playing more of an important part in studio life, and reflecting this, FX Rentals have added another 128Mb optical drive, a CD300 CD-ROM drive, another Sony 5850 PAL U-matic recorder, another Sony BVU800 time code NTSC U-matic recorder, and two sync pulse generators.

T 081 964 2288.
F 081 964 1910.

ABC Music's Education Division has opened another new office, in Northern Ireland. The new office, to be run by William Thompson of Ulster company EMS, will be able to follow up queries, and offer the full ABC backup, support, and after-sales service to schools in Northern Ireland. William has also worked as a music field officer for Belfast Education & Library Board. The Northern Ireland office can be contacted on 01232 425800.

EXCLUSIVE! HOT NEWS FROM USA TRADE SHOW

Although a professional audio show, the recent AES Convention in San Francisco — attended by your intrepid *SOS* crew — had a significant number of rather excellent new product releases for the more average musician or project studio owner. We'll just quickly run through some of the highlights.

• It was announced that **Sony** are joining Tascam in the manufacture of DA88-format digital 8-track machines; the system has been rechristened Digital Tape Recording System, or DTRS. Sony's first product to be released under the DTRS banner will be the the PCM800.

• **Alesis's** rival ADAT digital 8-track is now running the new System 4, an upgrade which offers over 60 minutes of recording time using 180-minute tapes, one-button punch in and improved chase/lock performance. ADAT has also been granted a price reduction — down to $2999 in the US ($1500 for the BRC). It was also announced that Panasonic have joined Alesis to support the S-VHS-based ADAT format; Alesis have also agreed to buy Panasonic's professional S-VHS mechanism. Other new products from Alesis include the MIDIVerb 4, a simple to use device that features 48kHz sampling rate and 18-bit inputs and out convertors, and the first QuadraCard RAM sound card for the Quadrasynth keyboard and S4 synth module.

Alesis' new MIDIVerb 4.

T Sound Technology 0462 480000.

The Lexicon Reflex.

• **Lexicon**'s Alex digital effects unit has been joined by the Reflex Dynamic MIDI Reverberator. Reflex offers eight algorithms, 122 preset effects, 128 user memory locations, up to 10 adjustable parameters per effect, stereo in and out and a full dynamic MIDI implementation.

T Stirling Audio 071 624 6000.

• **Digitech**'s range of harmony processors — remember the Vocalist series? — has been joined by two new family members. The Studio 5000 instrument harmony/effects processor provides up to four harmony parts along with a comprehensive collection of standard studio effects, including a stereo sampler, EQ and compression, stereo reverb, 6-second delays, and dynamic filter. The Studio Vocalist is a dedicated, professional spec device that offers pitch correction, detuning, and up to five-part vocal harmonies. XLR and quarter-inch connectors are provided, along with phantom powering, and the spec includes "more bandwidth" to capture more of the natural overtones of the voice.

T Arbiter 081 202 1199.

• The **Roland** camp had the DM800 Digital Audio Workstation, a 8-track digital hard disk recorder and mixer in one package. The unit features a large display and an easy to comprehend control surface; up to 300 virtual tracks are possible,and you can access up to 24 track hours of digital audio, providing you can afford the hard disks. Many removable drives are also supported. Preliminary info was also released on the AFP700 anti-feedback processor and the RSS10 Sound Space Processor (3D sound with only two speakers).

T Roland UK 0252 816181.

• **Vestax** had the new HDR6 digital hard disk recorder — look out for a review in *SOS* soon. The HDR6 aims to offer an affordable way into hard-disk multitrack recording; you get the controller and supply the drives yourself. The system has a built-in digital mixer, sophisticated record and edit facilities and is synchronisable and expandable with 18-bit AD and 20-bit DA conversion.

T Vestax Europe 0428 653117.

• **Digidesign** launched Pro Tools III, which will offer up to 48 tracks of record/playback, up to 64 analogue or digital channels of input and output and the Digidesign TDM virtual digital mixing and plug-in environment. DAE, the Digidesign audio operating system, and a new version of the Pro Tools software are also included. The core Pro Tools III system is priced at around $8000. Digidesign also announced a price cut for the Pro Tools I system.

T Digidesign UK 081 875 9977.

• **Waves** have announced that all their Plug-in processors are now available in TDM-Bus compatible versions. Their Q10 parametric EQ, L1 Ultramaximizer and the brand new C1 compressor/gate will also soon be fully compatible with the new Pro Tools III. Waves have also announced the release of *WaveShell*, a program which allows the real-time processing of digital audio with any of the company's Plug-Ins; any Waves program can be used in real time during DAT to DAT transfers, mastering, tracking and mixing. V1.0 of *WaveShell* runs on Digidesign DSP hardware for the Mac and will retail for $100 in the USA. International pricing may vary.

T JWM Ltd 0637 877170.

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For further information
contact SCV London
6-24 Southgate Road
London N1 3JJ
Tel: 0171 923 1892
Fax: 0171 241 3644
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Or the RD-8 timecode ADAT. The 2nd generation ADAT that has all the sync options built-in.
Both, along with the D-30 broadcast DAT player and a multitracker range headed by the award winning 380S, represent the finest recording audio in the business.
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Shape of THINGS TO COME

Behringer have recently presented three of their Blue Riband Sound Engineer awards; the awards are given to engineers who have worked with Behringer products for a long period of time or who have relied on them throughout complete tours. The awards were presented at Music Labs in London, and the recipients were Robbie McGrath (Simply Red), Jim Ebdon (Wet Wet Wet) and 'Big' Mick Hughes (Metallica). Big Mick is quoted as saying that the Behringer Composer is "the best compressor I have ever used."

T 0483 458877.
F 0483 458822.

Hinton Instruments' *AudioCalc*, the 'professional audio calculator' for the Atari range of computers, has just reached V1.04. The software, which runs on any Atari from ST to TT to Falcon, offers a package of five calculators optimised for audio: sound propagation, tape timing, music timing, analogue level calculations and digital audio calculations. Every calculator has been revised and improved to match users' suggestions. *AudioCalc* costs £39.95 inc VAT (Europe £45, ROW £50), or you can download a demo from Blackwater bulletin board on 081 299 3933.

T 0373 451927.
F 0373 451927.

4-TRACK FUN FROM FOSTEX

SCV London have announced the arrival of the new Fostex XR5 Multitracker. The XR5 — which offers plenty of facilities for the newcomer in a stylish package — incorporates a high-speed Dolby B 4-track recorder and a 4-input mixer section, and retails at £379 inc VAT. Other features include two aux sends with stereo returns, insert points on the first two inputs, direct tape outputs, varispeed, and a foldback send/output. For the MIDI musician, the XR5 also features a sync option on track four.

A SCV London, 6-24 Southgate Road, London N1 3JJ.
T 071 923 1892.
F 071 241 3644.

PHILIP REES THRU AND THRU

Philip Rees are known for producing useful, affordable and well-built MIDI hardware that often helps to solve problems you never realised you had. Most popular of all, perhaps, are their MIDI Thru boxes, which are available in various sizes and formats. The latest products from Philip Rees are, in fact, a pair of new MIDI Thru boxes. The V4 is the simpler device, and simply adds another Thru connection to the three found on the popular V3. Power for the V4 is derived from the MIDI line, and the line power circuitry should work perfectly with the vast majority of MIDI master devices. Philip Rees say that should an incompatible MIDI device be found, it is nearly always easy to rearrange the system to avoid the problem. The V4 costs just £19.95, and the battery-powered V3 has a new low price of £11.95.

The second new Thru box is the V8, which has eight outputs arranged in two banks of four, and two MIDI inputs. For each output there is a source select slider, which can be set to either of the inputs or an 'off' position. The V8 requires an external power source such as a mains adaptor — a first for Philip Rees, who usually provide internal power on their products. They can supply a suitable adaptor for £7.95, although a regulated or unregulated DC mains adaptor of between 9V and 12V drawing 320mA will do. The retail price of the V8 is £27.95 inclusive.

A Philip Rees Modern Music Technology, Unit 2, Clarendon Court, Park Street, Charlbury, Oxford OX7 3PT.
T 0608 811215.
F 0608 811227.

ADVERTISEMENT

STEREO DIGITAL EQ AT £552!

Roland's incredible E-660 digital eq is available exclusively through TMC at a new low price for a limited period only. At only £552 + VAT (£649 inc) the E-660 offers an unbelievable array of features whilst remaining entirely in the digital domain.

- Pre + post delay
- Hum canceler
- Balanced + unbalanced analogue
- SP DIF + optcal I/O
- 28 bit internal processing
- 99 memories
- Full MIDI implementation

THE MUSIC CORPORATION NEWS

T 0425 470007 F 0425 480569

A The Music Corporation, The Market Place, Ringwood, Hants, BH24 1AP.

STRIP YOUR DATS FOR 99 QUID

Turnkey have launched a range of DAT modifications and add-ons. The Digicon SCMS stripper is a box with optical and coaxial digital connections which strips out the SCMS copy inhibit code. It's priced at £129, or £89 if bought with any new DAT machine. The Digitool is an enhanced Digicon in a steel case with more analytical functions: an LCD display shows professional or consumer mode, lock status, emphasis/de-emphasis, and so on. It's priced at £199, or £149 with a new DAT machine.

If you own the right kind of machine, how about The Destroyer, an internal SCMS stripping mod for Sony DTC690 or DTC60 DAT machines. The mod costs £99, but is available free when you purchase a DTC60 (£799) or a DTC690 (£529) from Turnkey. Lastly, the DTC690 is also available with an analogue recording option for £549, or with the destroyer too, for £599.

A Turnkey, 114-116 Charing Cross Road, London WC2H 0DT.
T 071 379 5148.
F 071 379 0093.

MUSICIANS BEWARE!

A reader phoned *SOS* last month to tell us about a scam being inflicted on musicians. He had been selling his Falcon computer setup, worth £2500, and had been delighted when a buyer offered to pay for the gear with a building society counter cheque. He had accepted the cheque, assuming that it was as good as cash, and the buyer had walked away with the setup. When the reader deposited the cheque, his bank informed him that it was not genuine and that he'd been ripped off.

While this scam is not new, it's the first time we've heard of musicians being targeted. So be wary, and wait for all cheques to clear before handing over the goods.

If anyone is offered any of the following gear, your fellow reader would appreciate it if you would inform the police. Any office will do, though the one dealing with his case is Kentish Town.

- Atari Falcon 030 with 14Mb RAM and 65Mb internal drive; serial number Y434 022002064.
- Commodore 1942 monitor; serial number 4008996.
- DAC DP300 hard drive; serial number 3039.
- Steinberg *Cubase Audio* software; registration number 12527.

INTERNET CORNER

Those of you with access to the Internet (MIT Press, to be precise) may have picked up news of ZIPI, a new fast alternative to MIDI that seems to offer some great potential. It's been in part developed by Zeta, the MIDI violin people, who find MIDI a bit of a drag at their end of the business. One of the first instruments to be quoted as having ZIPI compatability is actually Oberheim's new FAR resynthesis system — see Paul White's exclusive preview elsewhere in this issue.

As of November 1, Yello (see interview with Boris Blank in the last issue of *SOS*) is being represented on the Internet. Interested users can log on and obtain:

- Information on Yello and their new album, *Zebra*.
- A short sequence from the band's most recent video, 'How How'.
- Four original samples from the new single, 'How How'.

Yello On the Net also works with response elements via e-mail. This package was put together in co-operation with Kabel New Media GmbH, Hamburg and can be accessed as follows:

Internet, via WWW: url://yello.space,net/yello
Compuserve: log onto the Recording Industry Forum via "Go Polygram"

Cerberus Sound & Vision has reached agreement with the MCPS for royalty payments from revenue gained from the new digital audio format, Cerberus Digital Jukebox. CDJ is the first digital distribution system and format to be accepted by the MCPS. Cerberus invite you to let them distribute your music, digitally, direct to listeners via modem.

A Cerberus Sound & Vision, 21 Denmark Street, London WC2H 8NE.
T 071 497 0678.
F 071 497 0679.

RS COMPONENTS: TUBULAR SELLS

RS Components claim that the world-wide market for valves is still worth around $3 billion, so it should be no surprise that the noted electronic components supplier are introducing a range of valves aimed at the needs of the audio industry. A range of eight audio amplifier valves is being supplied by specialist distributor Richardson Electronics, the parent company of National Electronics, who are one of the few remaining specialised valve manufacturers. Included in the range are preamps, drivers and output valves for power outputs of up to 70W which are suitable for oscillator, RF or AF amplifier circuitry or for use in power output or audio power amps.

A RS Components Ltd, PO Box 99, Corby, Northants NN17 9RS.
T 0536 201234.
F 0536 405678.

ADVERTISEMENT

NEW MIC FACILITY

If you've ever pondered over which mic is best for your personal vocal or instrument sound, The Music Corporation has the answer. Customers are now able to try a range of mics recording straight to ADAT and then compare each mic in one of TMC's studios. Customers are requested to make an appointment

T 0425 470007 F 0425 480569

RETURN OF THE RV4

Following the success of Kawai's last RV4 deal, TMC have managed to obtain a further small quantity of RV4s at the same price. Offering four simultaneous effects, each with separate stereo ins and stereo outs, an optical, digital I/O, and 48kHz a/d, the RV4 is unrivalled at £499.

Shape of THINGS TO COME

Philip Martens, one of the composer/producers behind 2 Unlimited, recently bought a Soundtracs Jade 40-channel desk, including patchbay. Phil is well-impressed: the desk offers "tremendous" dynamics and "fabulous" EQ.

T 081 399 3392.
F 081 390 8101.

Our recent item regarding Steven Bird's Amiga to SY85 sample converter software contained a bit of a howler: a slip of the word processor may have led the hapless reader to believe that the software was only capable of converting samples up to 35kb in length. The actual value should have been 350kb — that's quite some difference. Our apologies to Steven. The software is still available, priced £15, cheques payable to Steven Bird.

A S Bird, 81 High Street, Uppermill, Oldham OL3 6AP.

HW International have been appointed UK distributors for Camco Power Amplifiers, which are made in Germany. Camco amps feature twin torroidal PSUs and bi-polar output circuitry; they also feature variable speed DC fans, built-in adjustable limiters, and switching for in or out of phase inputs. Camco amps can also be computer controlled via the company's *Win Cai* software, running on Windows PCs.

T 081 808 2222.
F 081 808 5599.

A concert broadcast on MTV in November featured Björk accompanied by percussionist Evelyn Glennie. Evelyn's engineer Greg Malcangi used a Beyerdynamic MC740 condensor mic to record her marimba — Greg has long been impressed by how the MC740 handles this tricky-to-record instrument.

T 0273 479411.
F 0273 471825.

MONTE CARLO ON THE BEACH

Turtle Beach have released their first low-cost Sound Blaster-compatible PC sound card. The new Monte Carlo features 16-bit stereo record/playback, wavetable synthesis through software and a selection of CD-ROM interfaces. Included with the Monte Carlo is the new V-Synth wavetable synthesizer, which is GM-compatible, 32-voice polyphonic and Windows compatible; V-Synth requires a 486 machine.

Also included in the Monte Carlo bundle is Turtle Beach's new Sierra Audio Rack 'rack controller' (which can shrink and run on top of the current program's menu bar), MicroWave OLE compatible sound recorder, Mouse Player and Stratos introductory song-writing software. Last of all, the bundle includes a CD-ROM with over 50 game demos. The whole lot retails for £149 inc VAT.

A Et Cetera Distribution, Unit 17, Hardmans Business Centre, Rawtenstall, Lancs BB4 6HH.
T 0706 228039.
F 0706 222989.

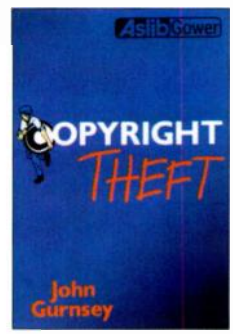
NEW AGE FOR MINI MICS

Sennheiser's new MD504 miniature dynamic percussion mic recently saw service at the New Age Music Festival at London's Conway Hall. Headline act Steve Schroeder — ex-Tangerine Dream — was intending to perform with percussionist Jens Zygar, who uses a set of giant gongs. The gongs put out high sound pressure levels and extremes of frequency, so a robust mic was called for — the MD504 is capable of handling SPLs in excess of 160dB, and six of the mics were fixed to Zygar's gong racks to boost the sound to match Schroeder's racks of synths.

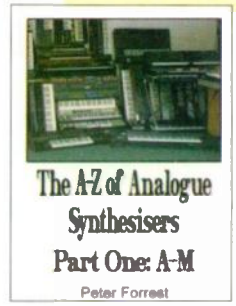
A Sennheiser UK Ltd, 12 Davies Way, Knaves Beech Business Centre, Loudwater, High Wycombe, Bucks HP10 9QY.
T 0628 850811.
F 0628 850958.

SHELF LIFE

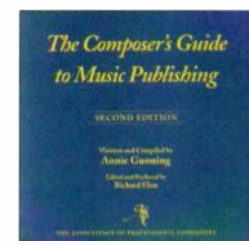
SOS continues on its quest for books that will actually tell you something new... First up this month is *Copyright Theft* by John Gurnsey, a book that discusses the problems of copyright of audio, video and electronics products. The book addresses this complex area and aims to provide readers with a better understanding of copyright theft in all areas: book, electronic, database, audio, video, games and multimedia publishing are all considered, as is the question of whether existing laws can effectively serve such a rapidly changing industry. In general, the information is sound and well-explained, though some readers familiar with the US Senate's 1983 report on home taping's effect on the music business may well put a different interpretation on the results. It's an expensive book, but one that contains a wealth of information unlikely to be found elsewhere. *Copyright Theft* costs £28.50, Order Code B293.

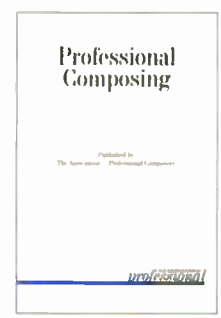


The A-Z of Analogue Synths Part One: A-M by Peter Forrest, aims to be a complete rundown of all the major analogue synths and keyboards ever made. On the evidence of this first volume, it looks like he's succeeding. The book is useful and detailed, and shows evidence of the massive amount of research and effort put in by Peter. He gives pocket company histories and detailed data on the instruments produced — but note that entries for some particularly obscure instruments and companies are limited due to lack of data. The book also provides a comprehensive overview of the qualities of various instruments; charts and tables assess second hand values and maintenance levels necessary to keep a given instrument playable, and such intangibles as sound quality, collectability and user interface. The book costs £14 plus postage, *SOS* Bookshop Order Code B294.



The Composer's Guide to Music Publishing, by Annie Gunning, 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, ballet and commissioning agreements. There is also advice for composers setting up their own publishing companies. An exhaustive and useful book, priced at £18.95, Order Code B297. The APC also produce a useful little booklet called *Professional Composing*; this aims to give readers an insight into the different fields of music in which the APC is involved. Its 36 pages manage to convey a great deal of useful information regarding the preparation of music and, most importantly, getting paid for it. It costs just £3.95, Order Code B298.





Turn to our mail order section starting on page 198 to find the necessary postage rates and further ordering information.

A SOS Publications Ltd, Media House, 3 Burrel Road, St Ives, Cambs PE17 4LE.
T 0480 461786 (24 hours).
F 0480 492422.

At last. Affordable, direct-to-disk multi-track recording and playback with no stutters.

This is the direct-to-disk development the sound recording industry has been waiting for.

A hard disk drive that's specifically developed for real-time sound recording and playback, rather than for computer number crunching.

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It's the Micropolis Microdisk AV mass storage system. The only disk drive technology that's been designed specifically for real-time sound recording and playback.

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Micropolis Microdisk AV is a quantum leap in mass storage technology for direct-to-disk sound recording.

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Hardly surprising, then, that the system is fast becoming a de facto standard. Not only for sound recording, but also for digital video and graphics editing.

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Specialists in hard disk drives, audio/video storage and disk array technology.

Shape of THINGS TO COME

FISHMAN GO DIRECT

Fishman have launched the Dual Parametric DI unit. The new device doubles as a 2-channel parametric EQ and DI box with sufficient headroom for guitar, bass or keyboards — proprietary electronics uses voltage-doubling technology to increase headroom. Each channel has separate frequency, cut/boost and bandwidth controls that can be easily bypassed. There is also a master volume control with a phase switch; input is on a quarter-inch jack, while output is on a jack or a balanced XLR connector. Power comes from a 9V battery (50 hours) or 9V adaptor.

A FCN Music, Morley Road, Tonbridge, Kent TN9 1RA.
T 0732 366421.
F 0732 350367.

NEW BOUNDARIES FOR BEYER

Beyerdynamic's new MPC65 boundary effect dynamic mic, priced at £230 including VAT, is a compact mic, well-suited to applications where a mic needs to be unobtrusive. It features a semi-cardioid pattern, a frequency response of 65Hz to 18kHz, and provides high gain before feedback. A low-cut filter is provided on a separate preamp to eliminate low-frequency rumble and unwanted surface noise; the mic requires 12V-48V phantom power, and is available in black or white.

A Beyerdynamic (GB) Ltd, Unit 14, Cliffe Industrial Estate, Lewes, Sussex, BN8 6JL.
T 0273 479411.
F 0273 471825.

2turnkey complete

With up to 48 disk tracks and 64 channels of I/Os, built in TDM Bus providing a powerful digital processing environment, the new Pro Tools III system is set to revolutionise the world of digital audio. There are two choices of I/O interfaces, the 882 provides 8 inputs and outputs on balanced jacks for under £1000. For the professional the 888 interface offers no compromise features with balanced XLRs, 15 segment LED metering, 4 x AES/EBU & 1 x SPDIF digital I/Os to allow up to 8 channels of digital audio to be simultaneously transferred. Pro Tools III comes with a DSP farm card that contains 4 x Motorola 56001 chips which with the bundled software plug-ins provide: single or 4 band EQ, full dynamics (Compression, Limiting, Expansion, Gating). plus Flanging, Delay, & Chorus. Come and see the future of recording...

Emulator IV

Professional Digital Sampling System

Come to our demo day. Call for details

The problem with purchasing monitors is trying to find a range on display. Look no further as we have on demonstration a comprehensive range of professional nearfield monitors The Genelec 1031 & 1030 bi-amped monitors are compact with a high SPL, making them ideal for the home/project studio. The dyanaudio BM10 offers a clean and punchy sound at a keen price, delivering a low frequency response that belies its size, while the M1s have fast become the engineer's choice.
As exclusive agents for Waldorf we carry their full range of monitors from powered nearfields to main studio monitors.

CR-3A is a professional quality large diaphragm cardiod condensor mic, hand-built in the USA by Manley Laboratories and has a beautiful and flattering tone on vocals and a wide range of other instruments. Switchable 10 dB pad and high-pass roll-off filter and comes with shock-mount, case and pop-shield
Until recently, we have been selling this microphone for £599, and in direct A/B comparisons with similarly priced mics; over 85% of our customers prefered it! The high sales volumes have enabled us to cut the price to a staggering £349.

Turnkey Studio Systems 14 Flitcroft Street

adj (1927.) : installed and ready to operate

Moving fader automation • System management software accessed by an LCD touch screen • Built in FD & HD drives • Transport bar remote control of a host of tape machines. These are some of the additional features on the Soundcraft DC2000 which along with the company's great reputation for sound quality and its affordability, sets a landmark in mixing console manufacture. We have a 32 channel version on permanent demonstration in Studio One, along with the Fostex RD8, Tascam DA88 and Alesis ADAT. Pro DATs are also stock from JVC, Tascam, and Technics up to the Sony and Fostex time code machines.

Pro Tools III

DIGITAL AUDIO PRODUCTION SYSTEM

Its all here in black & white, the new sampler from Emulator. Redefining digital sampling standards, the Emulator IV features 128 voice polyphony and up to 128mbyte of sample memory, giving up to 24 minutes of sampling time. A new icon based graphic interface makes it easy to use and powerful audio processing features include distortionless pitch transposition over a 10 octave range. Additional options include Flash RAM sample memory, 32 MIDI channel capability. If all this has wetted your appetite call for details of our Emulator IV clinic.

In our continued commitment to offer good service and support we now have a forum on the CIX bulletin board. This will provide around the clock information: price lists, software updates, usefull hints & tips, plus the ability to air your likes and dislikes. As all mail is checked every day you can be assured of a quick response from our tech support team. You can access the information you need at a time that's convenient to you, whether is eight o'clock at night or four in the morning.

"A truly professional instrument. Waldorf have taken most of the best elements found in synthesizers from the past 25 years, added a few new ideas of their own and packed them into one big box."
(SOS Review July '94)
With up to 48 voice polyphony, user definable wavetable synthesis, true analog 3 stage filters, and sample resynthesis, the Waldorf Wave has to be heard to be believed. New soundbanks are now available.

NEW

MicroWave V2 Update

All you need is a computer, modem and telephone line. As an introductory offer if you buy a modem from us we will pay your sign up fee and 1 months minimum air time. Cix also provides a free gateway to the Internet giving you access to sites all around the world at the cost of a local telephone call. If you would like more information please get in touch and get on line. Nick Thomas can also be contacted on CompuServe and the Pan Network.

How can you improve on an already classic synthesizer? Waldorf have managed to squeeze a host of new facilites out of the MicroWave with the Version 2.0 software update. New Voice Allocation Modes. Panning Modulation, 32 new Wave Tables. Additional LFO Wave Shapes and parameters.

Turnkey Studio Systems operates from our basement suite of studios (Studio 1 shown here) Please use the new Flitcroft Street entrance.

EX-DEMO, USED & NEW ITEMS (All prices include VAT)	
Tape	
Alesis ADAT	£2795
Fostex RD8 NEW	£2499
Tascam DA88	POA
Consoles	
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preview

Oberheim FAR

Resynthesis Technology

PAUL WHITE gets a sneak preview of an approach to synthesizer technology that could truly change the face of both synthesis and sampling as we know them...

It's a very poorly-guarded secret that all the major synth companies are looking very closely at resynthesis as the next major evolutionary step in synthesizer technology. Conventional sample-based synths don't 'need to know' how the original sound is created — they simply use a digital snapshot or sample of a sound, and then add further processing to change the pitch, envelope, spectral filtering, and so on. At the other end of the spectrum, we have physical modelling, where the synth 'needs to know' almost everything there is to know about the sound being synthesized, as it has to emulate all the physical characteristics of the instrument, and the player/instrument interface, in software.

Resynthesis fits neatly between these two extremes. The idea is that you take any sound, analyse it, and then recreate it from partials (sine waves) using Fourier resynthesis. The synth 'needs to know' nothing about how the sound was created in the first place, but *does* need to be able to break the sound down into its spectral components, and then recreate these components as exactly as possible. This idea has been around for almost as long as electronic synthesis itself, but at the 1994 AES show in San Francisco, Oberheim previewed a working resynthesis system which showed just how much potential this approach to sound creation has.

The first obvious question must be: if a resynthesized sound is so close to the original, why not just sample it and save yourself all the bother? As you may have guessed, there are several very good answers to this question. Once a sound has been analysed and resynthesized using a series of partials, you can extend the sound without the need to loop it (you simply play the series of partials for longer), change the sound's pitch (without it being subject to quantisation distortions), and, more importantly, you can modify the resynthesized elements in various ways to create new and interesting sounds. One practical example of this is true audio morphing, where the partials making up one sound can be transmutated over time into an entirely different sound. This is quite different from crossfading or filter morphing, and in an example demonstrated to me, a sax changed seamlessly into a mewing cat and back again before my very ears. So, how have Oberheim achieved all this?

THE FAR SIDE

Working in collaboration with The University of California (Berkerley CA), IRCAM, Silicon Graphics, Lincoln Labs at MIT and CCRMA at Stanford University CA, Oberheim have set up what they call G-Wiz Labs, a development facility dedicated to developing the hardware and software for 'real-world' application of their FAR (Fourier Analysis and Resynthesis) technology. The FAR system appears to divide the original sound into several hundred short sections, or frames, per second, after which it undertakes a spectral analysis of each frame. The frames are then recreated using a series of partials, and a method of fading from one frame to the next makes the transition seamless. The completed resynthesized sound is then compared with the original sound, to identify any non-pitched components which could not be reconstructed from partials, and these components are then recreated using filtered noise before being added to the resynthesized signal.

At the moment, the system is very costly, and runs only in conjunction with an Apple Mac computer, but it isn't hard to envisage more affordable spin-offs based on this technology. The system is already capable of very convincing resynthesis — it sang me a complete line of the Susanne Vega song *Tom's Diner*, which was later changed in tempo, rhythm, pitch, and harmonic content for my amusement.

Sound morphing instruments based on preset partial sets are one way of utilising the technology at the affordable end of the price spectrum, while many of the sampler's traditional jobs could be made much easier and more flexible using resynthesis. For example, it will be possible to analyse just the highest and lowest note of an instrument, and then have the software interpolate the full range of notes in between, rather than having to resample every two or three semitones. Similarly, sounds can be sustained indefinitely without looping and without sounding stagnant, simply by meandering back and forth amongst the partial frames (not unlike wavetable synthesis).

By changing the relative balance of the partials, or by changing the pitch of some of them, sounds can be dramatically altered, while still retaining some of the characteristics of the original sound. I was shown a simple slider control that could change the balance between odd and even harmonics, which, linked to a performance control, could be very creative.

It's obvious that the surface of resynthesis has only just been scratched, but from the short time I spent with the system, numerous possiblities sprang to mind, all of them exciting. According to Oberheim, we can expect to see saleable units by mid-1995, probably in the form of a 2U rack box with SCSI, Ethernet, a 0.5Gb hard drive and up to 128Mb of RAM. The unit will need a Mac to run, and will cost in the region of $10,000, so I don't expect we'll all be queuing up for one at once, but I for one am very much looking forward to the cheaper spin-offs that will almost certainly follow. Perhaps more importantly, now that Oberheim have shown their hand, it won't be long before the other synth majors let on what they've been up to in this area. SOS

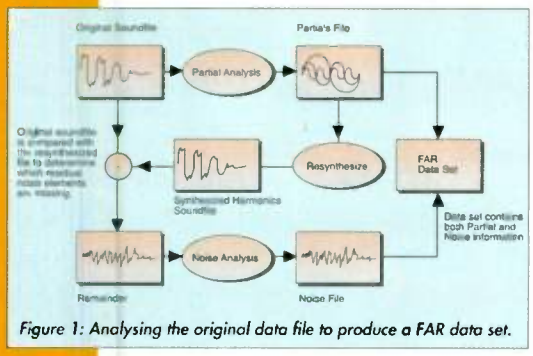

Figure 1: Analysing the original data file to produce a FAR data set.

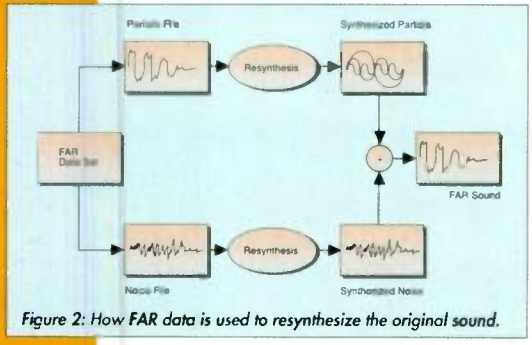

Figure 2: How FAR data is used to resynthesize the original sound.

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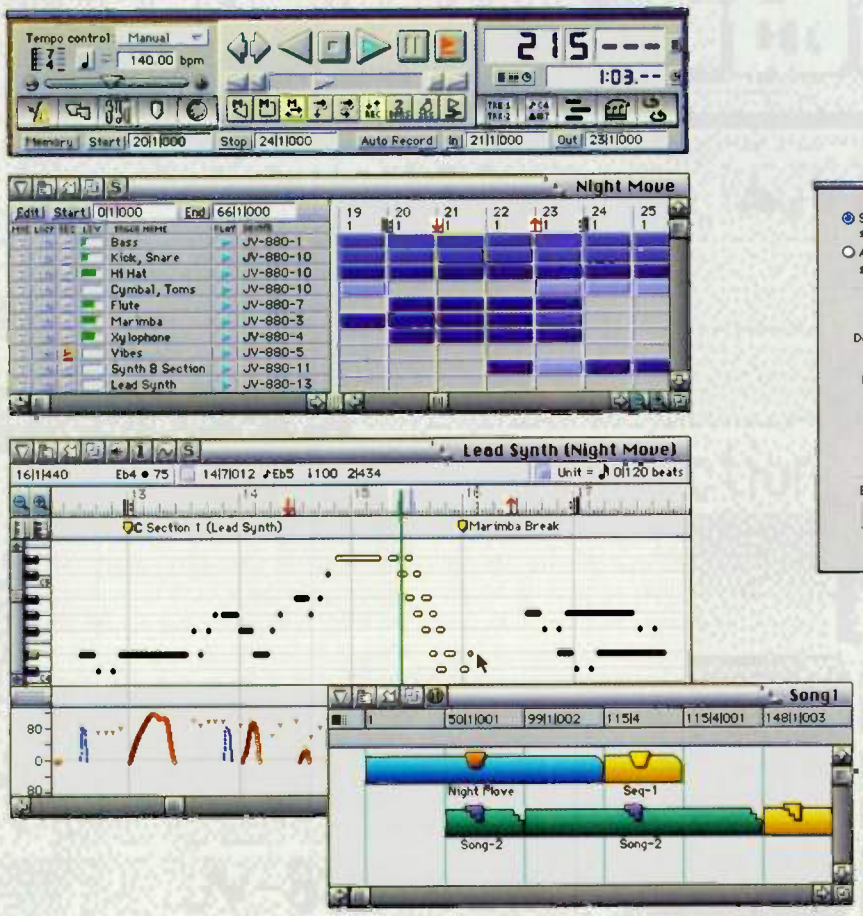
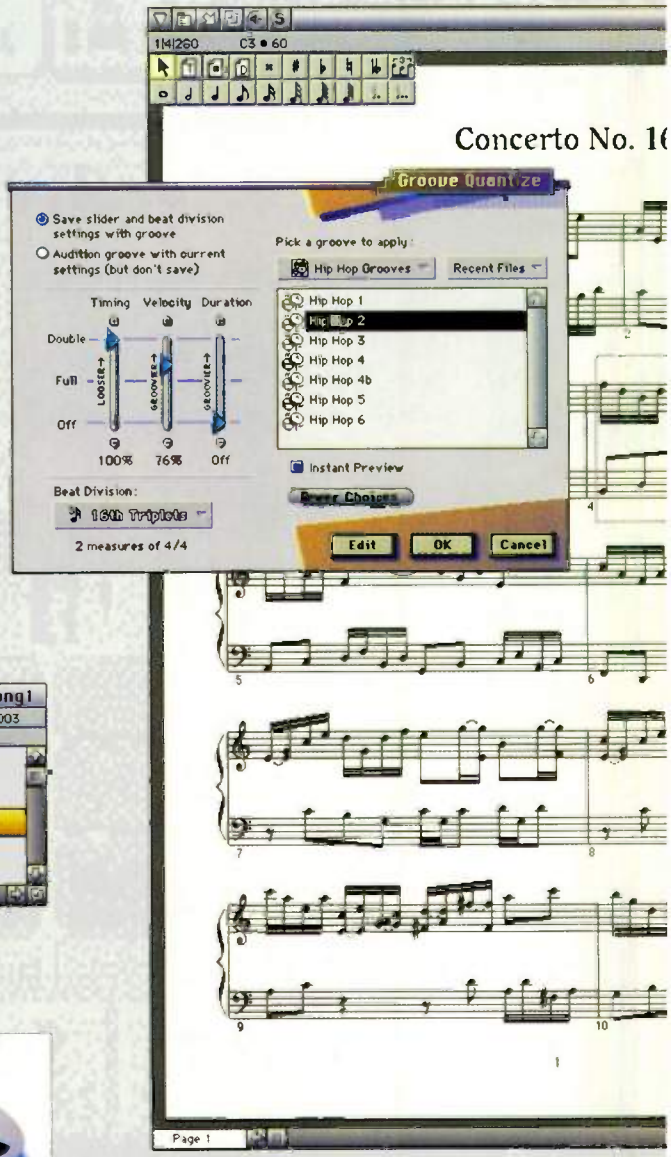
THE MIDI SEQUENCER SOFTWARE





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CONS
- None at the price.

SUMMARY
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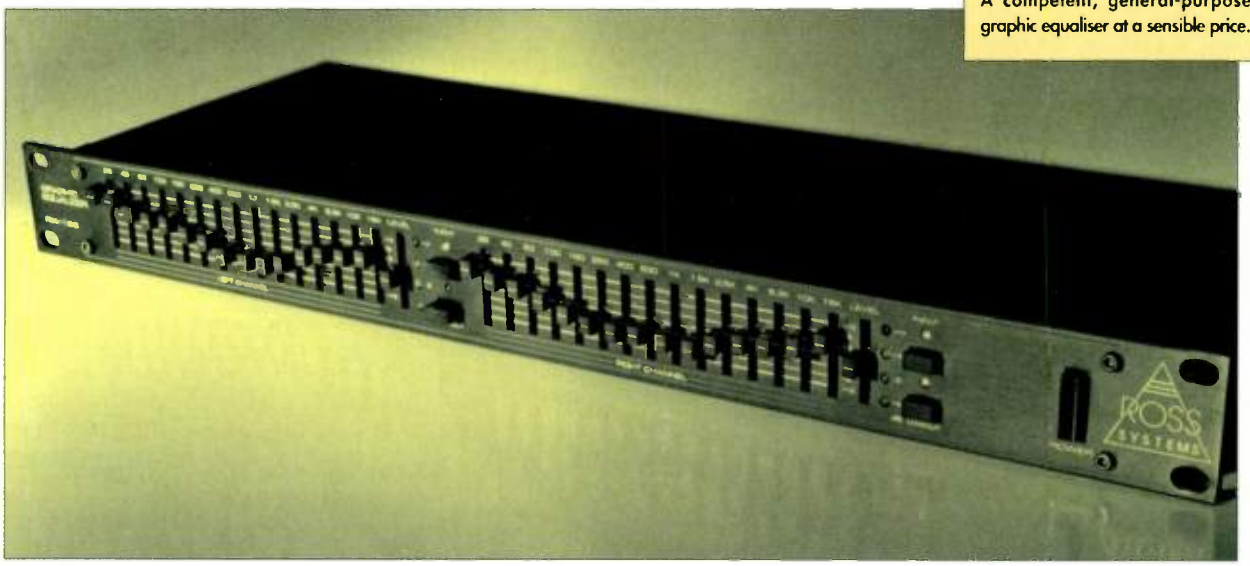

PAUL WHITE gets to grips with the latest budget equaliser from Ross, and offers a few handy tips on graphic equalisation.

The Ross RX15S is a low-cost graphic equaliser suitable for most general purpose applications. There are 15 centre-detented faders per channel, with an additional fader for level control. Each band offers up to 12dB of cut or boost at ISO-standard centre frequencies from 25Hz to 16kHz. Due to the way the ISO frequencies are distributed (according to the logarithmic nature of human hearing), half the controls are dedicated to frequencies below 1kHz, which provides plenty of scope for fine-tuning the critical bass and mid-range areas of the audio spectrum.

Unlike some cheaper units, the RX15S is mains-powered via a captive mains lead. The unit doubles up the inputs and outputs on both jack and phono connectors, and the jacks are balanced, although using a mono jack forces them to work unbalanced. In addition to the main graphic controls, there's a low cut button for each channel which brings in a 6dB-per-octave rolloff at 30Hz. Each channel has its own Bypass switch, and a simple four-LED meter monitors the output level up to a maximum of +17dB, which is where the unit runs out of headroom. Such metering is a good idea, as it's easy to get carried away with EQ boost, and if you don't keep an eye on the levels, you can start to run into clipping distortion due to the increase in signal level.

Listening tests with various solo instruments and mixes revealed the RX15S to be quite musical-sounding when used sensibly and in moderation. There's a small degree of inter-band interaction, but this is to be expected with the type of circuitry used. Most importantly, the RX15S does not have the hard, honky tone that betrays some cheaper units, and although serious pro graphics are more precise and sweeter-sounding — and, as a result, much more expensive — the RX15S is a useful tool that wouldn't be out of place in even quite a serious studio setup. There's a lot of competition at the bottom end of the graphic market, but this one gives as good as it gets. SOS

FURTHER INFORMATION

£ Ross RX15S £179 inc VAT.
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GRAPHIC DETAIL: A WORD ON GRAPHIC EQUALISATION

Of the many types of equaliser available today, graphic equalisers are probably still the easiest to use simply because the front-panel fader positions provide a convenient graphic representation of the overall filter response. Despite this, graphic EQs have had perhaps more than their fair share of bad press, mainly because they tend to get used for room equalisation. While room EQ is valid enough in live sound, the currently accepted wisdom is that studio control rooms shouldn't be equalised in the same way because equalisation doesn't actually tackle the underlying problem of poor acoustic design. At the recording stage, studio graphics are best reserved for carving raw sounds or tweaking stereo mixes. It can be argued that parametric equalisers are more accurate for this job, but they are also rather more tricky to set up.

Graphic equalisers are *particularly* good for shaping electric guitar, bass, and synth sounds, but provided they are used in moderation, they can be used successfully on most material. The general rules when using graphics are: set smooth curves rather than ragged lines of faders; use cut rather than boost where possible; and use as little EQ as you can get away with.

Some of the cheaper graphics tend to suffer from inter-band interaction, which means that whatever you do to one band will also affect what's going on in the adjacent bands, and with this in mind, it's all the more important to set the controls up in the form of smooth curves.

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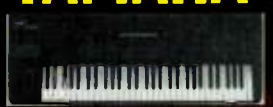

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brief encounter

Ensoniq Soundscape

16-Bit PC Soundcard

Following in the footsteps of Roland, Emu and Korg, Ensoniq have now taken the plunge into plug-in hardware with their latest release, the 16-bit Soundscape card for the PC. PAUL NAGLE puts it through its paces.

The Ensoniq Soundscape is the latest 16-bit PC soundcard to hit the streets. With CD-ROM and MIDI interfaces, a 32-note polyphonic General MIDI synth, and some free software, it's obviously designed to tempt the PC owner into making music, perhaps for the first time. As Ensoniq have a long-established pedigree making 'real' synths, I was curious to see the results of their initial foray into 'plug-ins'.

The box offered encouragement, with its proud '100% Ensoniq' and 'Wavetable Synthesis' declarations, and I was impressed by the overall construction and quality. Externally, three mini jacks carry stereo output, stereo input or a mono line/microphone input. A standard joystick/MIDI port completes the connections. A MIDI cable is not supplied, but I was able to use the lead from my Creative Labs AWE32 card for testing purposes, and had no problems driving the card via its own MIDI In.

Before we go any further, I should point out that Soundscape is *not* related to the high-end PC hard disk recording system of the same name. While I'm in the mood for removing ambiguities, the phrase 'Wavetable Synthesis' also needs to be taken with a pinch of salt — the synth component is simply preset General MIDI. The manual gleefully informs us that the synthesizer architecture has separate, configurable 4-Pole digital filters and 'hardware' envelopes, yet no software is provided to access these, and neither are there any user-programmable memories.

GETTING STARTED

The Soundscape's manual provides clear installation instructions. Jumpers are used to reset the card's base address, wave port address and the CD-ROM interface (if used); IRQs are selected by software after installation, defaulting to two for the MPU interface and seven for Wave play/SoundBlaster emulation. If you wish to use the Soundscape as your CD-ROM interface, the card can provide support for three popular double/single-speed formats, namely Sony, Mitsumi and Matsushita/Panasonic/Creative, with internal audio connectors for each.

The software is supplied on three 3.5-inch 1.4Mb disks, with a Custom Install strongly recommended if you wish to retain control of file placement. The setup program copies all sorts of files into your Windows/System directory, although strangely, the device's Windows drivers were *not* installed automatically — I had to perform this separately. A new option, Sound Mapper Config, appeared on my Windows Drivers panel, providing support for multiple soundcards if necessary.

The programs include Voyetra's *Audiostation*, an integrated suite which includes a MIDI file player, the Soundscape mixer, an audio CD player, and a basic Wave editing/recording tool in the form of *WinDat*. You are advised to run several copies of *WinDat* if you need to cut and paste between several different sound files which, I suppose, is one way around the limitation of only being able to work on a single sample at once!

The MIDI file player and mixer/orchestrator looked great, and the supplied MIDI songs were well chosen to show off the Soundscape's prowess. The Voyetra General MIDI player insists that you install Microsoft's MIDI mapper before it will communicate with the card, although I can think of no sensible reason for this. In fact, I tried several other MIDI programs which accessed the card via its internal Windows drivers with no problems.

SuperJam! Jr. provides auto-accompaniment music-making, with a virtual band accessible via a friendly interface. I had some fun moving the 'musicians' around the X-Y axis, and altering their volume and pan values as the music played. although being a real-time kind of guy, I couldn't help wishing I could record these movements as part of a performance. Although Windows help is provided, *SuperJam! Jr.* is the only program not to be supplied with a hard copy manual. If you want to make music of your own with Soundscape, you'll need to purchase the one item of software omitted — a sequencer.

SOUNDS

Considering that the General MIDI synth is crammed into 2Mb of ROM, it manages to sound pretty convincing most of the time, especially when the sounds are used in a mix, rather than individually. The 32-note polyphony is generous (the GM specification only requires 24), and the output is clean and distortion-free. My favourites were: 'Polysynth', 'Piccolo', 'Clarinet', 'Calliope', 'Lead', 'Crystal' and most of the brasses. 'Synth Bass 1' is probably the best General MIDI bass I've heard. Most of the drums are OK too, but the strings, organs, and percussive

ENSONIQ SOUNDSCAPE
£199

PROS
- Generous (32-note) polyphony.
- MIDI and CD-ROM interfaces.
- Carries the Ensoniq name.
- SoundBlaster compatibility.

CONS
- No MIDI cable supplied.
- No access to the synth parameters at present.
- A little pricey considering the relative cost of the competition.

SUMMARY
A good introduction to making music on the PC, provided you have some sequencing software.

instruments seemed less impressive. Some of the 'Sound FX' are interesting, especially 'Helicopter', and 'Seashore'. Since the Ensoniq does not have any built-in effects, all the sounds benefit from a splash of reverb.

The card is capable of recording and playing back 16-bit digital audio files at up to 44.1Khz alongside the synthesizer section. Interestingly, up to three wave files can be played simultaneously if the synth is disabled, which may be how most musicians will use it. The card is capable of emulating the SoundBlaster (which is great if you're into games), or it can co-exist with an existing soundcard, as long as you ensure there are no DMA conflicts (Direct Memory Access — soundcards use this to access system memory without interrupting the processor).

SOUNDSCAPE HARDWARE REQUIREMENTS

- IBM-compatible PC.
- 386 Processor or higher.
- 1x16-bit expansion slot.
- 4Mb of RAM.
- 4Mb hard disk space.
- DOS 3.3 or higher.
- Windows 3.1 or higher.

Voyetra's Audiostation, supplied with Soundscape, features this colourful MIDI orchestrator.

CONCLUSION

The Soundscape is a clean-sounding General MIDI PC card, capable of handling digital audio and driving external MIDI instruments alongside its internal synth. For a beginner, all that's missing is a sequencer and a MIDI connector lead. For the more established setup, needing a simple GM module, an extra MIDI interface and a CD-ROM controller, the Ensoniq is also worthy of consideration. I hope that future software revisions will include an improved Wave editor and access to the synth parameters, as this would expand Soundscape's usefulness still further. SOS

FURTHER INFORMATION

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Charlie Lab Digitar

Pocket MIDI Guitar

How do you fancy a way of playing guitar patches, like a guitar, without the expense of a guitar synth system? Impossible? DEREK JOHNSON finds out...

Italian company Charlie Lab's Digitar aims to provide a cheap and easy way to add guitar-like textures to MIDI-based music, without the need to buy an expensive and cumbersome dedicated MIDI guitar synth. For a start, the Digitar isn't actually a guitar: it's a compact and sturdy belt-mounted box, worn around the waist and equipped with six thick wires — 'strings' — which you play pretty much as you would the strings on a guitar. Power and MIDI connections are provided by an external box which is connected to the Digitar by a lead. Chords of up to four notes are played on a MIDI keyboard, the connected Digitar interprets these into a six-note guitar chord, you strum the strings and the result is sent to the MIDI Out to play the guitar sound of your choice — all of this, of course, happens simultaneously. String movement, detected by fast optical sensors, produces no audible delays or glitches.

PHYSICALLY

The Digitar's 'strings' are suspended between the bridge and the optical sensor housing. The 'bridge' also houses a large switch which functions as a parameter selector and increment/decrement button. For right-handed people, the control panel is to the right of the bridge — string orientation can be reversed for left-handed operation. Central to the control section is a four character LED display; this leads to some rather cryptic abbreviations while editing, but is bright and clear. Surrounding the display are the editing buttons — here you access various options for selecting MIDI In and Out channels, patch numbers, transposition, rhythm or lead mode and neck position (an automatic option selects neck position in relation to where on the keyboard you play the input notes). The well-illustrated manual explains all, but be warned that it can occasionally be a little unclear.

You have access to eight patches (which Charlie Lab confusingly call 'Sounds', though they are not sounds at all, but rather configurations of parameters). These comprise a main program change and an optional secondary program on a different MIDI channel. The factory set 'Sounds' call up a variety of acoustic and electric guitars on any General MIDI/GS sound source, although customisation is easy. As shipped, the secondary program change is GS patch 121 'Guitar Fret Noise' or 121 variation 'Guitar Cut Noise' (General MIDI-only sound sources interpret both as Fret Noise) which sounds whenever you take your hands off your keyboard. This can be irritating, but sometimes helps with the illusion of a real guitar being played.

While eight patches may not seem a lot, each patch also has access to two function buttons — waggishly labelled FUN1 and FUN2 — and pressing one of these accesses an extra set of parameters that alter the way the main patch behaves.

IN ACTION

For the non-guitar playing keyboardist, the Digitar is a gift from the gods: it really does allow for the easy generation of convincing guitar parts. Given a quality sound source — I used a Korg X5 and a Roland SC88 — the results are uncannily realistic. There isn't a guitar synth on the market that comes anywhere near the Digitar in price. Of course, *real* MIDI guitar systems do offer extra facilities — separate MIDI channels per string, pitch bend, splitting and layering and so on — but we wouldn't necessarily expect these features in a product aimed at keyboard players and costing less than £300.

It's worth noting that the Digitar is not without its faults. First of all, the power/MIDI lead is a little short (though extra length can be added by simply buying a telephone extension lead). Secondly, the connectors used are basically flimsy 4-way telephone plugs. This is the one serious weak spot in an otherwise robust unit. However, the manufacturer is aware of the problem and it looks as if the connector will in future be provided with a rubber protective sleeve.

I also found that while the Digitar's output is always astonishingly guitar-like, there are times, if you listen closely, when chord voicings aren't quite right. Don't get me wrong: chords are always correct and in tune, but voicings are not totally predictable. This is probably due to six-string chords being derived from a four-note input. The Digitar also can't really be used to play lead lines in the same way that a guitarist would. A 'lead' mode assigns input notes to the first available free string, so if you only play single notes they will all be assigned to the top E string. This could be adapted to solos, but probably isn't worth the bother.

The bottom line is that the Digitar succeeds. You can pick, strum or thrash in whatever manner you wish, and the Digitar will always turn it into something useful — and that includes up and down strokes. The result can be played live or recorded into a sequencer, and in fact, the MIDI input (upon which the guitar strumming or picking is imposed) can even be a set of chords being played by a sequencer. A good feature for live use is being able to select various modes over MIDI; note numbers at the lower extreme (0 to 22) are used. The otherwise unavailable 'split' mode, which enables the Digitar to emulate a 12-string guitar, is selectable here.

There's nothing else like the Digitar on the market: gentle acoustic strumming, finger-picking or heavy distorted thrashing are all eminently possible — and very convincing — with this excellent device. SOS

CHARLIE LAB DIGITAR £299

PROS
- Unique.
- Easy to use.
- Great results!
- Reasonably priced.

CONS
- Power/MIDI lead too short.
- Power/MIDI connection a little too flimsy.
- Chord voicings could be more predictable.

CONCLUSION
A unique device that delivers exactly what it promises in a straightforward and affordable package.

FURTHER INFORMATION

£ Digitar £299 inc VAT.
A Audio Awareness, Eurotec House, 31-35 High Road, Chadwell Heath, Romford, Essex RM6 6QW.
T 081 598 8081.
F 081 598 8984.

S Turbo

MUSIC PROCESSORS

KEYBOARD

61 keys (S2 Turbo), 76 keys (S3 Turbo). Weighted synthesizer type, Dynamic and Polyphonic Aftertouch sensitive.
Rack 3 unit (S2R)

SOUND GENERATION

PCM, Wavetables, Multiloop, Crossfade Multiwave and Subtractive Synthesis • 6 MBytes Internal ROM (Sounds)
2 MBytes Internal RAM (PCM Samples) • 6 x 18 Bit DACs
4 Sound Edit Modes: Single, Dual Oscillator, Dual Crossfade, Sound Patch Matrix (for programming Drumkits or special Sound configurations) • 2 Digital Effects Processors (Reverbs Delays Modulation Effects) • 32 Oscillators Polyphony 32 notes max • Dynamic allocation of voices with assignable priority • 16 parts multitimbral, 16 Layers, 16 Splits, 32 Dynamic Switches • 32 Digital Filters, fully programmable (5 resonance types with Low Pass, High Pass, Band Pass, Parametric Boost, Parametric Cut) • Dynamic Stereo Panning

CONTROLS

S2 Turbo, S3 Turbo: 2 Wheels, 2 Pedals/Footswitches, 7 Function Buttons, 7 Sliders, all fully programmable. Volume Pedal
S2R: 2 Footswitches, Volume Pedal

SAMPLE LOADING

Sample Translator Version 2.0 already installed
This reads disks in a range of formats, including Akai* S1000 (HD formatted), Avalon, Sound Designer, Sample Vision and Wave.

MEMORY

Motorola* MC68302 Microprocessor (16 MHz) • 6 MBytes internal ROM (Sounds) • 2 MBytes internal RAM (Sequencer)
2 MBytes internal RAM (PCM Samples) • Sound Library (500 internal sounds and over 1500 sounds storable in RAM)
DSP Effects Library (64 64) • 100 Performances • 10 Songs
Optional Static Memory Expansion (512 KB)

EDITOR

Desktop Editing with graphic display of functions • Undo, Compare, and Clipboard functions
Graphic Display: 240 x 64 pixels with neon backlight • 14 function buttons • Internal time/date clock

SEQUENCER

16 tracks • Resolution: 1/192 of 1/4 note • Events: approximately 250, 000
Background Song loading • Realtime, Overdub, Quantize, Realtime Delay, Microscope Editing
Compatible with Standard MIDI file (Atari/IBM compatible)

DISK DRIVE

3.5" high-density diskettes • Formatted in 1.62 MB. Formatting in MS-DOS (1.4 MB) or Atari (720 KB) • Loads and Saves PCM Samples, Sounds, Songs, Performances, DSP Effects • Sample Data Compression (up to 2 MB of Sample Data stored on a single disk) • Loading of software updates with new User Programs and software options
Possibility of saving up to 100 Songs and/or 1000 Performances divided into 10 groups on a single disk.

MIDI

Complete Master Keyboard functions • 32 independent MIDI channels • 2 MIDI In • 2 MIDI Thru • 2 MIDI Out
MIDI Merge (Input MIDI data can be processed and modified) • Song Position Pointer In/Out (Play Mode)
System Exclusive • Clock In/Out

AUDIO OUTPUTS

Stereo Master (L/R) 4 outputs programmable separately or in pairs • Headphones

• S3 Turbo (76 key version)

S2R Music Processor •

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Roland MCR8

MIDI Multi Controller

Roland's new MCR8 hardware controller seeks to take the strain out of parameter access synth or software editing, by offering you real-time manipulation of any MIDI values from its front panel sliders and knobs. PAUL WARD checks it out.

How many times have you found yourself struggling to position a software control on screen with a mouse, or attempting to find a specific parameter amongst a parameter access synth's plethora of menus? How often have you wished you could just reach out and tweak it by hand? Hardware controllers such as JL Cooper's veteran CS10 and Peavey's PC1600 attempt to give you that opportunity, as does Roland's new MCR8 MIDI multi controller. The MCR8 provides a work surface of assignable knobs, buttons and controls for instant tactile satisfaction, and will also serve as a MIDI interface for a Mac or PC with an RS-422/RS-232C serial port.

When I was asked to review this unit, and was briefed with a quick run-down of its capabilities, I made a mental note to clear some bench space prior to its arrival. It came as something of a shock, then, to see the size of the package that subsequently arrived! The MCR8's control surface covers little more than the space of two CD cases laid side by side. Five minutes after unpacking, I had a single box perched on one end of my mother keyboard, acting as the MIDI control centre for my entire studio — now that's what I call progress! But reducing the physical size of equipment must surely result in some trade-offs. Here, we are asked to put up with yet another 'wall wart' power supply, and some slightly diminutive controls. A fair trade, I'd say.

The MCR8's facia is divided into two distinct areas. To the left are eight sets of channel controls. When in other than GS Control mode (see the side panel 'A Matter Of Mode' for a detailed run-down on the MCR8's four operating modes), these channel controls can be switched to work on channels 1-8, 9-16, or to work on two channels simultaneously — ie. channel 1's slider can send out volume commands for both channel 1 and 9 at the same time. The A/B buttons (which specify which channels are currently active) are placed conspicuously at the left-hand side of the row of faders, and are thankfully illuminated to give instant visual confirmation. Even with the presence of these glowing buttons, I still occasionally found myself moving a fader and wondering why I wasn't hearing the correct results. It was at these times that I would have liked the MCR8 to have accommodated a full set of 16 separate channel strips.

To the right is where operations such as bank and program numbers are dialled up for transmission, and where controller numbers can be assigned to the channel knobs and faders. Here also are the sequencer control buttons, with Song Select, Start, Stop, and Continue provided for. The omnipresent Roland alpha wheel is not far away, although I found its use here to be somewhat limited by the lack of an on-board display, since you have to 'feel' for the number of clicks you've made.

The rear of the unit houses the obligatory MIDI In, Out and Thru connectors, as well as the serial socket for connection to a Mac or PC. Two small switches allow selection of one of the MCR8's four operating modes, and also tell the unit what type of computer (if any) is connected to the serial port. A power switch is good to see on a product this small, as is a cable strain reliever by the DC power input socket.

IN USE

So, how is the MCR8 to use? The small controls are occasionally irritating, but this must be taken in context with the savings on space. The Achilles heel of the MCR8 must surely be the lack of any form of display. I found it quite disconcerting to be forced into blindly selecting and sending patch numbers with no confirmation prior to transmission — a simple 3-character LED would have been adequate for the task. This would also have been of help when assigning controller numbers in the MIDI mixer mode. Given that I could only take the MCR8 so far, as no software is presently available to take advantage of Mode 3 operation, everything seemed me to be

ROLAND MCR8 £295

PROS

- Gives you hands-on control of a wide variety of MIDI devices.
- Various operating modes for increased flexibility.
- Will function as a Mac or PC MIDI interface — providing your software supports it.
- Compact and relatively inexpensive.

CONS

- Can be fiddly.
- Lack of any display means some operations are performed 'blind'.
- Will only be truly operating at its best once software support appears for it.

SUMMARY

Roland have created a device with great potential for the future, which is still able to meet the demands of today, despite some of the operating methods being a little fiddly. If software support begins to arrive, then the MCR8 could become the start of something big.

A MATTER OF MODE: THE FOUR FACES OF THE MCR8

The key to using the MCR8 is in understanding its four application modes. Roland supply a number of plastic overlays to give the correct legending for the controls in each mode.

• MODE 1

This is the GS Control Mode. Here, the MCR8's various knobs and buttons send MIDI control change and SysEx messages primarily dedicated to the taming of GS-compatible synths, such as Roland's Sound Canvas series. Each MIDI channel can be sent bank and program select messages, and can have its volume, pan and effects send level altered. Those sound parameters defined by Roland's GS standard (such as filter cut-off, resonance and envelope values) can be accessed directly from the faders. You can also send System messages, including master level, pan, key shift and effects parameters. In addition, sequencer control buttons give access to Start, Stop, Continue and Song Select.

• MODE 2

This turns the MCR8 into a multi-purpose MIDI mixer, where level, pan and program number can be controlled in much the same way as in Mode 1, but the knob and fader banks can be defined to send any of the control change messages between zero and 95. The sequencer controls are carried over from mode 1.

• MODE 3

This is the PC Software Control Mode. In addition to providing a serial PC/Mac interface, the MCR8 also merges its own control change data with the messages arriving at its MIDI input, and sends these to the host PC. The result is a neat, self-contained MIDI interface, which integrates the concept of MIDI mixing in much the same way as the mixer pages of Steinberg's Cubase or Emagic's Notator — but here we are provided with a panel full of real controls to tweak. Since no PC software is yet available to take advantage of this mode, I was unable to test its efficacy, but I have a feeling that it won't be long in coming. The lack of an on-board display should prove to be far less of a pain here, providing that the recipient software gives a reasonable amount of visual feedback.

• MODE 4

The last mode emulates the J L Cooper CS10, a widely-used assignable MIDI controller which has also become the standard hardware controller for Digidesign's Sound Tools and Pro Tools. This will undoubtedly endear the MCR8 to many Mac owners, and can only serve to consolidate a single control standard — which is no bad thing, in my opinion. Roland make references here to compatibility with 'yet-to-be specified' Roland and Boss products. Given Roland's track record of establishing standards, I believe that we will be seeing a healthy range of MCR8-compatible synths and effects modules in the near future.

working fine, with the exception of one slightly dodgy fader, which I am assured is a feature of the pre-production model I had for review.

CONCLUSION

Roland are making great play of the multimedia applications of the MCR8, and I can certainly see the sense of just such a unit in that context. There is nothing to say that it need be used for controlling merely audio — the limits will be defined by the software developed to take advantage of the MCR8's control messages. But the average MIDI musician should not ignore this unit either. The MCR8 will currently work as a MIDI mixer straight out of the box, even though some functions (such as patch selection) are a tad fiddly for serious use. Where things will really get interesting is if the big software companies take a shine to the standards set by Roland, and begin to develop sequencers, editors, hard disk recorders and the like with MCR8 control options. I, for one, have my fingers crossed that this will be the case. SOS

FURTHER INFORMATION

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Karl Steinberg now runs one of Europe's most successful software houses. But the company grew from a mere idea and a small business loan. PAUL WHITE talked to the man behind the mighty Cubase at his Hamburg R&D department.

Karl Steinberg

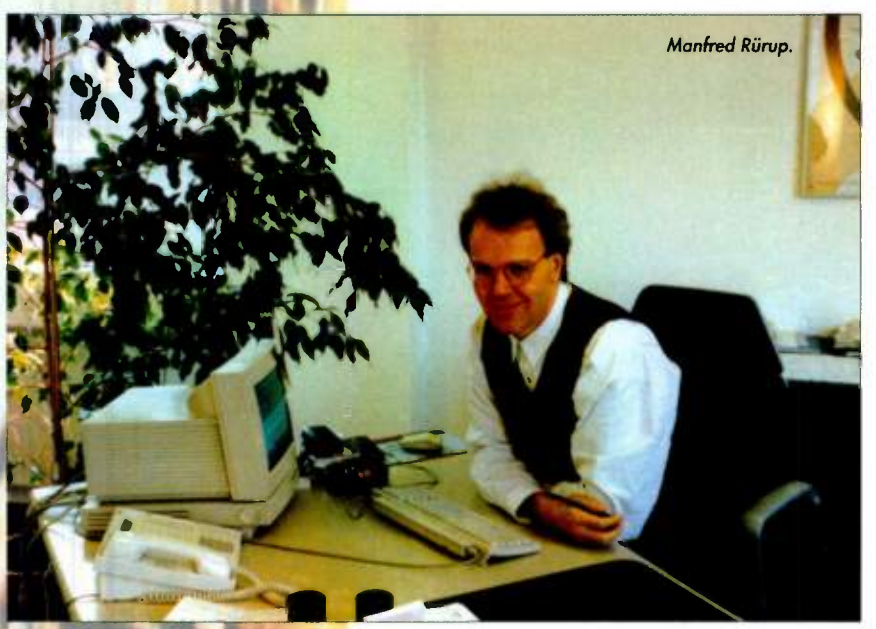
COMPUTER LOVE

These days,the names Steinberg and *Cubase* are synonymous with MIDI sequencing — but every household name had to start somewhere. In Steinberg's case, it all began when Karl Steinberg, after cutting his programming teeth on a Sinclair ZX81, designed a program called the *Multitrack Recorder* for the Commodore 64. This was soon followed by *Pro 16*, a music sequencer many musicians will remember — and the rest, as they say, is history.

Steinberg the company dates back to 1984, when Karl Steinberg and partner Manfred Rürup started to produce commercial MIDI sequencing and editing software from their living room. The first Steinberg product to gain wide acceptance in the UK was *Pro 24*, which ran on the then-new Atari ST computer, and actually endured until 1989, when *Cubase* was launched. Today, Steinberg employ around 40 people and produce a wide range of music-related software and hardware.

Steinberg were one of the first companies to take the concept of affordable hard-disk recording seriously; they started research in this area more than five years ago, and their efforts culminated in *Cubase Audio* for the Macintosh, PC and Atari computers. Audio spin-offs followed, including the *Time Bandit* timestretching software and the new *Recycle* sample-loop manipulation program.

I began by asking Karl how he first became interested in music software design.



Manfred Rürup.

"I was always interested in electronics; in 1976 I built an analogue sequencer with sliders, but you could also speed it up and use it as a waveform generator. However, my soldering was never too good. Then I became a studio engineer, and that's when I met Manfred Rürup. We soon discovered that we thought on the same wavelength, and because Manfred was working a lot with keyboards, we always had access to the latest gear. Once we got hold of the MIDI specs, I started to write programs for the ZX81, and then, when Manfred got hold of a C64, I started working with that. It seemed to me that software was rather like building electronic circuits — except that you didn't have to solder anything.

"When we finished the first product, the *Multitrack Recorder* for the C64, we went around all the music stores in Hamburg to show what it could do, and though most of them didn't understand it at the time, some of them saw the potential. We worked from home with the help of Manfred's wife; we built our own interfaces, printed our own manuals — and sold about 20 or 30 to start with. After that came *Pro 16*, which sold rather more.

"The next big step was the Atari, and musicians seemed to be buying it just because it had a MIDI socket on it, even though there was no music software available at the time. The Atari is the same Motorola family as the C64, so there was no real problem in writing software for a different machine.

"That was when Werner Kracht came into the company and worked on *Pro 24*, so you could say that he was the father of *Cubase*. At the same time, I started working on MROS for the SMP24, when it became apparent that we needed a more general method of handling physical MIDI I/Os, and for looking after timing."

Cubase was a totally new concept in graphical interfaces. Was this designed from scratch or were you influenced by the interfaces used by graphics software packages?

"The interface was largely our own idea. We got a lot of user input from *Pro 24*, then we got together to discuss what the ideal sequencer interface should look like, taking into account the capabilities of the machine. *Cubase* makes the data contents available in a much more visual way than *Pro 24*."

It is obviously a very successful interface, because all your major competitors have adopted some variation on it for their own products. I would imagine that this makes you

Karl Steinberg at the company's Hamburg R&D centre.

feel proud that it was your interface, yet a little unhappy that other people are profiting by your ideas?

"Sure — it just shows that this is the right concept, but yes, I do have mixed feelings about it being copied."

It is well known that there are many pirate copies of *Cubase* on the market, which must have hurt you in financial terms. But at the same time, this did give the product a massive user base and must be responsible for building up a certain amount of inertia, which has helped maintain the perception of *Cubase* being 'the standard' MIDI sequencing program.

"It was a real problem actually. If your name is Microsoft and you sell millions of products, it doesn't really matter so much, but when you are a small company it is very dangerous."

MULTI-PLATFORM WORLD

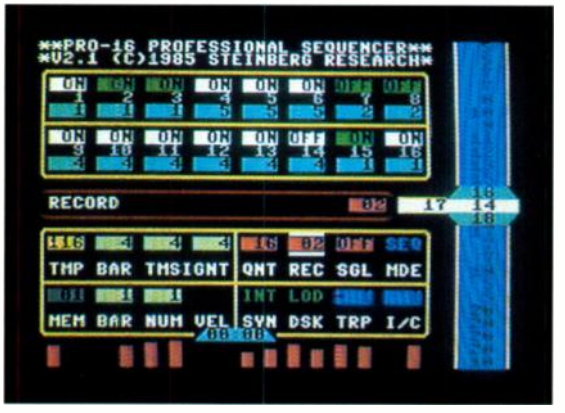
When the sequencing market was dominated by the Atari STs, you only had one computer to write for. How different is it now that you have Atari STs, Falcons, PCs, Macs and now Power PCs to deal with?

"Luckily, we realised this early enough to start working with an environment that could easily be ported over to other platforms; that's much easier than writing a different version of the program specifically for the operating system of each computer. In 1991, *Cubase* was released for the Macintosh, followed by a version for PC Windows about one year later."

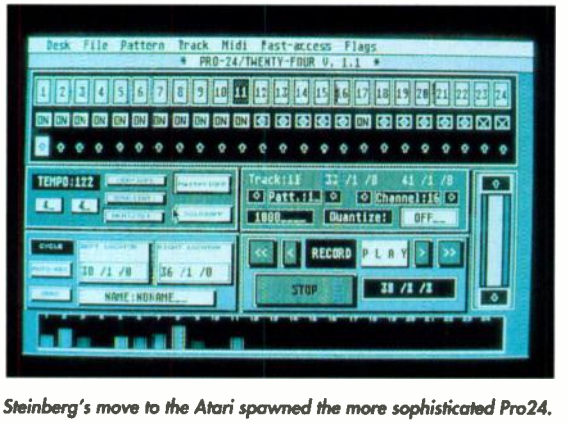
Which machine do you use to write your software on?

"It doesn't really matter too much. Until recently, I used to write mainly on the Atari because the programming tools were very good, but now the Mac and PC programming tools are good too, so I move from one machine to the other."

It seems that a lot of musicians are buying PC systems simply because they offer a lot of computing power for the money. However, many of these same users are running into problems because the PC isn't as straightforward as the Atari or Mac when it comes to installing ▶



1985 saw the launch of Pro16, running on the Commodore C64.

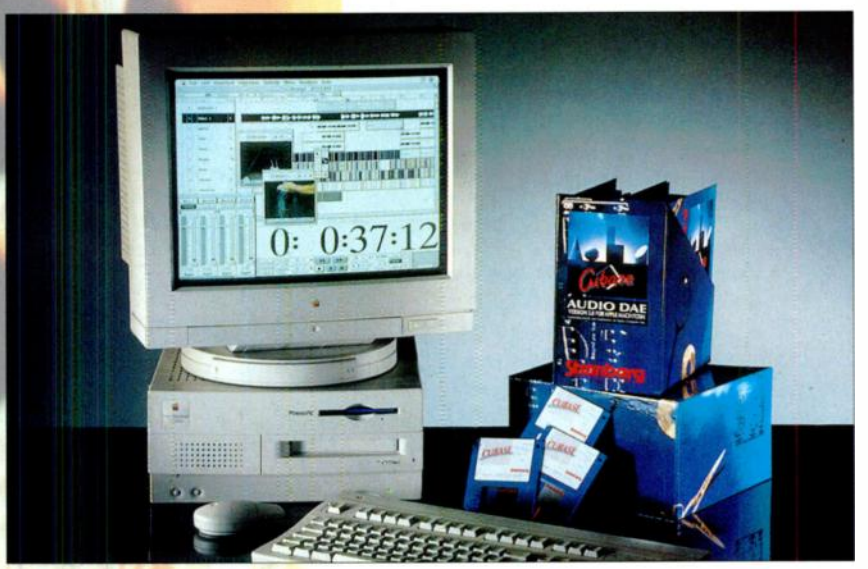


Steinberg's move to the Atari spawned the more sophisticated Pro24.

Karl Steinberg

software, driver compatibility and configuring the machine. What advice do you have, apart from "read the manual first?"

"We try our best to reduce things to an manageable amount of drivers, and try to have a scheme which allows you to be as compatible as possible. We recommend people use the MME driver, which is compatible with most sound cards too. Normally if you have a sound card you get a driver with it; so that's the idea behind the PC — you have a driver for each hardware tool."



Cubase Audio DAE brings Steinberg's widely-used sequencer right up to date.

We do get calls from readers with PC systems who find that the various drivers refuse to co-operate. Is this something that happens a lot with PCs?

"Anything that has to do with installation happens regularly with PCs! I don't know when this problem will finally be overcome, but it can really only be sorted out by Microsoft themselves. When we started we had our own driver in there as well as the MME driver, and I think it's safest to use the MME driver."

"I think that sound cards of one sort or another will play an important role in the future."

How much longer do you think it is possible to support the 1040ST now that it is no longer in production?

"It's hard to say, but we'll continue to support it with updates for the foreseeable future. There's also a lot of interest in the Falcon, and how long it will take before everyone switches to a different computer, I can't say. Apparently somebody has acquired the rights to build rack-mount Falcons, so that could extend the life of that machine in the music marketplace."

Do you have any feel as to what will be the popular platform of the future; will we all move to PCs, Apple Power PCs, or will the operating systems converge so that we end up with something new in between?

"It may well end up being something between the two, but it's really impossible to say exactly what is going to happen, which makes it very hard for us. We simply can't decide on anything until the computer companies have crystallised what they're going to do. I think there will eventually be some common base on which everything works. Also, now that Apple have announced that they will licence their Macintosh operating system to other companies, we don't know what the effect of that will be. The dream is to have both Windows and Macintosh in one computer (not just emulations), but we don't know if this will happen. Like the end user, we have to wait and see."

MIDI AND AUDIO

Since the introduction of affordable tapeless digital audio, Digidesign have played a pivotal role in that they supply key hardware components as well as their DAE Digital Audio Engine software, not only for Steinberg systems, but also for every other major music software company. Do you find this a comfortable working relationship?

"Initially, the working relationship wasn't always easy, but now it is very good and we receive a high level of co-operation. *Cubase Audio* (other than on the Falcon) relies on Digidesign hardware, and future upgrades to *Cubase* will support TDM, Digidesigns's internal bussing and DSP system that makes it possible to integrate a large number of powerful processing and routing functions into the desktop audio environment. I don't want to give too much away yet, but I think that what we're doing is going to be pretty exciting!"

As computers get more powerful and less expensive, it should be possible to introduce further audio processes without having to rely on additional external hardware. For example, it would be nice to have a sequencer that offered both hard disk recording and sampling without having to resort to expensive sampler cards. Is this a realistic option?

"This is obviously possible, depending on the platform and the computer, but I think that sound cards of one sort or another will play an important role in the future. For the consumer, it's a real solution to getting into low-cost audio, and for the more serious user, I can foresee more expensive sound cards with higher specifications which are still cheap compared with their hardware equivalent. For example, there could be affordable cards offering multi-channel digital I/O, samplers, and so on, which provide professional quality. We have no intention at this time of going into sound card manufacture — we are very small compared to the huge entertainment companies in that market — but we will create software to make use of them. A lot depends on the chips available to sound card manufacturers, and at the moment, very few sound cards have additional DSP processing."

Obviously the main thrust of your software design effort goes into sequencing, but what other related areas interest you?

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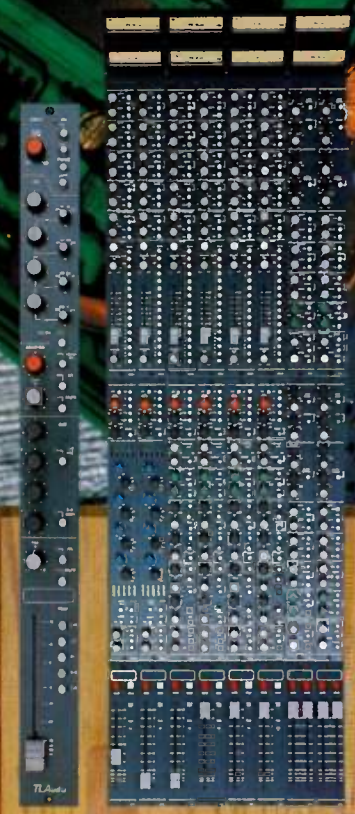

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Karl Steinberg

"We already have *Recycle*, and the idea for that came from the Swedish guys who wrote the software. It was a great idea, because so many people work with drum loops, yet there was no easy way to manipulate them. With *Recyle*, you not only have the opportunity to create perfect loops very quickly, but you can also isolate individual beats and remove them, or even combine selected beats from two completely different drum grooves. It also provides a straightforward way of mapping individual beats to MIDI notes, creating MIDI drum patterns from recorded loops, or for making drum loops that are part audio loop, part MIDI. Then we have *Time Bandit*, which provides very high-quality pitch and time manipulation over a wide range.

MusicStation is one of Steinberg's packages for the PC platform.

"Our most recent product is *AudioSpector*, a level meter, correlator, analyser and test-tone generator software package for the Atari Falcon. Anything that has to do with not only MIDI, but audio is of interest to us."

Have you been tempted to do any plug-ins for Digidesign's software in the way that Waves and other companies have?

"I can't say anything specific, for commercial reasons, but that is an area we are interested in."

How do you tackle the problem of software complexity? Established users demand more and more features, but this must make it ever more difficult for the entry-level user coming across a program for the first time.

"What happens is that it becomes more complicated for us to make the programs easy for the user, and *Cubase* is probably one of the most approachable high-end sequencing programs around. You have to be aware of all the tools available for accessing and changing the various parameters, while doing everything you can to enhance the usability and stability of the program."

There are word processors which allow you to create your own menus or macros of the parameters you use most. Is this a possible solution?

"Once you start to offer that, people come up with incredible configurations which can actually make things more confusing, so we try to avoid this in general. There are, however, things we could consider, such as presets in Logical Edit, but apart from that, I think that if you read the manual, it's not too difficult to use *Cubase*. The program has over two million lines of code, and though it offers an enormous range of facilities, you can still use it in a very basic way if you want to."

What can you tell us about the next upgrade to *Cubase* without giving away too many commercial secrets?

"The Macintosh version will have OMS support, so that it can make use of programs like Opcode's *Galaxy*, there will be more tracks, and the interface is being restyled to include the use of colour. Not only will colour be used to make the interface more visually attractive, it will also be possible to assign colours to different types of MIDI event to make editing more intuitive. There are quite a few visual changes, but not so many as to confuse the existing user. We did a lot of thinking about not only how to make things look better, but also on how to improve the ergonomics of the program.

"It's probably worth mentioning that the latest Mac *Score* version is the most advanced integrated scoring package on the market so far; there are over 200 new features in the scoring section alone. We also have integrated StyleTrax, so now automated accompaniment is built in, and CueTrax is also part of the program.

"CueTrax allows you to be the timing master and the computer to be the slave. You don't have to play to a click because you, in effect, are the click. It goes a lot further than simple 're-barring' with a fit-time calculator and a very graphic approach. You can bring movies and sound together, stretch or reduce tempo and cut and paste tempo information."

KNOWING THE SCORE

It surprises me how many *Score* packages you sell when most pop musicians are assumed not to read music. Who buys *Cubase Score*?

"For those who are interested in notation, the scoring side of the package is very strong. There may also be those people who don't read music too well but want to be able to produce a score for their record company or for their publisher."

How important are electronic mail systems

"...it becomes more complicated for us to make the programs easy for the user."

such as Compuserve for providing user feedback and for the creation of help groups and clubs?

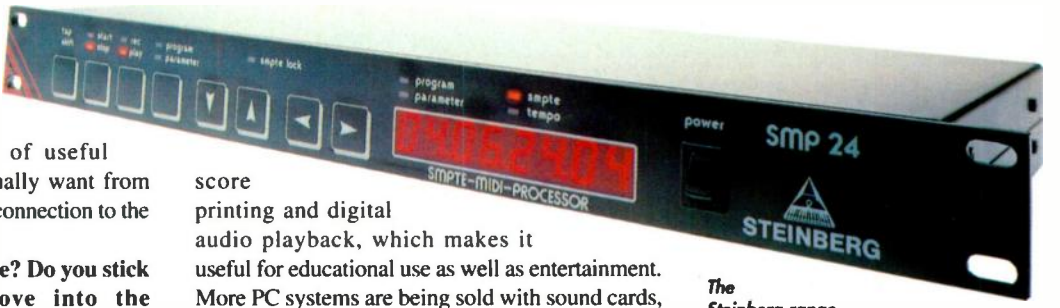
"We spend quite a lot of time with Compuserve. This is a very valid service and, for example, allows us to communicate with our beta testers in the States or in the UK. You also find a lot of people in the computer forums who are very aware of computer technology. There are lots of discussions which let you know what is happening and provide a lot of useful information on what people actually want from their software. To have this direct connection to the end user is very good."

Where do you go in the future? Do you stick with music or do you move into the education/games market?

"There are lots of areas we could move into, not all of which I want to discuss at this point, though the PC market is particularly interesting. But we don't want to move away from music. We have an agreement with Music Sales to produce software which makes use of existing music scores and we're looking at interactive CD-ROM as a way of producing more educational music packages. Also we are marketing Heavenly Music's MIDI song files (not in the UK) because we think they are very good and it makes it easier for new customers if they have some completed files to play with. In the UK, Heavenly Music will sell their own material, but we'll help sell it in the rest of the world.

"Our *Music Station* PC package combines a simplified *Cubase* approach with sound cards, auto-accompaniment, score printing and digital audio playback, which makes it useful for educational use as well as entertainment. More PC systems are being sold with sound cards, and once a user finds out that he or she can produce music with little or no additional hardware, they usually want to experiment with it. Hopefully, this will help to win back people who bought their computers mainly for playing games.

As well as 'edutainment', we're also looking seriously at music education and investing a lot of money in that area. We get a lot of feedback from professional teachers too; we have to educate tomorrow's customers, and if we don't teach them how to get out and make music on a computer, then tomorrow we won't have a job!" SOS



The Steinberg range isn't confined to software alone — hardware units like the SMP24 synchroniser have found a ready market with hi-tech musicians.

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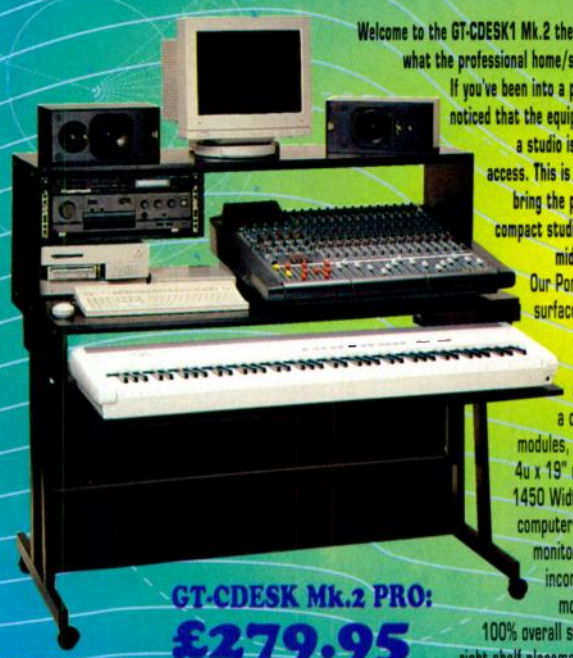

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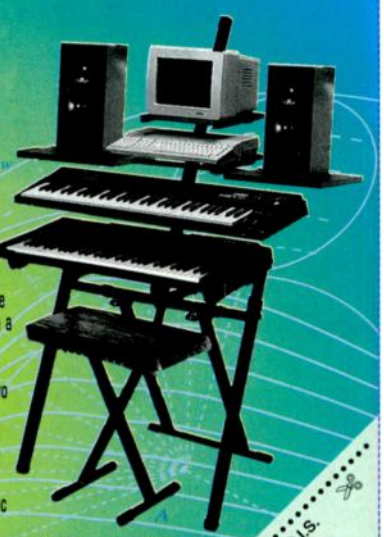

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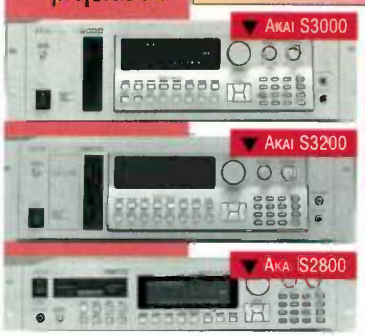

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PROS
- Superb keyboard action — better than some real pianos I could mention!
- Excellent built-in sounds.
- Comprehensive controller functions.

CONS
- External power supply.
- More MIDI sockets would have been nice.

SUMMARY
Destined to become another Kurzweil Classic — a superb instrument that will find favour with professional keyboard players on the road, as well as in the studio. Expect to see one on a major tour soon!

I had a deprived childhood. While my contemporaries were out skateboarding or setting fire to cars, I spent hours locked away in a music room with a piano, several volumes of *Little Tunes for Tiny Fingers*, and an angry teacher who rapped me across the knuckles with a ruler whenever I made a mistake.

Of course, 10 years of piano lessons later, I now have an advantage over many of my fellow musicians — I can play. For a trained pianist, however, sitting down in front of your average synth is a bit of a shock. Five-octaves' worth of springy plastic switches is hardly a substitute for the luxurious feel of solid wood, hammer action, and weighted keys. So I was excited when I discovered that Kurzweil, purveyors of such remarkable products as the K250, K2000 and the recent (but pricey) MicroPiano, were putting the finishing touches to a new controller aimed specifically at pianists-turned-hi-tech. Not only did this new keyboard promise Kurzweil's classy feel and presentation, it would also boast built-in sounds. Too good to be true? Let's find out!

ENTER THE PC88

Straight out of the box the PC88 is a impressive beast. Although its width and depth are about the same as any average synth, its additional length (nearly six feet from end to end) makes it an imposing machine, though Kurzweil still reckon that it's lightweight. After carrying it out of the van and up the stairs to my studio, I beg to differ!

Reaching round to the back of the PC88 to plug it in reveals its first (and, as I subsequently discovered, only) negative point — an external power adapter. 'Wall warts' are a well-known reviewer pet hate, but add to this the fact that the power adapter supplied with the review machine didn't work, and you can imagine my frustration. Having finally got the PC88 up and running, I surveyed its design and construction...

The expansive top panel is well designed and far from crowded. Data entry is via a keypad and/or alpha wheel, and real-time control is available in the form of four definable sliders and three buttons. Two wheels (normally pitch-bend and modulation) are positioned to the left of the keyboard, though the sheer length of the keyboard means that this is quite a reach. Additional control is available through two footswitches (one is supplied), and up to four continuous controller pedals.

The PC88's wheels and sliders are taken straight from the K2000. Sadly, the LCD is not. That said, I found no problem with the two-line display, and it's certainly easier to read under stage lights!

OPERATION

Using the PC88 is a cinch. Although the review model (a beta-test prototype) came with a photocopy of the manual (still in draft form), I needed to refer to it half a dozen times at most. If you do need to use the manual, you'll find it helpful and friendly. There's even a section entitled 'For people who never read manuals' which, of course, I didn't read!

There are two main modes of operation: Internal Voices and MIDI Setups. The latter is for layering internal or external sounds and setting up zones and keyboard splits. The former allows instant gratification — plug in, switch on and play...

SOUNDS

The PC88 offers 16 sound 'groups', with four variations in each, making 64 sounds in all. The first eight of these are acoustic pianos, ranging from Classical Piano through to brighter instruments suitable for stage use. Coming from Kurzweil, you'd expect the piano sounds to be good, and they are — in fact I'd say that these are the finest piano sounds I have heard on any instrument. In common with the Micro Piano, you can choose between 'beat tuned', for solo work (see box on beat tuning), or 'ensemble' tuning, which works better in a mix. This is a subtle but sophisticated feature which is very welcome, and demonstrates the attention to detail which puts the PC88 ahead of the competition. I was

hard pressed to find the subtle timbral changes which commonly occur at the borders of sample ranges. On a real piano, the timbre changes at various stages along the keyboard anyway (lower notes have just one string, whereas the highest notes have three) and some of the sample ranges on the PC88 have been chosen to correspond with these natural changes. In all then, a piano sound of the highest calibre.

A range of electric pianos is provided: delicate, soft Rhodes, though DX7-type FM, to the electric grand pianos we used to hear in the '70s. Bearing in mind that all of these electric instruments were originally designed to emulate the acoustic piano, it seems ironic that we should be offered so many types of piano sounds nowadays. Still, with sounds of this quality, I'm not complaining.

Though the PC88 is a piano-centred instrument, the additional sounds provided are also superb in quality and range. Emu's Proformance modules offer vibes and bass, Roland's pianos and modules tend towards classical sounds such as organs and harpsichord, but the PC88 provides all of these, as well as strings, classical guitar, and acoustic and electric bass.

The organs are top class, ranging from full-bodied, gut-wrenching distorted Leslie, through to delicate jazz organs and even a classical pipe organ. I recognised the acoustic guitar and bass sounds from the K2000. A few loops and buzzes are detectable in the bass sounds, and, like their K2000 equivalents, they give out halfway up the keyboard (though they are bass sounds, after all). However, all are quite usable, and a number are layered with a ride cymbal for those annoying 'Hamlet advert' type jazz trios!

The strings, again, are ex-K2000. They have an impressive richness and depth, and respond well to the touch of the keyboard. My favourite, 'Stereo Strings' (actually in the 'Synth Pad' group), is particularly haunting.

I was amazed when I first heard the PC88's in-built demo. Instead of the expected Chopin Prelude or Beethoven Sonata, I was treated to a Keith Emerson-style display of keyboard fireworks, focusing on a great many of the additional sounds — not just the pianos.

Polyphony for the internal sounds is 32 notes, which is adequate, if not over-generous. You're not likely to experience note-stealing unless you layer lots of sounds. The internal sounds can also be treated by the internal effects processor. This is fairly basic and offers Reverb ('Bright' or 'Dull' — sorry, 'Warm'), Chorus, and Delay. Although not very flexible, the effects are of reasonable quality and work well with the internal sounds. You probably wouldn't use them if you had access to a decent multi-effects unit, but they're there if you need them.

MORE THAN A FEELING...

The keyboard action is superb. I'm told (off the record) that it's the same as Peavey's DPM C8 keyboard (reviewed enthusiastically in May 94's *SOS*) and at this summer's British Music Fair I was able to compare one against the other. They felt identical, and were both infinitely superior to any ▶

BEAT TUNING

Real pianos are tuned by ear, using the harmonic 'beats' which occur when two notes of almost identical pitch interact with each other. Since the higher harmonics of a stretched string tend to be sharper than those of the real harmonic series, beat tuning ensures that the piano remains in tune with itself harmonically, although the highest notes appear to be slightly sharp. Electronic instruments typically reference each note to a fixed frequency (A4 =440 Hz), which allows for better mixing with other instruments. The difference is not great — an eighth of a tone at most, but it is there.

Kurzweil PC88

SOUND GROUPS & EFFECTS

(There are four Variations in each Sound Group.)
- Classical Piano
- Stage Piano
- Classic Electric Piano
- Digital Electric Piano
- Electric Grand
- Piano and Strings
- Strings
- Harpsichord
- Acoustic Guitar
- Clav
- Rock Organ
- Jazz Organ
- Vibes
- Acoustic Bass
- Electric Bass
- Synth Pad

EFFECTS
Reverb Type:
- Room
- Stage
- Hall

Reverb Colour:
- Normal
- Bright
- Warm

Effects:
- Chorus 1
- Chorus 2
- Delay

EXPANDABILITY

The manual tells of an expansion board for the PC88 (V.GM) which will be available shortly. This adds three banks of sounds. Bank 1 is a General MIDI Sound set, Bank 2 provides additional sounds, including percussion, with Bank 3 providing identical sounds to the internal bank, to double the polyphony to 64 notes. The manual refers to the V.GM board on nearly every page — perhaps to let you know what you're missing!

other keyboard I could find at the show. A few days later, I did come across a £60,000 Bosendorfer Grand Piano which may have had the edge, but not by much...

MIDI CONTROL

There are 128 'Setups' available, arranged in groups of 16. Each Setup can have up to four zones, which can transmit on separate MIDI channels, or access the internal sounds. Unfortunately, there is only one MIDI Out socket — I found this a bit limiting and would have like a couple more. MIDI Data from a sequencer or external controller can be merged with the keyboard, but, again, as there is only one MIDI In, it would have to be one or the other.

Each zone can have a separate program, key range, velocity curve and transpose characteristic. The really clever stuff happens when the enormous list of controller functions is brought into play. The four sliders and buttons can be assigned to any MIDI Controller message, as can the footswitches and pedals. Each controller can be assigned to more than one zone, so that, for example, a slider could be used to 'crossfade' from one zone to another. One of the zones is always current — its info is displayed on the LCD and the parameters can be altered. A slight quirk with the zone buttons caught me out a few times. In order to mute a zone, it is necessary to push its button twice — once to make it the current zone, and again to mute it. But if it already is the current zone, pressing twice turns the zone off and back on again. Not exactly intuitive!

CONCLUSION

Kurzweil have always been good at making piano-based instruments. When I first discovered the company back in the early 1980s, their K250 was often spoken of in the same way as the Fairlight CMI and the Synclavier series, and Kurzweil products still carry a high level of respect, particularly in the UK, where (because of higher prices) they have always been more exclusive than in the US.

And although there can't be many keyboard players who are unaware of the K2000 flagship synth, many people are surprised to discover that the company also make a range of electronic pianos (the Mk5 and Mk10) which sell steadily alongside Clavinovas and traditional acoustic pianos in home keyboard shops up and down the country. Add to this the fact that Kurzweil are now owned by Young Chang, one of the world's biggest makers of acoustic pianos, and you begin to realise the kind of skill and expertise that must have gone into the PC88.

This is a mighty fine instrument, and it rewards the effort made learning to play it. If you make your music by wiggling a mouse around, then this is probably not the instrument for you. But if you have any keyboard technique at all, then the PC88 will enhance and nurture it. During the two and a half weeks I had this keyboard, I found myself playing things I would never have imagined before, and even my old synth modules seemed to come alive with the extra feel and response offered by the PC88.

You've probably gathered by now that I like the PC88; I do, for two reasons. One — it's a great instrument; but two — I can really play it. So all those years of suffering were not wasted. With this machine I'm dangerous — watch out, world!

SOS

FURTHER INFORMATION

£ PC88 £1899 inc VAT; V.GM expansion board £TBC.
A Washburn UK, Amor Way, Letchworth, Herts SG6 1UG.
T 0462 482466.
F 0462 482997.

ON THE ROAD: LIVE WITH THE PC88

During the course of the review, I did some gigs with the PC88 hooked up to a K2000. The two machines worked well together, and with the aid of an unofficial beta-test copy of the V3 K2000 software, I was even able to leave my sequencer at home. The system performed superbly; by playing piano-type sounds on the PC88, and letting the K2000 handle everything else, I had a whole of a time. If I had decided to add a few more modules, however, I might have been frustrated by the lack of more than one MIDI Out socket.

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DIGITAL

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Front Man

BILL LEEB • FRONT LINE ASSEMBLY

Canadian hardcore band Front Line Assembly have carved out a niche for themselves in the Electric Body Music market — but the hard men of synth rock have a softer side, which is emerging through various alter-egos and an evolution of the band's own sound. NIGEL HUMBERSTONE talks to Front man Bill Leeb.

Throughout their rising career, Front Line Assembly have been at the forefront of the industrial electronic music scene, having perfected their sound within the genre, experimenting and pushing the sound barriers to the extreme. But with their latest album offering, *Millennium*, FLA have re-invented themselves in a career move which they themselves openly describe as an attempt to branch out and reach a new market.

FLA have existed in one form or another since 1986, with the personnel nucleus now consisting of Bill Leeb and Rhys Fulber, following the departure of Michael Balch back in 1989. I spoke with Bill Leeb, long distance to Vancouver, Canada and started off by asking him what kind of reaction to the new album's direction he foresees from FLA's considerable fan base

"It's kind of weird, because Roadrunner [the record label] are marketing to a whole new crowd with all these magazines like *Metal Hammer*, but they've all been digging this record. I think we went as far as we could with that whole EBM [Electronic Body Music] kind of thing. There's no room to grow in that market because it's just like, such a definitive style. Now the only big crowds are on the metal side and with alternative music like the Cranberries. So you either die out, or you re-invent yourself and find a new kind of groove".

When Leeb talks of 'metal bands', he's not refering to the old ones like Judas Priest, but the new breed of the '90s — groups like Pantera and Carcass, who are deemed more 'politically correct'. Leeb: "Rhys himself has been turning into a bit of a 'metal head'; he's changed quite a bit, so between that and us listening to a lot more hip-hop and ambient techno is the reason for the new sound. I also think that you've got to lose old fans in order to gain new ones. Nowadays we don't even listen to that old electronic scene any more, but it seems that the whole 'metal/industrial' thing is really trendy right now, especially over here in the states, and it's perfect for us because we come from the industrial side. We've also done various remixes for these metal bands like Fear Factory and Motley Crue, so now it seems that we're in the right place at the right time."

One track from the new album, 'Victim Of A Criminal', even features a rapper — Che the Minister of Defense, from P.O.W.E.R.

"Again, we're just experimenting. We'll probably 'weird out' all these white anglo-saxon Swedish kids, but we haven't been in Europe for so long and I guess we get more influence from the whole American culture. A couple of years out of Europe and you get into your own world — we're so close to LA that we're engulfed by the whole genre from down there and that's really where we get most of our cues from."

FRONT LINE FACILITIES

FLA have their own programming studio, Cryogenics, in Vancouver, which is used for writing, pre-production, and the occasional completion of their numerous projects. But when it comes to recording and mixing FLA material, the duo uproot and transfer to the Armoury Studio, a well-equipped facility complete with 92-channel SSL console — an expensive option, but one Leeb feels is fully justified.

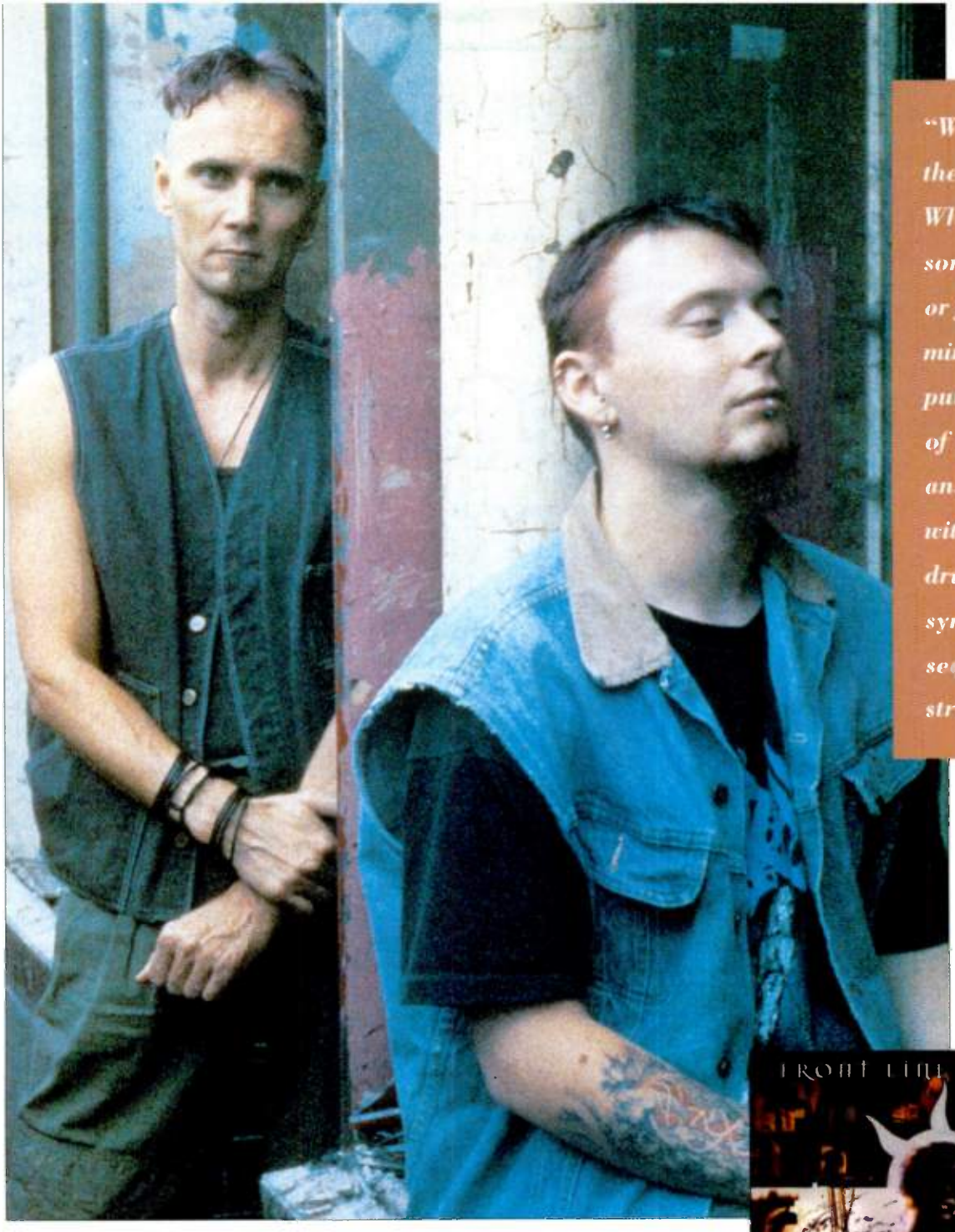
"Oh yeah — we have maybe 15 keyboards running, then three Akai S1000s with all their outputs and millions of samples. Then you've got all your vocals on tape — so you just add all that up and you've got 85 strips right there. It's kind of an ordeal with the amount of gear we use, but it's what we need in order to get that 'huge' sound. Like the guitars: we'll mic a guitar from an amp and then put it through the SSL and a couple of EQs, and then into the sampler, where we'll layer it maybe five times and time-stretch it so that it's picture perfect. We need that process just to get the size of the sound."

Guitars are in fact the essential ingredient of FLA's new sound, in the thicker, hardcore style employed by acts such as Pantera, Sepultura and Fear Factory. Wildheart guitarist and ex-Vai vocalist Devin Townsend has supplied most of the guitar work for the album, along with Don Harrison, and various samples. As the the rest of their music, the key process is 'layering'.

LAYERING

"Usually we're trying to get the fattest sounds. When we start a song, we get three or four kick

Bill Leeb (left) and Rhys Fulber in their Vancouver programming studio.



"We're trying to get the fattest sounds. When we start a song, we get three or four kick drums, minimum, and we put them all on top of each other — and it's like that with the snare drum, the bass synths, the sequences and the strings."

drums, minimum, and we put them all on top of each other — and it's like that with the snare drum, the bass synths, the sequences and the strings: everything is layered.

"Like our bass sounds — we'll use the MiniMoog, sample it two or three times, then use the Pro One and put that on top of it. Before we go into the studio we try to get it perfect, 'cos it's so expensive in there.

"Once we've got a sound prepared we then take it into the studio and process it by putting it through compressers and harmonisers, as well as through the SSL. I think the SSL board is a big factor — it's possibly the punchiest-sounding console there is for electronic music. Neve are great too, but they're really warm sounding and better for acoustic bands. We always want things to be as punchy as possible and to that extent I think the mastering is very important. We use a guy called Brian Gardner, who's done people like Janet Jackson. In fact we mastered this album four times, and that place [Bernie Grundman's in Hollywood] is $400 an hour! By the third time it was pretty good, but still not right. It was Greg Reely [FLA's engineer/producer] that said it could be better — I mean, we spent two years making this album, so we're not going to just say 'OK, this is good enough', even though we drove the record company crazy and nearly missed our release dates.

"Between the time when we start writing the songs, then layering the sounds and with all the processing that we use — by the time it goes to the mastering plant, it's gone through so many different stages and has had so much work put into it that it's got to sound good. Like with our latest Intermix album, which we just got mastered. It's leaps and bounds better than the first two. We did it at a place called Sterling Sound in New ▶

Bill Leeb - Front Line Assembly

York and we booked, like, five weeks ahead, and the guy we used had done the last two Madonna albums. It just sounds awesome and I think that part is so important in order to bring out the extreme highs, sub-bass, and widen the whole stereo field."

PERPETUAL PROJECTS

Leeb and Fulber are workaholics. Not content with one particular avenue, they have consistently diversified with various side projects and alter-egos — including Intermix, Delerium, Will and Cyberaktif. Leeb is now also putting together a series of compilations called *Organism*, which will feature ambient/trance music from local Vancouver artists. So just how do they organise themselves and find the time for so much activity?

"We don't have a life! It's like we have our own little studio — Vancouver's a nice place, but there's not a lot to do and we don't party much or do drugs, so for the lack of all that we just go in and work, and you'd be surprised after a year just how much material you have. If you work it four to five days a week, at the end of the year you've got a couple of hundred songs kicking around — and you might as well release them."

As Intermix, which represents an outlet for their experimental and underground dance grooves, Leeb and Fulber are set to release their third album. With Delerium, however, they have recorded six albums of deeply cinematic sounds. The latest album, entitled *Semantic Spaces*, features vocals from Kristy Thrisk of the Rose Chronicles. Distributed through Nettwerk in North America, the album has even been playlisted on top 40 radio stations.

"It's kind of weird — the music's so fluffy and so light with a beautiful voice, and at the other extreme we've got this almost heavy metal Front Line record. With Delerium material we'll just write the whole album in one shot. We've always thought that we can write as commercial music as anybody, but until now we've never had the vocalist. The hardest thing is finding the vocalist, someone who can sing well, without sounding 'cheese-ball'.

"I think that the last three records we've done, the last Intermix, the new Delerium and Front Line Assembly, are easily the best. It's probably because of the years of doing it that we're finally putting two and two together. It's a learning process, which is slow thing, especially with electronic music — and I think it takes a long time before you really learn to do more with less. Like before, I think we tried to use a million sounds and ended up making everything sound totally busy and overbearing. Now it's more important to use less sounds, but just put them in the right places and make the sounds perfect and bigger. Then I think the whole thing gells a lot more.

"It takes a while to learn and we're still learning. Every day there's a new piece of gear and you've got to figure out how to use it." Front Line Assembly certainly have amassed a considerable collection of electronic equipment. Modern digital technology shares space with an increasing analogue arsenal of Moogs, Sequential Circuits, Oberheim and Korgs. Leeb: "We have a friend in Seattle who's a 'synthbroker', so he's always looking out for analogue stuff for us. This guy can get anything you want — though it's not cheap. But it's our livelihood, so we don't mind splurging if it's a really cool piece of gear that nobody else has.

"I've always wanted one of those WASP synths — you know, the ones with yellow and black keys — but you can't find them in the states.

"So we're slowly collecting all these antique analogue keyboards and modular systems. Using them is a slow process because these things are so funky that you've first got to find a sound, sample it and then put it all across a keyboard — which takes forever. But in the end it's more of an original sound."

On the sleeve notes to *Millennium* are listed a large selection of FLA's equipment, including a pair of Kurzweil K2000s.

"Yeah. Rhys is really good at programming that thing. He programs these really cool washy string sounds and we layer them with other keyboards — we layer everything! He even does some sampling on the K2000 and processes on it."

Speaking of sampling, Front Line Assembly are one of the few groups that I know who use both the Emu Emulator (IIIXP) and Akai S1000 samplers. Usually it's either one or the other. Leeb comments:

"I can always tell the difference between an Emax and an S1000 or an Emulator — I can always tell them apart because each has a sound of its own and it's all down to personal preference. The Emulator we sometimes use for drums, whilst ▶

ALBUM DISCOGRAPHY

■ FRONT LINE ASSEMBLY
The Initial Command ..... (KK 1987)
State Of Mind ..... (Dossier 1987)
Corrosion ..... (Third Mind 1988)
Gashed Senses & Crossfire ..... (Third Mind 1989)
Caustic Grip ..... (Third Mind 1990)
Tactical Neural Implant ..... (Third Mind/Roadrunner 1992)
Millennium ..... (Roadrunner 1994)

■ INTERMIX
Intermix ..... (Third Mind 1992)
Phaze Two ..... (Third Mind 1993)

■ WILL
(Rhys Fulber with Chris Peterson & John McRae)
Pearl Of A Great Price ..... (Third Mind 1991)
World Flesh Ston ..... (Third Mind 1993)

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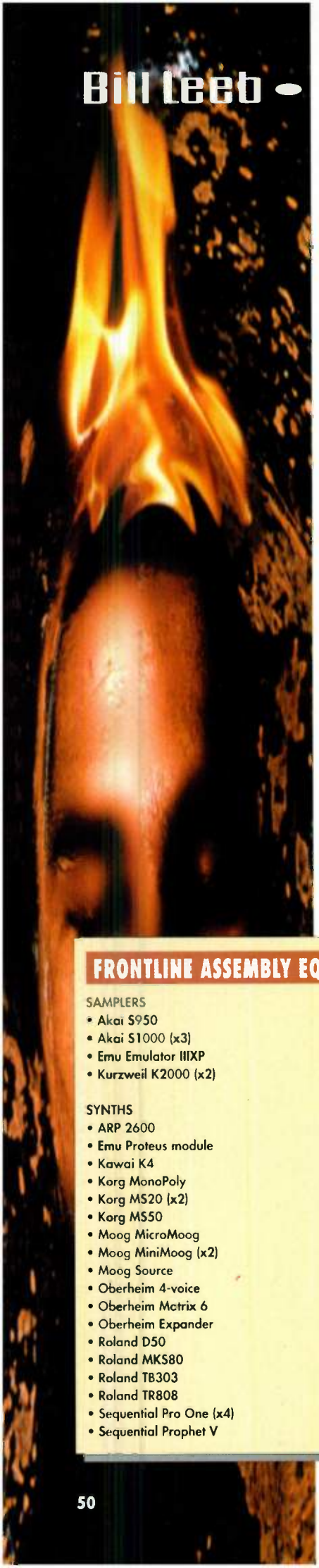

Bill Leeb - Front Line Assembly

the Emax creates a weird, processed sound which almost sounds robotic if you sample someone talking."

Another interesting choice is FLA's continuing use of an Atari computer within an American market that is almost completely dominated by Apple Macintosh systems. Leeb: "Yeah, Ataris are kind of old, but we never got round to using Macs, even though I've got a big one at home. For us the Atari/*Notator* setup is more than fine for what we want and what we do. It really depends on what you're used to, and this is just so easy to use and so logical for the way we like to write. The Atari for us is so fast; like when we get ideas, I don't want to spend a hour trying to put them across on the computer. We can run the Atari with our eyes closed, and that's the ideal situation."

Also included on the album sleeve notes is an extensive name-check of all the bands and artists that have influenced FLA. Ranging from Killing Joke and Napalm Death through to Orbital and Future Sound of London, the list is quite a diverse acknowledgement. The Human League are also mentioned, which is interesting, because one of the FLA tracks on the album, 'This faith', has certain similarities to their style — in particular, the bass line, which is reminiscent of 'Being Boiled'.

"You've got a good ear, because you're the first person that's actually caught on to that out of the hundreds of interviews that I've done. I loved the first couple of Human League albums — I thought they were awesome."

The vocal textures on *Millennium* are in a similar vein to other industrial bands, like Nine Inch Nails and Skinny Puppy (Leeb's first band until 1986) — creating that distorted-yet-controlled effect. For the new album it seems that Leeb has further refined that vocal sound.

"Greg Reely is the guy that gets the results. He uses Eventide processors quite extensively; he's got three now (H3500 DFX, H3000 SE and H3000 S) and between those he does most of the vocal processing. They are the ultimate for vocals and Greg is the master; he sits there for hours and just tweaks those things, modifying the parameters — I would never have the patience.

"Usually we write all the songs first. Then I take about five weeks and write all the vocals, then we go into the studio. I never write them beforehand because I find that the music and the samples that we use inspire the whole vocal scenario." Leeb recognises the importance of Greg Reely's role and as a result he has consistently been employed to engineer, shape and mix the FLA sound, including the new Delerium project.

"He's awesome — when you go into one of these studios with fully automated SSL boards and all that gear, it takes years to master it all and become really good and fully proficient. He's a perfectionist with everything. I also think he gets some of the best drum sounds.

"We don't use drum machines any more; instead we have a huge library of drum sounds and drum loops. I collect sounds from various sources — records, CDs, and from various producers who we've worked with. I've been collecting for six years, so after a while you get a lot — but you can never have too many. I have a laser disc at home and a DAT player, so whenever I hear anything that I think sounds unusual I sample it. It's become like a full-time thing." SOS

Front Line Assembly plan a World Tour for February/March 1995

FRONTLINE ASSEMBLY EQUIPMENT

SAMPLERS
- Akai S950
- Akai S1000 (x3)
- Emu Emulator IIIXP
- Kurzweil K2000 (x2)

SYNTHS
- ARP 2600
- Emu Proteus module
- Kawai K4
- Korg MonoPoly
- Korg MS20 (x2)
- Korg MS50
- Moog MicroMoog
- Moog MiniMoog (x2)
- Moog Source
- Oberheim 4-voice
- Oberheim Matrix 6
- Oberheim Expander
- Roland D50
- Roland MKS80
- Roland TB303
- Roland TR808
- Sequential Pro One (x4)
- Sequential Prophet V
- Studio Electronics SE1
- Waldorf Microwave
- Yamaha TG77

MISCELLANEOUS
- Atari 1040ST/C-Lab *Creator*
- Korg VC10 Vocoder
- Mackie 36-channel desk
- Fender, Gibson & Peavey guitars
- Roland MPU101 MIDI/CV Interface
- Wizard Amplification

The following equipment is either part of The Armoury Studio, Vancouver, or is hired; it's equipment which was used in the making of Millennium and essential to the FLA sound.

- Ademaria ADL1000 Tube Amp
- Akai ME35T trigger interface
- Apogee AD-500 18-bit stereo converter
- AMS RMX16 reverb
- AMS S-DMX 15 stereo delay
- Brooke Siren DPR402 Comp/De-Esser
- Brooke Siren DPR404 Comp/De-Esser
- dbx 120X-DS Boom Box
- dbx 160X Compressor
- dbx 160 Compressor
- Digidesign ProTools
- Drawmer DS201 2 Channel Noise Gate
- Drawmer DS404 4 Channel Noise Gate
- Drawmer DF320 2 Channel Noise Filter
- Drawmer M500 Dynamic Unit
- Drawmer 1960 Comp/Pre-Amp
- Eventide H3500 DFX Ultra Harmoniser
- Eventide H3000 SE
- Eventide H3000 S
- Eventide FL201 Flanger
- Focusrite 15A 115HD Mic Pre-Amp
- Genelec 1031A monitors
- Hughes & Kettner Tube Amp
- Klark Teknik DN780 Reverb
- Klark Teknic DN30 Octave EQ
- Korg VC10 Vocoder
- Lexicon 300 Digital Processor
- Lexicon 480L
- Lexicon 224XL
- Lexicon PCM70 Effects Processor
- Lexicon PCM42 Digital Delay
- Marshall 5002 Time Modulator
- Neumann U-87AJ microphone
- Opcode Studio 3 SMPTE/MIDI interface
- Panasonic SV250 Portable DAT
- Panasonic SV3500 ProDAT
- Roland RSP550 Vocoder
- Roland Dimension D Analogue Chorus
- SSL 92 channel mixing console
- SSL G324 Stereo Compressor
- TC Electronic 2290 Delay
- TC Electronic 1210 Spatial Expander
- TC Electronic 2240 Parametric EQ
- TC Electronic 1220 Parametric EQ
- TC Electronic 140 Parametric EQ
- Teletronix/UREI LA24 Tube Compressor
- Tube Tech CL1A Tube Compressor
- Urei LA4 Compressor
- Valley People 610 Limiter
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- Yamaha SPX990 Digital Effects

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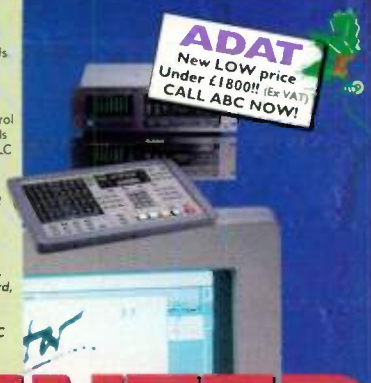

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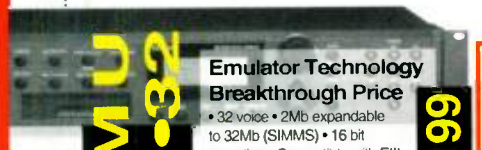

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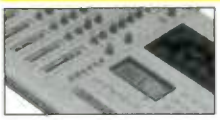

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ESi32 32-VOICE DIGITAL SAMPLER

News of the ESi32 has set the hearts of ambitious but fiscally challenged samplists beating faster. MIKE BARNES brings you this exclusive review of the machine which packs EIII sampling power into a box costing under £1200, and wonders "Is it too good to be true?"

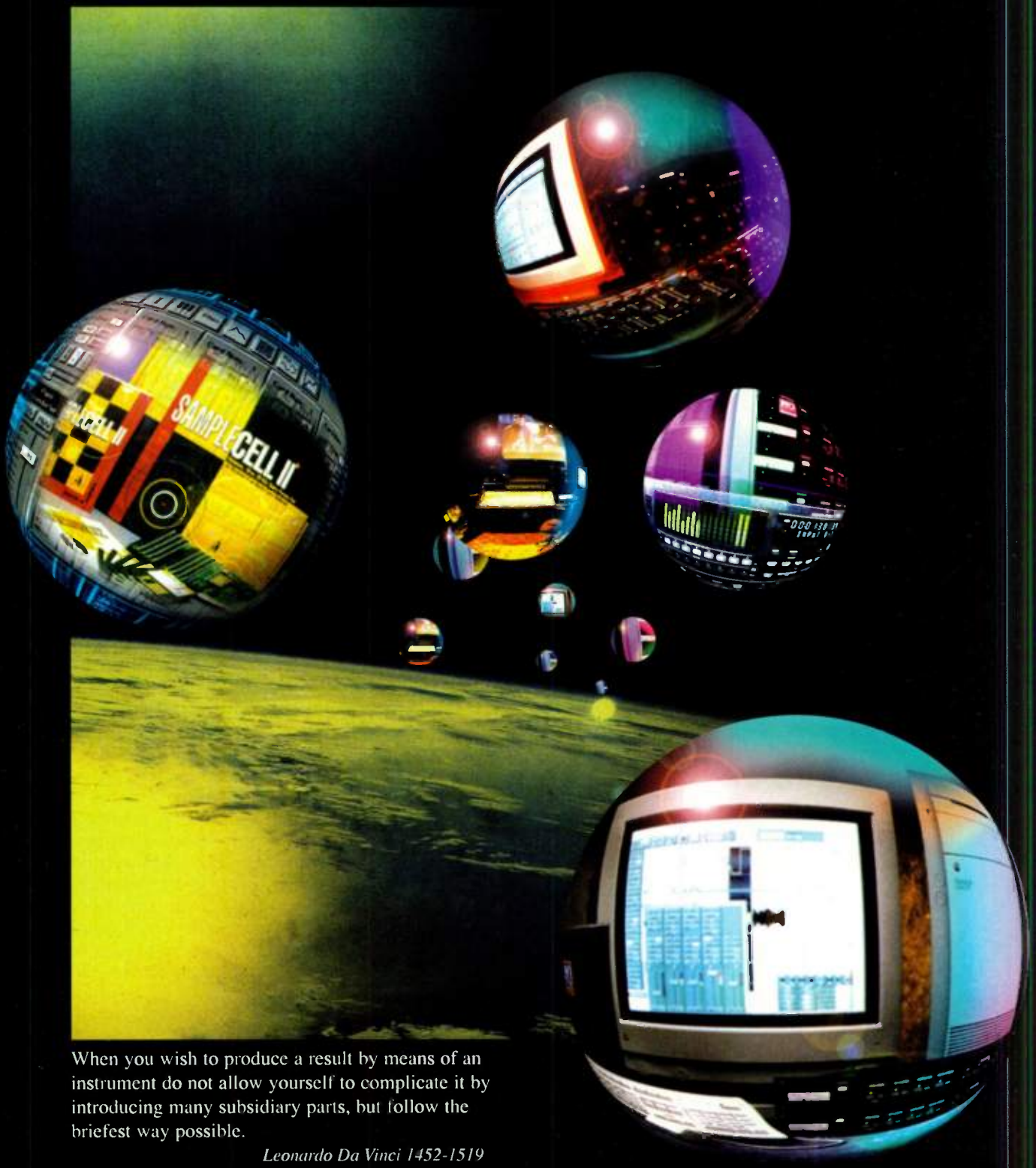
Emu have never been particularly interested in producing a 'budget' sampler, instead choosing to build innovative but expensive powerhouse samplers such as the Emulator 1, 2 and 3 from the early to mid '80s and the recently-announced E4. Their cheaper Emax range was well-liked and pretty successful, but the Emax II (like Akai's S900/S950) has started to age as sampling innovations and sampler features have moved on. With the S760, Roland set a new price/performance point in the sampling world, and effectively said "catch us if you can" to the rest of the manufacturers. Many thought that Emu would bow out of the cheaper end of the sampler market, or maybe try and repackage the Emax II design at a lower price. Instead, they decided to build yet another powerhouse sampler, only this time, somehow, cheaper. The ESi32, which I became acquainted with on my recent visit to San Francisco for the AES Convention, is the result, and turns out to be very much the brother of the EIIIXS (sharing the same display, voice architecture and the majority of software screens).

SPECIFICATIONS

The ESi32's basic hardware specification is as good a starting point as any, so here it is. The 19-inch, 2U Rack is 32-voice polyphonic (16-voice stereo) with 32 digital resonant 4-pole filters, and 16-part multitimbral, with 2Mb RAM as standard (expandable to 32Mb). There are two quarter-inch unbalanced sample inputs for mono/stereo 16-bit sampling (at 44.1 or 22.05kHz), and four quarter-inch individual unbalanced polyphonic outputs (18-bit), the usual complement of MIDI In/Out and Thru connectors, two expansion slots (for SCSI and Digital I/O boards) and a 3-pin IEC power connector (yes, with a 100-240V auto sensing supply for those that are internationally inclined). RAM is fitted internally in two 30-pin SIMM slots, and the operating system is stored in flash EPROM for instant boot-up.

For all those '90s men who find the inside as interesting as the outside, if you remove the lid from the ESi32, you can see just how busy Emu have been since the EIIIX. All the main components are isolated on a single, all-new, incredibly neat and compact motherboard containing Emu's custom LSIs, with ribbon connectors to the front-panel interface and the disk drive, with the auto-sensing PSU set snugly on the left-hand side. There's room aplenty for a 3.5-inch internal hard-drive to be mounted, and the HD floppy drive can be swapped out for a 3.5-inch Syquest removable drive, since the firmware is all there waiting for it. The ESi32 could almost have been a 1U, half-rack product if Emu had wanted to make it so. However, the 2U decision was, I think, the right one; the 31 ovoid buttons are comfortably spaced and allow dedicated

Digital audio comes down to earth



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EMU ESi32

FILE INTERCHANGE

With the new atmosphere of sample exchange, library sharing, and so on, reading other people's samples has become an important feature to all manufacturers other than Akai, who have essentially set the industry standard. Whilst Akai have been able to sit back and rest on their own library and that of their user groups, Kurzweil, Emu, Gem, Roland and Yamaha have all been looking at ways of reading and translating Akai's data format, with lesser or greater success. The ESi32 will read and translate Akai S1000/S1100 data format (including samples, but only the first of Akai's eight loop points, envelopes and filters), but only via SCSI (sorry, no Akai floppies). This means that it has access to any Akai CD-ROMs or hard-drive/optical media, a vast amount of data. On top of this, you can load any EIII/EIIIX files and import Emax II files, again via SCSI. Emu are therefore claiming the crown for sheer quantity of instant available library support for the ESi32.

EMU ESI32 £1199

PROS

- Price!
- Large feature set.
- Sound quality, resonant filters and trigger Mode.
- Expandability.
- Akai S1000/EIIIX library compatibility via SCSI.
- Digital tools/synthesizer-like programming features.

CONS

- Floppy file management system needs improving.
- SCSI implementation does not appear to support all popular drive formats as yet, though Emu plan to put the EIV SCSI firmware unto the ESi in the future to remedy this.
- No SMDI or SCSI file transfer as yet.
- No graphic waveform editing/CRT if you like that way of working.
- No internal effects or effects expansion option.
- Scrub wheel edit not yet working.

SUMMARY

Despite my moans about some facilities not yet implemented, it's hard to see how anyone could be anything other than positive about the ESi32, establishing, as it does, a new feature list standard at this price. An absolute bargain.

functions (such as multi-mode/trigger/load and save) rather than reams of menu pages and constant scrolling (try editing a Yamaha TG500 from the front panel sometime!).

FEATURES

On booting, the ESi32 reports the version of the operating system currently in flash EPROM and then gives a readout of the RAM and any boards installed, and proceeds to try and mount any connected hard-drives if the SCSI board is present. Then the fun begins...

The ESi32 has three basic play modes:

- Single Preset Play
- Multi (timbral) Mode
- Trigger Mode.

Two of them are as you might expect — Preset Mode plays a single 'Preset' or patch, and Multi Mode allows you to put a Preset into any of the 16 available MIDI channel locations, complete with volume and Pan position, for multitimbral sequencing. There are no internal effects to bother with (though the ESi provides for routing its second pair of outputs as a mono send and return to an effects unit if you so wish), so all is pretty straightforward. Trigger Mode is new, a lot of fun, and doesn't even require MIDI, or a keyboard. What is it? Simply a way to map samples onto the 10 trigger keys (similar to the ones on the Akai S01) for triggering manually by button pressing. The interesting aspect of this is that samples can be set to latch or unlatch, so you can set a drum loop going on one key, and then play chords over it with other keys, or add additional loops over the top. It's a sort of polyphonic radio cart machine, where you can press a button, trigger a jingle and lay other parts over it. Simple, yes, but effective for sketching out a few ideas without the need for sequencer or keyboard! Having tried to force the triggers to fall over by some demi-semi-quaver jittering on the buttons, and thoroughly entertained myself in the process, I can endorse this feature 1000%. I can see some hip DJs taking an ESi32 along to clubs for some on-the-fly triggering. Shame you can only have one set per bank of presets and they can only be applied to Preset number 000 — I want more!!

VOICE ARCHITECTURE

For those unfamiliar with the voice architecture parameter naming of Emu samplers, it's worth comparing the ESi32 to, say, Akai's terminology before discussing how sound is organised on the ESi32.

AKAI ('standard' terms)	EMU
Volume	Bank (group of Presets)
Program	Preset
Keygroup	Zone
Rescaling	Gain Change
Digital Fade	Taper
Mapping	Placing
Layering	Linking

Emu parlance for sample, by the way, is 'sample' — not wave, oscillator or any other progressively more obscure variation.

Most manufacturers have settled on 'sample' as the basic raw material in their system but, as you organise samples together, terminology changes, though in most cases, the principle is exactly the same. Akai Programs contain keygroups which have four slots for samples, making layering and velocity switching between samples very straightforward. In comparison, the ESi32 has only one slot per 'zone' (which is the nearest equivalent to a keygroup), but a Preset contains two parts — Primary and Secondary layers like Emu's Vintage Keys or Morpheus tone generators. This allows two-way velocity switching between layers. Presets can also be joined together via 'Linking', which effectively gives you the same ability for four-way switching or crossfading. The big difference between the Akai/Emu approach is that Akai's keygroup and its associated parameters are linked to a fixed keyboard range, whereas the ESi32, for example, can have a totally different filter/EG/LFO setting on every key of your keyboard, since Emu's Zones are freely assignable to different parameters independent of the actual sample ranges. This type of free zoning is extremely powerful. With Emu's Quick Zone function, you can simply play in the keyboard range you want to edit via MIDI from your keyboard, and then adjust the individual parameter you want to apply to that range, regardless of what other parameter ranges have been set and what sample ranges are covered!

EDITING

Editing on the ESi involves two different buttons — Digital Processing or Dynamic Management. The first deals with looping, trimming, normalising and processing samples, and assembling them on the keyboard, and the second with making a finished 'patch' or Preset with envelope and filter/LFO parameters attached. Space doesn't permit a fully detailed account of every single available function in the sample-editing area, since there are so many; however, I'll highlight a few of the neatest tricks and list the rest. If you have a SCSI hard drive connected to the ESi32, you can turn on 'UNDO', mode, which will always automatically save a backup of your sample to disk before you process it and allow you to immediately undo your actions and restore the original. The ESi32 can also audition samples live off hard disk/CD-ROM (not floppy) without having to load them into RAM, which is incredibly useful for just checking out the odd few samples which you can't quite remember. Cut, copy and paste of sample regions is also supported (ie. mixing) as well as fade in/out. On the 'synthesis' side, Transform Multiplication (originally from the Emax) allows two samples to be 'multiplied', accentuating common frequencies and removing uncommon frequencies, to create a new sound. It can be fairly time-consuming and pretty hit or miss, but is certainly a way of creating new sounds.

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EMU ESi32

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- Pitch Change
- Transform Multiply
- Doppler/Pan

When a sample has been processed to your heart's content (see DSP features box), you can then 'Place' it into a Zone and start to apply envelopes/velocity sensing/filter control/LFO control under Dynamic Processing. The ESi32 has familiar VCA and VCF sections for both the Primary and Secondary layers of a Preset, with dedicated envelope generators for amplitude and filter control, plus a spare auxiliary envelope that can be routed to control, say, the LFO. The LFO consists of just four basic types, but is vastly enhanced by a delay and variation parameter and an individually controllable 'Send' amount to each of the possible destinations. Velocity can control just about everything you might want, including sample start point, cutoff and attack. It all adds up to comprehensive control over your samples.

For those who need real-time MIDI control, the ESi again delivers the goods. Under the Preset Definition button, all the real-time parameters are grouped (including real Portamento), and the Pitch Wheel, Mod Wheel, aftertouch and two other MIDI controllers can be assigned to one of nine destinations, including, perhaps most importantly, the Filter Cutoff and Attack.

EXPANDABILITY

The ESi32 is far more modular than any previous Emu sampler design, making possible a wide range of configurations at different price points. Rather than including features such as SCSI and digital I/O as standard (as on previous Emu samplers), these features are available as add-on boards, which enables you to start small (and cheap) and build upwards. The basic version of the ESi comes with a high-density 1.4Mb floppy drive, 2Mb RAM , no SCSI, no digital I/O. The RAM used is now the 30-pin, 70ns, SIMM boards which will be familiar to Macintosh users, as opposed to the more expensive ZIP RAM used in the older EIIIX racks. However, there are only two internal SIMM slots, which have to contain the same size board, so the available options are 2Mb (2 x 1Mb SIMMs), 8Mb (2 x 4Mb SIMMs), 16Mb (2 x 8Mb SIMMs) or 32Mb (2 x 16Mb SIMMs). This does mean, unfortunately, that you have to decide how far you want to upgrade well in advance, or, for example, be prepared to get rid of both your 4Mbyte boards when you decide you want 8Mbyte ones. Recent Macs let you mix and match RAM board sizes and this would have been a better option.

The SCSI and digital I/O boards fit into the two empty slots on the rear of the ESi32. The review model had only the SCSI board fitted, which includes a single 50-way connector like the Akai S1000 board. This was tested with an Apple CD300 CD-ROM drive and worked perfectly, even allowing samples to be auditioned direct from disk. However, I had less joy with a 128Mb Magneto-Optical drive which had worked perfectly with the EIIIX. Unfortunately, since we had access to a an ESi32 for such a short time, I had to leave this matter unresolved. As always with samplers, the lesson is: check with the manufacturer for a full drive compatibility list. The ESi32 is set up with SCSI arbitration firmware, which is supposed to allow two ESis to share the same drive and act as a single 64-note-polyphonic system using MIDI overflow mode (according to the spec). However, you'll have to take Emu's word on that for now, since we only had access to one unit. Transfer of samples via SCSI (using the SMDI protocol) to sound-design software is mentioned, but is not, as yet, implemented.

The digital I/O board was not available for this review but is specified as having SPDIF In/Out on RCA (phono) connectors, and will support 48, 44.1, and 32kHz sample rates. Digital outputs vary in quality and some can be quite fizzy, so we'll have to wait before we can pass judgement on this one. Also, as far as I can tell, Emu has no plans to support the DAT streaming technique, which allows you to dump data digitally to a DAT machine via the digital I/O, like the Akai digital board. Both boards are expected to retail between £175 and £200, which is a little more than some companies, but may well come down if third-party companies start taking an interest in the ESi, as they did with the S1000. A CRT board like Roland's and extra outputs seems impossible, though they said that about the prospect of making the DX7 multitimbral, and Grey Matter found a way!

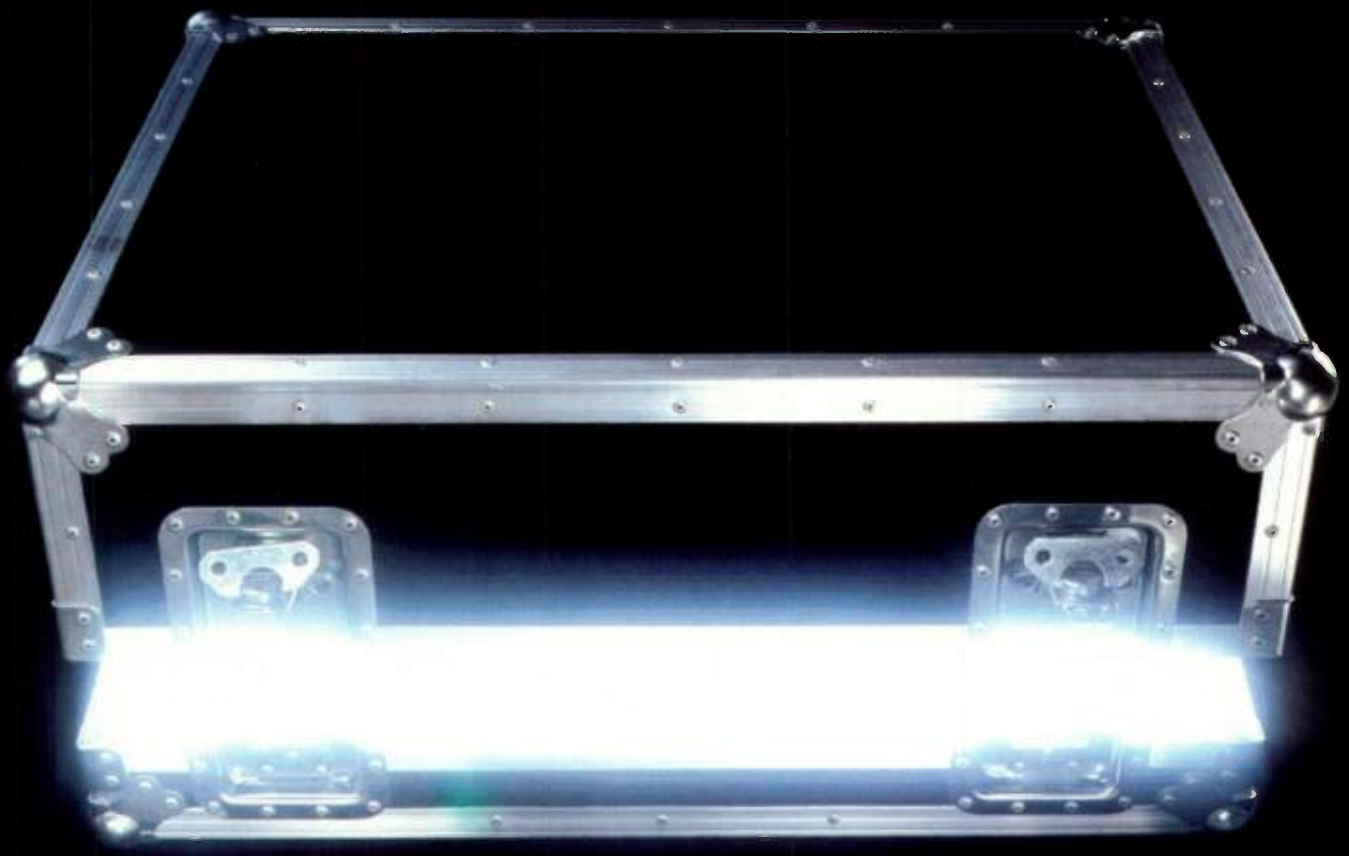
ESI32 VERSUS THE REST

Despite a few early software niggles on the file management side (which Emu are aware of and set to improve), with this specification at this price point the ESi32 looks like being a world beater, coming in mid-way between the Akai S01 at the sub-£1000 mark and the Roland S760 at around £1600. Akai

IS IT REALLY AN EIIIX?

What may not be obvious from the specs, but is immediately seen when looking at the display and software functions, is that the ESi32 bears many similarities to its older, distinguished brother, the EIIIX, and in terms of raw power is very close. A great many EIIIX users will look on the arrival of the ESi32 with some trepidation, as if it will kill their baby, but the ESi32, though sharing many of its older brother's software features, is not quite an EIIIX in the hardware or software department, and it's worth noting the differences. The ESi32 has opted for four unbalanced outputs, compared to the 10 balanced ones on the EIIIX, one SCSI port compared to the two on the EIIIX, optional SPDIF digital support compared to XLR AES/EBU and SPDIF digital I/O on the EIIIX, and has waved goodbye to that strange little RS232 port on the back of the EIIIX. Gone is the much-loved EIIIX arpeggiator, Volume Curves, and the DSP tools Exciter, and for now there is no SCSI transfer to sound-design software on the ESi. The DSP functions seem to take a little longer to calculate on the ESi, and the military-standard casing has been toned down. Depending on what type of work you're involved in, these may or may not be significant differences, but what is impressive is that, for the mass market, Emu have targeted the areas of compromise in such a way as to leave the essential power of the EIIIX intact in a smaller and cheaper box.

LOOK OUT!



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EMU ESi32

have got wind of this, and (understandably) are reducing prices across their range (particularly on the S2800) to try and even things out, which will delight musicians. Aside from all the pricing issues, perhaps the other key considerations are raw polyphony power, compatibility and editing/ease of use. The ESi32 compares favourably, with its 32-voice polyphony, against Roland's 24-voice, but if you are a fan of graphic/CRT displays, the ESi32 may not satisfy your visual desires in the same way as Roland's samplers. If and when it is implemented (Emu say it will be), the scrub-editing facility on the ESi will reduce the need for a visual wave display, though some may hanker after waveforms in the looping page.

From a feature/sound point of view, there seems little compelling reason for buying, say, an S01, with the ESi32 hovering just above a grand, unless you absolutely must have Akai's key-group way of working or Akai floppy-disk compatibility, which the ESi lacks. But considering that the ESi is in its first software version, it was well behaved whilst in my company, and already has a feature set to be proud of.

SUMMARY

An Emulator for not much more than a grand — it can't be, can it? Well, maybe the ESi32 is not an Emulator by name, but an Emulator by nature it certainly is. In fact, the ESi32 is essentially 75% of an Emulator EIIIXS for 25% of the original retail price, and ought to be forwarded to Des Lynam for the *How Do They Do That?* treatment! At £1199, the ESi really does stand apart from all else in terms of power for your pound, and really sets a new standard for samplers at this level. It looks slick, operates well (despite having no LCD graphics), has a positively obese feature list, the best resonant digital filters (outside the EIIIX and E4) and an absurdly high testosterone level in the sound department. The bundled sounds show off the machine well and yes, are genuinely usable, and that oft-dismissed but essential item, the manual, has clear explanations, tutorials and real world troubleshooting. I can already hear the sounds for the next set of ESi disks: the pleading voices of musicians in loan establishments, the rattling of tills in the music retail world, and the satisfied sighs and chinking of glasses in Malones bar, Santa Cruz. The Emu has landed. SOS

BUNDLED SOUNDS

Eleven sound sets (listed below) are bundled with the ESi32 on HD floppies. Each has been designed not only to sound good, but to show off features of the ESi32, such as the great-sounding filters, the effect of some of the digital processing software tools, and the use of the trigger buttons. Many people consign bundled software to the box from whence it came, never to be seen again, but the ESi set is not one to be left in the box; there are plenty of interesting, usable presets which offer a lot of sounds for a little memory. The bundled disks are as follows:

- Vintage Combo (2 disks)
- Stereo Grand (2 disks)
- Orchestral (2 disks)
- Techno Shop (2 disks)
- Trigger Funk (1 disk)
- Rhythm Section (2 disks)

Loading from the floppy drive is not as fast as some systems, but floppies have never been particularly high on Emu's priority list. The EIIIX had to wait for several software upgrades before the floppy drive did anything other than load the system! The biggest omission in this first version of software on ESi32 is the lack of preset and sample loading from floppy (though this works via SCSI). Far from hiding this, the ESi insists on shouting 'Requires SCSI Drive!' when you try to access this feature. This all means that it is not currently possible to combine presets from different floppies into one bank, which is a major oversight. Since I was using the SCSI version, and stopped using floppies for samples long ago, this was not a great personal concern, but one which will be for many users. I have spoken to Emu, and it seems that this matter is being given utmost priority in the next software update, which is expected to drop in sometime before Santa.

FURTHER INFORMATION

E ESi32 (2Mb, standard model) £1199 inc VAT.
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CONS
- No digital inputs.
- Mixer is designed really for mixdown rather than recording.
- Channel parameter access system is less intuitive than that of conventional mixers.
- No proper linking facility for using more than one desk.

SUMMARY
For anyone with the slightest imagination and around £2000 to spend, from the project studio owner to the post-production professional, the ProMix must come pretty close to the top of the must-have list.

Over the past 20 years, digital technology has had an impact on every aspect of the recording industry, totally revolutionising the way in which studios and mastering suites produce recorded sound. Long gone are the days of having to take out a second mortgage in order to buy a Fairlight or Synclavier, and as the price of silicon falls, samplers and digital effects units have now become common tools in even the most basic of recording systems. Cheap digital recording is now also a reality, with machines like the Alesis ADAT and DA88 digital 8-tracks still firmly at the top of the equipment sales chart. The rise of the DAT tape, despite falling flat on its face as a basic consumer product, also looks set to relegate analogue mastering to nothing more than a safety backup.

Despite all these technological miracles, any studio is still only as good as the weakest link in its audio chain. Without fail, virtually every signal recorded and replayed during the production process has to pass through the humble mixing desk, and in most situations, this has meant a return to analogue. Digital mixing is still in its infancy, with the major players like Neve and SSL still holding all the cards, and charging like the Light Brigade for a system that will keep your precious audio signals well and truly in the digital domain.

However, the dream of an affordable digital mixing system has now come one step closer, with the release of Yamaha's flagship new console, the ProMix 01. Analogue inputs are still the order of the day, but the new desk offers high-specification analogue to digital converters on each channel, and from then on all of the audio processing — from level and panning to equalisation and master output — occurs digitally. The resulting sound quality should, in theory, be hiss-free — no more pushing up the stereo faders with all of the input channels muted and hearing that tell-tale rise in noise that is associated with normal analogue consoles.

After its triumphant launch at this year's APRS, Yamaha have kept us waiting for the first proper shipment of desks into the UK, but at last the first stock has arrived, and I was eager to put the ProMix through its paces and see if all the surrounding hype was justified.

VIEW FROM ABOVE

The ProMix 01 comes in a relatively small package, belying the power contained beneath the bonnet. There are 16 mono input channels, each with a master fader, effects send and equalisation, as well as one stereo input fader, one send/return fader, and a master stereo output control. Each

channel has a 'pad' switch, which will attenuate the input signal by 20dB to cope with high-level signal sources, as well as a rotary master gain control to fine-tune the input level. A 48 volt phantom power supply is provided for condenser microphones, but this is not controlled on a 'per-channel' basis; instead, a single switch routes the voltage to all of the first eight inputs. With this design, care should certainly be taken during sessions, as it is possible to damage inappropriately wired dynamic microphones and DC-coupled electronic circuitry.

The front panel is dominated by a 240 x 64-dot backlit LCD display which shows the current setup of the desk, or the individual channel settings, more of which later. A group of key switches to the left of the display act as 'function buttons', determining the overall desk configuration and governing the views that are available on the LCD. Each individual channel also has a 'select' button, which assigns it as the channel to be edited, and an 'on' switch, which routes it to the master faders. Somewhat surprisingly, there are no 'solo' buttons, so if an individual signal needs to be monitored on its own, all other channels have to be switched out and re-instated after editing, although it is possible to monitor individual signals or groups of signals using the more complex 'cue' ▶

Yamaha ProMix 01

▶ button on the front panel. There is a '2tr' switch, primarily designed to route a stereo master signal to the loudspeakers, to monitor a final mix direct from DAT or tape mastering machine, as well as a rotary monitor output control for speaker volume, and a headphone level control. A single stereo 'bargraph'-style LED display (12-segment) is provided for monitoring master output levels, as well as the ubiquitous Yamaha data wheel and cursor keys, to move about the display and adjust parameter values.

The rear of the unit contains all the relevant connections the ProMix needs to talk to the outside world. Inputs for channels 1-8 are standard XLR sockets, wired with pin 2 as hot, and channels 9-16 have stereo balanced jack sockets, though the nature of the balanced audio signal will allow mono jack plugs to be used in these channels without a problem. The inputs can cope with a broad range of signal levels, from -60dB to +4dB, and should be fine for the majority of applications. Phono-style plugs are provided for the 2-track input monitor, and unbalanced jack sockets are used for the single stereo channel on the desk. It's particularly handy that when no plugs are inserted into these 'stereo in' sockets, the 2-track input is automatically routed to the main stereo input channel, allowing EQ to be applied to the stereo signal for simple processing of a final recording. The phantom power switch is located on the rear, as are the master power switch, and the mains supply (which is hardwired directly into the back of the unit). Stereo output is via XLRs and phono sockets for the analogue signal and a single phono socket for the digital (which is to the SP/DIF format, suitable for most DAT recorders and digital editing systems). The monitor output, for studio amplification, is routed through unbalanced jack sockets, and there are also two external auxiliary sends, again on jack sockets (though the desk has another two internal effects sends, giving four in total). Standard MIDI In, Out and Thru connections are also provided. It seems a shame that so many mixing desk manufacturers choose to place their headphone sockets on the rear of a console; Yamaha have not broken ranks here, having placed the ProMix's headphone monitor output rather inconveniently next to the mains lead.

UNDER THE COVERS

So far, I have only touched on how the ProMix is specified as a basic mixing console — number of inputs, number of auxiliary sends, and so on. Even with these specifications, given the digital processing and output, the desk would surely offer ▶

DIGITAL AUDIO

There have been many books and articles devoted to the subject of digital audio over the last few years, but it still remains one of the most confusing aspects of the recording industry, and one that causes problems for engineers and musicians alike. If you understand the basic concepts of digital audio, happily skip over this section, but if not, another explanation may be in order.

Sound is effectively a vibration of air. The air moves back and forth very quickly, in sympathy with the sound, as it travels towards the listener. In the same way that ripples on a pond move outwards in circles if a stone is thrown into the water, so sound travels in a similar way. The only difference between the two is that while the surface of the water rises and falls as the ripple moves outwards, a sound 'wave' causes the air to vibrate horizontally as it heads towards your ear. A loudspeaker reproduces sound by moving a large 'diaphragm' back and forth, vibrating the air as well as pushing it out towards the listener. The larger the movements, the louder the sound, and the faster the movements, the higher the frequency of sound that will be produced. When audio is converted into a digital signal, a computer effectively stores the exact position of the speaker diaphragm, thousands of times per second. Every position that the diaphragm assumes is recorded as a number, which is then stored as digital sound. For CD-quality audio, a value of 0 is stored when the diaphragm is at its 'rearmost' position — when it cannot move any further backwards — and a value of just over 32,000 is assigned when the diaphragm has moved all the way forwards. Every possible position between the two settings is then allocated a number between these values. As the speaker moves to play an audio signal, its position is stored 44,100 times a second, to produce an accurate representation of the sound, and these numbers can thus be edited and played back at will to produce digital audio.

There are two main variables that govern the quality of the resulting digital signal: the number of values associated with the position of the speaker (a greater spread of numbers will produce a more accurate representation of the position of the speaker — known as the 'resolution' — and the better the resolution, the lower the distortion); and the speed at which the readings are taken (the faster the better) — known as the 'sampling rate', which determines the audio bandwidth. Once you understand the concept of representing a 'snatch' of sound as a number, then the whole digital process is analogous to that of a cine-film, where the more frames per second you have, the smoother the sense of movement.

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Yamaha ProMix 01

times for every possible function. In practice, I found that it was surprisingly easy to adjust to this new way of working, and the benefits of total recall and built-in effects soon outweighed the disadvantages. There is certainly a growing move away from larger consoles, with sales of the outstanding Euphonix console on the increase, and the recent release of Tactile Technology's new desk, both of which are based on the single-channel principle.

The ProMix's internal compression and gates are very effective, as are the effects programs, and the whole unit is remarkably compact (it can be racked if necessary) and 'friendly' to use. I found the EQ very adaptable, and for a digital system, also very musical, with a good sense of depth and clarity. Just about the only potential problem with the console was the fact that the faders had a particularly 'lightweight' feel to them, giving the impression that one of them might just come off in your hand with a sudden movement. I stress that this was certainly not the case with the model that I looked at, but racking a ProMix up and taking it out on the road, with all the associated knocks and bumps may not be the best idea — this is a well-designed but delicate piece of equipment.

Two manuals are provided with the ProMix — a quick-start tutorial, and an in-depth book which covers the desk in great detail, both of which are excellent, and a great improvement over some of the Japanese translations often presented to equipment purchasers.

SPECIFICATION

Frequency Response	20Hz-20kHz, +1/-3dB	
THD	Less than 0.1%	
Dynamic Range	105dB typical	
A/D Converter	20-bit linear, 64 times oversampling	
D/A Converter	Stereo Out	20-bit linear, 8 times oversampling
	Monitor out, aux sends 3&4	18-bit linear, 8 times oversampling
Processing	Internal	24-bit linear
	EQ	36-bit linear
Sampling Frequency	48kHz	
Effect Types	Reverb, delay, chorus, symphonic, flanger, pitch change, phasing, tremolo. auto-pan	
Compressor Types	Compressor, gate, ducking	
Faders	60mm motorised	
Memories	Scenes	50
	Internal Effects	30 preset, 10 user
	Compressor	10 preset, 10 user
	EQ	30 preset, 20 user
Meters	2 x 12-segment LED bars	
Inputs	Channels 1-8:	Balanced XLR-type x 8 (+48V switchable phantom power)
	Channels 9-16:	Balanced quarter-inch phone jack x 8
	Stereo In	Quarter-inch phone jack x2
	2TR In	RCA/phono jack x 2
Outputs	Rec Out	Analogue: RCA phono jacks x2; Digital Coaxial: RCA/phono jack
	Stereo Out	Balanced XLR-type x 2
	Aux Send	Quarter-inch phone jack x2
	Monitor Out	Quarter-inch phone jack x 2
	Phones	Quarter-inch stereo phone jack
Weight	12.5kg (27.9lb)	
Dimensions (W x H x D)	435 x 125 x 485mm (17 x 5 x 19")	

CONCLUSION

The ProMix represents outstanding value for money. Its sound quality is superb, and the automation and built-in compression and effects make this desk a force to be reckoned with. The absence of digital channel inputs highlights one of the weaknesses of digital desks, and that is that you can't use digital inputs unless either everything is locked to the same master clock, or the mixer inputs include asynchronous sample rate converters. As much of the semi-pro digital gear around doesn't lend itself to master clock sync, asychronous sample rate conversion may be the best compromise for the immediate future. Rumours suggest that Yamaha are currently working on an updated version of the desk (no doubt a lot more expensive) with some form of digital input capability. Multiple desks can be linked together very easily, using the stereo input channel on each desk to slave the outputs together, so multi-channel systems can be assembled with ease, though a dedicated link facility (ideally digital) would have been far more satisfactory. The ProMix isn't a recording desk, but given its price, it might be worth considering recording via your exisiting mixer and using a ProMix purely at mixdown, to gain the benefit of automation and the onboard effects. And because the ProMix has an SP/DIF digital output, the result can be piped straight into your DAT machine.

Regardless of what studio setup you currently use, it's almost certain that adding a ProMix would make it more powerful. If you're looking for a master quality mixing desk, and can manage with 16 inputs, the ProMix may well be the perfect addition to your studio. SOS

FURTHER INFORMATION

£ ProMix 01 £1899 inc VAT.
A Yamaha Kamble Music (UK), Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL.
T Product Info Line 0908 369269.
F 0908 368872.

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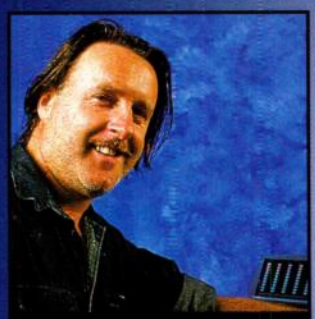

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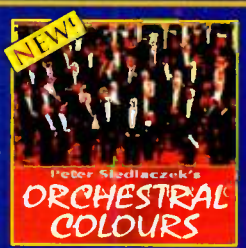

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CURRENT RANGE

The Apple range changes very rapidly — new product announcements appear at an astonishing rate. Keeping up with exactly what is current is not easy — in fact, the list that follows may well be out of date by the time you read this!

- **LCIII**
- **LC475/Performa 475**
- **LC630/Performa 630**
- **Quadra 650**
- **Workgroup Server 80 (like a Quadra 800)**
- **Workgroup Server 95 (like a Quadra 950)**
- **Power Mac 6100**
- **Power Mac 7100**
- **Power Mac 8100**
- **PowerBook 145B**
- **PowerBook 150**
- **PowerBook 165**
- **PowerBook 520**
- **PowerBook 520c**
- **PowerBook 540**
- **PowerBook 540c**
- **PowerBook Duo 230**
- **PowerBook Duo 280**
- **PowerBook Duo 280c**
- **PowerBook DuoDock II**

To find out what the current range looks like, you need to contact your nearest Apple supplier. If you are unsure who your nearest supplier is, try ringing Apple UK on Freephone 0800 127753. They have a database based on postcodes — so have the first part of your postcode ready to quote to them.

▶ 8Mb of memory rather than 4Mb, otherwise you may find that some software packages are too large to run. You can also run most MIDI software on the now extinct 68030-based LCII or III, but expect certain things, such as screen redraw time, to be noticeably slower than on the 68040 models.

And then there's a whole series of rebadged and slightly tweaked Mac variants: the Performas. These are intended for home use, and the lower performance models are usually found in a different set of retail outlets to the more traditional Apple Centres — Dixons, for example. The 5xx and 6xx series are probably the best ones to consider for music, though the LC475 is also available in a Performa version. By the way, check out the quality of the display if you're buying a Performa bundle or a used Performa, as some of the early Performa displays were decidedly un-sharp.

Take care if buying a Mac abroad; while most Macs have automatic power sensing, some Macs built exclusively for the United States home market may not automatically switch between 240 and 110 volts, and some USA models have different system ROMs to those sold in Europe, which may cause software compatibility problems.

TEST DRIVE

It's always advisable to try before you buy, and if you can get to test-drive some Macs, preferably with MIDI software, you'll be able to get an idea of how speed performance varies from one machine to another. Make sure that any demo model does not have an accelerator secretly hidden inside, and check that your prospective purchase has a realistic amount of RAM and a sensible size of hard disk. RAM is still quite expensive (about £30-£35 per Megabyte), and hard disks get faster (and correspondingly more expensive) as they get larger. Lots of RAM and a large hard disk may improve performance, but make sure to allow for these in your budget. In some cases, it may be cheaper to go for a new Mac with sufficient RAM and disk capacity than to buy an obsolete model and upgrade it. Check the table in the 'Past Macs' section for more information on Macs, both current and obsolete. Some Mac suppliers specialise in second-hand Macs — I bought my Mac from a small friendly Apple dealership that deals with many second-user Macs (ExMicro on 0115 945 5077). And there are always private sales if you like taking a risk.

NON-MUSICAL USES

You can use a Macintosh for tasks other than music! This article was written on a Mac, and it will probably be edited and prepared for printing on a Mac as well. There are excellent programs for all the usual business tasks: Word Processing, Spreadsheets, Databases, Diagrams, Presentations, Accounting, and more.

My Mac gets used for both music and writing, as well as sorting out my invoicing and keeping several databases on all sorts of things. I use just one program for the majority of my non-music work: *ClarisWorks*. And for entertainment there are a large number of superb commercial (and shareware) games, with none of the hair-thinning hassle of trying to install a soundcard, SCSI, CD-ROM drivers, and Windows onto a PC.

EVANGELISM

I am biased. This article is biased. It is my intention to make you think hard about buying a Mac, and to warn of the potential problems in buying PC-compatible unless you already know a lot about PCs. I have used both computers and I know which one I prefer. I am so confident about the Macintosh that I am prepared to promote their use for MIDI and musical applications, and once you've tried one, I'm sure you'll end up thinking very seriously about buying a Macintosh.

Having said that, you need to take a balanced view. You should read widely in the computer press (Mac and PC); talk to computer users and musicians; and try various computers for yourself at length. Ultimately you should buy the computer that best suits you and your music-making — it's just that I happen to believe it's a Mac.

POWER MACS

As I see it, the immediate future of computing belongs to the PowerPC chip and the PowerMacs which use it. Developed by IBM, Motorola and Apple, the 60x series of chips uses a new processor which is designed to run fast and efficiently. Although this represents a break with the 680x0 series of chips which have been used in all pre-PowerMac models, Apple have managed to ensure that the compatibility of the PowerMacs is excellent, and PowerMacs run existing 680x0 programs at speeds comparable to a mid-range Quadra. Programs which are written to take advantage of the PowerPC chip run much faster — anything up to 10 times faster than the fastest 680x0 Mac. So-called 'native' applications will gradually appear as software developers make the conversion, and you will find that an increasing number of programs will support both 680x0 and PowerPC processors.

For music and MIDI, the PowerMac is still something of a gamble. MIDI is one of the areas of the operating system that suffers because of its very specialised nature and relatively small market share. Manufacturers of MIDI software are working on enhancing their software systems to take the maximum advantage of the PowerPC chip, but this could take a while. In the meantime, keep a close eye on what is happening, because the performance gains from 'native' PowerPC applications are stunning. In a year or so, things may look very different.

CONCLUSION

If you're reading this, you can probably be described as a high-tech musician — especially if you are involved in the use of digital audio, multi-track tape, synchronisation, or even MIDI. This makes you a very rare and special person, because most people who make music still do it with guitars, playing along with records at home, or playing a piano or home keyboard from sheet music.

Special applications, such as music, require special computers. The Mac has always been used by creative and imaginative people, so it follows that it enjoys a smaller, more highly dedicated ▶

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▶ and more exclusive ownership than the mass-market PC-compatible clones. The Mac helps you to make the most of your music, by making the computer part easy, consistent and friendly. As I see it, any other computer just has to be a step backwards. SOS

PAST MACS: MACINTOSH MODELS 1983-94

Going for a second-hand Macintosh requires a formidable knowledge of their history if you're going to be able to spot a bargain or filter out a dud. The following list has been compiled over several years from a wide variety of sources, and includes most of the major Macintosh models. No list is ever going to include all the obscure variants that may have escaped from a factory, but it should help you to place most unfamiliar Macintoshes in a meaningful context.

Name	Type	Case	Processor	Speed	RAM Min	RAM Max	FPU	SCSI	H/Disk	NuBus Slots	PDS	Ether Net	Video	Colour/ Mono	Sound	Built-in CD-ROM	Launch	PowerPC Upgrade
XL	Mac	Lisa	68000	8 (MHz)			No	No	No	No	No	No	Built In	M	Output	No	Jan-83	
128K	Mac	One	68000	8	128K	1	No	No	No	No	No	No	Built In	M	Output	No	Jan-84	
512Ke	Mac	One	68000	8	512K	1	No	No	No	No	No	No	Built In	M	Output	No	Sep-84	
Plus	Mac	One	68000	8	1	4	No	Yes	No	No	No	No	Built In	M	Output	No	Jan-86	
SE	Mac	One	68000	8	1	4	No	Yes	20	No	Yes	No	Built In	M	Output	No	Mar-87	
SE/30	Mac	One	68030	16	1	16	No	Yes	20	No	Yes	No	Built In	M	Output	No	Mar-89	
Portable	Mac	Book	68000	16	1		No	Yes	20	No	No	No	Built In	M	Output	No	Sep-89	
Classic	Mac	One	68000	8	2	4	No	Yes	40	No	No	No	Built In	M	Output	No	Oct-90	
Classic II	Mac	One	68030	16	2	10	No	Yes	40/80	No	Yes	No	Built In	M	I/O	No	Oct-91	
Col Classic	Mac	One	68030	16	2	10	No	Yes	40/80	No	Yes	No	Built In	C	I/O	No	Feb-93	
LC	Mac	Pizza	68020	16	4	10	No	Yes	40/80	No	Yes	No	Built In	C	I/O	No	Oct-90	
LCII	Mac	Pizza	68030	16	4	10	No	Yes	40/80	No	Yes	No	Built In	C	I/O	No	Mar-92	
LCIII	Mac	Pizza	68030	25	4	36	Optional	Yes	40/80/160	No	Yes	No	Built In	C	I/O	No	Feb-93	
LC475	Mac	Pizza	68LC040	25	4	36	Optional	Yes	80/160	No	Yes	No	Built In	C	I/O	No	Oct-93	Yes
LC550	Mac	One	68030	33	4	36	Optional		160	No	Yes	No	Built In	C	I/O	Yes	May-94	Yes
LC575	Mac	One	68LC040	33	5	36	Optional		160/320	No	Yes	No	Built In	C	I/O	Yes	May-94	Yes
LC630	Mac	Box	68LC040	33	4	36		yes	250/350		Yes	No	Built In	C	I/O	Optional	Aug-94	
200	Performa	One	68030	16	4	10	No	Yes	40	No	No	No	Built In	M	I/O	No	Feb-93	
400	Performa	Pizza	30	16	4	10	No	Yes	40	No	Yes	No	Built In	C	I/O	No	Feb-93	
410	Performa	Pizza	30	16	4	10	No	Yes	40/80	No	Yes	No	Built In	C	I/O	No	Apr-93	
450	Performa	Pizza	30	25	4	32	No	Yes	120	No	Yes	No	Built In	C	I/O	No	May-93	
460	Performa	Pizza	30	33	4	36	No	Yes	40/80/160	No	Yes	No	Built In	C	I/O	No	Oct-93	
466	Performa	Pizza	30	33	4	36	No	Yes	40/80/160	No	Yes	No	Built In	C	I/O	No	Oct-93	
467	Performa	Pizza	30	33	4	36	No	Yes	40/80/160	No	Yes	No	Built In	C	I/O	No	Oct-93	
475	Performa	Pizza	68LC040	25	4	36	Optional	Yes	80/160	No	Yes	No	Built In	C	I/O	No	Oct-93	
476	Performa	Pizza	40	25	4	36	Optional	Yes	80	No	Yes	No	Built In	C	I/O	Optional	Oct-93	
550	Performa	One	68030	33	4	36	Optional	Yes	160	No	Yes	No	Built In	C	I/O	Optional	May-94	
575	Performa	one	68LC040	33	5	36	Optional	Yes	160/ 320	No	Yes	No	Built In	C	I/O	Optional	May-94	
600	Performa	Box	30	32	4	68	Yes	Yes	80/230	3	Yes	No	Built In	C	I/O	Optional	Feb-93	Yes
630	Performa	Box	68LC040	33	4	36		yes	250/350	No	Yes	No	Built In	C	I/O	Optional	Aug-94	
si	Mac II	Box	30	20	3	17	Optional	Yes	40/80	Adapter	Yes	No	Built In	C	I/O	No	Oct-90	
	Mac II	Box	30	25	5	32	Yes	Yes	40	6	No	No	Built In	C	I/O	No	Mar-87	
x	Mac II	Box	30	25	5	32	Yes	Yes	40 -160	6	No	No	Built In	C	I/O	No	Sep-88	
cx	Mac II	Box	30	25	5	32	Yes	Yes	40 160	3	No	No	Built In	C	I/O	No	Apr-89	
fx	Mac II	Box	30	40	5	32	Yes	Yes	40-160	6	No	No	Built In	C	I/O	No	Mar-90	
vi	Mac II	Box	30	16	5	64	No	Yes	80	3	Yes	No	Built In	C	I/O	Optional	Oct-92	Yes
vx	Mac II	Box	30	32	4	68	Yes	Yes	80/230	3	Yes	No	Built In	C	I/O	Optional	Oct-92	Yes
ci	Mac II	Box	30	25	5	32	Yes	Yes	40/80/160	3	Yes	Yes	Built In	C	Output	No	Sep-89	
100	PowerBook	Book	68000	16	2	8	No	Yes	20	No	No	No	LCD	M	Output	No	Oct-91	
140	PowerBook	Book	30	16	2	8	No	Yes	20/40	No	No	No	LCD	M	I/O	No	Oct-91	
145B	PowerBook	Book	30	25	4	8	No	Yes	40	No	No	No	LCD	M	I/O	No	Jun-93	
150	PowerBook	Book	30	33	4	40	No	Yes	120	NoNo	No	No	LCD	M	I/O	No	Aug-94	
160	PowerBook	Book	30	25	4	14	No	Yes	40/80/120	No	No	No	LCD	M	I/O	No	Oct-92	
165c	PowerBook	Book	30	33	4	14	Yes	Yes	80/160	No	No	No	LCD	C	I/O	No	Feb-93	
170	PowerBook	Book	30	25	4	8	Yes	Yes	40	No	No	No	LCD	M	I/O	No	Oct-91	
180	PowerBook	Book	30	33	4	14	Yes	Yes	80/120	No	No	No	LCD	C	I/O	No	Oct-92	
180c	PowerBook	Book	30	33	4	14	Yes	Yes	80/120	No	No	No	LCD	M	I/O	No	Apr-93	
520	PowerBook	Book	68LC040	50/25	4	36	No	Yes	160	No	Yes	Yes	LCD	M	I/O	No	May-94	
520c	PowerBook	Book	68LC040	50/25	4	36	No	Yes	160	No	Yes	Yes	LCD	C	I/O	No	May-94	
540	PowerBook	Book	68LC040	66/33	4	36	No	Yes	240	No	Yes	Yes	LCD	M	I/O	No	May-94	
540c	PowerBook	Book	68LC040	66/33	4	36	No	Yes	320	No	Yes	Yes	LCD	C	I/O	No	May-94	
Duo 210	PowerBook	Book	30	25	4	24	No	Dock	80	No	No	No	Built In/LCD	M/C	Output	No	Oct-92	
Duo 230	PowerBook	Book	30	33	4	24	No	Dock	80/120	No	No	No	Built In/LCD	M/C	Output	No	Oct-92	
Duo 250	PowerBook	Book	30	33	4	24	No	Dock	200	No	No	No	Built In/LCD	M/C	Output	No	Oct-93	
Duo 270c	PowerBook	Book	30	33	4	32	No	Dock	240	No	No	No	Built In/LCD	C	Output	No	Oct-93	
Duo 280	PowerBook	Book	68LC040	66/33	4	40	No	Dock	240	No	No	No	Built In/LCD	M/C	I/O	No	May-94	
Duo 280c	PowerBook	Book	68LC040	66/33	4	40	No	Dock	320	No	No	No	Built In/LCD	C	I/O	No	May-94	
Duo Mini Dock	PowerBook	Dock					No	Yes		No	No	No	Built-In/LCD	C	I/O	No	Oct-92	
Duo Dock	PowerBook	Dock					No	Yes		2	No	No	Built-In/LCD	C	I/O	No	Oct-92	
Duo Dock II	PowerBook	Dock					Yes	Yes		2	No	Yes	Built-In/LCD	C	I/O	No	May-94	
610	Centris	Pizza	40	20	4	68	No	Yes	80/230	Adapter	Yes	No	Built In	C	I/O	Optional	Feb-93	Yes
650	Centris	Box	40	25	4	132	Built In	Yes	80/230/500	3	Yes	Yes	Built In	C	I/O	Optional	Feb-93	Yes
660AV	Centris	Pizza	40	40	8	68	Built In	Yes	230/500	Adapter	Yes	Yes	Built In	C	I/O	Optional	Aug-93	Yes
605 (US)	Quadra	Pizza	40	25	4	36	Optional	Yes	80/160	No	Yes	No	Built In	C	I/O	Optional	Jan-94	Yes
610	Quadra	Pizza	40	25	4	68	Optional	Yes	160/230	1	Yes	Yes	Built In	C	I/O	Optional	Oct-93	Yes
610 DOS	Quadra	Pizza	40	25	4	68	Optional	Yes	160/230	1	Yes	Yes	Built In	C	I/O	Optional	Jan-94	Yes
630 (US)	Quadra	Box	68040	33	4	36	Built In	Yes	250/350	No	Yes	No	Built In	C	I/O	Optional	Aug-94	
650	Quadra	Box	40	33	4	132	Built In	Yes	160/230	3	Yes	Yes	Built In	C	I/O	Optional	Oct-93	Yes
800	Quadra	Tower	40	33	8	136	Built In	Yes	230/500	3	Yes	Yes	Built In	C	I/O	Optional	Feb-93	Yes
950	Quadra	Tower	40	33	8	256	Built In	Yes	230/400	5	Yes	Yes	Built In	C	I/O	Optional	May-92	Yes
700	Quadra	Tower	40	25	4	20	Built In	Yes	80-160	2	No	Yes	Built In	C	I/O	No	Oct-91	Yes
900	Quadra	Tower	40	25	4	64	Built In	Yes	160 +	5	No	Yes	Built In	C	I/O	No	Oct-91	Yes
840AV	Quadra	Tower	40	40	8	128	Built In	Yes	500/1G	3	No	Yes	Built In	C	I/O	Yes	Aug-93	Yes
60	Server	Pizza	40	25	8	68	Built In	Yes	500	Adapter	Yes	Yes	Built In	C	I/O	Optional	Apr-93	Yes
80	Server	Tower	40	33	8	136	Built In	Yes	500	3	Yes	Yes	Built In	C	I/O	Optional	Apr-93	Yes
95	Server	Tower	40	33	16	256	Built In	Yes	500	5	Yes	Yes	Built In	C	I/O	Optional	Apr-93	Yes
6100	PowerMac	Pizza	601	60	8	72	Built In	Yes	160/250	1	Yes	Yes	Built In	C	I/O	Optional	May-94	
7100	PowerMac	Box	601	66	8	136	Built In	Yes	250/500	3	No	Yes	Built In	C	I/O	Optional	May-94	
8100	PowerMac	Tower	601	80	8	264	Built In	Yes	250/500/1G	3	No	Yes	Built In	C	I/O	Optional	May-94	
6150	Server	Pizza	601	60	8	72	Built In	Yes	500	Adapter	Yes	Yes	Built In	C	I/O	Optional	May-94	
8150	Server	Tower	601	80	8	264	Built In	Yes	500/1G/2G	3	Yes	Yes	Built In	C	I/O	Optional	May-94	
9150	Server	Tower	601	80	8	264	Built In	Yes	500/1G/2G	4	Yes	Yes	Built In	C	I/O	Optional	May-94	

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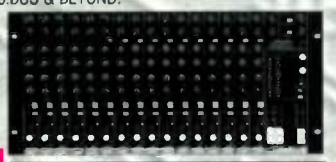

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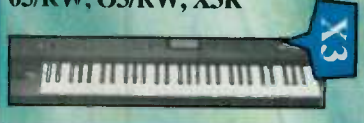

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Great XPECTATIONS

KORG X5 AI2 SYNTHESIZER

The X5 is Korg's cheapest fully-featured keyboard synth, with a spec that belies its modest price tag. DEREK JOHNSON finds out whether it's really the bargain it seems.

Last July's British Music Fair saw the unveiling of Korg's cutting-edge Wavedrum percussion synth (see review in November *SOS*), which understandably grabbed a lot of the limelight on the Korg stand. Slightly outside that limelight, but likely to be of interest to rather more musicians, due to its price tag, was the new X5 synth, which impressed the *SOS* team on a number of points — not least its compactness and superficial cosmetic similarity to Kawai's perennially popular cult second-hand buy, the K1.

The X5 is a 32-voice polyphonic, 16-part multitimbral, General-MIDI compatible digital synth sporting Korg's AI2 synthesis — the same method as that found on the 01/W and subsequent Korg synths. Look at the X5 as an 05R/W with a keyboard (and the 05R/W was itself more or less an X3 without a keyboard — confusing, isn't it?), and you'd be in the right ballpark.

Anyone familiar with virtually any Korg synth released since the appearance of the now classic M1 in 1988 will know exactly what to expect. This is a 'Sample + Synthesis' (S+S) instrument, equipped with 6Mb of waveform ROM. That provides 340 Multisounds (multi-sampled waveforms, including eight preset drum kits) plus an additional 164 percussion samples for use in the two user-definable drum kits. The basic waveforms are of good quality — clean, bright samples with hardly a buzzing loop in sight. There are compromises on the multi-sample front — the basic acoustic piano waveforms, for example, have some rather obvious crossover points — but this is hardly noticeable when you're actually playing the X5. Apart from straightforward, 'bread-and-butter' instrumental samples — piano, strings, guitars and so on — there is a healthy and varied selection of basic sampled synth waveforms and off-the-wall noises.

Each basic Program consists of one or two waveforms, coupled with a comprehensive selection of synth editing parameters. There are 100 user-editable Programs, plus a bank of 136 preset General MIDI-compatible Programs. In common with previous AI/AI2 instruments, the X5 also has a bank of Combi(nation)s — 100, to be exact — each of which can comprise up to eight Programs. The X5 also features a single, 16-part multitimbral setup that's optimised to play back GM standard files. Effects aren't left out of the equation: the X5 sports dual stereo multi-effects processors, with a choice of 47 different effects.

ON THE OUTSIDE

We've established that the X5 is physically compact and internally related to the Korg synths that have gone before. The front panel once again shows the Korg pedigree, with a backlit LCD and a selection of chunky clear buttons, some of which light up when selected. There are dedicated buttons for selecting Programs (a Bank button toggles between the GM and RAM banks) and Combis, for entering edit or global modes, and for choosing the multitimbral setup. A numeric keypad, value and parameter page buttons, and a data slider round out the control panel. Round at the back, there's a simple stereo output, MIDI connections (In, Out, Thru) and a computer connection marked 'PC to Host' (more on this later). Footswitch and volume pedal also have a socket each; the volume pedal can be used to control volume or filter cutoff, and the footswitch can be used as a sustain pedal, to scroll through programs, or to turn effects on or off. Power comes from an external supply — a backwards step, perhaps. The X5 does sport a headphone socket (on a stereo mini-jack), which is, thankfully, at the front of the unit.

ON THE INSIDE

Programming the X5 is exactly as I remember programming the M1:

KORG X5 £799

PROS
- Compact and light.
- Very nice sounds and effects — no compromises here.
- Computer interface.
- Excellent value for money.

CONS
- No aftertouch from keyboard.
- No filter resonance.
- Only one multitimbral setup.

CONCLUSION
A worthy instrument at an extremely fair price. The X5 could well be this season's 'must-have' synth for newcomers to the marketplace.

• **Multisounds/Programs:** you can choose one or two 'oscillators' (Multisounds) for each Program, and alter the range of synth parameters for each Multisound. These parameters include a fairly traditional synth signal path: each oscillator is treated by its own modulation generator and passes through its own VDF (Variable Digital Filter), with attendant Envelope Generator, and a VDA (Variable Digital Amplifier), which also has its own EG. In addition, each Program has a Pitch EG, as well as a VDF Modulation Generator. The resulting Program passes through the dual stereo effects processor, and that's it. The major compromise to keep in mind here is that if you use two 'oscillators' (Multisounds) per program, the X5's polyphony is halved to 16 voices. Note also that the otherwise excellent filter lacks a resonance control.

• **Combis:** As mentioned earlier, the X5 has a bank of 100 Combis. Here, up to eight Programs can be combined, with their own volume level, MIDI channel, transpose value, detune value, top and bottom key (for keyboard layering), and velocity high and low values, as well as pan position and effects send values. A Combi can be an 8-part multitimbral setup (with each Program on its own MIDI channel), or can provide the player with comprehensive key and velocity layering and splitting facilities — great for producing impressive sounds in a live setting.

For a more comprehensive multitimbral setup, press the Multi button. This is optimised for General MIDI use — a GM sequence will be reproduced perfectly on the X5, with all the correct Programs being chosen from its GM sound bank. The Multi section can access all Programs, however, not simply the GM Programs, simply by using Bank Select messages to access the Programs in the RAM bank.

Two features that I particularly like are the inclusion of 10 alternate tunings (including Arabic, gamelan and pure major), a user-definable tuning — even my Yamaha SY85 lacks this option — and drum kits that respond to pitch bend. This last point may be of limited use to most people, but it's good to see it included.

IT'S MORE FUN TO COMPUTE

Apart from not transmitting aftertouch from the keyboard, the X5's MIDI implementation is very good, with no gaping holes. One really neat point is the inclusion of a socket for direct connection to a computer. Korg's optional connection kits include a cable and software driver disk for IBM compatible or Macintosh computers. I used the X5 with an office Mac and found no difficulties — I installed the driver and connected up the keyboard and had instant, painless access to various bits of sequencing software. In fact, I ran the X5 during my review of Opcode's great new *Overture* scorewriting package, seen in last month's *SOS*; it operated flawlessly and sounded pretty good too.

The X5's compact size and great complement of sounds make it an ideal candidate for the desktop musician. If you are running a PC or Mac-based system, a keyboard such as the X5 will provide you with cost-effective, yet quality sounds, a nice keyboard, and a computer interface all in one box. It certainly beats the sound quality of the average budget PC sound card by a long way. Admittedly, there are a number of sound modules that come equipped with MIDI interfaces, which is a very tidy facility in itself, but having the keyboard in the same package is even tidier. Add the connection kit and a pair of headphones, and you're up and running.

Advanced MIDI users will welcome the comprehensive MIDI specification chart at the ▶

IT'S A FAMILY AFFAIR

Korg's family of AI and AI2 synths now covers a wide range of current and discontinued instruments; here's an abbreviated list, which is limited to those reviewed in past issues of *Sound on Sound*.

- **M1 keyboard synth (uses AI synthesis; reviewed August1988).**
- **M1R rack synth (AI; reviewed July 1989).**
- **T2 keyboard synth (AI; reviewed December 1989).**
- **01/W FD keyboard synth (AI2; reviewed October 1991).**
- **01/W Pro keyboard synth (AI2; reviewed June 1992).**
- **01/W Pro X keyboard synth (AI2; reviewed June 1992).**
- **03R/W synth module (AI2; reviewed May 1992).**
- **05R/W synth module (AI2; reviewed October 1993).**
- **X3R synth module (AI2; reviewed February 1994).**

X-RAY SPEC

- **6Mb waveform ROM with 340 multisounds and 164 percussion samples.**
- **32-voice polyphony.**
- **Two independent multi-effects processors with 47 effects.**
- **Built-in computer interface.**
- **61-note velocity-sensitive keyboard.**
- **100 User Programs.**
- **136 preset General MIDI Programs.**
- **100 Combinations.**

KORG X5 SYNTH

back of the manual, and if you're in any doubt as to how to connect the keyboard up to a computer, the manual provides very clear instructions.

ADDING IT ALL UP

While the X5 may offer nothing wildly original, it certainly has its attractions. Not for nothing is the M1 a classic, and the X5 provides the latest generation of this technology in a highly affordable package. It simply oozes classic and classy sounds, and you *can* afford it — honest! As an entry level synth, this instrument's spec certainly belies its low price.

However, I must point out some entries that appear on the negative credit list. First of all, as I mentioned earlier, the velocity-sensitive keyboard doesn't transmit aftertouch — the X5 does respond to aftertouch, and it *can* be transmitted by the mod wheel, but there's no joy from the keyboard, I'm afraid. In common with other M/T/0-series Korg synths, the X5's filter — which is otherwise a musically useful device — lacks resonance; some users may find the single multitimbral setup to be not quite enough, and the fact that it resets itself each time you turn the power on can be a bit frustrating; I've mentioned the external PSU already, and no, we don't like them; and remember that the nominal 32-voice polyphony will be reduced to 16-voice polyphony if you use two-waveform programs — though, in fairness, this type of waveform/polyphony trade-off is the case with most modern S+S synths.

But I only mention these demerits for the record. The bottom line is that the X5 offers Korg's established AI2 synth system, in a keyboard, at its lowest price point yet, just £799. At this price, these niggles can be rebutted in one go, and what's more, the X5 has little competition. Off the top of my head, Ensoniq's SQ1+ retails for £899 (though it adds a 16-track sequencer), and only Yamaha's much simpler SY35 is actually cheaper at £599. The only other way you'll beat this price is by going for an up-market home keyboard of some kind — bang goes your street cred (*Elitism rools OK — Ed.*).

Many GM-dedicated instruments lose out on editing facilities — not the X5. It's a real synth with as many synth parameters and effects as you could reasonably expect, meaning that, for once, the fiscally challenged can go for the cheapest option without losing out on sounds, editability and fun — and let's not forget the computer interface. Good move, Korg!

SOS

X-OTIC SOUNDS

To get an idea of the sound of the X5, I can point you in the direction of all the M, T and 0 series synths that have gone before, with sparkly, rich sounds that are fun to play. The same goes for the 47 excellent effects. What's really remarkable, and you've probably gathered this from the main review, is that these sounds and these effects have been packaged at an unmissable price. Even though the style of sounds is quite familar, I find myself quite attached to a number of the factory Programs and Combis. Here's just a few of my personal favourites.

PROGRAMS

- **A07 The Strings: swirly, thick-chorused ensemble strings that still impress without the effects.**
- **A30 Space Wing: a sweet, ethereal sound with a shakuhachi-like attack and a lush fade-in.**
- **A37 Chamber Ens(emble): live-sounding, in your face small string section.**
- **A63 Whirly: electric piano with an edge when played hard.**

COMBIS

- **00 Star Burst: musically pointless but exceedingly impressive texture. Hit lower octaves hard for instant dive bombing, while sparkles fade in and out in the upper octaves.**
- **05 Calcutta: nice ethnic feel, with velocity switched tablas and split santur/strings. Instant Bollywood.**
- **47 Orchestral: the name says it all; a classy, classic layer of woodwinds and strings.**
- **89 Death Stars: Seriously gloomy texture, with explosive attack at high velocities.**

The GM bank of sounds is also very good. It has high and low points, as with any manufacturer's interpretation of the spec, but in general the quality is high.

X-CITING EFFECTS

- **REVERBS: Hall, Ensemble Hall, Concert Hall, Room, Large Room, Live Stage, Wet Plate, Dry Plate, Spring.**
- **EARLY REFLECTION: ER1, 2 and 3 (ER 3 offers a reverse envelope).**
- **DELAYS: Stereo, Cross Delay, Dual Mono, Multi-tap 1 (2-channel multi repeat delay), 2 (adds cross panning) and 3 (adds crossed feedback).**
- **CHORUS: Left/Right out of phase, left/right in phase, Quadrature Chorus, Crossover Chorus, Harmonic Chorus.**
- **SYMPHONIC ENSEMBLE**
- **FLANGER: left/right in phase, left/right out of phase, Crossover Flanger.**
- **PHASER: Left/right in phase, left/right out of phase.**
- **OTHER: Exciter, Enhancer, Distortion, Overdrive, Rotary Speaker, Auto Pan, Tremolo, Parametric EQ.**
- **SERIAL COMBINED EFFECTS: Chorus-Delay, Flanger-Delay.**
- **PARALLEL COMBINED EFFECTS: Delay/Hall, Delay/Room, Delay/Chorus, Delay/Flanger, Delay/Distortion, Delay/Overdrive, Delay/Phaser, Delay/Rotary Speaker.**

FURTHER INFORMATION

£ X5 £799; computer connection kit £30. Prices inc VAT.
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MONITORING & VOCALS

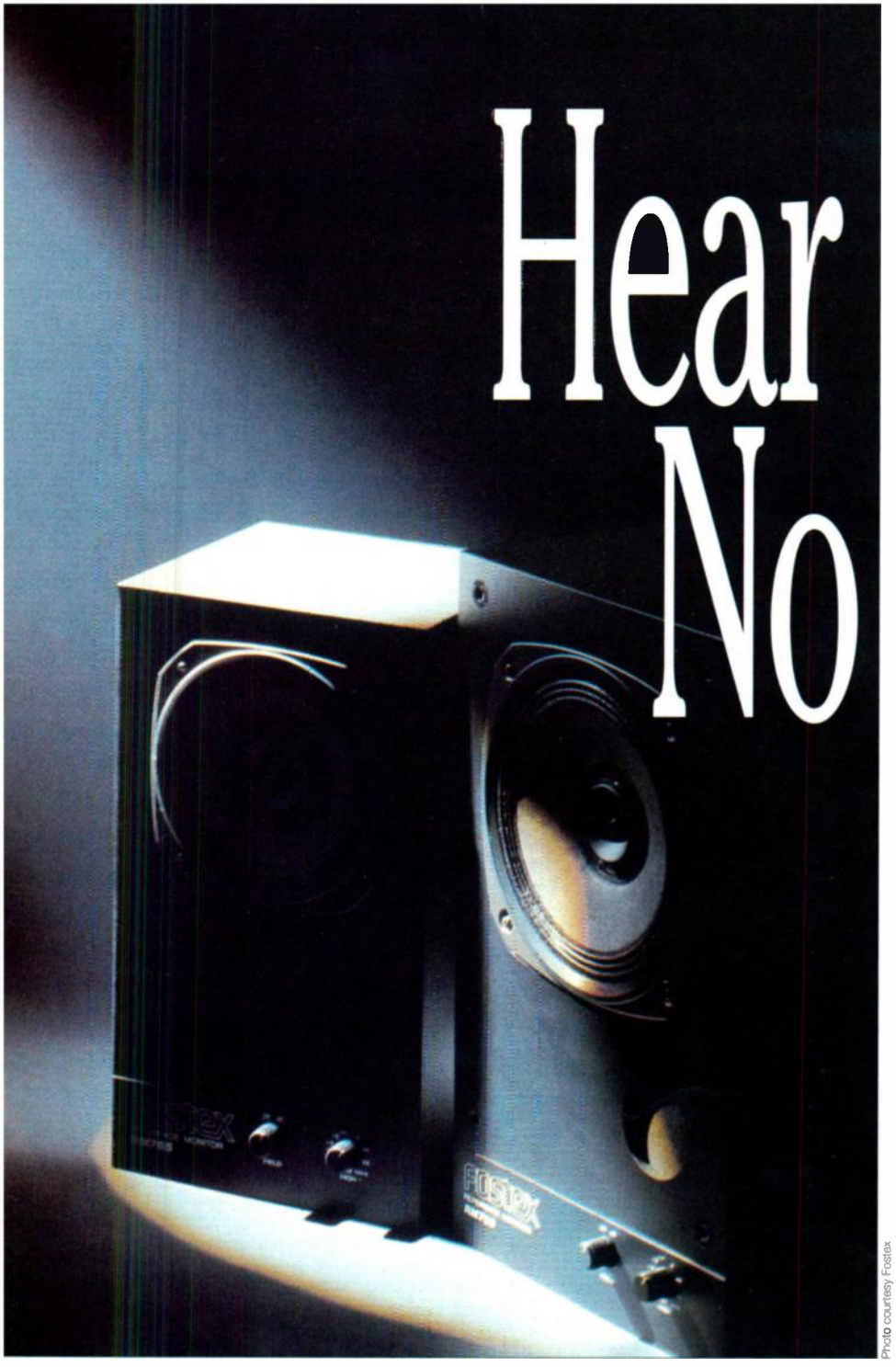

Photo courtesy Fostex

If you can't get a good performance from your vocalist, it could be your method of monitoring that's at fault. PAUL WHITE offers some helpful advice.

It's all too easy to overlook the fact that the standard of a vocal performance can depend heavily on the type and quality of monitoring provided for the performer. There's a tendency just to give the singer a pair of cans with a rough backing mix set up, and then leave her/him to get on with it — but this is unlikely to prompt the best possible performance.

There are several factors which affect a vocalist's ability to pitch and perform properly, one of which is monitoring level. I favour the type of system that allows the performer to control the overall level of his or her monitoring from within the studio or vocal booth. Although most mixers come with elaborate foldback systems, I usually find it just as easy when recording a lone singer to feed them the control mix as it is to feed them a foldback mix — and at least I know then that they're hearing exactly the same thing as I'm hearing. I can also constantly monitor their headphone balance, and even though the ideal monitor mix might not have quite the same balance as the final mix, that isn't usually a problem when you're overdubbing.

As a rule, singers need to be able to hear both the rhythm of the track and an instrumental mix that will help them pitch their notes most accurately. This might mean bringing up the level of the pad keyboard part or the rhythm guitar, while pulling stabs and sound effects back a bit; in the case of backing vocals, the singer also needs to be able to hear the existing vocal parts clearly. None of this need be radical, however, and a slight readjustment of the control room mix is usually all that's needed.

OI, DID YOU SPILL MY VOCALS?

The type of headphones used by the singer can also make a difference to your end result. Although semi-open headphones usually provide the most accurate sound, they don't give as good a degree of isolation as fully-enclosed models. Whether a little spill from the cans is going to cause problems is really down to you to decide; if the vocals are going to be used solo at any stage, then spill from the backing tracks needs to be kept to an absolute minimum, but in most instances, a little spill is not a major problem. Some singers find it easier to work with one headphone on and the other off, and if this increases the spill level unacceptably, you can always pan the headphone mix to one side, or even wire up a set of phones with one side disconnected. If you don't want to tamper with your headphones, you can achieve the same result by making up a simple adaptor, as shown in Figure 1, overleaf. This uses two 47Ω resistors to sum the left and right stereo channels to mono. If you have the facility to provide a mono feed, omit the resistors and leave either the red ▶

MONITOR REVERB TIP

It's well known that reverb in the cans is very helpful in extracting a confident performance, and can also help with accurate pitching. What is less well known is that too much reverb can put the singer off just as much as too little, so once you've set up a level *you* think is OK, ask the singer if he/she would like more or less of it.

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But a bucketful of bells and whistles isn't worth a handful of truly outstanding reverbs. Now there's no dilemma. With S-DISC you can have it all.

The TSR12's bigger brother, the TSR24 is arguably the most powerful digital effects processor available. In addition to all the features of the TSR12 it enables you to write your own effects or algorithms, stack them in any order and even re-use them within the same patch. Processing power can be doubled with the optional PPC200 card, for even more flexibility, longer delay times and much more.

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Monitoring & Vocals

▶ or black core of the cable disconnected.

Aside from the headphones, spill into the vocal mic can often be traced to sound leakage from the control room — the isolation between the control room and studio leaves much to be desired in many home studios and small commercial facilities. The only way around this is to turn the control room monitors down as much as is practical while recording, and in extreme cases, the engineer may need to resort to headphones during recording.

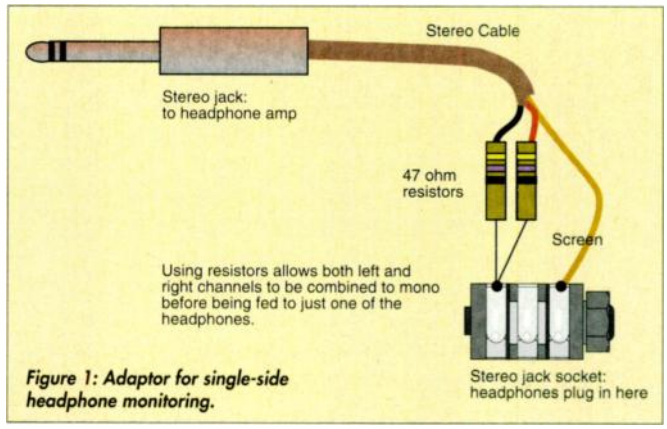

Figure 1: Adaptor for single-side headphone monitoring.

SPEAKERS CORNER

Some singers just can't work with headphones, and in this case, the only alternative is to use loudspeakers for monitoring. This obviously raises the question of spill, but in situations where a modest degree of spill isn't a problem, you can get away with keeping the mic fairly close to the vocalist and setting up a speaker (or pair of speakers) behind the mic, in much the same way as you would live. You'll need to use either a cardioid or hypercardioid mic to make this work properly, and the monitor needs to be positioned in the 'dead' area of the mic, where it picks up little or no sound, as shown in Figure 2. It is also important to position an absorbent surface behind the singer, to minimise the amount of sound reflected back into the 'live' side of the mic. Even after you've taken these precautions, the monitoring level should still be kept as low as possible.

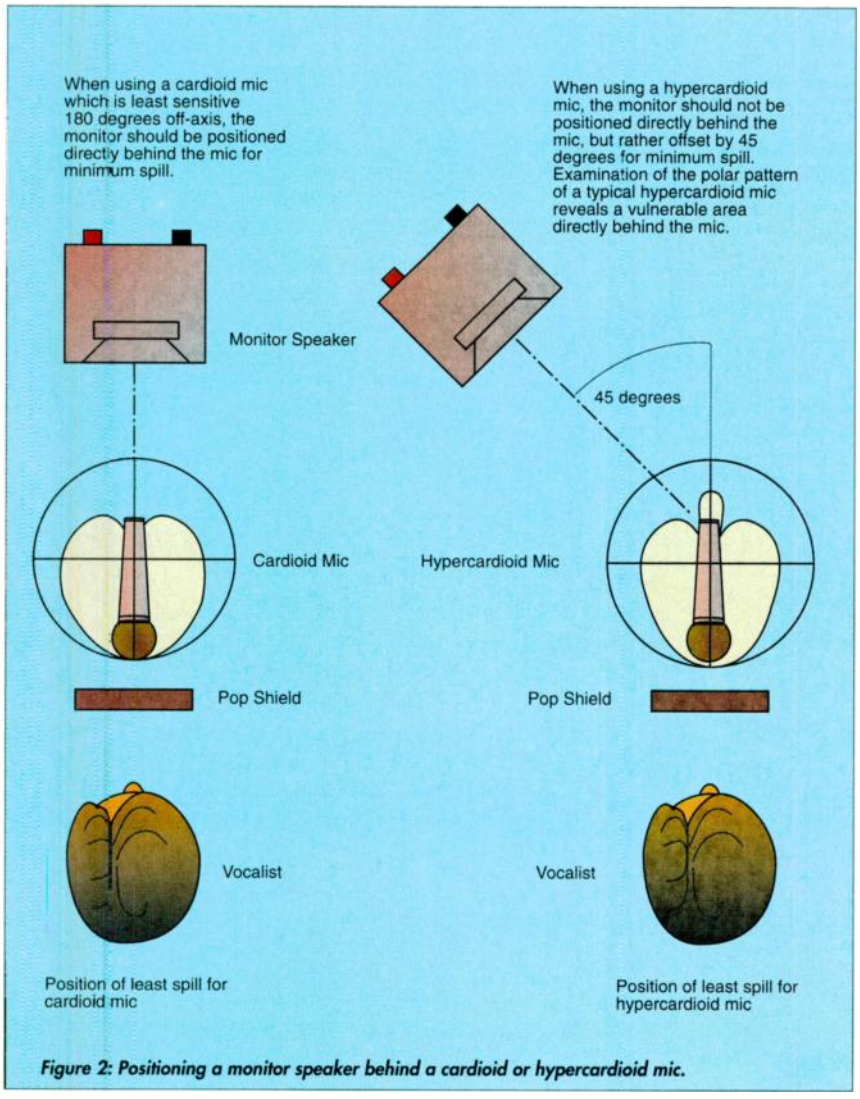

Figure 2: Positioning a monitor speaker behind a cardioid or hypercardioid mic.

A more effective solution is to use the 'out-of-phase' monitoring trick, which involves sending an identical mono foldback mix to two speakers, one of which is wired out of phase with the other. If a microphone is placed anywhere on an imaginary line equidistant from the two speakers, the sound fields will largely cancel each other out, resulting in very little spill. The mic position is critical, and the best way to do the final adjustments is to listen to the mic channel using headphones while you play the backing track. As you move the mic, you'll hear the spill level change, and it doesn't take long to find the spot where there's minimum sound. Figure 3 shows how this monitoring system might be set up.

STEREO... FROM ONE MIC?

Using out-of-phase monitors in the above way is a well-known, tried and tested technique which has been used by professionals for many years, but how can it be applied to stereo recordings? The problem is that stereo recording relies on the use of two microphones, either in different places or pointing in different directions — which means that only one of the pair can be in the right position to benefit from out-of-phase monitoring. There's no complete solution that I know of, but if you're working with an ensemble and don't have any artistic objections to recording the part twice to thicken it up, there is a way around the problem — record your stereo vocal part using just one mic!

To do this, you set up the mic and speakers as usual, but then position the performers such that the mic's position relative to them is the same as it would be if it were one of a stereo pair. If you ▶

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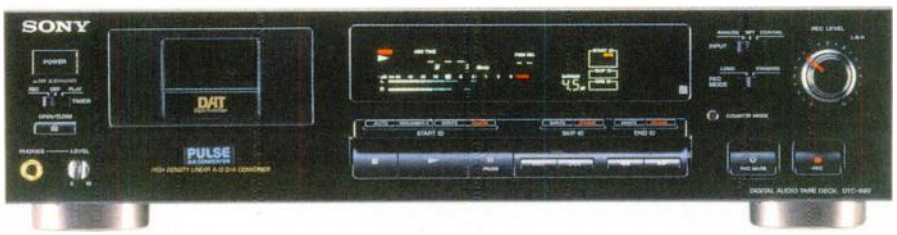

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OPPOSITE EUSTON STATION

are trying to simulate a spaced-pair stereo miking setup (where the sound source is recorded by two mics placed in parallel a short distance apart), this might simply involve the ensemble shuffling a couple of feet to the left of centre. Once the track is recorded, the singers move the same distance to the other side of centre, and overdub the same part on another track. With any luck, when the two tracks are replayed simultaneously, and panned hard left and right, the result will not only be in stereo, but will also be richer, because each voice has been captured twice. Figure 4 shows the position of the performers relative to the mic for the two takes. If you're simulating a coincident miking setup (where the two mics are placed at the same point, facing the sound source at right angles to one another), you need to move the performers around the mic in an arc, so as to maintain a constant distance from the mic.

NOW IN *TRUE* STEREO

Finally, you may want to make a true stereo recording without double-tracking everything, in which case there *is* a solution, but only if you have lots of tape tracks to play with and a mixer that offers phase reversal. In this case, you set up your stereo pair of mics in the studio with the monitor speakers behind, just as you would for a stage performance. Record the vocal performance to tape, complete with spill, then remove the singers and record just the monitor spill onto another two tape tracks. Now comes the interesting part. Play back both the vocal tracks and the spill-only tracks (both panned to their correct left and right positions), but with the mixer's phase reverse buttons down on the 'spill' tracks. Once the levels of the tracks are matched, the spill should largely cancel out, though you may have to adjust this independently for the left and right parts to get it perfect. In theory, the degree of cancellation is likely to be higher if the performers remain in their original positions during the recording of the spill-only tracks, but what you gain in separation, you may lose in additional breathing and shuffling noises. Once the result is as good as you can get it, bounce it onto another pair of tape tracks, leaving the original four free for re-use.

Once you've tried these techniques and convinced yourself that they work, you'll probably be able to come up with variations of your own to suit your own working methods. If you can minimise the level of spill at source, that's fine, but in situations where you have to use monitor speakers in the studio, these tricks can save the day. SOS

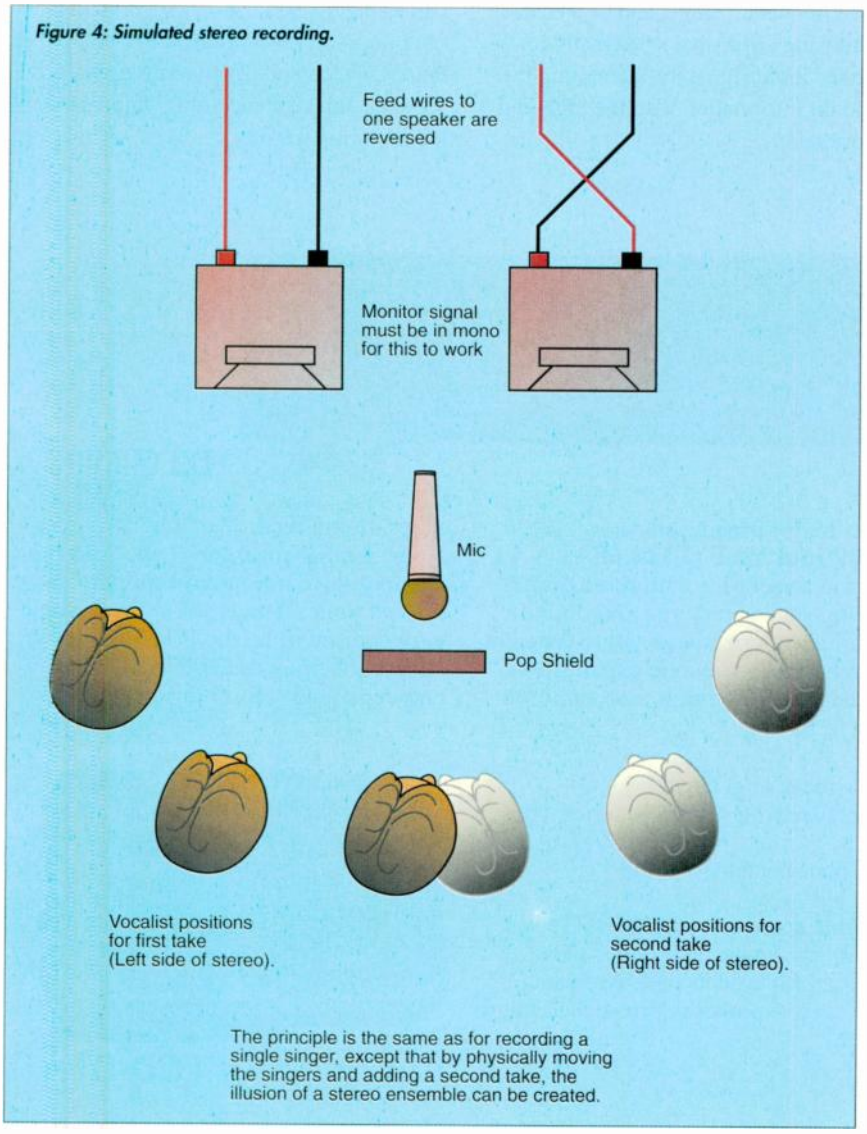


Figure 4: Simulated stereo recording.

The principle is the same as for recording a single singer, except that by physically moving the singers and adding a second take, the illusion of a stereo ensemble can be created.

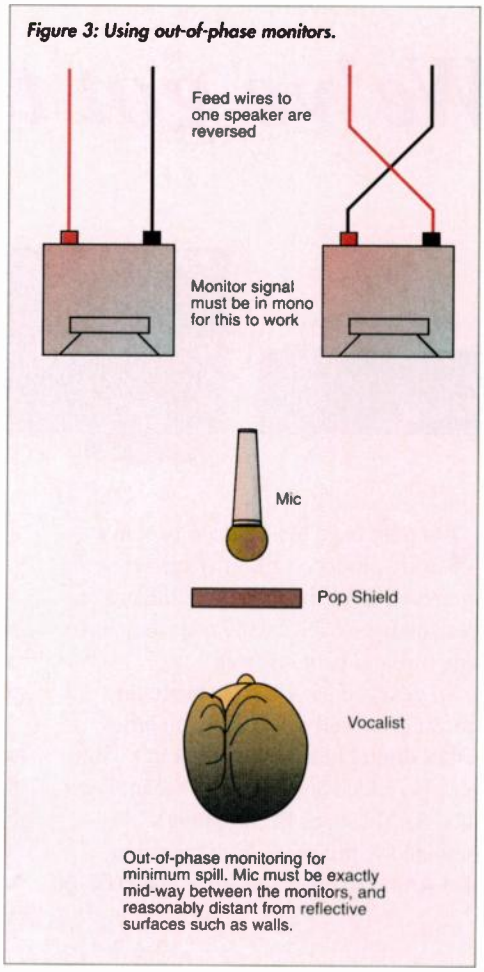
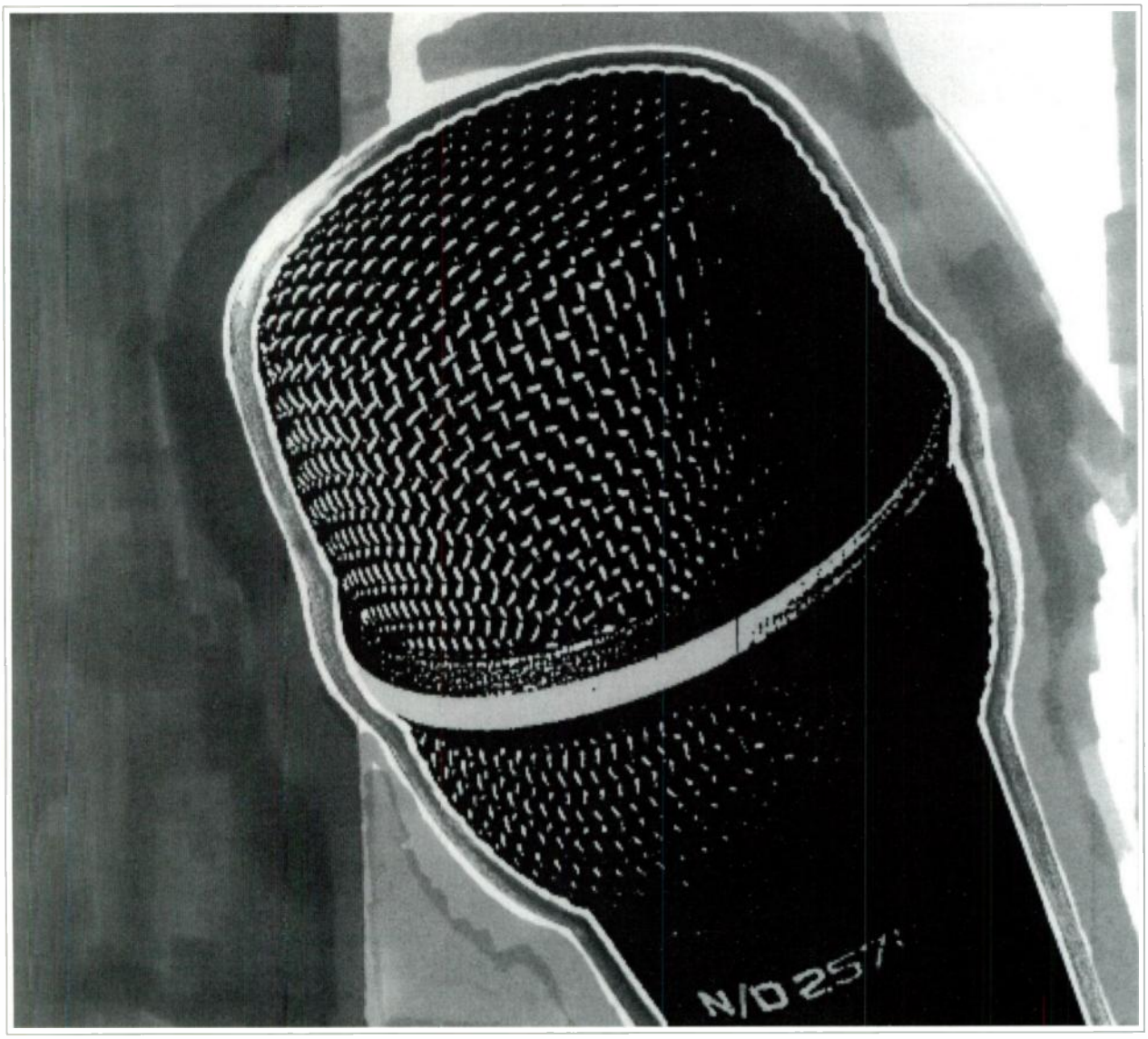


Figure 3: Using out-of-phase monitors.

Out-of-phase monitoring for minimum spill. Mic must be exactly mid-way between the monitors, and reasonably distant from reflective surfaces such as walls.

TALKIN'

LOUD



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Shuttlesound

At a time when the prices of multi-effects units are, on average, lower than they've ever been, Boss have launched a processor which does... reverb! DEREK JOHNSON looks at the back-to-basics RV70.

BOSS RV70

DIGITAL STEREO REVERB

In the same way that there is a vocal minority who bemoan the loss of "knobs and sliders" from synths, so there are those who look back fondly at the time when reverbs were reverbs and digital delays were digital delays, and they had the knobs to prove it. Roland — the company which begat Boss — may be adamant about never going back to the days of knob-ridden synths with real (as opposed to sampled) oscillators, and they may never build another TR909, but when it comes to effects processing, they're clearly prepared to go (slightly) 'retro'.

This brings us to the new RV70 Digital Stereo Reverb from Boss. It is simply a reverb, and, yes, editing is undertaken by just four knobs. If you can tweak the knobs and press the 'Write' button, you can work the RV70, and this is as far as you ever need to go if you're a hands-on, plug-in-and-play type of person. This wouldn't be a Roland/Boss product if you couldn't go deeper, however, and it comes as no surprise that there are indeed hidden — MIDI — depths to the RV70. To be more specific, there are certain features of the RV70 that can only be accessed over MIDI and which make the RV70 a more sophisticated beast than it might at first appear to be — see the 'MIDI Matters' box elsewhere in this article for details.

PHYSICAL WORLD

As you can no doubt see from the accompanying photo, the RV70 comes housed in a 1U rack and features a slightly jazzier colour scheme than the usual black. Apart from the four editing knobs, there are the expected input and output level controls, a Direct button (which selects either the effects-only output or a mix of effects and input signal) and a central display which features a three-character, seven-segment LED display, peak LED and a trio of indicator LEDs which show you what effect type is currently selected. A pair of up/down buttons to the right of the display select Programs and parameters, and the MIDI and Write buttons are self-explanatory. At the rear, there are stereo input and output jacks, +4/-10dB level switch, MIDI sockets, a remote socket for remotely turning effects on or off, and the captive mains lead — no external power supply!

PROCESSING

Inside this deceptively simple package is a 16-bit DSP (44.1kHz sampling frequency) that utilises what Boss call AF — Adaptive Focus — to "significantly reduce quantisation noise by combining multiple samples to optimumly match signal levels through analog to digital conversion." That's a quote from the manual, but it does mean in practice that the RV70 is one of Boss' quietest units.

My mention of the three 'effect type' LEDs above might indicate a fairly simple machine internally; in fact, while there *are* three types of effect possible from the RV70, these broad definitions hide a total of 11 different algorithms. The three groups of effect types are:

- **Reverb**, a sophisticated, dedicated effect.
- **Non-linear**, a filtered, delay-based digital algorithm that can produce wicked, metallic sounds.
- **Reverb + Delay**, which offers a choice of two parallel and serial reverb/delay combinations.

Without any recourse to MIDI, editing is simply a matter of selecting a program that features an algorithm you want to use or has a sound close to what you want, then twiddling the four knobs and, by pressing the Write button, saving the result when you're happy. The four knobs have different functions, depending upon which Preset and which algorithm you're editing. The parameters they control for each group of effect types are as follows:

- Reverb: reverb time, pre-delay, HF damping and density.
- Non-linear: non-linear time, pre-delay, filter and density.
- Reverb + Delay: reverb time, pre-delay, delay time and feedback.

Note that when you twiddle a knob, the number in the display starts to change; when you've finished, the display reverts to the current program number. The parameter values shown nearly always range from 0-100, and don't necessarily bear any relationship to real-world values, such as delay or decay times — you simply

BOSS RV70 £375

PROS
- Very easy and immediate to use.
- Powerful (if hidden) MIDI implementation.
- Great sound.

CONS
- Limited display.
- No bypass switch on front panel.

SUMMARY
The hands-on approach, coupled with a sparkly, noise-free sound, equals another winner from the Boss/Roland family of processors.

work by ear. Even if you want to produce timed delays, this is easy enough to do.

IMPRESSIONS

The sound quality of the RV70 is excellent, and having hands-on access to your parameters makes coming up with sophisticated-sounding treatments a doddle. Your average multi-effects processor may offer more options, but they're not nearly as much fun, nor necessarily as immediate as the RV70.

I found that even when simply using the front-panel knobs it was possible to come up with outrageous and interesting treatments. For example, when using a Reverb effect, setting the reverb time to 0, a high value on the pre-delay, and a high density value produced a really fat pseudo-delay effect. The HF damp knob is also remarkable: small adjustments really make dramatic differences, going from ultra-sheen sparkly digital reverb right down to an absolutely dead room. And let's not forget the Non-Linear algorithm: the clangorous, metallic treatments available here are worthy of processors with much higher price tags.

It's always a shame to have to dig up negative comments regarding a piece of hardware that I'm genuinely enthusiastic about — I felt the same way about Digitech's TSR12 a couple of issues ago — but some users may find the lack of a naming facility for patches a bit of a drag: that's one of the advantages of the LCD approach to operating systems. It's back to pencils and paper, I'm afraid. I could also bemoan the lack of a front-panel effects bypass switch, but I won't.

I will mention the price, though. At £375, some may comment that the RV70 retails for the same as some multi-effects processors. That's true, but even so, I find myself rushing to Boss's defence — this unit really does sound good and is so much fun to use. And I suppose musicians of restricted bank balances might appreciate being able to buy one high-quality effect at a time, when finances allow, rather than having to stump up all the cash for an all-in-one unit. The move to specialised processors is, as far as I'm concerned, a good one — I still have a small collection of Boss micro-rack units, which have an immediacy and a character I often find lacking in more up to date, better-specified products. There's no doubt that all-purpose multi-effects units have a place, and are great value, but the prospect of being able to choose a reverb from one company, a flanger from another and a delay from yet another, based on each company's strong points, is an attractive one. The complete freedom to patch individual processors in any configuration is also highly desirable.

It would be nice to see more companies follow Boss down the specialisation path; financial considerations aside, I hope this is the start of a musician-friendly trend. SOS

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RV70 ALGORITHMS

- REVERB: Room 1-3, Hall 1 & 2, Garage
- NON-LINEAR
- REVERB + DELAY: Hall-parallel, Room-parallel, Room-series, Hall-series

MIDI MATTERS

The RV70 is a simple to use, good sounding little processor. But what if you enjoy playing with MIDI? The RV70 won't disappoint you. Underneath the foolproof exterior is a sophisticated MIDI-equipped centre, with plenty of parameters to play with in real time. The relevant MIDI information is provided in a separate MIDI specification document — not provided with the review machine — and should allow the user to come up with profiles for use with the MIDI mixer page of the typical high-end sequencing software package. The manual itself goes into some depth on how to use the RV70 with the new Roland MCR8 MIDI controller — see exclusive review elsewhere in this issue.

Being able to access certain parameters only over MIDI may be seen as a negative point, but it needn't be a problem: look at the MIDI access as something of a bonus to a very straightforward processor, a bonus which makes the RV70 attractive to a wider range of people. Just to give you a taster, here's a list of the parameters available over MIDI, which you can modify using the usual range of MIDI continuous controllers.

- **Algorithm selection (1-11).**
- **3-band EQ, with peaking or shelving low and high bands, and peak mid.**
- **Parameters relating to the Reverb and Reverb+Delay-based algorithms, as follows: room size, reverb time, density, pre-delay, HF damp frequency and gain, LF damp frequency and gain, release density, early reflection level, reverb level, delay time and level (left, right and centre), delay feedback level, delay time scale.**
- **Additional parameters for the Reverb+Delay algorithms: reverb level, delay time and level (left, right and centre), delay feedback level, and delay time scale.**
- **High-cut filter frequency.**
- **Output level.**
- **Parameters for the Non-linear algorithm: Density, pre-delay, four-way envelope with time and level for each point, non-linear filter, non-linear filter type, delay feedback level, non-linear time, high-cut filter frequency, output level, non-linear filter type and resonance.**

This provides an impressive degree of editability by anyone's standards, and certainly extends the appeal of the RV70 towards the more demanding sound designer.

The recently released 'Tangents 1973-1983' Tangerine Dream boxed set chronicles the 10 seminal years the German group spent on the Virgin label. MARK PRENDERGAST concludes his history of the band, and looks at the effect they have had on the development of modern music technology.

Dream Sequ

TANGERINE DREAM AND THEIR CHANGING USE OF TECHNOLOGY PART 2: 1977-1994

During the 1970's, Tangerine Dream blazed a trail for electronic music with a string of hit albums that brought them worldwide acclaim. Part 1 of this feature, in last month's *Sound On Sound*, recounted how the 'classic' Tangerine Dream line-up of founder Edgar Froese, Christoph Franke, and Peter Baumann crafted famous albums like *Phaedra*, *Stratosfear*, and *Rubycon* using nascent, unreliable electronic technology. But tensions between Edgar Froese and Peter Baumann became unbearable following two extensive tours of the United States in 1977, and Baumann left to pursue a solo career in the Autumn of that year.

Baumann's departure had serious repercussions for Tangerine Dream. Edgar Froese and Chris Franke drafted in old Berlin chums Steve Jolliffe (flute) and Klaus Krieger (drums) for the making of the *Cyclone* album in 1978. But the new personnel and new instruments — a Roland guitar synth and multi-trigger drums — did not save the album from sounding poor. Jolliffe even sang — the first time there had been vocals on a Tangerine Dream album. Not surprisingly, no track from *Cyclone* appears on the Tangents boxed set. Jolliffe was dropped, and the trio of Froese, Franke, and Krieger recorded *Force Majeure* at Hansa Studios in Berlin. On its release in 1979, this proved to be Tangerine Dream's return to form. The apocalyptic 'Thru Metamorphic Rocks' still sounds futuristic, even today.

Christoph Franke recalls: "It was a new phase, more structured. The music was more heroic, a little bit like art-rock again. We got some more keyboards, and our big Moog modular was more stabilised inside — new oscillators came in, and new envelopes. But the Mellotrons and MiniMoogs were still there".

Tangerine Dream began 1980 by being the first Western rock group to play on the Eastern side of the Berlin Wall (documented on the live album *Pergamon*, released in 1986). More important than the concert's location, however, was the fact that it marked the debut appearance of Johannes Schmoelling as a member of Tangerine Dream. Edgar Froese had been very impressed with him when they had met at a Berlin theatre — at 29, Schmoelling was already an audio technician, with a degree in electronics, a background in piano and organ music, and a specific interest in sound collage. Froese recalls: "Johannes had remarkable concentration, and could work for long stretches of time".

Schmoelling has his own memories of joining the group. "It seemed to be the ideal group to work with, as I could be composer, performer and sound engineer all in one person. Before I joined, the music of Tangerine Dream was basically built on sequencer loops, more or less in one key, with few harmony changes and long sessions of improvisation. When I came to the group, we tried a mixture of more structured elements, with more jazz-orientated chords, composed melodies and some synthesizer solos closer to rock. We really wanted a more dynamic sound."

Chris Franke: "Johannes wasn't so much a synth player, so I taught him a lot about using MiniMoogs and things. He was very good on the engineering side, which helped us with the recording. Also, he was a very good piano player, better than Peter [Baumann], so we got into more fancy keyboard styles, and in some ways the music became more professional — a lot more than just capturing hypnotic and spacey feelings. So, in some ways, it became more conventional, and in others a little bit more advanced".

Technologically, the group remained on the cutting edge by liasing with the electronics industry as new developments occurred. During the late 1970s, Chris Franke made important connections with Oberheim and Sequential Circuits, the American distributors of Roland. He also went to Japan and helped design the Jupiter 8. His connection with equipment manufacturers led him to become a Beta tester for Waveframe and other companies. On 1980's *Tangram* (the first studio album to feature the new trio of Froese, Franke, and Schmoelling), the warm smoothness of new keyboards mingled seamlessly with older sequencer and guitar elements. According to Franke: "We got Oberheim synths, and went back to using a Clavinet to get string sounds, higher overtones, and more aggressive colours. In our early days, most synths weren't polyphonic, and we had had to vary monophonic lines. But in the 1980s, the polyphonic synth wave began, and it shows on *Tangram*".

THIEF AND POLYGON STUDIOS

Tangerine Dream's next album, *Thief*, recorded in 1980, made the group famous in America as soundtrack composers. The album also focused

Tangerine Dream shortly before Peter Baumann's departure. From left to right: Peter Baumann, Chris Franke, Edgar Froese.

attention on the group's increasing financial independence, for they were now working quite happily in a $1.5 million studio of their own design — Chris Franke's Polygon Studios. This was where the group had recorded *Sorcerer* years before, but the studio had been rebuilt and re-equipped over the years until it bore little resemblance to the original 4-track setup. Chris Franke explains: "On *Stratosfear*, we had run up studio costs of 80,000 Deutschmarks, and even Hansa Studios was quite expensive. We eventually realised that all this money could go into equipment. During the late 1970s, we found this old ballroom which had at first been a cinema, then a discotheque, and then a storage room. I rented it, fixed it up over the years, and then got some bank loans and bought all these 24-track machines and mixers. *Thief* was still recorded in analogue, and used a new ARP synth, which had a very nice sound thanks to its ring modulators — some very rich overtone structures".

Franke justifiably says that *Thief* was full of sequences which directors still remember today. A huge GDS computer was brought in from Music Technology Incorporated to help with the audio-visual synchronisation. Edgar Froese remembers

TANGENTS DISCOGRAPHY

- *Phaedra* (Virgin 1974).
- *Rubycon* (Virgin 1975).
- *Ricochet* (Virgin 1975).
- *Stratosfear* (Virgin 1976).
- *Sorcerer* (MCA 1977).
- *Encore* (Virgin 1977).
- *Cyclone* (Virgin 1978).
- *Force Majeure* (Virgin 1979).
- *Tangram* (Virgin 1980).
- *Thief* (Virgin 1981).
- *Exit* (Virgin 1981).
- *White Eagle* (Virgin 1982).
- *Logos Live* (Virgin 1983).
- *Risky Business* (Virgin 1983).
- *Hyperborea* (Virgin 1983).
- *Firestarter* (MCA 1984).
- *Flashpoint* (MCA 1984).

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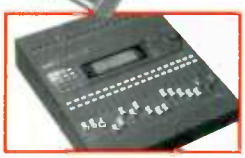

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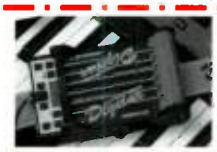

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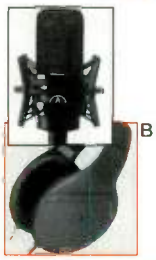

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Tangerine Dream 1977-1994

how easy it was to work with the versatile director Michael Mann. "He was very professionally prepared, and knew precisely what he wanted. After working on the score for three weeks, Michael came from LA to Berlin to arrange a final mix of all the instruments. In the meantime, the film was being cut down quite considerably, and this meant that some of our cue points were no longer correct. So we flew to LA for two weeks, and did some further alterations. *Thief* took place in a normal thriller setting, but nobody had ever heard sequenced electronic music in this kind of Hollywood film."

Edgar Froese on tour, 1977.

In fact, Mann's film, which starred James Caan and Tuesday Weld, was a huge critical success. The American press went wild over the soundtrack, and acknowledged how the German trio had succeeded in making electronic music sound organic and full of adrenalin. Not surprisingly, the album stayed three months on the Billboard chart on its release in March 1981. Edgar Froese still says today that the talented Mann "was the director who really helped us on the way".

EXIT

Even during the hullabaloo which surrounded the release of *Thief*, Tangerine Dream were busy recording another album, *Exit*, put down over the summer of 1981. Full of brief melodic passages and hypnotic sequencer phrases, the album again saw Tangerine Dream on the cutting edge of electronic innovation. Edgar Froese: "We built everything around our MCI mixing console, because we needed to have all the instruments quite near. We didn't use acoustic instruments much at all, and didn't need an engineer. We just had everything around us, the same way as on stage". Schmoelling recalls: "We experimented with drum-loops built out of spliced tapes, achieving the same effects as rap musicians do today using sampling techniques".

Chris Franke has more detailed memories of *Exit*: "All the gear had become more complex and reliable, so you could afford to do all sorts of unusual connections. The Mellotron had only run tape segments lasting eight seconds, after which you had to find another tone. But on *Exit*, we were into very long landscape sounds, so we applied tape *loops* to the Mellotron instead of these segments. We spent nights and nights recording them ourselves and putting them in. And so suddenly, I had very long string and choir sounds which could then be sent through a vocoder. Through another vocoder input, I'd send drum sounds in order to 'rhythmise' the choral and string sounds. This was a completely new experience. With the equipment we had by then, we could really concentrate on what was in our heads, on how to realise certain sounds. We were fighting the equipment when we began, but at last it was doing what we wanted it to do. The MCI console ▶

SOUNDTRACK PROBLEMS: *RISKY BUSINESS*

Edgar Froese: "When John Avnet and Paul Brickmann [the producer and the director of *Risky Business*] arrived in Berlin to hear our completed soundtrack score, we were devastated to hear that nothing we had done suited them. They said they had imagined something completely different. Something like this can be a real pain, especially if you've worked on a score night and day for three weeks. But as a professional, you've got to swallow your disappointment and find out immediately where the mistakes and misunderstandings are. We tried doing this for five days, with no success. Nothing could satisfy the producer and director. We were gradually getting tired and rather annoyed at the whole film business. We almost gave up trying to find a solution, and there were only two days left before they went back to Los Angeles. We sat in front of our instruments, totally unmotivated, turned off the monitors which showed segments of the film, and started improvising some rhythmic patterns and loops without a beginning or end. Brickmann was suddenly electrified, and claimed that this was exactly the kind of atmosphere the film required. After that, we recorded the complete score in two days and two nights, and ended up bringing the master tapes at 7am to the gate where the director's plane was ready to take off. *Risky Business* was one of the USA's three most successful films of 1983. There simply are no absolute laws which rule the world of business and music."

Christoph Franke: "That soundtrack was a case of too many chefs in the kitchen. After doing everything with Fender Rhodes and strings, we stumbled upon a minimal kind of thing, like Steve Reich or Philip Glass. It was a new way of drawing a romantic theme, which we still get credit for today. The Roland MC8 sequencers — which were new then — were central to this, as a lot more of our melodies could be programmed. And we built our own sequencers. Sequencers in the early days could only handle six or 10 notes. Suddenly, we had sequencers which could deal with 64 notes, which meant that our music had much more structure."

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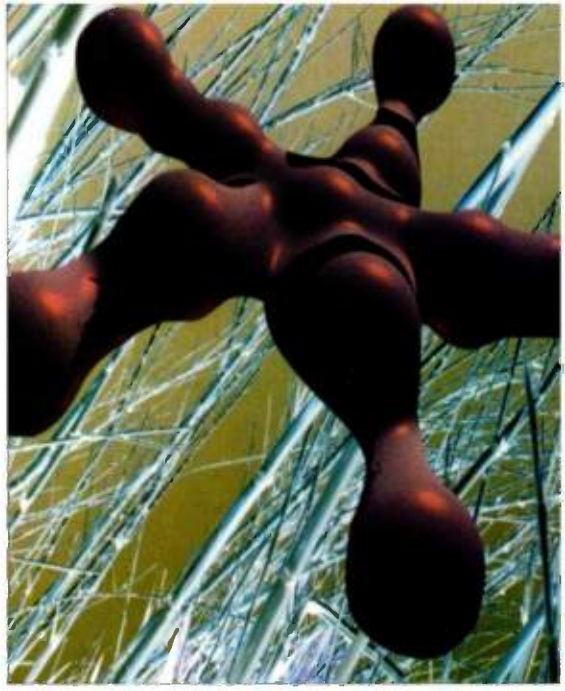
Tangerine Dream 1977-1994

at Polygon was the first with computerised automation, and that allowed for many experiments. And the studio was 24-track, which was still a big deal then".

THE SAMPLING BREAKTHROUGH

Over the next two years, Tangerine Dream entered a mellower, though still prolific, phase, touring the world, and playing large festivals in Berlin. March 1982 saw the release of *White Eagle*, which marked the beginning of another technological breakthrough for the band — digital sampling. Edgar Froese recalls: "During the production of *White Eagle*, we were able to use an instrument which had just been developed, and whose inventor we knew well. This was the PPG Wave 2.0, which was followed later by the Waveterm — one of the first professional samplers. The graphic monitor's representation of partial wave forms allowed us to create completely new musical structures. It was a very complex and expensive procedure, but for our adventurous imaginations, this development came at exactly the right time".

As the band continuously toured throughout the Far East and Australia, Johannes Schmoelling began to really make his presence felt in the live arena. This can be heard on *Logos Live*, released at the beginning of 1983. Meticulously crafted, this album shows Schmoelling to be a master of melody, texture and nuance. His fascination with jerky sampling rhythms also strongly influenced *Hyperborea*, released at the end of 1983. The classical Greek symbolism of this album recalled the band's debut for Virgin ten years earlier, which was fitting, as it proved to be the final studio album for the label. Ten years on, Schmoelling is still very happy about the *Hyperborea* album, with its electronic sitar, and exotic North African flute and tabla sounds. "Like *Logos Live*, *Hyperborea* was determined by the new generation of digital synthesizers and sampling technology. We were able to memorise sounds, and used a lot of sampled drum sounds. We also invented new rhythm structures by using a special arpeggiator technique." Edgar Froese also has happy memories: "On 'No Man's Land', we first used the Waveterm computer as a digital sequencer. The result came as a real surprise, especially in terms of tuning and editing".



But Chris Franke has different memories of this period. "I felt that from *White Eagle* to *Hyperborea*, we were all in a phase where the music became smooth but also a little bit more boring. It was becoming repetitive, because we didn't have the punch or the bite or the hunger anymore. We were more established, and it's the absolute truth that musicians lose a little bit of their bite when they get established.

"In terms of equipment, we really got into all the polyphonic synthesizers. Every couple of months there was something new, despite ARP going out of business — a new Korg, a new Roland. We were surrounded by keyboards — our studio became a keyboard store. We rented a Synclavier, which I found very interesting. I had already bought an expensive audio computer, and *then* I was going to buy a Synclavier. But at the last minute, I realised I could get two Waveframes at half the price, so I went for those, because we always needed a ▶

FALLING OFF THE CUTTING EDGE: CHRIS FRANKE ON LEAVING TD

Chris Franke left Tangerine Dream in 1988. As he says, much has been written on this subject [for an example, see the Chris Franke interview in May 1994's *Sound On Sound*], but he remains clear about his reasons today. "I felt I needed a creative break, because I think we started to repeat ourselves. We ended up with so much equipment that we took on a lot of jobs to pay for it, became overworked and did too many things at the same time. We did not have time to explore our minds for fresh ideas or explore the great computer instruments we had at our disposal. Kids with much more time than us, but less experience, began producing better sounds, and I began to feel our quality was dropping. This was a very bad feeling for a group who always wanted to be on the cutting edge of music.

"Edgar and I still talk every three to six months, and we discussed the boxed set, although my film music schedule didn't allow me to get directly involved. I think he did a very good job on the music, and the booklet notes are most informative. I'm very happy with how it all turned out."

Chris Franke on tour, 1982.

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WRH

Tangerine Dream 1977-1994

back-up model — we always had down-time and couldn't depend on just one. So I bought two Waveframes and we just rented the Synclavier. The Waveframes were great for stage and studio work."

At the end of 1983, Tangerine Dream performed a classic concert in Warsaw, and the album taken from the performance, *Poland* (released not on Virgin, but on the Jive label), reveals just how ahead of their time the German trio were. The hypnotic beats and electronic rhythm of the title track sound very close to music made today by German techno guru Pete Namlook.

Despite having begun their relationship with the Jive label for the *Poland* album, *Hyperborea* proved not to be the last Tangerine Dream record to be released through Virgin. In 1983 the group made a substantial contribution to the soundtrack for the film *Risky Business*, which starred Tom Cruise. Elements of both *Force Majeure* and *Exit* could be discerned amongst the tracks, and the title piece, also known as 'Love On A Real Train' involved repetitive elements that were close to the minimalism of Steve Reich. Still, for all its excellence, the making of the *Risky Business* soundtrack was not without its problems (see the separate 'Soundtrack Problems' panel).

THE DREAM CONTINUES...

The *Tangents* boxed set covers the years 1973-1983, and it is this period which has been the main focus of this two-part feature. Two further film soundtracks, *Firestarter* and *Flashpoint*, were issued via Virgin and MCA in 1984, and come from the same Froese, Franke, and Schmoelling period. Excerpts from both appear on the boxed set. Briefly, post-1985, Schmoelling left Tangerine Dream to concentrate on his own Riet studio in Berlin. It was here that the five CDs of the *Tangents* boxed set were digitally pre-mastered. His replacement, computer genius Paul Haslinger, was instrumental in the recording of the brilliant *Underwater Sunlight* in 1986 for Jive Electro. Detail of Haslinger's time in Tangerine Dream can be gleaned from the interview with him in *Sound On Sound*'s November 1990 issue. In 1988 Christoph Franke left Tangerine Dream (see the separate 'Falling Off The Cutting Edge' panel), and various musicians passed through the ranks after his departure. In 1990, Jerome Froese joined his father's band, and also helped out on the re-editing and re-recording aspects of *Tangents*. Edgar Froese now plans a second boxed set, which will concentrate on the early days of the group, as well as the latter-day Tangerine Dream. For now, *Tangents* is an important document of a group in constant development and growth.

Edgar Froese, who is still for many the living embodiment of Tangerine Dream, has his own last words: "If you listen to all of TD's albums chronologically, you practically have a history of synthesizers, sequencers and samplers, with up-to-date analogue *and* digital sounds. In truth, our music is a diary of the history of musical instruments in the '70s, '80s and '90s."

FURTHER INFORMATION

The *Tangents 1973-1983* boxed set is out now on Virgin Records, catalogue number *CDBOX4*.

Sound On Sound has featured several interviews with Tangerine Dream personnel over the years. Early member Klaus Schulze has been interviewed twice, once in August 1987 and again in February 1993. Paul Haslinger, member of the band since 1986, was featured in November 1990, and Christoph Franke spoke at length about his current work and his favourite equipment in May 1994. Back copies of these issues are available from: SOS Mail Order, Media House, Burrel Road, St. Ives, Cambs, PE17 4LE. The August 1987 and November 1990 issues cost £1.50 each, while the February 1993 and May 1994 issues each cost £2.50.

TANGERINE INNOVATORS

Both Edgar Froese and Christoph Franke have strong views on the effect Tangerine Dream have had on the evolution of electronic equipment over the years. Edgar Froese: "Our contribution, in all modesty, is surely quite great. Why? In the first 12 to 13 years of producing albums, we hardly ever used a sound which was common or readily available. Almost everything was custom-made. Over 80% of our income went, directly or indirectly, into sound research and the development of new instruments. That naturally changed the listening habits of our colleagues in other countries, just as it changed the the awareness of our listeners in general. We had a sound library with over 2400 sounds of our own creation. We named these sounds 'Hybrid Stacks', because they were made up of different sounds from different sources. In the early years, these sounds were stored as complex events on tape loops in the Mellotron, and later on, they were put into synths and sampler units. To a certain extent, we have kept to our philosophy; on our latest album from 1994, *Turn Of The Tides*, there are 52 sounds which are not for sale with any sound module or sampler. The disadvantage of this gigantic sound research is that we have been plagiarised and sampled more often than any other band — it would take an army of lawyers years to chase down all the stolen TD samples.

"Generally, I feel that the computer and sampler are overrated pieces of equipment. They can only be time and work-saving means in the hands of a musician who has a story to tell — a musician who could 'express' himself just as well on acoustic guitar and grand piano. If you need a 'sound adventure' to turn your ideas into sounds, complex computers are just a useful help"

Chris Franke: "Sampling was a very important aspect of Tangerine Dream and the electronics industry — we were definitely the group who showed the industry that they must make a sampler. In 1983, I went to Mellotron and said that they should make a digital Mellotron, without the flaws of variable, short and noisy tapes; and I also went to Tom Oberheim and said "You must get some hard disks together and do a digital Mellotron". Both said "Aaah, you can't do it". I had already built a little machine that could store 100 milliseconds of sounds, which I used as an electronic drum machine. And then the LinnDrum came out, and people worldwide knew you could digitise sound. I even wrote an article in *Keyboard* magazine campaigning for a digital Mellotron. Fairlight eventually did it, in a very expensive way, and Emu did it cheaply, but it sounded pretty terrible... Today, I have a machine with 250 sample voices, 300Mb of RAM and 3Gb of hard disk space — there's been such a big revolution in eight years!

"I did a lot of designs myself, for sequencers and controllers. I never believed that a sequencer should be just a piece of digital notepaper — I think it can be an interactive tool with a musician. It can be an algorhythmic composer, something you can really play with and use to make improvised music. I've worked with Steinberg and other companies, like Intelligent Music in San Francisco, who see the sequencer not just as a linear recorder, but as a tool to create new sounds. I worked on *Cubase* and I'm still a Beta tester to this day. I still talk to Steinberg. So yes, it's true that TD were responsible for several sequencers. Also, we emphasised how important filters were in synthesizers. We convinced Roland and loads of people about filters, because this is where the oscillators started to really come alive. Today, it's samplers which are getting good filters, yet some companies are building samplers without filters at all, which is terrible. So I still call them up, and rap them on the knuckles for their shortcomings."

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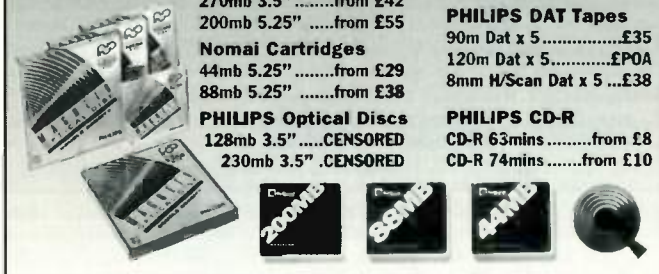

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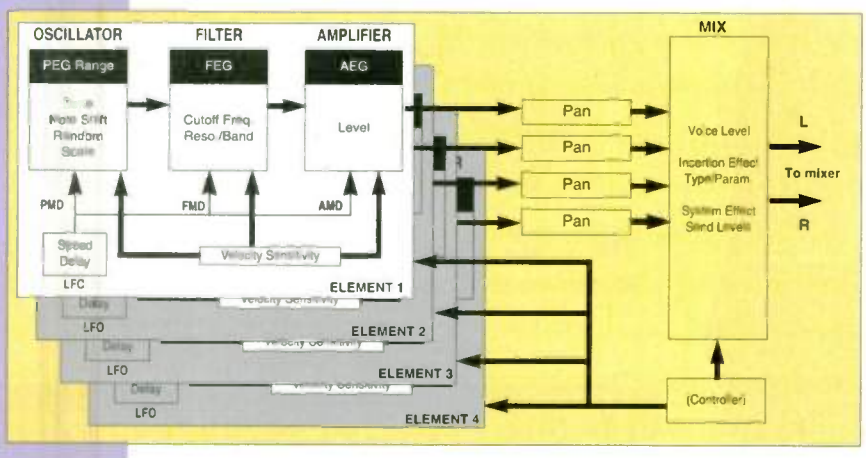
Ten years on from its launch, MIDI has evolved into a ubiquitous music-making tool. General MIDI offers a predictable way to produce music from disks, and has opened up computers and MIDI to the mass-market consumer. And the immensely popular SY85 workstation has been joined by a pair of GM-compatible workstations: the 76-key W5 and the 61-key W7. Apart from the length of the keyboard, the two instruments are identical. It was a W7 that I had for review — but note that when I write W7, I also mean W5.

NOSTALGIA?

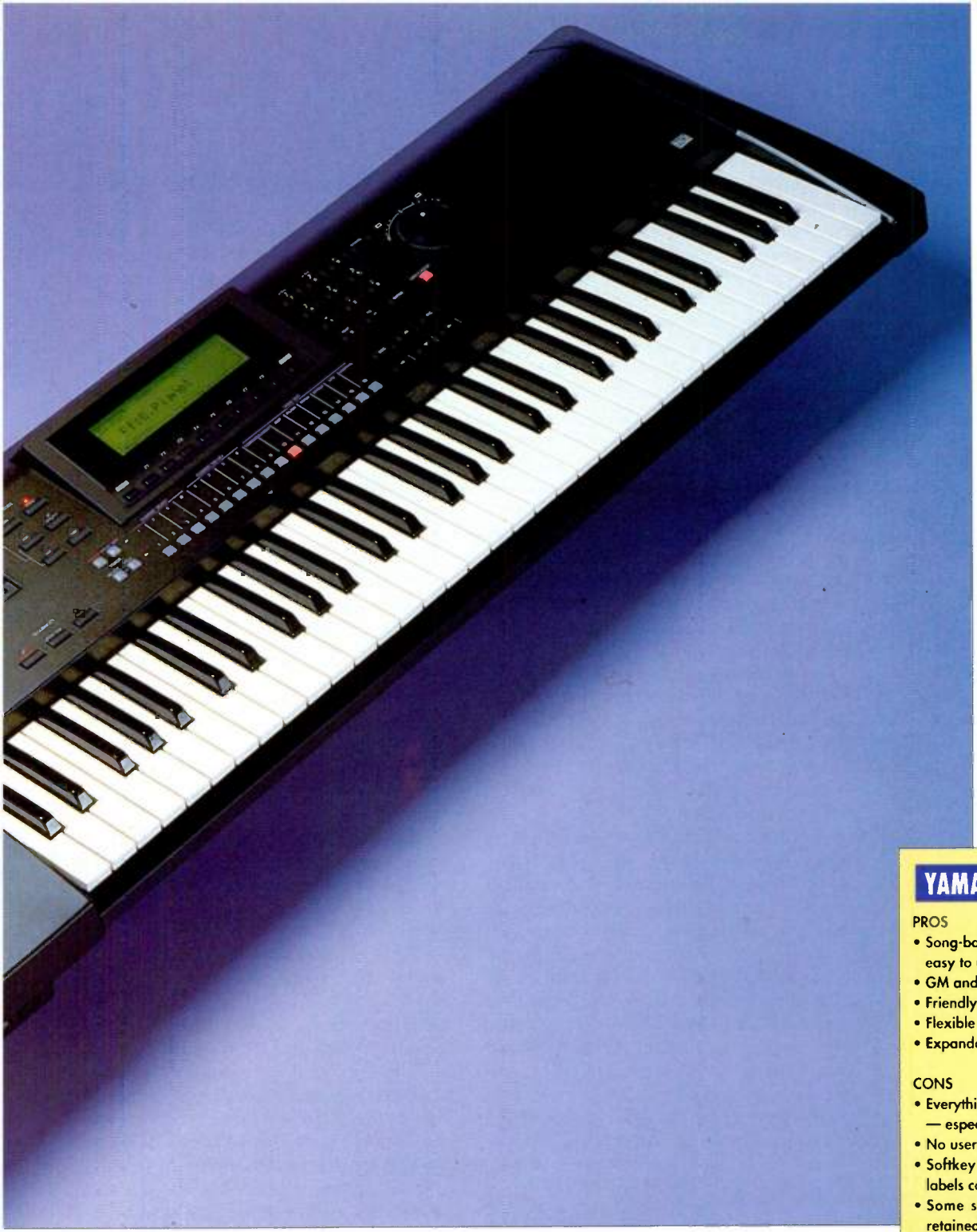
Keyboards have changed. The DX7's mono-timbrality, 16-note polyphony and 32 memories would not impress anyone nowadays. Instead, the W7 oozes specifications — you'll have to look in the 'Specifications' box to see them all, but as a rough approximation, take a TG300 and expand it, then add a keyboard and a sequencer and you begin to get the flavour. Yamaha seem to be determined to simplify even the most complex of workstations, so each new release shows incremental improvements in the way that they operate. The W7 certainly tries very hard to make a sophisticated workstation really easy to use.

AWM2 Voice Architecture.



ARCHITECTURE

Workstations combine a sound source with a sequencer, so that you can put together the instrumental basis of a complete song; the gradual evolution of the synthesizer workstation has produced instruments like the W7, where a single package works as a complete musical unit. The basic unit of storage in the W7 is a 'Song', which can hold information about the sequence, the multitimbral parts, and the sounds used — all inside a single file on disk. To emphasise the linking of the Song information with the performance and multitimbral information, Yamaha call the 'store everything required for a complete song' a 'Song Multi', which is an awkward term, but I can't think of anything better either.



There are several banks of sounds available (Yamaha call sounds 'voices'). These are:

- GM voices (G).
- Preset voices (P).
- Internal voices (I) Battery backed RAM.
- Song voices (S) Volatile (save to disk!).
- External voices (E). Available only with ROM expansion module fitted.

There is a similar set of Drum sound banks, with a 'D' added to the identification letter, so 'GD' is the GM drum sound bank.

Voices are categorised into different groupings, dependent on sound type. These are based around the system that Yamaha have been using for some years, and greatly simplify the selection of sounds and use of the sequencer. The categories are:

- Pf: Piano
- Cp: Chromatic Percussion
- Or: Organ
- Gt: Guitar
- Ba: Bass
- St: Strings/Orchestral
- En: Ensemble
- Br: Brass
- Rd: Reed
- Pi: Pipe
- Ld: Lead Synth
- Pd: Synth Pad
- Fx: Synth Sound Effects
- Et: Ethnic
- Pc: Percussive
- Se: Sound Effect
- Dr: Drums
- Sc: Synth Accompaniment
- Vo: Voice
- Co: Combination

YAMAHA W7 £1399

PROS

- Song-based storage makes it very easy to use.
- GM and SMF compatibility.
- Friendly user interface.
- Flexible effects.
- Expandable ROM storage.

CONS

- Everything stops for the disk drive — especially the sequencer.
- No user RAM sample storage.
- Softkey alignment with on-screen labels could be better.
- Some song setup information is retained after power-down, whilst the song sequence itself is lost — could be confusing.

SUMMARY

Yamaha have put a great deal of effort into making this a very easy to use and powerful workstation.

FEATURES

- AWM2 (S&S) synthesis
- 16-bit linear samples, at 48kHz
- 8Mb ROM samples (optional 4Mb expansion socket)
- 128 GM sounds
- Eight GM drum kits
- 128 Preset sounds
- 128 Internal (RAM) voices
- Two Preset drum kits
- Two Internal (RAM) drum kits
- 128 Song sounds (volatile RAM)
- Two Song drum kits (volatile RAM)
- 32-note polyphonic
- 16-part multitimbral
- 16-track sequencer
- 16 songs
- 96ppqn resolution
- 100,000 event capacity
- SMF and ESEQ compatible
- 76- (W5) or 61-(W7) note keyboard, velocity and aftertouch sensitive
- 720kb DD disk drive
- Three Global effects processors (40 effects)
- Three Voice-specific effects processors (35 effects)

Because the categories are now part of the operating system, you have 10 characters available to name the sound, and there is no need to type in the category — you just scroll through the list.

W7 'Voices' are made up of between one and four Elements. Each Element is a complete S&S synthesizer consisting of an oscillator, filter and amplifier, each with its own dedicated envelope generator, plus an LFO and other Common facilities. There are 500 named Elements in two banks, plus any additional ones which are loaded from disk into the Internal or Song element memories. If you're familiar with previous Yamaha keyboards like the SY85 and SY77, a W7 Voice is equivalent to a Performance — a complete snapshot of a layered or split arrangement of up to four separate sounds. It took me a while to realise exactly what was going on. Of course, if you're new to all this, the W7 will just seem remarkably simple to use, because it works as you would expect.

Two notable modifications to the voice editing are the new envelopes and the Templates. The new envelopes do not have the familiar ADSR format, but instead introduce a new variation on the sustain portion. The Envelope is now zeroed on the sustain level, rather than the start level, and a second Decay time parameter now sets how long it takes for the envelope to reach zero. If you give this a very long value, then there is no appreciable decay and the envelope behaves as an ADSR type. But shorter Decay 2 times produce new types of envelope where the 'sustain' can gradually die away (like on a real piano, for example).

The Templates allow you to quickly set up several parameters in one go — so there are lists of templates that set how the filter responds to velocity, with names like 'VeloHard' and 'Sweep', and Envelopes with names like 'Pluck 1' and 'Brass'. The basic idea behind editing has also changed: instead of editing parameters directly, you now make changes to attack or filter cut-off, for example, relative to the existing value in the element you are editing. Although this sounds radical, it's wonderful once you're used to it because you always know where a sound started, and you can decide how far from that you want to go in your editing. You also get more graphical feedback on what you're doing, such as filter response curves that change as you edit.

To summarise, the sound synthesis facilities offer plenty of scope for making lots of interesting sounds. Initially I was going to say that there's nothing really innovative here, just improvements on previous products. But I would have been wrong; the architecture looks familiar, but having the all-encompassing 'Voice' as the basic unit of sound-making really does simplify things compared to the older 'Voice and Performance' system. It makes the W7 deceptively straightforward — you may have trouble convincing people that workstations can be hard to use if you show them a W7.

SONGS

Although you can use the 'Voice' mode to play individual sounds, the 'native' mode of the W7 is probably 'Song' mode, where you assign sounds to the 16 tracks of the sequencer — arguably the focus of the whole instrument. In comparison to my own workstation (the SY99), I was intrigued to discover that I spent most of my time looking at the sequencer track controls — the 'virtual' mixing desk — whereas on the SY99, I spend most of my time working with sounds or patterns, and almost never tweak the sequencer track controls.

The W7's LCD provides you with graphical representations of the sort of controls associated with a real-world mixing desk, such as level, pan, and effects sends, as well as some that are exclusive to workstations, such as tune, note shift and pitch-bend range. The large LCD lets you see all 16 tracks at once, although you need to scroll up and down to see all the controls on each 'mixing desk' channel. Sixteen buttons underneath the LCD serve as track selectors, and the LCD even displays the voice category for each track, rather like a tiny scribble strip. This makes identifying a drum track or a lead instrument ridiculously easy.

SEQUENCER

Which brings us neatly to the sequencer. The W7 blurs the boundaries between parts, so it is very easy to jump back and forth between voice editing, mixing and sequencing. 'Song' mode actually includes that inescapably useful mixing desk display, which turns out to be the 'Multi' page of 'Song' mode. The idea is that you choose your sounds, assign them to tracks to produce a 'Multi' setup (and save the 'Multi', of course!), and then record some music into the sequencer, track by track, with adjustments to playback mixing as you hone the track contents. Finally, you save the 'Song Multi', which then stores the complete voice, multi and sequencer information onto disk.

The sequencer behaves like a multitrack tape

HOW DOES IT COMPARE WITH THE SY85?

The first question that many people will ask is "How does it compare with the SY85?" So here's a quick comparison of the main differences. The architecture is different — on the W7 you work with Elements within a Voice, and this roughly corresponds to Voices within a Performance on the SY85. By doing this, Yamaha have avoided lots of the lower-level complexity of sound editing, which makes it much easier for the user. The underlying Elements can be edited with computer editor programs via MIDI SysEx messages.

The W7's graphics-based LCD display, with six rows of characters, is much clearer than the SY85's two rows of characters. Effects are much more advanced in the W7; the ability to use three Insertion Effects on selected voices, as well as the three global effects, is a marked improvement over the SY85's two effects.

Having 16 tracks available in the sequencer instead of eight is a definite improvement, and having 100,000 events (rather than 20,000), with the strong linking of everything into a Song Multi, makes the W7 much easier to use. The W7 has a ROM expansion socket, which lets you add an additional 4Mb of new elements and 128 voices. Unlike the SY85's volatile user RAM, these extra sounds are immediately available, and do not have to be loaded from floppy disk. Although you can get GM-mapped sounds for the SY85, the W7 is fully GM Level 1 compliant.

It may also be worth noting what has been lost from the SY85. The MIDI Data Recorder functions are no longer provided (a great pity). The wealth of quick access sliders has been replaced by templates for quick editing. The data and waveform card slots have made way for a single expansion socket — so presumably SY series-cards will be incompatible. The SY85 started out at £1499 (although it currently lists at £1099), and the W7 costs £1399. Neither instrument is provided with alternate tuning tables — shame.

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SOFTWARE SUPPORT

Yamaha try very hard to provide purchasers with software support; already announced for the W7 are six disks containing Voices and Elements — the names probably explain the content:

- **Session Player (EMS SYW7D001)**
- **HipHop & Techno (EMS SYW7D002)**
- **Top 40 (EMS SYW7D003)**
- **Ambient & New Age (EMS SYW7D004)**
- **Analog & Vintage (EMS SYW7D005)**
- **SuperSynth (EMS SYW7D006)**

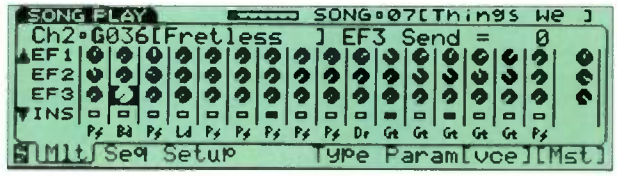
Prices haven't been set as of press time, but Yamaha hope that they will retail for less than £30. What is known is that Mac and Windows editing software for the W7 will be available free of charge, as will a W7 demo CD. Contact your Yamaha Hi-Tech dealer for more details on any of these supporting items.

recorder, but with the now familiar advantages of editing data rather than tape. The track selection buttons double as playback mute/solo buttons, and you can record in real- or step-time, with a wide variety of time signatures, at tempos from 30 to 250 bpm. The W7 has 416kb of sequence memory, which apparently translates to a generous 100,000 events — an on-screen thermometer-type display shows you how much room is left in memory.

Few of us can record everything flawlessly first time. I tend to be a frequent visitor to the editing pages of sequencers, and I have always had reservations about the small LCDs and limited editing facilities on workstations. The W7 is different. With the large display devoted to showing events in a vertical time sequence, you can clearly see an event in context, and a graphical time line display shows a keyboard with a horizontal time-line and dots where note events occurred. Of course, having located the place where you want to make changes, you can then edit individual events, add program changes, tempos, tweak velocity, and so on. Overall, it's a great way of editing even quite complex musical material — I preferred it to the sequence editing on my SY99. A range of 'jobs' allow you to make changes to tracks on a larger scale; copying tracks, measures and phrases, quantising, modifying, moving and other editing features are all possible — too many to list here. The only weak area is that it can't display an overview of events at the 'phrase' level, which is where most people would use a computer sequencer anyway.

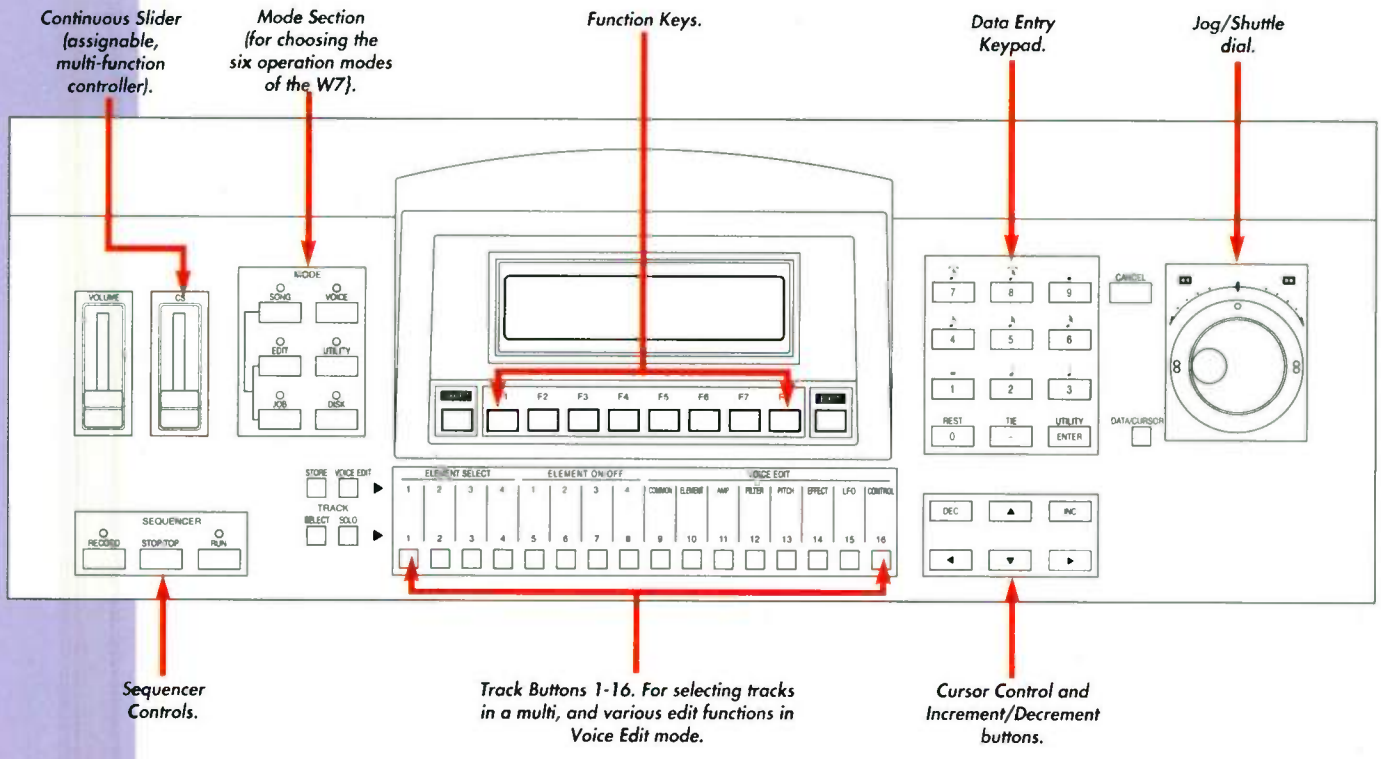
EFFECTS

With a sequence recorded using a rough mix, it is probably time to return to the mixing desk and have a look at the effects. Most workstations have an annoying lack of effects capability — or rather, their effects are fine for single sounds, but can't cope with multitimbrality. The traditional solution has been to allow an effect to be linked to a sound whilst you are only playing mono-timbrally, but then to choose a separate 'global' effect when playing back multitimbrally from the sequencer, which usually destroys the sound and restricts you to reverb or chorus as 'the effect'. The W7 is *not* like this at all.



Effects mixing.

Yamaha's own TG300 showed the way. It offered three separate effects, which meant that the three effects sends on the 'mixing desk' display were exactly that — you could have gated reverb on drums, chorus on the pads, and a flange on the lead line. The W7 takes this idea one stage further. Using studio terminology, it allows you to insert effects into the output of any three of the tracks. For example, if you had a track with a thin 12-string guitar sound, you could add a strong chorus to just that track, and still have the three global effects available, as well as the two other Insertion Effects. With careful effects send and insert



assignment, this means that the W7 can use six different effects at once. This is definitely the best solution so far to a very thorny problem.

I can't leave the subject of effects without mentioning how good they are. Personally, the weak spot of Yamaha effects for me has always been the phasing and flanging, but the W7 corrects this with powerful phasing and resonant flanging, amongst many others. But don't take my word for it — go and listen.

CONTROLS

For an instrument from the same stable as the VL1, the W7 only has a minor family resemblance — the slightly chamfered surfaces, perhaps. The colour is interesting — a dark grey/brown 'gun-metal' colour with a sparkly metal flake finish. The user controls are clustered around the display in the centre of the top surface. The LCD is a blue backlit display with a good range of viewing angles, and there are eight softkey buttons, roughly aligned to the display — I would have preferred stronger visual cues to link the buttons with the on-screen labels.

Directly underneath the display, and directly in front of the user's hands, are the 16 track select/mute/solo buttons, which also act as Element selectors/mutes and page selectors when editing a voice. But don't panic, because these are not ordinary buttons — they are clear, textured plastic with LEDs underneath. They flash green to show track data during playback, turn red to show a record enabled track, and turn orange/yellow when you are editing. Neat and unmistakable.

The Operating Mode buttons are to the left of the display, whilst the numeric keypad and cursor controls are all to the right. The data wheel is actually two concentric controls: the outer dial is used to shuttle back and forth through a sequence or song, whilst the inner dial can be used to change data values or move the cursor — a thumb-activated switch selects which job the centre wheel does, making for very fast operation once you are used to it.

The keyboard performance controls have the same rubber non-slip coating as the VL1, and are a little forward of where you might expect to find them on most instruments — though in practice, I almost prefer them in this position. The keyboard itself has a light feel, and uses conductive rubber sensors instead of the more expensive wiping contacts, so it doesn't have the springy (and noisy) feel of older (and more expensive) Yamahas.

All the live performance sliders of the SY85 have been replaced with a single 'CS' slider, next to the volume control, which seems to emphasise that this is a workstation first, and a performance keyboard second. Another point which reinforces this is the method of bank selection, which uses two softkeys: pressing them blanks out the display of the current bank for a second or so, just when you need to see it, which makes changing banks a little difficult, especially on a busy, darkened stage. I also have to deduct marks for the lack of labelling of the socket positions on the top surface, for mounting the headphone socket at the rear and for not providing a breath controller socket.

SOUNDS

As anyone who has heard the musical examples in my recent lectures will know, I don't like GM mediocrity. The W7's GM voices sounded much like those on the TG300 and have the high audio quality and compatibility with other GM sound sources that you would expect. The Preset sounds were more interesting. As usual, here's some to try out for yourself when you audition the W7:

- P040: Gt:Switch Gtr. A velocity switched, muted, slightly distorted guitar. Instant rhythm chops!
- P044: Gt:Pinch, and P045: Gt:Feedback. These both show how it is now possible to get good, screaming guitar sounds from a synthesizer. The hard bit is learning to play them so that it sounds right!
- P053: BA:FLOG. A superb anti-aliased bass sound.
- P074: EN:TEN CC. I'm (not) in love with this one...
- P081: BR:JUMP. Annoy music shop assistants by doing Van Halen impressions!
- P117: SC:CRISP. Pure sequencer/vamping territory.
- P128: CO:MCKINLEY. Very OTT.

The 'factory' Internal RAM sounds from the supplied Yamaha demo disk cover a very wide range — with some very off-the-wall sounds. There's something here for most purposes, but be prepared to reject quite a few!

Overall, the Yamaha programmers seem to have made quite a lot of the wave resources inside the W7. The Presets provide a good contrast to the GM sounds, and the factory Internals must have been fun to program — they were certainly fun to play.

CONCLUSION

In some ways, it looks as though Yamaha are saying 'The synthesizer is dead: long live the workstation.' The SY (SYnthesizer?) series seems to have been replaced by the W (Workstation?) series. Certainly, the VL1 and VP1 synthesizers are well outside the purchasing power of most keyboard players. With the demise of the SY99, this leaves the W7 and W5 at the top of the 'affordable' Yamaha keyboard tree. And look at what they represent: GM compatibility, sequencer-oriented design and user-friendliness. The contrast with the DX7 synthesizer could hardly be more total.

If I was starting out in music today with a W7, I'm not so sure that I would feel quite the same desire to use a computer-based sequencer. But having a workstation as capable as this does mean that it is consequently less suited to other uses — I would not rate it too highly for live performance or as a master keyboard.

Although I preferred it to the SY85, I didn't get quite the same warm buzz of 'buy me' excitement with the W7 as I did with the VL1. But then I have always preferred synthesizers to workstations: the W7 is definitely designed for GM and sequencing first. Of course, if you want General MIDI, some very nice sounds and a capable sequencer, then the W7 could be exactly the keyboard to buy — it's probably one of the most 'musical', and least technically frightening, workstations I have yet seen. SOS

EXPANSION ROM BOARDS

Underneath the W7 is an access plate which allows you to install a 4Mb expansion module. Price is still to be confirmed, but should be about £100. Details of the first three modules emerged as we went to press, with availablity by January 1995:

- Concert Grand (WEMB01): a wide variety of high quality piano sounds.
- Vintage Sounds (WEMB02): samples of vintage instrument sounds from the '70s.
- Rhythm Section (WEMB03): melodic and percussion sounds for producing rhythm backings.

FURTHER INFORMATION

£ W7 £1399; W5 £1649. Prices include VAT.
A Yamaha Kemble Music (UK), Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL.
T Product info line 0908 369269.
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Control

MIDI CONTROLLERS AND HOW TO USE THEM

NICK MAGNUS concludes his exploration of MIDI controllers with a look at creative uses of SysEx, and some of the hardware MIDI devices which allow more intuitive uses of controllers. But first, how to mingle your Ooohs and Aaahs...

Last month I exhorted you to put pressure on your MIDI datastream by advocating the copious use of control messages. This month sees no change from this philosophy; once you've got the hang of some of the following techniques and the ones explained last month, you might even start to be excited about the possibilities and come up with some of your own uses of control messages.

REAL-TIME CROSSFADES

Real-time crossfading can make use of any spare controller that your synth is capable of recognising. The modulation wheel is always a good choice, as there is more physical play in its movement than a short fader can provide, allowing for greater precision.

For this example, assume that you want to crossfade a vocal 'Oooh' sound with vocal 'Aaahs'. The synth must either be multitimbral, playing two different patches on the same MIDI channel, or must use two different tones within a single patch, which can have independent modulation values applied to them.

- Configure the 'Aaah' sound so that mod messages control VCA level in the normal way — i.e. when the wheel is in the Off position, the 'Aaahs' are silent; when the wheel is full On, the 'Aaahs' are fully audible.
- Now configure the 'Ooohs' in the opposite way. Setting this sound's VCA mod sensitivity to generate negative values causes the mod messages to control the VCA level inversely — so that when the wheel is in the Off position, the 'Ooohs' are fully audible, and have disappeared by the time the wheel reaches its full On position.
- You will need to pay attention to the synth's VCA modulation sensitivity in order to get the smoothest curve; if it is too severe, there may be an overall volume drop in the central position. Total volume control can be made available via CC#7 and key velocity.

CONTROLLING ENVELOPE PARAMETERS

Some synths go so far as to permit access to envelope parameters via MIDI controllers. One example of this is the humble Roland U220 module. In the case of this particular synth, up to three parameters can be assigned, using any controller number between 00 and 95. The advantage of this is that you can vary between, for example, agitato strings (fast attack, fast decay, fast release), and a nice languid largo (slow attack, no decay, gentle release), and any stage in between, simply by varying the three controllers.

ALTERNATIVE CONTROLLERS

These and last month's examples illustrate what can be done using a conventional keyboard controller. I would now like to concentrate on an alternative: the Yamaha KX5 or KX1 shoulder-slung remote keyboards. These differ from other popular sling-ons in one very important respect: the Pitch Bend strip. Unlike the conventional wheel or lever, this vinyl strip allows numerous pitch-changing techniques which are otherwise

impractical to obtain. These effects are fundamental to the characteristics of certain instruments such as guitar, bass, fretless bass, sax, woodwind and many others. In common with each other, these instruments are all capable of instantaneous, legato pitch jumps. Lead guitar, for example, uses vibrato, hammer-ons, pull-offs, trills, and the whammy bar amongst its arsenal of tricks. All these are possible on the KX's pitch bend strip, and when merged in conjunction with other MIDI controllers, lend authentic expression to any guitar simulation.

Vibrato, in particular, takes on a whole new perspective. Instead of using the mod wheel or aftertouch to trigger an LFO, one can enjoy real vibrato by merely wobbling a finger on the strip, just as if it were a string. Not only are you in direct physical contact with the speed and width of vibrato, but also its direction. A fretted guitar will only produce vibrato above the pitch of the string, and the vinyl pitch strip enables the player to do exactly this.

> *"Real-time crossfading can make use of any spare controller that your synth is capable of recognising."*

Using techniques already discussed, we can add further icing to the cake. Employing the real-time crossfade method described above, 'split' harmonics can be inserted at will. For this you will need two sets of tones: one is the main guitar sound; the other is a suitable rendition of guitar harmonic feedback (the same guitar sound tuned one octave and a fifth above should work well). Set the tones to control VCA level in response to modulation messages, with the harmonics having the inverse response. Now any note can be sent into simulated feedback by raising the modulation amount. "But I've only ▶

able Urges

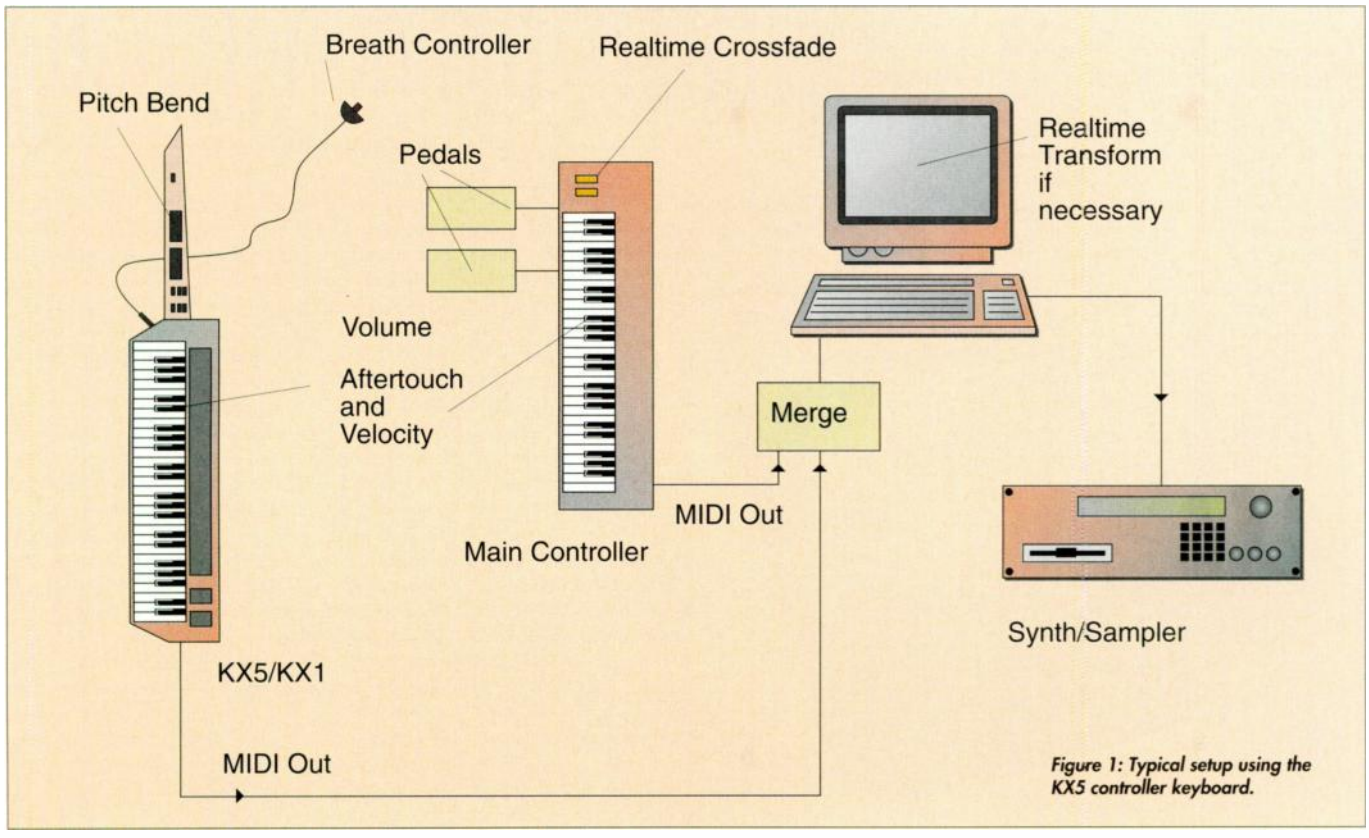

Figure 1: Typical setup using the KX5 controller keyboard.

Using MIDI Controllers

Yamaha's KX5: note the vinyl pitch-bend strip at top.

▶ got two hands," I hear you protest. Well, unsurprisingly, this is where your feet are pressed into service — time to slip on the sensible shoes. If your synth has inputs for one or more continuous, or swell-type, footpedals (the Roland A50 master keyboard has four) I wholeheartedly recommend investing in a couple. Assign one to send modulation (CC#1), and the other, if you have two, to send volume (CC#7). You now have access to a vast wealth of expressive devices. The volume pedal itself is very useful for reproducing that dreamy, swelling effect often used by guitarists. Add some swirling chorus, some long delay, and *voila*... instant Steve Hackett.

Saxophone impersonations also benefit from merging the KX5's data with that of the main keyboard. Not only do we have pitch gymnastics, courtesy of the vinyl strip, but the KX is also blessed with a breath controller input, which can itself control VCA level and filter cutoff, for natural-sounding timbral variations. Substitute the guitar harmonic from the above example for a growly, overblown sax sample and you're ready to rock. A word of warning, though, concerning the sequencing of breath control data. Unlike volume and filter sweeps, which can always be overdubbed, breath control is generally best recorded as part of the performance, when hand and mouth are, hopefully, co-ordinated as one. Since you may occasionally need to stop in the middle of a phrase to drop in, beware of discontinuities in the breath data. If you drop in on an adjacent track, make sure you do not have two parallel sets of breath data at the overlap point — your synth won't like it. If there are discontinuities, try using the controller re-draw tool on your sequencer to bridge the gap between the drop-out value and the drop-in value. Figure 1 shows a typical KX setup, with all the control options highlighted.

Whether or not you opt for a KX5 or a KX1 depends on (a) the availability of either one (on the second-hand market) and (b) whether or not you're a champion weightlifter. Having tried the KX1, I can testify to the fact that there must be people out there still suffering from RSI, having used it once for a three-minute number. Mum, where's the Germolene?

I hope these articles have demonstrated that electronic instruments are not the soulless monsters their detractors would have us believe. If you have discovered any wonderful applications for MIDI controllers, you will not be punished for writing in and sharing your discovery with the readers of *SOS*. Except you, Wiggins Minor. SOS

SYSTEM EXCLUSIVE & HARDWARE CONTROLLERS

Although not, strictly speaking, a controller, system exclusive can be utilised in exactly the same way as the other controllers I've talked about. Each SysEx message is unique to a specific parameter of a synth, permitting control of practically any aspect of the sound. The Roland Juno 106 was amongst the earliest of synths able to make use of this facility. Advanced for its time, it generates SysEx at the MIDI output as a result of the simple action of moving its front-panel sliders and switches, allowing real-time recording and subsequent playback of any changes made to a patch. The operation of the system exclusive in this example is entirely transparent to the user, which, for many people, is exactly as it should be. Curiously, despite this tremendous advance, the 106 doesn't respond to MIDI volume messages!

Today's synths, on the whole, will also transmit system exclusive, but they no longer have the luxury of a complete front panel of knobs to twiddle (with the exception of the Roland JD800), so other means have to be employed to generate the SysEx data. Companies such as Peavey, JL Cooper and Kawai manufacture units dedicated to this purpose, featuring a hardware array of sliders and switches which can be configured to represent a front panel for a particular synth [see also the review of Roland's new MCR8 dedicated MIDI controller elsewhere in this issue]. These sliders can be assigned to the desired function using a 'learn' mode — when the device receives a SysEx data string transmitted from a synth's MIDI output, that string is automatically assigned to a switch/slider, which can then be used to alter the desired parameter. Alternatively, you can refer to the synth's MIDI implementation chart and type in the appropriate SysEx string by hand. [For further information on the potential of hardware controllers like these, see the June '93 issue of *SOS*, which has an in-depth review of Peavey's PC1600 controller. This unit is still in production, priced at £329 and, according to Peavey, very popular.]

Many software sequencers also feature a MIDI manager page, where you can define a custom set of virtual controls to do exactly the same job. It is even possible to transform an incoming controller into the SysEx message of your choice, thus allowing the use of your master instrument's existing facilities.

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Feel those 100mm faders! Turn those smooth and responsive knobs! They feel and work better than any other in its class. The M-2600's physical design takes the aggravation out of recording and lets you focus on the process of creating music. Everything is 'right where it ought to be'. Try it for yourself.

Each M-2600 channel features advanced-design mic pre-amps with incredibly low-distortion specs. Plus you get phantom power on each channel. Feed anything into the M-2600 from condenser microphones to line input from synths and sound modules.

For your personal or project studio, don't settle for anything less than a dedicated recording console. Some may try to convince you that a "multi-purpose mixer" works fine for multitrack recording. But don't take their word for it. The compromises, hassles and workarounds just aren't worth it.

Want proof? Ask your salesman how a multipurpose mixer handles these common recording situations. But listen carefully for workarounds, repatching schemes and other compromises. Then compare it to how easily the M-2600, a *true* recording console, sets up and does things.

SITUATION Separate headphone mixes for the talent and the producer. The talent wants a reverb-wet mix, but the producer wants it dry. Everyone wants it in stereo.

Compromise: Multi-purpose mixers require you to sacrifice 4 AUX sends and tape returns to get 2 stereo headphone mixes; but you need those sends/returns for outboard effects! What a dilemma.

M-2600 Solution: With a few buttons, assign up to two, independent stereo AUXs to be used as headphone mixes. Everyone hears the mix they want — and you've still got four AUX sends and returns free for signal processing gear.

SITUATION You're EQing tape tracks to get just the right sound. You're using the shelving EQ for the monitor mix, and the sweepable mids for the channel buss. Still, the drummer wants a certain frequency out of his mix — a job for the sweepable mids.

Available with 16, 24 or 32 inputs, the M-2600 is optimized for digital recording. Don't wait till your first session to discover the compromises and hassles other boards will put you through.

Compromise: Few multi-purpose mixers have EQ assignment. You're stuck with the shelving EQ on the monitor mix, and the sweepable mids on the channels *(if they even have split EQ)*. You've got no choice. Good luck trying to explain this to the drummer.

M-2600 Solution: Assign the shelving EQ, the sweepable EQ, or both to either the monitor or channel buss as necessary. The entire EQ section is splittable and assignable and can work in tandem.

SITUATION Mixdown. You're sending tracks to effects units for added studio polish. You want to take advantage of true stereo effects. How do you do it?

Compromise: Most multi-purpose mixers have fewer AUX sends than the M-2600's eight. Usually only in mono. And, some sends are linked, so you can't send them to different signal paths. So you settle for only a few effects, or forego stereo effects altogether.

M-2600 Solution: Pick one: 8 mono sends or 1 stereo and 6 mono sends or 2 stereo and 4 mono sends. Each with its own level control and separate output jack. So you can use true stereo effects and still have sends left over for effects. Send the effects signals back via 6 stereo returns.

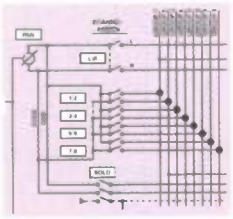
That's not all! The M-2600 doesn't compromise sound, either. You'll appreciate the new TASCAM sound — low-noise circuitry and Absolute Sound Transparency™. It all adds up to the perfect console for any personal or project studio — combining great sound with recording-specific features you'll need when recording, overdubbing and mixing down.

So forget compromises. Invest in a true recording console. The TASCAM M-2600.

...DING, MOST OTHER CONSOLES ...MPROMISING SITUATION.

Only the M-2600 provides two independent stereo cue systems. Demanding performers can hear the submix or scratch tracks the way they want, so they'll perform better. Meanwhile, the control room or producer's mix is unaffected. You can accommodate everyone involved in the production — without interrupting the creative flow. Best of all, using the cue mixes doesn't involve tying up your valuable AUX sends.

Use more effects/signal processing gear on more tracks with the M-2600. Use two (count 'em) true stereo send/returns to support stereo effects units. Plus, you still have 4 fully-assignable AUX sends left over for other gear. A total of 8 AUX sends — more than nearly any other console — anywhere. Better yet, you can use them all at once. No compromises. At mixdown, you can actually double your inputs so you can mix in all those virtual tracks. Just press the "Flip" switch. No repatching. No need to buy expensive and space-eating expansion modules.*



The incredibly flexible design of the M-2600 means signal routing is versatile and accomplished by the touch of a button, instead of a tangle of wire. Our decades of mixer experience has resulted in an ergonomic design that's exactly what you need: a board that speeds and facilitates recording and mixdown. Everything is where you intuitively think it should be. Dedicated solo and mute indicator lights on every channel, on master AUX sends, stereo returns, and each of the 8 busses so you always know exactly what you're monitoring. Plus, SmartSwitches™ protect you against redundant or canceling operations.

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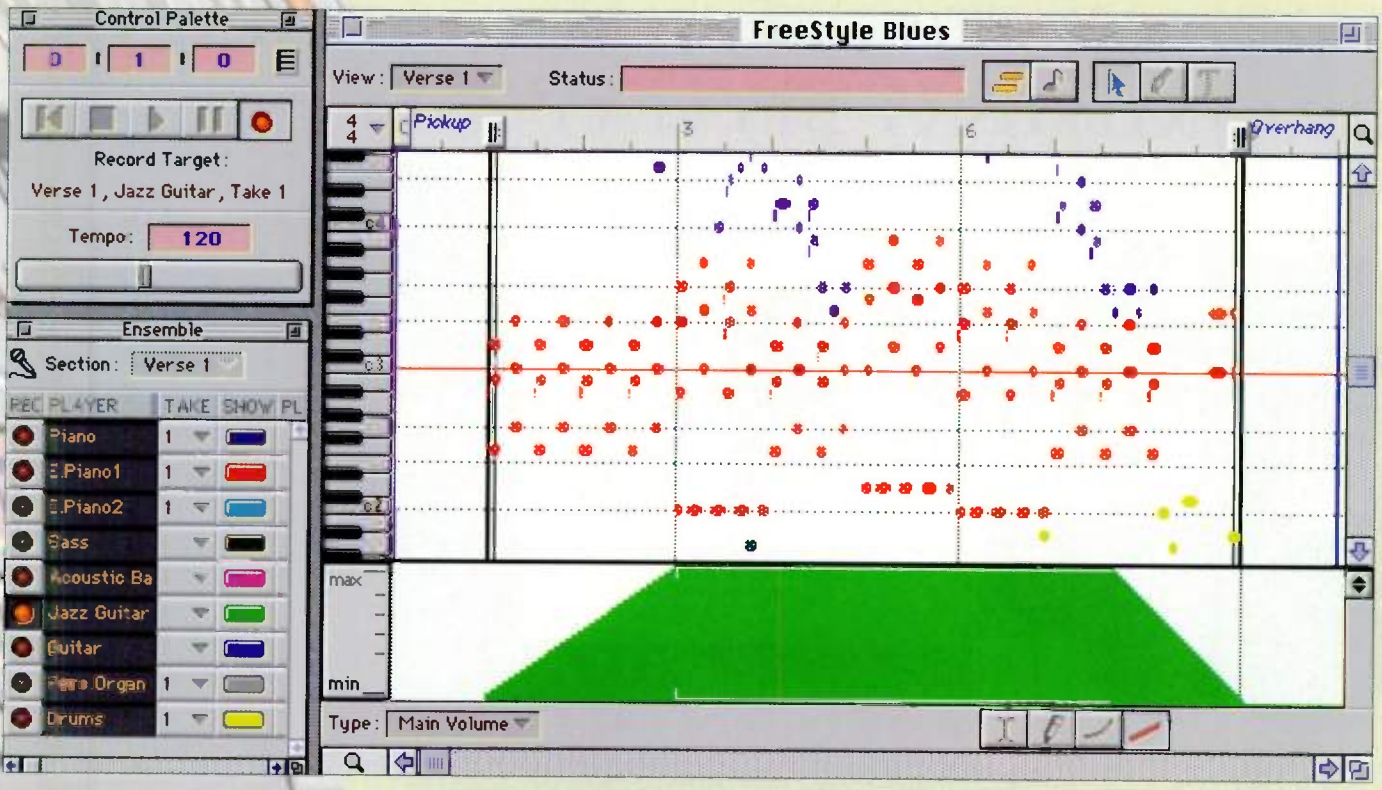

Figure 1: This is FreeStyle's main screen, showing the Control Palette on the left, the Ensemble window underneath, and the graphic editing window to the right, with the Controller Editor open at the bottom, showing a volume fade-in and fade-out which I drew with the line tool.

Free & EA

MOTU FREESTYLE MAC SEQUENCING SOFTWARE

Mark of the Unicorn have taken a brand-new look at sequencing for their latest package, FreeStyle, which is aimed at entry-level users as well as musicians who would rather avoid most of the complexities of MIDI. MIKE COLLINS checks it out.

MOTU FREESTYLE £179

PROS
- Innovative new approach to sequencing.
- Visually appealing.
- Works well with General MIDI synths.

CONS
- No Event List Editor.
- Problems when using older, non-GM synths.

SUMMARY
A very novel and reasonably-priced take on the computer sequencer, *FreeStyle* is an excellent tool for those who want the power of a computer sequencer but don't wish to be bogged down with the finer points of MIDI.

The latest MIDI sequencing software from Mark of the Unicorn, *FreeStyle*, offers a fairly radical departure from the established norms we've come to expect in this field. The program uses a so-called 'trackless' approach to sequencing, one of the main advantages of which is that you can use both linear and pattern-based recording and playback, and seamlessly switch between them. So, for example, a bass part made up of several different sections joined together in an arrangement will be visible in its entirety on the screen, and more importantly, on a notation printout.

Since MOTU's new sequencer is so different from the company's other high-profile sequencing program, *Performer*, product specialist Simon Stock, from MOTU's European distributors Klemm Technology, came over to my house before I started the review, in order to take me through the main features of the program. Here's the gist of what he told me.

FreeStyle uses Mark of the Unicorn's FreeMIDI system as its basis for controlling your MIDI equipment. Most of the time you will not be aware that you are using it, as FreeMIDI deals with where to route MIDI data in your setup. When the program is first run, it scans your Mac's serial ports for MIDI interfaces; if it finds a standard MIDI interface it will take you into the 'Easy Setup' window; if it finds something like a MIDI Time Piece or Studio 4, it presumes you have a more complex system, and so takes you into 'FreeMIDI Setup'.

With *FreeStyle* you don't even need to worry about MIDI channels — the program dynamically

allocates them, much as modern synths dynamically allocate polyphony. This is because *FreeStyle* employs a 'Player Library' — a list of instruments that you use in your music, together with preferences for them, such as which sound to use on which synth, and what clefs and staves the chosen instruments should have in the notation window. So if you select 'Piano' in *FreeStyle*, a patch change is generated on the first available (unused) channel for the synth it is going to trigger; FreeMIDI deals with where to send that message, as it knows what port and cable each synth is connected to.

GETTING STARTED

When you create a new file in *FreeStyle*, the first thing it asks you to do is to select an 'Ensemble' to work with. Ensembles are different groups of Players (just like in real life), and *FreeStyle* includes some pre-defined Ensembles, though you can edit and create your own Ensembles freely. So instead of being presented with a blank canvas of empty tracks, you have already made a conscious decision about what type of music you're going to write.

The first thing many sequencer users do when starting a new piece is to bang out a basic drum part on their keyboard, then quantise and loop it before adding the other parts. To save you the bother of doing this each time, *FreeStyle* has a built-in 'Riff Metronome' as an alternative to the standard metronome. This contains a number of pre-recorded drum beats that you can use as the basis for your track, and which can be played on any instrument in your system. You can customise and edit these later on, by using the 'Become Player' command, which creates a new Player with the actual notes in a loop.

Each Player can record any number of takes, which you can then switch between using a pop-up menu. This is ideal if you are the sort of person who wants to try out half-a-dozen ways of playing an idea, and then sort out the most suitable one later. Although you could do this on a conventional sequencer, the trackless format means that takes are grouped with the player that recorded them, so you do not have to perform a lengthy sequence of mute-unmutes to switch between three different versions of a bass line.

FreeStyle even deals transparently with the headache of music in the bars leading up to and just after a section. Every section includes 'Pick-Up' and 'Overhang' measures that are part of that section, so you don't need to copy down-beat cymbal crashes to the first bar of all your verses — the software takes care of this for you! Another useful feature, Auto-Loop record, automatically senses when you stop playing — again helping you to put your music together, rather than forcing you to become a computer operator.

Having recorded a number of sections, you can choose to chain them together in the Arrangement Window, which is a standard graphical representation of blocks of music. *FreeStyle* allocates a letter of the alphabet to each section, so setting up a standard Verse-Verse-Chorus-Verse-Chorus arrangement is as simple as typing A-A-B-A-B. Sections can be layered on top of each other, and freely moved, lengthened and shortened in this window.

EDITING AND NOTATION

FreeStyle makes maximum use of the Mac's graphic and colour abilities. For instance, in the Grid Edit window, different players are distinguished by their colours, and higher velocities are represented by deeper shading of that colour. Notes that are 'original' and notes that are repetitions of a loop are distinguished by being round or square respectively. The volume and pan controls in the Ensemble window also have a very slick feel to them — another sign of the attention to detail which has gone into the interface design.

The Grid Edit window allows conventional manipulation of notes by dragging them up and down to change pitch, sideways to change their time position, or dragging the right end to lengthen or shorten the note. You can zoom in and out on both axes, and the display shifts its zoom setting as you move the mouse. And the 'Zoom-to-Fit' feature allows you to option-select a group of notes, while the zoom setting changes so that the selected notes fill the whole window, for the most efficient view of them.

You can also display a Controller Edit window at the bottom of the Grid Edit window, and this can show any MIDI controller data, colour-coded for the different players. Here, the pencil, line, and curve tools allow for easy creation or editing of controllers or velocity, and the scale automatically changes to suit the type of controller being edited; so, for example, if you select MIDI

TRACKLESS TASTE

MOTU product specialist Simon Stock explains the approach of *FreeStyle* in his own words:

"*FreeStyle* is a new way of sequencing. Instead of presenting the musician with an analogy of a recording studio, as most sequencing software does, with Tracks and Channels, *FreeStyle* uses musical terms such as Player, Ensemble, Take and Arrangement. The key to this is that FreeStyle is a 'trackless' sequencer. By getting tracks and channels 'out of your face', *FreeStyle* acts as a creative tool, rather than a production tool like *Performer*. There is no event list editing, no MIDI Machine control, and no SMPTE sync — although you can sync to MIDI clock. Instead, you get a very slick program geared for writing your music."

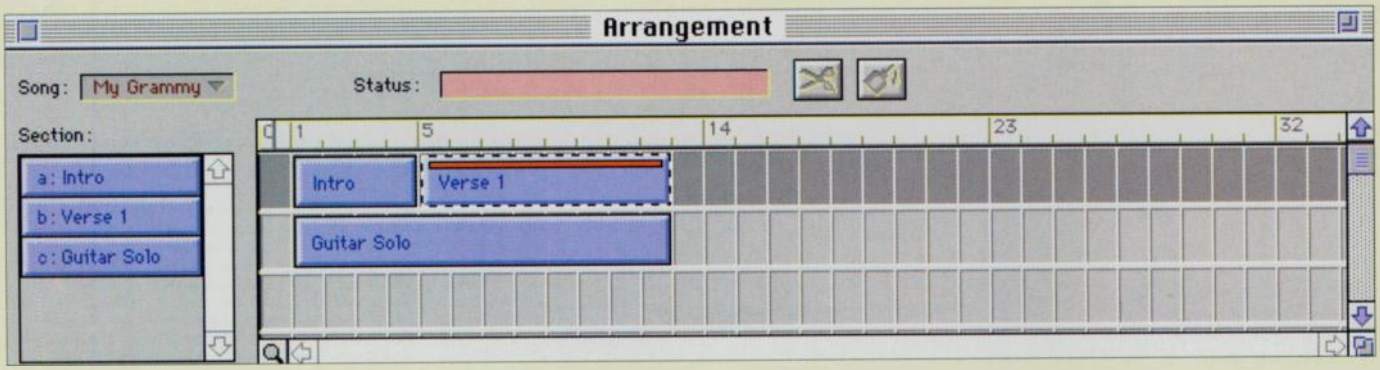

Figure 2: The Arrangement Window is where you assemble your patterns into a linear sequence representing your arrangement. It is very easy to use: you simply drag elements around, using the mouse to reposition things where you like.

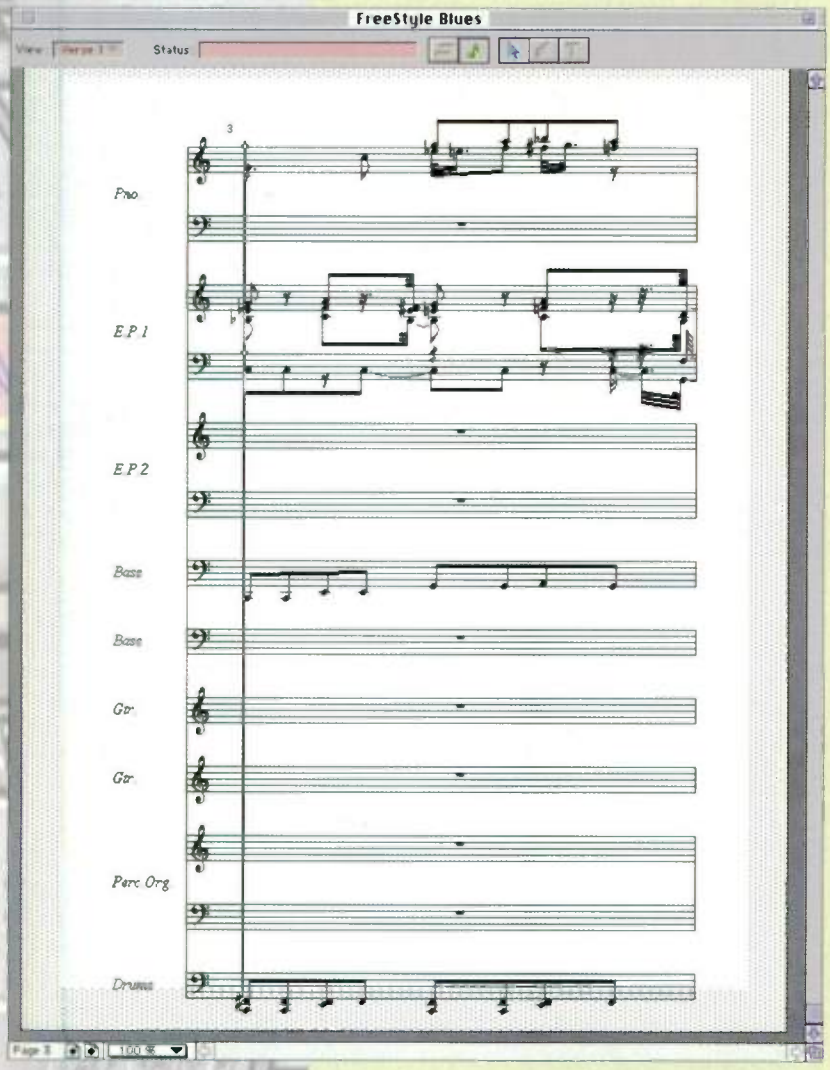

Figure 3: The Notation Window shows the music for the different Players on a conventional musical stave.

▶ Volume, you get a 0-127 scale, and if you select Pitch Bend, you get a scale with positive and negative values. This feature offers an easier way to create a velocity fade across multiple parts than in most other MIDI sequencers.

Music notation in *FreeStyle* is generated by MOTU's own QuickScribe TrueType font, so there is no need for any extra utilities in order to get accurate print-out on non-Postscript printers. The notation page shows the music in a page view that scrolls as you play back. Here you can view or print as many Players as you like, and two page layouts are offered — one for individual parts, and one for full scores. Transposing instruments are pre-defined in the Player Library, so every time you use a Saxaphone, the notation part is shown in B flat — you don't have to set this each time. Yet another musician-friendly feature.

REMOTE IDEAS

FreeStyle encourages you to use MIDI remote controls to operate it, by devoting a colourful graphic window to setting up of these remote controls, rather than the usual list of events and commands. Most sequencers offer some kind of MIDI remote control facility, which is extremely useful in setups where space prevents the MIDI keyboard and the computer from being right next to each other. The usual problems here are that you forget which key is mapped to which control, and keys that are mapped to a control cannot then be used for recording MIDI notes. *FreeStyle* gets around these problems, firstly by shipping with a strip of sticky labels to affix to your keys, and secondly by using 'trigger' keys to activate the remote controls. The default trigger is a 'clump' of the bottom three notes on the MIDI keyboard, which have to be held down, much as an option or shift key on a computer keyboard, whilst pressing the remote key.

Finally, if you want to import MIDI files, *FreeStyle* will let you read Type 1 MIDI Files, although at the moment only the initial tempo is supported. Balloon Help and graphic on-line help are also included, and a one-hour tutorial video is supplied with the software, which is great for anyone who hates manuals. ▶

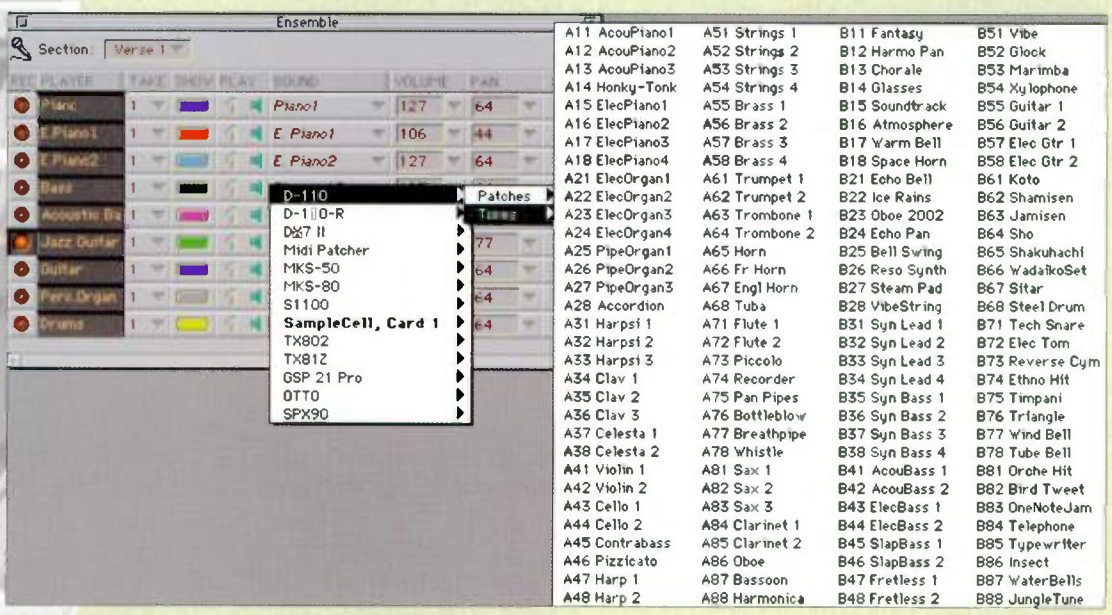

Figure 4: When you open up the Ensemble Window further, you can access pop-up menus for each player, to let you choose the synth patch or sound you want to use. With a General MIDI module, or other supported devices like the Roland D110, a list of the factory patches can be accessed here, which you set up using the PatchList Manager software (this comes with MOTU's FreeMIDI System). Unfortunately, nothing was set up for my older synths, such as the MKS80 or the DX7II.

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FREESTYLE IN ACTION

I tried to be ambitious at first, and set *FreeStyle* up in my main programming room, with my Opcode Studio 4 linked to my MOTU MIDI TimePiece I — with both feeding my synth rack. Most of the synths I have in my rack are neither General MIDI, nor do they dynamically allocate polyphony. This immediately made things difficult to sort out, but I struggled bravely with the FreeMIDI Setup and the PatchList Manager for a couple of hours before deciding to give up on this particular route.

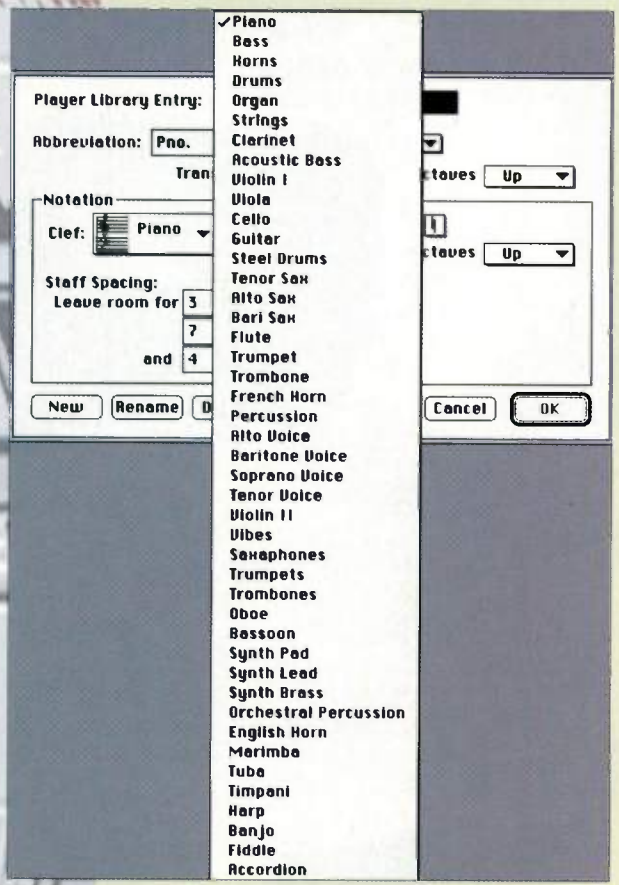

Figure 5: The Player Library dialogue box features a pop-up menu, where you can choose from a long list of generic Player types to suit most styles of music.

Luckily, I had a General MIDI synth module rigged up in the next room with a Macintosh Quadra 950, so I installed *FreeStyle*, plugged everything up, set up a basic FreeMidi document with one keyboard and the General MIDI module, then loaded up one of the demo files which came with the package. All I had to do was press play. The software had automatically configured everything correctly to play back on the synth module, without me having to set up anything in *FreeStyle*.

Now I could choose from a pop-up list of the actual sounds in the module for every Player in the Ensemble window, to try out different sounds. This was more like it! I started to see what *FreeStyle* was all about — taking the 'sweat' out of sequencers for entry-level/musician users with General MIDI modules.

Keen to try out recording, I chose a Jazz Band setup of Tenor Sax, Vibes, Piano, Bass and Drums, and started to improvise right away, while I switched between Players in the Ensemble Window. This was inspiring in its simplicity, and I found myself getting much more creative — through not having to think about the computer as much as I usually do. The Graphic Edit Window showed the notes on-screen as I played them, so I switched to the Notation window to try this out. Unfortunately, the Notation window would not update and redraw quickly enough to display the notes in real-time like the other window.

Then my friend Keith O'Connell, a professional musician and programmer, dropped by and decided to try out the Remote Controls. After spending just a few minutes customising a set of these to suit himself, Keith printed out the Remote Controls window and put this printout near the Yamaha DX5 he was using as the MIDI master keyboard. Suddenly, comments like "This is brilliant!", and "You can do everything from the keyboard!" started to emerge as I typed this review in the next room. Then the music started happening as Keith pounded away crazily at the keyboard, barely pausing for a breath between swapping Players! And this is how another masterpiece was born — sounding like a whole jazz band in action, where a solitary click had been playing just a few minutes beforehand.

I just had to tear myself away from frantically trying to finish this review before the looming deadline and take a look at what was going on. It seems that once you've set up your remote keyboard controls the way you like, you can then simply sit down and do whatever you want to do from the keyboard. For instance, you can jump between Players while you're recording, and decide whether to keep or undo a take while you're building your arrangement up. This lets you concentrate on the business of putting your music together, without getting embroiled in all the fiddly stuff with the mouse and keyboard, as you can often do with other sequencers.

Keith explained that, for him, the tie-ups between General MIDI, FreeMIDI, the Players and the Remote Controls definitely removed many of the things which can get in the way of your creativity while working out musical ideas. He added: "I could see myself quickly getting a new arrangement sketched out using this setup, and then transferring to *Performer* running a large MIDI rig, so I could use the more advanced editing features on *Performer* to work on the finer details of the arrangement and production." This was a useful piece of feedback from a busy professional, who regularly works on TV sessions.

To get another different perspective, I asked my girlfriend Sia, who is doing a module on Digital Audio at Middlesex University, to try *FreeStyle*. Sia can play a little guitar, but is neither a keyboard player nor a schooled musician. She represents an absolutely entry-level user getting started with

"I started to see what FreeStyle was all about — taking the 'sweat' out of sequencers for entry-level/musician users with General MIDI modules."

computer sequencers for the first time. Sia recorded a short piece using simple bass and snare drum, bass guitar, organ chords, and piano melody, and was amazed at how easy it was to quantise everything to correct for timing slips, and move a wrong note to the correct pitch by pointing, clicking and dragging it in the Graphic Editor. She had thought that it would be impossible for her to get it right with her limited keyboard skills, and couldn't believe how perfect it sounded when it was all corrected with just a few simple edits. She commented: "It's so simple you just can't fail with it! You can put stuff together just seconds after you boot up the program. I could never feel happy working with numbers in an event list, but I just loved being able to grab the notes, move them around in time or up and down in pitch graphically on the screen." So, there you have it — a pretty good endorsement of *FreeStyle* from two people at opposite ends of the spectrum of musical skills.

CONCLUSION

General MIDI is an attempt to simplify things for musicians, and *FreeStyle* is another step along this path. The two work very well together. If you have a small setup with one or two General MIDI synths, a sampler, a drum machine, and a MIDI-controllable effects unit and mixer, *FreeStyle* is the perfect complement at beginner to intermediate level. For professional work, it is not really a choice I could recommend at present, as it lacks SMPTE sync, Event List editing, and many other features which are essential for power users. And the Dynamic MIDI Allocation system can be a real pain if you have any older synth modules which do not support General MIDI or dynamic polyphony allocation. *FreeStyle* expects these things as the norm, and can make life pretty difficult for you if you are using synths which do not comply.

> *"General MIDI is an attempt to simplify things for musicians, and FreeStyle is another step along this path. The two work very well together."*

The idea of preset collections or Ensembles of Players appealed very much, though. And I particularly liked the idea of pickup and overhang bars. I also liked the musical metronomes, as I am definitely one of those people who prefer something more musically stimulating than a metronome click to play along to when I'm putting ideas together. The Controller Edit window is similar to the one in Opcode's *Vision*. It's one of the neatest features for me, and one which I really miss when I'm working with other sequencers; I must also mention that the implementation of the Controller Edit window is every bit as good as the one in the much more expensive *Vision* software. The manual also deserves a special mention, as it is exceptionally good, and makes great use of pictorial explanations with notes.

All-in-all, I found *FreeStyle* very appealing, both visually and functionally, and can definitely recommend it as an excellent alternative to competitors such as Opcode's *MusicShop* or *Cubase Lite* for entry-level users or those who don't want to concern themselves with the more technical aspects of MIDI sequencing. SOS

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PART 2: Chris & Cosey's CHRIS CARTER looks inside the black magic box and lets us into a few more well-kept Wavestation secrets...

Making The Most Of Your WAVE

If you've spent a happy month creating your own wave sequences and getting more intimately acquainted with your vector envelopes, as I encouraged you to do in my last instalment, you'll be looking forward to more inside Wavestation info. I'll start by talking about...

THE JOY OF IT ALL

The Wavestation's joystick can be used to control a number of the synth's functions simultaneously. For instance, as well as controlling a vector envelope, the joystick could also adjust the amount of DDL level on its Y-axis and the delay time on its X-axis. Other options include the phaser LFO rate, the auto pan speed and depth, the reverb depth — there are endless internal routing possibilities available.

The Joystick can also be used to control an external MIDI instrument, either simultaneously with the Wavestation or independent of it. The X-axis transmits controller 16 and the Y-axis transmits controller 17, and the receiving instrument must be set to the same MIDI channel as the Wavestation for this to work. If you have another MIDI synth or effects unit that can respond to controller information, this can be a very handy feature.

At this point it's also worth mentioning that if the PARAMETERS setting is enabled on the MIDI page (PERFORMANCE>MIDI), the Wavestation will send out SysEx messages whenever any of its parameters are edited — for example, when you execute filter sweeps or effects adjustments. These can also be sent to your external sequencer (assuming it can record MIDI SysEx info) and played back with all your twiddles faithfully recorded. Be careful, though, as this method eats megabytes for breakfast!

WAVY EFFECTS

If there's one thing missing on the Wavestation, it must be a proper dynamic resonant filter — or a VCF, as we used to call 'em when I were a lad. The nearest the Wavestation has to this is on the FILTER page, but it isn't really up to the job and has a very bland sound. To make up for the shortcoming, however, Korg included some very nice resonant PCM waves (over 40 of them). With clever wave sequence programming, using smooth crossfades, you can get quite convincing effects.

Another option is to use one of the multi-effects filters (number 43 or 44), though both include a distortion or overdrive control that can't be totally eliminated. However, the effects bank filter section has a resonance control and high and low EQ, and is capable of very powerful analogue-sounding effects. Note also that it can be manipulated from almost any source in the A/D, and even by external MIDI controllers.

UNDER THE WAVES

In my opinion, the Wavestation's Effect number 33 (Stereo Rotary Speaker) is underrated and overlooked. For a start, it can do a very passable impression of a ring modulator. The trick here is always to have the SLOW speed a lot higher than the FAST speed. You can also modulate the speed from all the usual Wavestation sources, or even cascade two filters — very Dr Who...

Another feature of the Rotary effect which you might not have noticed is its ability to provide a pretty good RSS 3D simulation. Of course, there's no control over the positioning of the sound field, but there's some strange phase shifting going on that definitely makes the sound appear to stretch out beyond the speakers. Here's what you need to do:

- Set the MIX to WET.
- Set the SLOW speed to between 0.15 and 0.27.
- Set the depth to 15.
- By placing Effect 34 (Stereo Mod Pan) in series before Effect 33, and setting the MIX to WET and the LFO to between 0.18 and 0.24, you can enhance the 3D impression even more — though this does use up both effects processors.

AN EXTRA EFFECT

If you have a fairly basic setup with not many effects units, it's handy to know that one of the A/D multi-effects processors can be isolated from the rest of the synth and pressed into use as an independent processor. The secret to doing this successfully is to keep internal patches on busses A and B and the external audio well clear on busses C and D.

- First, connect your audio source to the A/D and adjust the rear levels to suit.
- Select a Performance to start working within and choose a Patch to initialise and edit.
- For stereo use, you will need to make a 2-oscillator patch structure and name it INPUTS (or something similar), then enter the waves as A=516 (input 1) and C=517 (input 2), with levels set to 99.
- On the ANALOG INPUT ASSIGN page (GLOBAL>ANALOG), set the input channels as follows:

WAVESTATION EFFECTS

- 01-09: Reverbs
- 10-14: Early Reflections and Gated Reverbs
- 15-20: Stereo and Mono Delays
- 21-28 Chorus, Flangers and Exciter
- 29-30 Distortion, Filter & EQ combinations
- 31-33 Phasers and Rotary Speaker
- 34-36: Autopan and Parametric EQ
- 37-46 Delay combinations
- 47-49 Pitch Shifters and Compressor
- 50-55 Vocoders and Delays

Input 1: FILT=99, A=OFF, B=OFF, C=ON, D=OFF
Input 2: FILT=99, A=OFF, B=OFF, C=OFF, D=ON

The exciter (XCTR) setting can be set to whatever you want.

- On the PATCH BUS ASSIGNMENT page (EDIT>PATCH>FX BUSS), set the buss assignments as follows:

516-input 1: A=OFF, B=OFF, C=ON, D=OFF
517-input 2: A=OFF, B=OFF, C=OFF, D=ON

- On the EFFECTS MIX page (EDIT>EFFECTS>FX MIX), set the routing as follows:

ROUTING=PARALLEL, MIX 3=OFF, MOD 3=OFF, MIX 4=OFF, MOD 4=OFF

- Finally, select your INPUT patch and go to the PERFORMANCE PART DETAIL page (EDIT>DETAIL) and set the FX BUSS to PATCH.

You can then copy the INPUT patch to other performance locations if you want to, always making sure that nothing else is sharing the A and B or C and D effects busses.

From now on, the A/D will go through 'FX1' and exit through outputs 1 and 2, while the external audio will be processed by 'FX2' and will appear at outputs 3 and 4. Of course, you can still use any of the A/D's modulation sources to control effects settings, or use MIDI to control the external audio level.

VOLUME TIP

Due to a design quirk, if you layer four single-oscillator Wavestation Patches in a Performance they will always sound a lot louder than one four-oscillator Patch. So if you're looking for maximum volume, keep this in mind. The only problem with using lots of single-oscillator patches is that you can't apply vector envelopes to them individually.

A/D SECRET

Deep within the bowels of the Wavestation A/D is a strange, undocumented feature called the SPECIAL screen. To access it, follow these instructions to the letter — and make sure you ▶

▶ have no RAM or ROM cards plugged in, or it won't work.

- Make sure the Wavestation is switched off. Now switch on, and in the time between the word KORG appearing and the flashing WAVESTATION A/D script coming up, press the DOWN cursor and number 4 on the keypad simultaneously.
- Instead of a Performance page, what will appear is the SPECIAL screen, with the A/D version number, a date, and a time. There are also a number of options above the function keys. Most of them are meant for testing the machine and don't actually do much:

INIT-RAM wipes your RAM banks by copying the ROM Banks into them (all of them).
SHOW doesn't seem to do anything.
D-IN and **D-OUT** are for copying to and from some sort of RAM or ROM card.
KSD seems to freak out the instrument.
CONT takes you back to the performance screen and normality. Fun, eh?

I WISH

If I had a wish list for the Wavestation A/D, it would include a larger memory for wave sequence steps — because 1500 steps don't go far if you have a lot of long wave sequences mapped across the keyboard (the SR has 5500 steps!). I'd also like a faster central processor, as editing slows to a crawl if your wave sequences have more than 40 or 50 steps and the display is constantly trying to catch up with your button presses. Similarly, if you move the joystick or data wheel too much when any internal wave sequences are playing, their timing slows down. It would also be great if the A/D could read the newer 01/W PCM cards, as there are far too few EX or A/D PCM cards available and, to my knowledge, no third-party PCM support at all. Another great addition would be a way of saving the entire contents of the A/D onto a RAM card. In fact this *should* be possible, because the Korg RAM card (the MCR-03) has a capacity of 256k and an entire dump from the A/D is only 204k. But there's no way of doing it. Why, Korg?

WAVING GOODBYE

I've really only scratched the surface of the Wavestation here, and in all truth a book could probably be written about it (maybe there is one somewhere!). I know it's very tempting to use the Wavestation's presets, as they sound so wonderful, and if you have an SR version then you are not really encouraged to edit anyway (although you could use a graphic computer editor). I must admit at this point that I have used a couple of presets on releases of my own (hangs head in shame!). But such a lot more can be achieved with this great instrument by getting your hands dirty and editing your own sounds. Even using one of the presets as a starting point and then tweaking it is better than wasting the potential of a phenomenal piece of technology.

As I said at the beginning of this short series, I'm sure that the Wavestation will come to be seen as a classic of the '90s; as is happening now with old analogue gear, you can be sure that in 10 or 15 years, everyone will be trying to get that '90s 'retro sound' and the Wavestations will be high on people's shopping lists. Why not become a part of history now — get Waving! SOS

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- Joystick Y Axis
- MIDI 1
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DEAR CATHY & CLAIRE...

Occasionally I find when that when I try to sync Wavestation A/D wave sequences to MIDI, the instrument will not recognise the MIDI clock signal. Alternatively, notes sometimes just drone on and on in an almost random fashion. These problems usually occur after the A/D has been switched on for three or four hours, and regardless of whether I'm using an Atari STE or an Apple Mac as the master clock (each with a different interface). So far, neither problem has occurred in a live situation, but I do know of other users getting similar problems with large MIDI setups. Switching the A/D off, then on again, doesn't always solve the problem either, but I discovered that if you send the A/D a MIDI reset command that usually cures it. I've spoken to Korg in the past about this, but unfortunately they couldn't shed any light on the problem. Any ideas from Wavestation users reading *SOS*?

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BLOOD & IRON

PRODUCING MUSIC & EFFECTS FOR A MAJOR TV DOCUMENTARY

PART 2: In the concluding part of this short series, our intrepid MIDI musicians turn their attention to the creation of sound effects and the final mix... By PAUL D LEHRMAN with STEVE OLENICK.

Last month we looked at the beginnings of the audio production for an ambitious three-part television documentary called *Blood and Iron: The Story of the German War Machine*. I told you how I bid for the project as a medium-budget all-MIDI production, using sequencers and samplers for both the music and effects tracks. I did the music tracks myself, mixing them into mono with a bit of stereo reverb, in my home studio on a Kurzweil K2000 and a handful of other synth modules. For the effects tracks, I sub-contracted sound designer Steve Olenick, also a K2000 owner.

THE SOUND EFFECTS

Steve realised early on in the project that efficiency would be of the utmost importance if *Blood and Iron* was to be finished on schedule. With close to three hours of silent black-and-white footage and stills, much of which required effects, this would be a massive undertaking. Flexibility was also a major goal: since no one was going to hear all the audio elements (effects, music, narration, dialogue, and sync sound) together until the final mix, the ability to tweak individual events during the mix — without having to go back to the original sources — would be essential.

Although the traditional way of creating layered effects tracks is with multitrack tape or multiple reels of magnetic film, Steve and I wanted to try to create the tracks in a MIDI environment. The Kurzweil sampler could play up to 24 effects 'tracks' (i.e. voices) at a time, and by controlling them with a sequencer, last-minute changes in timing, level, or even sound could be made without disturbing anything else.

Steve and I met on several occasions with New York producers Robert Ross and Herb Krosney, to discuss the creative approach to take for the effects. How many layers of effects would we use? Where would we leave out the effects and let the music or voice-over alone carry the scene? How realistic should the effects be? To do a multi-layered effects track with the depth of a feature film was impossible in the time available — not to mention the fact that this would have taken us way over budget. On the other hand, we didn't want to take the typical war program approach of simply putting in spot effects for foreground events and leaving the rest silent. Ambience, we felt, was crucial to setting this series apart from the standard documentary relying on black-and-white silent footage.

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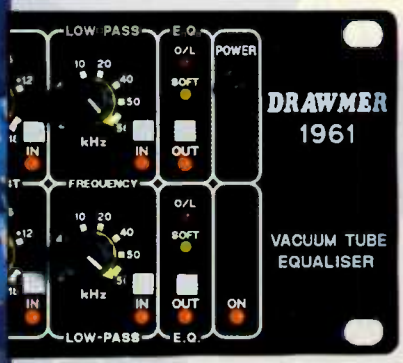

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BLOOD & IRON

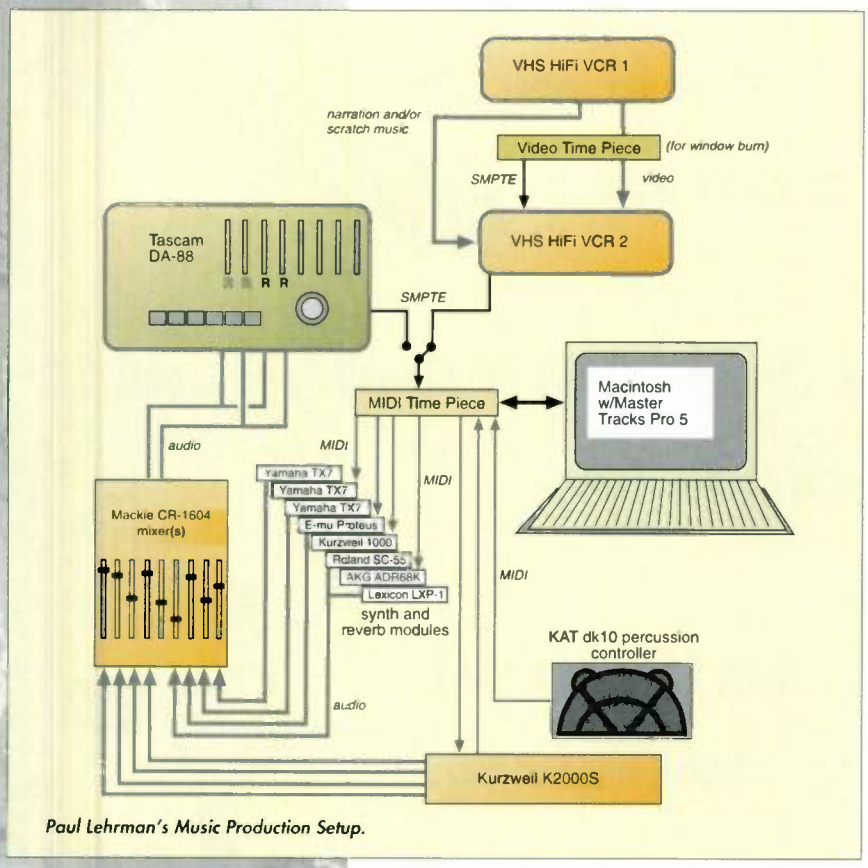
PRODUCING TV MUSIC & EFFECTS

We also wanted to create an ebb-and-flow effect, to help keep the viewer's attention. The contrast between scenes with effects and those without, if handled properly, could have a strong emotional impact. A scene of people being put in trains to be shipped to concentration camps, for example, would much more effective without jangling train wheels or crowd sounds — the ominousness of the event would be better conveyed with music and narration alone. In addition, to create a consistent stylistic approach, only motion picture scenes would have effects under them — still pictures, no matter how ingeniously the camera moved over them, would have only music and voice-overs.

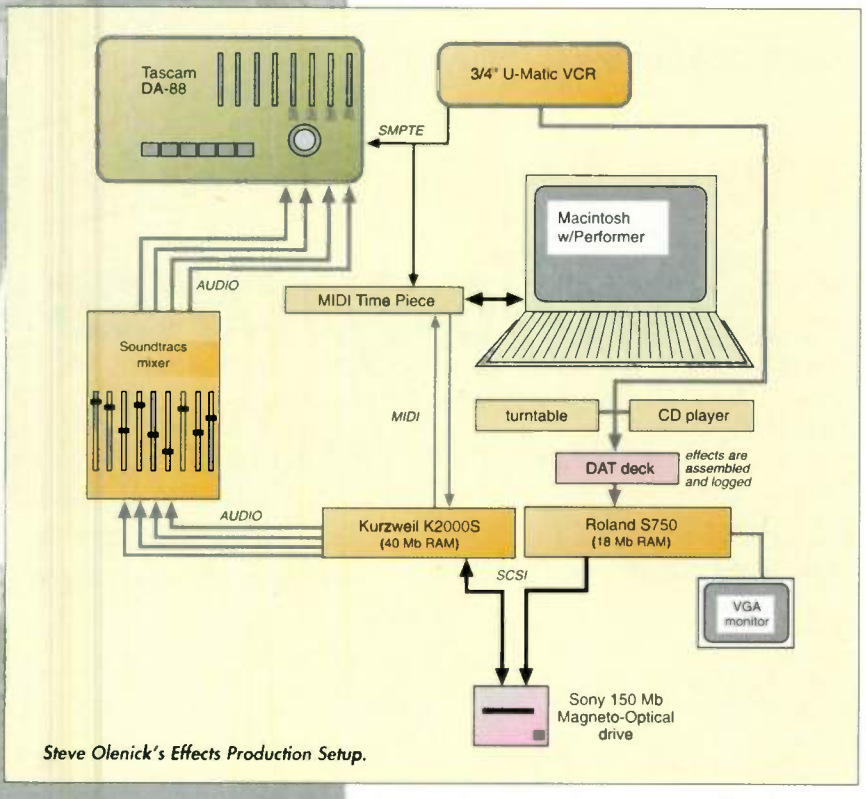
The next step was to find, listen to, log, and categorise the sounds. To help with this phase (and, as it turned out, later phases as well) Steve hired David Williams, a radio and video editor/producer who had worked with Steve recently on a large multimedia project. They culled sounds from CD libraries, LP libraries, sampler disks, and also sounds provided by the series' producers from some of their un-edited footage that had sync sound.

Using a sampler for the effects gave a lot more 'bang-per-megabyte' than a hard-disk recording system would. In a sampler, sounds can be modified and disguised using pitch changes, filters, loops, and envelopes, so that one good ambience, for example, can be used many different times without sounding repetitious. The down side is that the sampling process itself takes time — the same amount of time it might take to record directly to tape. But the added flexibility, plus the fact that any samples gathered can be stored permanently in the sampler's native format for use on future projects, more than makes up for the extra effort.

All of the chosen effects (and there were several hundred) were copied to DAT, and their locations on the tape logged into a custom spreadsheet Steve created in Microsoft *Works*. The spreadsheet could then be studied and re-arranged to put the sounds in the order in which we wanted to sample them. A second spreadsheet was created that displayed sample names, DAT locations, original source locations (which CD or LP, which track, and so on), sample-key assignments, root notes, keymap names, and program names (see Figure 1).



Paul Lehrman's Music Production Setup.



Steve Olenick's Effects Production Setup.

THE SAMPLERS

The major instrument used in the process was a Kurzweil K2000S sampler. Steve's K2000 had 40Mb of RAM available, and he calculated that he could put one episode's worth of sounds into the machine at a time, loading other sounds in for each show. His external storage medium was a 128Mb removable magneto-optical drive.

At the time of production, the Kurzweil had a very clumsy operating system, which only allowed entire banks of samples, keymaps, and programs to be loaded or saved to disk at a time, and made moving samples around in memory, or loading individual samples or keymaps into an existing program, impossible. (Version 3 of the operating system is now shipping, and the file handling has been vastly improved.) Thus we decided to do the original sampling on my Roland S750, since its

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Groups					4	4
EQ bands mono	2	3sm	3sm	3sm	3sm	3sm
EQ bands stereo	2	2	2	3, 2	3	2
High Pass Filters		M	M	M	M	M
Auxs	2	2	2	2	6	8

M = Mono input S = Stereo input sm = swept mid

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file structure was far more flexible, and its disks are readable — surprisingly well — by the K2000. This way we could save files from the Roland at each step of the way on disk, as well as saving the finished banks from the K2000.

Hooking the magneto-optical drive up to both samplers worked beautifully — the drive itself, with both samplers plugged in simultaneously, became the network between the samplers. Some experimentation was needed to determine in which order the various units should be turned on, so that they wouldn't crash (and to discover that the cartridge had to be ejected after powering on, and then re-inserted), but once that was over the system worked consistently.

Sounds from the various sources were sampled into the S750 and saved as individual samples and as keymaps on a Roland-formatted cartridge. Those files were then opened by the K2000 and loaded into the Kurzweil's RAM. In the K2000, the samples and keymaps were arranged in programs and banks, and then a Kurzweil-formatted cartridge was put into the drive and the banks were saved to it.

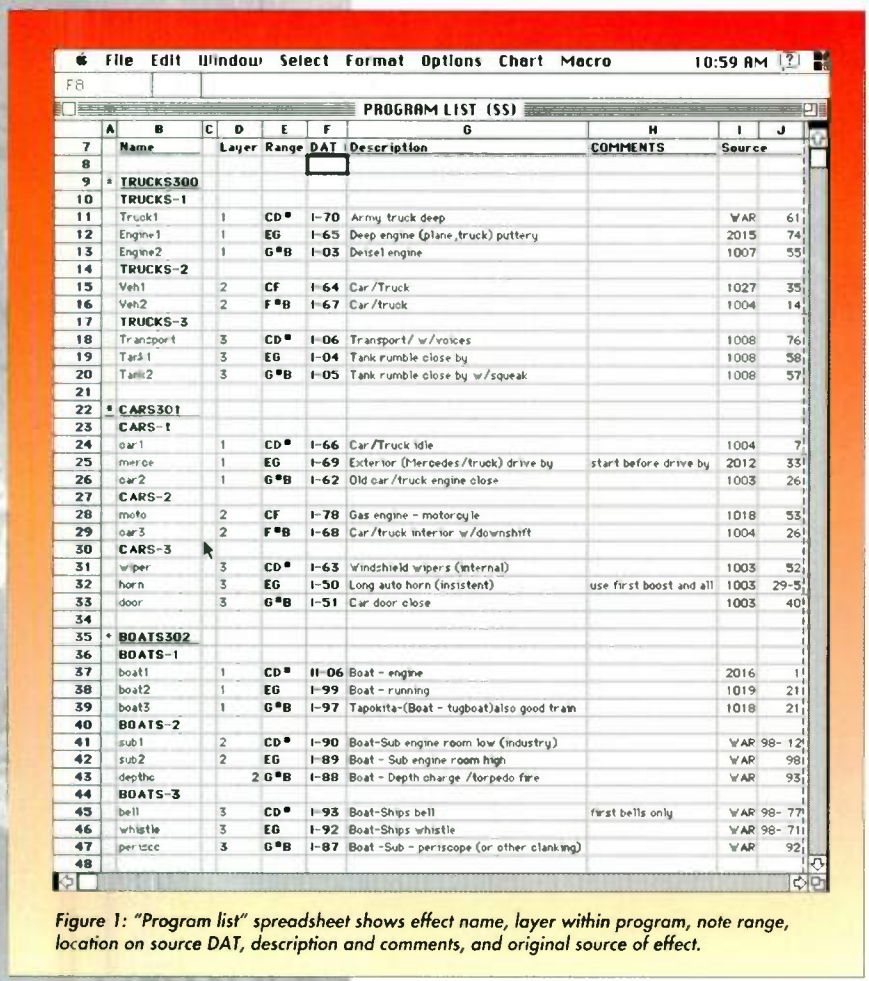
Besides the S750's better file structure, there were two other advantages to this method. Firstly, the S750 allows the use of a full-screen color monitor (the K2000 only has an LCD display), and this made the sampling, initial editing, and mapping much faster. Secondly, the samples could all be recorded on the Roland at 22.05 kHz, which stretched the available RAM considerably. The K2000 can play and edit samples at that rate, but not record them.

Once the source DAT tapes and the sampling spreadsheet were done, the sampling began. This was a fairly mechanical process. Some creative decisions were made during sampling, but for the most part it was a simple matter of cueing up the DAT tape, naming a sample in the Roland, setting level, recording the sample, and assigning it to a note range. Each keymap took up one octave.

The Roland keymap was then imported into the K2000 as a 'layer'. Three layers, each one octave in range and located adjacent to each other on the keyboard, made up one Kurzweil program. The mappings were set up to be as intuitive as possible, since the effects were actually going to be played from the keyboard.

For the most part, Steve and David felt that the sounds were too bright and had too much presence to accompany the older footage. Rather than filtering or re-sampling them, however, Steve used the Kurzweil's extensive real-time DSP facilities to give them the right 'dark' qualities. While working so hard to collect the samples with high fidelity, it occurred to Steve that they would make an excellent library for future use. Why ruin them when the next documentary might be able to take advantage of them at full bandwidth?

The spreadsheet was then printed out and taped up above the keyboard. Little by little, we became familiar with the notes to play for given sounds and never had to scratch our heads in confusion (well, hardly ever).



File Edit Window Select Format Options Chart Macro 10:59 AM

F8

PROGRAM LIST (SS)

	A	B	C	D	E	F	G	H	I	J
7		Name		Layer	Range	DAT	Description	COMMENTS	Source	
8										
9	*	TRUCKS300								
10		TRUCKS-1								
11		Truck1		1	CD*	I-70	Army truck deep		WAR	61
12		Engine1		1	EG	I-65	Deep engine (plane,truck) puttery		2015	74
13		Engine2		1	G*B	I-03	Deisel engine		1007	55
14		TRUCKS-2								
15		Veh1		2	CF	I-64	Car/Truck		1027	35
16		Veh2		2	F*B	I-67	Car/truck		1004	14
17		TRUCKS-3								
18		Transport		3	CD*	I-06	Transport/ w/voices		1008	76
19		Tank1		3	EG	I-04	Tank rumble close by		1008	58
20		Tank2		3	G*B	I-05	Tank rumble close by w/squeak		1008	57
21										
22	*	CARS301								
23		CARS-1								
24		car1		1	CD*	I-66	Car/Truck idle		1004	7
25		merce		1	EG	I-69	Exterior (Mercedes/truck) drive by	start before drive by	2012	33
26		car2		1	G*B	I-62	Old car/truck engine close		1003	26
27		CARS-2								
28		moto		2	CF	I-78	Gas engine - motorcyle		1018	53
29		car3		2	F*B	I-68	Car/truck interior w/downshift		1004	26
30		CARS-3								
31		wiper		3	CD*	I-63	Windshield wipers (internal)		1003	52
32		horn		3	EG	I-50	Long auto horn (insistent)	use first boost and all	1003	29-5
33		door		3	G*B	I-51	Car door close		1003	40
34										
35	*	BOATS302								
36		BOATS-1								
37		boat1		1	CD*	II-06	Boat - engine		2016	1
38		boat2		1	EG	I-99	Boat - running		1019	21
39		boat3		1	G*B	I-97	Tapokita-(Boat - tugboat)also good train		1018	21
40		BOATS-2								
41		sub1		2	CD*	I-90	Boat-Sub engine room low (industry)		WAR	98- 12
42		sub2		2	EG	I-89	Boat - Sub engine room high		WAR	98
43		depthc		2	G*B	I-88	Boat - Depth charge /torpedo fire		WAR	93
44		BOATS-3								
45		bell		3	CD*	I-93	Boat-Ships bell	first bells only	WAR	98- 77
46		whistle		3	EG	I-92	Boat-Ships whistle		WAR	98- 71
47		periscc		3	G*B	I-87	Boat -Sub - periscope (or other clanking)		WAR	92
48										

Figure 1: "Program list" spreadsheet shows effect name, layer within program, note range, location on source DAT, description and comments, and original source of effect.

SEQUENCED SOUND EFFECTS: BEYOND TAPE EDITING

Using a sequencer for effects offered us a wide variety of editing functions. We could move events around using the graphic screen display, or type in new time-code locations in a list, or highlight groups of events and use regional commands to adjust parameters. If a sound was in the right place, but it was the wrong sound, we could click on the note and drag it up or down in the graphic display until the correct sound was heard. The placement could be locked during this drag, so that only the note changed, not the time-code location.

One of the bones of sound editors' lives has always been film editors re-cutting a reel at the last minute and sending it over to the sound room for re-synchronisation. In a MIDI environment, this is no problem: we could simply select all of the events after an edit, and move them backwards or forwards by the appropriate number of frames in a single operation. No razor blades, destructive punching, or losing tiny little bits of tape on the floor. The editors in New York could make all the changes they wanted, and we could adjust the effects tracks in literally a couple of minutes.

SEQUENCING

The next creative step was placing the sound effects into *Performer*. The sequencer was set up to slave to the 3/4-inch video tape from the producers, which had been striped with timecode and had window burn inserted. Each scene was then run repeatedly, and effects were played into the sequencer on the Kurzweil keyboard in real time. Here's an example of how it was done: say, for example, a factory scene needed an ambience track running through it. On the sequencer, the 'Industrial Ambience' track (see Figure 2) is

placed in record-enable mode, sounds are auditioned on the keyboard against picture, and after the decisions are made, the scene is run again, with the sequencer recording the keyboard.

Any mistakes could be edited immediately. An effect could be moved, shortened or lengthened, pitch-shifted, or have its volume (velocity) changed. In many cases a known amount of backwards shift (Steve's reaction time) was applied to the track right after recording. Next, to add specific sounds of machinery to accompany visual events, Steve would record-enable the 'Industrial Spots' track, play a couple of spot effects in, and then adjust their placement. This continued until we were satisfied with the whole scene.

On occasion, none of the samples we had recorded were right for a particular visual event, and so a new sound had to be found, sampled and placed directly into a keymap in the K2000. Having anticipated this, however, we had left vacant slots in keymaps and merely had to assign the sample to one of those slots. We did run out of sample memory at a couple of points, but we were able to find unused samples that could be deleted, or loops that could be shortened to make more RAM available. When all of the shows were done, we realised we could fit the sounds for all three of them into the 40Mb of RAM available.

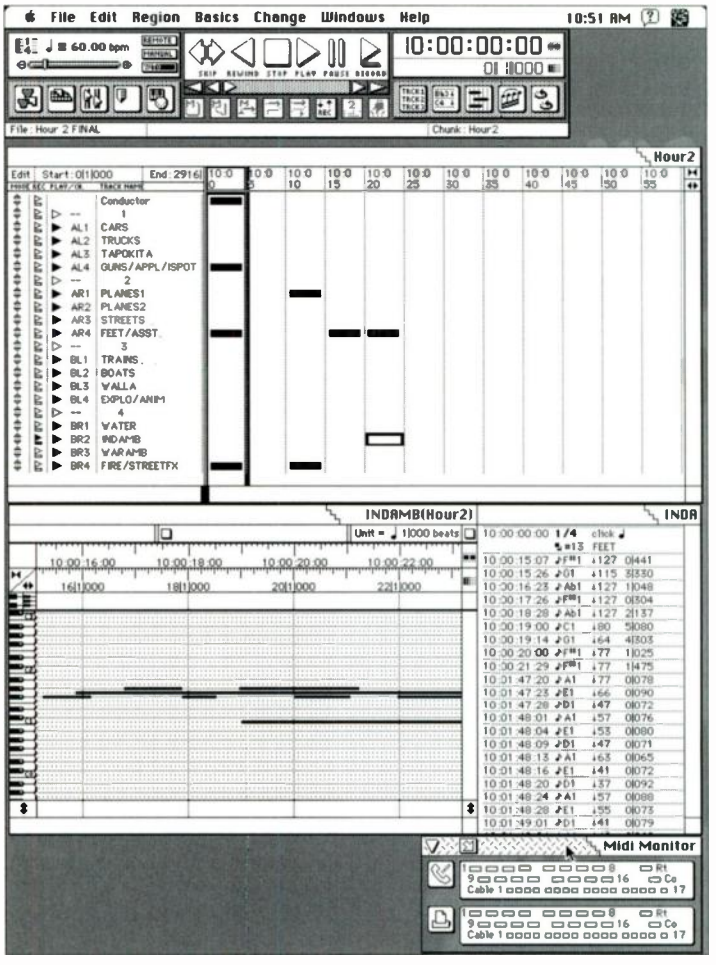


Figure 2: Overview window (top) shows which tracks are active; edit windows (bottom) show cues on one track, in both graphic and text formats.

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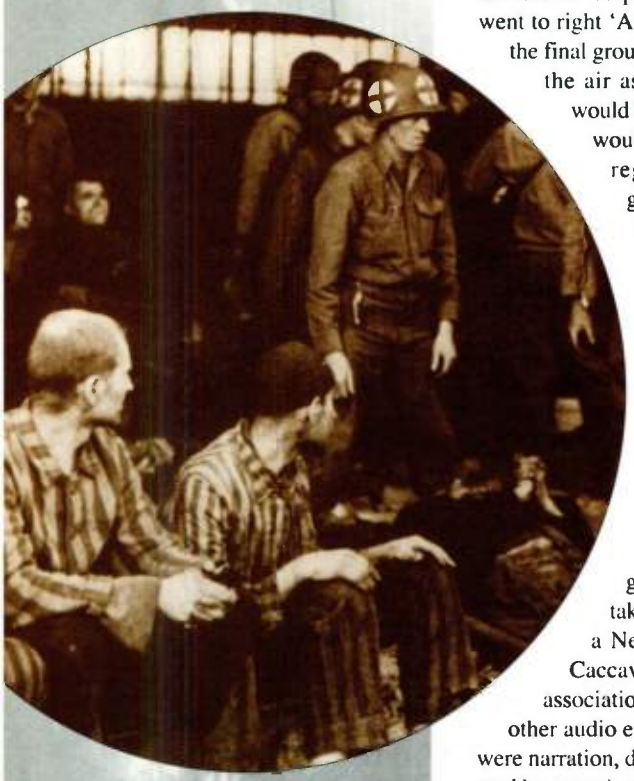

I had grouped the instrumental families in the music tracks to my Kurzweil's four outputs by assigning individual MIDI channels to specific outputs. Steve assigned his Kurzweil patches to the outputs the same way. The first group of four patches, on the first four MIDI channels, went to the left 'A' output of the K2000. The next group went to right 'A', the third group to left 'B', and the final group to right 'B'. We were still up in the air as to exactly how the final mix would be accomplished, but this scheme would give us maximum flexibility, regardless of whether we were going to tape, to a hard-disk system, or directly to the video master. Each group could have its own track or fader, all carefully documented on the spreadsheet, and that would greatly facilitate the mixing process.

GETTING IT TOGETHER

Originally, we fantasised about doing the final post-production of *Blood and Iron* without ever going to tape. The posting was to take place at This Way Productions, a New York studio owned by Dan Caccavo, with whom I have had a long association. Besides the music and effects, other audio elements that had to be dealt with were narration, dialogue (mostly historical quotes read by actors), and the sync sound accompanying some of the original footage. We first proposed putting everything into Dan's Digidesign Pro Tools system, recording the music and effects in Boston with a Sound Tools system and bringing the disks to New York, but we realized we would need 12 tracks (his system had only eight) and significantly more disk space than he had available.

The next idea was to put only the voices and sync sound into Pro Tools, and do the music and sound effects directly from the two K2000s (and the rest of my MIDI gear) as a 'virtual multitrack' mix in Dan's studio. A sequencer's lock-up time is usually much shorter than a tape deck's, which was a big plus. We would need to bring two more Macs (to add to the one running Pro Tools, and the one running Dan's console automation), one for the samplers and the other for the music, with everything locked to timecode.

As we became closer to finishing the audio, however, we had to reject this concept, for a number of reasons. First, I realised that mixing the music at the same time Dan was mixing the rest of the show would make the sessions chaotic, to put it mildly. Second, Cindy Kaplan-Rooney, the film editor on two of the three episodes, expressed considerable fear that something costly might go wrong. "I know it's supposed to work," she said, "and I trust you guys, but I've never seen it work, and so I'm nervous." Since we had never really seen it work on this kind of scale either, we weren't going to argue with her.

Steve had the most compelling reason: in the stop-and-go process of mixing, there would inevitably be times when a long sampled sound was supposed to start just before the point where we were rolling tape. In that case, one of two things would happen: either the sound would not play, or if the sequencer's 'note-chasing' feature was on, the sound would start from the beginning as soon as we rolled tape. Thus we would be hearing either the wrong part of the sound, or a loop that was out of sync, which meant it would be impossible to hear the mix as it really was unless we always played each segment of the program all the way from the beginning.

Adding to the unease was the fact that, due to changes in the production schedule, Steve would not be able to come to New York for the mixing session. If there were some kind of MIDI glitch and an effect ended up missing or in the wrong place, there was a strong likelihood no one would notice it — until, of course, the show was on the air. David, the associate sound designer, would be there for the mix, helping make sure the balances were correct, but as he was not intimately familiar with the sequences, he might well miss any MIDI problems.

So we decided to use multitrack tape. Our first idea was to use multiple timecode DATs, but this would take a lot of extra time, and the cost of hiring four or more extra decks in New York (Dan was already hiring one for printing the final audio) would be prohibitive. We investigated hiring an Alesis ADAT, but since none of us had used one at the time, we were a bit nervous about the complexities of slaving it to timecode (using the outboard Big Remote Control). We were also slightly put off by the format's tape-length limitation: only about 40 minutes can be recorded

This Way Productions, where the soundtrack was completed. Sitting at rear are co-producer Robert Ross and editor Cindy Kaplan-Rooney.

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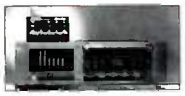

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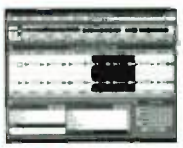

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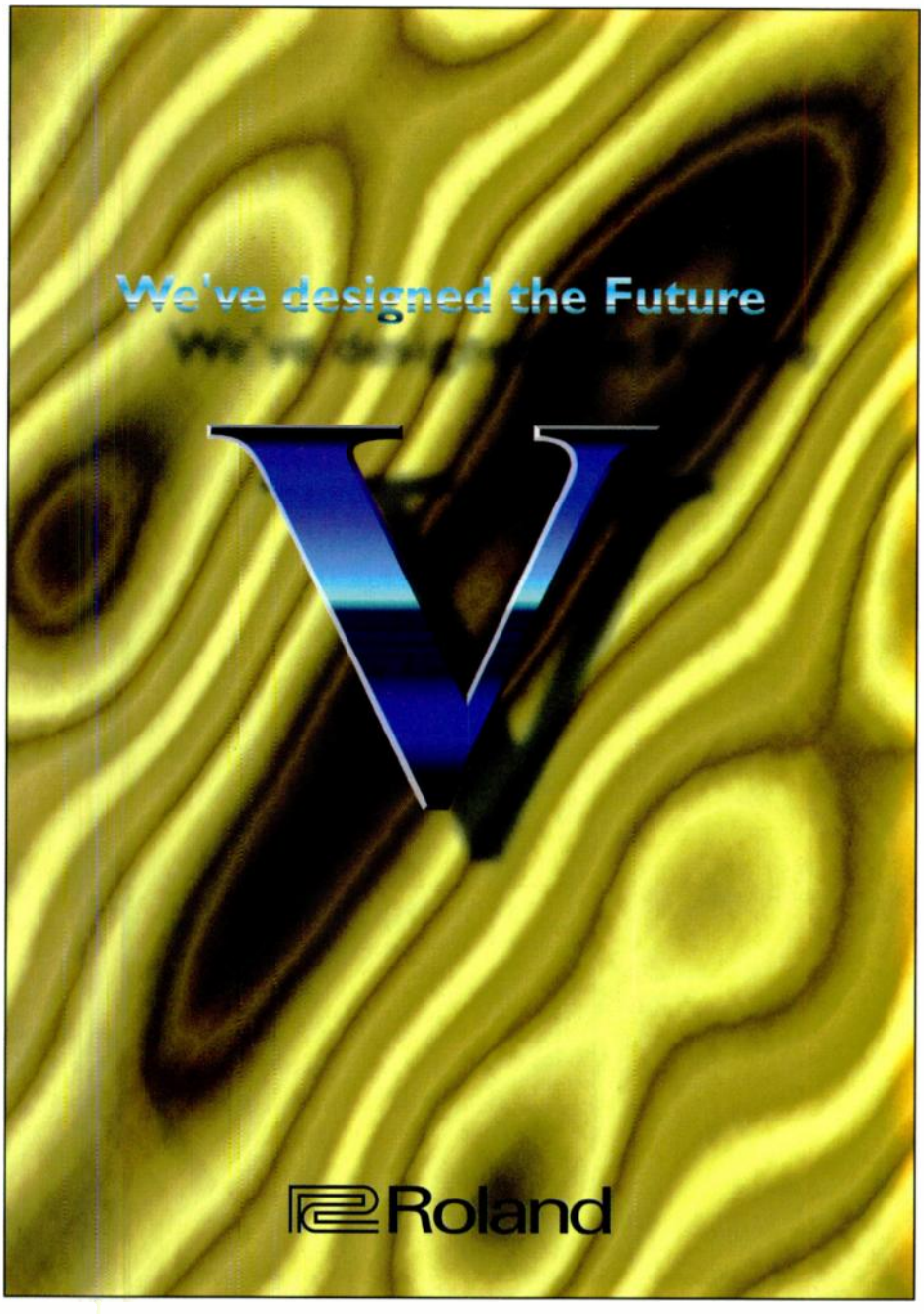
on a cassette, which meant that each show would have to be broken up into at least two reels, and finding break points in all the shows that worked for both effects and music might not be easy.

We ended up with a Tascam DA88, which had an SY88 sync card already installed. An all-in-one unit, it promised hassle-free synchronisation, and records over 100 minutes on each Hi-8 cassette. We found one at a local music store actually hiring for less than the Alesis system, and we snapped it up. It turned out to be an excellent choice.

Getting started on the DA88 was not quite as easy as we would have liked. Each new tape used in the deck has to be 'formatted', which involves running it once from end to end. Fortunately, the machine can also generate a SMPTE timecode stripe, starting at any frame number you like, on an invisible track while it formats. (It can also record audio at the same time, but this seemed unnecessarily risky.) Unfortunately, the manual does a miserable job of describing the procedure — but after a few tries we managed to get it right.

After the timecode was recorded, I recorded the music, locking my sequencer to the DA88's SMPTE. Although I had combined my shorter sequences into longer ones, there were still some very fast transitions that needed to be made between sequences, and even some overlaps. Resisting the temptation to test the machine's digital punch-in capability, I used alternating pairs of tracks: 1 and 2 for the first cue, 3 and 4 for the next, and so on. In the mixing studio, the faders could simply be left on for all four tracks, because the unused tracks at any time were truly silent. As I was mixing the music, Cindy called from New York and told me where the commercial breaks were going to fall in the American broadcast version. Where I could, I recorded a second version of the cues surrounding the breaks on the second pair of tracks, with appropriate fade-outs and ins. All three shows were printed to tape in three days.



Then the DA88 was carried across town to Steve's studio. He plugged in his Mac and K2000 and laid down the effects directly from the sampler's outputs onto the four remaining tracks of tape, with no reverb or other processing. Co-producer Herb Krosney flew up from New York for the effects-laying session. This would be the first time that any of us would hear the music and effects combined. Steven summed all his outputs into mono for monitoring, and adjusted the levels going to the tape as if he was doing a mix — even though they were going onto separate channels on tape.

Herb had a few small suggestions, but essentially he was extremely pleased with what he heard (as were we). The effects for all of the shows went down in one long afternoon. Steve's track sheets now reflected what was on the tape, and they came down with us to New York, so that Dan could make use of them.

FINAL MIX

At This Way Productions, located in a hiply refurbished old warehouse in the bustling and trendy part of downtown Manhattan known as SoHo, all of the audio tracks were put together. The narration and dialogue voice-over tracks had been recorded elsewhere, and placed on timecode DAT. Dan loaded each segment, with its associated start time, into his Pro Tools system. The sync sound segments were loaded in the same way.

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BLOOD & IRON

PRODUCING TV MUSIC & EFFECTS

A JVC 3/4-inch U-Matic video player supplied the master picture and timecode. The Tascam DA88, containing all of the music and effects tracks, was put into slave mode, as was Pro Tools. An Adams Smith Zeta 3 synchroniser distributed the transport commands and timecode, and also converted it to MIDI Time Code for yet another Macintosh — the one running the studio's MegaMix automation system installed in its Soundcraft 1600 desk.

In attendance were Dan and his assistant engineer Bill Kreth, co-producer Robert Ross, editor Cindy Kaplan-Rooney, associate sound designer David Williams, and myself. We were all confident that we would be out of there in three days. Alas, it was not to be. Part of the slow progress could be blamed on the degree of flexibility we had built into the process, and the inevitable "Let's try it this way!" and "Let's keep on it until it's perfect!" syndromes which this flexibility fostered. For example, since none of us had heard a complete mix before, there were a few spots where the music or effects 'stepped on' a voice-over, or vice versa. A discussion would ensue over which element should be brought up, or moved in time, and sometimes several different solutions were tried. Consensus was not difficult to achieve — everyone usually agreed readily when the right solution was found — but such creativity takes time. What was most surprising to all of us was how well everything fitted together, even though we had all been working essentially in isolation.

Owner Dan Caccavo at This Way Productions with his Pro Tools system.

A far more serious obstacle arose when we discovered that many of the voice-over segments had nasty little 'clicks' at the beginning. Dan worked out that this had occurred when the studio who had placed the cues on DAT inserted (without being asked) a very fast, but not very good, noise gate into the signal chain. Some of the clicks could be eliminated by putting a volume slope on the cue in Pro Tools, while others were better served with a fast automation move. The process was not difficult, but it was extremely tedious.

The DA88 performed flawlessly, locking up in a few seconds just about every time the videotape started. The automation also worked perfectly, and Pro Tools — especially in Dan's extremely knowledgeable hands — proved itself the ideal tool for dialogue editing.

After the third day, I had to get back home to Boston, and two days later David did the same. The mix continued well into a sixth day, but the Boston contingent did not worry unduly about not being there: between Cindy's, Robert's, and Danny's excellent ears and sensibilities — as well as Steve's comprehensive cue sheets — we considered the project to be in good hands.

On the sixth day, Dan produced the music-and-effects-only version ('M+E'). Producing this version wasn't just a question of eliminating the voices and leaving the other levels where they were, nor did it mean creating a mix that put the music and effects out front and pretended there were no voices at all — there was a middle ground he had to find. But since everything was automated, it was a straightforward matter to tweak the automation files so that the vocals were turned off, and the other levels brought up a modest amount and re-balanced. On the seventh day, everybody rested!

The first copies went out to the networks in the US and Europe who had originally sponsored the series. The next ones went to a distribution company who were hoping to sell the series to other networks around the world. As of this writing, the show has aired on the Discovery Channel in Europe [in May 1994; there is also a possibility that the show will be repeated], while the French broadcast and American cablecast are scheduled for early 1995.

Robert Ross and myself recently spoke on the phone, and he paid us what might be the ultimate compliment from a producer: "I wish I had allowed more time in the film for the music and sound to come forward," he said. "They often did a better job of setting the scene than the narration did."

We can't wait for Krossfire's next project. Hopefully it will be something a little more cheery. Maybe something about Canada's long-standing successful multi-lingual culture?...no, that won't work; how about the joys of mutual-fund investing in post-Communist Russia?...no, not that either; well, how about...

Observant readers may have noticed that an incorrect diagram was printed with the first part of Blood & Iron, in our December issue. We printed Steve Olenick's Effects Production setup with the caption 'Paul Lehrman's Music Production Setup'. Apologies for any confusion caused; both diagrams are printed with this instalment.

BLOOD & IRON BACKGROUND

Blood & Iron is a three-part series exploring the origins of Germany's aggressive military history, which has been closely associated with its industrial development. Programme One focuses on the factors which made Germany into a forceful presence at the armaments stage, leading to the First World War. Programme Two looks at the build-up to World War II and at how the nation's aeronautical genius was harnessed to ensure air supremacy. Programme Three explores Germany's immediate post-second World War history.

Blood & Iron was shown on satellite's Discovery Channel from Wednesday 18th May. There is a possibility that it will be repeated in the future, so keep an eye on your TV listings magazine if you have satellite.

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ANDREW PRICE • COPYRIGHT-FREE MUSIC

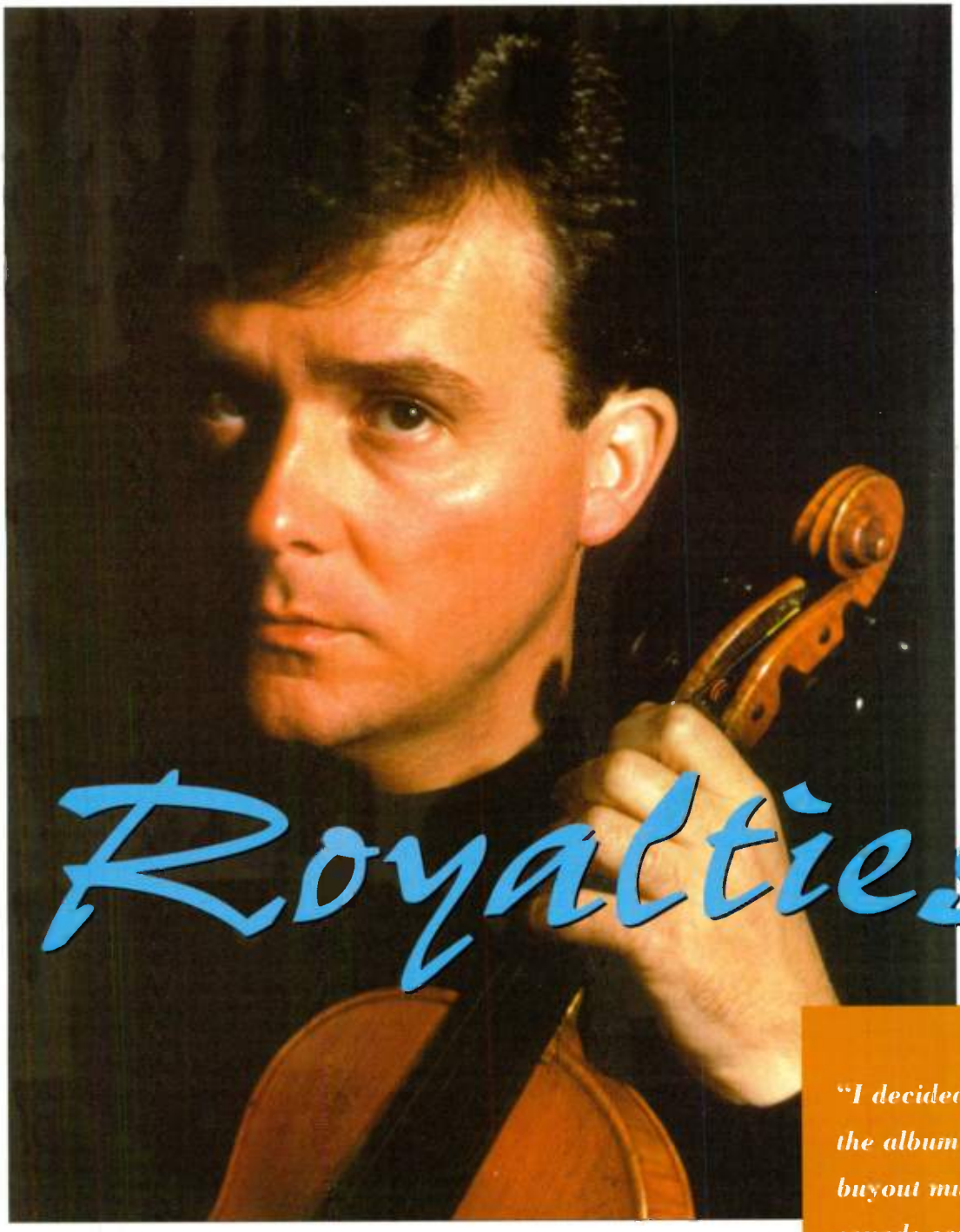
Classical violin player Andrew Price is making his fortune with music that he deliberately didn't copyright. Here he explains to PAUL WHITE how he managed it, and offers some tips on blending MIDI-generated music with real orchestral players.

Andrew Price is a classical violin player, but became interested in recording during the mid '80s, when affordable multitrack equipment made home recording a possibility. In 1988, with one album of library music and a handful of jingles under his belt, he left his job as First Violin with the BBC Symphony Orchestra in London, and headed north.

"I was still doing work for existing clients, one of whom was a solicitor, Roy Hewetson, who produced his own tapes on conveyancing as a guide to the pitfalls of house purchase. He would write the scripts and voice them, and I would record his voice, compose appropriate music, produce a master and provide duplicate cassettes. One evening, the conversation turned to library music. I outlined the direction I felt the industry was going in, and the type of releases I thought would sell well, and he just said, 'Fine, let's do it!'. Thus the HAPS Music Library was born...

"Over the next few years, our output comprised 10 CD albums of library music. All our albums except the first (made up of 81 29-second jingles) used real instruments throughout, and were recorded in some of the best studios in the North. A couple of those titles have done amazingly well. Several radio stations still use our second album,

Andrew in his home studio.



Royalties

Impossible Quest, for their news or current events themes. Our third album, *At The Top*, which had a very American, 'life in the fast lane' feel, has also been a very good seller in television and radio. I particularly enjoyed the last four albums we made, all based on the seasons of the year, as they were arranged for string quartet, and enabled me to be both the writer and the First Violinist."

FIDDLER ON THE SIDE

Although heavily involved with the HAPS library music, Andrew began work on other projects. Only six months into the HAPS project and the first CD album, he was drawn back into orchestral playing once again. "The Manchester-based BBC Philharmonic were advertising for a rank and file First Violin, and I was lucky enough to be offered the job — six years on, I'm still there! The Orchestra also provided an accessible pool of talent for the instrumental requirements of the HAPS recordings.

"During this time, too, my own string quartet, the Ariosi, had some success. We'd done a number of soundtracks for BBC documentaries, one of which won the Golden Rose of Montreux, and in the same year, a recording we'd played on for Sam Brown, entitled 'Stop', shot to number five in the charts, and we found ourselves miming on Top of the Pops! The quartet was deemed to be an important feature of the single, so we were invited to be in vision with Sam and her singers."

Due to the terms of his contract with the HAPS library label, Andrew was barred from undertaking any composition of his own at the time, aside from the work for the HAPS library. However, he was not prevented from working as an arranger, and ▶

> ***"I decided I would make the album 'copyright free buyout music'. This sounds complicated, but it just makes the album more attractive to potential users."***

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so found new and fruitful employment arranging well-known music for TV advertising. One such project was an ad for a milkshake called 'Daisy Shake', as he explained: "The visual side was animation — different coloured cows jogging up and down on a plank of wood, making milkshake. The agency had linked the 'shaking' up and down with Jerry Lee Lewis's song 'Whole Lotta Shakin' Going On'. The producer asked me if I could do an arrangement to fit the style and brief requirements. I confidently said yes on all counts, put the phone down, and then rushed out to buy a cheap CD with 'Whole Lotta Shakin' on it. After careful listening to the original, I was able to construct a sound-alike track. Having the original also helped me a lot when matching up the instruments used — and this added to the authentic sound of the finished product. My advice for anyone considering taking on a project that lies at the limits of your arranging abilities is to stretch yourself and have a go. Advertising is such a 'no prisoners' world that they'll probably inform you with all the grace of a ton of bricks if they don't like what you're doing.

"Another ad campaign that I really enjoyed being involved in around then was for Evening Primrose beauty products. Again, the ad men had decided to utilise the powerful undertones of a hit record to link with the merchandise. The record was 'Put You Together Again'. Presumably, after a day at the office that's torn you apart, a long lingering soak in Evening Primrose helps put you together again! It was right up my street, as the producer wanted to use just strings and piano, but still have a 'big-sounding' arrangement. So, to get that effect, I wrote for the register on each instrument that has a richness and warmth of tone, and introduced movement into each part, including musical dialogue between instruments."

CHANGING DIRECTION

The next few years saw the completion of the HAPS library schedule and a number of other important projects. Andrew was asked to write a Christmas Medley for the BBC Philharmonic's last concert of the Year, conducted by Carl Davies. He was also commissioned to adapt one of his existing pieces for the Royal opening of Manchester Airport's Terminal 2.

"I felt as if I'd reached a significant point in my composing and arranging at that time. My first album from 1986 had been taken over by the Carlin library label and re-mastered on CD, so there were 11 CDs of my music on the market! I was fairly well established as an arranger — I did regular work for the Pickwick label, for people like Paul Jones (ex-Manfred Mann), Bonnie Langford, and Fiona Hendley — so I felt it was time to push the boat out and start my own label. That's when I formed AP Music.

DIY ORCHESTRA

"I have some techniques for recording myself up to 14 times and achieving a very big 'section'-type sound. The golden rule is to look at the workings of a real symphony orchestra. The lush, rich sound of an orchestral string section comes from the fact that although they're all playing at the same time, they're doing it in slightly different ways. Some players play notes in higher left-hand positions, which gives a more 'mellow' sound, while other players give slightly more edge and projection to their sound by playing in lower positions. Vibrato techniques will vary enormously, and bow speeds and attacks will alter slightly between players, as will intonation. All these elements combine to create the 'big orchestral sound'. If you want to attempt to approach this with just one player, then every take should encompass one or more of the variations mentioned. This is actually very hard to do, as the player has to fight the temptation to go on 'automatic pilot'. But the results are worth the effort!

"Going to a real concert can also provide aspiring arrangers with useful experience for constructing orchestral arrangements, whether real or synth-based. If you observe how much of the time the strings play in comparison to the wind, brass, and percussion at a concert, you realise that by and large, the foundation for the musical canvas is the string section. A common mistake made by newcomers to string arranging is to simply regard the cello line as an extension of the bass. The cello is a wonderful instrument to write for — let it take over from the first violin now and again, or allow it to converse with a counter melody.

"The engineering side's important too. Different microphones and positions also help make the tracks sound slightly different. I like to record every take in stereo and bounce tracks, adding a new line at the same time to make the maximum use of the available tracks. Effects can also help; orchestral sounds obviously need *some* added reverb to produce the illusion of playing in a concert hall. In my experience, the choice of reverb is dictated largely by the tempo of the string arrangement. I use a Lexicon LXP1 and Alesis Microverbs (I and II), but you can find similar settings to the ones I use on most reverb units. For slow to mid-tempo, I use 'Large 2' on the LXP1, or 'Large 6' on the Microverb I. For faster stuff, I use 'Small 2' on the LXP1, or 'Small 4' on the Microverb I. 'Med 2' on the Microverb II is also very good.

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"It would have been fairly simple to produce another 'library' album, but I had another idea at the back of my mind. A lot of people who were using their camcorders to record weddings, holidays, and other social events kept telling me that they didn't have access to professional quality music, and after talking to some potential buyers, I had a good idea of the type and style of album that might come in useful — when your PRS statements show commercial use of the same tracks year after year, it isn't difficult to incorporate the same formulae into new compositions.

"I began writing the album, as always, by going back to the old-fashioned method of pen and manuscript, without a keyboard in sight. I wanted to cover not just the obvious topics for a camcorder user, but material for more advanced filmmakers too. I eventually settled on some broad categories: Weddings, Holidays, Children, Comedy, Mystery, and so on. Once I had finished arranging and orchestrating, I began programming the information for tracks and parts on the Atari. I wasn't in a hurry to complete this project, so I was able to take my time and keep the quality high at every stage. Eventually, I went into Alfasound studios to complete the project. We added real instruments on ADAT, and decided to master onto quarter-inch tape using Dolby SR, with a little compression courtesy of a Valley International 610. After we'd done the necessary cutting and splicing, the recording was transferred to DAT.

"I was really pleased with the quality of the finished master, which was due to the expertise of the engineer, Richard Scott. Although they now have a SADiE digital editing system at Alfasound, recording on analogue tape with Dolby SR has a lot going for it in terms of sound quality, provided you take the time to line everything up correctly. However, having seen the SADiE in action, I do admit that the versatility of the system has real advantages when you're compiling tracks."

COPYRIGHT FREE

Andrew went on to explain that having completed the record, he decided to market it in a rather unusual way: "I decided I would make the album 'copyright free buyout music'. This sounds complicated, but it just makes the album more attractive to potential users, as there are no problems if they decide to show films which include my music to paying audiences, or whatever! The idea is to sell the mechanical copyright in the asking price, although a writer does have entitlement to PRS fees in the normal way if recognised broadcast networks use the material. This practice is standard in America, where 'needledrop' and 'buyout', as they are known, exist side by side. The price usually ends up being higher than that of an ordinary CD, because as writer of the works, you are electing to sell the mechanical clearance of the compositions in the purchase fee.

"After careful consideration, I decided not to press the CD in this country, but instead to have it done abroad, through a company called Melody. The financial considerations were so worthwhile that once I was satisfied that the quality was OK, it was a very easy decision to make. Pressing plants in England were a little bit negative about pressing 75 minutes of total programme length. Although the plates for the on-body printing had to be generated again (as the originals were lost somewhere along the line), I think the finished CD is perfect aurally and visually."

Pressures of his day job led Andrew to let someone else handle the distribution of his finished CD: "I decided to put the distribution in the hands of Alfasound, although I did put as much time into talking to people and generating new sales as I could. The CD is available from any branch of Tecno cameras, and through mail order. It should be available shortly on satellite shopping, and we are already exporting to Japan.

"Although the album has taken a lot of my time and a fair injection of capital, it's a very satisfying experience to see an idea through all its stages until you have a commercial product that's in demand. Certainly, it's very gratifying to receive letters from those users who say that the album is 'the best copyright free music available

ANDREW PRICE: DISCOGRAPHY

LABEL	CATALOGUE NO	TITLE
Ready Music	LP BLK 112	*Horror*
HAPS	CD 001	*29-second jingles*
HAPS	CD 002	*Impossible quest*
HAPS	CD 003	*At the top*
HAPS	CD 004	*House of evil*
HAPS	CD 005	*Laughing gas/Rainy day*
HAPS	CD 006	*Look ahead/Look to the stars*
HAPS	CD 007	*Spring*
HAPS	CD 008	*Summer*
HAPS	CD 009	*Autumn*
HAPS	CD 010	*Winter*
Carlin	CD 168	*Drama themes*
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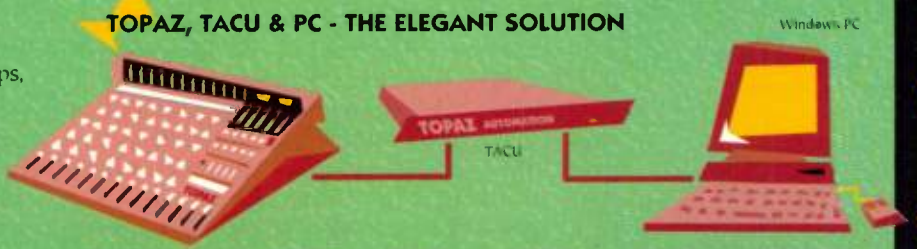

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on CD'. It is selling amazingly well — so another CD will be following on pretty swiftly!"

MAN AND MIDI IN PERFECT HARMONY

I asked Andrew to explain in more detail what equipment he'd been using at the various stages of his career: "When I left London, I sold my Fostex A8 and Ram RM10 desk, because I felt ready for a change. A lot of composers seemed to be using 'workstation' keyboards, and I felt that these were well-suited to the creation of jingles like the short 29-second ones on the first HAPS album, so I bought a Roland D20. Once a project was completed and stored safely on 3.5-inch discs, I used to take the keyboard into a fully professional studio to complete the project. The main problem with the D20 was its stereo output. I used to get round this in the studio by 'firing in' individual tracks to multitrack from the sequencer, which was synchronised to tape. This was surprisingly easy and accurate, but there was the problem that individual drum sounds couldn't be separated.

"It occurred to me that if I bought a drum machine with individual outputs, at least I could 'fire' sounds to different tracks. I liked the sounds in the Roland R5 machine, and four outputs were fine for my working setup — so I bought one. I worked with this arrangement for a while, and completed a number of projects, but I never found Roland gear particularly user friendly. Eventually, I sold the workstation and drum machine to buy an Atari/*Notator* set-up.

"The Proteus modules and Alesis D4 drums that I use now are so easy and logical to operate that I've never looked back since buying them! By the time we were recording the HAPS orchestral albums, I was producing printed parts direct from *Notator* for my players, and this had a number of advantages, not least that I could hear and correct anything that didn't seem to work before the musos even saw the title page. The clear, clean printing was also a bonus, and helped avoid mistakes.

"My work seems to fall into two main categories; sequencing actual music tracks on the one hand, and producing scores and parts for musicians to play on the other, both of which rely on the computer. Although I can foresee an Apple Mac purchase sometime in the future, I'll probably stay committed to my Atari/*Notator SL* package until it dies on me, as I can find my way around it pretty well."

Although he has been fortunate enough in recent years to afford the luxury of self-constructed MIDI tracks combined with the talents of real players, Andrew recognises that budgets often do not stretch to a decent complement of human players. In cases like this, he is full of ideas. "One way of working that provides a good compromise is to combine a good string patch with even just one real player. This is a very effective way of creating the illusion of a full section of players, even though there is no single synth patch that can incorporate all the elements that a human violinist will utilise in playing. For example, the use and speed of vibrato, speed and pressure of bow, playing nearer to the bridge for more 'edge' to the sound, or near the fingerboard for a softer, more veiled sound (often referred to as 'sul tasto') — all these techniques provide a huge variety in timbre and envelope, which current synths can't emulate.

"The first step is to choose your string patch carefully. Some manufacturers would have you believe that all string players start playing a second after the downbeat, if their factory presets are anything to go by. This is not the case in the wide variety of sessions that I've done! I use a Proteus 1 with orchestral upgrade, and find four patches particularly useful: 001, 'Hall Strings'; 033, 'String Orch'; 069, 'Smooth String'; and 203, 'Legato Strings'. I'd recommend you steer clear of solo patches, and stick with ensemble configurations, as most solo patches are so obviously fake.

"When writing, you need to construct individual parts; first and second violins, viola and cello lines, depending on the track itself, and how far down the line you want to go. Violins alone can work fine, as long as the sequenced line is identical to the part you give to your human player. If you have enough tracks spare, try recording at least three tracks of violin to help create an ensemble effect. Fairly close miking of any 'real' players will pick up shifting and surface noise that helps to create the illusion of a full section when combined with your synth patch. One of my trade secrets is to get the violinist to put his mute on for one of the takes — this seems to smooth out the combination of violin and synth/sampler in the mix.

"The final step to authenticity is to look at the layout of an orchestra at a real concert; the first and second violins are positioned on the left, so your 'real' tracks should be panned between quarter to and five to the hour. If your budget stretches to a cellist, then they should be dealt with in the same way. Try recording the cello line twice, and, as with the violins, ask your player to use their mute for one of the takes. Position the cello tracks at around quarter past the hour, then slowly raise the 'real' instrument faders until the desired level is achieved. Raise the muted tracks last, and savour the effect!" SOS

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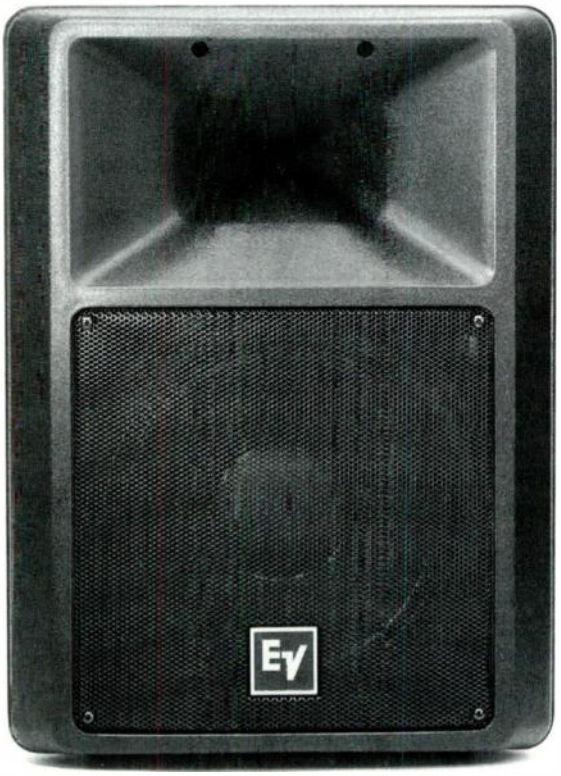

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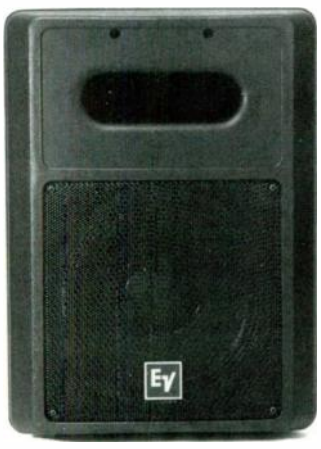

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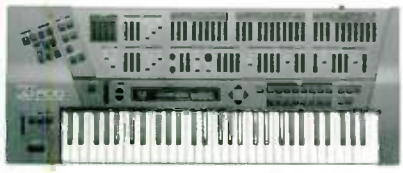

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DAY PARTAY

Recording Venue: Home.

Recording Equipment: Gem S2 synth, Atari ST running *Pro 24* sequencer, Fostex R8 8-track open reel, Seck 12:8:2 mixer.

Recorded in Cardiff, and influenced by Steely Dan, Bjork and PM Dawn, Day Partay seem to have an international flavour. The group use breakbeats and synthesized sounds in conjunction with real guitar, and the jazz-pop production style relies heavily on the vocals, which are placed well up in the mix. 'Groovy Luv' shows a sense of humour — before the lazy beat starts, the song features the sound of an old 78rpm record having the stylus ripped off it. The lead vocal style is just right — it's almost spoken, and very upfront against the well-layered soft backing vocals, which gives an intimate sound over the busy party atmosphere. The arrangement keeps you interested too, with some nice key changes and occasional clean guitar breaks to add to the mellow flow of the song. Sonically, the keyboards are too low in the mix and the whole bass end is light, so I'd suggest a remix on what is otherwise a fine track.

The bass on the second song is at a better level, and the whole mix is full of nice touches. For instance, where some demos rely on the repetition of one breakbeat with added drum machine percussion, main man Jason Roberts works in fills, stops, and other breakbeats too. His use of panned synthesizer and swelled chords in the breaks is also musically interesting, and to top it all, the lyrics have obviously been given a bit of thought and humour (especially the Mills and Boon reference). I did think that the only thing to improve the production would have been the use of wah guitar, but then that would be to impose my own personal taste.

A more driving sound is given to the final song, which proves that Day Partay have a little bite as well as the ability to produce a heavy party groove. The guitar riff, when it appears, is given a lot of short room reverb and this really gives it some character in what is otherwise an intentionally dry mix. I also liked the multi-tapped echo vocal break, and its sudden cut back into the track. All in all, plenty of good ideas, well-executed grooves and good performances make this the tape of the month. ☐

top tape

TOO BLUE

Recording Venue: Home.

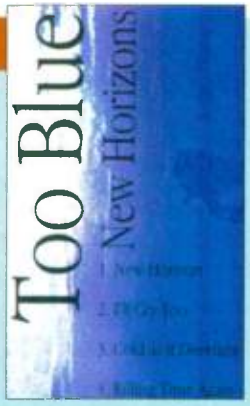
Recording Equipment: Yamaha MM1 mixer, Macintosh LC475 running *Cubase Score*, Alesis MIDIverb II and Quadraverb, Yamaha EMP700 multi-effects, Casio DAR100 DAT, Sony TCK611S tape deck, Sony TAF270 amplifier.

Mark Barron and Matt Sladen first started playing music at school together some six years ago, and even though they're now geographically separated, they still get together to produce the odd song or two. Musical influences take in U2, Tears for Fears, Depeche Mode and the Blue Nile. No multitrack was used in the recording — guitar and vocals were played live to the sequenced mix. This usually separates the men from the boys, and I can truthfully say that they've turned in a really good performance.

On the first song, the melody relies heavily on harmony vocals, and both Matt and Mark turn in a beautifully tuneful performance. Perhaps it's the buzz of doing it live, but they do give the vocals an edgy atmosphere which certainly does the song no harm. Instrumentally, the piece opens with a warm pad keyboard sound before the up-tempo backbeat pounds in. Gated snare has been chosen to drive the song along on the two and four beats, and this effect also gives the snare its own place in the mix. Acoustic guitar strums along rhythmically, with quite a hard DI'd sound. This could maybe have been improved with a few dB's cut at 800Hz, but the top end should not be lost entirely, as this gives the guitar the clarity to sit above the keyboards in the mix. The only weak point in an otherwise excellent song was the middle section, which somehow didn't seem to work, and this was reflected in the uncertainty of the vocal at this point.

Only Mark sings on the second song, which starts with what sounds like keyboards, with a high harmonic content. Modulated triplet-style delay is used on this sound, and a wide stereo field is created when bells and strings join in, providing a moody and atmospheric start. Unfortunately, the drum sound really lets down the otherwise fine mix — the reverb is too long, and there's too much of it. The long sustained keyboards and wide stereo of the more percussive synthesized guitar sounds work well in the mix, but this does not mean that the drums need to be treated with the same amount of effect. A pizzicato-style snare with a short room reverb would have sat much better in this track. In contrast, the vocal has only been lightly treated, and although this does work, a fraction more reverb or even delay would have been ideal.

The third track features acoustic guitar again, and this time it's heavily compressed and miked up. The sound is better, but a little heavy on the bass end, which suggests that the microphone was placed too near the sound hole. Once again, there are excellent harmony vocals from the lads, but they've fallen prey to the reverb beast again on this one, and should have gone for a big pre-delay in the program to keep the vocal clarity in the mix. The string arrangement is short and sweet, and goes well with this style of reverb, but could have been improved by taking out some of the harshness from the sound — a few dB of cut at around 4-6kHz would do the trick. ☐



SWERVE

Recording Venue: Home.

Recording Equipment: Fostex 280 4-track, Denon DRS810 tape deck, Sony DAT DTC690, Alesis 3630 compressor, ART Multiverb LTX effects, Sessionmaster pre-amp, Shure SM58 mic, Alesis MMT8 sequencer.

A different band to the one you're thinking of, so let's hope Swerve main man Paul Hill doesn't get any letters of a legal nature through the post — it has happened to yours truly in the past!

Paul's opening song has an energetic standard rock backing made just a little bit more interesting by his deadpan vocal style. Whether this is by accident or design is hard to tell, but I suspect the former. Whatever the case, I believe it's something to develop in the production and lyrical content. As for the backing, there are some good overdriven guitar sounds courtesy of a Strat and Sessionmaster pre-amp. The clean guitar is also fine, but a little too much reverb has been added in some parts of the mix. For example, when the picked clean guitar plays arpeggios, the modulated reverb works well to sustain the notes played, but on the chopped chords, the length of reverb decay results in a confused sound, lacking clarity. The song is a little on the long side — the verses, especially, don't develop in arrangement, and harmony vocals or another instrument would have picked the verses up at the eight bar stage. However, the short solo is tasteful, and ideal for the song.

Paul's ability to create a hooky guitar lick comes to the fore on the second track, where the clean guitar track is really the melodic anchor point of the song. A better drum sound and less wooden programming also help power this one along, but the bass sound is a touch twangy. It has plenty of energy in the upper-mid frequency range (where it clashes with the clean picked guitar) and not enough lower mid and actual bass. Consequently, there's a hole in the mix in this range, which the kick drum can't fill. I'd suggest trying a different bass sound, or turning the treble EQ down by three or four decibels on the bass track, if possible. □

MIKE MASTERS

Recording Venue: Home.

Recording Equpment: Atari running *Cubase*, Studiomaster 12:2C, Alesis MIDIverb II, Microlimiter and Microgate, Vesta DIG411, Audio Technica Pro 2 microphone, Nakamichi cassette deck, Sony DATman.

From deep in rural Scotland, Mike Masters (or Ferkyn Eel, as he wishes to be known for the purposes of this recording) specifically asks ("wiggles with anticipation") for comment on the material content as well as his engineering prowess. The two songs on offer here, 'Sky God Sez' and 'Fish out of Water' are based around the lyrics, and are musically sympathetic in terms of soundscape and atmosphere. This gives them more of a visual arts style — you could certainly imagine them being used as part of a play or film, or as backing for contemporary dance. 'Sky God Sez' is at once ponderous and foreboding, as Mr Eel tackles the slippery topic of unquestioning belief. The opening line is a strong one ("You've a led imagination"), and sets the theme for the song as he moves through a gamut of social, commercial and religious themes. The sounds chosen are all interesting, from the opening feet tramping across a soundscape (complete with bell in the distance) to the church organ used in the chorus. This is punctuated by the multitracked vocal "Sky God Sez" (treated with a pitched-down harmoniser), and while this seems a little corny reading it back off the page, all I can say is that it doesn't sound anything of the sort. The closest comparison I can make to the vocal effect is the demon in the film *Legend*, if that means anything to you...

'Fish out of Water' is based on the premise that we've evolved from a humble background to destroy the planet and ultimately ourselves. Heavy stuff, but it's performed with some humour, and, again, has some memorable lyrics. Both the songs have been well mixed, and I'm glad that Mike made an effort to make the words audible, as they're of utmost importance in such compositions. However, in terms of atmosphere, 'Fish' is more bubblegum cartoon than Arts Council Grant, and will probably earn Mike more money than credibility. Now, there's a dilemma! □

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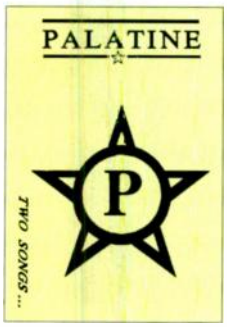
As an incentive to send in your best demos, 3M are kindly providing prizes for the best tape submitted each month. The lucky winner has a choice of: 20 Scotch XSII-S high-bias C60 cassettes, 10 3M DAT 90 digital cassettes, five reels of 3M 996 quarter-inch tape, three reels of 3M 996 half-inch tape or two reels of 3M 996 one-inch tape. Designed to accept very high recording levels without distortion, 3M 996 tape is packed on precision NAB reels and comes in tough, attractive library cases.

demo DOCTOR

quickies

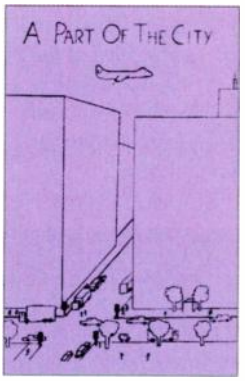
▶ The engineer at Pearl Studios in Liverpool has done a fair job on **PALATINE**'s demo tape, which features four-on-the-floor dance grooves. The top end of this cassette is lacking a bit of sparkle, and the bass end is a touch heavy, but that could easily be the fault of a tape machine mismatch. If not, then it could be run through a high-pass filter set at around 70Hz to deal with that low bass, and an enhancer would add some post-production HF sparkle. The music is OK, but doesn't sound very current — maybe some more adventurous sounds would help. Also, more needs to be made of the chorus vocal. The second track on the tape comes across better, on both the musical and production level, and leans heavily on early '80s synth production, if that's any use as a yardstick.



On the other hand, **STUART MEE** is firmly locked into the late '80s, with a battery of digital sounds in his instrumental arsenal. There are some unusual ones though, and plenty of attention-grabbing changes in the movement from one theme to another. For instance, the changeover from bells to acoustic guitar sections in the first instrumental is accompanied by some very Gabrielesque synth patches, which stopped me from nodding off to the hypnotic eighth-note bell sequence. Speaking of which, I'd suggest shortening some of the pieces for demos to library music companies, as they often go for

compositions that are between one and two minutes long. Clear, unambiguous titles are also useful to libraries (for example, 'Go For It', naff though it is, would be a good one for a theme for corporate businessmen to use at a show or lecture) because it's obvious what style of music it's going to be.

Stuart's mixing skills and grasp of dynamics are impressive — there's plenty of balls in the bass end without any nasty booming, and I don't see why he shouldn't approach companies with this material, given a little editing.



As well as a cassette and a DAT, **KEVIN JOHN CURTIS** has sent me a letter telling me about his proposed album of guitar instrumentals, which range from heavy rock to acoustic. Kevin also raised a point in his letter concerning the layering of snares on the Alesis D4, and to answer this query briefly, you shouldn't have to assign two MIDI notes as triggers, provided you can assign the same MIDI note to both snares (look under MIDI Utilities). Not all the tracks from the album are featured on the cassette or the DAT, but the tracks I did hear are played with skill, and well engineered. That said, I'm not really sure that there's any market for releasing this on a CD, unless he can get some interested party in the guitar world to back it. Selling it at gigs is one thing, but it takes a lot of gigs to get through five hundred CDs! I was slightly disappointed to find that all the tracks on the cassette sent to me were heavily rock-orientated, but there was an extra acoustic track on the DAT, which I did take a look at. This showed a little weakness in the sound of the acoustic, which is thin and over-processed on the picked sections, giving the guitar a hollow, out-of-phase sound. The track also slows down noticeably when the drums come in. Apart from this, the production on the recording was of a high standard.

Finally, **MARK ALEXANDER** has sent in a tape of DJ mixes which he performs to a very high standard — I can only applaud the clever sound manipulation on display here. The high bell sounds come out a bit too loud above the backbeat and vocal for my taste, but the drum machine is well balanced with the rest. I also liked the use of pan and echo in the House mix of 'FWIF' and 'Northern High' which is carried out with precision to a backdrop of atmospheric phased strings. ☐

JORGEN SALDE

Recording Venue: Home.
Recording Equipment: Tascam 38 tape recorder, Fostex 820 desk, Lexicon, Alesis, Behringer and Boss effects, Ensoniq ASR10 sampler.

Usually when I get demos from Sweden, they turn out to be of very high quality, and this is no exception, even if it does have the old 'answering the telephone' ploy to start the first composition. The first track is an odd mixture of instruments, not all of which I recognised. However, it was based around piano and some sort of melodeon or accordion, with other instruments like clarinet taking up the theme from time to time. The piano had no sustain, and its stilted nature perfectly suited the peculiar nature of the melody. Virtually no reverb ensured that this was a mix of perfect clarity and balance.

The second track continued the offbeat melody theme, this time against some well-utilised kit and percussion samples consisting of tabla, conga and possibly talking drum. The low frequency range was catered for by the changing low pitch of the drum, while the strings were layered in the mid range, with hi-hats and cymbal crashes taking the high frequencies. In terms of performance, the drums were overindulgent in this area, and some alternative cymbals could have been used — Chinese ones would not have been out of place.

Track four features more experimentation, and it's good to hear someone toying with sound but so obviously in control. In this case, it's the sound of a bow drawn across a violin with enough force to generate a note but also to scratch and produce high harmonics. This is fed to a a reverb patch with pre-delay, and backed by electric piano chords, hand-held maracas and bells, producing an atmospheric piece. I wasn't let down in the technical department, and all in all, this is a well-recorded tape for those who like a combination of traditional instruments with tanatalising melodies and occasionally unorthodox backings! Shame it's not available on general release. ☐

widgets

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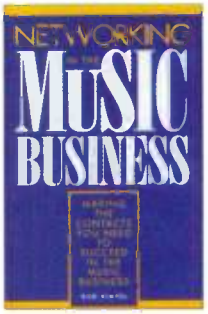
NETWORKING IN THE MUSIC BUSINESS

"Networking is the way to get songs listened to, not blindly calling up and bothering record companies." So proclaims Dan Kimpel's *Networking in the Music Business*, a book which fits almost perfectly into the classic self-help mould — except that it's geared to the needs of musicians and songwriters. As advertising director for the Los Angeles Songwriters Showcase, Kimpel has observed thousands of people trying to break into the music business, and with 20 years in the industry, has seen what makes the difference between a breakthrough songwriter or performer and just another also-ran. Central to the book is Kimpel's very American concept of Networking — not the computer sort, the people sort. He maintains that it is the people you know and the people you *get* to know who can help make you the breakthrough artist, and his book brings together a multitude of strategies to help you make valuable and lasting contacts.



Kimpel begins by explaining what networking is, tells you where the power really is in the music industry, and outlines the type of places you should go to make contact with the decision makers. He then explores how you can make the best impression on the people you meet, and how you can assess and maximise your own talents, using anecdotal material from successful industry professionals, including songwriters, lawyers, managers and producers.

Many people will find this book of most value for its wealth of advice on self-motivation; Kimpel helps you to chart your own goals and set the agenda for where you would like to go in the music business; he gives you questions to ask yourself, which help you assess whether you have evolved a potentially successful musical style and whether your own commitment is really up to it. A point made by one of Kimpel's interviewees is that really successful artists have one thing in common — absolute drive and commitment and, above all, persistence. These are things we all really know if we think about it, but it's surprisingly valuable to have them pointed out on paper and in such a motivating way.

Practical help offered by the book includes action plans that you can use to give yourself a sense of purpose, and suggestions of weekly, monthly, and yearly 'attainment' schedules. Kimpel also presents strategies to help you overcome the insecurity and fear of rejection which holds so many musicians back. He prompts you to examine your self-image and public persona, and to approach people with honesty and positivity: as he puts it, "you will receive reflected positive responses from people you approach in an upbeat, positive manner."

The chapter on selling yourself and your music gives useful ideas on starting your own organisation, to help yourself and your contacts to create more publicity, and creating your own 'scene' with like-minded others; examples here come from people involved in the creation of the London punk scene, and the New York group centred around CBGB's bar, where Television, Blondie, Talking Heads and The Ramones created a 'scene' — with very successful results.

There are some uncomfortable home truths in this book — on the subject of taking a 'straight' job to pay your way until you can make it in music: "We all have limited energies and creativity; if we expend them on behalf of someone else's business, we're short-changing ourselves. Sure it's possible to work at any number of things and make enough money to have a comfortable lifestyle, but if you want success in the music business (which ultimately will pay off in emotional satisfaction as well as monetary gain), you can't give up your vision and creativity. Guard them jealously and use them to fuel your ambition." Highly recommended. *Debbie Poyser*

FURTHER INFORMATION

£ ***Networking in the Music Business*** **(hardback, 122pp), Order Code B251, £11.95 plus postage (£1.95 UK, £4.95 Europe, £7.50 rest of world).**
A **SOS Publications Ltd, Media House, 3 Burrel Road, St Ives, Cambs PE17 4LE.**
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RAPCO DB-101SL PASSIVE DI BOX

Most of the DI boxes we've looked at in *SOS* have been active models capable of matching high-impedance sources, such as electric guitars, to the inputs of mixing consoles, but there are other applications where active, high impedance circuitry is unnecessary, or even undesirable. In these instances, the active circuitry is replaced by an impedance-matching transformer, which avoids the question of powering and offers a high degree of electrical insulation between input and output.

Under review is a passive DI box built by Rapco. The circuitry is simple but provides two modes of operation, for use with both line-level signals and speaker-level signals from amplifiers, such as guitar amps, making it very versatile. The balanced output may be fed directly into the mic input of any mixer, and because the circuitry is passive, no phantom power is required and no circuit noise is generated.

Unlike speaker simulators, the DB-101SL can't simply be connected instead of a loudspeaker, as its impedance is higher than that of a loudspeaker and its circuitry isn't designed to dissipate the power generated by an amplifier. Most amplifiers work best when connected to a load of the proper impedance, while valve amplifiers in particular may sustain damage if run without a load. To get around this, the box has both an input jack and an output jack, enabling it to be placed in-line with either a speaker or line-level feed without breaking the signal path. In other words, the DI box goes between the amp and speaker (or instrument and mixer) and taps off a tiny percentage of the energy, while the bulk of the signal goes through to the output socket. This is ideal for some types of live recording, as a balanced feed can be obtained without affecting the way the amplifier normally works, but in the case of rock guitar, some further treatment may be necessary, because the DB-101SL doesn't colour the sound as a typical guitar speaker does.

A rocker switch selects between Instrument and Speaker level inputs, while on the output, a Ground Lift switch is fitted; this is a vital facility as, without it, ground loops and the hum that they cause can be a major problem.

In practice, this DI box goes about its business largely unnoticed — which is the way it should be. Little coloration is evident in the DI signal, and because there's no active circuitry, no noise is added by the unit. Of course, the old adage about lunches and the lack of free ones also applies to passive DI boxes; transformers can either provide current gain or voltage gain but never both at once, as that would contravene the laws of physics (Jim) — and physics wouldn't be best pleased about it. In this case, the impedance-matching transformer provides current gain, leaving the mic amp on your mixer with the job of handling the voltage gain side of things. This means that you need to have a mixer with spare mic inputs, and if performance isn't to be compromised, they must be reasonably quiet into the bargain. *Paul White*

FURTHER INFORMATION

£ **Rapco DB101SL £39.95 inc VAT. JHS also have other DI boxes in the Rapco range.**
A **John Hornby Skewes & Co Ltd, Salem House, Parkinson Approach, Garforth, Leeds LS25 2HR.**
T **0532 865381.**
F **0532 868515.**

ART CS2

COMPRESSOR/LIMITER

Does ART's new model have anything new to offer in a market already well supplied with affordable compressors? PAUL WHITE finds out.

SPECIFICATIONS	
Maximum Input Level	+21dB
Dynamic Range	117dB
Ratio (Slope)	1:1 to limiting
Attack	0.5mS to 50mS
Release	50mS to 2S
Gate Release	50mS to 2S
Output (Make-up gain)	-20dB to +20dB

ART's CS2 joins an already large number of compressor/limiters in the marketplace, and on the face of it, offers little or nothing that is new. It features dual-channel or stereo operation, hard or soft-knee compression and on-board gating to reduce noise, all familiar features, and if anything, it loses points because of the external wall-wart power supply. This being the case, you might be surprised to find that I actually like this little unit.

Presented in a 1U rack case, the CS2 is remarkably conservative-looking for an ART product, with all the controls clearly marked and no 'purple pizza' logos in sight. The rear-panel in an out jacks are balanced, but accept unbalanced cables; unlike some budget compressors, the CS2 has a detector loop insert point, allowing equalisers to be inserted into the side-chain for de-essing and so on. This is wired like a console insert point, so you'll need either a stereo-to-two-monos Y-lead or a patchbay to make use of it.

The compressor interface is quite conventional, with Threshold, Slope, Attack, Release and Output Level controls for each channel, though why the term 'Slope' has been used in place of the more familiar 'Ratio', I don't know. A switch is used to select between soft-knee and hard-knee operation (soft-knee being the more gentle of the two options), but a slightly unusual touch is a second switch for compressor/limiter selection. Most compressors require you to set the Ratio (Slope) control to maximum to perform limiting, and usually you need a fast attack time, but in the case of the CS2, one button push sets this for you, regardless of where the front-panel controls are set, which is a nice little touch.

Another nice touch comes in the form of a couple of LEDs above the Threshold LED, one marked 'Below' and the other marked 'Above'. These simply indicate whether the input signal is reaching the threshold or not, but even though there is a separate gain reduction and input/output level meter, it seems to make setting up even more intuitive. The gain reduction meter is the usual LED ladder type, using 10 LEDs to cover the range 3dB to 30dB. The input/output meter has only six LEDs and covers the range -30dB to +5dB, with a push button to select between input monitoring and output monitoring.

Other than the mandatory compressor Bypass button, which hard-wires the input directly to the output, all that remains is the gate. Though you wouldn't expect a full-featured gate on a compressor/limiter, this one has the essential Threshold and Release time controls, and a gate LED which comes on when the signal is being gated. It isn't affected by the compressor Bypass switch, which means that you can use the gate on its own; if you need to turn the gate off, simply turn the Gate Threshold knob fully anti-clockwise.

For stereo operation, there's a Stereo Link switch, which forces the right-hand channel to follow the settings of channel 1. In this mode, the side-chain signals are linked so that the same amount of gain reduction is applied to both sides, even when one channel is louder than the other. Without this, the stereo image would constantly tend to wander towards the quietest side.

VERDICT

Used on a variety of single tracks and complete mixes, the CS2 behaved very predictably — and that's one of the nicest compliments you can pay a compressor or gate. In soft-knee mode, it behaves in a dutifully polite way, but switch it to hard and it takes command of the situation in a reassuringly confident manner. I particularly liked using the hard mode for bass guitar; it seemed to bring the level nicely under control, whilst still emphasising the punch and power of the bass.

The simple gate works well in keeping pauses clean, and because it has a good release time range, even slowly decaying sounds can be treated without being cut off in their prime. There are very few gripes; I've already mentioned my dislike of external PSUs for this type of equipment, and I would also have liked to see a few status LEDs on the switches, especially the Bypass, but there's nothing there I can't live with. On the whole, the CS2 is a really nice little compressor. SOS

ART CS2 £279

PROS
- Easy to set up.
- Soft- and hard-knee compression, and a gate, all in one unit.
- Well-written manual.

CONS
- Wall-wart PSU.

SUMMARY
A very friendly, basic compressor that takes all routine jobs in its stride.

FURTHER INFORMATION

£ CS2 £279 inc VAT.
A Washburn UK Ltd, Amor Way, Letchworth, Herts SG6 1UG.
T 0462 482466.
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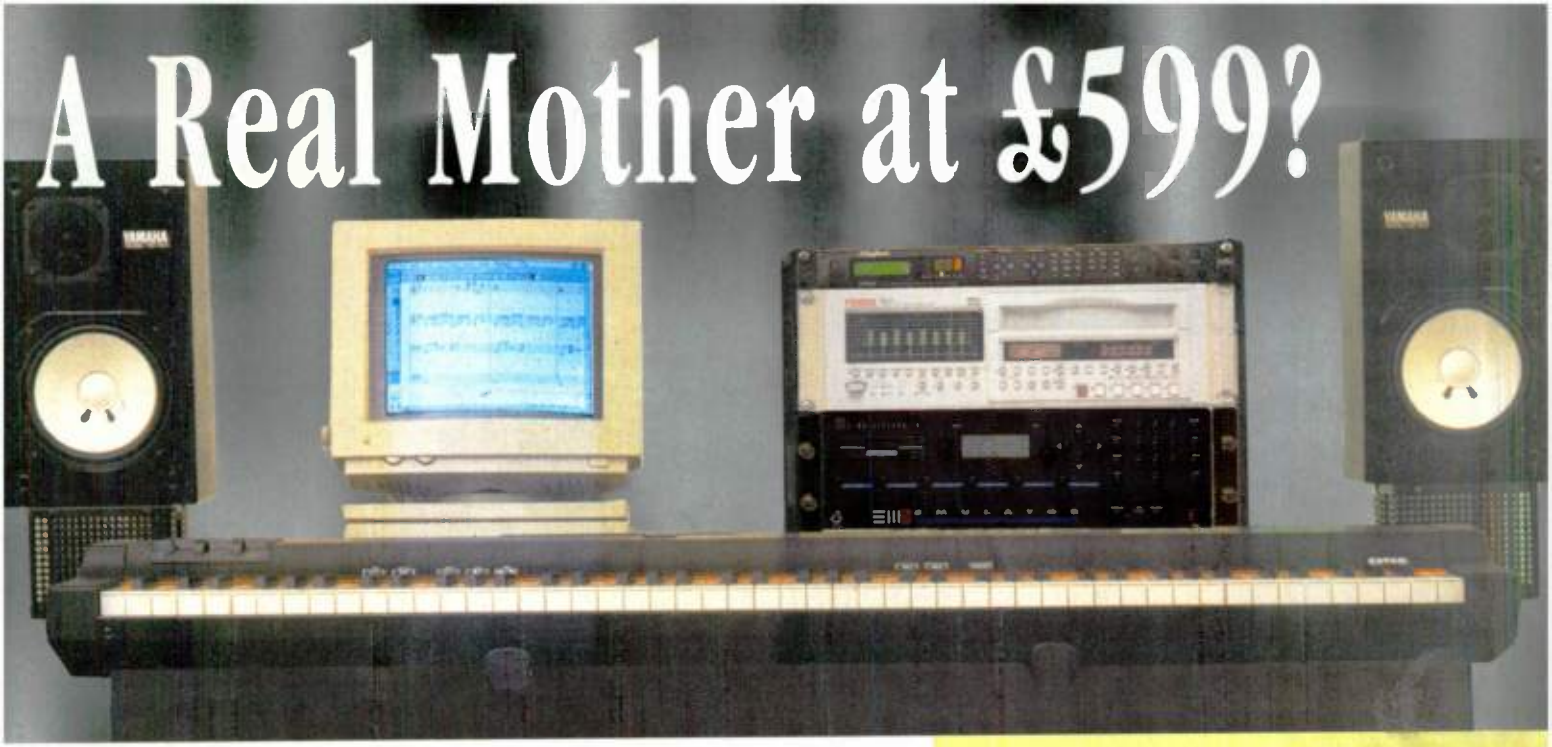

At an RRP of £599, Fatar's new Studio 900 master keyboard makes the case for combining your favourite sound modules and rack samplers with a single high quality master keyboard even more persuasive.

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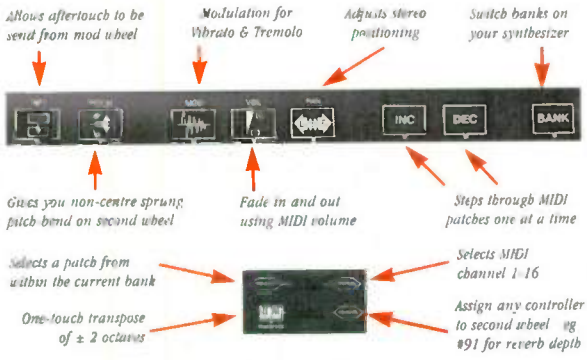

If you need more MIDI control then check out the all-new Studio 1100 and the current 2001 models. Both combine the Famous Fatar feel with unparalleled features at the price.

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STUDIO 1100

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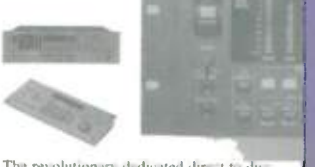

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GIGAPACK VOL.1 (CD-ROM)

The Sound and Vision Gigapack contains two CD-ROMs for Roland samplers, which house a total of 1.1Gb of data (hence the name). In terms of samples, that's over 10,000 of the wee blighters! A tricky task to review in under 1,500 words, but here goes...

Taking a look at volume 1, on the first CD, the first thing I notice is that the CD-ROM is *completely* full!! 0.0 secs left! That's a first, folks. So, no problem with the width — what about the quality?

The CD-ROM opens with volume after volume of drum hits. These are presented twice: once 'across the keyboard', and again on separate patches. Handy! Stereo and mono versions of natural and dancey kicks, snares, toms, hats, and cymbals precede 808 and 909 sounds, and analogue and digital synth kits.

The kits are followed by 900 loops, grouped according to fixed tempo intervals 5bpm apart, from 80 to 130bpm. Very sensible. Sometimes, a 32Mb volume appears. Fear not, 16-Meg users, these are merely combined 16-Meg volumes assembled for the convenience of those with a fully loaded S760.

The remainder of the first CD-ROM is taken up with assembled drum kits, of which I auditioned the following volumes:

'Stereo Real Kicks': I loaded in both the full keygroup and single partial volumes into the S770, to make sure the samples were being shared, and not unnecessarily duplicated. Gigapack passed the test. The kicks, incidentally, were great. Velocity switching had been used in almost all cases, and wide use had been made of the Roland filters, too, to de-noise the sample decay times (not that many of the samples I auditioned needed it). One almost imperceptible curve fitted all; easily done on a Global edit.

'808/909 kits': The sounds are convincing; in particular, that hard-to-capture 808 kick is reproduced faithfully. Mapping is correct, too, with mono voicing for most sounds, and exclusive group 1 assigned to hats (making sure that a closed hat chokes off an open one). As well as two 909 and one 808 more-or-less MGS kit assignments, there are patches where several samples of one voice are incrementally adjusted. I'd have liked MGS single instrument patches myself, for easy toggling between sounds while your sequenced drum pattern is running, but you can't have everything (then again, why not?). Three-way velocity switching is provided on several 909 kick and snare examples.

'808/909' snares: I loaded this on top of the previous volume, and this time there was no overlap. The 909 snare group was larger and more diverse, but A/B-ing with the 909 snares from the previous volume revealed that a low level, low frequency boom was now absent (I hadn't noticed it before). Some velocity switching was again in evidence.

Moving on, I came to '90bpm A-D Loop'. Four patches each contained around a dozen 1-bar patterns, and all except the fills were looped. The rare groove vinyl-style material tended to be in mono, while programmed stuff was usually in stereo. The looping was uncannily accurate over several cycles, and the sampling itself flawless. I'd describe the patterns as rib-ticklers rather than serious hip-hop: quite understated almost. Sometimes several partials were deliberately mapped onto an exclusive number, meaning that only one of the set can play at a time.

Next up was '125bpm A-D Loop'. Simple programmed rock drumming, one or two rarer grooves and programmed 909 make up the bulk. One or two tasty percussion loops emerge, but otherwise it was pretty unadventurous, and unnecessarily heavy on the bass drum: after all, it's the kick that causes most problems when loops and programmed drums are stacked.

Next, I checked out the first and last of the five bass volumes. 'Synth Basses' had no looping and sounds from various sources, most of which were perfectly usable, though few were entirely memorable. If it's a typical rolling bassline you're after, you'll find that several of these will fit your chosen key. I also looked at 'Div Basses' — I had to see what these were. They turned out to be acoustic, fretless and slap basses, and were decent enough.

Next up were some Microwave voices. I never did think the Microwave was a patch on the old PPG Wave 2.2, and the voices here do nothing to alter that opinion. The digital synth banks, though, are top-notch. Looping is always ultra-smooth and inoffensive, and some nice tricks are employed where appropriate, such as 'Analog Feel' (a Roland random de-tune option, applied at patch level, but operating independently on each partial slot). Mono samples are sometimes widened by fixed de-tuning, which is how I always do it. The TB303/MC202 set available here is cleverly configured to give eight (yes, eight) levels of velocity switching, corresponding to incrementally different filter settings. I still prefer my own 303 library, though, which ▶

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VISA

utilises the S770 filter mapped to a controller.

After the TB303s, there were three available volumes of classic dance synth sounds, which were pretty comprehensive, covering essential ground not yet touched by factory presets. Most of the best of the JD800/900 is faithfully represented, and there are plenty of classic FM, analogue, and S+S sounds.

After the synths come the pianos, strings, organs, guitars, brass and woodwind. The piano volume I auditioned had three fine stereo multisample sets. Synclavier quality, but no velocity switching. One of the piano and strings layers in the Emu library is aptly called 'Heaven', and if you feel a Bacharach-esque chord progression coming on, you could do worse than to load either of the 'Piano + Strings' patches offered here.

Sadly, the electric guitars all seemed to be pretty bland. That essential bite of the old Emu classics was missing, as was the transparent zing of the stunning showpieces that sold so many Ensoniq EPS16s. On the other hand, the steel-strung acoustic I looked at was a monster, with eight velocity levels on each of seven multisamples, plus some of those little mute and finger noises that can add realism.

The string ensembles and solos were fine, the Mellotron being especially welcome. There were no isolated violas or cellos, though. Also, the brass is strictly orchestral, and there were no rasping saxes or section falls. Maybe on volume II? We'll see next month.

I almost forgot to mention. The CD-ROM also includes the absolutely stonking Classical Choir set from Peter Seidlaczek, recently bestowed five stars in CD format. Now that's what I call a bonus!

Conclusion: I have to confess that during this review I broke off, loaded up *Cubase* and did some serious sequencing with material from both sides of this double CD-ROM. Generally, killer loops are perhaps thinner on the ground than on the top sample CDs. Still, around 25% of those I auditioned from the massive 900 on board tempted me into some sequencing, and several workable tunes have already been initiated. All in all, then, there are few technical criticisms I can make about this product. OK, so I did find *one* percussion loop that ran 10 cents off its stated tempo, but nobody's perfect. Certainly not Michael Schuhmacher, anyway. Also, I don't understand why some choral samples were looped rather than left exactly how they were on the CD, where notes ended with a nice natural reverb tail. Smoothing out ensemble loops does mess with the sound, and some of the natural attack can get lost where the smoothing 'width' encroaches on the sample start. Then again, maybe the raw data would not have fitted onto the CD-ROM, or into handy 16Mb chunks. Actually, to make best use of this set, you'd need to have not 16, not 32, but 128Mb of RAM. Or resort to hard disk recording.

Overall, though, good use has been made of the host sampler's DSP, where sounds are not merely stuck onto keys, but are variously filtered, velocity-switched, have velocity mapped to filter cut-off, are given the simulated stereo treatment, expertly looped, and generally made to sound like more than samples.

Remember, I couldn't audition everything: don't write in complaining that the muted guitar sets are pitched 10 cents below concert, or something like that. However, I did hear and see enough to convince me that this product has been crafted from legitimate sources by engineers who know a great deal about the S700 series' operating system.

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KORG PALETTE (SAMPLE CD)

●●●●

Synthetix, makers of the Korg Palette, are a new name to the world of sample CDs. This, their debut disc, showcases a mixture of loops, effects and sounds coaxed from an array of Korg synthesizers, ranging from such older analogue classics as the MonoPoly and Trident to the more recent T-series synths and the idiosyncratic Wavestation.

The CD starts well, with some juicy analogue sequenced loops courtesy of the MonoPoly, Poly 6 and Poly 61. Variations of filter cut-off and resonance settings are offered, and the bpms are given for each loop. Two more blocks of arpeggiated loops are available elsewhere on the CD, variously supplied by the Delta and Mono Poly.

The bulk of the disk is taken up with single notes, recorded at C and repeated over a range of two to five octaves for each voice (the P3 Piano 1 and 2 sets are given seven samples each, to include the intervening F sharps). The highlights, for me, were to be found among the M1 samples, most notably 'Thalog' and 'Super J' which punt some serious nether region. Many of the Mono Poly samples were also excellent — 'Taurus' and 'Saws 2' held my attention for quite a while. I would suggest that even the most hardened analogue addict would find friends here.

Synthetix point out that 'a number' of the samples are recorded dry, to enable the samplist to add his own effects. I would much rather that *all* the samples had been taken dry, for the very same reason. However, the effects are far from obtrusive when they *are* around, and generally gave me little trouble when creating loops or envelope templates. Exceptions to this were a couple of delicious phased sounds that stop short of completing their phase cycle, making looping extremely difficult, if not impossible!

The CD closes with a small selection of Korg drum and percussion samples.

Conclusion: this disk presents a healthy collection of voices, effects and atmospheres from someone who obviously knows his VCF from his VCA. There are few, if any 'fillers', and the majority of sounds are highly useable and 'musical'. I could certainly see myself dipping into this collection for many years to come, in the knowledge that I'd rarely come up empty-handed.

Rather than being a collection of 'instant' jigsaw pieces, these sounds rely on the programmer to fine-tune the end results to his own tastes. Synthetix point out that the samples will only come to life when appropriate loops, envelopes, LFOs and the like are applied to the raw sounds. If you are looking for instant gratification, then this CD might not be for you. If, on the other hand, you are prepared to put in a little work, then herein lies a solid basis of material to keep you busy well into that difficult third album. *Paul Ward*

£ Korg Palette £45 inc VAT and UK postage.
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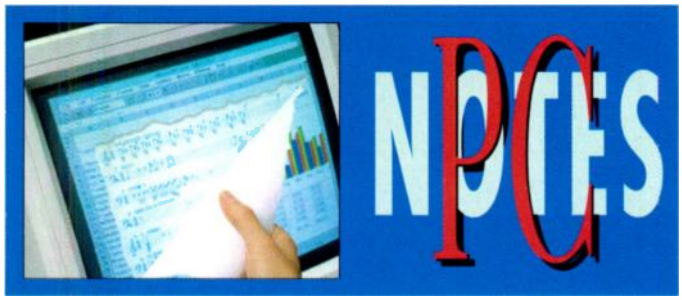
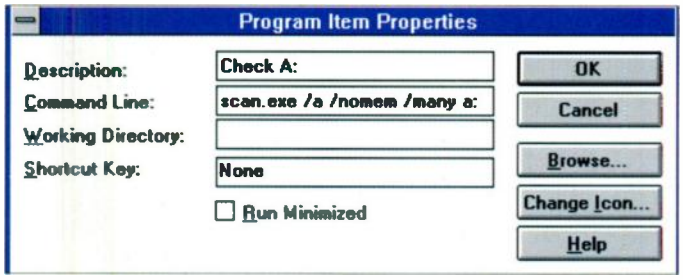


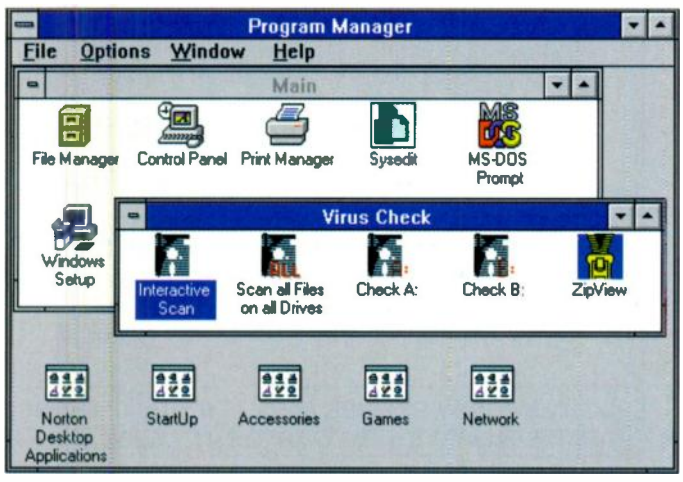
BRIAN HEYWOOD looks back at how the PC world has fared in the past twelve months, presents the 1994 PC Notes awards, and looks forward to a very Windows95...

Well, another year has sped past without my life being disturbed by either fame or fortune (ho hum). Last year, I made public a few of my hopes and fears for 1994. Luckily, neither of my nightmare scenarios came to pass, with Norway remaining firmly in the lower reaches of the Eurovision results, and the Bay City Rollers declining to make a comeback!

As far as PCs are concerned, 1994 was a year of consolidation. Prices kept on coming down, with one surprising exception, that of RAM. While hard disk prices have reduced to about half their 1993 value, 1Mb and 4Mb SIMMs (Single In-line Memory Modules) are about the same price that they were 18 months ago. What makes this even more surprising is that other semiconductors, such as microprocessor chips, *have* come down in price — for instance, a 486DX chip is now a quarter of the price of last year's offering. It looks like something strange is going on here.



Virus checking: Use the 'New', option off the Windows Program Manager File menu to create a new program group and an icon for each of the virus checks you need.



The new program group lets you quickly scan various media for virus infection.

WINDOWS95

This year should see the introduction of the next version of Windows. Unlike its predecessors, Windows95 will be a full-blown operating system, and will no longer need to be run 'on top' of DOS, but will directly incorporate all the necessary functions for disk access, which will make it considerably faster. However, Windows95 will still be able to run DOS programs, providing a virtual DOS environment. Although it will still be a 16-bit operating system, the new Windows will be able to run 32-bit applications, by converting the 32-bit calls to suit the 16-bit environment. All in all, it should be an improvement on the current version of Windows.

THE PC OF THE FUTURE (*NOT!*)

There has been a lot of speculation this year about the future of personal computing, and how long the Intel x86 family of processors can last before they run out of steam. In 1991, IBM, Apple and Motorola got together to create a new personal computing standard, based on a new chip made by Motorola, but using the RISC (Reduced Instruction Set Computer) technology developed by IBM. Back then, it looked very hopeful, with three industry giants pooling resources to produce something that wouldn't suffer from the problems inherent in the design of the PC. A *Byte* magazine editorial at the time hailed the venture as "a move toward common systems that can ease the pangs of incompatibility".

Two and a half years down the road, things don't look quite as promising. As Jack Schofield (*Computer Guardian*) has been pointing out, the IBM PowerPC and the Apple PowerMac are wholly incompatible from both a hardware and a software point of view. They may use the same processor chip, but might as well be entirely different computers. IBM has now announced that it will be working with Apple to produce a Common Hardware Reference Platform (or CHRP), but that was what a lot of people thought the 1991 agreement was all about. The bottom line is that you shouldn't expect to see anything in the way of a 'compatible' PowerPC — apart from some pretty fast Mac derivatives — before the end of the century.

VIRUS ATTACK

I must admit that I thought it couldn't happen to me, but at the end of last year, my PC was 'infected' by a virus called NewBug. This particular virus infects the boot sector of a floppy disk, and transfers itself to your hard disk's partition table if you ever try to boot from the floppy, even if the floppy is not a 'bootable' disk. So, how many times have you accidentally left a data disk in the floppy drive when you've turned the PC off? I'm not sure, but I think the virus will 'infect' any floppy you write data to. As yet, I don't know what damage the virus has caused, but it was quite a shock when I found it.

Luckily, I discovered the virus pretty quickly, but it has caused me take the virus threat a lot more seriously, and I have instituted virus checks at a number of points in my system. You don't have to pay a lot of money for a reasonable virus checker — MS-DOS 6 comes with a copy of *Norton AntiVirus*, and the *Scan* program from McAfee Associates in the US is available for a nominal cost. I have used *Scan* in the examples below, but you should be able to modify them to suit any virus-checking program that you may have.

ANTI-VIRUS DEFENCE PLAN

There are two basic elements to an anti-virus defence scheme for your PC. The first line of defence is at the entry points, namely the floppy drive(s) and the modem. The second line is to have a regular scheme of virus checking, in case a virus *does* get through the first line of defence. For checking

floppies, I have set up a a couple of icons that allow me to quickly scan the contents of either of my floppy drives. Simply set the command line to something like:

SCAN.EXE /A /NOMEM /MANY A:

where SCAN.EXE is the virus-checking program, and A: is the floppy that you want to check. The other parameters tell *Scan* to check all files on multiple floppies, but not to check the computer's memory for virus infection. If you have a B: drive, create an icon for that as well. It might seem odd not to check memory for infection, but not bothering with this speeds up the process considerably — and if the system is *too* cumbersome, you'll be tempted to stop using it.

If you have a modem, you also have the opportunity to get infected whenever you down-load an executable file. Since these files are usually *ZIP*ped to conserve space, it's even more difficult to check them. I use an excellent Windows ZIP viewer and extractor application called *Drag And Zip* from Canyon Software, which allows you to specify a virus scanner. This allows me to check a *ZIP* archive at the click of a button. Again, I set the *Scan* parameters to check all files, but not memory.

The second line of defence is to add a line into your Autoexec.bat file to check for a virus infection each time you boot up your PC. Use the *SysEdit* application included with Windows (it's in the Windows/System directory) to add the following line as near to the top of the Autoexec.bat file as possible:

SCAN /M /CHKHI C:

This will check all memory (including the video memory and upper memory blocks) for all known virus types. This only checks the system files on the C: drive, since it's designed to detect whether your PC has *been* infected rather than preventing infection, as in the earlier examples.

The final useful time to check for infection is just before you take a backup, since an infected backup set could reintroduce the virus back on to your PC at a later date. This check should be pretty comprehensive, so use a command like:

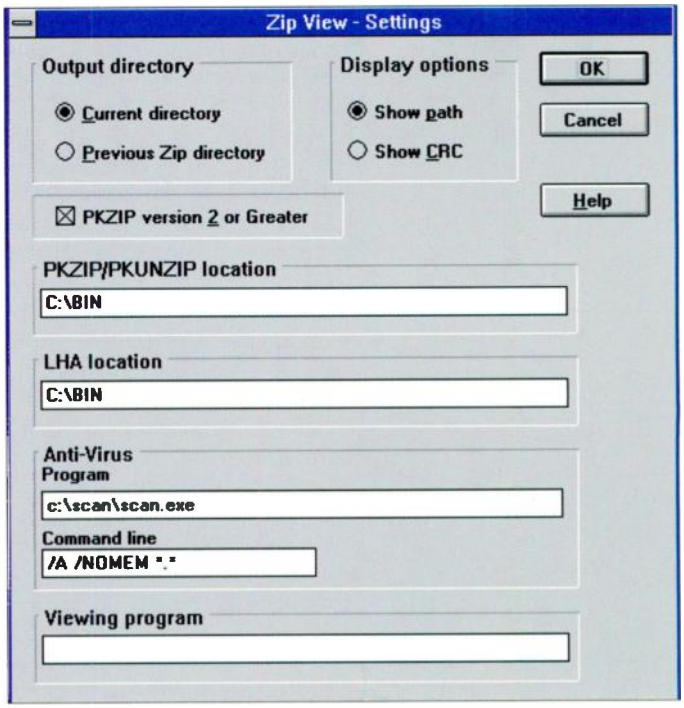
SCAN /M /CHKHI /A /ADL

This will check all memory below one megabyte for all known virus types, and then check all files on all local drives. This check will take a while, but it will be worth it if it finds a virus.

The action you need to take if you detect a virus will vary, depending on the type of virus found, and whether your PC has actually been infected. Obviously, if you detect the virus on a disk or in a downloaded file, then formatting the disk or deleting the file will do the trick, though you should warn whoever you received the disk or file from that it was infected. If your PC has already been infected, then you will need to refer to your anti-virus software's documentation to find out the cure for that particular infection type. McAfee Associates have a DOS program called *Clean-up* which has various methods of disinfecting your system.

WHERE TO FIND THE SOFTWARE

The latest versions of McAfee Associates *Scan* files are freely downloadable from many on-line services (e.g. CIX and Compuserve), and from McAfee's own bulletin board (0101 408 988 4004). If you need to contact them direct, their address details are: McAfee Associates, 2710 Walsh Avenue, Suite 200, Santa Clara, California 95051-0963. USA. Tel: 0101 408 988 3832; fax: 0101 408 970 9727. A shareware version of *Drag And Zip* is available for download from a number of bulletin boards and on-line ▶



The Settings dialogue in the Canyon Software ZipView application lets you scan the contents of a ZIP archive before you extract it.

PC NOTES AWARDS

• **FAVOURITE MUSIC SOFTWARE**

I was tempted to say *PowerChords* again, but I decided to go for *CakeWalk Professional for Windows v.3.0*, on the grounds that it is the most usable, solid Windows sequencer that I've come across — keep up the good work, guys! Contact: Et Cetera, on 0706 228039.

• **FAVOURITE PIECE OF HARDWARE**

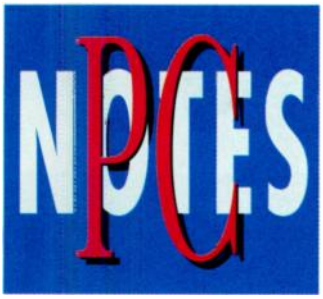
The Lyrrus G-Vox, along with 'The Bridge' Windows device driver, as it turns my trusty Stratocaster into a MIDI controller. The package also includes *PowerChords* and MIDIsoft's *Recording Studio* sequencing software. Contact: Koch Media, on 0252 714340.

• **FAVOURITE SOFTWARE/HARDWARE COMBINATION**

The Soundscape hard disk recorder, which allows you to integrate digital audio to MIDI with a minimum of fuss. I find it great for quickly recording tracks, making digital recording as simple as (or simpler than) using MIDI. Contact: Soundscape Digital Technology, on 0222 450120.

• **MOST USEFUL MIDI UTILITY**

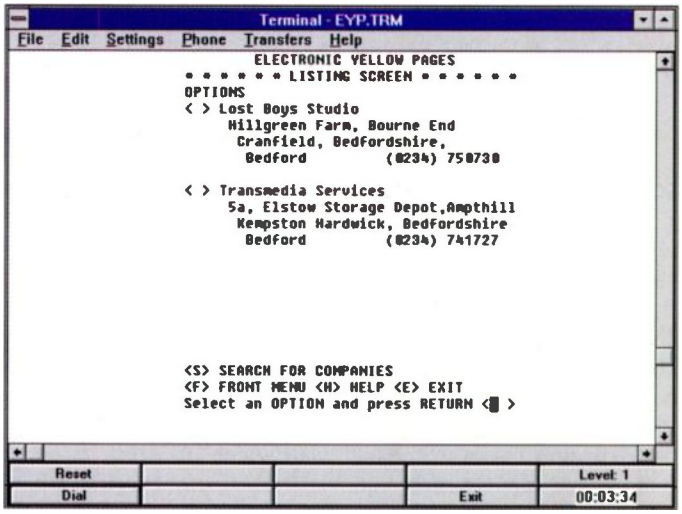
MIDI Master Plus from Lowrie Woolf Associates lets you turn any Windows MIDI device into a multi-client interface, allowing more than one MIDI application to use the same MIDI device simultaneously — like a kind of software MIDI merger (for example, you could have your favourite patch editor alongside your sequencer). You can also use *MIDI Master Plus* to connect the output of one Windows MIDI application to the input of another, without using an external MIDI interface. So, to continue the above example, you can, say, record SysEx dumps directly from your patch editor into your sequencer. The utility also comes with improved SoundBlaster and MPU401 MIDI device drivers. Every music PC should have this software! Contact: Arbiter Pro MIDI, on 081 202 11990.



▶ services, and the full version is available direct from Canyon Software at: 1537 Fourth Street, Suite 131, San Rafael, CA 94901,USA. Tel: 0101 415 453 9779. MC and Visa are accepted. The program is also available from Nildram Software at: 82 Akeman Street, Tring, Herts, HP23 6AF. Tel: 0442 891331; fax: 0442 890303. Nildram also have an area on Compuserve (GO UKSHARE, which can be emailed on nildram@cix.compulink.co.uk), and run a bulletin board on 0442 891109.

CYBERSPACE CORNER

Yet another useful service available to anyone who owns a modem is British Telecom's Electronic Yellow Pages. This service is available anywhere in the country for the cost of a local phone call, and lets you search country-wide for the goods or services that you require. Again, I use the Windows *Terminal* program to access the service, set up to emulate a DEC VT100 terminal (Settings:Terminal Emulation) with the 'line wrap' switched off (Settings:Terminal Preferences). The service only operates at 2400 baud, but it probably doesn't matter too much, as it's a very interactive system. To have a look, dial 0345 444444, and press your return key twice after your modem has connected. SOS



Use the Windows Terminal program to access British Telecom's Electronic Yellow Pages, for the cost of a local call.

ABOUT THE AUTHOR

Brian Heywood has a Masters degree from the Music Department of City University, and has been using PCs professionally in audio production for some time now. He is also co-author of the *PC Music Handbook*, which is available from the SOS Bookshop. Brian can be contacted via email on CIX as brianh@cix, or on PAN as BRIANHEYWOOD.

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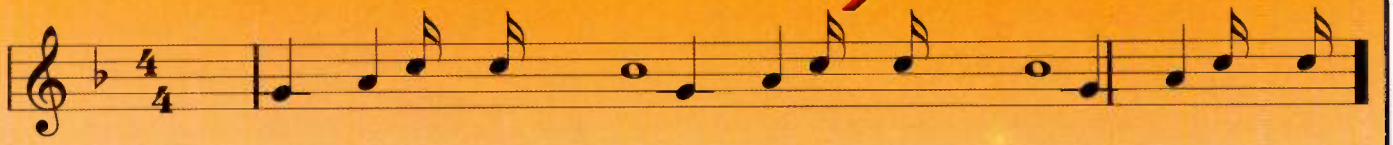
Quick Score Professional



QuickScore Professional is a Windows 3.1 application incorporating advanced features with ease of use and speed. It contains all of the most requested sequencer features, as well as superior notation transcription and printing. This is a quality program, at an exceptional price!

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- *Super high-quality printout on all windows supported printers.*
- *Import and export MIDI files.*
- *System requirements: Windows 3.1, IBM PC Compatible computer (386 or above strongly recommended) Windows appropriate.*
- *MIDI interface or sound card, VGA monitor, 2MB free memory, Hard Disk.*

For Further Information on Quick Score Professional please contact:
Off Planet Media at:1 Hurts Yard Nottingham NG1 6JD
or call (0115) 953 1131. *Dealer Enquiries Welcome*

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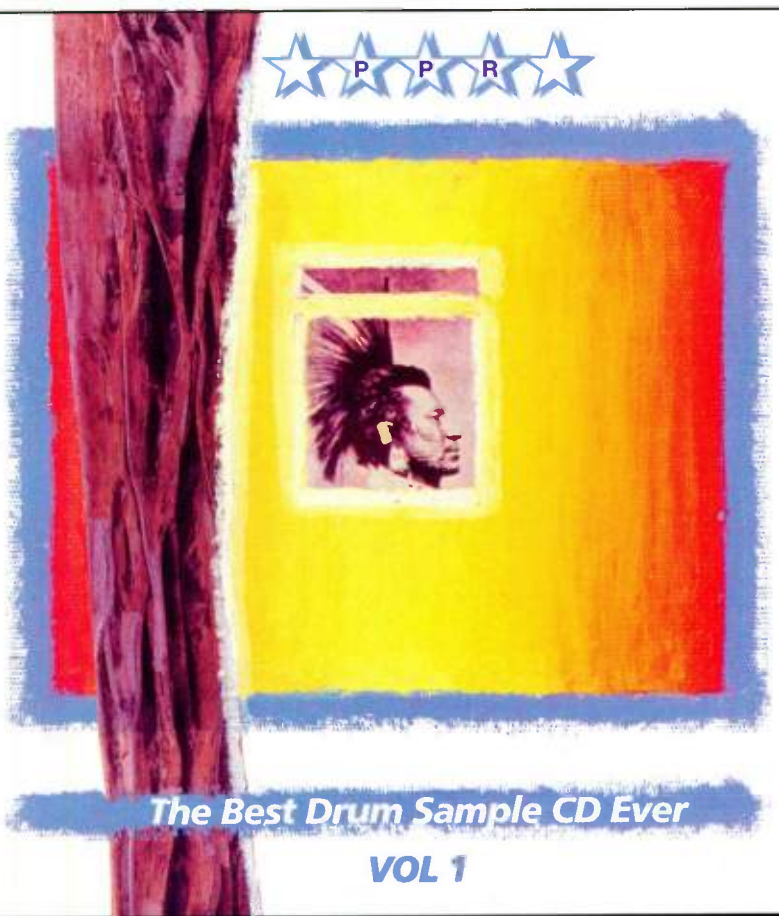
Music Software



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MARTIN RUSS brings you the latest Apple news and views. First off the press is the low-down on Apple's new System 7.5...

APOLOGY

After I mentioned The Developer Council's series of monthly meetings in the November issue, the date of the December meeting changed from the 14th to the 7th — and at the time of writing [late November — Ed], I can't think of any way of letting you know in time. So this is designed as a retrospective apology for anyone who turned up on the wrong day... sorry.

After the huge leap of System 7, and the bug fixes and System Folder internal tidy-ups of System 7.1, Apple have just released System 7.5, which seems to represent more of a consolidation than a major new release. There are lots of small improvements and enhancements throughout the package, and it is available on floppy or CD-ROM, but the major inclusions point the way forward to *future* Mac operating systems. For example, the TCP/IP support should make networking (and Internet access) much easier, whilst the QuickDraw GX offers even more sophisticated graphics, portable documents and desktop printer icons, which enable you to print documents merely by dragging and dropping anything you want printed on top of the desktop printer icon.

AppleScript now allows you to automate all sorts of routine tasks — by providing an editable 'script' which can control applications. 'Drag and drop' now extends between applications, so you won't need to cut and paste to the Clipboard as much in order to move things between different applications. But all this is just the beginning of the transition to OpenDoc, which will let you combine small programs into larger, customised applications — and with the 'drag and drop' ease of use.

System 7.5 incorporates many of the neat add-ons that have been Shareware or Public Domain extensions — so you can have a hierarchical Apple menu, have windows collapse to just the title bar, reselect recently-used items quickly, and more. Because many of these have now become part of the operating system, the overall reliability of the system should improve. Apple also claim that System 7.5 should be 'highly compatible' with existing software.

System 7.5 requires about 25Mb of hard disk space to be installed, and with the current prices, this may be a good time to increase your hard disk size — my new internal 540Mb drive cost just over £300. You also need at least 4Mb — and preferably 8 — of RAM, and twice these amounts for PowerMacs. However, you can reduce the RAM demands by not installing all of the features of System 7.5. I will report back on compatibility and other interesting aspects as I get to grips with it.

YAMAHA MEDIA TECHNOLOGY

CD-ROMs, multimedia, and games often depend heavily on graphics, because the average computer user still only has a built-in speaker, designed solely to cope with beeps. Most people don't bother to connect their computers up to their hi-fi systems (which is perhaps not that surprising — my Mac generates some very loud transients when it powers up!), and therefore lose out when software *is* programmed to have an impressive combination of sound and vision. But rather than resorting to the domestic hi-fi, how about adding a pair of active speakers to your system, specifically designed for computer use?

This is a good point to mention Yamaha's new Media Technology Division, and their new YST series of Multimedia Speakers. The YSTM10 model has all the features that you might not even know you needed — like all its controls on the front panel, where you can reach them, or magnetic shielding, to prevent distortion of your computer monitor picture when you place the speakers on either side of the screen. Yamaha's hi-fi and electronics knowledge have been employed to the full on the YST10s — they use the new 'Active Servo' technology, which produces a bass response down to ▶

APPLE NEWS IN BRIEF

• MERGER MANIA!

The trend of software company mergers continues, as Macromedia (*Director, MacroModel, Three-D*) take over Altsys (*Freehand, Fontographer*). However, it is interesting to see strong rumours that IBM may be trying a different approach. Rather than buy Apple (as Sony and AT&T were allegedly considering recently), IBM may invest instead. Such investment could take the form of continuing and strengthening the collaboration on projects like the PowerPC.

• *CLARISWORKS* HITS THE BIG THREE-OH

ClarisWorks 3.0 is out! The price is lower (£151.58 inc VAT), and the program now has neat assistance features to make it even easier to use. It still works in small amounts of RAM, is still quick to use (unlike MicroSoft's *Word 6.0*), and is bundled free with a Claris organiser program if you purchase it before the end of January 1995. Contact Claris on Freephone 0800 929005.

• MOTU PRICE UPDATE

Here are the latest prices for MOTU software and hardware products.

Performer — £349.
Digital Performer — £499.
Unisyn — £245.
MIDI Time Piece II — £599.
FastLane — £79.
FreeStyle — £179.
Mosaic — £449.
Performer/Unisyn bundle — £449.
MIDI Express — £379.

All prices include VAT. Contact Klemm Technology on 0462 733310 for more information.

• SYMANTEC ON THE NET

If you want to update any Symantec software (SAM, Norton Utilities, THINK C etc), try ftp'ing them at devtools.symantec.com.

• YAMAHA LATEST

Coming soon from Yamaha — *Visual Arranger*, a low-cost application (about £50) which will offer auto-accompaniment and arranging using GM sound modules (and will presumably also eventually include the QuickTime 2.0 musical instruments). Also forthcoming is *Score Reader* (yours for around £299), which will quickly convert scanned printed music to MIDI File format. Contact Yamaha's Media Technology Division on 0908 366700.

• *GALAXY* SUPPORTS THE WORLD

New Opcode *Galaxy* Librarian support is now available for a wide range of instruments, including the Emu Morpheus, Kawai GMega and K11, Korg Wavestation SR (for which an Editor is also available), Boss DR660, Roland R8M and JD990, and Yamaha DEQ7, SPX900 and TG500.

• AID FROM APPLE

Apple is setting up a European-wide customer service system from bases in Paris and Slough. British Telecom has won the multi-million pound contract to provide a telecommunications network to support the so-called Apple Assistance as it extends into other European countries. The Macintosh client front-end and systems integration has been carried out by BT Syntegra, the systems integration part of BT, who will install Apple customer support centres throughout Europe.

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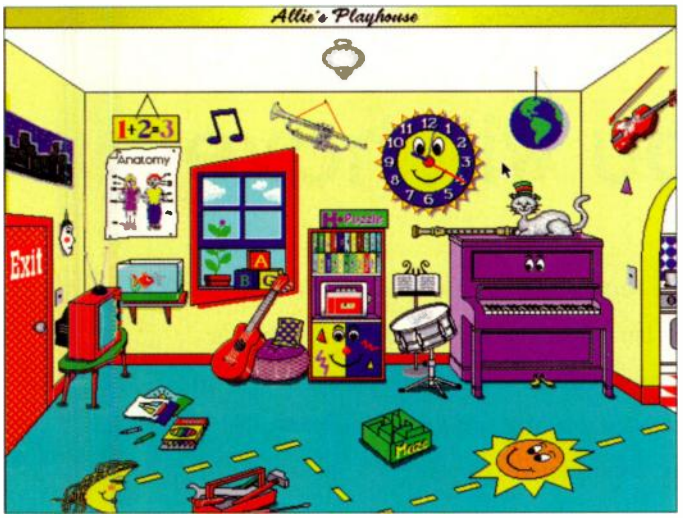
Apple NOTES

▶ 80Hz from a speaker only 80mm across. And the price is quite a surprise: around £69 (including VAT). An essential purchase for the Mac multimedia user.

In complete contrast, the new division's other major hardware product is a CD-ROM drive. Not just any drive, but the world's first quad speed CD recorder, which means that it can be used to create audio (CD), data (CD-ROM) and even CD-I compact discs, using write-once CDs. With suitable media and software, you can make a 74-minute disc in about 19 minutes. Contact Yamaha's Media Technology Division on 0908 366700, or fax them on 0908 368872.



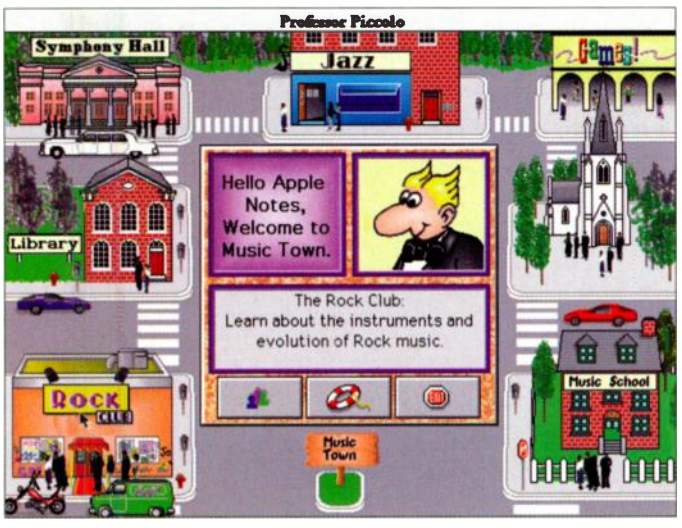
Allie's Playhouse.

INTERACTIVITY

Opcode have recently formed a new multimedia division, Opcode Interactive. I have been looking at two of their CD-ROMs for the Macintosh (also available in PC Windows format): *Allie's Playhouse* and *The Musical World of Professor Piccolo*. *Allie's Playhouse* is designed for children aged from three to eight years old, and features two rooms in a house full of objects. When clicked on, these either lead into specific activities (like karaoke-style nursery rhymes, or painting by numbers) or just make a noise. Some of the audio comes from the CD as high-quality sound, and some comes from the Mac. Help is at hand from Allie the alien (whence the name of the CD-ROM), and a 'friend', who describes what to do in each of the activities. With the aid of two judges, a two-year old and a six-year old, I reached a qualified 'thumbs-up' verdict, although some more 'depth' would have been nice — more pictures to paint, more samples, more games options, and so on.

The Musical World of Professor Piccolo is designed for those of eight years and upwards, which includes adults too. The title page uses a view of 'Music Town' as the starting point for a wide range of fun and educational activities, all strongly tied to music — even the games! You can explore a symphony orchestra, dissect a rock song, learn about jazz music, read about and hear many musical instruments, and even take an interactive music course. The music theory lessons have some quite taxing exercises — the one on rhythm is quite a challenge at the higher levels. Again, my only major criticism is a slight lack of depth in some areas, but my six-year old judge thought it was wonderful! The majority of the sound comes from the CD, so the quality is excellent — especially the Rock song example, where you can listen to each instrument in turn, while the rest of the band drops down in volume.

The program is fun, educational, and full of the musical emphasis you would expect from Opcode (*Allie's Playhouse* even has a page where you assemble samples into rhythmic sequences!). All in all, it's a good combination for anyone who wants to avoid the current crop of shoot-em-ups, horror and gore on CD-ROM. The judges — oh, all right, it's a fair cop, they're my kids actually — certainly seem to put these CD-ROMs alongside Broderbund's *Just Grandma and Me* and *Arthur's Teacher Trouble* in their request charts. Contact MCMXCIX on 071 723 7221 for availability details.



The Musical World of Professor Piccolo.

TIP OF THE MONTH: REGISTRATION TIME!

Register your software! Every time I talk to software distributors, they complain that they sell lots of software, but receive very little feedback from users (like registration cards, for example). One of the major advantages of registering is that you get notified about updates to software, but very often there are also special prices on other products from the same manufacturer — and even freebies occasionally (I got a free footswitch!). Product support is more often than not only available for registered users — and who can say that they have never needed help? I certainly can't, as quite a few amazingly patient support teams will testify...

ON THE NET

After the Internet ftp server address given last month proved to have 'gone away', I began to wonder if it had been the victim of some sort of conspiracy. My fears seemed to be confirmed when one of the standard MIDI watering holes apparently moved because someone had been uploading copyright material (standard MIDI Files, perhaps?). And when you hear that the login blurb for some ftp sites grimly announces that 'this connection is being logged', you really do begin to think that perhaps 1984's Big Brother has arrived 10 years late!

Happily, the Internet is not all doom and gloom. One of the side effects of the media hype has been a matching explosion in companies who will provide Internet access, in much the same way as Bulletin Boards have been operating for years — and in fact, some of these companies seem to have their origins in BBS-land. So it is very welcome that after many years, when my only route to 'The Net' was via a long distance call to London or Cambridge, I am promised that I will soon be able to surf with only a local call in the new year — a good belated Christmas present. Watch out for local providers in your area... SOS

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- *8 Meg of Sounds*
- *512 Presets featuring Classic popular analogue Synths from the 60s, 70s & 80s*
- *32 Voice Polyphony*
- *Wide range of Built-in Digital Effects (Reverb/Chorus/Delay)*
- *Ideal for any Musical Style needing Analogue Sounding Instruments*

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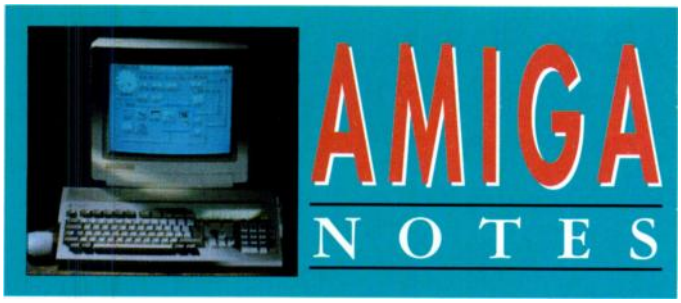

PAUL OVERAA brings you more news on Amiga music applications and that crucial Commodore bidding war...

Offers for the purchase of Commodore International continue to dominate the thoughts of many Amiga developers and end users, and even as I write this month's column (mid-November), yet another bid, this time from Escom, the German PC clone manufacturer and distributor, has emerged. Despite this late challenge, the Commodore sale is beginning more and more to look like a two-horse race between the Commodore UK team and the American company Creative Equipment International (CEI). There is even a rumour on the Internet that the CEI bid has already been accepted — but I must emphasise that this is only a rumour at this stage and certainly no official announcement has been made. As I understand it, the acceptance of any of the bids arranged with the liquidator could, in fact, be contested in the courts by the other parties involved anyway!

The Commodore UK team say that they are still quietly confident that their offer will finally win the day, but it is clear that the CEI offer is not going to be lightly dismissed by creditors. CEI are believed to have already put over $1 million on the table (as a guarantee against bid withdrawal); this company ships around 50,000 Amigas a year and has a turnover of over $22 million, and they obviously mean their bid to be considered seriously.

At the end of the day, and certainly before you read this, it will be the Commodore creditors who make the final decision on which offer to accept. If the UK management buy-out bid does succeed then the Amiga world will get back to business as usual very quickly, because the UK side of Commodore's business has always been strong. If CEI have won, then, being acutely aware that the UK is Commodore's largest and most loyal market, they'll obviously be looking for close UK marketing ties. Needless to say, the easiest way of rapidly achieving this will be to come to a working arrangement with Commodore UK themselves — and again this is likely to ensure that UK operations continue much the same as before. The bottom line is that this particular two-horse race looks to be very good news — regardless of the outcome, both the Amiga itself and Amiga users in general are going to end up winning.

It's pretty clear, incidentally, that some Amiga developers are holding back on software updates and new product launches until they are certain that the final Commodore deal is signed, sealed, and delivered — so you can expect to see quite a flurry of product announcements shortly after the new owners of Commodore International make their plans known to the Amiga community.

WORLD OF AMIGA

Whoever becomes the lucky new owner of Commodore, it is fairly certain that a formal statement will be made in plenty of time for the Commodore UK-organised World Of Amiga exhibition (Wembley 9-11th December). Whilst this will certainly be buzzing with rumour and speculation this year, it is also likely to be the showground for some exciting Amiga hardware and software; I'll be bringing you details of products and new developments next month!

TAKING THE DIRECT APPROACH

I've had several letters from people who have been trying without success to get hold of a copy of the *AudioMaster IV* sample editor package. This editor, as some of you will know, is generally regarded as the best 8-bit Amiga sample editor around and is essentially the same software as is provided with the Ramscan *Audio Engineer* sound sampling package.

Now it's certainly true in general that retail stocks of *AudioMaster IV* have dwindled over the last couple of years, but the product *is* being stocked by a company called Digital Direct at the quite reasonable price of £39. This company, incidentally, is being mentioned more and more often in the Amiga press in connection with MIDI and music products. Amongst other items, they supply the Microdeal *ProMIDI* interface, the *Megalosound* 8-bit direct to disk sampling system and *Aura*, the new HiSoft 12-bit PCMCIA sampler for A600/A1200 machines. Digital Direct can be reached on 0525 718271.

MIDI WITHOUT AN INTERFACE

Here's a tip for the techies: if you're in the unfortunate position of having created songs with older Amiga software that cannot export sequences in MIDI file format, you may at some stage need to link two Amigas together and transfer the song arrangements in real time, in order to get the material into a more modern sequencer. This is not difficult to do, and basically involves simply playing each sequence on one machine whilst you re-record it on another. ▶

AudioMaster IV is basically the Aegis release of Ramscan's highly acclaimed Audio Engineer sound sampling package software.

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- ROM: 512K

Digital Signal Processor:
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- Internal IDE Hard Drive Option (127 or 209MB HD versions available)
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- Hardware-assisted horizontal fine scrolling
- BLITTER graphics processor

Sound:
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- SDMA sound DMA co-processor

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- On-line help
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At the centre of the Falcon 030 lie two powerful hearts: the super fast 68030 processor which runs 4 million instructions per second and the Motorola DSP 5601 processor. Working together, they give processing speeds up to 10 times quicker than any other multimedia system at a comparable price. The Falcon 030 also boasts an impressive array of interfaces for linking peripherals.

THE IMPACT OF COLOUR

The Falcon 030 produces images indistinguishable from a real picture displayed on your TV. Every pixel on screen can be shown in a different colour and 65,536 colours can be displayed at once, from a palette of 262,144, producing a true colour display of the highest quality.

SUPERB VIDEO

The Falcon can be used to create special effects, overlay pictures, lighten any that are too dark, even get rid of the unfocussed bits. Video editing and special effect, techniques are both easy and affordable.

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The Falcon 030 comes complete with a stereo input into which can be plugged a microphone, a Walkman, or a hi-fi system. To reproduce the sound, a convertor mixes the eight 16-bit channels, then outputs crystal clear stereo sound at a sampling frequency of up to 50khz, better than CD quality. The Digital Signal Processor with direct-to-disk capability, means that the Falcon can store sound samples, including the human voice, on hard disk and play them back in real time.

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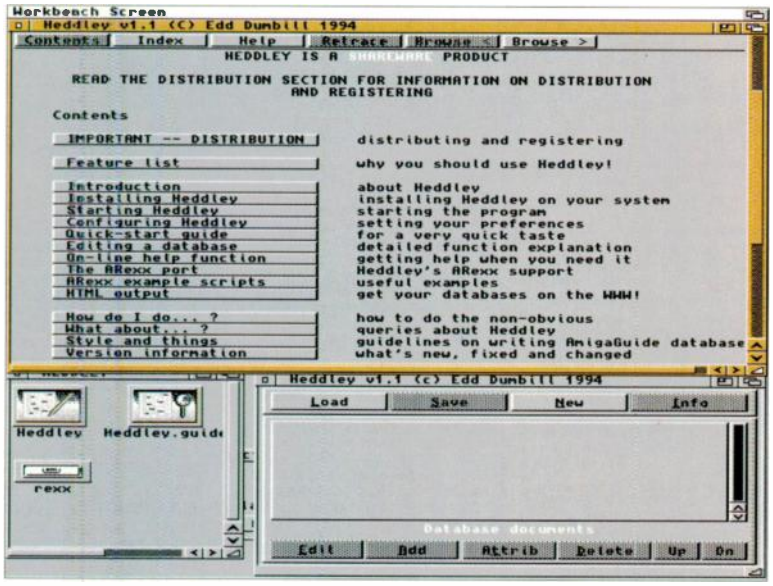
AMIGA NOTES

MIDI message transmission is, of course, based on plain old serial port comms, and you might care to know that, providing you're competent enough to knock up a simple two-wire serial lead, you do not need to go to the expense of buying a second MIDI interface — you can join the two Amigas directly via their serial ports.

Get yourself a couple of RS232 plugs and some wire, then link the system ground pin 7 at one end of the cable to the corresponding pin 7 at the other end, and the data transmit pin 2 to the data receive pin 3 at the other end. Link the two machines directly via their serial port connections, plugging the end of the lead with the pin 2 connection into the Amiga that will be playing the material, and the MIDI transfer will work just as well.



Heddley uses Amiga Guide to provide its own on-line help.

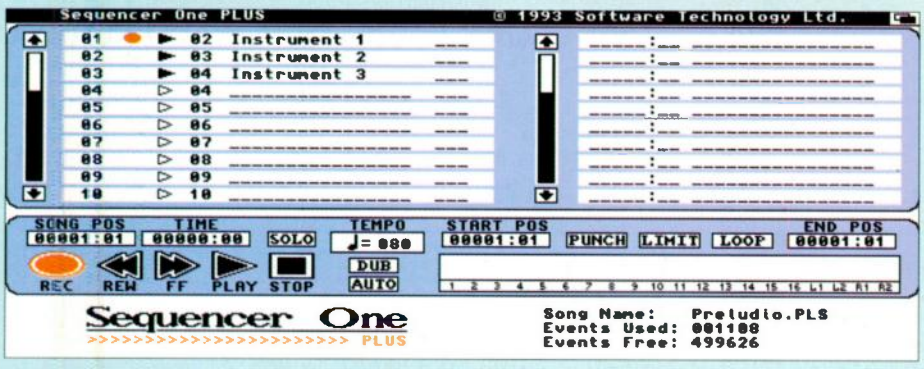
A REVOLUTION IN THE MAKING

In the near future, Amiga users are likely to see an explosive increase in the use of on-line Amiga Guide help documentation. This Commodore hypertext help system, as many will know, works using text files that contain embedded commands which indicate how the associated text should be displayed and used. Links can be created to specific text sections, and in the final document a user can move between different sections at the touch of a button. You might, for example, be reading a help file for a particular program and come across a term you don't understand. Click on that term and you'll be provided with a suitably enlightening explanation of it. Having read that, you would then click on a Retrace button to be returned to the text originally being read.

What you might not know is that, up until now, most developers have built Amiga Guide databases using ordinary text editors. During recent months, however, a new program has appeared, called *Heddley*, which is likely to change things dramatically — because it allows anyone to create on-line hypertext help files (with buttons and links) with incredible ease. Whilst obviously good news for developers, this is not why I'm mentioning *Heddley*. The really important point is that end-users themselves are now going to be able to produce Amiga Guide readable documents without knowing anything about the technical ins and outs of Amiga Guide document formatting.

Hypertext-based MIDI/music tutorials, user-group sequencing help, disks... the possibilities are endless. The best news of all, though, is the price — *Heddley* is a shareware program and registration costs just £10. The program is well worth checking out and should be available from most of the larger PD/shareware libraries by the time you read this. It can also be obtained directly from its author, Edmund Dumbill, c/o 13 Giles Avenue, Burnholme, York YO3 0RB.

AMIGA NEWS IN BRIEF



Software Technology's Sequencer One Plus is on special offer at the moment!

• SAMPLE THIS!

Software Technology has a special offer on at the moment which allows *Sequencer One Plus*, the complete 8-bit *Sample Series* sound sample library, and the *Hit Kit* to be purchased for just £57.42 (plus £2.50 p&p). Not a bad deal, considering that the normal combined price for these items is almost £145. Contact Software Technology on 061 236 2515.

• MAGICAL DRIVE FROM WIZARD

Wizard Developments have just released a new external floppy drive, called the Saturn, for the Amiga. It's compatible with all Amiga models, uses a Sony anti-click drive mechanism and has switchable boot virus protection. The price of £49.99 includes a two-year guarantee. Details from Wizard on 0322 272908.

• ARTY CRAFTY

A new hybrid artist's tool called *Photogenics* has just been released (priced £54.95). It provides a powerful image processor coupled with conventional paint program facilities. One of the interesting things about this package is that it supports a range of file formats, including JPEG and GIF. For details contact Almathera 081 687 0040.

• AMIGA GETS MAC ATTACK

Consultron, the company that gave the Amiga *CrossDOS*, the MSDOS file reading/writing utility, have now released a *CrossMAC* program which allows users of high-density drive Amiga machines to read 1.44 MB Apple Mac high-density disks. Its price is $149.95 (about £100). Contact Consultron at 11280 Park View, Plymouth, MI 48170, USA. Tel: 0101 313 459 7271.

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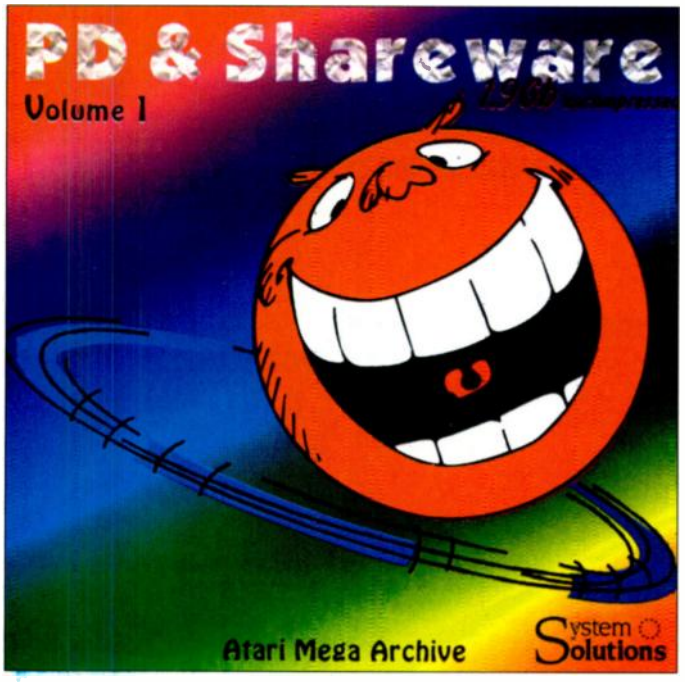
VIC LENNARD explores a brand-new, home-grown CD-ROM...

Back in May's Atari Notes, I looked at *GEMini*, the first Atari-specific CD-ROM. Various others have appeared in the meantime (although mainly on the graphics and fonts fronts), and I've been waiting for the next decent one to raise its head before broaching the subject of CD-ROM again.



Eye-catcher — the frivolous cover belies the amount of decent software inside.

Anyone intending to compile a CD-ROM is confronted with two major problems: where to access the data from, and how to ensure that the various files are as up-to-date as possible. In fact, these two are closely inter-related — a decent Atari archive is likely to have the latest software on board. The largest of its kind is the one at Michigan University, and so System Solutions decided to 'mirror' this in their first CD-ROM, the aptly-named *Atari Mega Archive*.

FILES, FILES EVERYWHERE

This disc is quite literally *packed*. The cover boasts 1.9Gb of data, which at first sight appears to be impossible — a standard ISO-format CD-ROM can only hold around 600Mb. However, all files are compressed, which explains the incredible capacity. This does have a disadvantage, though; programs cannot be run directly from the CD-ROM. Additionally, a variety of different compression techniques have been used, including *ARC*, *IZH*, *ZIP* and *ZOO*. Fortunately, self-extracting versions of most archivers have been included in the 'Archiver' folder. Phew!

Disc organisation is pretty good, with the entire shebang being broken down into 32 folders. This includes an individual index per folder (plus last minute additions) and folder names that give a decent indication as to their contents — like 'Music' and 'Sound', the two we're most interested in.

FACE THE MUSIC

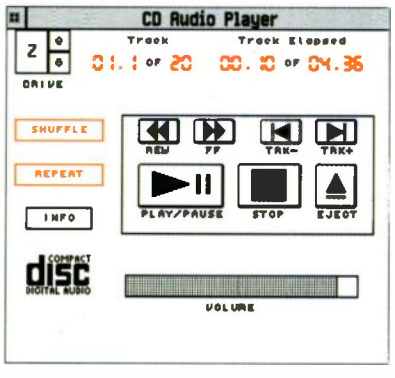
The 'Music' folder contains 6.9Mb of shareware programs, demos and info documents (for example, the annotated version of the MIDI Specification that appeared some years ago on *Usenet*. The explanations there are far better than any that have appeared in print).

Being the world's central repository for Atari files, Michigan has gathered up all in its path for some years. Consequently, many of the files are several years old, although most of them appear to be the latest versions. In fact, some of the files are from 1994, which is pretty good going. There's a demo of *Patchking*, the generic patch librarian that Software Technology released last year, but the lack of a 'read.me' file makes it impossible to run. A double click on the program simply brings up a dialogue box complaining that it can't find a particular file. Not a good start!

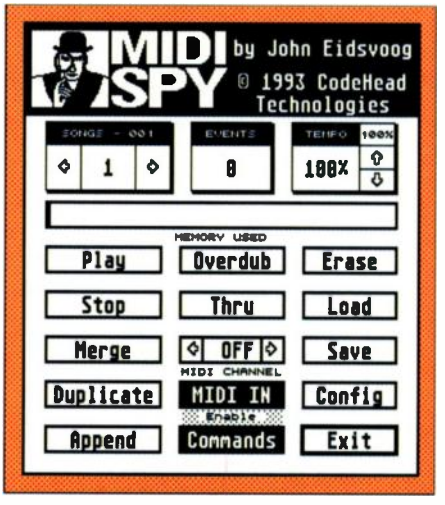
How about a guitar tutor? The *Guitaristics* demo from 1990 offers some useful facilities — despite the dire screen display! Playback can be either through the monitor's speaker or via a sound module connected to the MIDI Out, and the program can even print out the scales, though not on the demo version. Still, it gives you a pretty good idea of the program's abilities, which is true of most of the demos here. The only problem with any of them is the concern over whether the company is still in business!

Codehead Technologies is one company that is definitely still around, and its *MIDI Spy* demo is another program that appeared last year. This is a unique desk accessory that sits around minding its own business until data appears at the MIDI In port. At this point, it records the data as a Standard MIDI File. Neat idea, especially for the more spontaneous among you. The demo loads files, but times out after 10 minutes.

There are a couple of decent MIDI File playback programs, including a good Dutch shareware offering — in English, I hasten to add. The user interface may be poor, but *Playback* allows you to load a MIDI File with the option of ▶



In control — the CD Audio Player desk accessory acts as a classy remote control.



Eye spy — the demo of Codehead's MIDI Spy is functional, but times out after 10 minutes...

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HOT FROM AES

Paul has just returned from San Fransisco where the Digital Audio industry has been showing its latest wares. By some very astute ordering, he has managed to get the following products available for sale in December, so by the time you read this everything below will be in stock. The Digital Village really does go the extra mile (or 5000 miles to be precise) to get you the latest advances in technology first.

ProTools III

The latest hardware from Digidesign now allows you to record 16 channels of digital audio to one fast SCSI 2 hard drive with all the existing features and capabilities of ProTools.

Also included is your first TDM module so you are on the fast track for internal mixing, EQ and other all-digital processing.

888 I/O

You can use ProTools III with the existing 882 I/O or the brand new 888 I/O

which gives professional connectivity (balanced XLRs) for both the 8 channels of analogue inputs and outputs and the 8 channels of digital I/O (AES/EBU) - ideal for use with the Tascam DA-88 or the new Sony PCM-800 (DA-88 compatible). ProTools III also directly supports the Digidesign ADAT interface.

Sequencer Support

Steinberg were already showing the latest version of Cubase Audio which not only supports all 16 channels on ProTools III but also full TDM capability for DSP processing of these audio tracks, including several custom TDM modules for chorusing and other high quality effects. ProTools III support from E-magic Logic Audio, StudioVision and Digital Performer expected early in the new year.

E-mu Samplers

The ESI32 is E-mu's most affordable sampler ever (under £1200) gives you features previously only available for big money: 32 voices, excellent filtering and enveloping, S1000 SCSI compatibility, full EIII library compatibility and DSP processing.

We have managed to obtain a significant number of these machines in December, but the only thing we can guarantee is that they will be disappearing fast, so call today to avoid disappointment.

So with all this power available for just £1199 inc VAT, a real price breakthrough, what does this mean for the Emulator range? Well, the EIIIXP and its options will still continue, but the big news there is Emulator IV, the highest specification sampler ever: 128 voices, up to 128MB of RAM, full DSP processing for effects and of course compatibility with the existing libraries of EIII and S1000.

E-mu have now finally moved to SIMMs for RAM expansion (to 32MB on the ESI32 and 128MB on the EIV), so it won't cost you a fortune to expand either to its full potential.

E-mu ESI-32 - E-mu's stunning new sampler

Getting to The Digital Village

It has come to our attention that not everybody realises just how easy it is to find the Digital Village, especially if you are not from London. Not only are we at the other end of Barnet High Street from High Barnet tube station, but by car we are 2 minutes from the M25 junctions 23 & 24 and there is plenty of cheap easy parking right outside the store.

The Digital Village

THE EXPERTS

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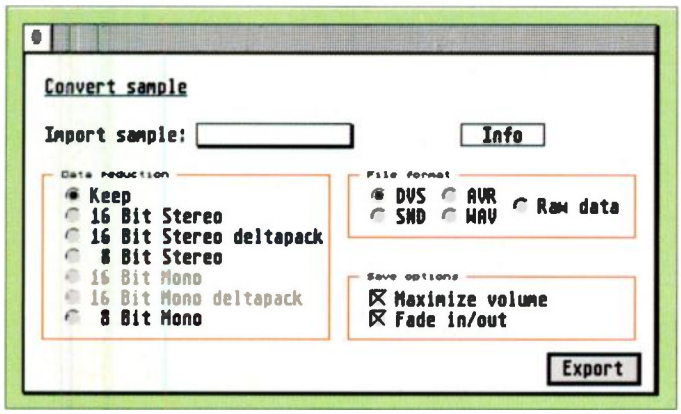
filtering out whatever you wish before loading to cut down on memory consumption. Once loaded, further filtering can take place, and you can mute tracks and change the MIDI channel, MIDI Volume setting and transpose value. If you can ignore the way it looks, this is a very useful application.



All change — 525 is a useful sound file converter.

Fancy building your own sync box? You can do just that courtesy of a useful text file and a *Degas* diagram from Mark Bombard. Or how about a desk accessory Korg M1 librarian? Yep, there's one of those as well, in the form of the Buddhaware *M1 Assistant*, although the idea of praying once a month to Buddha for the enlightenment of the author as 'payment' doesn't really appeal! And if you want a basic sequencing package, Steven Eker's useful *EKSEQ* sequencer and Henry Cosh's *Accompanist* are also on offer.

For those with older sound modules, there's a wealth of editing software. The Yamaha FB01 and TX81Z, the Kawai K1, Casio CZ range, and Roland D10, D110, D70 and MKS50 are all catered for.

SOUND ADVICE

The 'Sound' folder is immense — almost 150Mb to be precise! Over 10% of this is in the form of digitised sounds or .SND files that can be used with a variety of programs, while almost 900 .MOD song replay files take up an amazing 125Mb! Incredible.

I've mentioned trackers a few times recently, and this CD-ROM has them all: *NoiseTracker*, *ProTracker*, *DeskTracker*, *Paula* and *Octalyser* — to mention but a few. The latter of these is probably the best 8-bit tracker on the market, and has been used to create the music for numerous games. The version on this disc is the final shareware offering (0.9) and is fully functional, aside from MIDI support and a few features. There are also a variety of utilities, including the excellent *525*, which converts between five different types of sound file, and *Digidrum*, a replay system for sampled drum sounds.

THE REST

If your areas of interest extend beyond MIDI and music, then the *Atari Mega Archive* has plenty to offer. There are demos of power programs such as *Calamus SL*, *Pagestream 2.2*, *LDW Power* and *DynaCADD*, plus a host of fonts and clip art — and an STe-specific folder. At £24.95, this is probably the best English Atari-specific disc on the market. Now all you need is a CD-ROM drive... oh, what's that box over there all about? SOS

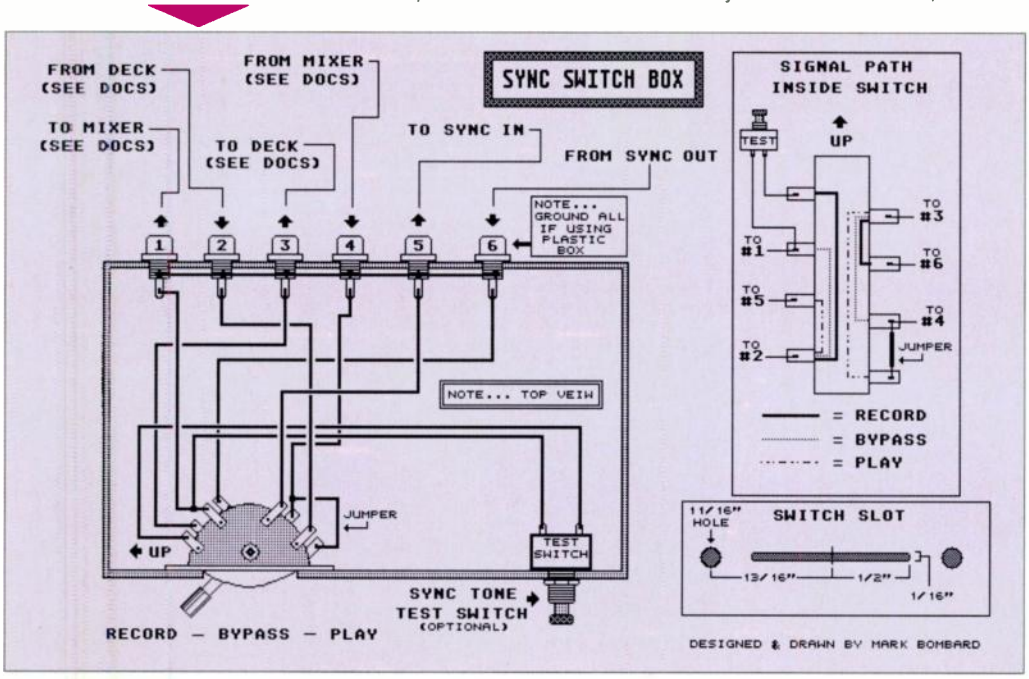
Bulldog breed — the CD and box were designed using Atari software and hardware.

BUYING A CD-ROM DRIVE

System Solutions offers a system based around the Apple CD300e and the *ExtenDOS* software. Housed in Apple grey, the front panel includes an eject button, a volume control knob and headphones socket. The rear sports a pair of SCSI ports, an ID selector, the power switch and a pair of stereo phono connectors for the audio output. This double-speed multi-session mechanism can play audio CDs, and is also PhotoCD-compatible.

The CD300e replaces the CD300 model, the main difference being the lack of a caddy — it uses a CD drawer system, similar to that found on domestic audio CD players. For pricing details, see the Further Information at the end of this month's Atari Notes.

Sync it yourself — hunt around and you'll find a project to build a sync box.



FURTHER INFORMATION

£ *Atari Mega Archive* £24.95; CD300e, *ExtenDOS* and SCSI2 lead for Falcon, £289; CD300e, *ExtenDOS* and Translator for ST/STe, £339; CD300e, *ExtenDOS* and ICD Link 2 for ST/STe, £359.
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LABELLED WITH LOVE

How To Treat, Label And Store Tape

PAUL WHITE explains the APRS tape labelling system and offers a few hints of his own on tape care.

With the introduction of small-format tapes such as DAT and Video 8 (as used in Tascam's DA88), there's a tendency to treat valuable recordings in rather too casual a fashion. The importance of correct tape storage tends to get overlooked, and judging by some of the DATs that come into my studio for editing or sweetening, labelling doesn't come far up the list of priorities either. Tackling the issue of labelling first (on the basis that you should always label a tape before storing it), there is a simple tape labelling system, devised by the APRS (Association of Professional Recording Studios), which has been introduced as an industry standard. This encompasses both multitrack and stereo master tapes, any copies or clones — and of course DAT. Colour coded labels are available from the APRS, but in the case of DAT tapes, many brands now come with a set of APRS colour coded labels included. Even if you don't have the 'official' labels, writing the correct description on the box will suffice.

It seems self-evident that any tape should include details of the format, such as how many tracks there are, what speed they were recorded at, what noise reduction (if any) was used, and so on, but it still surprises me that tapes come in to my studio without any of this information. Analogue recordings should always include information on the tape speed, track format, noise reduction, and record EQ (NAB/IEC), as well as the titles, times and recording dates of the material on the tape.

Analogue, open-reel tapes are usually stored 'tail out', to reduce 'print-through' (where the magnetic information from one layer of tape is partially transferred to the layer of tape next to it, resulting in pre or post echoes). Tapes stored 'tail-out' must be rewound before playing. If noise reduction is being used, print-through is unlikely to be a problem, but it's still good form to adhere to this convention. Furthermore, before storing a tape, it should be wound back to the beginning, and then spooled through to the end (at normal speed rather than at fast wind), so that it 'packs' evenly on the reel. Some machines have a special spooling mode for this purpose, which is rather faster than real-time.

Digital tapes, whether stereo DAT or multitrack (such as the Alesis ADAT or Tascam DA88) should display the recording's sample rate and the type of recording machine used. One of the worst crimes you can commit is to mix 48kHz and 44.1kHz sample rates on the same DAT tape, as this can create havoc if the tape is subsequently sent for digital editing. A quick tip — if you patch an Alesis AI-1 digital interface between the DAT machine and the digital editing system, then set the destination sample rate for 44.1kHz, any 48kHz tracks will automatically be converted to 44.1kHz.

Both digital tapes and analogue cassettes perform better if they are wound through to the end and then back to the start before being used for the first time. This helps loosen up any binding of the tape in the cassette shell, and may reduce the number of record errors. It is also recommended that the first minute or so of a DAT tape should be recorded with silence before the recording proper starts. This is because the first few turns of the tape onto the take-up hub may wind less than perfectly evenly, and this increases the risk of record errors, which, if serious, may even cause audible drop-outs.

After a session using digital tape, it helps to wind the tape right through to the end, then fast wind it back to the start again before starting it. Print-through is not a problem you have to worry about with digital tape.

POLITICALLY CORRECT LABELLING

The following descriptions are condensed versions of the labelling conventions outlined in *The Master Tape Book* (see the 'More Information' side panel).

• Session Tape
Usually a multitrack tape (analogue or digital), this is the tape used to make the original recordings — the working tape onto which material is recorded and overdubbed. The Session tape may contain out-takes as well as wanted material, and an album project may comprise several Session tapes. Where the recording has been made 'direct-to-stereo', the original recording is still known as the Session Tape. All relevant data as regards the tape format and the recorded contents should be recorded on the tape box or inlay card.
APRS label: blue with the words 'Session Tape'.

• Original Master
When a multitrack tape is first mixed to stereo, the result is the Original Master tape. This is usually not the tape used for final production; apart from the fact that it would be unwise to send the only master tape away for record or CD production, it is likely that the mixed material will need re-ordering, the gaps between tracks will almost certainly need editing, and some form of further processing may be necessary, such as compression or EQ. *APRS label:* red with the words 'Original Master'. ▶

JUST FOR THE RECORD

Something that has to be decided upon fairly early when arranging your material for release is the total running time, and how that relates to the medium you're going to release it on. The running time of a cassette can be significantly longer that of a CD — cassettes are limited only by the maximum length of tape that you can get into the cassette shell, while the maximum CD recording time is 74 minutes (and most commercial releases are no longer than 60 minutes in length). In the case of vinyl, it's best to discuss the recording length with the company handling the cutting, as the type of material can affect the maximum playing time.

Never send off an Original Master tape, and if you've paid to have a Production DAT Master made up, then it makes sense to get one or two clones made at the same time, so that you don't risk losing or damaging the original.

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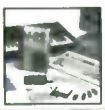

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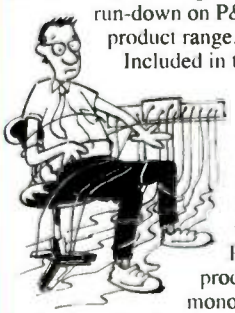

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How To Treat, Label And Store Tape

• Production Master

The Production Master is a copy of the wanted material from the Original Master tape or tapes, but with the track order and spacing the same as it will appear on the final record or CD. It is common for further EQ or overall compression to be added at this stage, and there may be fade-outs and level changes to consider. If the Production Master includes material recorded at different times or in different studios, it may be necessary to equalise individual tracks to make the album sound more homogenous.

The type of release medium should also be recorded, as different master tapes will be required for record/cassette and CD production. For example, the tracks on a CD run continuously, whereas the tracks on a vinyl or cassette album are arranged as two sides. There is usually a gap of one or two minutes between sides on the Production Master tape. For cassette production, side one is usually made slightly longer than side two, so that when the tape is turned over at the end of side one, side two is ready to play.

For DAT tapes destined for CD release, a sampling rate of 44.1kHz is preferable, though any CD mastering house should be able to work from a 48kHz tape made on a semi-pro DAT machine.

A full listing of the songs by title, start time (Start IDs) and playing time should accompany the Production Master, including full details of the recording format and the type and model of machine that was used. This latter point is important, because masters made on Teac or Casio DAT portables are pre-emphasised during recording (pre-emphasis is a type of top boost used during recording, which is reversed upon replay, providing a degree of noise reduction). If these tapes are simply copied in the digital domain without first being de-emphasised, they will sound bright and thin.

READ THE LABEL: MORE INFORMATION

For more detailed information on the APRS system of tape labelling, see the useful reference work *The Master Tape Book*, written by Alan Parsons, Bill Foster and Chris Hollebone, and published by the APRS and the British Record Producers' Guild. The book is available from the *SOS* Bookshop, price £15. Cheques or POs should be sent to: *SOS Publications Ltd, Media House, Burrel Road, St. Ives, Cambs, PE17 4LE.*

• Production Master Copy/Clone

This allows distribution of the tape for manufacturing without having to release the original. A tape made by analogue copying is known as a copy, whereas a tape made by digitally transferring the data from one digital recorder to another is known as a clone. A clone should be identical to the original in all ways, while a copy will always undergo some slight degeneration.

APRS label: orange with the words 'Production Master Copy Clone'. The appropriate Copy or Clone check box should be ticked, and the information from the actual Production Master should be included.

• Safety Copy/Clone

A backup copy or clone of any another tape. All details from the original tape should be included.

APRS label: pink with the words 'Safety Copy Clone'. The appropriate Copy or Clone check box should be ticked.

• Not For Production

Any tape which must not be used as a source for media manufacture.

APRS label: yellow with the words 'Not For Production'.

• PQ-Encoded Master Tape

The U-Matic tape used in the manufacture of CD or other digital media. This tape includes coded data, enabling the CD player to find individual tracks, display the total number of tracks, the time remaining and so on. Currently, there is no way to perform this process at home (it requires the services of a CD mastering facility), though software is becoming available which will allow the home user to produce PQ-coded Write-Once CDs or CDRs, from which conventional CDs may then be manufactured en masse.

APRS label: grey with the words 'PQ-Encoded Tape Master'. Check boxes are provided for the various release media formats and to indicate whether the tape is an original or a clone. In most cases, the release medium will be CD, and different U-Matic masters are needed for Minidisk and DCC production.

• Media Version

Copy or clone made for radio broadcast, film/video soundtrack, or similar purpose. If the tape is recorded with timecode, details should be included on the label.

APRS label: yellow and marked 'Media Version'. Check boxes are provided for Radio, TV, Film or Video.

TEST TONES

Conscientious though you may be with your tape labelling, it isn't enough to know what is on a tape — it's also wise to indicate how high the signal level gets when the music is at its loudest. Analogue recordings are normally preceded by test tones for this purpose — although these don't give an entirely accurate picture of peak signal level, because different engineers tend to push the record level into the red to a differing extent. To ensure that the left and right channels haven't been mixed up anywhere along the line, the tones should start with a burst in the left channel only.

There should be five seconds of 1kHz tone on the left channel only, followed by around 30 seconds of the same tone on both channels recorded at 0VU. To assist in optimising the replay tape machine alignment to the tape, a 100Hz, 0VU tone should be recorded, followed by a 10kHz tone at around -10dB. All tone levels should be recorded on the box or label.

One exception is the Production Master for CD (or other digital format) manufacture. This usually includes no tones, to avoid the possibility of the test tones accidentally ending up on the album, which would be disastrous. Furthermore, at the PQ-coded Master stage, everything that is present on the tape will usually be included on the final CD, so it is not wise to include test tones on this version of the material. If it *is* necessary to check the peak level, the material has to be played through and the peaks noted manually.

DAT TAPES

Because DAT tapes can't be recorded above their maximum level, it is usual for them to be recorded so that the maximum peak level falls around 2dB short of the maximum meter reading, so as to build in a small safety margin. Record between one and two minutes of silence onto the start of the tape, and if test tones are required (see separate 'Tones' side panel), a -14dB, 1kHz tone (14dB below the full-scale meter reading) will suffice. The level should be noted on the label or accompanying paperwork. At the end of the recording, the machine should be allowed to run on in record mode for at least half a minute before the tape is stopped.

When recording DAT Production Masters, set the Auto ID function to On. However, Auto ID must sense the presence of the programme material before writing the ID, so there's a chance that the first fraction of a second of the track will be missed. To get around this, manually move all IDs back by half a second or so after recording.

STORAGE

It is well known that analogue tapes deteriorate in storage, and many master tapes over 10 years old are virtually unplayable, unless they are first 'baked' at a controlled temperature to drive off the moisture they've

absorbed over the years. Even this cure is only temporary, and it is advisable that digital copies of all valuable old material are made as soon as possible. Of course, there's no guarantee that digital tape won't degenerate in the same way, but at least you can clone it onto a fresh tape every five years or so, and keep more than one copy of anything really important.

No tape will last forever, but storing it properly can make a huge difference to how long it does survive. The enemies of tape are magnetism, excess moisture and heat. Even short terms of exposure to an excess of any of these factors can cause irreversible damage. Tapes also need to be kept clean, so storage in a dust-tight case is a good idea.

When I interviewed Toyah [see January 1994's SOS], I noticed that her husband Robert Fripp had put all his masters into chicken incubators to provide a stable environment. A splendid idea, but you don't need to go to such lengths with your own tapes, provided you apply a little common sense. First of all, magnetism — obviously you shouldn't leave valuable tapes piled on top of a speaker cabinet, but other sources of magnetic fields include computer monitors and mains cables, especially those carrying large currents. Store your tapes at least a couple of feet from any of these.

3M's dual DAT cases are ideal for DAT storage.

Most modern houses aren't excessively damp, but if you have a garage studio, store your tapes in the house rather than in the studio, and pick bedrooms rather than cellars, as these are less likely to be damp. If you do have to leave the tapes in the studio building, consider buying a dehumidifier to prevent moisture build-up. This will also help protect your gear.

Tapes like to be stored at a constant temperature, and as far as the home recordist is concerned, the cupboard at the top of the wardrobe is probably as good a spot as any. Tapes should never be left in direct sunlight, not even for short periods, and if you have to transport them by car, put them in the boot, not in the car itself, as sunlight coming through glass can create a lot of heat.

Wind all tapes before storing, as described earlier in this article, and put open-reel tapes in plastic bags before putting them in their boxes, as an added precaution against dust. DAT tapes should be kept in their library cases, and if you have a DAT storage system to put these in (such as the 3M dual DAT cases pictured elsewhere in this article), so much the better. I'm not promising that you won't ever have tape troubles, but if you treat your tapes with a little respect, such problems are far less likely. SOS

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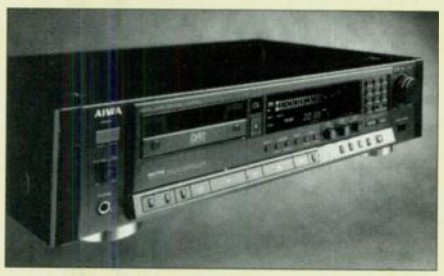
DAT'S ON THE LEVEL!

Setting the right DAT recording level

Digital recording is very different from analogue when it comes to setting the right recording level. JERRY HALATYN helps you to understand your DAT machine...



So you finally went out and bought a DAT machine! You probably couldn't wait to plug it in, turn it on and record music with a purity previously impossible with your budget. You probably thought you'd breeze through the owner's manual and get right down to some serious digital recording in no time. How hard could it be? Connect the inputs and outputs, set the record level and... hang on — what kind of meter is this? No values above 0dB? No nominal level?

You quickly learn, through trial and error, that if you go over 0dB on a DAT machine, the result is nasty distortion or complete muting of the signal (depending upon the model you own). You suddenly have to think of your levels as existing within a margin below 0dB — a new way of thinking for many of us!

So where should your average level be? Eventually you learn that there isn't really an industry standard by which you can set DAT recording levels — it seems that everyone has their own way of doing it.

SOME LIKE IT HOT

The most common advice given is simply to record as hot as possible — without going over 0dB. Using this method, you might find yourself constantly adjusting the record level, reducing it gradually after having overloaded the DAT machine several times. Just when you think you've got it right, the slightest change in the mix sends the meter over the top. In this case, a compressor can help balance the dynamics within the music. Since a smooth, subtle effect is desirable, a soft-knee compressor will yield the best results. A limiter is also effective but should be used as a kind of insurance policy to help keep those few highest peaks in check. Be sure to avoid 'crunching' the signal down to fit on the DAT.

A CUT ABOVE THE REST

The 'as hot as possible' approach does take advantage of the DAT machine's dynamic range, which is, at best, about 96dB (a little better than two-thirds of what the human ear can handle). However, it does not regard the dynamics of the recorded music, and this may lead to another problem.

Take, for example, the following scenario: you've just mixed down two songs. During playback, you notice that the mellow song (Song A) sounds louder than the more lively one (Song B). Neither mix went over 0dB — so why is one louder than the other? Because a song with relatively narrow dynamics, when recorded as hot as possible, has an average signal level that sits higher on the meter, closer to 0dB while never going over it. This can make it sound twice as loud as a more energetic song whose transient peaks keep its average signal level several dBs lower.

NOMINAL LEVEL

The problem of relative levels arises because our ears perceive sound based on average level, while a DAT machine's meters read peak levels to warn of clipping. Because of this it isn't practical to set a notional point on the meter that will work for every song, as every song has a different peak-to-average ratio. It is possible to balance the subjective levels of successive mixes on a DAT tape by making aural judgements of apparent loudness, but for this to really work, the song with the highest peak-to-average energy ratio needs to come first, so that the other mixes can be referenced to that.

An alternative is to compress the songs that have wide peak-to-average ratios, but only if the compression doesn't compromise the way the song sounds. Because most DAT masters destined for album release are re-compiled on some form of editing system, it is generally safer to leave level-matching until that stage, which means that you can go for maximum level on every track you mix.

MAX HEADROOM

Headroom is the safety margin between the level you think you'll need and the point at which the signal level hits the endstops. Because you can't always predict the level of the highest peak, it is essential to leave some headroom, but this may vary with the type of music you are recording. For example, a dance track may have a limited dynamic range, so you could get away with something like 12dB of headroom above the average signal level. However, it's the peaks that matter as far as the DAT machine is concerned, so keep an eye on them. More dynamic music may need to be recorded with even greater headroom, but the trickiest situation is in live recording; even if you've done a trial run, the levels may change significantly for the actual performance. In this case, you could set your nominal recording level around 20dB below clipping, just to be on the safe side. This will, theoretically, compromise the signal quality to some extent, but because of the wide dynamic range of DAT, this is unlikely to be serious, and is far better than audible clipping.

0VU EQUALS -?DB

It is common practice to match the nominal level of a mixing console's L/R outputs with a specific level on the DAT machine (usually, anywhere between -20dB and -12dB, depending upon the required headroom). This allows the engineer to concentrate on the console's L/R meters while occasionally checking the DAT machine's levels.

To align a DAT machine to your desk:

- First determine the headroom you'll require (let's say you've chosen 14dB).
- Next, generate a 1kHz reference tone which registers 0VU on your desk's L/R meter.
- Turn down the DAT machine's record level and put it into REC/PAUSE mode.
- Turn up the record level slowly until the DAT machine's meter reads -14dB.
- With the machines aligned, you simply refer to your desk's L/R meters while recording. Keep the average level around 0VU, which now corresponds to -14dB (your virtual nominal level) on the DAT machine.

Whatever you choose as your nominal level on DAT, it's a good idea to record a reference tone at that level. This is quite helpful when calibrating your console's 2-track returns or aligning other recorders for dubbing copies from the DAT machine.

SIMPLE AS DAT

As usual with audio recording, there are few rules and many guidelines for setting DAT levels. Whichever method you use, remember this: anything you record will have some sort of dynamics, including peaks, as well as an average level. For the best results, establish an appropriate headroom and, of course, never go over 0dB or else ... (MUTE) SOS

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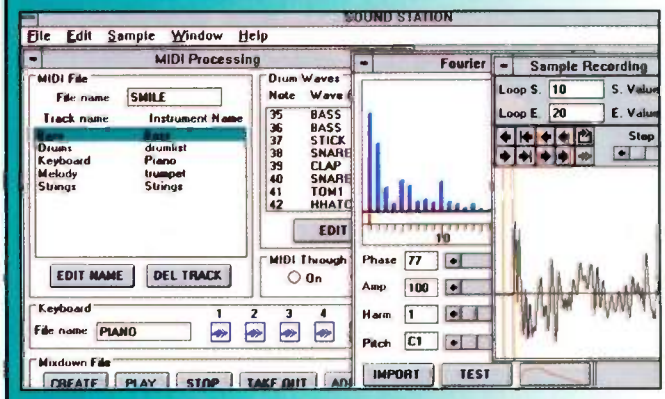

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KORG T1 workstation, full-size piano weighted keyboard, sequencer, disk drive and effects built in. With flightcase, stand, leads, manual and sustain pedal, £2000. ☎ Dave 0895 256273.

KORG T3, excellent condition, flightcased, £799; Korg 01/W FD, excellent condition, flightcased, £950; Korg Wavestation, excellent condition, cased, £675; Emu Pro Plus piano module, superb quality sounds, £250. May deliver (Derby).

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MOOG ROGUE with original manua and PSU, pristine, £160; Korg S3 super drum machine, built-in effects, eight outs, SMPTE write/read, £250; CV/Gate, new, £90. ☎ Stephen 051 727 0110.

MOOG PRODIGY synth, mint, £220. ☎ 0222 811984 (Cardiff).

MOOG ROGUE with filter input and psu, £220; TR808, mint, £350; Teisco 100P analogue, £65; Boss 16 channel mixer, £290; CS60, £400; D110, £195. ☎ Tom 0372 745494 or 0956 318695 (Surrey).

MOOG ROGUE boxed £250, Roland MKS30 £250, Yamaha TX81Z £140, Roland MKB200 mother keyboard £180 or £750 the lot. ☎ 0273 475155

OBERHEIM 4-voice mega analog synth, four dual OSC SEMS plus programmer, £2800; Oberheim DMX MIDI with extra cards, £450; Oberheim DSX sequencer, MIDI, £250, manuals. ☎ 081 995 8773.

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RHODES 54 electric piano, £200; ART Multiverb 2 multi-effects, £100. ☎ Keith 0256 763825 (Basingstoke).

ROLAND D10 £375; Roland MC202, £195; Cheetah MS6, £195; Cheetah MS800, £95; Alesis MMT8, £85; Philip Rees MIDI/CV, £130. All ono boxed as new. **0624 627213.**

ROLAND D10 some key contacts need cleaning, £300 (hence); Dr. Synth DS330, £275; Boss DR550. £90; Roland MC50, £350; Peavey 8:2 Unity 1000 mixer, £250; Alesis Microverb II, £80; Max A-frame 3 tier stand, £80. Buyer collects. ☎ 091 491 3937.

ROLAND D20 multitimbral LA synth, 32-note polyphonic, 8-part multitimbral, 8-track sequencer with floppy drive, ROM cards and 100s of sounds on disk, mint, £525 ono. ☎ 0733 233135.

ROLAND D110 and cards, £250; Ram 10:4:2 mixer (4 or 8-track use), £320; Boss compressor/gate, £50. ☎ Roger 01708 477987 (Hornchurch, Essex).

ROLAND D550 £450; Korg DRV2000 effects, £180; Music Prose Novation (Mac), £140; 12U rack (castors), £140; 17U rack, £140; both heavy duty, Valley Micrograte £60 each. ☎ 0374 195331.

ROLAND DS330 Dr Synth (Sound Canvas), mint condition, boxed, as new, £235. ☎ Ian 0702 616961.

ROLAND E36 keyboard needs attention, hence, £180, no offers. ☎ 081 665 1840 eves.

ROLAND FP8 digital piano, 88-note weighted keyboard, full MIDI, with sostenuto and expression pedals, and stand, piano in grey, excellent condition, £1200 ono **091 230 0718 (Newcastle).**

ROLAND JD800 synth, good condition, complete with cards and full flight case; Korg O1W/FD workstation, thousands of sounds and full flight case, £1850 ono for both, may split or part exchange. ☎ Kevin 0476 74771 (9am-5pm).

ROLAND JUNO 1, Juno 2 & Juno 60, SH2000, Korg MS10, MS20 700, Jen SX1000, ARP Omni 2 and many more. ☎ 0670 523363.

ROLAND JUNO 60, swap for SCI Pro One, TB303, JX1, JX3P, TG100, or £280, other swaps considered. Contact, Keith, Flat 2, 20 Alhambra Road, Southsea, Hants P04 0RL.

ROLAND JUNO 60 programmable synth and Roland MD8 MIDI-DCB interface, rare item, offers. ☎ Richard 0742 683479.

ROLAND JUNO 106, very good condition, including manual and case, £370; Roland U220 plus 3 cards, boxed, in mint condition, £320; ART Multiverb Alpha II, as new, £195 only. ☎ Dave 0734 665538.

ROLAND JUNO 106 £430; Roland JX3P, £300; Casio FZ1, £650, no offers, all in excellent working order and condition, never gigged. ☎ 081 683 3996 eves.

ROLAND JUPITER 4, £350; Roland D110 plus Atari editor plus 800 sounds, £280; Roland CR5000, collectable analogue drum machine, £50. ☎ Nigel 0724 711353.

ROLAND JV80 keyboard with orchestral expansion board, monitor speakers, amp, two Voice Crystal cards software included all ex condition, boxed, with manuals, home use only, £850 ono. ☎ 061 428 5717.

ROLAND JV880 synth module, boxed with manuals, as new, £475. ☎ Fred 0633 266647 after 6pm.

ROLAND JV880 £450; Kawai K4 keyboard, £350; Digitech VHM5 harmoniser, £350; Oberheim Matrix 1000, £200; Roland CM64 LA/PCM module £200. All vgc with manuals, all ono. ☎ John 091 414 3783 (Tyneside).

ROLAND JV880 with PCM102 ROM card, both immaculate and boxed, £465. ☎ Fred 0633 266647 after 6pm.

ROLAND JV880 expandible synth module, boxed with manual, £495; Phonic SE206 50 watt monitors, £60. ☎ Dan 0634 364507 (Kent).

ROLAND JX8P analogue, 12 oscillator, fully programmable polysynth with velocity, aftertouch and good MIDI spec stereo chorus, superb brass strings, squelchy basses etc, £350. ☎ Steven 0726 66715.

ROLAND JX8P analogue synth with digital control with manuals, etc, £350; Yamaha TG100 almost unused, £220; Carlsboro Cobra 90 keyboard amp, excellent for live work, £200. ☎ 0533 841785 (Leicester).

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ROLAND KR33 digital piano, 76 unweighted keys, monitor speakers, 8 voices with stand; Kawai R50e drum machine with bass sounds, £580. ☎ 0332 297434 (Derby).

ROLAND MC202 sequencer with built-in mono synth, manual, excellent condition, £145; Sequential Circuits Pro One mono synth with sequencer, excellent condition, manual, £175. ☎ 0444 242142 (Sussex).

ROLAND MKS7 Super Quartet, £350; Cheetah SX16, 2Mb, huge library, £425; Roland MT32, £120; Yamaha DX100, £120. All boxed, home use. ☎ 061 434 7443.

ROLAND PC200 master keyboard and Boss DS330 synth module. Boxed, as new, £320. ☎ Dave 0733 245814.

ROLAND SC55 Sound Canvas, £320; Yamaha TX81Z, £160; Roland D110, £200; Band in a Box, £25; Sequencer plus, £50; MQX32M, £160; Kurzweil SX1000, £525. ☎ 0222 549350.

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ROLAND U20 RS-PCM synth, card, vgc, £400. ☎ Shaun 0602 520140 (Nottingham).

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ROLAND SH1000 analogue synth excellent condition with original box and manual £180 ono. ☎ 081 555 4022.

ROLAND STUDIO MV30 music production system, like a D70 and 16-track sequencer all in one box, 6 outputs, tape sync, disk drive, MIDI file-compatible, 2 soundcards, £650; Roland DS330 Dr Synth (Sound Canvas), boxed, as new £235; Roland CM64 (like a U220 and an MT32 in one unit), plus one soundcard, £260. ☎ Ian 0702 616961.

ROLAND U20 RSPCM synth, plus card, very good condition, £400. ☎ Shaun 0602 520140 (Nottingham).

SEQUENTIAL PRO ONE analogue synth, very good condition, manual and brand new, MIDI to CV convertor £375. ☎ 0244 311874 after 6pm.

SEQUENTIAL PROPHET 5 analogue keyboard, immac, can deliver/demo, £925 ono. ☎ 0270 767335 (Sth Cheshire).

SEQUENTIAL PROPHET 5 V3.3 with MIDI and flightcase, £995; Roland SH101, £175; Prophet VS vector synth with flightcase, £895. All mint condition. ☎ 0742 883744, 0374 936769.

SEQUENTIAL SIXTRACK analogue synthesizer, can only be described as new, immaculate condition, includes manual and original box, £350. ☎ 0274 620004.

YAMAHA DX27 £120; EZ Vision Mac Sequencer, Disks and manuals, £50; Atari 1040STFM, Colour monitor, word processor, spreadsheet, some games, £200. All vgc, ono. ☎ Matt 0525 240429.

YAMAHA PSR84, updated PSR400, cost £500, accept £375 ono; Yamaha FB01 expander, £100. ☎ Andy 0582 864443.

YAMAHA PSR6700 76-note keyboard, with 8-track sequencer, 100 preset, 100 custom voices, £800 ono or swap for Quasimidi Quasar, Jupiter 8 or Oberheim OB8 and cash. ☎ Pete 0524 382873.

YAMAHA SK50D double keyboard organ/synthesiser including separate bass pedals, volume pedal and case, excellent condition, £150. ☎ 01429 871221.

YAMAHA SY22 synth, 5-octave, touch-sensitive keyboard, £300 ono; Roland D110 multitimbral expander, £220. ☎ Chris 0272 775747.

YAMAHA SY77 workstation, as new, plus string section wave and data cards, £800. ☎ Jamie 061 861 7761.

YAMAHA SY85 immaculate, home use only, genuine reason for sale, with stand, card and phones, etc, under guarantee, £650 ono, buyer collects. ☎ Tony 0524 420743.

YAMAHA SY85 work station, all cards and manuals, plus dance, techno, and ambient disks, plus hard case, stand, and leads, £900 ono. ☎ Phil 081 547 2174.

YAMAHA SY85 workstation, immaculate condition, bedroom use only, manuals, box, £825 ono; Novation Bass Station, one month old, box, PSU, £315 ono. ☎ Gary 0945 880275 (after 4pm).

YAMAHA SY85 1 year old with case and RAM card, excellent condition, £850 ono; Replay 16 sampler for Atari ST, 6 months old, as new, £70 ono. ☎ David 0904 489834.

YAMAHA TG33 32-note polyphonic, 192 voice sound module, FM & AWM synthesis, vector control, effects with dual stereo outputs, rack mountable, mint, boxed, bargain £220. ☎ Matt Overton 021 359 3611, Ext 4924/4429.

YAMAHA TG55 sound module, immaculate, boxed, manuals, Atari editor and sounds, £250; Korg DW6000 synth, £150; Kawai DC8 RAM card, £20. ☎ Darren 0375 677332.

YAMAHA TX7 £180; Casio CT657 keyboard, £150; OHM 140 keyboard amp, £160; 2 tier keyboard stands, £40 each; Yamaha MT1X 4 track, £200; Boss DD3 digital delay, £80. ☎ Gary 0374 147324.

YAMAHA TX7 sound module with manual, £140. ☎ 0181 317 1770.

YAMAHA TX81Z £150; Roland U220 with card, £250; Korg D58 synth, £250. ☎ Paul 0865 376408 (Oxford).

RECORDING

AKAI ME14D 12-track tape machine, boxed with manual and tapes, £1100. ☎ Andy 01706 59652 (Rochdale).

ALESIS SR16 drum machine, £160; Roland U110, £190; Casio FZ1 16-bit sampler, £250; Atari 1040ST, monitor, £200; TOA 8-track cassette deck, £300. ☎ Hywel 0554 820268/756324.

ALESIS QUADRAVERB digital effects processor, £260 ono; Korg M3R A1 sound module with a set of ROM and RAM cards, £375; rack case, £45 ono; Hohner Professional G3T Steinberger-type guitar, £170 ono. ☎ David 0602 734250.

ALLEN & HEATH SYSTEM 8 24:8:24:2 mixer, 24 direct outs, including AKG talkback mic, £700; Behringer single-ended de-noiser, mint, £175. ☎ Gavin 0902 29148.

AMEK MONITOR mixing desk, 16:6, 3-band EQ with three frequency switchable mid, high and low pass filters on all outputs, including flightcase, £450. ☎ 061 456 9436.

BEHRINGER ULTRAFEX II, £150; Phonic compressor/limiter PCL3200, £150. ☎ Chris 0113 263 3179.

BEHRINGER ULTRAFEX II enhancer, £180; ART FXR, £110; Award Sessionmaster II preamp, £110. All 19-inch rack units, boxed, as new. ☎ Dave 0733 245814.

CARLSBRO COBRA keyboard amplifier, 90 watts, includes cover, £210. ☎ 0977 791770 (Pontefract).

DESCTECH 16:2 mixing desk, 3 band EQ, 2 auxiliaries, headphone monitor, very quiet operation, only £300, home use only, excellent condition, boxed with manual. ☎ 0952 260064 (Telford).

DIGITECH VHM5 £475; Alesis HR16, £125; SR16, £150; Yamaha EMT1, £65; Atari STE 1Mb, SM125 monitor, £200; Steinberg S900 editor for Atari. ☎ Alan 0379 676670 eves.

DRAWMER DS404 Quadgate four pro quality noise gates in a 1U unit, each with side chain, hard and soft knee gating, stereo linking, excellent condition, quick sale. ☎ Dave 081 923 4300 any time.

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FOSTEX B16 half inch 16-track with autolocator, MIDI sync unit, loom, stand, tapes, £1500 ono. ☎ 021 605 6082.

FOSTEX 812 mixing desk, R8 recorder plus looms, excellent condition, £1600, boxed. ☎ Simon 0113 250 9801.

FOSTEX D20 SMPTE DAT, £1900; Soundcraft Spirit 24, £1750; Sony DTC1000, £699; Zoom 9120, £250; Roland CM32, £90; Akai 8Mb board, £275; Akai S1000, £1600. ☎ 0923 267733 (Watford).

FOSTEX E16 reel-to-reel tape machine, excellent condition, £1800 ono. ☎ 0483 277708.

FOSTEX R8 never used, perfect condition, £850 ono. ☎ Patrick 081 657 1985.

FOSTEX R8 8-track, quarter-inch, reel to reel tape machine, in excellent condition, with MTC1 MIDI controller for any computer to control, and 40-foot looms. £750. ☎ 071 511 1120.

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MACKIE 1202 £300; Roland JX1, £225; Atari 1040, Tatung hi-res monitor, BCK FTS MIDI Thru box, 2 in 8 out, £20. All above boxed and manuals. ☎ 0928 576064.

MICROPHONES various electret and dynamic, all studio quality, boxed, never used, offers. ☎ 021 445 3572 after 7pm.

MIDAS 18:8 recording desk, rare, RAM 10:4:2, Tascam 80-8, Bel, BC38T, Quad 33/405, HR16, SR16, Yamaha EMT1 Omnicraft 4x gate, Hands On 16+ cartridge, SPL SX2, AKG BX20E Reverb. ☎ 0379 676670

RAM 10:4:2 mixer, £180; Vesta DEX810 exciter, £80; Wanted: Akai S700 or X7000. ☎ Carl 0203 394737.

REVOX C270 top-spec professional quarter-inch, 2-track tape machine, with all documentation. Hardly used, retail price £3800. Offers. ☎ 071 481 2978.

RDS 1900 DIGITAL DELAY, rack mount, as new, £110 ono; Slapback Audio Scintillator rack mount as new, £110 ono. ☎ 021 445 3572 after 7pm.

SANSUI MR6 6-track rackmount, immac, £385, SY1 sync controller, links two MR6/WSX1 together for 10-track recording, £110; MDR7 smart FSK MIDI sync and sequencer, remote controller, £80. ☎ 0275 332957.

SECK 12:8:2 £550 ono; Seck 12:2 live, £250 ono Both excellent condition, manuals, etc. ☎ Ben 071 485 2071 (London).

SENNHEISER 441 studio mic, little used, mint condition, £300. ☎ 0749 870757.

SOUNDCRAFT SPIRIT 24:3 live desk with 50 metre professional Klotz multicore, stage box and heavy duty winder on wheels, desk in custom built f/c with internal wiring to EDACs, bargain £1495. ☎ 0977 557560.

SOUNDCRAFT 760 16-track machine, prewired to 24, plus 40 two-inch tapes, £3000. ☎ 0116 254 1918 or 0116 262 0942.

SOUNDCRAFT SPIRIT STUDIO, 16:8:2, immaculate condition, £1350; Soundcraft Folio 12:2 rackmount mixer, boxed as new, £225. ☎ 0977 557560 or 0977 603984.

SOUNDCRAFT SPIRIT Studio 16:8:16, as new, £1550, no offers; AKG 451 with CK1 capsule, £180; pair AKG 321 dynamics, £100 each; Calrec 2050, £140. ☎ 061 445 6825.

SOUNDTRACS PC MIDI 24, 24 channel in-line mixing desk, 48 inputs, 24 track monitoring, meter bridge, 6 band sweepable EQ, 4 auxiliaries, stereo effects returns, MIDI muting, £3695 ono or part ex for Akai S1000 sampler. ☎ 081 444 3444 or 0860 482 822.

SPIRIT FOLIO RAC PAC £600; Sony DTC690 DAT, £300, £850 together, 3 months old each, extremely as new, home use, boxed, manual. ☎ 0354 695642 (Cambs).

STUDIOMASTER 16:2 mixer with Five Star flightcase, mint, swap for Mackie or Spirit Rac Pac plus cash or similar rack mount mixer. ☎ Kevin 01773 606545 after 6pm.

STUDIOMASTER DIAMOND 16:2 mixing desk, £310; Tascam Porta 05HS, with tape sync/dbx modification on sync track, plus independent outputs added, £195. ☎ Dave 0733 245814.

STUDIOMASTER MIXDOWN GOLD 24:8:16:2 MIDI muting desk, £1700 ono; BBE 322A enhancer, £150; Sound Tech compressor/limiter, £150; MTR dual noise gate, £120; ART EXT digital multi-effects unit, £150; ART Multiverb 3 digital effects, £150; Alesis Microverb reverb unit, £60. ☎ 071 511 1120.

STUDIOMASTER SERIES 2 mixing desk, 32:16:2, just serviced, with all pots and faders replaced. Basically a new desk. MIDI muting, includes custom jackfield bridge. Immaculate condition, £2700 ono. ☎ Darren 081 959 4659.

TASCAM 688 MIDISTUDIO, 20-channel mixer and 8-track, cassette-based recorder with programmable MIDI-controlled routing, muting, etc. Built-in MIDI sync, etc. £1200 ono. ☎ Chris 0272 775747.

TASCAM DA88 digital multitrack recorder with synchroniser board and remote control, hardly used, still boxed, £3500. ☎ 0602 656160.

TASCAM DA88 digital multitrack recorder, vgc, light use only, £2150 ono; ATS500 synchronizer, £220, ono. ☎ 0273 473790 (Brighton).

TASCAM M216 16:8:4:2 mixer. Great for 8-track recording or live work, 3-band EQ, cannon and jack inputs and outputs, etc, £650 ono. ☎ Ian 0702 616961.

TASCAM MS16 16-track, 1-inch, with video synchroniser, and Soundcraft Spirit Studio 16:8 desk, excellent condition, £3000.☎ Joe 0533 695507.

TASCAM M30 8:4:2 mixer, good condition, £180; BBE Sonic Maximiser 322, make your demos stand out, £160. ☎ 0536 420309.

TASCAM M2524 automated desk, Fostex 280 four track; Korg A5 effects; Boss RE1000 rev/del; Roland TR707 drum machine. All very good condition. ☎ Lewis 0224 780086 (Aberdeen).

TASCAM MSR24 Dolby S 24-track, home use only, £3500. ☎ 081 981 2588.

TASCAM 38 half-inch 8-track, remote, manual + footswitch, £750; Seck 18:8:2 desk, ex condition, £685. Package for £1400 ono. ☎ Paul 071 373 9728.

TASCAM 238 8-track cassette machine, fully serviced at Tascam, £600. ☎ Ben 0742 668977.

TASCAM 244 Portastudio with box and manuals, £250. ☎ 0223 234850.

TASCAM 644 vgc, 12 hours use, manuals, leads, cleaning equipment, £675; Philips DCC300 digital recorder, unused, 10 blank cassettes, £175. ☎ Robert 081 545 1334, 081 943 1426.

XRI XR300 SMPTE read and write synchroniser, mint condition, £125, or swap for Alesis SR16. ☎ Steve 0690 710231.

YAMAHA GC2020B compressor, £119; Alesis Microverb II and Microgate, both £59 each; ART Proverb 200, £69. All very good condition, suit any setup. ☎ 0252 710244.

YAMAHA SPX1000 £600; Waldorf Microwave with 2 ROMs, £400; Drawmer LX20, £160; Cheetah MS6, £140; Steinberg Avalon sampler editor, £50. ☎ 051 638 0286 after 6pm.

ZOOM 9030 multi-effects, £275; Korg FC6 Program Changer, £60; both for £320; Peavey Spectrum bass, £185; U20 drums card, £25; Roland PC200 master keyboard, £100. ☎ 0933 678608.

DRUM MACHINES

ALESIS D4 drum module, over 500 stereo samples, fantastic sounds, boxed and unmarked with all manuals, guarantee etc, £240. ☎ 0253 869561 (Blackpool).

ALESIS SR16 swap with cash for D4, SR16 used for sounds only, pads unused; analogue delay pedal, £30. Wanted: de-esser, dbx, Symetrix, Drawmer, Behringer. ☎ 0902 845112 eves, 0831 400086.

ALESIS SR16 drum machine, boxed, as new, £120; Yamaha TG100 sound module, boxed, as new, £220. ☎ Mike 0684 298188 after 7pm.

BOSS DR55 Roland TR606, TR808, TR505, Simmons SDS8/9 brain, pads, & stands complete. ☎ 0670 523363.

BOSS DR660 drum machine, 255 excellent editable PCM sounds, including TR808/TR909 samples, and built-in effects. Immaculate condition, home use only, boxed, with manual, £265. Kenny ☎ 041 942 5958, after 5pm.

ROLAND CR78 £100; D110, £150; Korg M1R, £400; Casio VZ10M, £150 cash on delivery. Fax: Andrea +39 321 625308 (Italy).

ROLAND CR78 classic analogue drum machine, very good condition, immaculate, comes with manual and very rare WS1 write switch. Offers around £300 ono. ☎ Jason 0525 717557.

ROLAND R8 sound cards, SN02 & SN06, fantastic percussion, £25 each or both for £35. Wanted Mackie CR1604 or Samson mixer. ☎ Russ 0432 840649.

ROLAND TR707 drum machine, includes manual, MIDI, footswitch, separate outputs and power supply, still boxed, £180. ☎ 0977 791770 (Pontefract).

ROLAND TR808 £325 ono or swap for Roland TR909 with cash arrangement; wanted TB303. ☎ 0532 465518.

ROLAND TR909 as new, £450; Roland D110, £250; Akai AX80 MIDI polysynth, digital/analogue hybrid, £245; Yamaha Qy10 synth workstation, £100; Quick Disks, £1 each. ☎ 0268 525347 (Essex)

YAMAHA RY30 drum machine/synth plus 2 voice cards and ST librarian, £250; perfect, home use, boxed. ☎ Steven 0273 565754.

ROLAND TR606 Drumatix, good condition, boxed with manual, sounds like a mini 808, £110. ☎ Dean 0705 467464

ROLAND R8 drum machine with manual £250. May part exchange. ☎ Paul 0706 50897 or 0532 461033.

SIMMONS SDS9 drum kit, black, TMI/MIDI trigger, £550; Yamaha CS5 £150; Moog Rogue, £200; Casio CZ101, £100; Roland CR68, £80; Digitech GSP21, foot controller, £150; Davolisint Keyboard, £100; Roland RS09, Roland SR202, £100 each, Roland GR09, mint, £600. ☎ 0202 734739.

SAMPLERS

AKAI S01 boxed with manual and receipt, immaculate condition, 20 disks included, £500. ☎ Jon 091 226 1650.

AKAI S01 16-bit sampler excellent condition, bargain at only £500. ☎ 081 922 4001 3-6pm, Mon-Fri, or answerphone on 081 896 3461.

AKAI S01 as new, £500; Novation NM10X keyboard, £80. ☎ Chris 0831 814651.

AKAI S01 sampler, good condition, home use only, complete with disks and manuals, £550. ☎ Andy 071 924 1365.

AKAI S01 16 bit, 8 voice sampler, 3 months old, perfect condition, 15.6 seconds sampling time, includes unique sample library, £600. ☎ Dave 0865 747430.

AKAI S900 12-bit sampler holds 32 samples and 64 keygroups, full editing, filter, aftertouch, and LFO control, 8 separate outs, full MIDI spec, 3.5 inch disk drive, mint condition, quick sale, £495. ☎ 081 923 4300.

AKAI S900 with V2 software upgrade, plus 60 disks, £550 or swap for Korg M1R. ☎ Andy 01933 50491.

AKAI S900 sampler, £500. ☎ Dave 0895 256373.

AKAI S900 sampler, home use only, doddle to use, in mint condition with manual and library, £495. ☎ Dave 081 923 4300 anytime.

AKAI S950, Akai ME32T, £800 the pair, ono. ☎ Adam 0924 494960.

AKAI S1000 totally immaculate, hardly used, 8Mb memory, SCSI card, digital inputs/outputs, latest o/s. Best offer over £1800 secures (c/w box, manuals). ☎ Chris 021 449 2496.

AKAI S1100, expanded to 10Meg, abolutely mint, best offer secures, must sell. ☎ Ian 0742 324734 (Sheffield).

CASIO FZ1 sampler, full library and manuals, home use only, mint condition, £650 ono. ☎ Bob 0772 815190.

CASIO FZ1 sampler, 2Meg, 400 disks and edit software for ST, manuals, accessories, etc, £750 ono. ☎ Steve 0664 480738.

CASIO FZ10M 16-bit sampler, 8 individual outs, disks and manual, £725 ono; Roland MKS20 piano module, excellent piano sounds, £350; Yamaha TG55 multitimbral module, £275 ono; Yamaha EMT10, good piano sounds, £100. ☎ Brian 081 989 3050.

CASIO FZ10M vgc with 100 plus disk library, covering all musical instruments (excellent drum library), manual, £700. ☎ Robert 081 545 1334 or 081 943 1426.

CHEETAH SX16 sampler upgraded to 2Mb and monitor, £450; Prophet 2000 keyboard sampler, ex-Tears for Fears, upgraded, £490; Yamaha YMC10, £45; keyboard case, £40; 19 inch rack, £30. ☎ 0604 233362.

CHEETAH SX16 16-bit stereo sampler, 8 separate outs, plus disks, £350. ☎ Scott 0604 403580 after 5.30pm.

CHEETAH SX16 16-bit sampler 2Mb expansion, stereo, editing software, £550; Yamaha DX11 synth, £250; Atari STE 2Mb, monitor, software, £275. All vgc, boxed, more stuff. ☎ Heath 0422 835293.

ENSONIQ ASR10 16-bit pro sampler, etc, 24-bit DSP, home use only, don't be put off by non-Akai badge, S3000 equivalent, new car forces sale, hence £1500 ono. ☎ Matt 0954 719217.

ENSONIQ EPS16+ fully expanded rack with Flashbank memory, Waveboy effect expander disks 1 and 2 and comprehensive pro library, will deliver, £1050 ono. ☎ 0623 554672 daytime 0246 410799 eves (Sheffield).

ENSONIQ EPS16R+ sampler, synthesizer, top quality on board stereo effects, 16-track sequencer, separate outputs, 1000's of sounds, manual £950; Atari 1040STE computer, manuals, boxed, immaculate condition £150. ☎ 01384 410853

ENSONIQ EPS16+ sampler, hardly used, on board effects, sampler sequencer synth module, £900. ☎ Sam 061 406 7213.

PEAVEY SX/SP version 2.02 sampling system, 8Meg, £800. ☎ Ivan 0689 870197.

ROLAND DJ70, sampler workstation, immaculate (hardly used), £850. ☎ Nick 0273 737107.

ROLAND S220 rack sampler, complete with Atari ST, Mississippi Software editor, huge library on 3.5 inch disk & 2.8 inch QD, all manuals, good condition, £425 ono. ☎ Dave 0602 397354.

ROLAND S330 sampler, with monitor, mouse and disks. Resonant filters, 8 separate outputs, etc, boxed, as new, £550 ono. ☎ Ian 0702 616961.

ROLAND W30 workstation, home use only, 50 disc library, £850 ono. ☎ Mark 091 267 2750.

ROLAND W30 music workstation excellent cond, with over 40 sound disks, £850 ono. ☎ 0736 68253.

YAMAHA TX16W stereo sampler, 6Meg, 16-note poly, 10 outs, new Typhoon operating system, big library, extremely powerful, £900 or swap SY85. ☎ Andy 0295 273060 or 279339.

YAMAHA TX16W EXPANSION boards, 1.5Meg each, £150 each; Roland Sound Canvas, £325. ☎ Andy 0295 273060 or 279339, anytime.

COMPUTERS/SOFTWARE

270MB external hard drive, only 3 months old, super-fast Quantum drive with cable for Atari Falcon, only £260. ☎ Ian 0702 616961.

ADAS ST hard disk recorder/editor for Atari ST, housed in DAC DR2000 1U unit 250Mb hard disk with digital I/O, 24 mins 44.1KHz sampling, £750. ☎ Martin 051 726 9327.

AMSTRAD PC1640 IBM compatible computer, 3.5 inch and 5.25 inch disk drives, mono monitor, keyboard, mouse, manual and disks, £250. ☎ 0977 791770 (Pontefract).

APPLE MAC PERFORMA 400

4/80, £500; Yamaha QY10, £100; Roland RS09, £100. ☎ Chris 0296 81379 (leave message).

APPLE NEWTON personal organiser computer, new, unused, includes leather case and other accessories, £425 ono. ☎ Charles 071 277 0114.

ATARI ST 1Mb, hi res monitor, good condition £270 ono; printer and sampling cartridges also for sale. ☎ 0884 257487.

ATARI 520STE with 4Mb and 105 Power Computing ICD HD and monitor, with Midex Plus, Cubase V3.1, £750 ono. ☎ 071 511 1120.

ATARI 1040 STE 4Mb high res monitor, cubase, colour printer, word processors, games, mouse, over £2000 software, second disk drive, hard disk, vastly reduced bargain. All for £595. ☎ 0553 760362.

ATARI SM125 monitor in good condition, with Atari 1040 STF and programming software, £95 ono. ☎ John 0203 350268 (Warkwickshire).

ATARI ST computer, high resolution monitor, mouse, all leads, cables, immaculate, boxed, £270. Wanted urgently, Quadraverb, TR909, TB303, Emu ESI32, or similar. ☎ 0276 31010.

ATARI STE 2Mb, with SM124 hi-res monitor, manual, mouse, disks, boxed, good condition, standard for music, £300 ono. ☎ Dave 0865 747430.

ATARI STFM 1Mb, brand new, SCART lead, joystick, games, 50 new disks, Ferguson 22-inch colour TV, £350 ono the lot. ☎ John 0284 725639 daytime.

CADENZA music sequencing software for IBM compatible PC. 3.5 inch and 5.25 inch disks plus manual, still boxed, £100. ☎ 0977 791770 (Pontefract).

CMS402 2 in 2 out MIDI interface for pc, £60. ☎ 0273 605182 (Brighton).

CAKEWALK PROFESSIONAL for Windows, V3, the latest version just out. New and unopened. THE MIDI sequencer for the PC, only £179. ☎ James 0272 558953.

C-LAB UNITOR 2, SMPTE synchroniser/MIDI expander for Atari computer. Works with Cubase and Notator, etc, £175 ono; hard disk drive, 270Mb, fitted with super-fast Quantum unit for 8/16 tracks on Cubase Audio, including SCSI cable for Atari Falcon, only three months old, boxed, as new, £270. ☎ Ian 0702 616961.

DR T'S X/OR V1.1B universal editor/librarian for PC Window, boxed with manual, £150. ☎ 081 995 8773.

EMAGIC NOTATOR LOGIC, official copy with dongle, £200; Cheetah MD16R rackmounted drum machine, £150. ☎ Andy 01933 50491.

EXTERNAL 270MB HARD DRIVE, only three months old, boxed, as new, super fast Quantom drive 8 to16 tracks with Cubase Audio includes Falcon cable, only £260. ☎ 0702 616961.

MIDIMAN MM401 IBM compatible MIDI interface including software, still boxed, £50. ☎ 0977 791770 (Pontefract).

PC SEQUENCER, Emagic Micro Logic, excellent condition, boxed with manuals, £70 ono. ☎ Darren 0455 843203, anytime.

STEINBERG CUBASE Score for Windows, latest version, boxed with manuals, unregistered, £350; Steinberg PCI MIDI interface, boxed, as new, £50. ☎ 0929 551706.

STEINBERG CUBASE V2.5 for Macintosh, all disks and manual, genuine version, £250 ovno. ☎ Martin 051 726 9327.

STEINBERG CUBASE LITE and/or Trax, swap for your Windows sequencer, cash either way. ☎ John 051 339 0522 after 6pm.

TWELVE TONE Cakewalk Apprentice software for Soundblaster, unregistered disk and manual, £30; Award Matchbox guitar direct box with G12T simulation, mint condition, boxed, £70. ☎ Dave 0827 716699 evenings (Warwickshire).

YAMAHA CX5 sequencing and FM voicing cartridges, large keyboard, £80; Alesis SR16, unused, £180 or swap with cash for D4; analogue delay pedal, £30. ☎ 0831 400086 or 0902 845112 eves.

MISCELLANEOUS

ALESIS DATADISK, MIDI to disk storage rack, has real time sequencer upgrade. Excellent condition, £200 ono. ☎ Guildford 0483 579853.

EQUIPMENT CABINETS (2), 19-inch rackmount, 36U, 68 inches high, locking removable front and rear doors, £100. ☎ Chris 0272 775747 (Bristol).

FOR SALE back issues of Sound on Sound, H&SR, MT and others, £1 each. ☎ 0923 461097.

FAIRLIGHT CVI II, the Entertainer. Awesome video processor for studio or live performance. Multimedia, Perfect for raves, good condition, £2000. ☎ 0458 50948.

FULL FLIGHTCASE for Korg Wavestation or similar keyboard, excellent condition, £70. ☎ Graham 0234 217964.

KRAMER VSA guitar Black Floyd Rose lock trem and extra single coil Seymour Duncan, £300. ☎ John 0283 532569 after 5pm (Burton).

1K PA consisting of Studiomaster Gold 16:2, EX1000 amp, active crossover, bass bins, speakers, horns, cables, roadcases, stands, manuals. Great clean, full sound, vgc, possible delivery, reluctant sale, £1800. ☎ 091 234 2991.

PEAVEY Ultimate bass pair, Hisys sub speakers, Peavey CS1200 amplifier, flightcased, crossovers, virtually new, used once for practice, cost £2000, must sell at £1300. ☎ 0843 842775 anytime (Kent).

ROLAND GP16 guitar effects processor, 19-inch rackmount with foot controller and pedal, provides most effects you can think of simultaneously, £450 ono. ☎ Chris 0272 775747 (Bristol).

ROLAND GR1 MIDI guitar system, includes GK2 pick up, this is the best system on the market with no delays, £1000, with Ibanez custom guitar, £900 without. ☎ Graham 021 604 3025.

TRACE ELLIOTT AH500X bass amp, stereo, mono, bi-amp, 250W + 250W, 11-band graphic, DI out, etc, excellent condition, £400. ☎ 031 661 9967.

SEQUENCERS

AKAI MPC60 MKII fully upgraded to 2Mb, sampler/sequencer plus flight case, only 6 months old, offers around £1850. ☎ Jez 0705 293169.

ALESIS MMT8 sequencer, excellent condition, recently serviced, with box, PSU and manual, £120. ☎ 0223 234850.

ARP Sequencer Model 1612 (Black and Orange) immaculate condition, manual included, reluctant sale £500. ☎ 0274 620004.

ROLAND MC50 microcomposer, boxed, as new, £320; Casio SZ1 sequencer, £25. ☎ Nick 0344 844726 or 0703 221876.

ROLAND MC50 MkII MIDI sequencer, new, unused, boxed, includes manuals, £475 ono. ☎ Charles 071 277 0114.

ROLAND MC50 £300. ☎ 0533 517165.

ROLAND MC500 MKII sequencer with super MRC software and manuals, £360; Yamaha QY10 with Novation MM10 controller, £120. ☎ Dominic 0293 537477.

ROLAND STUDIO MV30 complete 16-channel MIDI sequencer and sound module D70 sounds, two card slots, reads MIDI files, 8 outputs, sync, auto mix, £650. ☎ 0702 616961.

ROLAND STUDIO MV30 music production system, D70 sounds and 16-track sequencer all in one unit, 6 outputs, tape sync, auto-mix, 3.5-inch disk drive, reads MIDI files, also includes 2 sound cards, £650 ono; Roland CM64 module, like a U220 and an MT32 all in one unit, also includes 1 sound card and editing software, £260 ono; Siel Expander 80, programmable analogue synthesizer module, similar to Korg EX800, £95. ☎ Ian 0702 616961.

ROLAND TB303 £450 ono; Roland CR8000. ☎ 081 567 4205.

ROLAND TB303, cased, boxed, vgc, £160 ono. ☎ 0582 491254 after 3am but before 9am.

YAMAHA QX1 sequencer, eight MIDI Outs, 384ppqn, disk drivem perfect condition with manual, £250. ☎ 081 995 8773.

YAMAHA QX3 16 track sequencer, built in disk drive, large display, 2 MIDI outs, with manual and boxed, £185. ☎ Duncan 01847 64075.

YAMAHA QX21 sequencer, 2-track, real time or step-time recording, excellent condition, offers. ☎ 0483 579853 (Guildford).

WANTED

AKAI 8MB memory boards wanted for Akai S1000 sampler; digital interface AES/EBU (IB 104) wanted for S1000. ☎ Jon 0924 381374.

AKAI S1000 sampler wanted, must be in very good condition, will pay £1300, more if memory is expanded. ☎ 071 609 0911.

AKAI EVI wind synth, valve version urgently required. Will pay cash and collect. ☎ Andy 071 602 5227.

AKAI IB104 digital in/out board; acoustic tiles in good nick and unused Ampex 456 half inch tape, cash waiting for above items. ☎ Andy 0532 430177.

ALESIS D4 drum module, swap Alesis SR16 drum machine, pads unused used for sounds only, and cash. Wanted: Emu Proformance 1+ £200. ☎ 0902 845112 after 6pm or 0831 400086.

ANALOGUE KEYBOARD, drum machine and sequencer wanted, eg Roland SH101, Sequential Pro One, TB303, TR909, Junos, Jupiters, Moog, Prodigy, Minimoog, Yamaha CS5, CS10, Wasp, Roland MD8. ☎ 051 449 1855.

CAKEWALK PRO V3 wanted to replace my Cakewalk Home Studio; for sale, Cakewalk Home Studio, Band in a Box, Power Tracks Pro, Roland D20. ☎ Martin 0507 610035.

CASIO DH100 digital horn wanted. ☎ 0458 50948.

DIGISOUND STUFF Korg DDD1 ROM cards, MS50, SQ10, Sigma, X911, EMS DK2 and 1 days use of a Mellotron. ☎ Norman 091 456 1055 or 0207 544967.

DIGITECH VOCALIST II wanted swap for VHM5, Mackie CR1604 wanted. ☎ 0379 676670.

EMU MORPHEUS and Proteus World 3, Roland TB303 Moog Prodigy with CV, gate; Studiomaster IDP1 or equivalent MIDI gate module. ☎ Simon 081 539 2140.

ENSONIQ ASR10 sample keyboard with V2 software, SCSI and memory upgrade preffered but not essential, Atari Stacey 4/40 computer wanted, cash waiting for items in excellent condition. ☎ 01384 410853.

EVENTIDE OMNIPRESSOR, 910, Phaser etc, working or not, but cheap; Oberheim SEM module; Waldorf microwave, Roland PG200. ☎ 081 692 8129.

FENDER RHODES electric piano 73/88 must be vgc up to £150 paid, will collect. ☎ 081 830 2735.

FOSTEX B16/E16 Akai S1000. ☎ 0344 891110.

KAWAI K4, swap for my Casio CZ5000, sequencer, free cassette recorder for data storage and versatile range of sounds. Manual included. ☎ 0629 813259 (Derbyshire).

KORG 01/RW wanted. ☎ 0902 714453, eves.

KORG WAVESTATION A/D pref with sound cards and Atari disks, must be good condition, cash waiting or exchange for M1 plus cash. ☎ Lew 0306 742416 (Surrey).

KURZWEIL K2000 Boss SE70, Spirit Folio SI. ☎ 0865 251183.

MACKIE CR1604 in good condition. ☎ 0905 610794

MACKIE 1202 and CR1604, Roland SC7, Tannoy NFM8, Roland E15, E35. ☎ Alan 0379 676670 eves.

MANUALS WANTED urgently for Alesis HR16, Kawai K1R and EVS1, photo copies will do, will pay all costs. ☎ Thomas 0698 814995.

MIDI GUITAR converter, Shadow SH075. ☎ Michael 010 45 396 66638 (Denmark).

ROLAND TR909 drum machine urgently required, top cash price paid, any condition, but pref with box and manual. ☎ 0734 391681.

ROLAND MPG80 programmer wanted cash waiting, will collect. ☎ Paul 0532 461033 or 0706 50897

ROM CARDS for Roland D70. ☎ 0737 768093.

SENNHEISER MKH30 mic, Sennheiser MKH60 mic, Electrovoice RE50 mic, Tascam/Teac DA30 DAT recorder, professional walkie talkies, Sony professional Walkman, Sennheiser 415/416 mic. ☎ 091 271 0567.

£10 PAID for SCI Six Trak circuit diagram - I want to add individual outputs. Akai sampler wanted. NLDF 3 Ladywood Rd. Sturry, Canterbury, Kent.

SWAP YAMAHA SY85 for quality sampler. ☎ Nick 0246 822613.

TWO INCH MULTITRACK recording machine for private buyer, any make considered, urgent, cash waiting. 24:8 or 32:8 desk also wanted. ☎ 021 453 3327 (Birmingham).

WANTED ENSONIQ output expander for ASR10, video manual for ASR10 from Covert (America), Wavestation EX program cards. ☎ Steve 0429 222517.

WANTED EVENTIDE H3000 harmonizer and TC2290 delay, Turbosound TMS4's, cash waiting. ☎ 0604 588618.

WANTED 16 TRACK recorder, E16, G16S or MSR16S in good condition. ☎ 0223 234850.

YAMAHA KX88 master keyboard must be in good condition. ☎ 0444 244673 after 5pm (Brighton area).

YAMAHA WX7 wind MIDI controller, must be in excellent condition, don't hesitate, best price paid by private buyer. ☎ Paul 051 259 5492.

PERSONNEL

BASSIST, DRUMMER and second guitarist required to re-establish band after relocation. Record company interest. Music is hard-edged/grunge.metal with jazz/melodic influence. ☎ Lynn 0483 579853 (Guildford).

COMPETENT KEYBOARD PLAYER/programmer available for tuition. Good knowledge of Cubase and most analogue and digital synths. ☎ Ricardo 081 482 0955 or 071 254 0953.

DANCE MUSIC PRODUCER seeks partner for pooling ideas and resources and writing songs. Must be committed, local, have daytime availablity. ☎ Alan 081 540 3973 (SW London).

FANZINES DJ's/journalists - 'The Cage' is promoting Industrial /Gothic/experimental releases from around the globe! Contact us for promo copies. Martin Bowes, 7 Radcliffe Road, Coventry. CV5 6AA. ☎ 0203 672288.

FEMALE SINGER/SONGWRITER with record company and management interest seeks hip-hop/swing writers to collaborate with for commercial material. ☎ Emma 0273 561023.

JINGLE COMPANY wants PR/salesperson, 21-30. Must have musical background, at least to A-level. Will train for services, plus percentage of deals. 32 ads on the box already. ☎ Laurence 081 558 6857.

KEYBOARDIST desperately needed for alternative band inspired by NIN, Jane's Addiction and Depeche Mode. Band have record company interest and free studio time. ☎ Paul 0372 468783/081 998 4508.

RAPPER/SINGER songwriter wanted into rap, swing, etc. Must have some equipment and live in London area. ☎ Sanj 081 347 9052.

PROGRAMMER seeks secure room, London, to set up programming suite. Use of room in exchange for use of my equipment. ☎ Gerry 0956 458410 (Mobile).

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We are now the U.K.'s largest music dealer for most of the products we sell (ask the manufacturers). In practice this means that our prices are the cheapest, often by a substantial margin. More importantly our products are backed up by a staff of over 25 including engineers, on hand long hours to provide a quality of after sales service that stems from almost 40 years serving Britain's leading music professionals. Put simply we understand that the equipment you purchase from us is used to produce music, often in a commercial situation, and our first priority is to keep you working at all times.

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Tue 27th Dec	10.30-6.00
Wed 28th Dec	10.30-6.00
Thu 29th Dec	10.30-6.00
Fri 30th Dec	10.30-6.00
Sat 31st Dec	10.30-4.00
Mon 2nd Jan	closed

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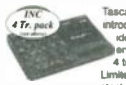
NEW Tascam 488 + 4 track pack	£999
NEW Yamaha MT8X + 4 track pack	£1029

FOSTEX 280 £619 NEW BOXED

6 inputs, 3 band mid-sweep EQ, Dolby C, 2 auxillaries, digital counter with 2 programmable locate points, controllable from Cubase etc. via MTC1 +MMC. RRP £699

FOSTEX X18 £299 NEW BOXED

Heres the machine offering bounce-down and sync jacks which you wouldn't expect at this price Mixmix bus doubles as effect send on mix-down. Dolby R.R.P. £289



Tascam re-introduce the ideal entry-level 4 track. Limited stocks

TASCAM Porta 03 £199

YAMAHA MT50 £379 NEW BOXED

Great new budget 4 track from Yamaha features double-speed dbx noise reduction, 2-band EQ on all 4 inputs, records all 4 tracks at once, renowned Yamaha built quality, sync input / output, aux send and dedicated stereo return. Footswitch drop in/out etc...

TASCAM Porta 07 £349

A fantastic new machine from the makers of the Portastudio. Double speed, EQ on each channel, built-in dbx, 4 channel

40% OFF • SECOND HAND & EX DEMO • END

Tascam 488	£899	Tascam 464 new	£599
Tascam 644	£599	Yamaha MT120	£319
Tas Porta07	new £329	Teac V370 2 trk new	£99
Tascam 424	£439	Teac W700R dual deck	£169

SOFTWARE • INSTANT CREDIT • up TO

PRO DAT Digital Audio Tape

Turnkey The Ultimate DAT store

SONY DTC690 + ADS16 pro mod. £549 NEW BOXED

We have secured large quantities of the last ever DTC690s, retaining a sub- £500 machine on the market. For only £549, we supply the machine fitted with the ADS16 44.1 kHz modification, and for another £50 also with the "Destroyer" internal SCMS stripper (normal price £99). Unbelievable value for a pro-featured DAT machine.

DTC690 only £475
• free tape with every DAT machine

DTC690 + ADS16 + Destroyer - £599

DESTROYER (for DTC690 & DTC60) internal SCMS stripper £99 NEW BOXED

DTC60 Plus free Destroyer £799

PRO DATS	PCM2300 DA30 Mk2	only in stock!	£1195 POA

PHILIPS DCC600 £199 NEW BOXED

DCC has 16 bit sampling at 48 kHz with advanced data reduction techniques Features include full indexing location facilities Co-axial Sp/DIF ins and outs, ful remote, plays analog cassettes with Dolby B + C. Less than half price - unbelievable deal exclusive to Turnkey HURRY!, RRP £499 Sound-on-Sound say "*Digital compression makes little or no subjective difference to the recorded result. In fact recordings sound frighteningly similar to DAT*"

DCC600 now offered at the same price as DCC300 !

Alesis XDS1100	£74
TCD-D7	£30
Sony DTC690	£47
Sony DTC60	POA
Sony PCM2300	£119
Tascam DA30 ex demo	£102
Tascam DA30 Mk II	POA

DIGICON SCMS stripper £129

or only £89 if bought with any new DAT machine

Remove the SCMS code from a digital signal : you to make as many digital copies as you like. Co-axial and optical connections - can also be used to transfer from one to the other, ie your machine with only an optica out can now have a co-axial out etc... LEDs indicate the curent signal status and also show any digital errors off tape. 9v battery allows use with portable machines.

DIGITOOL Super SCMS stripper £199

or only £149 if bought with any new DAT machine

All the features of the Digicon SCMS Stripper, plus a huge range of other analytic displays - Professional consumer mode, lock status, sampling frequency, audio data present, emphasis status, original / later generation, copy-bit present, hard-wearing metal case

Optical leads only £24.95

E-mu ESI32 or EIIIxp ?

£1199 £1999 NEW BOXED

Both machines feature 32 note polyphony, + 4 dB outputs, 10 octave distortionless pitch-shifting, G-chip resonant filters, the largest and best quality library (also Akai & Emaxll compatible). Super-easy Proteus-style operating system. huge range of DSP functions including time-stretch, doppler FX, parametric EQ, exciter etc... and both come with free access to our enormous sample library (we have all the E-mu EIII library on CD-ROM) and excellent technical support (many staff are owners!)

But what extra do you get with an EIII?

8 balanced outputs, (4 unbalanced on ESI32), • 2 SCSI ports (1 optional on ESI32) • AES/EBU and SP/DIF digi I/O (SP/DIF optional on ESI32) • 8 Meg standard (2 Meg on ESI32) • Superb built-in arpeggiator ! (none on ESI32) • Mac front end / librarian software (none for ESI32).

All this for only £800 extra ! Call now, initial ESI32 stocks limited, EIIIxps (RRP £3499) will sell out fast !

EFFECTS

BEHRINGER ULTRAFEX II £215

EX DEMO • CASH REBATES • SECOND

ART FXR new	£159	dbx 266 new	£329
ART FXRelite new	£249	Digitech VHM5II	POA
ART Alpha 2SE x	£299	Digitech TSR24	POA
ART Multiverb LT	£135	Drawmer LX20new	£209
AlesiQuad'verb GT	£385	Drawmer DS201	£299
AlesieQuad'verb	£275	Eneoniq DP/4	£989
Alesis 3630	£199	LA 4x4 new	£299
Alesis MEQ230	£219	Lexicon LXP1 & 5	£349
Alesis microverb3	£169	Lexicon ALex	£359
Alesis MIDIverb3	£199	Lexicon PCM80	POA
Aphex C II new	£249	Phonic Compr new	£199
BEHRINGER ALL NEW AT LOWEST PRICES :		Roland SRV330	POA
		Roland SN550	£999
Behringer Composer	£325	Roland SDE330	£639
Behringer Ultrafex	£215	Sony DP range lowest UK	
Behringer Duallex	£125	Sony HR-GP5	£399
Behringer Denoiser	£149	Symmetrix 425	£349
Boss SE70	£425	Yam SPX990 new	£649
dbx 163xcomp	£125	Zoom 9120	£249

40% OFF • INSTANT CREDIT • SH... 2nd HAND & EX DEMO ENDS

TIME CLEARANCE • CASH REBATES • up TO

QUADRAVERB+ £299

ZOOM 9010 £549 NEW BOXED

This is probably the best effects unit available under £1000 let alone this price. Zoom's flagship processor features astonishing reverb quality together with a multitude of other effects and highly flexible programming facilities. 4 individual inputs and outputs are fully routable allowing incredible effects such as 4 pitch shifters feeding each other! We have secured a STRICTLY LIMITED QUANTITY at a huge discount. Endless features, the highest quality all in a 1U rack. RRP £1599

ZOOM 1202 new £179

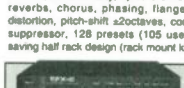
VISCOUNT STUDIO MULTI-EFFECTS

turnkey FACTORY DIRECT exclusive

The incredible success of these units means that we're now buying in larger quantities that ever before and can pass the bulk discount on to you. Check out these incredible prices. 5 day money-back guarantee

£199 EFX1

True 16 bit digital, stereo in/out, 32 character back-lit LCD, 95 dB dynamic range, THD 0.02% Full MIDI control (in/out) Excellent sound quality, shimmering reverbs, full editability, up to 5 simultaneous effects - reverbs, chorus, phasing, flange, delays, echo, distortion, pitch-shift ±2octaves, compression, noise suppressor, 128 presets (105 user spares) space saving half rack design (rack mount kit available)



£119 EFX2

Same processor as EFX1. 49 presets made from 7 banks of 7 sounds : reverb, delay, chorus/flange, phase/pitch-shift, multi, guitar1, guitar2. All the convenience of a preset machine with the advantage of editing the most useful parameters e.g. reverb time, delay time, chorus depth, etc... Footswitch control, -20/+4 dB operation. 95 dB dynamic range, 0.02% THD, Peak clip LED Ideal for project studio users. Up to 6 effects at once, half rack size (rack mount kit available)

POA SONY HR-MP3

YAMAHA EMP700 £299

Synthology~

At Turnkey, we buy, sell, service, and provide full back-up for Analog Synthesizers. We can locate all rare synths and rare parts. All the following machines are in stock at the time of going to press.

360 systems I/F	£ 195	Korg Poly800	£ 249
ARP Odyssey	£ 450	Multi-vox	£ 99
ARP Little Brother	£ 275	Rhodes Chroma	£1399
ARP 2600 + kybd	£ 1800	Yamaha CS5	£ 249
ARPPro Soloist	£ 195	Yamaha CS70M	£ 279
ARP String Ensemble	£600		
ARP Omni2	£ 500		

Moog		Jupiter 4	£ 425
Minimoog / MIDI	£POA	Jupiter 6	£699
EQ	£ 350	Jupiter 8 / MIDI	£ 1099
Drum	£ 150	JX3P + Prgmr	£ 350
Prodigy	£ 295	JX8P	£ 399
Source	£ 450	MD8	£ 225
Oberheim		MKS7	£ 350
Matrix 6	£ 575	MKS70	£ 695
Matrix 6R	£ 550	MKS20	£ 499
OBXa	£ 650	PG200	£ 125
OB8 (MIDI)+case	£ 900	RS09	£ 150
DSX	£ 150	SH7	£ 395
Roland		SH09	£ 250
CSQ100	£ 99	TB303	£ 599
EP10	£ 150	TR606	£ 129
system 100 sequ.	£ 299	TR808	£ 395
Juno 106	£ 475	VP330	£ 699
Juno 60	£ 450	Prophet 5 MIDI	£ 999

WRH

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sound house
OHO SOUNDHOUSE/TURNKEY
071-379 5148
Fax 071 379 0093
114-116 Charing Cross Road, London WC2H 0DT
Opposite Foyles and 100 yards from Tottenham Ct Rd tube)
A Division of ARBITER Group PLC

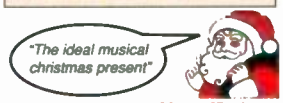
PRICES GUARANTEED*

E-MU | YAMAHA | CASIO | Studiomaster | KAWAI | BOSS | FOSTEX | TASCAM | JBL

Oberheim | Mordaunt-Short | audio-technica | SHURE | AKG Beyerdynamic | SENNHEISER | HAMMOND | TANNOY | DENON | QUAD

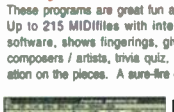
gemini | Technics | MACKIE | ARBITER Vestax | JLCOOPER | dbx | TOA | KURZWEIL | FATAR

COMPUTER



"The Pianist"	PC, Mac, ST	£49.95
"The Pianist vol2 upgrade"	PC only	£49.95
"The Jazz Guitarist"	PC, Mac, ST	£49.95
"The Jazz Pianist"	PC, Mac, ST	£49.95
"The New Orleans Pianist"	PC only	£49.95
"The Ragtime Pianist"	PC only	£49.95

These programs are great fun and educational too! Up to 215 MIDIfiles with interactive "JukeBox" software, shows fingerings, gives biographies of composers / artists, trivia quiz, background information on the pieces. A sure-fire christmas winner ! !



POWER TRACKS PRO Windows or DOS **£49**

PG Music brings you what is possibly the world's cheapest sequencer. It may not be the answer to life the universe and everything, but at £42 + VAT, there are well enough features to explore your musical talent.

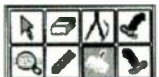
YAMAHA TG-100 GM sound module **£199**

A 16 part multi-timbral, 28 note polyphonic Yamaha sound module for only £199 ! Yes! and what's more you get a Mac and PC interface thrown in, Full General MIDI compatibility, and high quality 16 bit samples. LCD display, stereo mix input, built-in effects, 8 drum kits, compact 1/2 U rack. There is no direct replacement and our scoop purchase of the last units available brings you all this for only £199 RRP £349

TURTLE BEACH QUAD STUDIO + TAHITI CARD Quad Studio integrates 4 track hard-disk recording and MIDI sequencing. WaveSE inc-luded, use with any MTC sequencer

MPC WaveBlaster™ compatible GS synth for your PC sound-card £189

Music PC MPC401	£85	MQ Note/1 plus	£89
KEY MS101 serial	£99	MQX32m SMPTE	£199
KEY MS124 serial	£149	MQ 2Port/SE	£135
KEY MP128N parallel	£175	MIDI Express PC	£369
KEY MP128X parallel	£175	SoundBlaster compatible	
MQ Note/1 parallel	£69	MIDI adapter kit	£29



CUBASE FOR WINDOWS 3 PC versions available

Cubase MusicStation (new !)	£249
Cubase 2.5 (everything except printing)	£399
Cubase Score (full version)	£499

OFFERS INCLUDE A *FREE* PC MIDI INTERFACE

MusicTime - popular budget version of Encore now with 16 staves + Trax £229

IBM® PC COMPATIBLE

GoldStar GSC-X21 ONLY £99 !

STUDIO QUALITY SOUND CARD HALF PRICE In our judgement the GSC-X21 is on a par with today's professional synthesizers and the most realistic sound cards costing 4 times as much. There is no comparison with the average £200 multimedia card. Built-in MPU401 MIDI interface (cable included). 250 x 16 bit stereo sounds • 16 part multi-timbral • 32 note polyphonic • General MIDI. We have secured a limited quantity at a ridiculous price. RRP £199 **£99 REFUNDED IF NOT SATISFIED (7 days)**

Package Deals

Goldstar Card + Prism £129
Full blown 16 track pattern sequencer with detailed editing facilities

Goldstar Card + Roland PC200GS £249
4 oct touch sensitive keys, pitch/mod lever, sustain & GM compatible

Goldstar Card + Roland PC200GS & Prism £275
Many other hardware & software packages available. Please ask.

Digidesign Session 8 PC £2499

BIG NOISE HAPPY HOUR !

MAXPAK 2.0 RRP £235 **£149**

SEQMAX PRESTO only **£69**

WIN CADENZA RRP £299 **£99**

DOS CADENZA RRP £175 **£79**

Sound-on-Sound : "MaxPak2 aims to provide all the key elements of MIDI production" • PCW : "Up to 256 patterns can be recorded and chained together in sequence. It's effective and it works" • Computer Shopper : "MaxMax is an automated MIDI mixer and one of the most sophisticated in any music program" • Windows User : "TapeMax includes professional MID machine control" • Sound-on-Sound : "The beauty o' MaxPak is the multi-tasking capabilities" • Windows User : "LibMax supports a variety of synths and creates instrument databases for SeqMax" • PCW : "A dedicated drum editor provides further flexibility" • Music Technology : "The score editor ... is actually better than some stand alone packages I've seen" • Windows User : "MaxPak takes on the MIDI giants"

Turtle Beach Maui PC synth card. Trigger PC WAV samples from MIDI £179

VOYETRA'S AUDIO-VIEW for Windows £69 !

Up to 16 bit stereo 44.1 kHz Direct-to-disk recording system for the PC - works with any PC sampling card. Supports WAV and VOC files, full cut, copy and paste (with mixing). Normalise, Find Peak, Scale, Fade, Echo, Noise Gate, Invert Sample, DC Offset, Reverse and Cross-fade. Includes "CD Player" software to drive CD-ROM drive with audio CDs, Voyetra Audio Mixer software and OLE

Digidesign Sample Cell II PC Sample playback card £999

YAMAHA CBX-D5 + CUBASE AUDIO PC £1499 NEW BOXED

Finally here, and what a product at what a price! CBX-D5 gives ultra high quality, 4 track HD recording with the equivalent of 2 SPX1000s built-in. AES/EBU digi I/Os, 4 balanced analog I/Os, multiple units may be stacked together. Full non-destructive editing, quantise audio events/metal supplies very short, call now - Introductory offer.

Cadenza DOS	£175	Coda Finale from	£349
Cakewalk 5.0 DOS	£115	EZ MIDI Pro sequcr	£89
Cakewalk Home Studio	£99	MicroLogic	£129
Cakewalk Pro win 2	£189	Cd-grab	£49
Cakewalk Pro win 3	£219	Wave for Windows	£89

VOYETRA V-SERIES PC MIDI INTERFACES

V•22	£99
V•24s	£249
VP•11	£115

These highly respected interfaces are recommended by most PC software houses including Steinberg. V22 offers 2 ins and 2 separate outs. The V24s also offers 2 ins, but with 4 sep outs and an excellent SMPTE unit (all frame rates, click detector, SMPTE freewheeling and reconditioning etc). The VP11 is the most reliable laptop interface around. New drivers let you use multiple cards in the same PC, eg 2 x V22, 4 in, 4 out for £198 !

BAND IN A BOX 6.0 PC £89

Exciting new version. Not enough space to list all the new features and functions. Also includes new Styles disk #5 Upgrades available for existing PC windows users.

• FREE ACCESSORIES • SECOND HAND &

Steinberg Cubase	POA	Creator / UnitorC	£199
Cubase Lite	£99	Emagic Notator	£149
Cubase Score	£425	Emagic Unitor2	£299
Cubase Audio	£999	OpCode Studio 4	£POA
Cubase windows	£179	Deck 2.2 new	£399
Siberg Midex+new	£349	TG33 front panel	£19
Mac Syncman	£199	44 Mb Syquest from	£289
Atari Falcon from	£499	230 Mb Optical from	£899
Sampletcell PC	£999	SCSI DAT backup from	£999
Emagic Notator Logic		500 Mb H. Disk from	£499
new copy at	£289	1 Gig H. Disk from	£749

ACCESSORIES AND SOFTWARE • CASH BREAKS • ACCESSORIES AND SOFTWARE

MIDI QUEST version 4.0 Universal Editor and Librarian packages **£219***

THE WIDEST MIDI DEVICE SUPPORT AROUND

For Atari, Macintosh, DOS, Windows and Amiga. Now supports 190 MIDI devices, including Vintage Keys, Kawai K11 & G-Mega, Wavestation SR, X3, i2 and i3, Waldorf Microwave, SY85, TG500 and TG100, and many more. *£235 for the windows version.

NEW SOLOQUEST - only £99 inc VAT

Digidesign Audio Media II Hard disk recording inc VAT £869

MIDI hard ware

E-MU PROTEUS FX £POA

8 Meg ROM samples • Inc Orchestral & Proformance grand piano • 2 independent fx units • 32 note polyphony

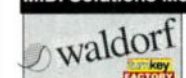
E-MU CLASSIC KEYS £POA

8 Mb of Vintage Keys samples, 2 independent stereo effects units, 32 not e poly. Fantastic new low price

VISCOUNT D-9 / D9e £299 NEW BOXED **£399** NEW BOXED

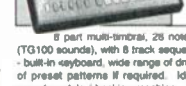
Viscount have done it again. Excellent and authentic draw-bar sounds at down to earth prices in stock now **Money back within 1 week if not satisfied**

MIDI Solutions Merger £59



WALDORF MICROWAVE £999

The Waldorf MicroWave continues to be by far the most popular true synthesizer on the market. Its combination of digital and analog technologies give unique gut-wrenching timbres. Amazing Bass ! New version 2.0 software gives numerous new features *ORDER NOW*



YAMAHA QY10 £149 NEW BOXED

8 part multi-timbral, 26 note poly sample player (TG100 sounds), with 8 track sequencer + full MIDI spec - built-in keyboard, wide range of drum sounds, selection of preset patterns if required. Ideal as writing tool / sound module / backing machine. Smaller than a video tape - sounds on the move ! Runs from batteries or AC adapter (optional). These are the last units available

YAMAHA RM50 £399 NEW BOXED

The ultimate drum module - over 1000 sounds. 16 part multi-timbral - spread a single sound across the keyboard. Full synthesis including resonant filters. 5 MIDI controllers per channel assignable to pan, filter, balance decay, pitch etc .. velocity cross-fading, 8 outputs, 6 trigger inputs, ground-breaking MIDI sample dump option, 4 card slots (Huge range of up-to-date sounds available) unbelievable spec, mind-blowing sound quality, ridiculous price. Hurry ! Hurry ! Hurry !

40% OFF • SECOND HAND & EX DEMO • UP TO

SYNTHESISERS

Alesis Quadrasynth	£995	Roland P55	lowest
Alesis S4	£849	Roland SK50 new	£499
Boss DS330 new	£310	Yamaha SY85	£899
Proteus FX	£599	Yamaha SY35	£499
UltraProteus	in stock	YamahaTG300	£499
Morpheus	£850	YamahaTG500	£999
ProteusMPS +	LOW	Yamaha QY300	stock

Korg Wavestation SR rackmount new £789

Proteus/1XR new	£499	**SAMPLERS/PLAYERS**	
Proteus/2	£545	Akai DR4d	£1395
Vintage Keys	£599	Akai S2800	£1499
Vintage Keys Plus	£800	Akai S3000	£2350
Proformance	£239	Akai CD3000	£1995
Proformance+	£275	Akai S950 new	£999
EnsoniqSQ1+32 new	£749	Akai S01	£599
EnsoniqTS10 new	£1599	E-mu Emax II	£899

Yamaha W7 all new workstation £1349

Ensoniq ASR10R	£1699	EnsoniqASR10	£1699
GEM S2	£1199	Roland S750	£1499
Kawai K11 new	£899	Roland S760	£1402
G-mega new	£499	S950 750k card	£99
G-mega LX new	£299	**MOTHER KBDS**	
KorgO1WFD	£1295	Roland A30	£300
Korg O6R/W	£449	Roland PC200Mk2	£175

Kurzweil K2000R super rack synth £1879

Korg Wavestn SR	£749	Yamaha PF85	£899
Korg i3	£1599	**DRUM MACHINES**	
Korg X3	£999	Alesis SR16	£199
Korg X5	in stock	Alesis D4	£299
KurzweilKMP1 new	£449	Procussion	£549
Matrix 1000 new	£499	Roland R8 Mk2	£525
Peavey DPM-C-8	stock	Yamaha RY30	£299

Roland RD500 digital piano MEGA DEAL

Roland SC88	stock	Yamaha RY20	£349
Roland SC7 new	£249	Yamaha QR10	£249
Roland JD800	POA	**SEQUENCERS**	
Roland JV1080	new	Kawai Q85	£249
Roland JV1000new	£1599	Yamaha MDF2	£329
Roland JV90	£1149	Roland MC50Mk2	£549
Roland JV35	£799	Yamaha QY20	£369

40% OFF • SECOND HAND & EX DEMO • UP TO

VISCOUNT RD70 / RD800 data filer £239 £459

RD70 : Records straight from your sequencer or plays back type 0 and 1 MIDI files from DD or HD MS-DOS disks (from 1040STE, PC and Mac) Programmable playback similar to top CD players. Internal or external sync, footswitch start/stop. Uses direct to disk storage for very large note capacity. Stores SysEx dumps.

RD800 : as RD70 but with 1 Meg (expandable to 4) of battery-backed up memory giving you instant song play, no break between songs. Instant loading, channel mute, tempo change, transpose etc... can be stored with the song, rugged steel casing, attractive new styling - the pro's data filer.

FATAR STUDIO 610 £249 NEW BOXED

The Studio 610 features 5 octave velocity keyboard, pitch and fully assignable wheel (eg pan, reverb, modulation, aftertouch), sustain and volume pedal, transpose, program change including bank select, 2 MIDI outs. Also available, Studio 900 as above + 88 note Hammer action weighted keys - £599, Studio 49 and 61 4 / 5 octave keyboards for £119 / £199

Novation BassStation £349

STUDIO hard ware

TM1000 condenser mic £119

Nearly all microphones in this price range are dynamic mics with a heavy coil, moving within a magnet, or vice versa. Whilst this is the simplest method of micro-phone design, it usually produces a far-from flat frequency response tailing off anywhere between 11 and 15 kHz Using over 40 years of experience in selling microphones, Turnkey have specified the TM1000 condenser mic to be built by Audio-Technica, makers of the legendary ATM4033. The TM1000 has a flat frequency response from 30 Hz all the way up to 21 kHz ±3 dB making it ideal for vocals and instruments with delicate harmonics such as acoustic guitar, piano etc...Built-in pop-shield, battery power means no phantom supply required. On/off switch, all metal casing.. We think it's the best recording mic under £200, if you don't agree, we'll take it back against any other mic with 14 days. Price includes heavy duty clip and 20 foot mic cable

LANGEVIN CR-3A £349

The CR-3A is a professional quality large diaphragm cardiod condenser mic, hand-built in the USA by Manley Laboratories and has a beautiful and flattering tone on vocals and a wide range of other instruments. Switchable 10 dB pad and high-pass roll-off filter, comes with shock-mount, case and pop-shield

Until recently, we have been selling this microphone for £599, and in direct A/B comparisons with similarly priced mics, over 85% of our customers preferred it! The high sales volumes have enabled us to cut the price to a staggering £349

JBL Control 5 175w speakers (Entire range in stock at low prices) £299

AURATONE type LSM50 super near-field monitors £99

These high quality AKG monitors are based on the classic Auratone design found in studios worldwide, but with improved housing giving enhanced bass and top end response. Power handling is also up to 50w RMS as is sensitivity giving a significantly louder speaker. The LSM50s represent both an ideal buy for the first-timer on a limited budget, and even more so for those who already have some larger monitors in order to compare mix You've probably often listened to your "perfect" mix on someone else's system, only to have to start again. These will save you hours of frustration.

JBL CONTROL 1s & Peavey PMA70 £329

These superb compact monitors (RRP £289), are ideally matched to the Peavey PMA70 monitor-amp, (RRP £179), two-way,bass-reflex design in high durability impact resistant casing. PMA70 also available with AKG LSM50s only £239.

OMNIPHONICS FOOTPRINT £279 NEW BOXED

Superb quality 75w per channel power amp from top studio amp manufacturer omniphonics Balanced inputs, emergence cut-out and bridgeable to mono, 1U rack-mount case. These are flying ! RRP £369.

JBL 4206 / 4208 £249/£299

SOUNDCRAFT SPIRIT FOLIO MEGADEALS

Soundcraft's SPIRIT Folio range is already legendary for its superb combination of quality features and price, but buy any Folio from Turnkey this month, and get £100 worth (£50 with Folio Lite) of leads absolutely free ! What's more, if it's a Rac Pac or a Folio 4, we'll also give you a free pair of Audio Technica ATH headphones (RRP £44.95) and a 10U rack-stand (RRP £34.95)

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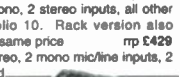

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REQUIEM by Simon Davies. Powerful symphonic rock, combining up to seven lead guitars, live drums. Satriani meets JS Bach. Excellent reviews, Mid-Sussex Times guitarist of the year. 24 minutes, 6 tracks, hi-quality CrO2 tape, £3.50 from: *4 Oakwood Park, Nutley East Sussex TN22 3NB.*

CANDLE MAGIC by Psy-Tech. Completely original music of a magical and mystical nature. Relaxing synth arrangements with sensitive vocals by psychic medium Lilian Skeels. 57 mins, 14 tracks, CrO2 tape, £4.95. Cheques to: *NT Hooton, 39 Kimberley, Bracknell, Berks, RG12 7ZB.*

AUTO by Telepath. Quality Techno/Ambient/Experimental/Listening music. 7-track 40-minute Fe cassette only £2.50 (inc p&p). Cheques/ POs payable to: *Thomas Churchill, 7 Thompson Avenue, Cardiff CF5 1EX*

OBSESSIVE THOUGHTS by DG and the Secret Things. Carefully crafted songs, fresh, bright, and new, from pre-major deal band. Limited edition 6-track mini album, 22 mins. CD £6.99, CrO2 tape £3.25. Cheques made payable to: *McHard and McHard, 108 East Clyde St, Helensburgh, Strathclyde.*

SPRUNG by Tortus. 6 tracks, 33 mins of Avant-techno-improv-pop. CrO2 tape from DAT master. Send £3 (inc p&p) to: *Peter Hanes, Tortus, 2 Ebbsfleet Road, London, NW2 3NA.*

JUST TWO BLUES by Just Two. Blues and rock are the theme on this 6-track CrO2 cassette from Billy and Peter Green. 20 mins, £2.99. Cheques to: *Billy Green, 48 Rossdale Heights, off Upper Malvern Road, Belfast, B18 4X2, Northern Ireland.*

DAWN by George Villiers Ensemble. CD £10, CrO2 tape £6. Acoustic Guitars and keyboards provide 13 melodic easy listening latin- and mediterranean-influenced tracks (*Which CD* Performance 10, Sound 9). Available from: *Lioneagle Records, 4 Hunters Meadow, Great Shefford, Berks, RG16 7EQ.*

DREAM JUNGLE by Rabbit. 13 tracks, 45 mins, CD £9.99 CrO2, tape £5.99. Guitar by Dave Gilmore. Recorded at Pete Townshend Studios using Synclavier. A 'must' buy! Quality! Cheques payable to John Bundrick, orders to: *Geoff Webb, 5 The Drift, Harlaxton, Grantham, Lincs, NG32 1AE.*

NOVERDUB by The Bushmen. Original, thought-provoking atmospheric listening dance music. Full 60-minute CrO2 tape, 22 tracks, £4 (inc p&p) payable

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Although all entries to the Tape Exchange must now be made on the new redesigned entry form, entries can still appear in the magazine without appearing on the phone lines — there's a box to tick on the form if that's what you'd prefer.

Calls are charged at 39p per minute cheap rate, 49p per minute standard rate. Livewire Communications Ltd CB2 5LR.

1 DEMO by PT109. Trance/Techno on CrO2 cassette containing six tracks. £3.50. Also Multimedia demo that runs through Windows on an IBM PC with soundcard, five disks £3.50, or both for £5.95. Send to: *Martin Ayrton, 164 Fleetwood Road North, Thornton, Blackpool, FY5 4BL* (Add=mayton@dw.span.com

• Some excellent samples compliment some very well-programmed techno. The basslines are a bit repetitive, and some tracks are slightly over-long, but it's definitely worth checking out, especially 'Magadishu'. •

2 TO COVER THE DARK by Aquarella. Self-release from ambient godfather Roedelius plus keys, sax, guitar, representing Austria, Britain, Italy. 14 tracks, on CrO2 C60, £5 inc p&p. First 50 also get our new demo tape. Available from: *Felix Jay, 7 Baring Road, Beaconsfield, Bucks HP9 2NB.*

• Ambient, free-form improvisational saxophone and piano melodies mixed with lots of chorusy guitar. One for David Sylvian fans. Superbly packaged. •

3 TOUCH MY SOUL by 2 Dimension. Sequencer-based garage/dance track. 3 versions and Instrumental on 12-inch vinyl. Limited edition of 200. 20 mins playing time. £2.50 (inc p&p). Cheques to: *Trevor Hendricks, 40 Stewart Street, Nuneaton, CV11 5SA.*

4 TURNING THE TIDES by ARC. Ambient theme music evoking the moods of the sea and shore. 57 mins, 10 tracks, CrO2 tape. £4.95. Cheques payable to: *Sean Murphy, ARC Music, 3 Cricketfield Lane, Walkden, Manchester M38 0AQ.*

• Very relaxing, thought-provoking music. Well produced, with real care taken in the slow-building arrangements. •

5 ANCIENT BEAUTY by Geoff and Michaela Smith. Music for the spirit and soul. Contemporary and timeless. Inspired by the writings of Baha'U'Allah. Awarded top tape by the Demo Doctor in May '93. 12 tracks, colour cover, £5 (inc p&p) to: *Geoff and Michaela Smith, Choughs Cottage, 3 Turnpike Road, Connor Downs, Hayle, Cornwall TR27 5OT.*

• Excellent production sits alongside strongly commercial material, beautifully packaged and sung. Striking blend of acoustic and full backing. Give it a listen! •

6 BRAMBLE by Indian Head. Weathered indie rock, guitars and S1000 battle it out. 4 tracks, 23 mins from 16 track studio. CrO2 tape, only £2 cheques to: *Chris Bradley, Melmont Sounds, 42 Regent St, Greenock, Inverclyde PA15 4PL.*

• Chord changes and harmonies are reminiscent of REM (when rocking) on the first track ('Scary') of this well-produced demo. Thereafter, things become more like early Jesus Jones ('Inverse', 'Hideaway'), where the sampler and film samples come to the fore. Uninspiring packaging, but the songs are strong. •

7 THE MASTER PLAN by Tin Lily and When It Goes In... by Freetalk. Commercial rock with powerful female lead vocals. Both tapes 42 mins, 10 tracks on CrO2 tape. £5 (inc p&p). Cheques/POs payable to: *Mark Newby-Robson, 14 Station Road, Sudbury, Suffolk CO10 6SS.*

• Commercial, poppy rock, well-produced to give a strong band feel. Reminiscent of the pomp of Queen in parts. The female vocals are indeed strong and very clear in the mix. Good for driving... •

8 BABEL by Nick Franks and Tim Wheater. A colossal mind-stretching trip through musical hyperspace with vast sonic backdrops and influences from dance, trance, classical and rock.

73-minute CD. 12 tracks. £11.49 (inc p&p) from: *Nick Franks, Warner Sisters Ltd, New Islington Mill, Regent Trading Estate, Oldfield Road, Salford M5 4SX.*

9 THE 7TH WAVE by Blue Flux. New album from SOS's Jan '94 Top Tape act. Innovative and uncompromising (mainly instrumental) music. Floydish riffs, infectious rhythms and loads of atmosphere. 55 mins, 12 tracks, CD mastering, CrO2 tape. XS, previous album Partial Eclipse £4.50, ex-hire for £8 from: *Thomas Kunze, Lucas Hdbs, Grange Road, Cwmbran, Gwent NP44 3XU.*

• Check out 'Other Worlds' on the phone line. Very like Wish You Were Here-period Floyd, with the odd sample coming through in Orb style. Well programmed and produced. •

10 FLESH EP by Viral Technology. Hard industrial NIN/Sheep On Drugs/Pantera. Our third tape, pro recorded and duplicated. 3 tracks, 15 minutes, CrO2 tape, £2.50. Cheques to: *P. Davies, Viral Laboratory, 13 Burnham Way, London W13 9YE, England.*

• Viral Technology weigh back in with another lunatic blend of corrosive acid textures and searing heavy metal. Excellent programming, although the production doesn't seem to be quite up to the quality of their last release. Generally, though, it's great industrial techno. •

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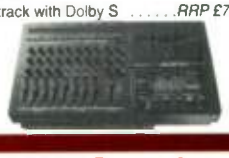

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to: *P Bartlett, Waterland Farm, Forest Green, Surrey RH5 5SG.*

RED EYE by Matt Tan. Progressive punk. Yes meets Jane's Addiction by British born (Singapore) musician. £5.50 (or US$10) money order for CrO2 cassette (inc p&p and airmail) from: *Matt Tan 2-28 De L'Epervier, Hull, Quebec, J9A-2V3 Canada.*

TEETH LIKE SHEEP by The Blue Smarties. 16 classic songs that try to defy categorisation. Guitar, flute beatbox and cynical singing on this 53 minute CD. £6 from: *Andrew Everett, PO Box 6358, London N16 5DQ.*

THE DREAM by White. New Age synth music, 60 mins, 7 tracks, great tunes £7.49. Cheques to: *DJ White, 53 Listowel Road, Kings Heath, Birmingham B14 6HH.*

GRINGO compilation CD featuring various artists and styles — grunge, hip-hop, Techno, Indie. 20 tracks, 74 mins. Only £5 (inc p&p). Full colour cover, Cheques/POs payable to: *Purge Records, 38 Chancery Lane, Nuneaton, Warks, CV10 0PD.*

SOUNDSCAPES by Saru. Solo electric guitar in differing styles with synthesized backing on three tracks. 26 minutes enjoyment time, 9 sound experiences, £3. Cheques to: *Saru, c/o 4 Warburton Close, Thornhill, Southampton, SO19 6HP.*

LIVING IN TEN CITY by Kevin John Curtis. Guitar instrumental music and rock through funk to acoustic, 14 tracks. CD £8.50 tape £5.50 (inc p&p). Cheques to: *Kevin Hoare, 8 Avon Manor, Purzewell, Christchurch, Dorset BH23 1EP.*

DAWN SKY by APR. That difficult third album of dance/rock songs. 10 tracks, 50 mins, CrO2 tape, £4.95, Cheques payable to: *Philip Cornelius c/o The Arts Centre, 33 Guildford Street, Luton LU1 2NQ*

JIMBO'S HELMET by Jim Redgewell. 18 original songs on Fe cassette, 60 mins, £4.99 (inc p&p). Cheques payable to: *Mr JF Ridgewell, 1 Compton Court, Canvey Road, Leigh-On-Sea, Essex SS9 2NN.*

WHEN YOU DIE... by Cryogenics. 5 tracks of growling grindcore meets deathcore. 14 mins CrO2 cassette complete with lyric sleeve. Send payment for $7 Canadian funds to: *Eric Montoni, 203 Goodman Drive, Oshawa, Ontario, L1J-7V6, Canada.*

THE WORD, THE SOUND by The Synth Sect. Eclectic synth rock music, mixed in stereo. 9 songs, 9 instrumentals. Send C90, SAE and 50p (or £3.50 cheque) to *Mark Saunders, Villa Nova, High Street, Godshill, Isle of Wight PO38 3HZ.*

CANTERBURY COMPILATION #1 with Dave Sinclair, Hugh Hopper, Elton Dean, Pip Pyle, Mark Hewins etc. Good rare recordings of music from the '70s and '80s. Four bands over 10 years, on C90. £10, Cheques to: *Mark Hewins, 81 Knollys Road, London SW16 2JW.*

RHYTHM BABY by Nelson King. "An interesting pastiche of the downhome Texas sounds of the fifties and early Chicago Chess stuff." — Mike Vernon, 42 mins, CrO2 tape, 9 tracks. £3.99 (inc p&p) to: *Richard Ricketts, c/o P+R Audio, PO Box 1361, Hailsham, E. Sussex, BN27 3PT.*

FREQUENCY FUSION FORMULA by Fusier. 67 mins, 12-track CD. A fusion of funk and trance, ambient and hardcore, jazz and rave. Send money order for (Australian) $22, payable to: *William Menz, 40 Cumberland Avenue, Cumberland Park, South Australia 5041.*

THE BIG PICTURE by Jon Rush. Electronic, 175 mins, 7 tracks, CrO2, quality inlay, £4.50 (inc p&p). Try *The CV* first — a collection of various John Rush tapes, £1.50, refundable against future order. Both available from *DA Rush, Stable Cottage, Chew Court Farm, Chew Magna, Bristol, BS18 8SF.*

MALABAR COAST by Nick Franks. A magnificent concept album with huge layered synth components and driving melodies inspired by Joseph Conrad's *Lord Jim* sea adventure novel. 73-minute CD, 12 tracks, £11.49 (inc p&p) from: *Nick Franks, Warner Sisters Ltd, New Islington Mill, Regent Trading Estate, Oldfield Road, Salford M5 4SX.*

THE WORLD WITHIN THE WORLD by Ochre Mode. Sound sculptures created by manipulating synthesised and sampled sounds along with voices. 38 mins, 9 tracks, CrO2 tape. Cheques for £4 and above to: *Evangelos Michaildis, Flat 4, 5 Cliff Grove, Heaton Moor, Stockport SK4 4HR.*

GHOSTFLIGHT by Sub Requiem. Original, innovative, haunting and melodic with thought-provoking lyrics. Eastern, cybergothic and rock overtones with powerful vocals. 10 songs, CrO2 tape, Dolby B, 43 mins, £5 from: *Linda Hunt, 5 St Georges Terrace, Llangawasai, Aberwystwyth, Dyfed, SY23 1HE.*

SLEEPLESS DREAMS by Alan Randall. Original atmospheric synth instrumentals with guitars. Home-produced and mastered to DAT, CrO2 tape, 8 tracks, 60 mins, £4.50. Also available, *Electric Rebirth*, same spec, £4.50. Cheques/POs to: *A. Randall, 64 Hungerford Road, Lower Weston, Bath BA1 3BX.*

HERE BE DRAGONS by Tristis. Experimental, ambient, folk, gothic, electronic music, 'makes Clannad look like Kylie' — The Organ. Guaranteed, no guitar and no MIDI. 60 mins, CrO2 cassette, £4 (inc p&p) from: *Steve Patterson, 4 Lipson Road, Plymouth, Devon*

OUT OF BODY EXPERIENCE by by Richard Graham. Vocal and instrumental, highly original minor key synths, singable choruses "Excellent... complex arrangements, brilliant songs" 30 mins, CrO2 cassette, £4.50 (inc p&p). Cheques payable to: *R. Graham, The Dell Studios, Norwood Drive, Batley, West Yorks WF17 0BN*

DESIGNER SHOES by Finlay Wells. 6 track cassette featuring folk, rock, and jazz styles with wake-you-up arrangements. Over 30 mins on CrO2 tape, £5 (inc p&p) to: *Nutshell Music, Alisdhorn, Kilmore, Oban, Argyll PA34 4XX.*

AVENGEANCE by X-Plode. Debut Techno 12-inch vinyl. 'Watch this go!' played on Key 103 by Stu Allan. Includes commercial dance track plus remixes, 4 tracks, 20 mins, Cheques for only £2 (inc p&p) to: *Lee Ashcroft, 48 Gilnow Road, Bolton, Lancs, BL1 4LJ.*

4MM by 4 Missile Mission. Alistair Wells's amazing album, over 60 mins, featuring 12 classic dance/orchestral tracks. Only £4.50 for cassette or £2.50 plus own tape, from: *Alistair Wells, Poppyfields, Westmill (nr Buntingford), Herts, SG9 9LJ.*

CONTROLLED BY VOLTAGE VOL 1 by Nick Edwards. 11-track cassette of electronic listening music. Melodic, futuristic, nostalgic, emotive. Filled with the warmth of analogue synthesis (no digital!) 60 mins, just £2.50 to: *6 Temple Street, Bedminster, Bristol BS3 3NF.*

CONSPIRACY EP by Necroscope [who featured in *SOS* Jan '94]. Industrial/techno/noise, 30 mins, 5 tracks, CrO2 £3 (inc p&p). Available from: *Phil Price, 286 World's End Lane, Quinton, Birmingham B32 2SB.*

DREAM WORLD by McHard and McHard. 4-track EP, limited edition, new, refreshing, exciting, melodic. A must for musos. CrO2 tape only, £2.99. Cheques and POs to: *McHard and McHard, West Lodge, Drumhead Estate, Cardross, Strathclyde G82 5HQ.*

DUCK by LRI. Synth and heavy guitars. The Cure meet Depeche Mode in a particularly gloomy mood! 44-minute CrO2 tape for £4. Cheques payable to: *Richard Hanson, 28 Albany Road, Chatham, Kent ME4 5DL.*

IT'S A SMALL WORLD by JFL. 11 tracks, 60 mins, melodic rock to country to epic instrumental to jazz. DAT-mastered CrO2 tape, £4 payable to: *Frank Young, 48 Campion Drive, Tanfield, Lea, Stanley, County Durham DH9 9PQ.*

• Well-packaged tape with some moody instrumentals ('The Longest Journey') and some fairly standard pop fare ('This is the Day'). The mix is occasionally muddy and overcrowded, but generally the production's good. The singing is also strong.•

MAYBE? by The Twilight Experiments. Indie crossover music, 64 mins, CrO2, Dolby B, £3.50, 21 tracks, from: *David E Owen, 1 Longfield Terrace, Minsterly, Shrewsbury, Salop SY5 0LC.*

SMALL BEER, LARGE VOID by Serendipity. Suffered enough? 12 atmospheric tracks. Structured, 'deep folk' lyrics, sample loops cut from the essence, soul food for red wine drinkers. Ridiculous value at £4.95, from: *Roland Parks, 10 Reynard Close, London SE4 2DF.*

FATE MADE A MESS OF MY JEANS by Tilted Tim. Reviews so far say: "Perversely appealing, quirky, original, off-the-wall." 13 surprisingly mainstream tracks! Ideal christmas present! 14-day money back guarantee! CD £8.99, cheques/POs payable to: *Flagrak, PO Box 549, Harrow, HA2 7BG.*

MADE OF WATER by Sultan Hu. Dreamy, ambient, spiritual, hypno, ethnic. 11 tracks, over 60 mins. First CD from Epic Head Records, produced by Nort, ex-Hula, Cabaret Voltaire. Cheques for £6 to: *P Hill, PO Box 183, Sheffield S2 4YY.*

COMPILATION 2 by Antenna. The second compilation of pure underground techno/trance. 14 excellent tracks by several artists. C90 CrO2 cassette. Free 12-inch white label with initial copies. £4 (inc p&p), payable to: *Antenna, PO Box 22, Cleckheaton, West Yorkshire, BD19 5YZ.*

SAME OLD STORY by Rabbit. Steaming new CD, rockin' and funky. 60 mins, 14 tracks CD £12. Cheques to: *John Bundrick, 5 The Drift, Harlaxton, Grantham, Lincs NG32 1AE.*

SOUND ON SOUND READERS' TAPE EXCHANGE

FROM ZERO TO INFINITY by Various Artists. Different styles from poetry to dance music. 42 mins. Nine tracks professionally re-mastered by SRT on CrO2 at £5 each. Contact: *Paul Wilson, 35 Newton Avenue, East Grinstead, Sussex RH19 4SW.*

FOOLISH PRIDE by Skulduggery. Guitar-led bluesy Rock 'n' Roll with swaggering piano. 40 mins, 9 tracks, CrO2 tape £4 (inc p&p) from: *Andy Tite, 50 Pershore Place, Cannon Park, Coventry CV4 7DA.*

SINGLE VISION by Initial Endeavour. Atmospheric instrumentals on 4-track C20 EP. Professionally copied onto CrO2 cassette. All original work. Cheques/POs for £2 to: *Mark Symons, 3 Kensey View, Launceston, Cornwall PL15 9LA.*

THE REAL WORLD by Glasshouse. 30 mins of original songs with a Numan/ Depeche Mode/NIN influence. Six tracks on CrO2 tape, Dolby B. £4 (inc p&p). Cheques to: *Geoff Pinckney, PO Box 2701, Bishops Stortford, Herts, CM22 7DN.*

WATERSHED by Watershed. Original 4-track EP of powerful pop, superbly played and recorded at a pro 24-track studio. Excellent vocal and Beatlesque harmonies. For CrO2 C20 send £2.99 to: *Badself Music Co, 7 Queensway, Mablethorpe, Lincs LN12 2AS.*

TTBØØ1 by Richard Brown. Dancy instrumental techno on 12-inch vinyl. 4 tracks, 30 mins. £4.50 (inc p&p). Cheques to: *TTB, 189 Dewsbury Road, Wakefield, West Yorkshire, WF2 9BZ.*

ACTUAL REALITY:MUSIC FOR TWO CASSETTE MACHINES by Billy Jenkins, Vanessa Mackness, Tony Messenger. Every performance different. "Amazing, hugely entertaining, worth every penny" — *SOS* May 1993. 23 mins, CrO2 tape, £9.99 (inc p&p) to: *VOTP Records, PO Box 3162, London SE13 7BE.*

VISUALS by Soma. 9 tracks combining the disturbed minds of Finbar O'Boogie and the Virgin Spermdancer. 35 mins for only £3.50 (inc p&p). Go on, buy it, it's fab! Cheques payable to: *Andrew Lucas, 22 Garland Crescent, Halesowen, West Midlands.*

ROTTERDAM: GIRLS ON ACID by XTC Recordings. 10 tracks on Fe tape. Quality recordings on DAT. The ultimate in hyper hyper hyper fast Rotterdam-style techno. £5 (inc p&p) from: *XTC Recordings, 6 Harris Road, Summerston, Glasgow, G23 5QH.*

10 DAYS TO LIVE by 10 Days To Live. Tough, atmospheric, progressive pop/rock. Currently gigging London area, rapidly building strong following. 11-track CD, 51 mins. £10 payable to: *Nemesis Records, 314 Metro House, Eastman Road, London W3 7QS.*

RESPIRATORY FAILURE by Zero Naut Zero. Industrial rhythms, gutter voice and guitars, 4 tracks, 20 mins. Professionally copied onto CrO2 tape with colour artwork. £2.50 (inc p&p). Cheques/POs to: *Gunther Walker, 133 Lichfield Grove, Finchley N3 2JL.*

DECLARATION

I, the below-named, hereby give my permission for SOS Publications to use a track/tracks from my submitted tape/CD

for transmission on their Phone Line service operated by Livewire Communications Ltd, over a period of up to six months. I hereby waive any royalties that might be due to me for the use of my music on this service during the above-stated period of time. I hereby also confirm and state that I am the owner of both the song copyright and the sound recording copyright of the above-named piece of music, and that the Mechanical Copyright Protection Society do not administer either the song copyright or the sound recording copyright of the above-named piece of music on my or any third-party publisher's behalf.

SIGNED.....**DATE**.....

If you require your material to be included on the *Tape Exchange* page but NOT on the Phone Line service, please tick this box: ☐

SOS READERS' TAPE EXCHANGE FORM

Name.....

Address.....

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Telephone.....

The *SOS* Readers' Tape Exchange provides an enormously successful service for readers, allowing them to advertise tapes, CDs, or records of their own music in their favourite hi-tech recording magazine. Every month we devote a section of the Reader Classified pages to the Tape Exchange. Here, you can advertise your own material to other readers, free of charge. Not only can you discover what others are up to, the service opens up a whole world of new music that you certainly can't find in local record shops. Furthermore, the service provides a source of new material for the attention of producers and record companies. With the aid of the Phone Line service, you will now also be able to *hear* a selection of the tapes featured on the pages before you commit yourself to a purchase.

Ads are usually run for three months before re-application is necessary, but this may change at the discretion of the magazine publishers. *SOS* makes no guarantee as to the quality of the music sold through it. Material will normally also be run on the Phone Lines for a three-month period, but this is subject to demand for the service, and is at the discretion of the Publishers.

It would be appreciated if anyone wishing to use the Tape Exchange page and Phone Line service could send a copy of their material to the *SOS* offices. Space permitting, we run mini-reviews of tapes that we find of particular interest. If you would like us to advertise your material, please bear in mind that:

1. Tapes should be recorded to the best possible standard and duplicated on good-quality cassettes.

2. Although pricing is up to the individual, your work is more likely to sell if realistically priced.

3. Cost-effective duplication can be undertaken by many companies, the more astute of which advertise in *SOS*'s Classified pages!

4. Unless your tapes contain all-original material, in order to sell your tapes legally to others, you must obtain copyright clearance for any cover versions recorded. This costs a lot less than you might think, and can be arranged through the Mechanical Copyright Protection Society (081 769 4400). *SOS* cannot be held responsible for any violation of Copyright law. Note also that MCPS-protected material (for example, cover versions) cannot be aired on the *SOS* phone lines. The Phone Line service is strictly for the use of amateur musicians, and material will only be placed on the phone lines if the musicians who have sent it are the owners of both the song copyright *and* the sound recording copyright.

5. If possible, include a sheet with your tape giving recording and equipment details, as other readers are sure to be interested.

6. If you're concerned about the security of your studio (because of publishing your address), use a Post Office box number, or sell via a relative or friend's address.

7. Use the form provided on the Tape Exchange pages or a photocopy. See the sample entry for the format to follow. Please keep your entries to a maximum of 40 words, and include the following information: Tape **title** and **artist name**; **style/type** of music; **playing time**; **number of tracks**; **tape type**, e.g. Chrome (Type II) or Fe; **price**; **address**. Send to *SOS Tape Exchange* at the Free Classifieds address. ***TAPE EXCHANGE ADS WILL ONLY BE ACCEPTED IF THE TAPE EXCHANGE FORM IS COMPLETED IN FULL.***

SAMPLE ENTRY: ***The Lentils Of Delirium*** **by Paul White and Mike Simmons. Hybrid ambient synthesizer and thrash metal guitar music. 56 mins playing time. 10 tracks. CrO2 tape. £4.95. Cheques to; *Dept PW1, PO Box 30, St Ives, Cambs PE17 4XQ.***

If you wish to have your material included both in the **Tape Exchange** and on the Phone Lines, please read and fill in the declaration carefully, and, if you are in agreement, sign and date in the space provided.

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SOS Book Shop

Recommended Reading

RECORDING & PRODUCTION TECHNIQUES

BEST SELLER

by Paul White.

This highly informative new book demystifies the techniques used by professionals in the recording of contemporary music. It reveals how to make full creative use of all manor of studio effects and signal processors, these techniques can be utilised both in the home and commercial studio. The book concludes with an invaluable section on master tape formats and an overview of the various processes and vinyl records.

CODE B200 **£11.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

HOME RECORDING

by P Bursck & K D Kessgen

Looks at whole signal chain of recording: signal levels, mixers, effects, portastudios, open reel tape machines, noise reduction, microphone placement, and more! 120 pages plus flexidisc record. Good overall grounding.

CODE B114 **£12.95**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

CUBASE POWER USERS GUIDE

by Peter Busch

The author has used Steinberg's Cubase since its release, and has produced a home-brew, 127-page, spiral bound book. The text clearly illustrates his experience of both the obvious operational points of Cubase as well as some of the software's arcane and undocumented side that only becomes clear after long-term use of the program. Although aimed at Atari ST and Falcon-based users of V3, with coverage Cubase Audio, PC and Mac users will still benefit from the book - they just won't find any specific set-up information. The book presents a practical insight into one of the industry's most powerful and popular sequencers - even regular users of Cubase are likely to find something useful in its pages.

CODE B246 **£11.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

POP WENT THE PIRATES

by Keith Skues

Published to coincide with the 30th anniversary of Radio Caroline, this book is as comprehensive a history of pirate radio in the UK as you could want. Much of the book was actually written in the 60s, when the author was himself a Caroline DJ himself, and has only recently been completed. The history of pirate radio is covered from the 30s up to the 90s, and potted biographies are given of DJs concerned with off-shore radio. The book runs to a whopping 568 pages and includes 230 black and white photos.

CODE B249 **£14.99**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

LOUDSPEAKERS FOR MUSICIANS

by V Capel

Valuable background is once-again put into practice with hands-on projects. A collection of 10 cabinet designs round off a useful and informative book.

CODE B284 **£3.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £4.50

ELECTRONIC PROJECTS FOR VIDEO ENTHUSIASTS

by R A Penfold

A selection of projects for the video and camcorder user, including dynamic noise limiter, automatic audio fader, video faders, video wipe and video crispener. Most of the projects are easy to build, and layouts for strip board are provided.

CODE B288 **£4.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

INTRODUCING DIGITAL AUDIO 2ND EDITION

by Ian R Sinclair

If you want a book that explains digital audio – CD, DAT and sampling – non-mathematically, then this is the book for you. The updated 2nd edition adds information on oversampling and bit-stream techniques, as well as a glossary of technical terms.

CODE B274 **£7.95**

Postage: UK £1.50, Europe £1.50, R.O.W. £6.50

AN INTRODUCTION TO LOUDSPEAKER AND ENCLOSURE DESIGN

by V Capel

The book provides both useful background to speakers and enclosures in general, plus practical information on crossovers and full details on constructing the so-called 'Kapellmeister' design of speakers.

CODE B281 **£2.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

AUDIO

by F A Wilson

Volume 6 of the Elements of Electronics series, *Audio* offers a comprehensive guide to the physics of sound, its recording and its reproduction. There is a lot of physics used in the book – in fact, this aspect makes the book a good basic text for those with a serious interest – but the text in between the formulae is clear and informative. Not bad value for £3.95 – a total of 308 pages.

CODE B277 **£3.95**

Postage: UK £1.50, Europe £4.50, R.O.W. £6.50

DIGITAL AUDIO PROJECTS

by R A Penfold

A two part book, with the first section looking at the basic principles involved including converting an audio signal into digital form and then converting it back to an analogue signal. The second part contains some circuits – for the moderately experienced only.

CODE B279 **£2.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £4.50

PIANO – THE BRITISH PIANO GUIDE

Edited by Marianne Rowe

This comprehensive guide offers extensive listings of piano teachers, manufacturers (acoustic and digital) and retailers, as well as tuners, pianist organisations and competitions. And to ease access, each section is organised alphabetically by county.

CODE B275 **£4.95**

Postage: UK £1.50, Europe £4.50, R.O.W. £6.50

ILLUSTRATED COMPENDIUM OF MUSICAL TECHNOLOGY

by Tristram Cary

This 542 page book is more of a small encyclopedia than a dictionary, and its 800 entries, 600 of which go into great depth, cover all aspects of electronic and electro-acoustic music. From simple definitions (mouse and moving coil, for example) to extended articles - 7 pages on organs, 10 pages on oscillators and 27 pages on computer music composition techniques, Cary's book is a goldmine of serious information. Definitely in the textbook class, the book is still accessible to the more general electronic / MIDI musician, and a comprehensive bibliography offers valuable clues for further research. Hardback.

CODE B255 **£45.00**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

NON LINEAR BUYERS GUIDE 1st Edition

New from Sypha is the Nonlinear Buyers Guide. Known especially for their definitive digital audio-focussed Tapeless Directory (look out for the 4th edition in the future), Sypha have applied the same comprehensive approach to digital video systems. The first edition of The Nonlinear Buyers Guide is the only international source of information on over 150 nonlinear video systems. Products included in the Guide are nonlinear editing systems, mixed mode editing systems, plug in cards and software for editing, disk recorders and servers. The information is provided in an easily accessible format and includes operational and technical specifications, future developments, costs and suppliers details. The Guide also gives useful pointers to those considering investing in a system.

CODE B270 **£19.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

ACOUSTIC FEEDBACK – HOW TO AVOID IT

by V Capel

The causes of feedback in live situations are discussed, long with good advice on trying to get rid of it. Also included is the and layout (using strip board) for a twin variable notch filter, plus full operation instructions.

CODE B285 **£3.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

BEGINNING SONGWRITER'S ANSWER BOOK

by Paul Zollo

If you're just starting out as a songwriter to haven't progressed very far, perhaps you have questions about the art and business of songwriting that you can't find answers for. Chances are, they're covered in this book. Over 200 of the questions songwriters most often ask are answered in this book. There are 11 chapters, covering subjects such as lyrics, theory, song structure, collaboration, demos, publishing and the music business. Some answers - such as "What makes a professional-sounding demo?" are actually mini-articles - and an index allows you to target subjects without wading through the text. A friendly, informative read.

CODE B253 **£10.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE ARC MUSICIANS' DIRECTORY

The new Musicians' Directory from Arc Publishing aims to provide all things to all musicians: whatever your style of music, the comprehensive listings offer you the contacts you need, whether it's labels, studios, venues, music shops or management - and that just scratches the surface of the dozens of topics covered by the book. Apart from being a directory proper, the Handbook also includes a selection of useful articles, including subjects such as how to be a session player (by SOS's very own Paul White), music publishing, releasing your own record, copyright protection, accounting, legal advice and more. The Musicians' Directory offers over 380 information-packed pages for little more the price of a new CD.

CODE B219 **£14.99**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

THE MUSEUM OF SYNTHESIZER TECHNOLOGY

by Martin J Neacomb

If you liked our feature on the opening of the Museum of Synthesizer Technology in October, but haven't got the time or the cash to visit in person, then the next best thing has to be the museum's guide book. This 118 book is printed on glossy paper and contains full-colour pictures of a large selection of exhibits from the museum, together with some descriptive text and company backgrounders. The text reads a little like a fanzine, but the hardcore synth fanatic will want this book for the pictures. In these pages you will glimpse instruments that you are unlikely ever to experience in the flesh: an exceedingly large Roland System 100 modular set-up, an EMS Synthi 100, an ARP 2500, a large Emu modular and what must be the comprehensive collection of Moog equipment anywhere. The Museum of Synthesizer Technology book is yours for £24.95, plus postage.

CODE B291 **£24.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

THE JEAN MICHEL JARRE BOOK

by Destination Jarre

From the fanclub that brought you The Unofficial Jean-Michel Jarre Biography, comes Exhibit: Jean-Michel Jarre. This glossy A4 magazine is actually the Destination Jarre magazine issue 10, but has been compiled as a themed 56-page collection of photos (over 80) and up to date information. JMJ's recent activities are covered, along with comprehensive video and memorabilia listings. A must for any fan.

CODE B292 **£8.75**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

88 SONGWRITING WRONGS & HOW TO RIGHT THEM

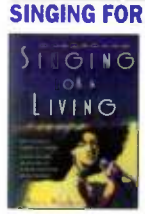
by Pat & Pete Luboff

This is a real workbook for songwriters, dealing with both the craft and art of songwriting. Song structure, rewriting, matching lyrics to music, collaboration, making the right demo, pitching the final result, and business matters.

CODE B254 **£11.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

SINGING FOR A LIVING



by Marta Woodhull

The title says it all. If you're already a singer, this book gives you everything you need to know in order to exploit your talent further: looking after your voice and voice exercises, business advice and marketing and audience interaction are all covered in this straightforward book.

CODE B252 **£12.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

KEYFAX 2

BEST SELLER

by Julian Colbeck

This early version of the Keyfax (1989) provides individual summaries and specifications of the last of the great mono synths digital pianos, and classic polysynths like the Roland JX10 and Prophet VS -forerunner of the SY22 and Wave Station. Early Keyboard and rack-mount samplers are also covered in this indispensable guide. Still a great buy.

CODE B096 **£5.99**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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STUDIO MUSICIAN'S JARGONBUSTER

by Godric Wilkie

The latest offering from the people who brought you 'Music In Sequence'.If the terminology of musical technology and recording leaves you gasping, then this is the book for you! With clear explanations of 1500 terms and concepts, anidst illustrative graphics, the whole work is extensively cross-referenced, and will soon be worth its weight in gold.

CODE MX30045 **£12.95**

Postage: UK £2.50, Overseas £0.00

KEYFAX 4

by Julian Colbeck

The new Keyfax book (1993) is the most comprehensive guide to professional keyboards yet compiled, Keyfax 4 spotlights synthesizers and expander, and MIDI keyboard controllers. From classic analogue machines right up to the latest synth/sampler hybrids. Reviews include technical tour on a practical, need-to-know basis. Everything you need to decide which instrument is best for you.

B201 **£12.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

SOUND FOR PICTURE - An Inside Look at Audio Production for Film and TV

Edited by Jeff Forlenza and Terri Stone

Covers all aspects of film and TV sound, dialogue, music, effects recording, and editing and assembling the result into a final soundtrack. Technical and creative aspects are all covered, and a comprehensive glossary is provided. A good proportion of the book is also taken up with a selection of case studies (including Malcolm X, The Abyss, Northern Exposure and Twin Peaks) that provide hands on information.

CODE B237 **£9.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

CABARET VOLTAIRE – THE ART OF THE SIXTH SENSE

by Mick Fish & D Hallbery.

This revised second edition offers a comprehensive overview of the career (to 1989) of one of the UK's most influential and pioneering electro-music outfits. It features a wealth of first-hand material, and is almost one long interview with Richard H Kirk and Stephen Mallinder. A great disc/videography is also featured. 224 pages, 50+ photos.

CODE B207 **£6.95**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

TAPE DELAY

by Charles Neal

A look at the experimental, electronic, industrial underground, as of 1987, featuring interviews with: Marc Almond, Dave Ball, Cabaret Voltaire, Nick Cave, Chris & Cosey, Coil, Einstürzende Neubaten, The Fall, Diamanda Galas, Genesis P Orridge, Michale Gira, The Hafler Trio, Matt Johnson, Laibach, Lydia Lunch, New Order, Psychic TV, Boyd Rice, Henry Rollins, Clint Ruin, Silverstar Amoeba, Sonic Youth, Stevo, Mark Stewart, Swans, Test Dept, David Tibet and Touch. If anything makes the 'underground' accessible, it's this book. As NME said, "A virtual Who's Who of people who've done the most in the past decade to drag music out of commercial confinement." 256 pages, 60+ photos.

CODE B208 **£11.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE ART OF DIGITAL AUDIO

This second edition of John Watkinson's classic text has been completely rewritten to reflect recent advances in this field, now covering new digital recording formats such as DCC and MiniDisc and including new treatments of subjects such as oversampling, data reduction, noise shaping, dither and Digital Audio Broadcasting. An introductory theory, applications and reference book all in one.

CODE B248 **£49.50**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

CLASSICS IN SEQUENCE

by William Lloyd & Paul Terry

Takes concepts behind Music In Sequence and applies them to all-time favourite classical music scores. Authors show how to make fresh, exciting interpretations of classic scores. Info on reverb and effects, interpreting scores, editing synth voices. Highly creative—an ideal workbook for the music classroom. Covers Medieval, Renaissance dance music, Bach's Toccata in D minor; Vivaldi, Purcell, Handel; opera excerpts from Rossini, Verdi, Borodin; Mozart, Schubert, Tchaikovsky, music from Carmina Burana; Debussy, Satie, Steve Reich's Piano Phase and more. Highly recommended.

CODE B193 **£12.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

KEYFAX 5

by Julian Colbeck

The latest instalment in the intrepid Keyfax series offers potted specifications and concise mini-overviews of digital pianos, home keyboards, General MIDI modules, stage organs and computer sound cards. Look out for company backgrounders, contact details and cross-references to earlier Keyfaxes.

CODE B231 **£12.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

MUSIC IN SEQUENCE

by William Lloyd & Paul Terry

Still one of our best-selling books. Easy to follow, practical guide to making real use of your sequencer, written by people who really understand music and how to create it using today's technology. This brilliant, unique book carries the SOS seal of approval.

CODE B155 **£12.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

TECH TERMS - A Practical Dictionary for Audio and Music Production

by George Petersen and Steve Oppenheimer

This is a concise collection of definitions of electronic music and recording terms; 300 words and phrases are given quick accurate definitions in plain English. So if you're new to recording, synths, samplers and MIDI, this book could be a big help in getting your mind into the terminology.

CODE B230 **£7.95**

Postage: UK £1.50, Europe £3.75, R.O.W. £4.95

MUSIC & NEW TECHNOLOGY

by Gabriel Jacobs & Panicos Georghiades

Forward by Vangelis. A thorough guide to creating music with today's music technology. Covers music theory, MIDI and electronics principles, computers, what gear to use in your MIDI studio, and most modern MIDI production techniques. Ideal for beginners and advanced readers alike.

CODE B156 **£14.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

MEET THE RESIDENTS – AMERICA'S MOST ECCENTRIC BAND

by Ian Shirley

Probably the only band to be more enigmatic than Kraftwerk - we don't even know who their members are. This 20th anniversary celebration provides an excellent, entertaining read, with guarded comments from the Residents themselves - whoever they are - and members of their immediate circle. A comprehensive (although not quite complete) discography is provided. 192 pages, 24 photos.

CODE B211 **£11.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

SYNTHESIZER PERFORMANCE AND REAL-TIME TECHNIQUES

by Jeff Pressing, Professor of Music, La Trobe University, Australia

Series Editor: John Strawn

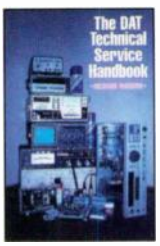
Composer, performer and professor, Jeff Pressing offers a thorough, clear, precise, and insightful orientation to the complex world of synthesized music. Covering a broad range of musical styles, with carefully explained terminology, the information provided is not specific to any manufacturer and thus may be widely applied. This is a comprehensive source of information to ground the synthesizer artist in the technologies and techniques required as a result of the microcomputer revolution.

Computer Music and Digital Audio Series
400 Pages Clarendon Press January 1993
0-19-816275-8 Hardback.

CODE B214 **£35.00**

Postage: UK £3.50, Europe £6.95, R.O.W. £9.50

THE DAT TECHNICAL SERVICE HANDBOOK



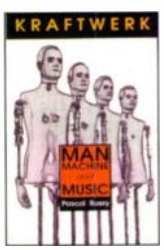
by Richard Maddox

A reference providing a wealth of information on DAT service and repair for engineers and technicians, including: step by step instructions for regular maintenance and repair; detailed techniques for maintaining and adjusting tape transport and head alignment; complete how-to instructions of replacing the record/play head drum; specific service notes, by make and model.

CODE B229 **£43.00**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

KRAFTWERK - MAN, MACHINE AND MUSIC



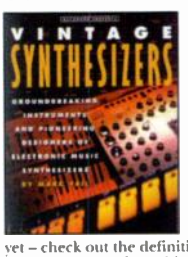
by Pascal Bussy.

Everything you'd ever want to know about Kraftwerk has been squeezed from the guys themselves and various other sources by M. Bussy. Laid out chronologically, the book features a discography and a comprehensive list of sources of quotes used. Especially worthwhile are exclusive (if guarded) interviews with Ralf Hütter and Florian Schneider. 200 pages, 8 pages of photos.

CODE B206 **£11.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

VINTAGE SYNTHESIZERS



By Mark Vail

This profusely-illustrated, 300 page book covers synth history, interviews with designers and overviews of important instruments. Mark Vail's book could be the most entertaining and useful synth book yet – check out the definitive history of the Minimoog, complete with pre-production designers' sketches. While not strictly a buyers' guide, there is a comprehensive section to sourcing, valuing, upgrading and servicing classic instruments.

CODE B199 **£16.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

PROFESSIONAL COMPOSING

A useful little booklet produced by the Association of Professional Composers that aims to to give readers an insight into the different fields of music in which the APC is involved. Its 36 pages manage to convey a great deal of useful information regarding the preparation of music and, most importantly, getting paid for it.

CODE B298 **£3.95**

Postage: UK £1.95 Europe £5.50 R.O.W. £8.50

THE COMPOSER'S GUIDE TO MUSIC PUBLISHING (2ND EDITION)

NEW

written & compiled by Annie Gunning

This book has been produced by the Association of Professional Composers and examines the business of musical copyright and music publishing from the composer's point of view. It aims to educate composers of all kinds of music in the operation of the music publishing business to help them obtain, negotiate and benefit from publishing agreements and avoid expensive mistakes. Apart from publishing, the book also covers copyright legislation, performing and mechanical rights, the royalty administration societies, music in film, broadcasting, theatre and ballet and commissioning agreements. There is also advice for composers setting up their own publishing companies. An exhaustive and useful book.

CODE B297 **£18.95**

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THE UNOFFICIAL JEAN-MICHEL JARRE BIOGRAPHY

This is more like a fat magazine than a book. It feels and often reads like a superior fanzine, with a dizzying amount of information that no true fan can be without.

CODE B220 **£7.75**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

Playing Techniques & Music

COMPLETE KEYBOARD CHORDS

by Warren Nunes & Steve Doherty

A handy guide to all the keyboard chords you wish you could play - from simple to complex! Includes exercises designed to help their use. Explains chord symbols and music notation.

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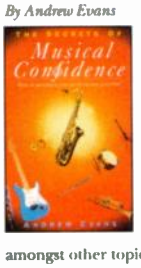
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

THE SECRETS OF MUSICAL CONFIDENCE - How to Maximise Your Performance Potential

By Andrew Evans



Written by a musician and psychologist, this is claimed to be a first for musicians:
a book aimed at maximising performance potential and increasing confidence.
A series of questionnaires and exercises allow you to analyse your abilities and needs and allow you to deal with stress, creativity and career management, amongst other topics.

CODE B240 **£7.99**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

SOLID GROOVES

By Dieter Peterrit & Herb Quick

128 pages dealing with both bass and drums, the 'heart' of the pop group, together. Although written primarily for drummers and bass players, anyone interested in understanding rhythmical music in popular styles will find this book invaluable.

CODE B172 **£11.50**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

1000 KEYBOARD TIPS

by J Drexler & Q Harle

The high-tech musician's guide to the basics of music, scales, chords and harmonies. 256 pages covering chord relationships, improvisation, suggested drum machine patterns, plus comprehensive chord table. Too good to miss!

CODE B113 **£13.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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SOS Book Shop

Recording

THE COMPACT DISC HANDBOOK

SECOND EDITION

by Ken C. Pohlmann, Prominent American audio-engineer and writer on digital audio

'Here is an interesting, timely, well-written book in which everything you ever wanted to know about the compact disk and more is explained.' ***Computer Music Journal.***

'compelling and fascinating reading, written by an expert with the knack of making complex explanations understandable.' ***Image Technology.***

This is a new edition, in paperback, of Ken Pohlmann's classic survey of the compact disc world. *The Compact Disc: A Handbook of Theory and Use*, and celebrates the tenth birthday of possibly the most successful consumer electronics product ever introduced. The text of this new edition has been thoroughly overhauled to update the user on the latest technological advances and gives insights into new formats and applications. It remains a comprehensive and authoritative handbook by an acknowledged expert on digital audio and related topics.

Computer Music and Digital Audio Series
364 Pages, numerous line figures, tables 1992
0-19-816527-4 Paper covers.

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MULTITRACK RECORDING

Edited by Dominic Milano

Creative guide covering setting up a home studio, basic multitrack theory and practice, plus tips from top record producers.

CODE B011 **£9.95**
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

RECORDING TECHNIQUES FOR SMALL STUDIOS

by David Mellor

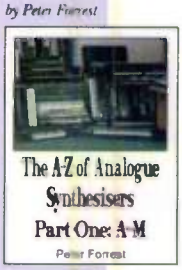
This well written, user-friendly book is designed to offer accessible and helpful tips on how to get the most out of the equipment in your studio.
Chapters cover: mic techniques; musical arranging for recording; 4-track recording; the mixer; preparing for an running a session; recording drums; recording vocals; integrating MIDI; using effects and signal processing; location recording, and digital recording. The book is rounded off with an "any questions" section, a glossary and a ist of recording studios in the UK. As you would expect from a book based on an SOS series, this is a must have!

CODE B198 **£9.95**
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE A-Z OF ANALOGUE SYNTHS PART ONE: A-M

NEW

by Peter Forrest



The author has aimed to make his book a complete rundown of all the major analogue synths and keyboards ever made, and on the evidence of this first volume, he seems to have succeeded. The book is useful and detailed, and shows evidence of the massive amount of research and effort put in by Peter. He gives pocket company histories and detailed data on the instruments produced - but note that a few entries for a few particularly obscure instruments and companies are limited due to lack of data. The book also provides a comprehensive overview of the qualities of various instruments; charts and tables assess second hand values and maintenance levels necessary to keep a given instrument playable as well as such intangibles as sound quality, collectability and user interface. The A-Z of Analogue Part One, which is limited to 8000 copies worldwide, also features 96 colour picture of classic instruments.

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Postage: UK £1.95 Europe £5.50 R.O.W. £8.50

THE MASTER TAPE BOOK

Alan Parsons, Bill Foster & Chris Hollebone

The definitive guide to the creation and management of audio master tapes. With 'Master Tapes' literally flying around the world being copied, cloned or re-cut for seemingly endless variations of compilation albums, it is terrifying to think that there is no standard set of procedures for labelling and maintaining master tapes. Until now, that is

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HOW TO SET UP A HOME RECORDING STUDIO

By David Mellor

This 112-page book expands upon the popular SOS series with additional text, pictures and a handy reference section. Excellent guide to help you sort out the design, layout and wiring of your equipment.

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Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

MIDI

MIDI SYSTEMS AND CONTROL

By Francis Rumsey.

This revised edition has been expanded in an umber of topic areas, to provide even more comprehensive coverage of every area of MIDI. Contents include: an introduction to principles and terminology; MIDI timecode; librarians and editors; different approaches to sequencer software design; practical systems design.

CODE B007AM **£19.95**
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

THE MIDI COMPANION

By Jeffrey Rona

A breezy run through MIDI that would suit the absolute beginner, this book is well-illustrated, clearly expressed and explains the technical bits in as close to non-technical language as the subject matter allows.

CODE B234 **£9.95**
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

MIDI FOR THE PROFESSIONAL

by Paul D Lehrman and Tim Tully

Co-written by SOS contributor Paul D Lehrman, this substantial, exhaustive work covers pretty well any aspect of MIDI that you could think of. As an overview of what MIDI is and does in 1994, this 239 page book couldn't be better.

CODE B227 **£11.95**
Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

MIDI SURVIVAL GUIDE

by Vic Lennard

Whether you're a beginner or a seasoned pro, the 'MIDI Survival Guide' shows you the way. No maths, no MIDI theory - just practical advice on starting up, setting up and ending up with a working MIDI system. Contains over 40 cabling diagrams, and how to: connect synths, sound modules, sequencers, drum machines and multitracks; how to budget and buy secondhand; using switch, thru and merger boxes; transfer songs between different sequencers, get the best out of general MIDI , and understand MIDI implementation charts.

CODE B196 **£6.95**
Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

MIDI PROJECTS

by R A Penfold

A comprehensive collection of simple MIDI projects, including CV and gate converters and a MIDI Thru box. A lot of the book is taken up with interface various obsolete computers to MIDI (Spectrum, CPC464, Commodore 64, BBC B, ZX81 and so on), but the general information is basically sound. Could prove a boon to musicians who are *really* broke!

CODE B278 **£2.95**
Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

MIDI: A COMPREHENSIVE INTRODUCTION

by Joseph Rothstein, Product Review Editor, Computer Music Journal

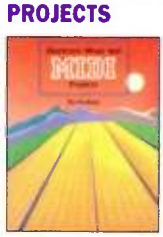
Series Editor: John Strawn

MIDI – Musical Instrument Digital Interface - is the data communications system which enables music equipment, computers and software from many different manufacturers to exchange information. Since its introduction in 1983 the impact of MIDI on the design and operation of synthesizers has been dramatic, yet to date, information about it has been scattered, but this book fills that gap, providing a practical guide for readers seeking a thorough discussion of the basic principles of MIDI.

Computer Music and Digital Audio Series
238 Pages, numerous figures 1992
0-19-816293-6 Hardback.

CODE B215 **£25.00**
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

ELECTRONIC MUSIC AND MIDI PROJECTS



by RA Penfold

Want a MIDI THRU box, patchbay or switcher? Well they're all here. And you don't need a degree in electronics either. All the projects are explained in detail, with full instructions on assembly. So if your into MIDI and you want to expand your system without taking out a second mortgage, fear not. Here's the book to help you build up your MIDI system without laying out thousands on hardware.

CODE B203 **£9.95**
Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

A BEGINNERS GUIDE TO MIDI

by RA Penfold

The title says it all: all aspects of MIDI are explained, and many common beginner's problems are discussed.

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Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

THE MIDI IMPLEMENTATION BOOK

Dave De Furia & Joe Scacciaferro.

In this book, there are over 200 complete Implementation Charts from over 30 makers of MIDI devices. These charts represent virtually every type of MIDI product available today. 216 pages.

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Drum Machines

DRUM MACHINE RHYTHM DICTIONARY

By Sandy Feldstein

For use with Roland drum machines or any grid-based pattern system. First 75 pages on programming huge range of rhythms in rock, latin, jazz and funk styles. Remainder analyses styles and patterns of world's top drummers - Phil Collins, Billy Cobham, Steve Gadd, Stewart Copeland, etc. Highly recommended.

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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

DRUM MACHINE PATTERNS

By Rene-Pierre Bardet

200 drum patterns and breaks presented in one-measure grid notation. Funk, R'n'B, ballad, pop, reggae, afro-cuban and many other styles.

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260 DRUM MACHINE PATTERNS

By Rene-Pierre Bardet

Even more drum pattern styles (paso doble, charleston, etc)

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Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

RHYTHMICAL GROOVES & PATTERNS

By Siegfried Hoffman

Looks at how drummers compose rhythm patterns to add emotion, swing or groove. Contains examples for you to programme into your drum machine or sequencer.

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PRICE MASSACRE!

BEST SELLER

THE COMPLETE GUIDE TO ALESIS HR-16 & MM-T8

by Craig Anderton

The 182 pages of this book more than live up to the term 'complete'. Covers the operation and application of both these units far more straightforwardly, and in much greater depth than any manual ever could. So, if you've just bought a used MMT-8 or HR16 without a manual, don't worry because we've just reduced the price of this great book yet again! Even if you have a manual and think you know all there is to know about your machine, you'll be surprised what tips and tricks you can pick up. If you own a different make of drum machine or sequencer altogether, you'll still learn a lot about the practicalities of MIDI-to-Tape Sync, integrating drum machines and sequencers into your MIDI system, and how to inject feel into sequenced music. This is an essential addition to any MIDI enthusiasts bookshelf - buy it today before stocks are completely exhausted.

CODE: B108S2 **RRP: £14.95**
WAS: £9.95 **OFFER PRICE: £5.95**
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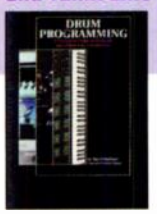
DRUM PROGRAMMING - A Complete Guide to Program and Think Like a Drummer



By Ray F Badness

Coming from a publisher that has a good range of real drum texts, we'd expect this book to be a little different. And it is: it gives plenty of insights into how real drummers approach their job, and there are plenty of example patterns to help translate these ideas to a drum machine.

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Electronic Projects

ELECTRONIC PROJECTS FOR MUSICIANS

By Craig Anderton

How to build 22 electronic sound projects - ring modulator, phase shifter, etc.

CODE B068 **£10.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

ELECTRONIC PROJECTS FOR THE GUITAR

By R A Penfold

How to make your own effects units at a fraction of the cost. Complete instructions on assembly of a guitar tuner, a distortion unit, a headphone amplifier, and a whole range of others. Assumes no previous knowledge of electronics.

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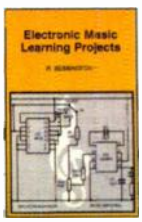
ELECTRONIC MUSIC LEARNING PROJECTS



by R Bebbington

A collection of musical electronics projects to give musicians experience of electronics construction and electronics buffs some experience of music. The projects, which all include strip board layouts, are suitable for construction in schools and use no more power than a 9V battery.

CODE B286 **£4.95**

Postage. UK £1.50, Europe £3.95, R.O.W. £5.50

HIGH POWER AUDIO AMPLIFIER CONSTRUCTION

By R A Penfold

Much useful background to amplifier design, speaker matching and more is included in the first couple of chapters, while the last section contains a selection of high power amp circuits plus suitable PSU circuits. Copper track patterns are also provided to allow you to make your own PCBs. While the circuits aren't too difficult as such, those with limited constructional experience should note that due to the high supply currents and voltages involved, even minor mistakes could be extremely dangerous.

CODE B282 **£3.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

PRACTICAL ELECTRONIC MUSIC PROJECTS

by R A Penfold

A variety of music and MIDI projects, including guitar distortion, headphone amp, metronome, mixers, MIDI tester, MIDI noise gate and MIDI control pedal, amongst others. No projects require test equipment, but only a few are suitable for absolute beginners.

CODE B289 **£4.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

PRACTICAL ELECTRONIC MUSIC EFFECTS UNITS

by R A Penfold

Another selection of musical effects, with more of a guitar angle. Projects include distortion, sustain, parametric EQ, graphic EQ, treble and bass booster, envelope modifier, wah wah effects and more.

CODE B290 **£4.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

ELECTRONIC MUSIC PROJECTS

By R A Penfold

A collection of relatively simple circuits that even the near beginner should be able to construct. The book is divided into four sections: Guitar Effects Units, General Effects Units, Sound Generator Projects and Accessories. Specific projects include fuzz box, phaser, envelope shaper, white noise generator, metronome, automatic fader and many more.

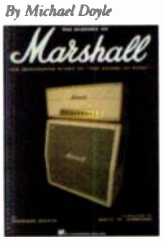
CODE B276 **£2.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

Guitars

THE HISTORY OF MARSHALL

By Michael Doyle

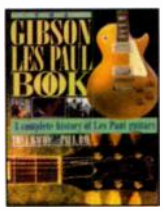


Everything you'd ever want to know about Marshall amplification is in this book. Hundreds of pictures and 64 colour plates including catalogue reprints illustrate the book, and the reader is provided with complete listings of every Marshall product ever made. Look out for the cross-section of circuit diagrams at the end of the book.

CODE B242 **£25.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

THE GIBSON LES PAUL BOOK



Tony Bacon & Paul Day

Want to delve into the history of the Gibson Les Paul family of guitars? This is the book for you. A history of the guitar is provided, along with many pictures of significant instruments, instrument details and ephemera. A comprehensive reference section documents every Gibson LEs Paul model from 1952 to the present day.

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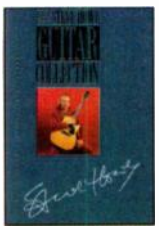
THE STEVE HOWE GUITAR COLLECTION



By Steve Howe with Tony Bacon

During his career, Steve Howe has amassed an enviable collection of guitars, and this large format books shows 125 examples from this collection in full colour. Everything from 18th century antiques through to contemporary solid body electrics is in the collection, and the text is by Steve himself.

CODE B241 **£14.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

FUNKY FINGERS

By Robert Lindmaier

Teaches the 'pop and slap' technique essential for today's bass player. Covers all the techniques, with notes, tabs and plenty of photos. Flexi record containing all the exercises included.

CODE B174 **£8.95**

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EASY ROCK BASS

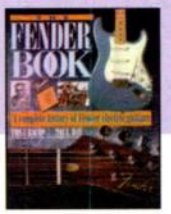
By Dieter Petereit

Deals with various bass techniques in depth. Contains musical pieces in tab and notes in the style of blues, reggae, rock, soul and funk. Includes flexi record of all the exercises, played by Dieter Petereit

CODE B176 **£9.95**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

THE FENDER BOOK



Tony Bacon & Paul Day

Fender produced the first commercially successful solid-bodied electric guitars and this book tells their story. A comprehensive history is related at all points to the guitars themselves, and there are many photos. A meticulously researched reference section provides details of all Fender guitars from 1950 to the present day.

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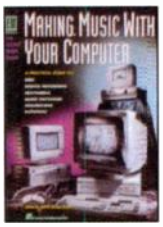
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

Computers & Music

MAKING MUSIC WITH YOUR COMPUTER



If you've heard about making music with computers and want to learn more, this is the book for you. Whether you're a computer user trying to come to grips with electronic music technology or a musician searching for the right computer. It begins with a broad overview and then leaves you free to explore the topics you're interested in. It covers the most popular types of music software, including programs for recording you music and bring out for others to play. With your enthusiasm and persistence, this book will be the guide that brings you into the world of computers and electronic music. 128 pages.

CODE B225 **£13.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

MULTIMEDIA ON THE PC

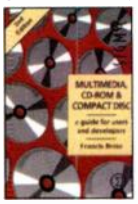
By Ian R Sinclair

If you want to know what multimedia is and what it can offer you, then this is the book for you. Much of the information is general enough for everybody, but as the title suggests, the book is aimed at PC users. The book explains the installation and use of a CD ROM drive and a sound card and covers all key concepts behind multimedia. As an added incentive, if you buy this book, you can send away for a free copy of *Picturebook*, a multimedia authoring package.

CODE B272 **£11.95**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

MULTIMEDIA, CD ROM & COMPACT DISK – a guide for users and developers (2nd Edition)



by Francis Botto

This is a practical guide to CD ROM and interactive multimedia and is aimed at both users and developers. Virtually all platforms and technologies are covered in this book - CD-I, CD ROM, CDTV, Macs, PC clones and so on - and a comprehensive range of appendices include a glossary, and lists of development tools, manufacturers and existing CD ROM titles. All aspects of system development - for example image capture and sound - are covered, along with much valuable general information.

CODE B295 **£14.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

COMPUTERS AND MUSIC

By R A Penfold

2nd edition. Covers hardware and software applications. Excellent glossary of jargon, and now bang up to date.

CODE B098 **£7.95**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

A DICTIONARY OF ELECTRONIC AND COMPUTER MUSIC TECHNOLOGY

INSTRUMENTS, TERMS, TECHNIQUES

by Richard Dobson, Flute teacher, Bath College of Education; freelance flute-maker and player

'the dictionary has a great deal of useful information. It is clear and easy to read.'

Classical Music.

The rapid pace of technological development in electronic music has led to a plethora of instruments and systems, yet these, and the technology behind them, are often only imperfectly understood. There has been an increasing need for a reference book which surveys the whole field objectively and with insight.

Richard Dobson assumes no prior knowledge on the part of the reader, and presents technical information in clear, comprehensive entries dealing with common principles and techniques, such as those on the computer, electronic components and synthesis. The book can be used both as a reference work and as a tutorial text.

There are entries on major commercial instruments, many of which are also illustrated. Much historical information is included in these, and also on those companies and individuals whose work has been central to the development of electronic instruments and their music. The Appendices provide tables on binary and hexadecimal conversion, MIDI commands, and scale and frequency. There is a general index and one of instruments and manufacturers.

Computer Music and Digital Audio Series
234 Pages, line figures Clarendon Press 1992
0-19-311344-9 Hardback.

CODE B226 **£25.00**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

MUSICAL APPLICATIONS OF THE ATARI ST's

By R A Penfold

Although an ageing machine, the Atari ST has had such popularity that it will probably be quite some time before it disappears for good – a situation helped by the inclusion of a built-in MIDI port. This book includes a general introduction to MIDI, a handful of MIDI add-on circuits (Thru box, MIDI switcher and so on), plus a collection of programs, in Fast BASIC, that allows you to use the ST's internal sound generator and create little MIDI applications.

CODE B280 **£5.95**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

COMPUTERS AND MUSICAL STYLE

by David Cope, Professor of Music, University of California, Santa Cruz

Series Editor: John Strawn

Professor Cope provides a step-by-step description of the way in which he analyses and replicates musical style by computer. He demonstrates his results in the style of composers such as Bach, Mozart, and Prokofiev with compositions which sound entirely new and yet somehow familiar. Musicologists, theorists, and composers will find this work to be both ground breaking in its quality and thoroughness, and composers may also find a method to assist them with their own compositional processes.

Computer Music and Digital Audio Series
262 Pages, music examples 1992
0-19-816274-X Hardback.

CODE B216 **£30.00**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

MULTIMEDIA ON YOUR PC

by Francis Botto

A practical guide to multimedia specifically on the PC. Botto's book is once aimed at users, educators and developers, and comprehensively discusses the hardware required to take advantage of multimedia in a PC environment as well as the hardware and software necessary in a multimedia authoring situation. The book is provide with comprehensive appendices covering a glossary and comprehensive product and manufacturer lists.

CODE B296 **£10.95**

Postage: UK £1.95 Europe £5.50 R.O.W. £8.50

PLEASE REMEMBER: POSTAGE IS PAYABLE ON ALL MERCHANDISE.

Samplers

WHAT'S A SAMPLER

By Freff

Ideal starter book for sampling novices.

CODE B104 **£4.50**

Postage: UK £1.50, Europe £4.95, R.O.W. £5.50

THE SAMPLING BOOK

By Steve De Furia & Joe Scacciaferro

How to achieve better samples - this book explains the technical issues involved, clearly and simply. Good advice on what to look for when buying a sampler.

CODE B025 **£11.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

Music Business

COPYRIGHT THEFT

◄ NEW

by John Gurnsey

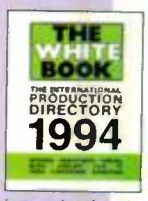
A book that discusses the problems of copyright of audio, video and electronics products is long overdue. The book aims to provide readers with a better understanding of copyright theft in all areas: book, electronic, database, audio, video, games and multimedia publishing are all considered along with the question of whether existing laws can effectively serve such a rapidly changing industry. An expensive book, to be sure, but one that contains information unlikely to be found elsewhere.

CODE B293 **£28.50**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE WHITE BOOK INTERNATIONAL PRODUCTION DIRECTORY 1994

◄ NEW



This is the latest edition of the essential source of contacts for artists, performers, venues, services and facilities associated with music, concerts, shows, festivals, film, TV, video, conferences, exhibitions and corporate hospitality - there's even a comprehensive international section. The layout is logical and an index makes fact finding an easy task - altogether an indispensable 864 pages. The new edition once again comes with a complementary copy of The Little White Book, which distils the contents of the larger volume to a pocket-sized list of names and phone numbers.

CODE B259 **£43.00**

Postage: UK £4.75, Europe £8.50, R.O.W. £16.95

THE MUSICIAN'S GUIDE TO READING & WRITING MUSIC

It's an entertaining but practical introduction, well, to reading and writing music. This is as friendly as it comes. Learning to read and write music isn't easy, but at least the process is lightened up with considerable doses of wit.

CODE B224 **£8.99**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

HOW TO PITCH AND PROMOTE YOUR SONGS

by Fred Koller

The title is self-explanatory: if you've got the songs, and you want someone to hear, publish and/or record them, then this book could save you a lot of grief. There's a lot of sensible information about the music biz in general, plus a few (American-biased) words about setting up as your own publishing business.

CODE B257 **£8.95**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

NETWORKING IN THE MUSIC BUSINESS

by Dan Kimpel

Think of this book as a popular psychology course for musicians. If you feel you could benefit from developing a positive attitude to getting ahead in your area of the music business, then *Networking* is for you. There's nothing like it for good, sensible advice: it's often not enough to have talent. To be successful, you'll need to persevere, have good "people skills", and exercise good networking skills. Success depends on what you know, who you know, and perhaps most importantly, who knows you. An essential book, and a snip at £11.95. Hardback.

CODE B251 **£11.95**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

SONGWRITERS IDEA BOOK

◄ NEW

by Sheila Davis

If you want a textbook, this is it: 250 pages of serious, intelligent insight into songwriting. Loads of good advice and a friendly tone make this a useful read to anyone, whether beginner or seasoned pro. The focus is firmly on lyrics rather than music, and the prominent references to poetry terminology shouldn't scare you off, be a surprise. Use Davis' 40 strategies and you could soon be "designing distinctive songs". Hardback.

CODE B250 **£9.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

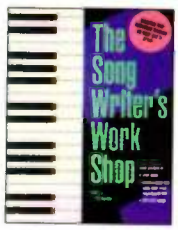
KEMPS INTERNATIONAL MUSIC BOOK

400 pages crammed with all the contact addresses and telephone numbers you'll ever need: record companies, recording studios, music publishers, equipment manufacturers, artist management, producers, PA and lighting hire, and more. The music industry equivalent of 'Yellow Pages'!

CODE B192 **£30.00**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

SONGWRITER'S WORKSHOP



Edited by Harvey Rachlin

If you want to work systematically at improving your songwriting skills, then try this book: it's divided into four individual "lessons", each of which is backed up by audio material on cassette. This allows you to listen in the car or walk around with your personal stereo and still absorb useful information. The four sections are: On Songwriting by Janis Ian (yes, *the* Janis Ian); Making Demos by John Barilla; Understanding MIDI by James Becher; and The Art of Pitching Songs by Teri Muench (ex-A&R director with RCA and publisher). Also included is an intro, a quick and breezy glossary and an index. Includes two cassettes.

CODE B260 **£15.59**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

THE SONGWRITER'S MARKET GUIDE TO SONG & DEMO SUBMISSION FORMATS

From the Editors of Songwriter's Market

If you've got the songs and you've got the contacts, this book will help you to choose a format that will get your demo heard as well as overall packaging and presentation and dealing professionally with publishers, A&R reps and other industry people. Plenty of example documents (lyric sheets and letters) are given, and the book is nicely rounded off with a glossary and index. Hardback.

CODE B258 **£12.95**

Postage: UK £2.50, Europe £5.95, R.O.W. £9.95

Live Sound

CONCERT SOUND AND LIGHTING SYSTEMS

Written by John Vasey.

This book shows how to set up, maintain and operate sound and lighting equipment for the performance of amplified music or any kind of touring production.

CODE B247 **£14.95**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

SOUND REINFORCEMENT HANDBOOK

by Gary Davis and Ralph Jones

From recording to broadcast, fixed installations to touring, this 400 page reference covers live sound setups, equipment, techniques and jargon.

CODE B105 **£27.95**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

LIVE SOUND MIXING

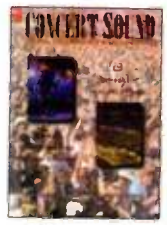
by Duncan R Fry

This is a hands on, friendly introduction to all aspects of mixing live. It hails from Australia, and is an SOS Bookshop exclusive. The author is an experienced live sound engineer and has packed his book with loads of information, diagrams and hints to take you from basic principles through to trouble shooting when things go wrong.

CODE B256 **£19.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

CONCERT SOUND - Tours, Techniques & Technology



Edited by David Trubitt

All aspects of concert sound are discussed: mic techniques, safety, acoustics, monitor mixing and more. The book also features a series of profiles of real artists laying live, cross-referenced with the techniques discussed. Genesis, U2, Van Halen, Suzanne Vega and Lou Reed are some of the artists featured, and a number of festivals are also discussed.

CODE B236 **£20.95**

Postage: UK £2.50, Europe £5.95, R.O.W. £9.95

THE FOCAL GUIDE TO SAFETY IN LIVE PERFORMANCE

Edited by George Thompson

This book provides an authoritative look at safety matters for workers in the live entertainment industry. It is edited by the Standards Officer of PLASA (Professional Lighting and Sound Association), and provides good solid information in an easily digestible, well-illustrated form. Topics covered include audience and crowd control, fire safety precautions and engineering, electrical safety, laser safety, sound levels and noise control and much more.

CODE B271 **£19.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

PUBLIC ADDRESS LOUDSPEAKER SYSTEMS

by V Capel

All aspects of PA speaker systems are covered in this book, including low-impedence matching, 100V systems, transmission lines and how to install inductive hearing aid loops. At the heart of the book is the Line-Source Ceiling Array, a system that is claimed to improve clarity, even coverage and reduce feedback. Full step-by-step construction and installation details are given.

CODE B283 **£3.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

Yamaha Books

SOS Bookshelf has obtained exclusive but limited stocks of a variety of Yamaha-based 'how-to' books - at a very special price to SOS readers. The books come from Alexander Publishing in the USA, and each guide offers tons of useful, easily-accessible information provided by experienced users. The list is as follows:

THE BROADWAY QY10

by Peter L Alexander with Bobby Maestas

Charts and musical examples for re-creating Broadway songs with your QY10 using only the internal patterns. Includes useful set-up information. 77 pages.

CODE B263 **£3.95**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

TG33 QUICK OPERATIONS GUIDE

by Bobby Maestas

Instant access to Yamaha's neat little Vector Synthesis sound module. Loads of examples, well illustrated. 115 pages.

CODE B264 **£8.95**

Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

YAMAHA SY77 CHEATER'S GUIDE & COOKBOOK

by Peter L Alexander, researched by James Muirhey

This weighty book offers an accessible and straightforward way into the SY77; sequencing is covered and depth followed by SY77-specific arranging tips and techniques - how to get the most out the SY77's sounds and polyphony. 354 pages.

CODE B266 **£28.95**

Postage: UK £2.50, Europe £5.95, R.O.W. £9.95

THE SONGWRITER'S YAMAHA RY30

by Dan Walker with Gregg Perry

A two-part work, the first part covering all operational aspects of the RY30 drum machine and the second uses the audio tape and musical examples to show what the RY30 is capable of, using the preset patterns to create a variety of classic tracks.
229 pages, two cassettes.

CODE B267 **£19.95**

Postage: UK £2.50, Europe £5.95, R.O.W. £9.95

YAMAHA SY55 OPERATIONS & SEQUENCING GUIDE

by Bobby Maestas

A good helpful look at this arguably overlooked instrument; technicalities are explained in context of music throughout. 153 pages.

CODE B268 **£9.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

We'll remind you once again that stocks are strictly limited, so act quickly to avoid disappointment. Postage extra.

SOUND CHECK CD

Impeccably recorded and compiled by Alan Parsons and Stephen Court.

Sound Check CD contains 92 tracks of test signals and reference recordings made at Abbey Road that can be used to set up monitors, check room performance, faulty equipment etc, and overall recording quality. No studio should be without one! 20+ close-miked instruments/vocals/music extracts. SMPTE/EBU timecode tracks (25, 30, drop-frame). Pink noise test tones. Third octave tones. Sweep tones. Sine + Square wave tones.

CODE CD029 **£19.50**

Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

ATTENTION SOS SUBSCRIBERS! YOU ARE NOW ENTITLED TO A 10% DISCOUNT ON THE PRICE OF ANY BOOK.

SOS Videos

ROLAND GR-1 GUITAR SYNTH VIDEO MANUALS

These two video manuals have been produced to help the user get the most out of Roland's sophisticated GR-1 guitar synth, the first covering all the basics from mounting the pickup and getting tuned up to selecting sounds and using the on-board sequencer. The whole approach is down to earth with no frills, each step patiently explained and demonstrated by Roland's guitar synth specialist, Jay Stapley.

Jay also presents the Advanced tape which takes the mystery out of sound editing, custom tuning, advanced sequencer applications, external sequencer hookups, using other MIDI sound modules, indeed virtually everything the GR-1 is capable of doing. These videos may not be as gripping as Terminator II, but if you own a GR-1 or are thinking of buying one, you'll be doing yourself a big favour by getting both these tapes these right away. Nice one Jay.

ORDER CODE V014 **£44.95**

FOR BOTH VIDEOS

Total Running time: 4 hours. *Format: VHS (PAL)*
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

EMAGIC NOTATOR VIDEO TRAINING MANUAL

This video manual is detailed and helpful, and is presented in a most friendly and approachable manner by session musician Tim Walter, whose tone throughout the video encourages and inspires confidence. If you are new to Notator and are still in awe of its power, this is the video to bring you down to earth. An introduction and 28 tutorials take the user from the absolute basics - including plugging in the dongle - to working with Unitor and SMPTE, and synchronising to video. As well as actual recording of MIDI data and sequencing, comprehensive coverage is given to using the score layout and printing facilities that are so much a part of Notator. The instruction offered by this video is as comprehensive as you can get without inviting Tim to your studio! Topics covered include: sequencing page, score editing, lyrics and text, graphic arranger mode, hyper edit, the printer page, using the part box.

ORDER CODE V012 **£19.95**

Running time: 2 hours 20 minutes *Format: VHS(PAL)*
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

THE EMAGIC LOGIC TUTORIAL VIDEO VOLUME 1

SOS can now bring you the long-awaited Emagic Logic training video. The tape is actually produced by Emagic themselves, and once again sees Tim Walter (as featured on the excellent Notator video manual) in the tutor's chair. There are plans for a series of videos which become ever more detailed and informative, but for now Volume 1 takes you through the first steps of getting the software up and running, and covers virtually all the controls you'll need. And yes, this video is valid for all version of Logic, whether being run on an ST, Mac or PC.

Presentation is rather intriguing, with a mobile camera that helps to hold the interest more than the average training video and some interesting graphics that aid comprehension and help to quickly find specific tutorials and bits inside tutorials. Here's a quick rundown of the contents of this straightforward and clear video:

- Tutorial 1: The Arrange window and basic sequencing
- Tutorial 2: Playback parameters and the Toolbox
- Tutorial 3: Controlling MIDI data flow
- Tutorial 4: Manipulating sequence data
- Tutorial 5: Moving around in Logic
- Tutorial 6: Windows and key commands
- Tutorial 7: More sequencing
- Tutorial 8: Score
- Tutorial 9: Looking at the Event List
- Tutorial 10: Editing the Event List
- Tutorial 11: Getting environmentally friendly (using the Environment)
- Tutorial 12: The best of the rest (HyperEdit, Matrix Editor, Cycle Mode and more).

ORDER CODE V023 **£39.95**

Total running time 70 minutes *Format: VHS (PAL)*
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

HOW TO GET THE MOST OUT OF HOME RECORDING

Julian Colbeck, probably the UK's leading keyboard expert and author, has written and presented this highly informative set of videos which no home recordist should be without. Have you got your set yet?!

SORRY, THIS SET OF VIDEOS ARE NOT AVAILABLE TO OVERSEAS READERS.

HOME RECORDING 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 - inputs, basses, auxiliaries, EQ etc - 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.

CODE V005 **£24.95**

Running time: 1 hour 10 minutes
Format: VHS(PAL) HiFi Stereo
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

HOME RECORDING 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.

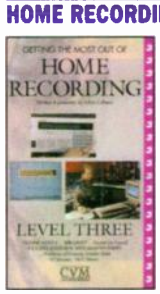
Full of clear examples and graphic information, the video majors on effects and how to use them well. It also covers the do's and don'ts of track bouncing; microphones and mic techniques for different applications; getting the most out of multi effects units; plus an analysis of guitar effects with top 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.

CODE V006 **£24.95**

Running time: 1 hour 45 minutes
Format: VHS(PAL) HiFi Stereo
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

HOME RECORDING LEVEL THREE



This video is packed with information and professional tips on advanced MIDI applications in the home studio, including interfacing with sequencers, which sync code is best for which application and why.

Hit producer Martyn Phillips (Erasure, London Beat) discusses modern recording techniques, and top programmer Paul Willen 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.

CODE V007 **£24.95**

Running time: 1 hour 30 minutes
Format: VHS(PAL) HiFi Stereo
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ENSONIQ VIDEO SERIES TRAINING MANUALS

The Ensoniq Video Series Training Manuals features material from the curriculum of Ensoniq's school and each tape aims to get you up and running with your new gear in no time at all. They also make great refreshers for established users and if you're seriously considering buying any of these products, the tapes give you considerable background that you may not get from magazine reviews, product brochures or shop assistants.

ENSONIQ EVS1: MASTERING THE ASR10

The latest in Ensoniq's long line of samplers is the powerful ASR10. This tape is a great addition to the manual, and starts at square one, moving carefully, if quickly to explanations on all points. Sections of the instrument being discussed are highlighted on screen, and subject titles appear at the bottom of screen at all times, making it easy to fast wind through a tape and get to the subject you want to investigate. The tape is divided into three broad sections: one covers loading, selecting, stacking and playing sounds and using effects, the second covers sampling and sample editing, and the third covers using the on-board sequencer.

CODE V019 **£18.95**

Running time: 51 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ENSONIQ EVS3: TS - TURN IT UP, TURN IT ON

Both this and the following video cover different aspects of the TS10 and TS12 synth workstations. In both tapes, a camera focuses in on the relevant bit of front panel while the voice over describes what you should be doing to get the current job done. It moves quickly - but you've got a pause and rewind button on your remote, haven't you? EVS3 covers all aspects of sound management on the TS10/TS12, from selecting programs and sounds, using real time controllers, stacking sounds to loading samples, using effects and so on. Apart from the title sequence, a thoroughly handy tape.

CODE V021 **£18.95**

Running time: 60 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

KORG X3 VIDEO TRAINING MANUAL

The latest in Labyrinth's series of exceedingly useful video manuals features Korg UK product specialist Phil Macdonald running through Korg's X3 workstation synth. The X3 features 61-note keyboard, 32-note polyphony, a Standard MIDI File compatible sequencer, disk drive, General MIDI compatibility and more. This video offers an easy way in to a powerful instrument. It starts from absolute basics, including audio connections and volume levels, and the clear and helpful script covers all basic facilities of the X3. The video features a sophisticated use of picture in picture, with the X3's display cut into the main image to show you clearly what Phil is actually doing, and main points are reinforced with on screen text and graphics.

The main section headings of the X3 Video Training Manual are:

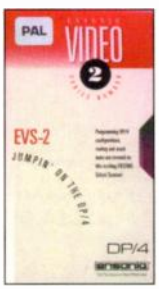
• X3 Audio Connections • Getting Around the X3 • Factory Disk • Disk Drive Modes • Selecting Sounds • Global Modes • Sequencer Mode • Quick Sound Editing • Playing MIDI Files on the X3 • Using the X3 with an external sequencer

Note that these are loose headings, with each section also containing information on connected subjects in varying amounts of detail. A lot of ground is covered, and we can recommend the tape to any X3 owner. The video costs a reasonable £19.95 plus postage, and is available from Sound On Sound Mail Order.

CODE V018 **£19.95**

Running time: 55 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ENSONIQ EVS2: JUMPIN' ON THE DP/4



Ensoniq's DP/4 is one of the most versatile multi-effects units on the market. This versatility - the DP/4 can function as four completely independent effects units - can make it initially confusing to use, especially for the complete novice. This tape features video footage of Ensoniq's Roy Elkins giving dealers a seminar on getting the DP/4 up and running and getting the best out of the unit quickly. It has a home video feel as a result, but is actually very informative. If you've been struggling with the DP/4, or have been put off purchasing the unit due to its reputed trickiness, this video should put your mind at rest. There are 18 'chapters' to this video, and if you can't use the DP/4 after one or two run throughs, then you don't deserve to own one!

CODE V020 **£18.95**

Running time: 48 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ENSONIQ EVS4: TS - SEQUENCER TURNED ON

Same format as EVS3, with a straightforward and easy to follow introduction to using the TS10/TS12's sequencer. A quick recap of EVS3 is followed by advice on creating sequences and songs, choosing sounds, quantising, muting and soloing tracks and using effects with the sequencer.

CODE V022 **£18.95**

Running time: 48 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

CASIOS CTK-650/750 VIDEO MANUAL

Casio's CTK-650 home keyboard has a lot of potential foran affordable home keyboard. For just £399, you get a velocity sensitive, 61-note keyboard and GM sound compatibility. As a newcomer, perhaps you're confused: some kind of one-to-one tuition might help you get the best out of your new instrument. Once again, Labyrinth come to your rescue, with the CTK650/750 Video Manual, presented by Casio's own Martin Lawrie and Chris Allen. The video starts right from basics - want to know where the power switch is? - and then progresses carefully through accessing sounds, rhythms, auto-accompaniment and using the sequencer. Good use is made of picture in picture and close ups, and overall the video has a friendly, approachable feel that should be especially welcome to the complete novice. It's also good value at £14.99.

CODE V024 **£14.99**

Running time: 50 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

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SOS Videos

HOW TO GET A RECORD DEAL

For the first time, the facts you need from the people who know. It takes more than talent to make it in today's music industry. It takes more than knowing what you want. It takes knowing how to get it.
How To Get A Record Deal contains vital information and insight that you will not find anywhere else, from artists and executives who have made it and know what it takes.
On this video music industry professionals give you the straight facts on how to break into this extremely competitive business. Because sometimes the difference between success and failure is information.
Presented by the National Academy Of Songwriters

CODE V003 **£14.95**
Running time: 1 hour 7 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

GETTING THE MOST OUT OF THE KORG M1

Written and presented by Julian Colbeck
The Korg M1 is a classic instrument. The range and quality of its sounds has made it one of the most successful synthesizers of all time. But because the M1 is so immediate, it's too easy just to scratch the surface, leaving many of its exciting capabilities undiscovered.
This highly informative video enables M1 owners to unleash the full creative potential of this enormously powerful workstation.
With plenty of musical examples, tips and inside information, the video offers clear, concise explanations of the instruments features and operating procedures, helping you to greatly expand your dexterity and creativity across he whole range of this world-beating instrument.
Comes with a FREE exclusive custom library of fabulous new M1 sounds on Atari format floppy disk (100 Programs, 100 Combinations) created by ABWH/Yes programmer Chris Macleod.

CODE V002 **£24.95**
Running time: 1 hour 10 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

STEINBERG CUBASE VIDEO TRAINING MANUAL

This manual, the first in a series, is presented by Chris West, Steinberg expert. It's very much a practical, 'get up and running' video, showing the novice user exactly how to install and begin using Cubase, whether they're running the program on an ST, Mac or PC computer - there's even a basic background on using the computers themselves! All of Cubase's controls are shown, explained and demonstrated in depth. Once you're familiar with the basic controls, Chris takes you slowly through recording your first session, followed by overviews of the various edit screens. It's rather like having an expert tutorial that you can run again and again until you can use Cubase like a pro.
Topics covered include; the main screen, customising names and outputs, copying and pasting between arrangements, MIDI filter, cycle mode recording, the tool box, all edit screens.

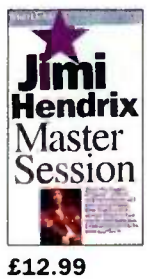
ORDER CODE V011 **£29.95**
Running time: 1hour 30 minutes
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

BRIAN MAY: MASTER SESSION

One of rock's most innovative guitarists gives you 45 minutes of face-to-face, step-by-step instruction. Learn all his hottest licks and effects from such hits as 'Bohemian Rhapsody' and 'Crazy Little Thing Called Love.' Special section on harmony guitar soloing. Highly recommended.

CODE SK10003 **£12.99**
Running time: 45 Mins Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

JIMI HENDRIX: MASTER SESSION



Unravels the mysteries of the unique Hendrix guitar styles. His innovative techniques left a deep and lasting mark on the art of heavy rock guitar.

CODE SK10045
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YAMAHA QY20 MUSIC SEQUENCER VIDEO MANUAL

by Tom Robinson
Yamaha's popular QY20 portable sequencer/sound source is a deceptively simple device to use; if you think you might like some insight into getting that little bit extra out of the device, then look no further. Produced in co-operation with Yamaha, the 90 minute video features mobile musician Tom Robinson showing you how to get the best from this portable marvel. Tom, who has used the QY20 extensively as a writing tool on the road, says:
"I never leave home without it".

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YAMAHA QY300 VIDEO MANUAL

◄ NEW

The latest tutorial video release from Labyrinth is a complete overview of what Yamaha's new QY300 sequencer/sound source is capable of. Presented by Joe Ortiz of Heavenly Music, the video offers a clearly presented, hands-on tutorial on what is potentially a very powerful piece of hardware. Joe starts off with an explanation of what the QY300 is about, followed up with a clear, step-by-step tutorial that introduces you to creating your own sequences and styles. As a bonus, the video comes with a free disk loaded with six new styles and six demo sequences.

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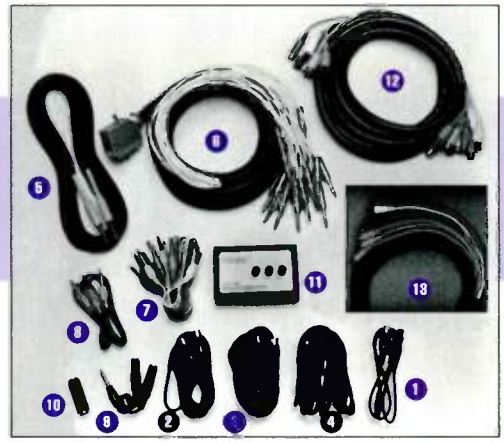

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- **4 six inch Velstraps.** Sturdy velcro-equipped straps for keeping unused cables tidy – they come in highly visible red, with a metal buckle. Fasten the strap around a loosely looped cable for secure, kink-free storage of your leads.
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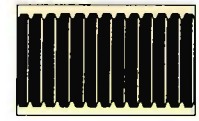

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WIN ART MR1 Compact Reverbs

ART's new MR1 reverb is likely to be one of the smallest effects units you've come across — but its size certainly doesn't restrict its abilities, as the MR1 actually offers the sound of ART's dedicated, full-rack reverb, the RXR Elite.

The MR1 is truly palm sized, measuring just 5 x 5.5 inches, but still manages to offer full 16-bit processing and 16 digital reverb presets — including Large and Small Hall reverbs, a variety of Room reverbs, Vocal, Guitar and Percussion Plates and two Chamber reverb effects, all benefiting from the proprietary ARM (Acoustic Room Modelling) technology developed by ART for the RXR Elite. Also featured are input and output level controls, effects bypass switch, dry/wet mix control and a 16-position preset selector. The user interface certainly couldn't be more straightforward!

The MR1 is designed to have many uses both live and in the studio, and is recommended for keyboards, guitars and drum machines (which you can plug directly into the unit), as well as studio or live vocals (use it in-line on a mixer insert point). We have three MR1s (worth £175 each) to give away, so three lucky winners will soon be finding out how versatile the MR1 is. Just answer the simple questions below, fill in the tie-breaker and send in your entry before the closing date of **Friday, 17th February 1995**. Good luck!

Prizes kindly donated by Washburn UK Ltd (0462 482466).

the small print

1. Only one entry per person is permitted.
2. Employees of SOS Publications Ltd, Washburn UK Ltd and their immediate families are ineligible for entry.
3. No cash alternative is available in lieu of the stated prize.
4. The competition organisers reserve the right to change the specification of the prize offered.
5. The judges' decision is final and legally binding, and no correspondence will be entered into.
6. No other correspondence is to be included with competition entries.
7. Please ensure that you give your DAYTIME telephone number on your entry form.
8. Prizewinners must be prepared to make themselves available in the event that the competition organisers wish to make a personal presentation.

QUESTIONS

QUESTIONS

1. The MR1 takes its sound from which of ART's rackmounting effects units?

a. The DXR Elite ☐
b. The FXR ☐
c. The RXR Elite ☐

2. The proprietary reverb technology developed by ART is called ARM. What does ARM stand for?

a. Adaptive Resonant Morphing ☐
b. Acoustic Room Modelling ☐
c. Aren't Reverbs Magic? ☐

3. How many reverb presets does the MR1 offer?

a. 6 ☐
b. 16 ☐
c. 4 ☐

4. Which of the following effects IS part of the MR1's presets?

a. Large Hall ☐
b. Medium Pantry ☐
c. Bijou Bike Shed ☐

TIE-BREAKER

In not more than 20 words what do you think 'MR1' should stand for, and why

.....
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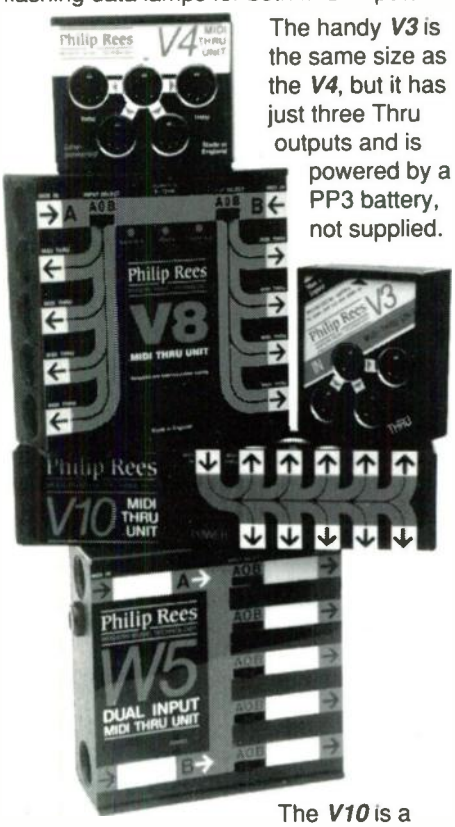
Post your entry to: *SOS ART Competition, Sound On Sound, Media House, Burrel Road, St Ives, Cambridgeshire PE17 4LE.*

Another new Thru box

Some MIDI gear may lack thru sockets. Chains of more than three MIDI devices can suffer from data corruption. For a chain to work each item must be powered-up. You can solve these problems at very low cost with the *Philip Rees* range of MIDI Thru Units.

The latest addition to this famous range of Thru boxes is the inexpensive ***V4***. This one-into-four unit is phantom powered via its MIDI In socket. The dimensions of the ***V4*** are a pocket-sized 58mm x 69mm x 23mm. As with all line-powered MIDI gadgets there may be compatibility problems with some MIDI master devices.

The **new *V8*** MIDI Thru box has eight outputs arranged as two banks of four, and two inputs. For each output bank there is a source select slider, which can be set to either of the inputs or an `off' position. This gadget requires an external power source, such as a mains adaptor. It has flashing data lamps for both MIDI inputs.



The handy ***V3*** is the same size as the ***V4***, but it has just three Thru outputs and is powered by a PP3 battery, not supplied.

The ***V10*** is a compact one-into-ten Thru unit with a built-in mains power supply.

The versatile mains-powered ***W5*** dual input Thru box has independent source selection for each of its five outputs.

V4 **MIDI Thru Unit £19.95**
V8 **MIDI Thru Unit £27.95**
V3 **MIDI Thru Unit £11.95**
V10 **MIDI Thru Unit £39.95**
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Talented tape sync unit

You can use the stunning **new *TS1*** to sync your MIDI sequencer to almost any tape machine.

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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 Song Position Pointer/SRT format.

Replay signal conditioning, 'jam' sync and level adjustment presets are provided.

The ***TS1*** merges MIDI data received with its own sync data. This lets you overlay new sequencer tracks in sync with your tape.

You can set the start time of the SMPTE stripe manually or via MIDI commands.

The ***TS1*** has a built-in mains power supply.

TS1 **MIDI Tape Sync Unit £99.00**

MIDI to DIN Sync box

You can use the ***MDS*** to synchronise classic drum machines to MIDI clocks.

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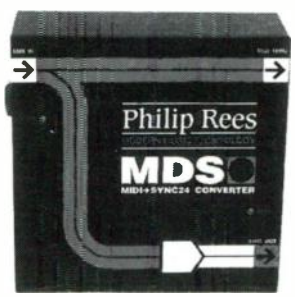
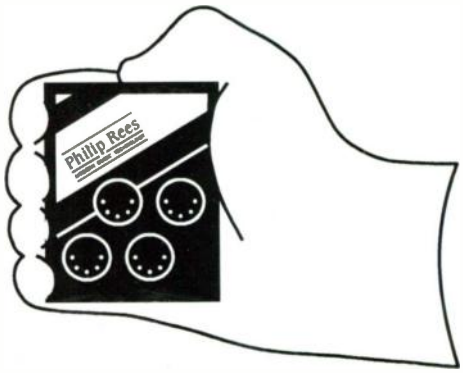


The unit is compact and contains an integral mains power supply.

MDS **MIDI to Sync24 Converter.. £69.95**



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2M **MIDI Merge Unit £69.95**
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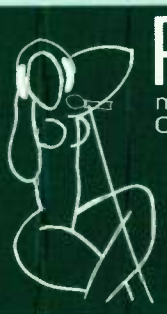

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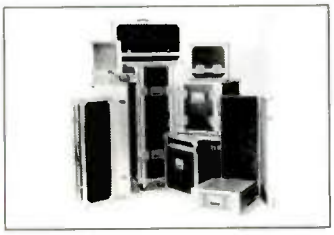

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PAUL STAVELEY O'DUFFY

By Sue Sillitoe

Producer Paul Staveley O'Duffy has strong opinions on how the music business could be improved. Here he puts the case for a more flexible approach to the record industry — one that would expand the boundaries of what the public gets to hear...

Ninety per cent of chart records today fall into two or three categories, each one identified by specific loops and keyboard parts. Basically, if you've heard one swingbeat record, you'll know that the next will probably have the same loops and Korg M1 piano sound. Human nature is such that we feel comfortable with repetition, something that is familiar. But now and again, a record comes along that has different qualities as well as the familiar ones. It catches our ear, and that's the record which may well lead us to buy a whole album.

Recently, two or three record companies have sent me demo tapes of their version of Eternal, and this is a perfect example of what I find disturbing — everything is coming down to the lowest common denominator. Where is the thrash metal band with electro beats, or the new age beat combo?

The problem is, of course, that A&R people are afraid to take a chance on something different, in case it doesn't fit in. Even when they have a success with a particular project, it doesn't mean they can then do something left-field that only costs them £10,000 to make, because every project is viewed on its individual merits, and each one is expected to make money. Yet sometimes, things that come from the left-field turn out to be popular — provided they are given the chance to develop. It is a lot to ask, especially as there is a very high turnover of staff, and the people who work in A&R are worried about their jobs. Obviously, you have to have the best people, but even the best people don't always have hits. They have to be allowed to fail as well as succeed, because making records is a lottery at the best of times.

It would certainly help if the public had more opportunity to hear a wider variety of music. At present, most people only go out and buy what is heard on the radio. Record companies and radio stations dictate what we hear, and, as a rule, if something is unusual and doesn't fit comfortably into a particular category, it simply doesn't get heard. I'm sure there are a lot of people who don't get a look in, simply because they don't fit the mould of the next Take That or Mariah Carey. If you came to a record company with something like Louis Armstrong's 'We Have All The Time In The World', and said you wanted to put it out as a single, what record company would have been interested? But look what happened when people heard the song through a television advert. They didn't care that it didn't fit into a popular genre, they just went out and bought it.

We need to give the public the chance to hear a wider variety of music, and it would help if there was more positive artistic control at record company level. Most A&R people haven't got a clue about the actual production of music, yet in the early days of making records, the A&R man *was* the producer. If we could get back to a situation like that now, a situation where artists could deal with someone who came from an artistic rather than a fiscal background, there would be more innovation and more opportunity to push out the boundaries of what is possible.

Bands like Oasis are very good examples of how talent should be handled. They signed to an independent record company that was interested in putting out singles, and suddenly they were selling them by the thousand. It's no wonder the album was a success — they had already built up a following who wanted to hear the music. But I'm sure that if Oasis had signed to a major, we probably wouldn't even know that they existed yet, because they would still be stuck in a studio somewhere remixing their first album.

If there was more involvement from producers and musically-based people, we might all be able to avoid some of the disasters, by figuring out in advance who is worth signing and who isn't. At the moment, producers mostly get to hear bands after they've signed. It might be better if the record company included the producer in the decision process, so that at least they had a musical assessment of the band's long-term ability.

As an industry, what we should all be doing is building up artists' careers, so that we get the major stars we will need in the future. The current situation doesn't permit this, because if the artist makes a record costing £100,000 and the record isn't a hit, he'll probably get dropped. Or, the artist signs the deal offering the most money, only to find himself under intense pressure to deliver first time, because there is so much money at stake. When the artist stalls at the first release, as many do, the record company drops them, because they are prohibitively expensive to keep on.

Bands and solo artists would be much better off if they were to accept a more modest deal over two or three albums — a deal based on good percentages and smaller advances. Then everybody involved would be under less pressure, and the band would have time to build a following and prove themselves.

We should all remember that the role of the music business is to sell records, and we should be addressing how best to do that. Making good records is only part of the equation. We should also be encouraging people to *buy* them, by selling them in the shops that people use every day — garage forecourts, supermarkets, toy shops and so on. The vast majority of the public never goes into a record shop, and so is hardly likely to spend its money on music. We need to address this problem, and find new ways of marketing music to the ordinary man in the street. I think there are a lot of things that can be done to encourage sales, and just looking at the way we sell music — as well as the sort of music we make — would be a good place to start. SOS

Paul Staveley O'Duffy is 30 years old, and has been working in recording studios since he was 16. Early in his career, he spent a few years in New York doing club remixes for artists including Stephanie Mills, Bar-Kays and Animotion. He returned to the UK and achieved world-wide success with Swing Out Sister, Was (Not Was), The Beloved, Lisa Stansfield, The Pretenders, The House Of Love and Television, to name but a few. Paul is currently producing Touch's album for MCA Records.

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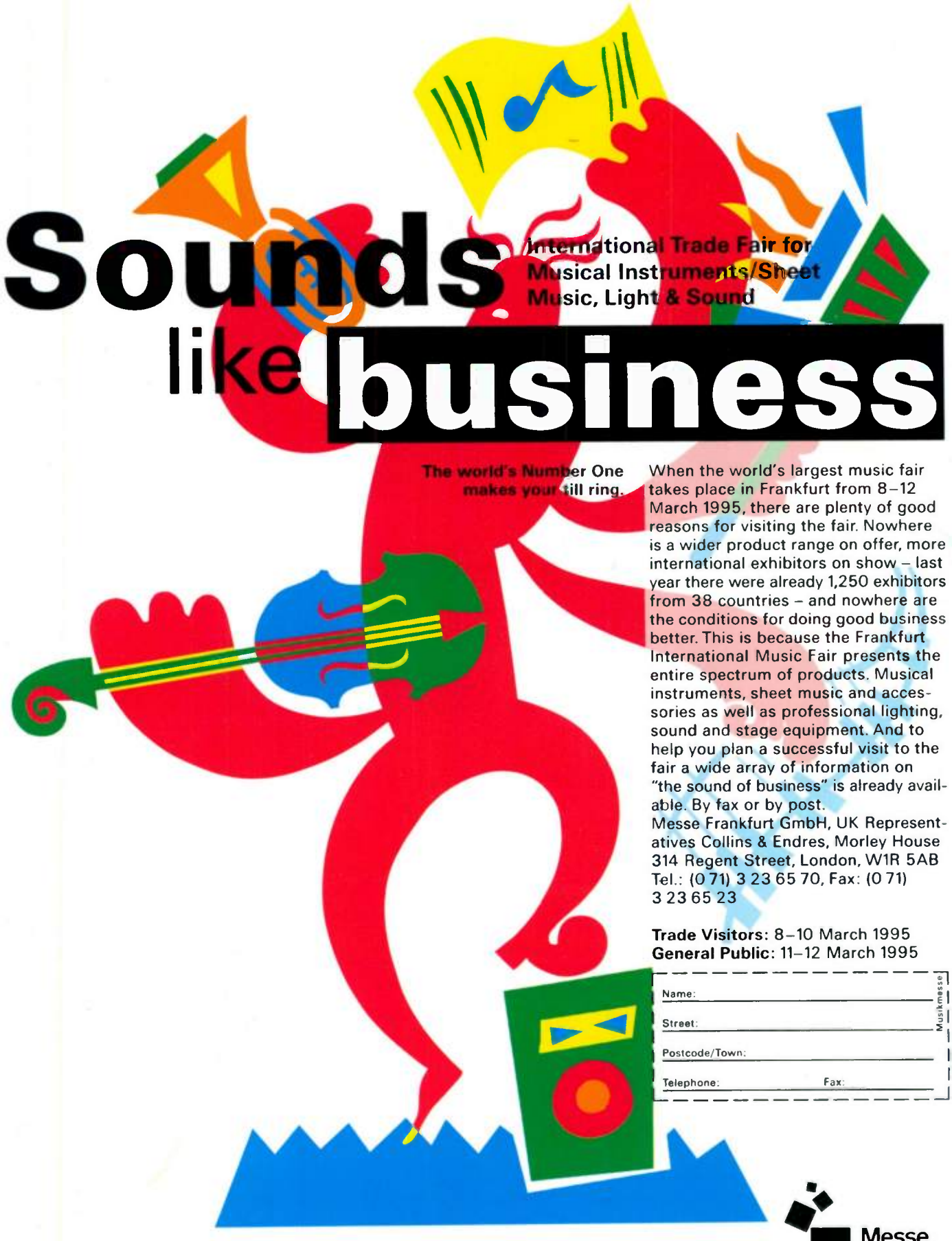

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