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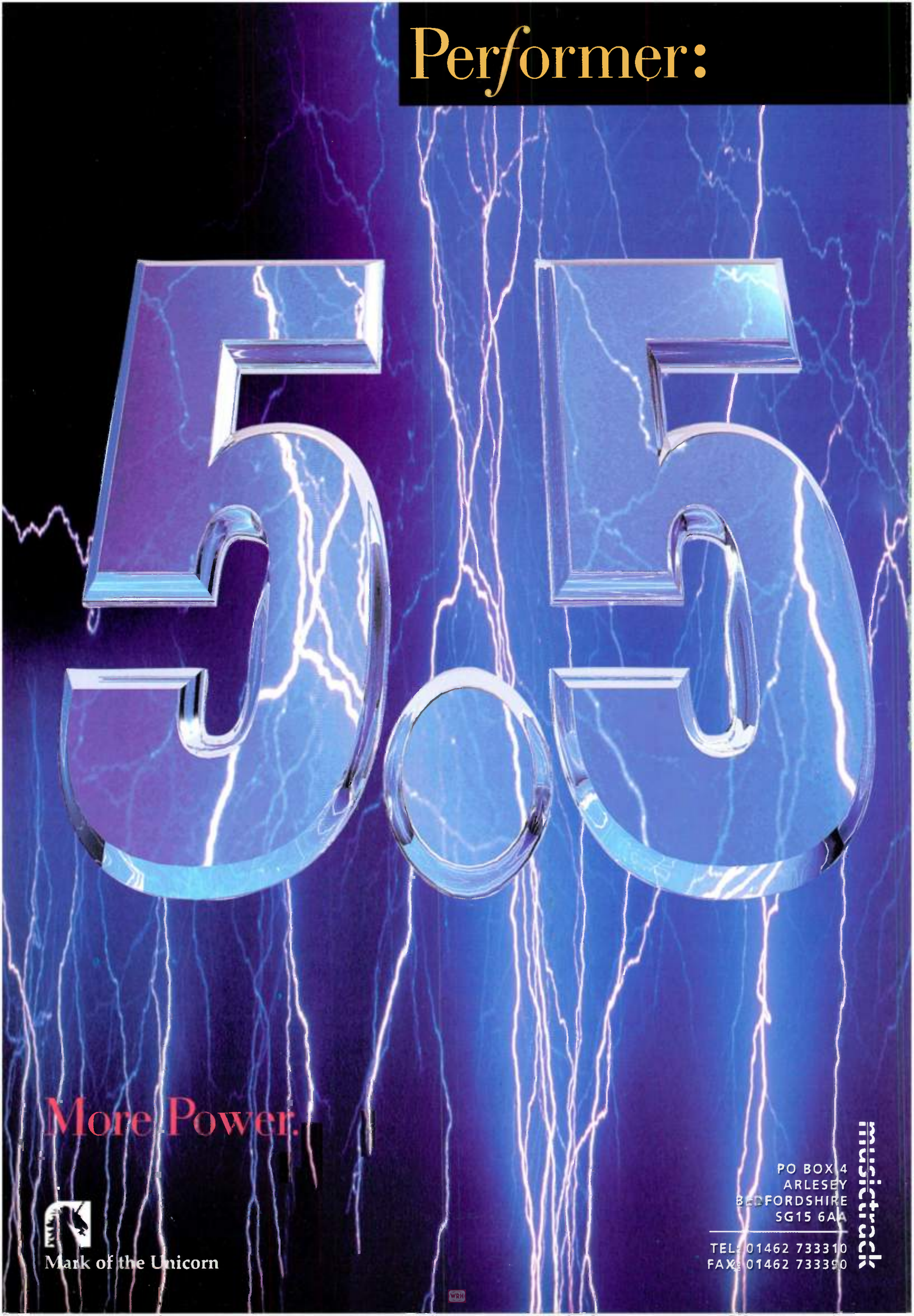

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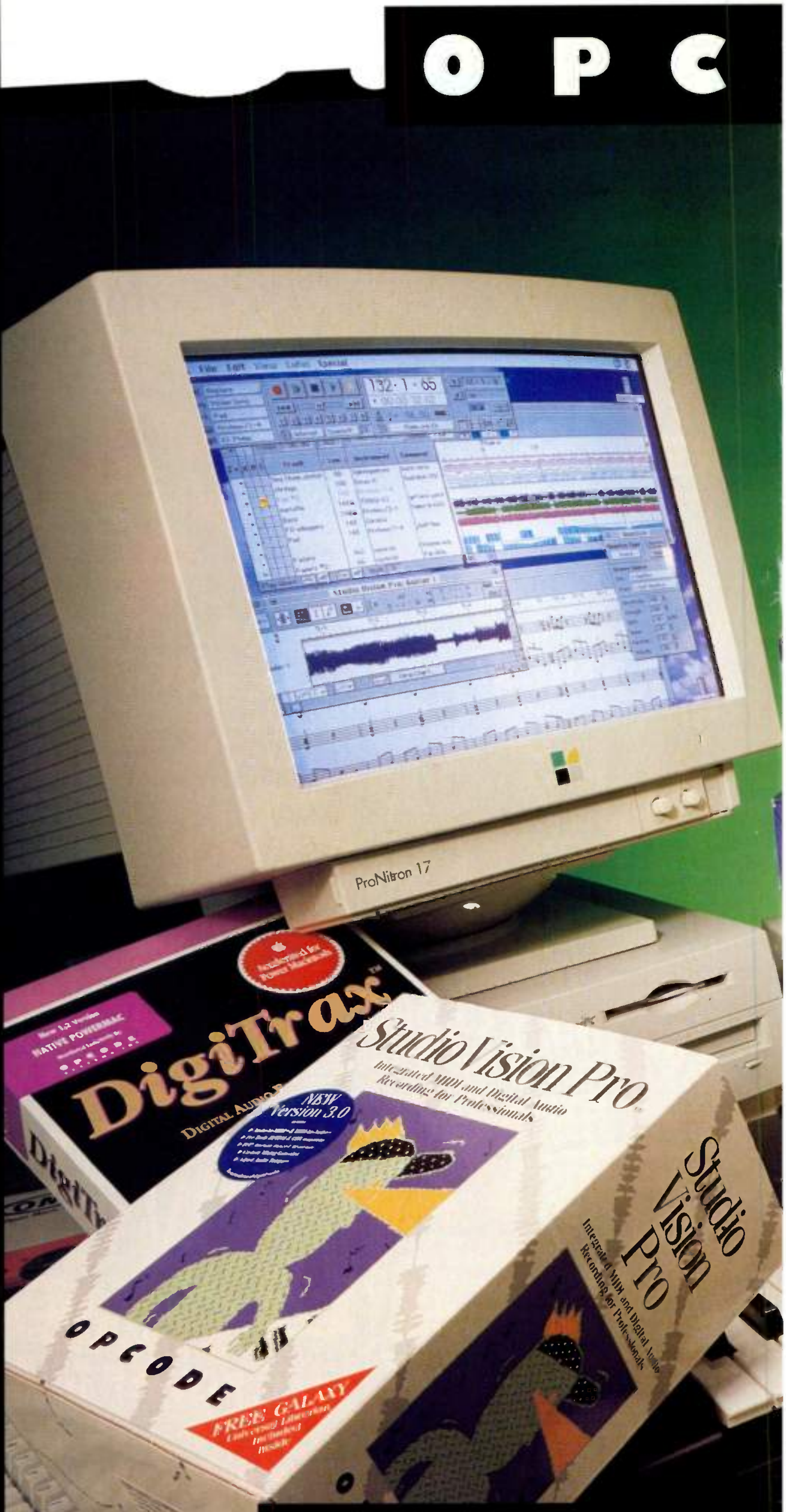

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leader

Almost persuaded

I suppose it's all my own fault really.

A few months ago, I asked you in the Leader column to write or call our Publisher (who art in St Ives, hallowed be His name, etc) to persuade Him to buy me a Pentium PC computer, so that I could experience first hand, what non-Mac owners have to endure. Well, it appears you did as I asked — within a couple of months, a gift-wrapped Pentium, complete with CD-ROM drive and Soundblaster card, appeared on my desk.

I suppose I should thank you — after all, you meant well — but I confess that this has come as a bit of a culture shock. Don't misunderstand me; the Pentium PC is a hugely powerful computer, and with DOS now well and truly eclipsed by Windows 3.1, and more recently by Windows 95, it's a lot more approachable than it was. At this early stage, however, it is still a very alien device. This impression will no doubt change with familiarity, but at the time of writing, I've used the thing for just a couple of hours, and I'm still in very uncharted waters.

I knew it would all be very different when I took the computer out of the box. Macs are, of course, complete systems, and come with a single manual, but many of the PC clones on the market are assembled from drives, boards, power supplies, chassis and so forth, all bought in from the far East. I found myself facing a veritable Ben Nevis of manuals; a voluminous set for the Soundblaster card, one for Windows 95, one for the floppy drive, one for the CD-ROM drive and even one for the mouse — but nothing really relating to the system as a whole. There was also a pile of floppy disks relating to all these bits and pieces (which I've yet to explore), and some CD-ROMs. Fortunately, the operating system was already installed, and the machine booted up with no problem, welcoming me with a friendly little fanfare via the Soundblaster stereo speakers.

I don't know who came up with the car bumper sticker proclaiming that 'Windows 95 = Macintosh 88', but in some respects, they're doing Macintosh 88 an injustice: the Mac operating system, even back then, was definitely slicker. On the other hand, Windows 95 is quite obviously the best thing that has happened to the PC as far as non computer-literate users are concerned, and there are quite a few things it does that my Mac would be envious of, one of which is to automatically check for hardware and software conflicts whenever you install a new piece of software or a new card. The PC is also capable of true multi-tasking, which the Mac is not. Installing Windows 95 may mean buying more memory, but unless you're a PC guru and you'd like to hang onto at least some of your sanity, it's a small price to pay, believe me.

Anyhow, after playing with the CD-ROMs for a few minutes, I installed my first piece of PC music software (though to retain some sense of anticipation, I don't think I'll tell you what it was!). It installed almost automatically, with no problems. I was also impressed by how fast the program ran, with very little time sitting around waiting for windows to redraw or for off-line processing to take place. It's still early days, but as long as I choose software that runs under Windows, and can avoid having to deal with the decidedly musician-unfriendly DOS (Prompt: backslash, bargepole/: don't touch with), I think the relationship has a future!

Paul White ***Editor***

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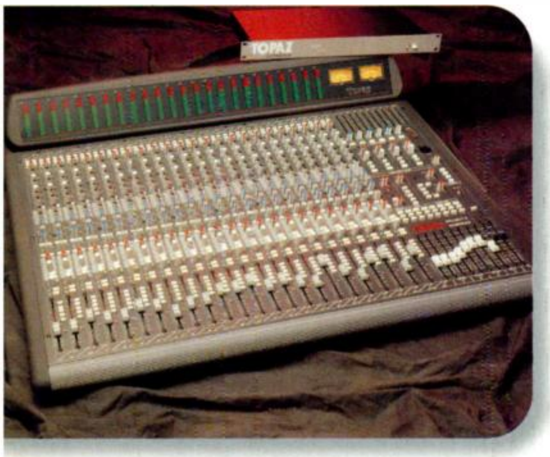

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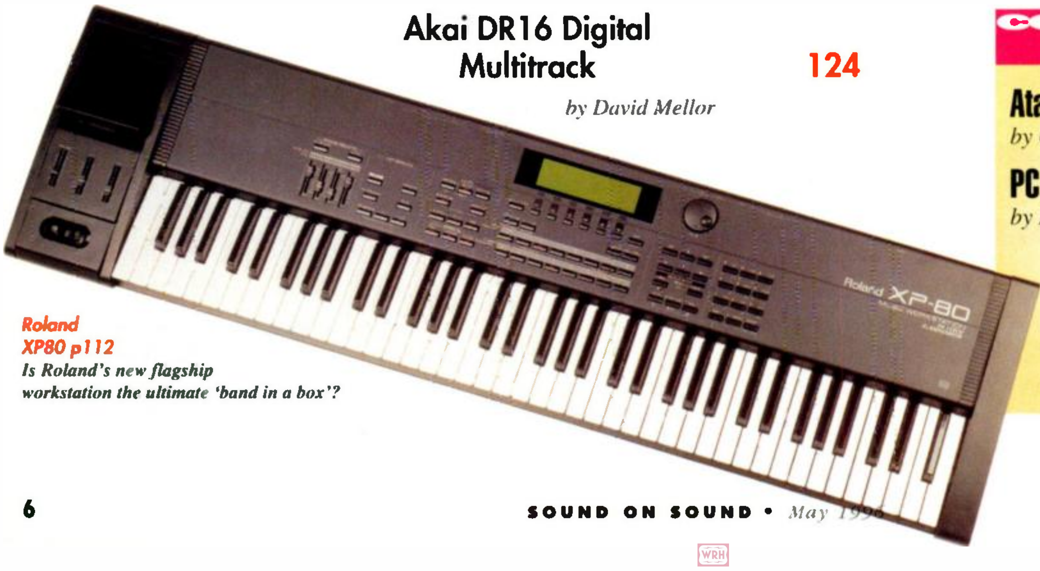

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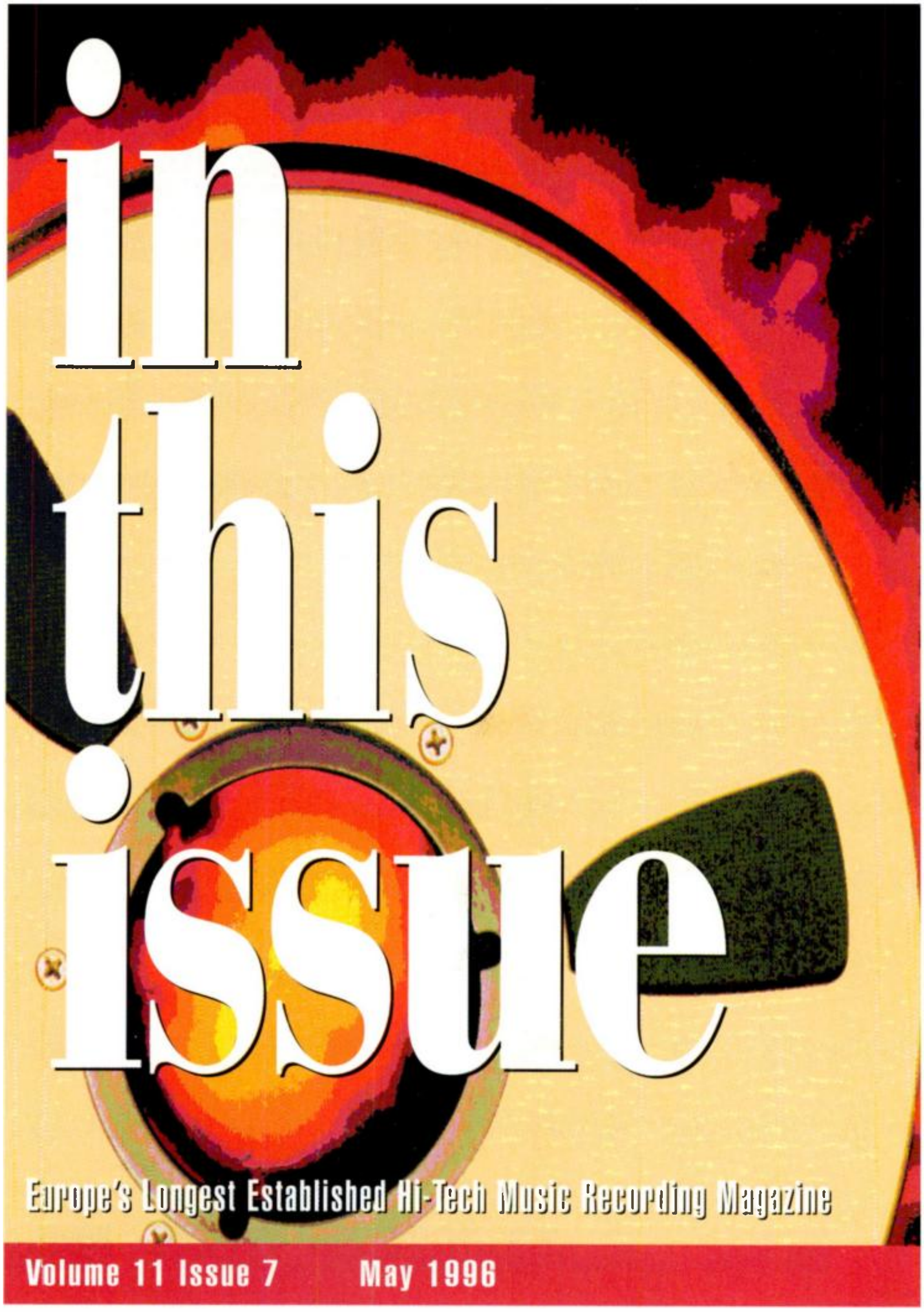
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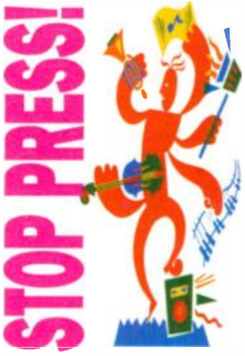

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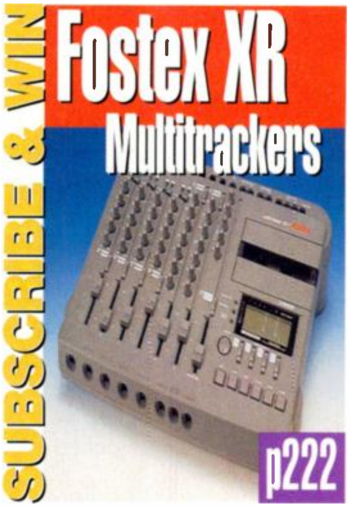
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GET CARTER (TO SHOW ME HOW TO BUILD A ROLAND 100M POWER SUPPLY, PLEASE)

I hope you can help; Chris Carter's guide to building a PSU for a Roland 100M synth in *SOS* April '95 has left me confused. I am about to construct the PSU as I write, and don't wish to damage the synth. Can Chris elaborate? Many thanks.

PS. I have bought every issue of your mag from 1985, and I think it has gone from strength to strength.

Steve Dagostino
London

Chris Carter replies: *I've checked the original article to see what might be confusing you. Is it the small printing error (+5V instead of +15V), or perhaps the fact that the 8-pin DIN plug/socket arrangement that Roland use is numbered 1-9? To clear up any misunderstandings, I will attempt to explain the connections once again, in a bit more detail.*

The list of numbers mentioned (see Figure 1) refer to pin connections made through the 8-pin DIN-to-DIN connectors that power and also link each module to the System 100M rack. To help avoid mistakes when soldering each pin or solder tag, there is usually a number next to the tag. But take note — there is no pin number 3. If the DIN plugs or sockets you intend to use are not *numbered, bear in mind that the pin numbers I have listed in Figure 1 refer to the rear (solder tag side) on the 100M rack.*

Pins 1, 6 and 7 are connected to the +/-15V buss, and power the PCBs. Pins 4 and 9 are connected to the 14V buss, and supply power to the LED indicators. Pins 2, 5 and 8 are connected to the CV/gate buss, and deliver keyboard signals to the modules.

In the original article, I didn't actually describe how to make a 100M PSU — I just suggested a solution if no 100M rack was available. Using something like the Maplin 15V regulator kit (part #LP88V, plus an appropriate transformer) is only really suitable as a last resort. It shouldn't be used to power more than one module, and it doesn't have the additional 14V output for powering the LED indicators. The best solution would be to get a knowledgeable engineer to build a proper, stabilised PSU with all the necessary outputs and DIN sockets. 100M modules are becoming very rare now, as are spare parts for them, so do not *attempt to build your own PSU unless you are confident at handling components, high voltages, and a soldering iron. Mistakes can be expensive and, more importantly, lethal!* ❑

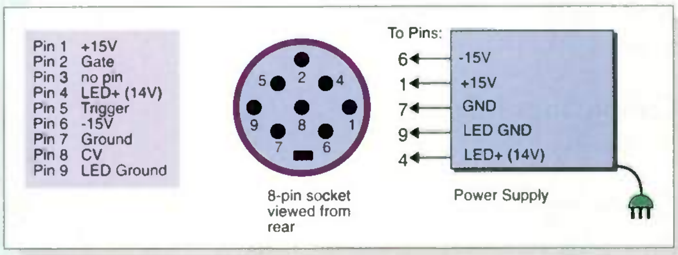

Figure 1: Connections to a Roland 100M power supply, as shown in the System 100M manual.

EVOLUTION — THEORY OR REALITY?

Greetings from Italy! I have been pleased by the mentions you have given the Evolution EVS1 synth lately, as it is an instrument I still use. My problem comes with editing, which, as Derek Johnson noted in *SOS* August '95, is only possible via a computer and Evolution editing software. I have both an Atari and the right software, but my problems arose when I switched to a Macintosh a couple of years ago. I contacted the Italian distributor for the (supposedly available) Mac version of the software, and was told that Evolution had been bought by a mysterious company, who had then closed it down! My questions are:

1. What *really* happened to Evolution Synthesis?
2. Is there *any* way of editing my EVS1 without an Atari? It all works OK at present, but I'm having to use both computers together, which is a bit of a bind... Thanks for your help.

Franco Bellazi
Grado, Italy

Assistant Editor Matt Bell replies: *To answer your queries in order: firstly, Evolution are in fact alive, well, and living at 8 Church Square, Leighton Buzzard, Bedfordshire LU7 7AE (tel +44 (0)1525 372621, fax +44 (0)1525 383228) under the name Evolution Electronics — who are probably best known to* SOS *readers as the distributors of the PC software* Samplitude Studio. *It's best to contact the company direct in the UK for queries concerning the EVS1 — they are quite happy to help. Copies of the editing software for Atari ST and DOS PC are still available from them at a price of £5.88 plus postage. Regarding your second query, it's bad news, I'm afraid — the Mac version of the editing software was never written, and there are no editing profiles for either Opcode's* Galaxy *or Emagic's* Sound Diver. *However, here at* SOS *we are planning a feature to help Mac-based EVS1 owners, so in those immortal words — stay tuned!* ❑

NON-STOP ELECTRONIC CABARET

I am trying to organise a weekend event in late '96/early '97, along the lines of a festival for electronic bedroom bands. The size, price and venue of the event will depend on the amount of serious interest in taking part. That is why I am writing to *SOS*, as I hope that publicising the event on your letters page will help generate such interest.

I am looking for people who have not yet performed, or who are very new at it. If you fit this description, please write to me at the following address with an SAE and a £1 postal order or cheque, made payable to B.O.B. Promos (it stands for Boring Old Bryan, as I spend most of my spare time playing my XP50 and JD800). The £1 is an indication of serious interest, which I need to get things off the ground, and will be refunded if there is not enough interest in the event.

Also needed will be amateur computer visual artists to perform along with the bands, and alternative, ambient-style DJs to do their stuff while the bands change over. Any help with lighting and PA would be much appreciated too.

The overall idea is to get people together who are looking to either break into the electronic arts or just enjoy electronic music. If successful, I hope to turn this into an annual or bi-annual event, inviting A&R men and other industry types. At the moment, it's just pie in the sky, but with your help, I hope I can make it happen.

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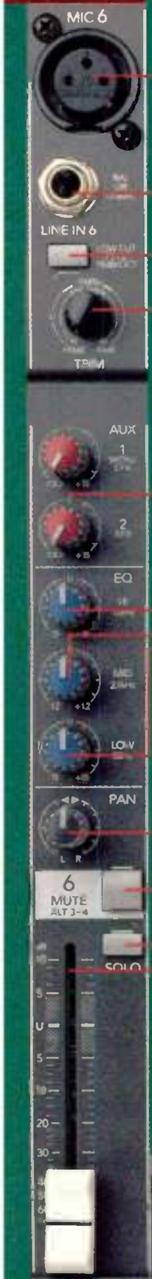

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Pan *control with constant loudness and very high L/R separation.*

Four buses on a 2-bus board! *Mute switch routes channel output to extra* **ALT 3-4** *stereo bus. Use it for feeding multitrack recorder inputs, creating subgroups (via Control Room/Phones matrix), monitoring a signal before bringing it into the main mix or creating a "mix minus."*

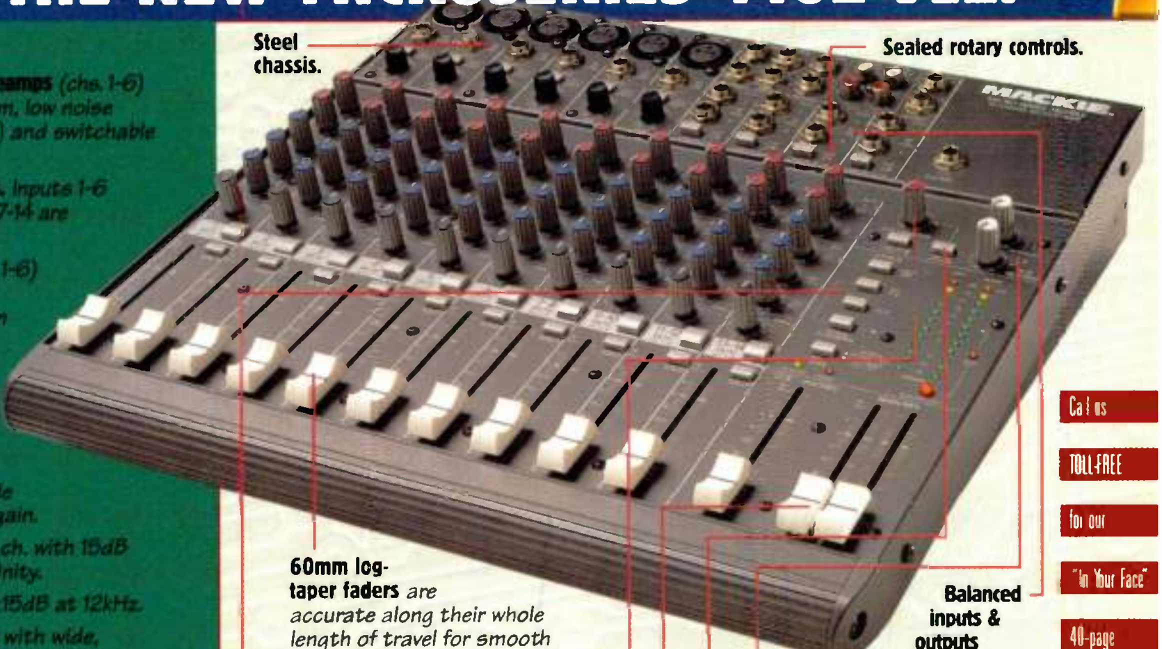
Solo. *AFL or PFL via global switching.*

60mm logarithmic-taper faders.

Main 1/4" balanced outputs.

RCA tape inputs & outputs.

–10/+4dBu *input level switching on stereo channels.*



Steel chassis.

Sealed rotary controls.

60mm log-taper faders *are accurate along their whole length of travel for smooth fades. They employ a new long-wearing contact material for longer fader life and improved resistance to dust, smoke and general schrunge.*

Control Room/Phones matrix *lets you select any combination of Main Mix, Tape In & Alt 3-4 signals for routing to Control Room, Phones & meters. Includes dedicated fader.*

Balanced inputs & outputs *(except RCA tape in & out & inserts).*

Stereo aux returns *with Return 1 to Aux Send 1 (for adding effects to monitor feeds).*

Separate left & right Master Gain *60mm log-taper*

Aux 1 Master *with Monitor/Pre-Post switch for live sound mixing flexibility.*

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40-page

brochure &

Amps Guide.

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1402-VLZ
CAUTION

VLZ *(Very Low Impedance) circuitry for ultra-low noise & crosstalk.*

Control Room & Alt 3-4 Bus *outputs.*

Balanced XLR outputs *with switchable mic/line output level.*

3-way Channel Inserts *(chs. 1-6).*

Switchable phantom power *for condenser microphones.*

Built-in power supply. *No wall warts!*

Beefy headphone amp.

Fast, accurate level setting via Channel Solo. *As the Rude Solo light blazes forth, a soloed channel's level is displayed on the LED meters. Set the solo mode to PFL, adjust channel trim to 0dB on the meters, and you've optimized the MS1402-VLZ UnityPlus gain structure for maximum headroom & minimum noise.*

12-LED meter display.

AFL/PFL switch.

*Suggested retail price (including VAT).

3-band equalization

AFL / PFL Solo

Room/Phones matrix

F & 1/4" bal. outputs

Rack mountable

MACKIE™

Mackie Designs Inc · USA · Represented in the UK by Key Audio Systems Ltd.
Robjohns Road · Chelmsford · CM1 3AG · Essex ☎ 01245 344001 · 01245 344002

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WRH

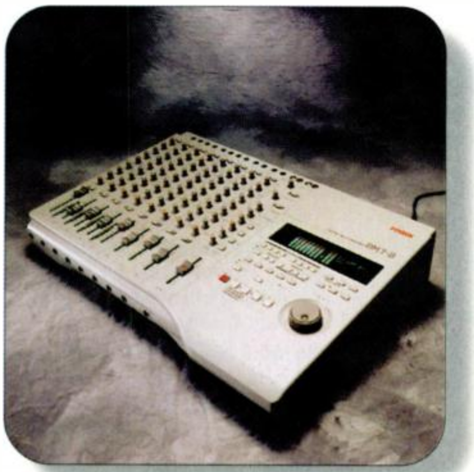
Shape of THINGS TO COME

By Derek Johnson & Debbie Poyser

E's on the case

If you gig with your rackmount processors, or ever have to transport them, flightcase specialists CP Cases have just the thing to keep them safely protected. The E-rack, available in sizes ranging from 4U to 12U, comprises an outer case, made from 2mm high-tensile aluminium sheet, and a rigid, anodised aluminium frame accessible from front and rear. The outer case has neoprene gaskets to provide a weatherproof seal, while the inner frame is shock-suspended on eight anti-vibration mounts, whose rubber hardness you can choose to suit the fragility and mass of your equipment. Outer finish and body depth can also be tailored to your requirements. Prices for the E-rack range start at £500, which isn't cheap, but these professional cases are really built to last.

A CP Cases, Worton Hall Industrial Estate, Worton Road,
Isleworth, Middlesex TW7 6ER.
T 0181 568 1881.
F 0181 568 1141.



Fostex: it's a fair cop

You may remember that when we reviewed the Fostex DMT8 (see *SOS* December 1995), we pointed out that it could only connect directly to DAT machines with an optical S/PDIF input, and Fostex promised to come up with a piece of hardware to help out owners of DATs with co-axial only digital I/Os. Well, they have, and the price is lower than expected, at £49.95. What's more, this little gadget can be used in any situation where there is a need to convert from S/PDIF co-axial to optical or vice versa.

The COP1 Co-axial/Optical Converter is one of those little boxes that's almost dwarfed by its own power supply (included in the price), and it's so simple that no instructions are necessary. The unit comprises two separate converters, one co-axial to optical and one optical to co-axial, both of which may be used at the same time if necessary. Blanking plugs are provided to keep the optical ports clean when not in use, but other than removing these, all you need do is plug in the power supply, connect your DAT co-axial and DMT8 optical cables and you're in business. There's nothing to set up — the box can work at any standard sample rate and there's a reassuring green LED to let you know the power is on. There is no SCMS filtering or any other kind of processing — the unit is purely a format converter — and the data isn't changed in any way.

Tests showed the COP1 to work as expected, and because of its tough construction, I have no concerns over the ability of this little box to survive studio life. It works, it's cheap, it's available — it's a fair COP. *Paul White*

Staying with the DMT8 for the moment, we've just been told by distributors SCV London that it's now shipping with Version 2 software. The new software offers a range of features, including 'virtual reels', which allows the hard disk to be partitioned into five project areas, each with independent timing and setup data; master and slave operation for sync'ing to other DMT8s, D80s or the outside world; a 'Move' function, in addition to 'Copy', with up to 99 repeat 'Pastes'; up to 64 tempo/time signature changes; and the ability to change the internal IDE hard drive — fitting a 1.7Gb drive, for example, can allow up to 40 minutes of 8-track recording. There is a price to pay if you're an existing DMT8 owner: the upgrade kit costs £49 including VAT.

A SCV London, 6-24 Southgate
Road, London N1 3JJ.
T 0171 923 1892.
F 0171 241 3644.

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

Life in the old synth yet

MIDI retrofit specialists Kenton Electronics have announced that they can now add gate, CV and filter control sockets to the Jen SX1000 synth. This mod, previously unavailable anywhere else, due to the complexity of the job (the SX1000 generates notes via a matrix-scanned keyboard), now makes the old machine fully compatible with Kenton's range of MIDI-CV converters. With prices for the SX1000 hovering around the £100-£150 mark, the £70.50 (inc VAT) conversion is an economical way of extending the instrument's life in the modern MIDI world. Contact Kenton for full details.

A Kenton Electronics,
12 Tolworth Rise South,
Surbiton, Surrey KT5 9NN.
T 0181 337 0333.
F 0181 330 1060.
E cliff@kenton.co.uk

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Theremin crosses the Waves

Regular readers of *SOS* will be aware that for the past few years, Robert Moog, the 'godfather' of the synthesizer, has been building Theremins and trading under the name Big Briar. But until now, it's only been possible to order Theremins from the States direct. That's about to change, with the appointment of Nottingham-based Second Gear as UK/Ireland distributors for Big Briar's Etherwave Theremin. The first shipments of Etherwaves are due to land in Easter — we'll bring you further news of pricing as soon as we have it. Meanwhile, contact Second Gear at the address below.

A Second Gear, 2nd Floor, Business Centre,
Forest Mills, Highurst STreet, Radford,
Nottingham NG7 3QA.
T 0115 978 0582.
F 0115 978 0582.

The Winning Circle

David Powell.

Steven Mason.

Judith Costello.

Yes, there are yet *more* lucky winners to announce this month; David Powell, a student at Birmingham University (pictured top) won himself a fantastic (and very large) Yamaha P150 digital piano in last October's competition. David's only difficulty was fitting the P150 into his diminutive student flat, a problem he eventually solved by taking it back home and setting it up in the lounge there! Many thanks to Yamaha-Kemble Music (01908 366700) for donating David's new pride and joy. It's also time to announce the winners of January's Evolution PC 'MIDI plus audio' software competition; Steven Mason of Kentish Town, London (pictured far left), picked up the 1st prize, a copy of SEKD's *Samplitude Studio*. 2nd prize — Evolution's *Sound Studio Professional* package — went to Jon Wilson of Westcliffe-on-Sea, while the five copies of the 3rd prize, Evolution's *Sound Studio* package, were won by George Frangos, Mr M Hall-Davis and Julian Storer of London, Paul Green of Bristol, and Judith Costello of Chipping Norton (pictured above). Congratulations to all this month's winners — and thanks also to Evolution (01525 372621) for all their prizes! *Next* month, we'll be announcing the lucky winner of the Akai S3000XL competition — but for now, I'm afraid you'll have to wait...

Music Lab cut the cost of borrowing!

Music Lab are offering silly deals on equipment rentals started in April. Their Special Offer discount scheme is based on a sliding scale: the longer the rental period, the cheaper the hire cost. If you hire for one week, you'll pay half of Music Lab's previous best rate — just two days' charge for the entire week, rather than the four days normally charged. An extra week's hire on top of this brings the discount to the maximum — 75% of Music Lab's usual 'four-day week' rate — so an entire second-week hire would be charged as only one day. *[Got that? — Ed]*. As an example, a Tascam DA88 8-track digital tape recorder usually costs £75 a day to hire; during April, you'll pay just £150 for the first week, and £75 for the second week. This offer applies only to hires started up to the last day of April, though — so hurry!.

Music Lab's Richard Eastwood revealed that the company are able to offer this special April deal because a significant proportion of their hire inventory is now effectively 'paid for'; the company hope that the offer "will tempt a wider pool of professional users to remind themselves what a good deal hire can be, and discover how good the Music Lab service really is."

Tascam's DA88: yours to hire for one week for £150 from Music Labs.

A Music Lab, 72-74
Eversholt Street,
London NW1 1BY.
T 0171 388 5392.
F 0171 388 1953.

New fish in cable sea

Everyone who owns a studio or plays an electronic instrument is in the market for cables, and Piranha would like you to look out for theirs next time you need some. Piranha cables are made to high standards using oxygen-free copper, and are available in a rainbow of colours — black, red, blue, green, and yellow — all with a distinctive red Piranha logo on the sleeve. Most good music shops stock the cables, in XLR-XLR, XLR-Jack, Jack-Jack, and Jack-Angled Jack varieties (2m, 3m, 5m and 10m lengths), but if you have trouble finding Piranha locally, the company invite you to call 01435 868186 for a full dealer list. Prices, apparently, are 'keen', and all cables are guaranteed for life.

Trade readers might be interested in an extra service Piranha offer to trade customers such as hire companies — your company's name can be printed along the length of cables to help identify your leads at the end of a hire. Retailers, meanwhile, can take advantage of personalised logo printing on cable sleeves — and both services are free!

A Piranha Cables, Heffle Building, 33a High Street,
Heathfield, East Sussex TN21 8UH.
T 01435 868186.

Shape of THINGS TO COME

The contact details at the end of last month's Waldorf Gekkos review gave Arbiter as the contact for further information; in fact, although Arbiter do handle all enquiries and sales for the Waldorf Pulse synth, the Gekkos and all other Waldorf products are dealt with by Turnkey (tel: 0171 379 5148)!

CEDAR Audio Ltd, the company behind the acclaimed CEDAR PC-based and stand-alone audio restoration products, have recently moved to new, larger premises. The new location is still in Cambridge, just 10 minutes from the old premises, and close to the railway station.

A **CEDAR Audio Ltd, 9 Clifton Court, Cambridge CB1 4BN.**
T **01223 414117.**
F **01223 414118.**

In The Nursery — the band that features *SOS* contributor Nigel Humberstone and his twin brother Klive — are to provide the live ambient backing for a screening of the silent classic film *The Cabinet of Dr Caligari*. The event takes place at Derby's Metro Cinema on May 4, and starts at 8.30pm. Tickets cost just £4.50; contact the cinema for further details.

T **Metro Cinema 01332 340170.**
W **http://www.fys.ruu.nl:80/~dompselr/itn/home.html**

Cimple Solutions have pointed out that we only printed their fax and mobile phone numbers in the contacts box for the second part of last month's servicing feature, 'The Professionals'. Apologies to all at Cimple — they do, of course, have a 'hard-wired' phone number as well — 0181 904 4141.

Jonathan Finney at Isotrack has asked us to mention that the Smartpatch patchbay (reviewed in last month's *SOS*) is actually manufactured by the company Signex (as shown on the front panel of the unit) and *distributed* by Isotrack. Apologies to Jonathan — the mistake came about because he runs both Signex *and* Isotrack!

CDs get the green card

discART
The Next Generation CD Carrier

Those of you losing sleep over the un-recyclable nature of your plastic CD cases can rest easier at night with the news of disc.ART, a new all-cardboard packaging system for CDs. According to distributors The Data Business, environmental legislation currently operating in Germany and France, and expected in the UK within two years, imposes a levy on packaging that is not environmentally friendly, and this could add an extra 5-10p to the cost of a CD pack. disc.ART would avoid this, as it is recyclable and 100% biodegradable. Other advantages include the fact that disc.ART has nearly one-third more print area for text and graphics than conventional CD packaging, and is lighter — it can reduce the weight of a CD pack by up to 60%, making it cheaper to mail. disc.ART provides full protection for CDs, locking them tightly inside the pack and suspending them on special carton pads, and is available with one-, two-, or multi-disc capacity. It's already been used with success in Germany.

A **The Data Business Ltd, Bankside, Kidlington, Oxford OX5 1JE.**
T **01865 842 224.**
F **01865 842 223.**

Panasonic SV3800.

DAT's new from HHB

HHB, distributors of Panasonic DAT machines, have unveiled the new SV3800 studio DAT. Although the new machine replaces the popular SV3700, it has more features and costs £300 less, at £1291.33 (inc VAT). The SV3800 offers a new 20-bit D/A converter and a Delta-Sigma 1-bit A/D converter, along with a comprehensive array of professional and consumer digital ins and outs, with XLR, co-axial and optical connectors. All major functions are accessible from the front panel, and a parallel remote controller provides more sophisticated external control. Analogue recording is possible at 44.1kHz or 48kHz, and the SV3800 will sense digital recordings made at 32kHz, as well as playing back all three rates. The SV3800 has been designed for pro use, and features XLR analogue ins and outs, a 19-inch rackmounting kit, and displays for error rate and hours in use.

While we're on the subject of DAT technology, HHB have also recently launched a new, improved range of blank DAT tapes. Features include upgraded tape formulation, new cassette design (check out that anti-static lid) and a temperature-resistant shell, plus a range of new lengths: 15, 35, 50, 65, 95 and 125 minutes. The latter is the longest full-thickness pro DAT tape currently available. HHB also have their own-brand 1.3Gb and 2.6Gb rewritable magneto-optical discs and MiniDisk blanks, and have been appointed exclusive UK distributor for Pioneer's CDMW74 CD Recordable disc; these blanks can hold 74 minutes of audio or 650Mb of data.

The new HHB 1.3 Gb and 2.Gb magneto-optical disks.

CDMW74 CD-R discs.

DAT15
DAT35
DAT50
DAT65
DAT95
DAT125
HHB's new DAT tapes.

A **HHB Communications Ltd, 73-75 Scrubs Lane, London NW10 6QU.**
T **0181 962 5000.**
F **0181 962 5050.**
E **sales@hhb.co.uk**

FOLIO SX

SPIRIT

THEY'D SAY...

The last word in state-of-the-art, multi-environmental mixing consoles for front-of-house and studio multitracking. SX has a massive 35 inputs as standard (inc. DC input) and 30 outputs*.

Scud-proof sans pad Preamps that give an embarassing 1000-fold gain capability with 22dBu of head (and shoulder) room.

QuadraBus Routing Dynamics conquer the limitations of musically-challenged stereo mixers. Wallow in the sheer power of two extra outputs.

Bi-functional Direct Facility – an almost totally unique feature that lets you decide the orientation of your outputs: twice the track laying potential of conventional mixers.

King-size Infinity Faders. Every SX comes with 72" (1800mm) of low-friction carbon-track sliders. [18 x 4"/100mm faders donates 72"]

Herculean EQ: Boy, does this system sub-structure work hard, using our near unique super sweep function there are infinitessimal bands to choose from.

Archimedian Auxiliary Architecture – we've got it! 90 golden combinations of FX and monitor sends. [Archimedes quotient = (15 x 3 Aux pots) x 2 combinations]

Homogenous Track Potentiometers permit undeviating rotational incrementation.

Micro-Monocoque Construction enables super-abundant component insertion. Geometric ergonomics facilitate a minimal rackmount footprint.

EN50081-1-1992 Emissions and EN50082-1-1992 Immunity
Naturally, SX comfortably surpasses these standards.

* Including all inserts, direct outs, groups, mono bus and anything else we could think of.

Wow!

Rush me a 4-color process lithographic impression packed with enhanced data and superfluous technical rantings on the Folio SX mega live/studio gizmo.

Name: ....

Address: ....

....

....

....

Planet: ....

WE SAY...

IT'S SAD that some mixer manufacturers resort to hype and long, technical sounding names to describe features that every self-respecting company has used for ages but doesn't shout about. This junk-food mentality only makes it harder for you to decide what's good and what isn't.

Judge Folio SX with your ears, not by words: visit your nearest Spirit dealer or send for the straight-talking brochure.

SX is a powerful, multipurpose mixer with DAT quality sound, housed in a freestanding frame with carry handle. It has 20 inputs (including 4 stereo channels) as standard – enough for most live and recording situations.

FACT: SX's 12 mono inputs have UltraMic™ preamps. 60dB of gain range and +22dBu of headroom, allows *any* mic or line device to be plugged in.

FACT: SX is a 4-bus mixer. In addition to the mix outs, two sub-buses allow you to record groups of instruments to multitrack, send them to additional speakers, or sub-group to mix. SX also has a dedicated Mono Out.

FACT: SX's 8 Direct Outs are switchable pre/post fader so they are equally useful when recording in the studio or at a gig.

FACT: 100mm faders throughout give you more resolution and finer control over your mix than the 60mm faders found on many more expensive mixers.

FACT: SX's 3-band EQ with swept mid is a real "British EQ". Custom-designed controls at carefully chosen frequencies produce a warm, natural sound. A steep 18dB/Octave High Pass Filter effectively reduces low end muddiness.

FACT: Of the 3 Auxiliary Sends, 2 can be pre- or post-fader. This makes SX equally suited to "monitor heavy" live performances or "effects heavy" mixes.

FACT: Unlike many small-mixer rotary controls, SX's have been custom-designed to give an even spread and consistent control around their sweeps.

FACT: By using the latest surface-mount technology, SX fits all these features into a rugged, compact frame which can be optionally rack-mounted into a 10U space in a matter of minutes.

FACT: SX meets stringent EC RFI requirements so that RF emissions are minimal. CE

IGNORE
THE HYPE
– JUST
LISTEN

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

SPIRIT
By Soundcraft

H A Harman International Company

http://www.spirit-by-soundcraft.co.uk

Please send me further information and a free application book written by respected pro-audio journalist Paul White on how to get the best from a mixer. I am interested in Folio SX for:

Application: ....

Instrument played: ....

I read the following magazines regularly: ....

....

Name: ....

Address: ....

....

....

.... SOS

Shape of THINGS TO COME

Teenage Fanclub's Norman Blake has taken delivery of a 24-channel Spirit Studio mixer, along with a pair of Absolute 2 monitors; both are now installed in Norman's home studio in Glasgow. In addition to a new album in May, there are plans to follow up the Fannies' home-recorded *Teenage Fanclub Have Lost It* EP, using the new hardware.

T **Spirit by Soundcraft**
01707 665000.

London recording facility The Strongroom has recently completed the refurbishment of its Studio 2. Central to the studio are the 96-fader Euphonix CS2000M mixing console, and the 48-channel Otari Radar digital hard disk recording system. The studio is now ready for anything — including 6-way Dolby Digital Surround film and video soundtrack work.

T **0171 729 6165.**

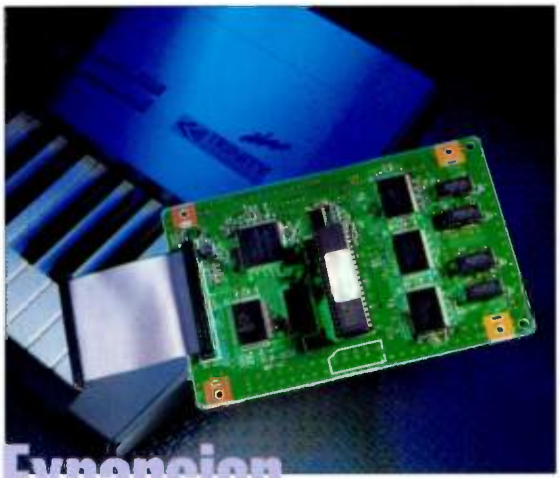
Tyrell Corporation has reduced the price of the Sonic Solutions digital audio workstation. All Sonic Solutions' facilities — simultaneous play, record and edit, MediaNet multi-user network and NoNoise — are available on an upgrade path from a basic 2-track system up to comprehensive multitrack systems. As an example, a Sonic Solutions workstation with Mac and a 2Gb drive costs £6995.

T **0171 287 1515.**

Crest Professional Series 7001 amplifiers have been specified for use at the heart of the Shaftesbury Theatre sound system for the recent revival of Pete Townsend's rock opera *Tommy*.

T **Crest Audio 01273 693513.**

Plug in a Prophecy with Trinity Expansion

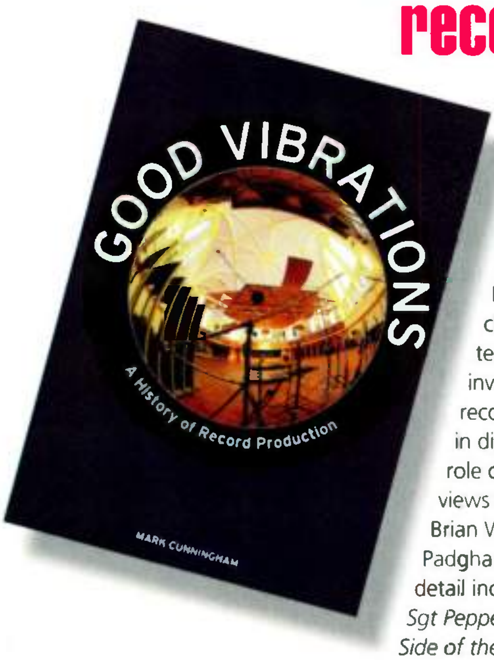


The first optional upgrade for Korg's Trinity series of synth workstations (reviewed in the December 1995 and January 1996 issues of *SOS*) is now available in the form of the Solo Board, which is basically a Prophecy physical modelling synth (See the Prophecy review, *SOS* October 1995). Plugging in the board turns a Trinity into a Trinity Plus, complete with a bank of 64 Prophecy sounds. The Solo Board (£475) offers all the synthesis facilities of the Prophecy, including analogue oscillator, modulation oscillator, comb filter oscillator, three types of physical modelling, plus multimode resonant filters and effects processing. Sounds from the Solo Board are freely mixable with standard Trinity sounds in Combi and Sequencer modes.

The Prophecy itself features in a new video, entitled *An Introduction to the Prophecy*, with Jan Hammer and Joe Zawinul demonstrating and explaining the Prophecy's capabilities. The video is free, save for a £2 charge for postage and packing. A detailed Prophecy training video is also available from the *SOS* Bookshop, priced £14.99 + £1.75 UK p&p — order code V049.

A **Korg UK Ltd,**
9 Newmarket Court, Kingston,
Milton Keynes MK10 0AU.
T **001908 857100.**
F **01908 857199.**

New book makes recording history



Regular *SOS* contributor Mark Cunningham, author of the fascinating Beatles feature which ran in the December issue of the magazine, has a new book out. *Good Vibrations — A History of Record Production* has been two years in the writing, and features a foreword by BRIT award-winning Best Producer of 1996, Brian Eno. The book chronicles the development of recording techniques and music technology, from the invention of sound-on-sound (multitrack) tape recording in 1949, to the current dramatic advances in digital technology. It also highlights the changing role of the producer and engineer, with quotes and views from such influential figures as George Martin, Brian Wilson, Tony Visconti, Trevor Horn, Hugh Padgham and Pete Waterman. Recordings discussed in detail include The Beach Boys' *Pet Sounds*, The Beatles' *Sgt Pepper's Lonely Hearts Club Band*, Pink Floyd's *Dark Side of the Moon*, Queen's 'Bohemian Rhapsody', David Bowie's *Heroes*, and U2's *Zooropa*. The book features around 100 photos and illustrations, many rare or previously unseen, and an extensive reference section. It's published on 30th May, with a price of £9.99, and will be available through *SOS* Mail Order — look out for more details soon. The ISBN is 1-86074-144-4, and it is published by Castle Communications.

THE COMPRESSOR LIMITER EXPANDER/GATE THAT WILL TURN THE WORLD ON ITS EAR. AGAIN.

A/B the sound with and without sidechain processing. No patching required.

The name that defines great compression!

OverEasy® – the choice of top professionals for soft-knee compression.

Tells you when the zero-attack PeakStopPlus™ limiter is doing its thing.

12-segment gain reduction meter allows precision monitoring of compression.

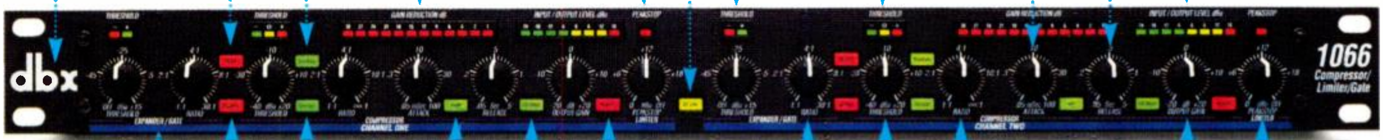
Link both channels the best way with True RMS Power Summing – a very musical way to achieve stereo compression.

3-segment OverEasy® indicator lets you know when that classic dbx compression starts happenin'.

Over/Under LED's let you know at a glance if you're panding/gating.

Fully adjustable attack and release controls offer maximum flexibility.

Peak-reading meter allows easy setting of optimum input and output levels.



Flexible expander/gate works over a 70 dB range.

Monitor sidechain processing when setting up the unit.

Prevents low-frequency energy from punching holes in the sound.

Get that classic dbx sound by selecting program dependent attack and release times.

Monitor either input or output signals.

The illuminated switches are not only cool, but are easily seen in light or dark.

Vary the Ratio to select anywhere from gentle downward expansion to gating.

Detented controls and soft-touch knobs assure precision adjustments.

Adjusts from mild compression to ∞:1 limiting.

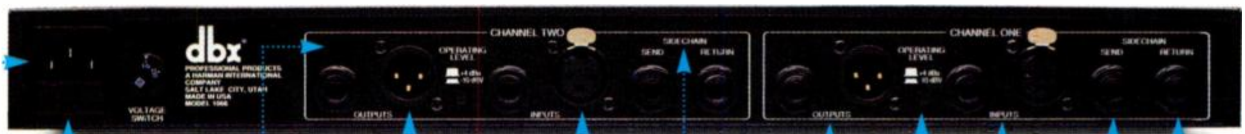
Add make-up gain or match levels over a 40 dB range.

Newly developed PeakStopPlus™ circuit intelligently tames signal peaks.

External power supply with easily replaceable power cord.

Add optional custom dbx output transformers manufactured by Jensen®.

Heavy-duty steel chassis will take years of road use and abuse.



Easily accessible fuse — you'll probably never need to find out how easy.

Connect the unit hassle free using either unbalanced or balanced 1/4" TRS or balanced XLR connectors.

Ensure signal path integrity with gold plated locking Neutrik® XLR connectors.

Add processing to detector path for frequency-conscious compression/gating/special effects.

Servo-balanced outputs drive up to +22dBu.

Convert semi-pro -10dBV signals to the dbx 1066's professional +4dBu internal level.

Precision balanced inputs reject hum and noise in tough audio environments.

Separate sidechain send and return jacks—no special "insert Y-cables" required.

You've seen and heard dbx signal processors for as long as you've been involved with audio. After all, our boxes are in daily use all over the world, with major touring companies, world class recording facilities, radio and television broadcast facilities and anywhere else audio professionals ply their trade.

Now, after over twenty years of pleasing the most finely tuned ears in the business, dbx has done it again with the new 1066. The dbx 1066 will, of course, be the standard against which all compressor/limiter/gates are judged. State of the technology VCA's, meticulous component selection, and scrupulous testing procedures are just a few reasons the new dbx1066 is the latest in a long line of pedigreed signal processors.

So head on down to your local dbx dealer and audition this box. We're sure you'll see why the dbx1066 is destined to turn the world on its ear.

dbx®
H A Harman International Company

Save The Planet! It's The Only Market We've Got

Harman International Industries Ltd
Unit 2 Borehamwood Industrial Park, Rowley Lane, Borehamwood, Herts WD6 5PZ, England
Tel: 0181 207 5050 • Fax: 0181 207 4572

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WRH

Shape of THINGS TO COME

The first edition of *The Leicestershire Media Directory* is now available. Priced at £5, the directory offers county-wide information on film, TV and AV services, marketing, PR and design, and media support services (archive and library services, education and training, funding and exhibition venues). The directory is available from Leicester City Council's Arts Advisory Unit, or from the Customer Service Centre at New Walk Centre, Welford Place.

T **0116 252 7342.**

Last Unicorn Ltd, producers of the WaveCraft modular synth software for PC compatibles, has changed its name to Audiovirtual Ltd. Further products due for release this year include a sample and MIDI file manager, and a virtual synth based on a popular analogue monosynth from the '80s. Which one, guys?

T **01256 701889.**
E **audiovirtual@l-unicrn.demon.co.uk**
W **http://www.audiovirtual.com**

AUTOPIA
VANQUIP

As of January 2 this year, EBD Systems Ltd has acquired the business and assets of custom flightcase specialists Autopia Terakat Accessories Ltd. Autopia's business has now been merged with the Vanquip division of Barton Storage Systems Ltd (also owned by EBD Systems), but will operate from Autopia's existing address. The aim of the merger is to provide an improved product range and better technical support.

A **Autopia Vanquip Ltd, Units 32-27, Court Road Industrial Estate, Cwmbran, Gwent NP44 3AS.**
T **01633 873118.**
F **01633 873051.**

Crimewatch SOS

The worst kind of news we at *SOS* have to disseminate comes as a result of crime. This month, Adam Whittaker reports that his studio in Newbury, Berks, was burgled on March 16. Virtually everything was taken, and a list of stolen items follows, with serial numbers where known. It stands to reason that if you're offered any of the following under dodgy or extremely cheap circumstances, report it to Adam or the Thames Valley police.

- Alesis ADAT V4 (AD2556488).
- Alesis ADAT V4 (AD2560928).
- Soundtracs Topaz 24 with meterbridge, left VU sticks in use (481264/9504).
- Akai S950 sampler, with memory expansion.
- Lexicon Reflex reverb (S0495-03885).
- ART Alpha 2 effects, control knob missing (471F-001386).
- Behringer Ultrafex II effects.
- Peavey Ultraverb effects.
- Drawmer DS201 gate.
- Alesis 3630 compressor, no PSU.
- Shadow guitar, black w/EQ5 pickup, underside of neck worn.
- Zoom 2020 guitar effects, PSU wired directly to circuit board.
- Sony DTC77ES 4-head DAT, mark on front (600067).
- Orla DMK7 master keyboard (002010).
- Vox Venue bass amp, union jack sticker on back.
- Miscellaneous: Wheeled flightcase, 4-5 feet tall, no front or back; 2 Signex CP44 patchbays; handmade wiring looms and cabling.

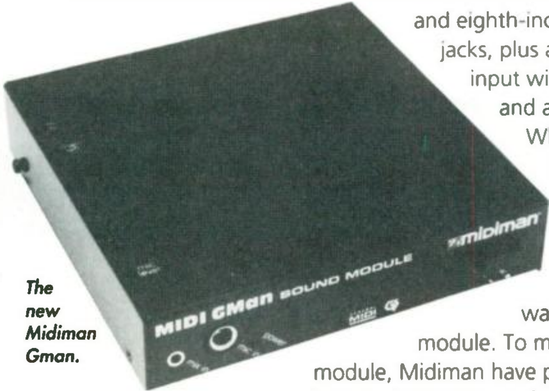
Axis Audio of Stockport report a strange occurrence, which is being treated as theft: on March 4, a brand new Akai DR16 hard disk recorder fitted with a Seagate Barracuda 2Gb drive and MIDI board was due to be delivered to a customer in East Tilbury, Essex. The delivery company appear to have delivered the unit to the wrong address, and the DR16 cannot now be traced. The police have been informed, and Axis Audio would be grateful of any information that may lead to the DR16's return.

T **BRP Studios 01635 551641.**
F **01635 34050.**

A **Axis Audio Systems Ltd,**
3 Waterloo Road, Stockport,
Cheshire SK1 3BD.
T **0161 474 7626.**
F **0161 474 7619.**

It's generally MIDI, Man

US MIDI gadget specialists Midiman have released a handful of new products. The MIDI GMan (£199) is a General MIDI/GS-compatible sound module featuring Roland-licensed sounds and a built-in Mac interface. In addition, the new module has both quarter- and eighth-inch main out jacks, plus a built-in mic input with mic preamp and a stereo mix in. When used with a PC sound card, the GMan becomes an external PC wavetable module. To match the sound module, Midiman have produced the Keyman 49 controller keyboard, for just £89.



The new Midiman Gman.

If you're a PC user in need of a MIDI interface, Midiman have expanded their range with the addition of the Winman 4X4s, a four in/four out card that also features full-blown SMPTE synchronisation, priced at £199. For those interested in video, the Video Producer (£179) is a new PC card that allows you to score to video using affordable home VCRs. Video Producer reads and writes VITC, offers screen burn, is MTC-compatible and comes with all necessary Windows drivers.

A **Midiman UK, Hubberts Bridge House, Hubberts Bridge, Boston, Lincs PE20 3QU.**
T **01205 290680.**
F **01205 290671.**
E **midiman@midifarm.com**

COMPREHENSIVE COMPOSER

West Sussex comprehensive Durrington High School has recently finalised an innovative new arrangement with professional composer and producer Paul Rogers. His title is Composer in Residence at the school, and he's currently co-ordinating a range of courses in recording and music technology, composition and arranging, as well as assisting in evaluating equipment for purchase for the school's ADAT-based digital recording studio. Other schools have joined in, and Paul has been able to organise a development programme to maximise the earning potential of their studios. Paul, whose project is self-financing and thus costs Durrington nothing, considers his most valuable teaching aid to be his almost-complete set of *Sound On Sound* back issues!

Courses are now open at several schools, and more than fulfil requirements for the University of London's ITCC in Music Technology, for which assessment and certification can be arranged. Course prices start from only £4 a session, and profits help to buy more equipment for the schools concerned. Contact him on 01903 219999 for further details.

TECHNOLOGY-ON-THAMES

The London College of Music's Diploma in Music Technology (DipMT) has been running successfully for almost three academic years, and has achieved

WRH

Let's hear it from the boy!

Sounds OK have been appointed UK distributors for the WaveBoy Industries range of Ensoniq sampler add-ons. The new disks work with the EPS16+, ASR10 and TS10, and actually redefine what the sampler's signal processing chips can do. The Parallel Effects disk (£39) provides 16 algorithms for the EPS or ASR, each of which contains four parallel sub-effects. Also on this disk is the Time-Dicer, a pitchshifter plus reverb that can deliver timestretching as well as dynamic pitch shifting. The Voder (£44) is named after an experimental device designed at Bell Labs in the '40s for creating human speech sounds. The electronic simulation loads a bank of resonant filters into the effects processor of an EPS16+ or ASR10. A basic collection of phonemes is triggerable from the bottom 16 keys of the keyboard, while pitch can be applied to the phonemes from the rest of the keyboard, creating the impression of speech or singing.

A new lease of life for the Ensoniq TS10

The Rez Filter disk (£49) recreates the sound of an analogue synth's four-pole low pass filter, coupled with a very fast ADSR envelope generator, inside your sampler. Other features include single or multi-trigger mode for the EG and a sample & hold function. Last of all are the Audio In Effects disk (£39), which allows you to treat external sounds with the EPS16+'s effects processor, and the Transwave Sound Library (£56), a collection of new sounds for ASR10, EPS16+ and TS10.

A **Sounds OK Interactive, 10 Frimley Grove Gardens, Frimley, Camberley, Surrey GU16 5JX.**
T **01276 22946.**
F **01276 682313.**

EDUCATION CORNER

wide support from the music industry. The Diploma is a 2-year, full-time course eligible for local authority mandatory awards, and is comprised of 16 modules. Applicants are normally expected to have a minimum age of 17, and must demonstrate at least one of the following:

For candidates under 21:
- NVQ Level 3.
- One A-level or equivalent.
- Success on a recognised Access Programme.

For candidates aged 21 and over:
- NVQ Level 2.
- Appropriate employment.
- Other relevant experience.

The college is based at Thames Valley University, where there is a 24-track professional-spec studio supported by permanent engineers, plus a performance and recording hall. There are also two smaller studios — a 16-track recording studio and a MIDI programming suite. The proximity of the Ealing Film Studios site, the National Film and Television School and the BBC are further advantages to studying at the college. Naturally, *Sound On Sound* appears on the suggested Reading List for the course!

A **London College of Music,**
St Mary's Road, Ealing,
London W5 5RF.
T **0181 231 2304.**
F **0181 231 2546.**

MUSIC GOES POP AT SOUTHWARK

London's Southwark College is now accepting applications for its BTEC National Diploma in Popular Music. It's a two-year, full-time course, with a finishing qualification equivalent to two A-levels or a BTEC GNVQ advanced diploma.

The course programme covers composition and arrangement, keyboard skills, recording techniques, music technology, performance techniques, the music business, music in the media and more. There's an on-site recording studio, keyboard lab, programming room, IT suite, A/V suite, rehearsal rooms, and a full-size theatre/concert hall. Course tutors include past *SOS* contributor Simon Zagorski-Thomas, and there are also visiting tutors and performers. Our photo above shows Squeeze's Glen Tilbrook, who visited to answer questions about his experiences in the music business from students on this year's course.

Course requirements are: four GCSEs at grade C or above, GCSE music, or a BTEC first diploma in Music or Performing Arts, or a proven interest/ability in music. Mature students with relevant experience are particularly welcomed. Application forms are available from the address below.

A **The Information Centre, Southwark College, Waterloo Centre, The Cut, London SE1 8LE.**
T **0171 620 0567.**

GATEWAY OPENS DOORS ON NEW COURSES

Gateway and Kingston University have announced two new courses designed for the Sound and Music Industry. These are:

- The Higher Diploma course in Recording, Music Technology and Music Business Studies. Students taking Gateway's popular one-year Diploma course can now extend it to achieve the Higher Diploma.

Gateway co-founder Dave Ward in front of the school.

During the second year, students can specialise by taking options in Broadcast Sound, Live Sound, Post Production, or Multimedia. The course is modular, and can be taken on a full- or part-time basis.

- The Service and Maintenance Training Course. This has been designed in partnership with the Faculty of Technology at Kingston University, with considerable input from employers and maintenance professionals. Students study the technological aspects of the course with the School of Computer and Electronic Sciences, while receiving concurrent training in operational and creative skills at Gateway. Successful completion of the course results in eligibility for a Higher Diploma in Sound and Music Industry Service.

Gateway is also planning a series of short courses during the Easter and Summer vacations — more details when we have them.

A **Dave Ward, Gateway,**
The School of Music,
Kingston Hill Centre,
Surrey KT2 7LB.
T **0181 549 0014.**
F **0181 547 7337.**
E **gatewayeducation@kingston.ac.wk**
W **http://www.kingston.ac.uk**

THERE'S NO SUCH THING AS A FREE COURSE... OR IS THERE?

Now for some news of courses with a difference. Incredible as it seems, The Music Project, housed in Leicester's Southfields College, is starting a series of free recording studio courses. Numbers on each course will be kept small, and there will be women-only as well as mixed courses. Days and times are yet to be set, but if you'd like futher details, contact Dave or Chandy at the address below.

A **The Music Project,**
Leicester Southfields College,
Aylestone Road, Leicester.
T **0116 254 1818 ext.360.**

Shape of THINGS TO COME

Soundtracs' newest mixing desk is the Topaz Maxi 8 live front-of-house console. This desk is available in 24- and 32-channel versions (priced at £2400 and £2800 respectively) with up to 28 mono inputs and two stereo inputs, plus four stereo returns. The Maxi 8 provides eight busses, 4-band quasi-parametric EQ and eight aux sends. At the push of a button, the desk can be reconfigured as a stage monitor and matrix mixer.

T 0181 388 5000.

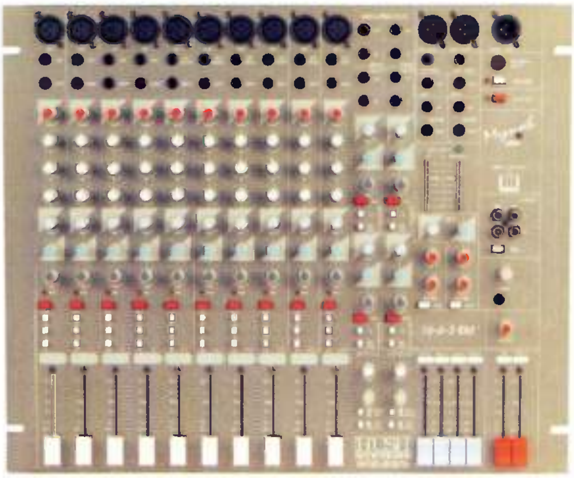
CTS and Lansdowne Studios have purchased three more Sennheiser MKH80 variable-pattern condenser mics, bringing their collection up to five. MD Adrian Kerridge is "extremely delighted" with the mics, saying, "the engineers use them all the time for a variety of applications, particularly orchestral film scores, where they are tremendous as a stereo pair, as overheads or as orchestral surrounds."

T 01494 551551.

House and club specialist label Sun Up Records are looking for new tracks. If you think you've got what they want, whether it's house or trip hop, drop them a demo.

A Sun Up records,
PO Box 172, Southall,
Middx UB1 1HF.

T 0181 571 1490.



Mynah change at 3G

3G Ltd have announced a change in their UK distribution arrangements. HW International, 3G distributor for a number of years, will continue to supply the Mynah Plus series of mixers only. All other professional models and products will be supplied to end users by 3G, factory-direct. This includes the Silk and Signet series of mixers, the new Fireball automated live console, the new DB420 mic preamp, the DMC62 disco mixer, and the GA42 electronic crossover. The company are setting up a full-time direct sales line, with facilities for Visa and Mastercard transactions. The move should make 3G products more affordable, since there will be no distributor or dealer markups.

A 3G Ltd, 3G House, 18/19 Laurence Industrial Estate,
Eastwoodbury Lane, Southend on Sea, Essex SS2 6RH.

T 01702 420645.

F 01702 420647.

T HW International (for Mynah only)
0181 808 2222.

CAUGHT IN THE 'NET

A SONIC STATE OF MIND

Sonic State's new Totally Humungous SynthSite sounds like a synth enthusiast's wet dream — it's an on-line database of synths, both analogue and digital, including modules and samplers, with specifications and pictures. The instruments are listed by manufacturer, and comments and subjective descriptions are provided. Links are also in place to other internet sites, where you can download patches, editors and more information. You can even add a synth that isn't featured, by filling in a SynthSite form. And if you'd like to exchange views with other synth nuts on the internet, you can check out Sonic State's new synth chat room. Now, where did I leave that anorak...

Sonic State, which is described by its founders as 'The Music and Pro Audio Theme Park', can be found at the Web address below.

W http://www.sonicstate.com

OPCODE GET NETTED

US software company Opcode have set up a new Web site, featuring news, information, and downloadable software. The site, say Opcode, isn't just aimed at current users of

Portable price cut from Marantz

Marantz's rugged portable stereo cassette recorder, the CP430, has just had a price cut, to £499 (inc VAT), a saving of about £50. This three-head machine features vari-speed, memory rewind, Dolby B or dbx noise reduction, and five hours of operation using alkaline batteries. A mains adaptor is supplied as standard, and doubles as a charger for the optional battery pack. The package also includes a black carrying case that provides access to all relevant controls.

A SCV London, 6-24 Southgate Road, London N1 3JJ.

T 0171 923 1892.

F 0171 241 3644.

Opcode software, but also provides a resource for anyone interested in using software to create music. It's divided into eight main areas:

- Products: this section contains in-depth information on all Opcode software and hardware products, including features, specifications and requirements.
- Support & Sales: this area offers technical information to users of Opcode products, including FAQs (Frequently Asked Questions), technical publications, FTP files and technical support via email. The sales area also has ordering and distribution information.
- What's New, What's News: exactly what it sounds like!
- Demos: an FTP site with downloadable demo software, librarians, utilities and MIDI files, as well as program updaters, OMS and MAX patches.
- Links: this area features lots of links to equipment manufacturers, music newsgroups, Opcode dealers and other WWW sites, including record labels and artists.
- OMS: provides information for developers and users on the Open Music System, the Opcode music operating system used by Microsoft and Apple.
- Education: an electronic resource for music students and teachers, with curriculum tips, lesson plans, and information and prices on academic software versions.
- Press Releases: constantly updated Opcode information.
- Opportunities: jobs at Opcode!

W **http://www.opcode.com**

SPIRIT'S WEBBED FEAT

Spirit by Soundcraft launched their web site on the internet at the beginning of March. Spirit have tried to make the site a little more interesting than a simple on-line brochure. Apart from full product specifications and an on-line brochure-ordering service, you'll be able to check out articles on Spirit products and take advantage of on-line applications support and competitions. Should you feel the urge to wear Spirit T-shirts or to use a Spirit mouse mat, a full range of merchandise can also be ordered from the site.

WELCOME
CLICK ON THE SUBJECT YOU WANT TO SEE
SPIRIT
By Soundcraft
NEWS
News
Merchandise
Famous Users
Product Information
Help
Other Web Sites
SPIRIT FOR MUSICIANS, MIXERS • MICS • LOUDSPEAKERS

W **http://www.spirit-by-soundcraft.co.uk**

Totally Tapeless

The new, 5th edition of the *Tapeless Audio Directory* from SYPHA covers over 300 professional digital audio workstations and broadcast systems, from cards and software packages to comprehensive turnkey systems. Applications include stereo and multi-channel audio post-production for video or film, commercials, news, speech, pop and classical music editing, CD mastering, multimedia, multitrack/mixer replacement and digital audio dubbers, as well as simple cart replacement, full broadcast automation and news distribution.

Listings include target markets, hardware and software specifications, operational features, networking and file transfer, archiving and backup, future development plans, training and customer support, typical configurations, costs and supplier details for the USA, Europe, and the Far East. In addition, a comprehensive explanation of tapeless terminology is provided, with useful tips for potential purchasers. The Directory costs £14.95 (plus £1.95 UK p&p) and is available from *SOS* Mail Order, order number B304.

A **Sound On Sound Ltd, Media House, Burrel Road, St Ives, Cambs PE17 4LE.**
T **01480 461244.**
T **24-hour hotline 01480 461786.**
F **01480 492422.**

NEWS FROM Frankfurt

It's a little-known fact that if all the people who attended the Frankfurt Musik Messe were to be transported to the Isle of Wight and placed shoulder to shoulder, it would make the show much easier to get around for those of us who have to write about it. Indeed, if the Messe keeps expanding at the current rate, we'll soon be able to take a ferry to Calais and walk straight in! If you ignore the time it takes to walk around a show covering an area equivalent to that of a modest international airport, then divide the number of people you want to visit by the number of days the show runs, it works out at about eight minutes per visit. But if you add in the walking time, which with a show of this size can be up to 35 minutes, it doesn't take a genius to work out that we have, on average, minus 27 minutes to spend with each exhibitor!

The disco and lighting side of the show is vast, and to make sure they don't miss it, incoming visitors are routed through this hall, where they have to run a gauntlet of smoke, lasers, strobes and endless, pounding dance music. No wonder the rave generation is in such a mess — they probably have to take drugs to make the music bearable. And as for the strobe lighting — why can't they just make do with a proper migraine like we used to have to?

The Musik Messe is all about product, though the performance element was increased this year to lend a certain artistic credibility to what is really a huge marketing exercise. Even the legendary Peter Green (of the original Fleetwood Mac) put on a concert, but the demand for tickets greatly exceeded the supply.

Like our '96 NAMM report (see *SOS* March '96), this section of the news takes a look at the salient points of the show, discerns any overall trends, and then weighs in with a more detailed look at what was on show. There were few individual products likely to change forever the way we make music, but **Steinberg** came pretty close with their latest generation of integrated MIDI and audio software, which takes *Cubase* even closer to the virtual studio ideal. Users with a fast Pentium PC and an inexpensive soundcard can now enjoy MIDI plus multitrack hard-disk recording, automated mixing and plug-in virtual effects including dynamics, de-noising, enhancement and virtual guitar amps. While this type of functionality is already available to Digidesign TDM users, the cost of both the hardware and software puts it well out of the reach of the vast majority of non-professionals. *Cubase 3.0* for the Power Mac was also shown and this is now said to be fully native.

Opcode were also pushing ahead with *Studio Vision Pro*, which continues to refine their wonderful audio-to-MIDI and MIDI-to-audio features. Like their rivals, they were also turning their attention to the growing PC market, with products such as the MIDI Translator MIDI interface for PC users.

One other common direction is the inclusion of basic audio facilities in previously standard MIDI sequencer programs by many of the major software companies; PC versions are also being designed to run on all the commonly available soundcards, including cheap SoundBlasters.

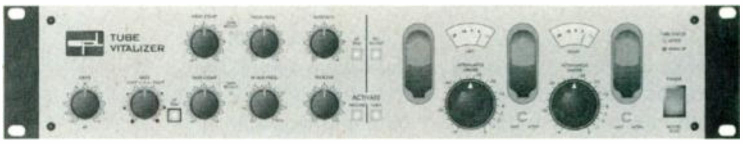
US software developer **Merging Technologies** were showing a promising-looking product, the Pyramix Virtual Studio, which offers ▶

NEWS FROM Frankfurt

▶ digital audio mixing, editing, signal processing and CD-R mastering for the PC. No UK distribution has been finalised yet, but the company are confident that it soon will be.

Those less inclined to go the virtual route now have greater choice in hardware solutions. **Fostex** (SCV London 0171 923 1892) have increased the options with their D80, a rackmount recorder based on DMT8 technology but offering eight tracks of simultaneous recording. The front panel can be removed for use as a remote control and an S/PDIF port permits connection to external devices. Obvious rivals include Emu's Darwin, the various **Vestax** HDR hard disk recorders (whose range has now been supplemented by an 8-track hard disk recorder, the HDR8, also on display at the Messe) and **Akai**'s DR range (see the *SOS* review of Akai's new DR16, starting on page 124 this month).

Wide though the tapeless choice is, another format has emerged, based on MiniDisc technology. While MiniDisc failed to make as big an impact as expected in the consumer marketplace, it has been reborn, firstly as an alternative to tape carts for broadcast, and now as an alternative to analogue cassette tape for home multitracking. The use of data compression allows over half an hour of 4-track recording on a disk that costs around the same as a DAT tape, and while data compression does compromise audio quality slightly, it is still far closer to that of CD than to that of the analogue tape which it replaces. MIDI Time Code (MTC) can also be generated without wasting an audio track, which offsets some of the limitations of only having four tracks, and of course you can indulge in cut, copy and paste editing. Models were shown by **Tascam**, **Yamaha** and **Sony** themselves (the inventors of the MiniDisc format). The prices look set to start at around the £800 mark. The layout of all three machines was in a similar style to *cassette*-based multitrackers, and all included a built-in analogue mixing section. While Roland's VS880 digital multitracker still provides the most bang for the buck in hardware terms, the low media costs of MiniDisc makes it very attractive.



SPL Tube Vitalizer.

When it came to instruments, there was little that was truly new, but more companies were getting in on the retro act to try to offer something really *old* instead! **Roland** have finally joined the race to cash in on their own history by launching the MC303 'Groove Box', a TB303 Bassline clone with added drums, and they also reinforced their commitment to the VG8 electronic guitar system by announcing new modelling software to extend its capabilities.

Roland MC303.

It seems that with few new ideas around, manufacturers are trying to find new ways of utilising their existing technology in more creative ways. One such item is Roland's 'Filofax' lookalike PMA5 Personal Musical Assistant workstation, which includes the '90s version of a GM Stylophone, a sequencer with auto-accompaniment and a cute touch screen interface. In a similar vein, **Korg** (01908 857100) have the Pandora palm-sized effects box (first shown at NAMM), which we're dying to try out.

At the other end of the scale, familiar keyboards were appearing either one octave longer or shorter than their predecessors, and just about every conceivable signal processor was being offered in a version with a valve in it — there were examples from SPL (of which more in a future *SOS*, but there's a taster pic above) and the ART, to name but two.

There were also a couple of new digital mixers, though none were head-on rivals for the Yamaha Promix 02R. **Korg**'s 168RC mixer (which is being promoted as part of their new SoundLink Digital Recording System — or DRS for short) is a straightforward 16-channel, moving-fader mixer which can interface directly with ADAT-compatible machines to provide digital mixing, automation and dual internal effects. As is now traditional, Korg's German distributors had no written information on anything interesting, let alone the mixer [*not even in German — bi-lingual Assistant Ed*] — and this was notwithstanding the fact that it had been shown at NAMM two months ago! It was left to the Korg UK staff to pass on what info they had and as always, they came up with the goods — thanks!

UK mixer manufacturer **Soundtracs** (0181 388 5000) were demo'ing the Virtua, a digital 48-channel mixing system aimed at the post-production market. It has a very clear user interface, moving faders, an integral monitor to provide various console overviews, and comes as a stylish control surface linked to a rack of electronics. At an estimated price of £15,000, it is more likely to be taken up by the post-pro market than by project studio owners, but for such a serious piece of equipment, the price seemed very modest to me. More importantly, perhaps, the technology used in the Virtua will almost certainly be used to create spin-off products designed for the project studio market. Watch this space!

Soundcraft/Spirit (01707 665000) were also rumoured to be working on a digital console, but when we questioned the staff on the Spirit stand, they all responded with the same pre-programmed quote: "Well, we'd be foolish *not* to be working on one..." — which made me think that their ploy of displaying one of their new mixers (which was firmly analogue, incidentally, and more of which later) at the bottom of an aquarium filled with dare-devil stunt fish was simply a play to confuse us. Personally, I think that's carrying soak-testing to extremes!

Soundcraft were also showing their Ghost console, first shown at NAMM, though I couldn't see it myself (weak gag, close brackets). Seriously though, the Ghost looks like a really solid product and we'll be trying it out in the very near future (see last month's news pages for a spec listing). Maybe it'll be on show next year at the bottom of a tankful of holy water?

After that quick summary of the directions we noticed at the show, here's a more detailed run-down of some of the products that were on display. Apologies in advance to anyone we weren't able to mention.
Paul White

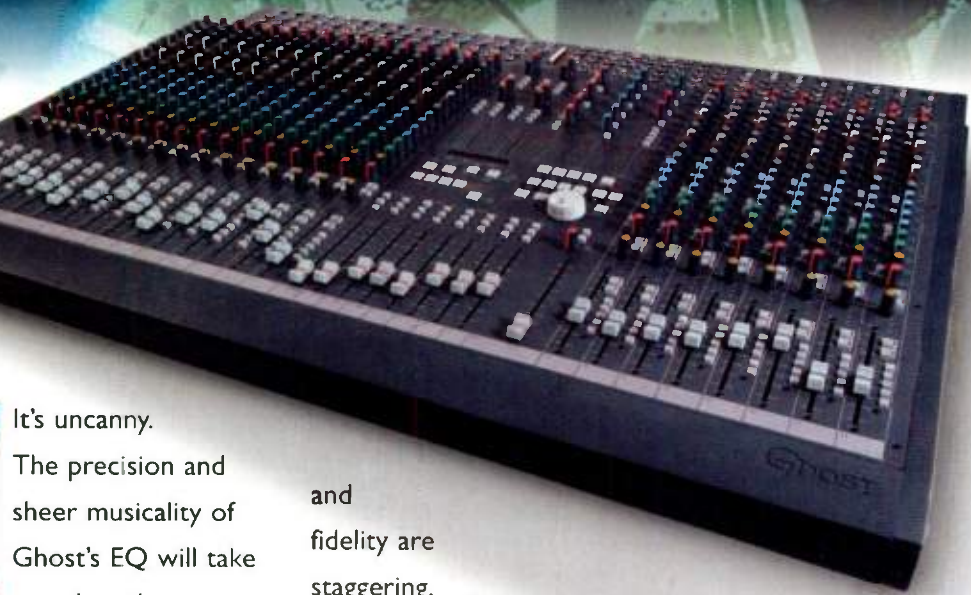
IN MORE DETAIL...

3G's (01702 420645) Fireball mixer should have arrived on these shores by the time you read this; it's an automated, live, 8-buss modular console available in 24- and 40-input frame sizes, with eight aux sends and 4-band EQ. The automation is snapshot-based, and as the desk is modular, the buyer can have access to a wide range of optional facilities, including dynamics processing.

We didn't see anything completely new from **Akai** (Akai UK 0181 897 6388), though naturally their recent range of synth modules, including the SG01v vintage synth module (see the February issue of *SOS*) was being shown, as was the DR4 VR, an enhanced version of the 4-track random-access digital recorder. Along with a couple of other nice refinements, the VR adopts the concept of 'virtual' tracks, of which it provides 250; any part of a virtual track can be combined with parts from any other, so you can record multiple takes and easily combine the best bits. ▶

WRH

Paranormal EQ



It's uncanny.

The precision and sheer musicality of Ghost's EQ will take your breath away.

Drawing on 22 years of Soundcraft experience, Ghost's new EQ is perfectly in tune with today's music.

Two fully parametric, overlapping mid bands with shelving high and low filters redefine the classic British EQ.

But there's much more.

Each channel strip benefits from its own dedicated circuit board and supports both the main input plus a mix B path for tape or other input signals. Ghost's flexibility and fidelity are staggering.

The signal path quiet, true and uncompromised.

And the automated mutes, just part of Ghost's comprehensive machine control and MIDI implementation, don't so much cut, as fade very quickly. There are no thumps and no clicks.

You'll hear nothing untoward from ProMic either, Ghost's microphone preamplifier boasts a better gain to noise performance than you'd expect on consoles costing many times more.

We could go on, but to appreciate fully the ergonomic and audio integrity of Ghost you need to see and hear one in the flesh.

So call +44 (0)1707 665000 to find out more.

Soundcraft

Ghost

A Harman International Company

NEWS FROM Frankfurt

▶ **AKG** (Harman 0181 207 5050) highlighted their affordable new WMS300 UHF wireless system, as well as the improved and extended Micro Mic MkII series of miniature instrument mics — see *SOS*'s April news pages for full details.

Alesis had their usual sizeable stand, and had several of the products familiar from the NAMM show on display, including the Nanoverb effects unit (mentioned by Alesis President Keith Barr in the interview with him starting on page 46 this month) — expect a review very soon!

Aphex Model 109.

Naturally, **Aphex** (Stirling Audio 0171 624 6000) were demo-ing their range of Aural Exciters, but they also showed a nearly-finished version of their new Model 109 parametric EQ, with 'Tubessence' vacuum tube circuitry. The recent Model 661 'Tubessence' compressor/limiter and Model 108 Easy Rider 2-channel auto-compressor completed the range on display.

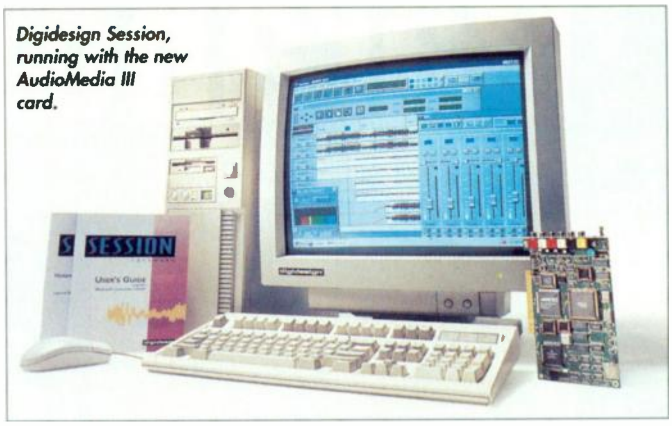
ART (Washburn 01462 482466) showed their usual mind-boggling array of effects processors, including the DST 8080, which offers a valve preamp, digital effects, and an 80-watt stereo amp, all in one 2U package aimed at guitarists. Also new are the Dual MP, a cost-effective two-channel valve mic preamp, and the Effects Network, a multi-effects unit which ART claim offers the sound quality of expensive dedicated processors, plus an intuitive interface for whichever effect you happen to be using.

Behringer (Behringer UK 01483 458877) are complementing their Eurodesk console with the launch of the CyberMix CM8000 mix automation system — though it can be used with consoles from any manufacturer. Also on show were the new Combinator MDX8000, a high-quality stereo 4-band compressor/limiter, and the Ultradyne DSP9000, a six-way, multiband dynamics processor.

Beyerdynamic (Beyerdynamic UK 0800 374994) had a handful of launches for the Messe, including the S600 UHF handheld transmitter, which complements the existing NE600 UHF diversity wireless receiver, and the MCE84 electret condenser studio mic. Beyer were also launching a limited edition of two classic mics: the M88, and the M500 ribbon mic.

Last year, **Clavia** (Key Audio 01245 344001) had one of the highlights of the show in the form of their Nord Lead physical modelling synth. This year saw them build on that release with version 2 of the operating software (more on this at a later date) and the rack version of the synth.

Digidesign's (Digidesign UK 01753 653322) audio cards are now available in PCI as well as NuBus versions, for compatibility with the latest generation of PCI computers — we saw it running in conjunction with a 'now for PC' version of Digidesign's *Session* software (see David Mellor's review of the Mac version in *SOS* December '96). The new AudioMedia III card is based on PCI technology, but AudioMedia II remains in the Digidesign range for NuBus Macs. Pro Tools software is now available to run with the audio capabilities of a Power Mac, or with a Mac equipped with an Audiomedia II card. Pro Tools Project is an entry-level system which runs with a Pro Tools Project audio card and can be upgraded later to full Pro Tools III status. Digidesign were also showing a very early version of Pro Tools IV, due for release later this year. This will offer support for the new Pro Control hardware control interface for Pro Tools, which was on display in a dummy version. There'll be more news on this as the year rolls on.



Digidesign Session, running with the new AudioMedia III card.

Digitech (Arbiter 0181 202 1199) certainly rival ART for greatest number of signal processors on sale at any given time; new for Frankfurt were the Studio Twin, a cost-effective and easy to use true stereo processor; the Studio 400 professional multi-effects, offering eight effects at once and optional digital I/O; the GSP2101 studio tube preamp/effects, packed with patches programmed by famous guitarists; and the VTP1 Dual Vacuum Tube preamp and EQ with 18-bit digital output.

Emu (Emu UK 0131 653 6556) hit the dancefloor with the 'Orbit — The Dance Planet' synth module, a 32-note polyphonic, 16-part multitimbral instrument with 8Mb of new sounds, powerful filters, and 50 internally sequenced drum loops, which the user can manipulate. It would seem from a quick inspection that rather than store entire sampled loops in Orbit, Emu have designed the patterns to be composed of basic sampled elements put together into sequences — so you can speed up or slow down the tempo of the internal loops without the audio quality changing if you desire. The emphasis is firmly on contemporary sounds and textures. The new Launchpad was also on display — a MIDI controller with a 1-octave, velocity-sensitive drum machine-style keyboard, five real-time control sliders, and six MIDI trigger buttons. This is designed to be used with the Orbit (as well as other MIDI devices).

Orbit
9090
The Dance Planet

Emu Orbit.

Ensoniq (Sound Technology 01462 480000) have followed up their launch of the MR Rack synth (reviewed in April's *SOS*) with two MR Workstations, one with a 61-note and the other with a 76-note keyboard — so anyone who liked the look of the MR Rack but prefers a keyboard synth is now spoilt for choice.

GeneralMusic (Key Audio 01245 344001), makers of the popular S2 music workstation, had one or two little surprises in store. The oddly-named Pick System is a portable mini amplification system recommended for home recording, personal monitoring, and even live performance in small venues. It comprises a cute 14-input mixer called the Pick Pad and a pair of MP 2A active monitors. We don't yet know whether this will be coming into the UK! The DJ Beat disco mixing console and Energy 2 high-power live amp were also on display.

Good news from **Kawai**: after years of inactivity on the hi-tech front, they've produced the K5000, ▶

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NEWS FROM Frankfurt

▶ a new 64-voice polyphonic 'advanced additive' synthesizer, based on a 32-bit RISC chip. The K5000 will be available in rack, keyboard and workstation (ie. including a sequencer) formats sometime in the early summer. More news when we have it!

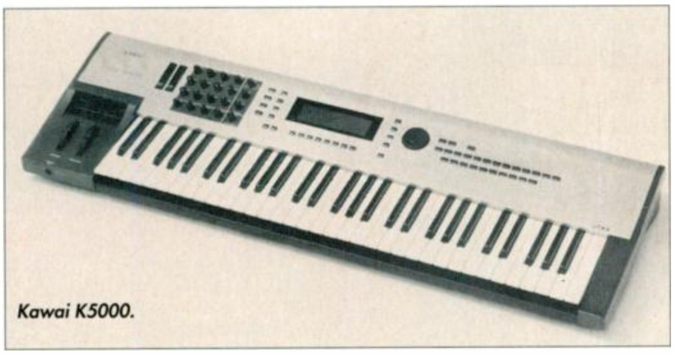
LA Audio (SCV London 0171 923 1892) have added a superscript 2 to most of their processor range, to produce the $4x4^2$ dual noise gate, filter, and compressor/limiter, the $4G^2$ quad noise gate, and the $4C^2$ quad compressor/limiter. The redesign is not limited to the titles; the range has newly-styled front panels and the circuitry has been improved — in the case of the 4x4 quite substantially.

LA Audio 4 X 4.

Lexicon's German distributors exhibited the same lack of concern over publicity as Korg's Teutonic distributors, offering no technical information at all, in any language, on the new PCM90 reverb — but then who needs it when you can read our hot-off-the-press review, starting page 86 this month?

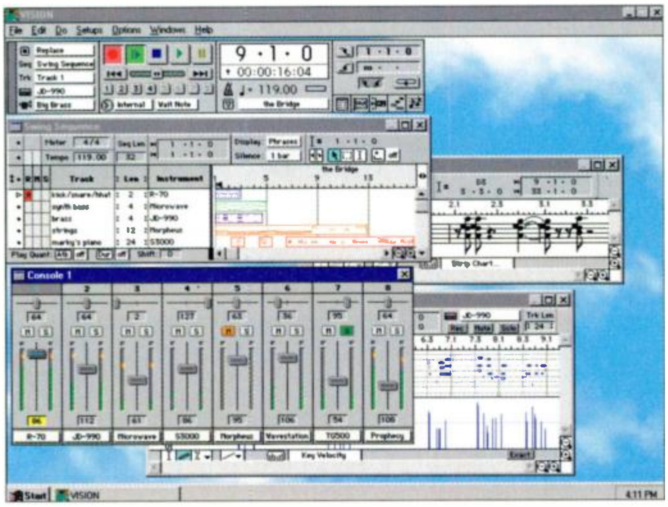
Mackie were showing off their new VLZ range of mixers, which has now been augmented by the addition of the 1402VLZ and somewhat redesigned 1604VLZ. Expect *SOS* reviews on the latter very shortly!

British synth company **Novation** (01628 481992) were showing an early version of their new DrumStation classic drum module, which should be ready by next month (see *Sound On Sound* March news for full details), while US synth legends **Oberheim** (MCMXCIX 0171 723 7221) announced new operating software for the OBMx monster analogue rack synth, and the imminent arrival of the Echoplex Digital Pro performance sample loop recorder as well as a new version — already — of their OB3 organ module (reviewed *SOS* March '96).



Kawai K5000.

Opcode (MCMXCIX 0171 723 7221) were focusing — by means of one of their unforgettable demos, hosted by 'larger-than-life' demonstrator Gerry Basserman — on *Vision for Windows*, and their latest version of Studio Vision Pro (v3.0), as well as the aforementioned MIDI Translator PC MIDI interface. This ingenious interface is the first product of Opcode's acquisition of hardware specialists Music Quest; a single unit provides two Ins and two Outs, but when you run out of MIDI channels, simply connect another MIDI Translator to the first interface. And if you're wondering what 'larger-than-life' refers to — well, let's just say that when you're sitting down to what you think will be a fairly sedate software demo, and a man runs onto the demo stage dressed as Humphrey Bogart, pulls a rubber face mask over his head and starts miming to hideously distorted vocals over a techno-metal backing — well, let's just say you feel slightly taken aback. But that's Gerry for you.

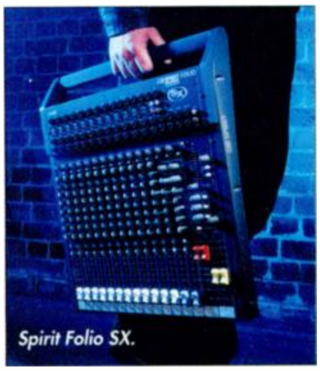


Opcode Vision for Windows.

There was a clutch of new products on **Roland**'s stand (01792 702701), including the DJ70 MkII, an upgraded version of the popular DJ70 DJ sampler, and the PC160 desktop music keyboard controller. On the keyboard side, Roland had the A33 76-note MIDI controller keyboard, and the A90 88-note controller, which isn't just a master keyboard — it can have a 64-voice polyphonic piano board installed inside, and it will also accommodate some of Roland's other synth expansion boards. Talking of which, the new SR-JV80-09 'Session' board was demoed inside the A90, and proved to be packed with newly developed waveforms including a variety of true stereo grand piano samples. But the real star of the Roland show (in terms of queues to look at it, at least — every teenager with a baseball cap and an unpleasant skin condition seemed to be desperate to get a look in) was the MC303 Groove Box (mentioned briefly above). This is a '90s take on the cult TB303 Bassline bass sequencer, and features a wide variety of sounds and drum kits, real-time sound control, an arpeggiator, and real-time phrase sequencing — all in a funky silver box, just like the real thing!

Sony (01256 483646) announced a MiniDisc 4-track, whose preliminary spec indicates a 6-input mixer section, two auxiliary sends with stereo returns, EQ, auto-punch in/out, and a jog/shuttle wheel. Sony's new SMS1P monitors are self-powered, magnetically screened, and aimed at desktop music and video editing applications, while for the more serious studio user, there's the new DPSV77 multi-effects processor, and the new low-price DAT machines — three, to be exact — plus a stereo MiniDisc recorder.

In addition to their existing range of mixers, **Spirit by Soundcraft** (01707 665000) were debuting the Folio SX at Frankfurt (the desk that had been submerged in the water tank). This new desk is a 4-buss design offering 20 inputs, direct outs on channels 1-8 to facilitate 8-track recording, 3-band EQ with swept mid, three aux sends, full size, 100mm faders, and a rackmount option. The SX stays true to the original Folio concept, being compact and light enough to be easily carried by its integral handle. Spirit also previewed the Folio Notepad, a super-mini mixer featuring 10 inputs, 2-band EQ, aux send, global 48V phantom power, switchable RIAA preamps, and four quality mic preamps. There were new additions to the Absolute monitor family, too, which we'll ▶



Spirit Folio SX.

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And the DMT-8 is packed with many more.

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An in-line mixer with close-focus EQ, and an incredible 22 inputs in remix is another.

And in a package which operates and 'feels' like a conventional tape machine.

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INPUTS
The channel strip has two inputs, main and SUB. SUB enables monitoring of recorded tracks during recording or can be used as a line input during mixdown. Channels 1-4 also have the addition of a 'wide range' trim fader (-10dBV -50dBV) for perfect mic level matching

EQUALISATION
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AUXILIARIES
2 AUX sends. Dual function rotary pots enable SUB or post fader main input to be selected as send source

ROUTING
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LEVELS
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V2 SOFTWARE NOW FEATURES

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Backing vocals great on the first chorus but a bit shaky in the second? Why waste time recording them again? With simple copy and paste editing you can take those great vocals on chorus 1 and paste them over the less than perfect ones in chorus 2

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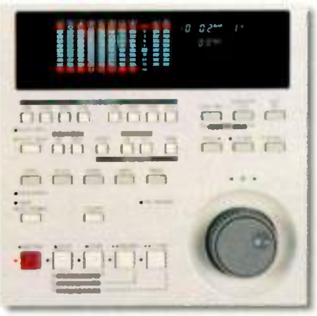

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NEWS FROM Frankfurt

bring you more detailed news on in the near future.

Providing one of the highlights of the show, **Steinberg** (Harman 0181 207 5050) showcased their radical reworking of the *Cubase* range, including the addition of VST (Virtual Studio Technology) for Apple Power Macs. The new *Cubase Audio VST* includes a complete overhaul of the look of *Cubase*, plus a new Effects Rack, providing digital effects such as reverb and chorus without the need for software plug-ins — though third parties are also being encouraged to produce plug-ins for the VST Plug-In interface. Perhaps most significant, though, is that *Cubase Audio VST*, with all its processing capabilities, now runs on Power Macs *without* requiring extra hardware. On the PC, *Cubase* has reached 3.0 and now also features audio recording; the new *Wavelab* waveform editor in this version allows sample-level sound editing.

Tascam (01923 819630) were showing their 564 Digital MiniDisc Portastudio (see *SOS* April news for more details), and also the new M1600 series of recording consoles. The M1600 desks have a 16- or 24-channel in-line design, with phantom power on eight channels, one stereo and four mono aux sends, insert points on every channel, and optional meter bridge.

The **TL Audio** (01462 490600) had their Indigo range of valve processors were on show — see the news item in *SOS*'s April news pages for more details.

Italy's **Viscount** (McCormick's Music, 0141 332 6644, Pro-MIDI BFP 01253 345386, or Turnkey 0171 379 5655) showed an ambitious new 24-bit digital multi-effects processor. Packaged in a 2U rack, the EFX3000 has a large LCD, and features up to nine simultaneous effects, a generous 512 user-programmable memories, and a built-in tuner. The EFX10, the 3000's little brother, was also on display.

Yamaha's (Yamaha-Kemble Product Info Line 01908 369269) surprise launch was the MD4 4-track MiniDisc recorder. This nice-looking unit is styled like a cassette multitracker, but records to MiniDiscs. It has a maximum recording time of 37 minutes of 4-track audio, with fast search and locate functions, and auto punch in and out. It also allows bouncing down to any track with simultaneous 4-track playback. The 4-channel analogue mixer section offers 3-band EQ, one aux send, pan and fader on each input channel. It also has direct outs to facilitate connection to an external mixer. Also new from Yamaha were the QY700 and the CS1X. The QY700 is descended from the QY300, and offers an XG-compatible AWM2 sound generator coupled with sophisticated sequencing capabilities, with particular emphasis on phrase-based auto-accompaniment. The CS1X synth is rather newer in design, offering a knob-laden analogue-style interface to control an AWM2 sound source. Nice touches include four simultaneous effects, a MIDI-clockable arpeggiator with 20 different patterns, and generous 32-note polyphony. There's also a PC/Mac computer interface. The P50M MIDI piano module features no less than 6Mb of piano sounds sourced from Yamaha's Concert Grands, Steinway grands, vintage CP80 and DX7 electric piano, plus 32-note polyphony. There's also a version 2 of the ground-breaking VL1 physical modelling synth on the way.

As usual, space prevents us from mentioning all of these products in too much detail, so we shall just be forced to bring you more detailed information in the form of hot reviews of most of these products over the coming months! SOS

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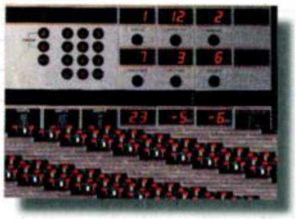

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SyQuest & IOMEGA

ZIP

Removable disk drives

JAZ

EZ-135

There was a time when hard disks were a luxury for sampler owners, but with the advent of the ultra cheap Iomega Zip and Jaz drives, and the soon to be released Syquest EZ 135 drive, this has become a thing of the past. For under £200 the Zip drive stores 100Mb (94Mb formatted) on each cartridge and the EZ drive 135Mb (124Mb formatted). If you want greater capacity the Jaz's 1Gbyte will suit any large fx library and is ideal for many dedicated hard disk audio systems like the Emu Darwin or Akai DR series.

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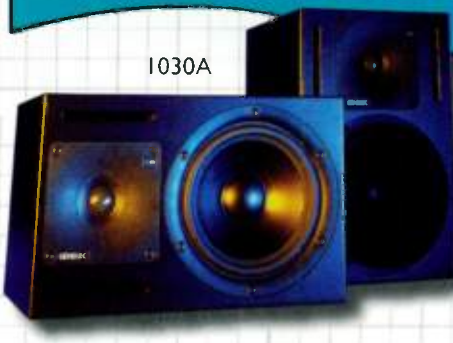
Authorised Dealer | Soundcraft | DRAWMER | lexicon | Roland | SONY | TASCAM | FOSTEX | digidesign

GENELEC

the all in one monitoring solution



Genelec has become the leading name in Studio Monitoring, and wth good reason. Their packaging of speaker, amp and crossover in one box not only makes them affordable, but means that all the components are perfectly matched, to make efficient and fabulous sounding monitors.

- ***Metal dome speakers***
- ***Active bi-amplified design***
- ***Electronic crossover and protection circuitry***
- ***Built-in bass roll-off, treble and bass tilt controls***
- ***Superb freauency response***

At Turnkey (one of only a handful of deaers nationwide) we have all the range that would fit in to our studio on permanent demonstration (and in stock!) and demos of larger pairs are easily arranged. Audition some Genelecs today and we guarantee you'll be impressed - why compromise on monitoring?

A recent addition to the range, the 1092A active subwoofer turns any of the smaller Genelecs into a full-range monitoring system, with frequency response down to 35Hz.

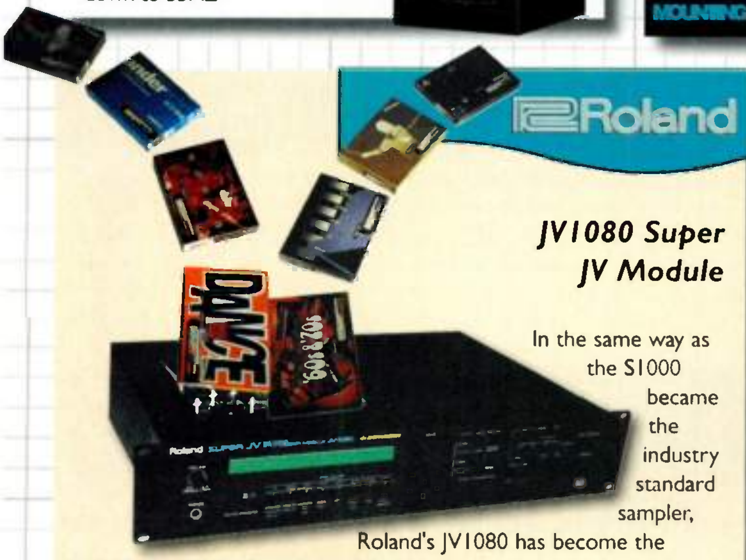
1030a
£1249
INCLUDING **FREE** CABLES AND MOUNTING BLOCKS

1031a
£2199
INCLUDING **FREE** CABLES AND MOUNTING BLOCKS

1032a
£2799
INCLUDING **FREE** CABLES AND MOUNTING BLOCKS

1092a
£1299
INCLUDING **FREE** CABLES AND EARPLUGS!

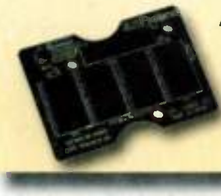
Roland



JV1080 Super JV Module

In the same way as the S1000 became the industry standard sampler, Roland's JV1080 has become the industry standard synth module. It's not hard to see the reason why - straightforward operation combined with top flight sound quality and a huge range of useable sounds.

But expandability of the machine is where it really comes into it's own. There are over 10 different expansion boards which can be fitted (up to 4 at once), each one with as much ROM as the original machine, covering sounds from Vintage to Orchestral and Dance to World.



At Turnkey we have the full range in stock, as well as an unbeatable price on the machine itself. Check one out today!

RRP £1199
£999
NEW BOXED

RRP £2275
£1799
WITH ANY 4 EXPANSION BOARDS

Roland

Roland VS880 Digital Workstation

BUNDLE PRICE
£1799
INC 1 GIG FIXED DRIVE

BUNDLE PRICE
£1999
INC 1 GIG JAZ DRIVE

BUNDLE PRICE
£2149
INC 1 GIG & FX BOARD

It's an 8 track recorder (each with an additional 8 virtual tracks) and a 14ch digital mixer complete with automation. An additional fx board can be added for under £350 giving RSS and SE70 type effects. The VS880 supports an internal IDE but we recommend an external SCSI drive for better performance and value.

Roland

MC303 Groovebox

The enduring popularity of the TB303, MC202 and TR909 has just refused to go away but increasing rarity has meant that secondhand prices have been driven up to ridiculous levels. Roland, the creators of these machines, now bring you the MC303 Groovebox which combines all their classic drum machine sounds, a step time / real time sequencer, 303 'acid' bass sounds complete with front panel filter controls and a whole host of other useable sounds (it's 16 part multi-timbral!). This box is an all in one dance music solution, and believe us, it sounds the business! Initial supplies will be very limited, order now to avoid disappointment!

NEW PRODUCT
£549
NEW BOXED

NEW PRODUCT
£699
WITH PC200 CONTROLLER KEYBOARD

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AKAI MACKIE E-MU YAMAHA TANNOY DENON AKG DigiTech EMAGIC

FOSTEX

modular hard disk recording comes of age

If 8 tracks aren't enough for you - don't worry ! Multiple D80's can be linked together to provide as many tracks as you want, and they can even be slaved to a DMT8 to expand an existing system !

The DMT8 has revolutionised the 8 track recording market, providing an all in one solution to hard disk recording. Now the introduction of the D80 shows that Fostex have only just started!

The D80 is a 3U rackmount unit, with 8 individual inouts and outputs, a removable front panel which doubles as a remote and meterbridge, and a removable 850 meg hard drive. It slaves to Midi Machine Control, as well as being able to act as a master, all with no track loss, and has SPDIF digital ins and outs to allow backup to a standard DAT machine and direct digital recording. Easy to use editing allows cut, copy and repeat pasting across multiple tracks. Surely this is the replacement for 8 track tape machines that everyone has been waiting for !

- ***8 separate analogue inputs and outputs***
- ***SPDIF digital I/O for back-up and digital recording***
- ***Up to 40 minutes of full 8 track recording***
- ***Multiple units can be linked for unlimited tracks***
- ***Uses removable caddy IDE drives***

NEW PRODUCT
£1499
INCLUDING FREE
2x 8WAY LOOMS

RRP £3526
£2999
INCLUDING SPIRIT STUDIO 24 & LOOMS

RRP £5025
£4399
16 TRK. SETUP
INCLUDING SPIRIT STUDIO 24

Exclusive ! adat

Fostex CX8 New High Speed ADAT

The CX8 is built for Fostex by Alesis and is basically exactly the same machine as the new high speed ADAT XT. The only differences are the colour and the D-Sub (rather than EDAC) connector on the rear panel.

The new design features a die-cast chassis and as completely redesigned transport, which rewinds and fast-forwards four times as quickly as the old machines. Also BRC style editing can be performed from the front panel with two machines.

Turnkey are the exclusive U.K. suppliers of this machine, and are therefore able to bring it to you at an unbeatable price.

Why pay more?

- **Totally interchangeable with ADAT XT**
- **New 4 times speed transport design**
- **Absolutely unbeatable price**

RRP £????
£2195
PACKAGE DEALS AVAILABLE

DTC790 Dat Machine SONY

We have exclusively secured a small supply of the Sony DTC790 to bring you the cheapest full size DAT machine on the market, but this is not at the expense of features: SPDIF coaxial input and optical in and out, digital and analog recording at all three sampling rates (32 kHz, 44.1 kHz, 48 kHz), as well as all the usual ID functions and a full function infra red remote control.

These machines are brand new and boxed with a full twelve month warranty. Another DAT exclusive from Turnkey!

TURNKEY EXCLUSIVE
£499
INCLUDING REMOTE

Orbit The Dance EMU

Emu have taken their wealth of experience in making modules such as the Proteus, Vintage Keys and Morpheus, combined it with the filters from the incredible Emulator 4, and with their usual inovation, come up with the Orbit - especially built for dance music.

The Orbit is stacked full of classic drum sounds, pulsating basses, ambient pads, as well as a huge variety of hits and effects. The inclusion of the E4's 16 different types of 6 pole filters mean that this module has more powerful filtering than any other synth. Finally the 'BEATS MODE' includes a wide selection of loops and grooves, which can have their pitch changed *without* tempo change and vice-versa, and even their sounds too !

The Orbit is already on demo at Turnkey - audition one today !

NEW PRODUCT
£869
INCLUDING FREE CABLES

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KORG ensoniq ALESIS Steinberg Technics Vestax KURZWEIL FATAR

EUROPE'S LOWEST PRICES GUARANTEED*

Sound Modules

OBERHEIM

MATRIX 1000 EXCLUSIVE

Now almost 10 years old, and still sounding as fresh as the day it was released The Matrix 1000 is essentially a Matrix-6 in a rack - 6 note polyphonic, 2 oscillators per voice, true analog VCF filters with 8 modes, "Matrix™" modulation with 20 sources and 32 destinations, raw gutsy analog sounds Why 1000? The 1000 presets were generated by Matrix6 owners worldwide in reponse to a competition to find the best analog sounds on the planet You're sure to find the perfect patch for virtually any application Group mode allows chaining of up to 6 units to create a true monster! Fully editable via MIDI, Mac, PC or Atari editor (available for only £49)

FACTORY DIRECT
RRP £599
£369
NEW BOXED

YAMAHA VL1m & VL7

EXCLUSIVE DEAL OF THE YEAR !!!!

Whilst we've always been well known for bringing you exclusive deals at knock-down prices, this is definitely the deal of the year!

Without doubt the most powerful commercially available synthesizers ever made, the Yamaha VL series have brought the first major break-through in synthesis technology since the advent of FM Not only that,but Yamaha's implementation of Physical Modelling gives the most breathtakingly realistic acoustic simulations available as well as fantastically powerful lead and bass synth sounds

Physical modelling takes a completely different approach to sound reproduction than any previous method Rather than begin with inflexible samples or a simple oscillator, extremely powerful DSP chips simulate in real time characteristics of real instruments such as tube/string length, damping, absorbtion, lip/bow pressure, throat characteristics, tonguing and many others
Once the basic (or not so basic !) sound has been created, it can then be passed through a powerful multi-mode filter section with resonance, harmonic enhancer, impulse expander, resonator and five-band fully parametric EQ with key-scaling abilities

Finally, a 32 bit effects section based on Yamaha's top of the line SPX1000 unit provides up to 3 simultaneous effects processors,capable of flanging, pitch-shifting, reverb, delay, distortion etc

If acoustic simulations aren't your thing, then imagine the virtually limitless palette of synthetic sounds the VL series can produce, in fact we have commissioned top programmers at Yamaha's R&D department to produce a "Dance and Techno" sound set which we're giving away with the units (these load via the built-in 3 5" disk drive)

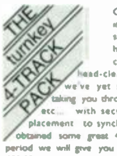
The VL-1m is a 3U 19" rackmount unit and is duophonic The VL7 is a monophonic, 4 octave keyboard with velocity and aftertouch sensitivity, and comes bundled with the breath controller and expression pedal

These prices represent 58% and 67% discounts from the RRP and offer a once in a lifetime opportunity to own a classic synth with real character We have strictly limited quantities of the last ever units and orders will be fulfilled on a first-come, first-served basis Buy now to avoid disappointment !

VL-7
RRP £2448
£799
WITH FREE BREATH CTRL + EXPR PEDAL

VL-1m
RRP £2399
£999
NEW BOXED

The UK 4 track Centre



Our famous 4 track pack includes everything you need to start making music Maxell headphones, microphone with cable, chrome tapes, cables, head-cleaning kit and the best book we've yet seen on multitrack recording, taking you through basic track laying, mixdown etc... with sections of everything from mic placement to synchronisation and MIDI We've obtained some great 4 track pricing AND for a limited period we will give you the 4 track pack (normal price £59 95) absolutely free with the units featured herein

PORTA 03 Mk2

only £199

INC 4 TRACK PACK

New version of a classic portastudio. Improved styling and metering (!)

YAMAHA

MT50 Multi-tracker

INC 4 TRACK PACK

High Speed, record on all 4 tracks simultaneously., dbx noise reduction, 2 band EQ on each track, as well as auxiliary send/return

RRP £389
£299
NEW BOXED

KURZWEIL

MicroPiano

SPECIAL PURCHASE

The MicroPiano is the most highly regarded piano module on the market, featuring Kurzweil's breathtakingly realistic true stereo samples - 32 note polyphony means you won't suffer from note-stealing and the wide range of other keyboard sounds and strings make it useful in many other situations. Built in effects including very high quality reverb mean there's no need to tie up another effects unit Strictly limited quantities at this price mean that stocks won't last long Order today - you won't be disappointed !

RRP £599
£369
NEW BOXED

E-mu VINTAGE KEYS +

THE WEST END'S EXCLUSIVE EMU CENTRE

8 Meg of Vintage Keys samples, 2 independent stereo effects units, 32 note poly, what more can be said Ideal for anyone needing great vintage sounds without the hassle of an analog synth Satisfaction guaranteed, unbeatable price

RRP £1099
£799
NEW BOXED

NOVATION BASS STATION

BUDGET MONO SYNTHS

If you need to get into analog synths on a budget, then the Bass Station rack or keyboard is for you But this is no mere toy! Two oscillators, pulse width modulation, two LFO's and knobs that send out MIDI information make this a versatile sound creation tool, capable of a wide range of bass sounds and effects The ideal addition to any MIDI setup!

FROM ONLY
£329
NEW BOXED

ACCESS

PROGRAMMER

FOR MATRIX 1000 OR MICROWAVE

There's no doubt that the Oberheim Matrix 1000 and Waldorf MicroWave deliver powerful analog sounds However, when it comes to programming your own sounds, top producers have tended to go for older synths like the Minimoog and Super Jupiter, because their knobs and sliders make for easy creation of new sounds The Access programmer gives you the best of both worlds - now you can freely experiment with your modern analog synth using the same intuitive front panel, and better still, record every tweak of a parameter into your sequencer

SCOOP
EXCLUSIVE
£369
NEW BOXED

NEW, USED & EX DEMO

Access MicroW Prog	£ 369	Peavey SpectrumBASS	£ 299
Access MATRIX Prog	£ 369	Peavey Spectrum Org	£ 359
Akai SGO1K	£ 299	Peavey Spectrum Syn	£ 359
Akai SGO1P	£ 299	Roland MKS70	£ 649
Akai SGO1V	£ 299	Roland JV1080	£ 949
Alesis DMS	£ 499	Roland MDC1	£ 479
Alesis SR16	£ 169	Roland MGS64	£ 469
Boss DR5	£ 259	Roland MOC1	£ 499
Boss DR660	£ 459	Roland MS1	£ 279
Dream GMX 1	£ 69	Roland MSE1	£ 499
Emu CLASSIC KEYS	£ 559	Roland MVS1	£ 399
Emu MORPHEUS	£ 899	Roland PS5	£ 299
Emu Procussion	£ 645	Roland SC55ST	£ 365
Emu Proformance	£ 359	Roland SC88VL	£ 529
Emu Proteus 2	£ 810	Studio Elec SE1	£ 1,499
Emu Proteus FX	£ 469	Technics SXWSA1R	£ 1099
Emu UltraProteus	£ 999	Waldorf MicrWave	£ 1,199
Emu Vintage Keys+	£ 799	Waldorf PULSE	£ 599
Kawai GMega LX	£ 129	Yamaha MU5	£ 189
Korg 05R/W	£ 399	Yamaha MU50	£ 329
Korg X5DR	£ 499	Yamaha MU80	£ 589
Kurzweil KMP1	£ 499	Yamaha QY22	£ 399
Kurzweil K2000R	£ 1,599	Yamaha QY300	£ 549
Marion PRO SYNTH	£ 699	Yamaha RY20	£ 299
Novation Bass Stn R	£ 300	Yamaha RY8	£ 239
Novation Drumstatn	£ 449	Yamaha VL1M	£ 999
ObThaim Matrix1000	£ 369	Yamaha VL7	£ 799
Oberheim OBMX2	£ 1,800	Yamaha WT11	£ 329

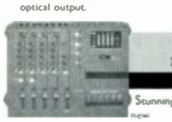
FOSTEX

DMT-8 digital multitracker

INC 4 TRACK PACK

The personal digital multi-track is here at last, and at a price you won't believe! 8 separate tracks of CD quality audio recorded to half-gig hard-disk (up to 12 minutes) Record up to 4 tracks simultaneously, jog-shuttle, sync to MIDI without losing a track The 8 channel mixer accepts up to 4 mics, 2 band EQ and 2 aux sends Separate outputs and S/PDIF optical output.

RRP £1499
£1399
NEW BOXED



FOSTEX

XR5 Personal Studio

INC 4 TRACK PACK

Stunning new double speed Fostex machine with individual EQ, up to 3 aux sends and 2 stereo returns, 2 inserts & 4 sep tape outs allowing use with an external mixer

RRP £420
£335
NEW BOXED

FOSTEX

XR-3Multi-tracker

INC 4 TRACK PACK

High speed machine at £249 ! New auto-bounce facility and built in mic - ideal for 4 track recording on the move

NEW PRODUCT
£249
NEW BOXED

ROLAND

SC88 - VL

64 NOTE POLYPHONIC

Based on the original Sound Canvas module, but with much more of everything, the SC88 is 32 part multi-timbral with two independent MIDI ins, also 64 note polyphony for handling virtually any MIDI thrown at it Having twice as much sample ROM too, the SC88 is really like two SC55s, except with 18 bit D/A convertors, delivering the same audio quality as the JV-1080 synth. Choose from a GS / GM compatible sound palette of 654 individual sounds, and 24 drum kits The built-in interface for Mac or fast PC provides further value for money When used with PC software such as Musicator, you can adjust the vol, pan, reverb and tuning on each individual drum sound Last ever units, get your order in now !

RRP £699
£369
NEW BOXED

WALDORF

MICROWAVE

TURNKEY FACTORY DIRECT EXCLUSIVE

The Waldorf Microwave has genuine analog synthesis including resonant filters. It has 16 oscillators, 8 part multi-timbrality and 6 individual outputs Sweep through up to 64 different waves, controlled by LFOs, envelopes etc. Devastating bass, totally unique sound ! Also available on a trial basis, please enquire - once you've tried this, you won't want to go back !

SPECIAL
£1199
NEW BOXED

WALDORF

PULSE

BRAND NEW MONOSYNTH

Waldorf quality at a previously unheard of price! Their first venture into the burgeoning monosynth market has been universally acclaimed, and rightfully so The Pulse's three oscillators provide some of the fattest sounds around, and it's modulation matrix allows a far higher degree of programming complexity than anything else in its range Add to that the fact that editing any parameter sends out a MIDI controller and you have a fantastic all round performer On demo and in stock now

NEW PRODUCT
£599
NEW BOXED

NOVATION DRUM STATION

BUILT AT LAST !

Someone had to build this eventually! Despite being discontinued for at least 10 years, Roland's TR-808 and TR-909 drum machines have remained indispensable popular classics ever since Now, Novation bring you those classic sounds with the original editting parameters , and in the convenience of a 1U rack, with MIDI, and 8 outputs. Initial supplies will be limited and demand, high We have been guaranteed a significant quantity of the first stock available Call for further details

NEW PRODUCT
£449
NEW BOXED

BOSS DR-660

THE BEST EVER DR. RHYTHM !

BOSS have been making Dr Rhythm drum machines since the early eighties, combining value for money and ease-of-use with the latest drum and percussion sounds The DR-660 builds on the success of the DR-550 Mk2, but offers 16 full velocity and aftertouch sensitive pads, 4 separate outs (unheard-of at this price), and 255 drum sounds including the best of TR808 / 909. The 660 also boasts the 'human feel' control first introduced on the R8 which allows velocity to control a real-time crossfade between several waveforms (for example, whereabouts the cymbals are hit) Process your sounds with on-board digital reverb and chorus - fully editable, with individual effect-send control for each drum sound

RRP £459
£299
NEW BOXED

TASCAM

Porta07 PortaStudio

INC 4 TRACK PACK

A fantastic new machine from the makers of the Portastudio. Double speed, EQ on each channel, built-in dbx, 4 channel metering system

RRP £399
£339
NEW BOXED

YAMAHA

MT8X PortaStudio

INC 4 TRACK PACK

Best-selling 8 track portastudio now brought to you at even better value by Turnkey features 3band EQ, separate cue mix, full LED metering insert-points, dbx noise reduction, individual tape/track outputs, 2 aux sends, double speed, logic controlled transport, auto punch-in/out, memory locators and cycle facilities.

RRP £1275
£899
NEW BOXED

NEW, USED & EX DEMO

Fostex 380S	£ 599	Tascam 424MK2	£ 499
Fostex DMT8	£ 1,499	Tascam 464	£ 699
Fostex XR3	£ 249	Tascam 488MKII	£ 999
Fostex XR5	£ 335	Tascam Porta03 MK2	£ 199
Fostex XR7	£ 429	Tascam PORTA07	£ 339
Roland VS880	£ 1,499	Yamaha MT4X	£ 399
Roland VS8F1	£ 340	Yamaha MT50	£ 299
Tascam 424	£ 379	Yamaha MT8X	£ 859

Keyboards

YAMAHA SY35

UNBELIEVABLE CLEARANCE DEAL

The SY35 has been in Yamaha's catalog for some time, and with good reason - its unique combination of sample playback, FM synthesis and vector control make it a great buy even at the RRP Yamaha have now decided that it is the end of the line for the SY35, but have no replacement in this range, indeed, no other manufacturer has a professinal synth for less than £599

The SY35 features 128 presets, but editing is a breeze with the unique vector control joystick, designed by Dave Smith, creator of the legendary Prophet VS Movements in sound can be recorded and played back exactly - a huge variety of synth sounds balance the stock piano, string, drum etc presets If that's no easy enough, the vector randomisation feature will automatically generate unlimited quantities of new and surprising sounds in a second ! 8 part multi-timbrality and 32 element polyphony mean you can create whole arrangements from just one keyboard

The keyboard itself has 5 octaves of full-size keys and is velocity and aftertouch sensitive making it an ideal mother keyboard (the synth is virtually free !) Built in effects including reverb, delay, and distortion round off a great all-in-one package This exclusive end of the line clearance deal represents unbelievable value for money Order now to avoid disappointment

RRP £599
£349
NEW BOXED

Package with Trax 64 track sequencing software + MIDI interface for either Mac or PC (please specify) only £399!

ROLAND JV35

EXPANDABLE GM SYNTHESIZER

Based on Roland's superb sound canvas GS chip set. the 317 preset sounds can be edited using 3 intuitive parameter sliders and stored in 128 custom memories. Edit paramteres include resonant filters, buuilt-in effects and envelopes. 8 drum kits provide a broad variety of drum and percussion sounds including classic Roland drum machine sounds. Using GS compatible software such as Musicator, individual drum sounds can be tuned, reverbed faded or panned and effects parameters are fully adjustable. Five octave velocity sensitive keyboard, pitch/bend modulation lever Exclusive deal at Turnkey on the last ever units - order now to avoid disappointment!

RRP £599
£429
NEW BOXED

HAMMOND

XB-2

B3 LIVES AGAIN !

If you need an authentic Hammond sound, there is currently only one place to turn: Hammond's XB2 has been specifically made to recreate the sound of the legendary B3, with 128 presets, 9 drawbars for easy programming, built in Leslie simulator, overdrive and reverb, nothing else comes close. You can even connect a genuine Leslie via the 11 pin connector (reconditioned Leslies also available), and best of all, it weighs only 30 pounds! Exclusively available through Turnkey

EXCLUSIVE
£1399
NEW BOXED

Sampling

TIME & SPACE

THE BEST EVER DR. RHYTHM !

We have two Time & Space Jukeboxes in store, each fully loaded with the current top 100 CDs. There are choices to cover everything from straight instrumental sounds through sound effects, to loops and breaks We carry virtually the full range in stock and can also supply most disks in CD-ROM format for direct loading into your sampler Come and check out the latest sounds today

FROM ONLY
£ 1 9
NEW BOXED

NEW, USED & EX DEMO

Akai CD3000	£ 1,199	Emu E4	£ 4,800
Akai S1100	£ 1,199	Emu E4 KEYBRD	£ 3,499
Akai EXM003	£ 189	Emu E64	£ 2,199
Akai EXM006	£ 129	Emu ESI32	£ 999
Akai EXM008	£ 499	Emu ESI32 SCSI	£ 1,199
Akai EXM01	£ 99	Kurzweil K2500	£ 2,799
Akai EXM3002	£ 179	Kurzweil SMP R	£ 894
Akai EXM3008	£ 499	Kurzweil SMPK	£ 894
Akai IB101A	£ 19	Roland DA400	£ 420
Akai IB208P	£ 399	Roland JS30	£ 749
Akai IB301S	£ 99	Roland OP760 1P	£ 330
Akai IB302D	£ 349	Roland S760	£ 1,149
Akai IB303T	£ 149	SIMM 1 MEG 30 PIN	£ 29
Akai IB304F	£ 349	SIMM 16 MEG 30 PIN	£ 499
Akai MPC3000	£ 2,599	SIMM 16 MEG 72 PIN	£ 449
Akai S2000	£ 949	SIMM 4 MEG 30 PIN	£ 129
Akai S3000XL	£ 1,799	SIMM 4 MEG 72 PIN	£ 129
Akai S3200XL	£ 2,977	SIMM 8 MEG 72 PIN	£ 299

YAMAHA P300

MASTER KEYBOARD / 32 note polyphonic PIANO

The P300 combines an 88 note, master keyboard based on the industry standard KX88, with the best piano samples we've ever heard - identical to, and developed for the ground-breaking P500, (rrp £5,500, used by Chick Corea etc.)

32 note polyphonic stereo multi-sampled sounds through SPX990 equivalent editable multi-effects Compre-hensive sound edit parameters including Microtuning, ADR envelopes etc As many as four separate MIDI paths can be used to independently control external MIDI instruments It also boasts four fully assignable MIDI controllers - 2 data sliders and 2 control wheels. You can connect any mix of 4 foot controllers, either momentary, toggle switch or continously variable pedals, and assign to almost any function including sostenuto

Store up to 32 voice and MIDI settings in any desired order, using the performance / chain feature, MIDI merge, Local On/Off for individual path 40 character backlit LCD and dedidated Help button make editing a breeze 40w stereo amplifier and built-in monitor speakers with 2 x line-in 5 band graphic and loads more - call for a brochure

Unbelievable amount of hardware for the money If you're contemplating a master keyboard or digital piano this year, get one of these before they all go

SAVE £1,800 !
RRP £3199
£1399
NEW BOXED

ROLAND

PC 200-II keyboard

IDEAL ENTRY-LEVEL MIDI CONTROLLER KEYBOARD

Compact touch sensitive master keyboard offering full control over pitch bend and mod, data slider assignable to reverb, pan or any controller, sustain pedal input, transpose over 2 octave range, send patch & bank change messages Check out our unique package prices with these modules

PC200
£149
NEW BOXED

PC200 PLUS PROTEUS FX	PC200 PLUS AKAI VINTAGE	PC200 PLUS 05R/W	PC200 PLUS SC88 VL
£649 NEW BOXED	£399 NEW BOXED	£539 NEW BOXED	£459 NEW BOXED

NEW, USED & EX DEMO

Alesis QS6	£ 749	Roland EP3	£ 149
Ensoniq SQ1PLUS32	£ 899	Roland JV 50 EX	£ 569
Evolution MK10	£ 60	Roland A30	£ 275
Fatar CMS61	£ 169	Roland A33	£ 399
Fatar Studio 2001	£ 1,099	Roland AX1	£ 399
Fatar Studio 2001FC	£ 1,299	Roland EP 5	£ 239
Fatar Studio 49	£ 89	Roland PC200GS	£ 165
Fatar Studio 61	£ 139	Roland SPD11	£ 649
Fatar Studio 610	£ 199	Roland XP10	£ 599
Fatar Studio 1100	£ 799	Roland XP50	£ 1,099
Fatar Studio 1100FC	£ 1,100	Roland XP80	£ 1,799
Fatar Studio 610+	£ 299	Sequent. Prophet VS	£ 1,199
Fatar Studio 900	£ 599	Technics SXWSA1	£ 1,999
Fatar Studio 900FC	£ 830	Ultimate keybd stand	£ 119
Goldstar GMK 49	£ 129	Viscon FK1000	£ 899
Hammond XB2	£ 1,399	Waldorf Wave	£ 6,845
Hammond XB3	£ 8,630	Yamaha CBX K3	£ 139
Kawai K11	£ 499	Yamaha KX5	£ 199
Korg PROPHECY	£ 675	Yamaha CBXK1	£ 129
Korg Trinity	£ 2,395	Yamaha P300	£ 1,199
Korg Trinity PLUS	£ 2,795	Yamaha PF85	£ 899
Korg Trinity PRO	£ 2,999	Yamaha QS300	£ 999
Korg Trinity PROX	£ 3,195	Yamaha SY35	£ 349
Korg X3	£ 879	Yamaha SY85	£ 765
Korg X5	£ 599	Yamaha VL7	£ 799
Kurzweil PC88	£ 1,295	Yamaha W7	£ 899
Novation BassStation	£ 299	Yamaha WX11	£ 299

EMU

E64

COME FRO A DEMO AND HEAR THE DIFFERENCE!

64 note polyphonic. Uses the same operating system as the E-IV (new version includes around 15 different filter types). 16 part multi-timbral, 8 balanced outputs, SIMM memory, 2 SCSI ports, AES/EBU and SP/DIF digi I/Os.

WEST END EXCLUSIVE
EMU CENTRE
£2399
NEW BOXED

EMU

ESI-32

VERSION 2.0 SOFTWARE

Featuring 32 note polyphony, 4xpolyphonic, G-chip resonant filters, huge quality library, (Akai and Emazll compatible) Time-stretch, doppler FX, parametric EQ, exciter etc... All E-mu samplers come with free access to our enormous sample library (we have all the EIII library on CD-ROM) and excellent tech support (many staff are owners)

WEST END EXCLUSIVE
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£999
NEW BOXED

ROLAND S760

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MEGADEAL! - incredible new low price from Turnkey including free SCSI CD-ROM drive and disk. Everything you need to get started with plenty of usable library. Also available packaged with OP1 video/digital board at £1699, or with OP1 plus DA400 8-output convertor for £1999

RRP £1899
£1499
NEW BOXED

PRICES INCLUDE 17.5% VAT
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Outboard

VISCOUNT
EFX10 Studio Multi-effects
HALF RACKMOUNT EFFECTS

We've just received stocks of Viscount's entry into the fully professional effects market, and it sounds great ! The unit features audiophile sound quality delivered by 24 bit processors with 128x over-sampling Delta / Sigma convertors. True stereo -20/+4 dB connections. Realtime MIDI control, large backlit display, huge range of effects including reverbs, delays, chorus, flanging, pitch-shift, wah, phasing, leslie simulations, etc.. The price of £299 makes the EFX10 probably the best value for money effects unit on the market - 7 day money back guarantee if not satisfied!

FACTORY DIRECT
NEW PRODUCT
£249
NEW BOXED

SPL STEREO VITALIZER
BULK PURCHASE

The Vitalizer is the Rolls Royce of enhancer / exciter processors. Using a significantly different process to other such products, the effect deals with the full frequency range and is substantially smoother and richer. Also included is a "surround" effect which varies the width of the stereo field. massive bulk purchase allows this unbelievable price - check one out now - we guarantee you'll be impressed.

RRP £589
£349
NEW BOXED

ROLAND SRV330 and SDE330
DIMENSIONAL SPACE EFFECTS PROCESSORS

These incredible units from Roland use the technology from their £24,000 RSS system. As well as being ultra high quality, regular effects units (30 bit processing is employed!) The 3D technology allows ear y reflections (SRV330) to be realistically placed and delays and choruses (SDE330) to surround you in a 360° circle, and synchronised to MIDI True stereo processing +4 / -20 dB ins/outs, a wealth of editing facilities and exceptionally quiet performance make these an unmissable buy Very limited quantities at this price

RRP £849
£599
NEW BOXED

DIGITECH STUDIO QUAD
4 CHANNEL STUDIO EFFECTS PROCESSOR

At last - Multi effects as they should be! The new Digitech Studio Quad features not only their custom designed and ultra-powerful 'S-DISC' chip, but also 4 independent inputs and outputs, which using the built-in sub-mixer, can be configured as 4 mono ins feeding 4 effects processors, feeding 4 stereo outputs Huge screen, and new intuitive operating system make editing a breeze 20 bit convertors give greater than 90 dB signal to noise ratio. Effects include reverbs, delays, detuning, chorus, flanging etc.... Hundreds of other features too numerous to mention. Very limited initial stocks, order now to avoid disappointment !

NEW PRODUCT
SHORT SUPPLIES
£499
NEW BOXED

Monitoring

ABSOLUTE 2
Studio Monitors by SPIRIT
PHONE FOR BEST PRICE

Here at last ! Stunning sounding and looking monitors from the UK's leading mixer manufacturer Incredible bass extension and power handling at a killer price In stock now, come in and audition them ASAP !

RRP £259
POA
NEW BOXED

CONTROL 5
JBL
NEW LOW PRICE

These classic monitors from JBL have been a standard in studios for several years and still stand up very well against more recent competition The solid build quality you can expect from JBL comes as standard and the ported design gives fantastic bass reponse. Internal fuses help to prevent blown tweeters and a separate sub-woofer is also available. Exclusive to Turnkey.

RRP £439
£249
NEW BOXED

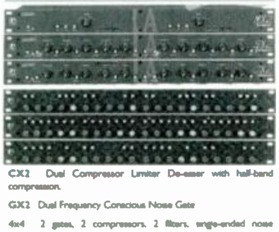
PRICES INCLUDE 17.5% VAT
Uk mainland carriage £9.99

**We will beat any genuine quote from a UK or European dealer. We must be able to substantiate the quote and the goods must be available and in stock*

SEE PAGE 209

FOR REST OF AD

LA AUDIO DEALS
Exclusive Turnkey Deals



CX2 Dual Compressor Limiter De-esser with half-band compression.

GX2 Dual Frequency Conscious Noise Gate

4x4 2 gates, 2 compressors, 2 filters, single-ended noise reduction, half-band compression, 4 ins and outs

4C 4 channel multi band compressor / limiter de-esser

4G 4 channel gate filter and single-ended noise reduction

CX2	GX2	4x4	4C / 4G
£199	£199	£299	£349
RRP £249	RRP £249	RRP £349	RRP £399

ZOOM 1202
SPECIAL OFFER

Our tremendous buying power makes this the only sub £200 effects unit to look at ! True stereo and the quality of the reverb alone make it worth the price, but there's lots more if one of the 512 presets doesn't suit exactly then using the two parameter knobs will allow you to tweak the program until it does. The addition of 2 band EQ will further tailor the sound to your mix Other effects include delay, chorus, phasing, flanging etc. and all this in a full 19" 1U rack. No need to look elsewhere !

RRP £199
£159
NEW BOXED

LEXICON Vortex
SPECIAL OFFER EXCLUSIVE

Despite the first digital effects units being developed almost 20 years ago, they have all followed a familiar path ever since, offering a conventional series of effects The Lexicon Vortex breaks the mould in allowing effects to be morphed between in real time and in the process, creating new and previously unheard-of effects. (This actually changes the effect algorithm continuously - it is not a simple cross-fade between effects) This unit is ideal for dance music, and anybody requiring out of the ordinary effects, and its real time nature make it an excellent choice for live performers such as guitarists Effects are also affected by the input signal, so that dynamics can control various different paramters within an effect algorithm Tempo can be tapped in to control delay times etc. Typical Lexicon quality can of course be taken for granted Exclusive bulk purchase makes this huge reduction possible on the end of the line. First come first served!

RRP £499
£249
NEW BOXED

LEXICON Alex and Reflex
SPECIAL OFFER

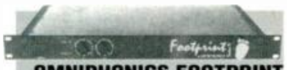
If You're looking for a straight reverb unit, Lexicon have a reputation that's hard to beat ! These are the cheapest units to offer the famous 'Lex' sound - The Relfex has the additional benefit of dynamic MIDI, allowing real time control of multiple effects parameters. Huge discount at turnkey !

RRP from £399
POA
NEW BOXED

ABSOLUTE ZERO
SPIRIT
PHONE FOR BEST

The latest additions to Soundcraft Spirit's monitor range are the Absolute Zero's. For those of us with slightly less demanding monitoring applications, they make the ideal choice.

RRP
£199
NEW BOXED



OMNIPHONICS FOOTPRINT
Power Amplifier
FLYING OUT OF THE DOOR

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 £399.

SCOOP
RRP £399
£279
NEW BOXED

CONTROL 1c
JBL
NEW LOW PRICE

These superb compact monitors (RRP £289) are ideal for accurate monitoring on a budget. Sturdy impact resistant casing makes them the only choice for location work. Bundle them with the Peavey PMA70 power amp for only £299.

RRP £289
£149
NEW BOXED

NEW, USED & EX DEMO

Alesis 3630	£ 199	Klark Teknik DN405	£ 727
Alesis MEQ230	£ 219	Klark Teknik DN410	£ 1,175
Alesis MICROVERB3	£ 169	Klark Teknik DN500	£ 939
Alesis MICROVERB4	£ 249	Klark Teknik DN501	£ 979
Alesis MIDIVERB4	£ 339	Klark Teknik DN510	£ 939
Alesis QUAD2	£ 549	Klark Teknik DN514	£ 856
AMEK 9098	£ 1,350	Klark Teknik DN6000	£ 3,237
Aphex 104	£ 199	Klark Teknik DN716	£ 1,232
Aphex 105	£ 399	Klark Teknik DN726	£ 1,749
Aphex 106	£ 399	Klark Teknik DN728	£ 2,100
Aphex 107	£ 549	Klark Teknik DN7730	£ 2,130
Aphex 108	£ 269	Klark Teknik DN775	£ 1,999
Aphex 320A	£ 1,818	Klark Teknik DN800	£ 1,433
Aphex 720	£ 1,818	LA 4C	£ 349
BBE 322	£ 149	LA 4G	£ 349
Behringer EX2100J	£ 149	LA 4X4	£ 299
Behringer EX3100	£ 199	LA C8	£ 699
Behringer MDX2100	£ 239	LA CX2	£ 199
Behringer MDX2400	£ 299	LA GX2	£ 199
Behringer MX8000	£ 2,199	LA MX2	£ 249
Behringer XR2400	£ 370	LA V8	£ 817
BOSS RV70	£ 399	Lexicon 300L	£ 4,641
BOSS VT1	£ 399	Lexicon 480L	£ 10,569
BSS DPR402	£ 849	Lexicon ALEX	£ 299
BSS DPR901	£ 849	Lexicon DUALFX	£ 249
DBX 150X	£ 149	Lexicon JAMMAN	£ 349
DBX 160A	£ 449	Lexicon LARC	£ 1,512
DBX 165A	£ 1,426	Lexicon LXP15II	£ 799
DBX 166A	£ 499	Lexicon PCM80	£ 2,114
DBX 168A	£ 1,028	Lexicon PCM90	£ 2,589
DBX 266	£ 351	Lexicon REFLEX	£ 349
DBX 274	£ 539	Lexicon VORTEX	£ 450
DBX 290	£ 410	Massenb. GLM8200	£ 3,319
DBX 296	£ 417	Massenb. GLM8900	£ 5,046
DBX 760X	£ 383	Neve 33609C	£ 2,192
Denon DRM550	£ 159	P+R DB 1 DI	£ 29
Denon DRM640	£ 199	Peavey Analog Filter	£ 359
Denon DRS810	£ 299	Roland RSS10	£ 2,199
Denon DRW580	£ 200	Roland SDE330	£ 449
Denon DRW760	£ 249	Roland SDX330	£ 799
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Digitech DHP55	£ 999	Samson E30	£ 219
Digitech MIDIVocalist	£ 450	Samson E62	£ 299
Digitech RPM1	£ 550	Sony DPSV77	£ 1,299
Digitech StudioVocalist	£ 999	Sony HRGPS	£ 499
Digitech TSR12	£ 299	Sony HRMPS	£ 499
Digitech TSR24S	£ 699	SPECK EQ316	£ 699
Digitech VOCALIST II	£ 599	SPL CVXLR	£ 822
DOD 231	£ 450	SPL EQMAGIX	£ 1,175
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DOD 834	£ 250	SPL OPTIMIZER	£ 1,173
DOD 835	£ 200	SPL STJ	£ 349
DOD 866	£ 250	SPL SVLXLR	£ 645
Drawmer 1960	£ 1,169	SSL 834	£ 2,350
Drawmer 1961	£ 1,169	Summit DCC2000	£ 3,113
Drawmer DF320	£ 499	Summit EQF100	£ 2,526
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Drawmer DS201B	£ 405	Symmetrix 420	£ 381
Drawmer DS301	£ 617	Symmetrix 421	£ 499
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Drawmer LX20	£ 220	Symmetrix 488	£ 599
Drawmer M500	£ 911	Symmetrix 501	£ 329
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Eventide H3500DFX	£ 3,701	Symmetrix 602	£ 1,939
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Focusrite BLUE245	£ 2,879	Symmetrix SC2	£ 30
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Focusrite BLUE330	£ 5,076	Symmetrix SX202	£ 258
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Focusrite RED1	£ 2,262	Symmetrix SX208	£ 258
Focusrite RED2	£ 2,344	TC 2290 22D24	£ 2,080
Focusrite RED3	£ 2,579	TC M5000 SADF	£ 3,496
Focusrite RED4	£ 2,344	TLA CL1	£ 1,169
Focusrite RED5	£ 2,056	TLA EQ1	£ 1,050
Focusrite RED6	£ 1,756	TLA EQ2	£ 1,521
Focusrite RED7	£ 1,756	TLA M1	£ 3,819
Focusrite RED8	£ 1,299	TLA M2	£ 4,994
Frontline DDS 20	£ 99	TLA PA1	£ 1,052
Furman LCX	£ 349	TLA PA2	£ 405
Furman PL8 PLUS	£ 235	TLA VII	£ 464
Furman PL8E	£ 175	Viscount EFX10	£ 249
Furman QN44	£ 399	Viscount EFX 1	£ 179
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Klark Teknik DN301	£ 939	XRI 300	£ 159
Klark Teknik DN320	£ 611	Yamaha D5000	£ 1,279
Klark Teknik DN330	£ 646	Yamaha PRO3R	£ 1,056
Klark Teknik DN332	£ 891	Yamaha Q2031A	£ 589
Klark Teknik DN360	£ 1,479	Yamaha REV100	£ 265
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ATC SCM10	£ 995	KRK 7000B/S	£ 1,286
ATC SCM100	£ 4,034	KRK 9000B	£ 1,874
ATC SCM100A	£ 5,659	KRK 9000B/S	£ 1,991
ATC SCM20	£ 1,505	KRK KROK	£ 351
ATC SCM200A	£ 11,207	KRK KROKS	£ 469
ATC SCM300A	£ 11,994	Omniph Footprint	£ 279
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Denon PMA250MK3	£ 159	Roland MA7	£ 150
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Dynaudio BM5	£ 494	Samson SERVO500	£ 399
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JBL control micro	£ 99	Waldorf EMESWhite	£ 579
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JBL 4206	£ 249	Yamaha NS 10M	£ 199
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JBL 4412A	£ 929	Yamaha A100A	£ 289
JBL CONTROL 5	£ 516	Yamaha MS101II	£ 116
JBL CONTROL1+	£ 399	Yamaha MS202II	£ 205
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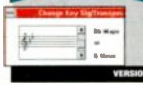
JBL CONTROL5+	£ 575	Yamaha YSTM10	£ 69

Computer Music



MUSICTIME
Notation arranger
VERSION 16 FOR PC WINDOWS AND MACINTOSH

MusicTime has no arrange page, no piano roll, no drum grid and no MIDI Manager All editing is done on the score itself - it's what we call a 'pure' score program This makes it much simpler & quicker to use, and ideal for educational situations MusicTime is easily our most popular computer music title for this reason.

New advanced version - Rhapsody - £249

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Universal PC Editor Librarian
OVER 200 DIFFERENT EDITORS

MIDIQuest is the most powerful, flexible and comprehensive editor librarian around, with support for the widest range of MIDI devices including XP50, JV1080 series, Morpheus / UltraProteus, MU50, MU80, Quadraverb Plus / GT, Classic Keys, TD-7, KT76 / KT88, Korg X5, DPM3 and many others Driver upgrades are generally free of charge, so MIDIQuest will last for as long as MIDI is around ! It's a really good investment For people who'll only ever need one editor we also do SoloQuest, which for £99 provides unparalleled value for money

Mac and Atari version 4.0 is still available at only £219.95

PC VERSION
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16 tracks of digital audio
AVAILABLE RIGHT NOW!

Designed from the very start to allow you to integrate professional notation, sequencing and up to 16 stereo or mono tracks of digital audio side-by-side on the same PC.

Supports simultaneous use of multiple sound cards including the ability to record multiple audio tracks at the same time Simultaneous recording and playback of audio files. Full-featured mixer integrates all operations for MIDI and audio tracks. Input and output meters for each sound card. Individual meters for each audio track

Fully automated and recordable real-time control over volume and pan for all Audiotracks as well as MIDI. Audio and MIDI data are viewed, edited, and mixed side-by-side at the same time Powerful editing operations include Mixdown, Crossfade, Gain Adjust, and Fit Time. Editing of recorded and imported wave files is non-destructive. Drag/drop sub-regions of audio into your song in wave view, measure/track overview, or the notation window

NEW PRODUCT
£299
WINDOWS 95

KEY MP128S
PC MIDI / SMPTE interface
128 SEPARATE MIDI CHANNELS

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BEST VALUE
£199
NEW BOXED

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Multi-track hard-disk recorder
UP TO 16 TRACKS ON YOUR PC

Samplitude is a very fast real time wave editor, hard disk-recording, sampling and multimedia program running Windows 3.1 with any 16-bit soundcard Create and edit samples. Crossfade, then dump to Sampling-Keyboard (SDS) or export it to a Standard Wave File Also re sampling, time-stretching Up to100-level undo echo, reverb and normalising MIDI files can be integrated Synchronise sound with video

STOP PRESS FOR PENTIUM OWNERS
Samplitude Studio now available with up to 16 tracks, simultaneous record & play, full SMPTE sync with any windows sequencer and support for multiple sound cards, dynamic compressor, limiter, expander and noise gate and digital EQ with real-time preview etc etc Only £399 inc VAT

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£249
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ROLAND SC7 bundle with Cubase Lite
COMPUTER MUSIC STARTER PACK

This great starter kit includes a Roland SC-7 General MIDI sound module which is basically a Sound Canvas 24 note poly, 16 part multi-timbral, 8 drum kits, and on-board reverb & chorus controllable for each channel separately A great money saver is the built-in MIDI interface for Mac or fast PC, which works via the computer serial port (cable included) The package also includes Steinberg's famous Cubase Lite (PC version) free, to get you off to a great start with software from one of the world's leading music software houses Strictly lim ited quantities 1st come first served!

RRP £497
£139
NEW BOXED

BAND-IN-A-BOX
Intelligent Arranger version 6
FOR PC OR MAC. (Atari v.5.0)

Highly sophisticated composition aide which combines editable styles and a chord list to provide computer generated backing tracks in seconds.

#1 SELLER
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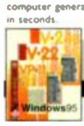
NEW BOXED



VOYETRA
PC MIDI interfaces
RELIABLE, COMPATIBLE, AFFORDABLE

Recommended by Steinberg The V22 has 2 in 2 separate outs V44 has 4 in 4 separate outs V24s has 2 ins, 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 - with auto-printer thru switching - no switching cables, no constant restarting of windows etc

V22	V44	VP11	V24S
£ 9 9	£199	£115	£249
NEW BOXED	NEW BOXED	NEW BOXED	NEW BOXED

CUBASE WINDOWS
4 different versions available
INDUSTRY STANDARD SOFTWARE

Cubasis
Entry level version without drum editor / sync / groove

Cubasis Audio
As above, but with 4 tracks of proper hard-disk recording

Cubase 2.8
The Cubase we all know and love, now with printing

Cubase Score 2.0
For people who need score notation DTP facilities

Cubasis Windows	Cubasis Audio	Cubase PC 3.0	Cubase Score 3.0
£149	£249	£329	£399
NEW BOXED	NEW BOXED	NEW BOXED	NEW BOXED

Future MUSIC PLATINUM AWARD

SIBELIUS-7
Music Notation
Now v3.0
EXCLUSIVE LONDON SHOWROOM

Why do so many music academies use a program which doesn't work on the PC or Mac?! Because for professional notation type-setting, nothing else comes close "In a totally different league from anything else" - Paul Patterson, Royal Academy of Music Future Music Platinum award

We are now an Acorn Authorised Dealer, we stock and demonstrate the exciting new RiscPC computer, running RiscOS/3 powered by the ARM Processor, and with optional 486 or 586 board for running Microsoft Windows software native if required.

CALL RICHARD FINCHER
ARRANGE A FULL
COMPARATIVE DEMO !

FROM ONLY
£499
PLUS VAT

SOUND FORGE
New XP version just released
ALSO SOUND FORGE 3.0 - £499

Sound Forge XP is a low-priced, general purpose sound editor which replaces the often unusable editors commonly bundled with most sound cards. It provides a wide range of Audio Processing functions including Fades, Pans, Normalize, Reverse, Smooth, Volume Control, and Stereo/Mono Conversion Audio effects include Delay/Echo, Chorus, Distortion, and Reverb. Sound Forge supports most common real-time audio compression formats , and is fully 32 bit native in Windows 95 and NT

XP VERSION
£149
WINDOWS 95

NEW, USED & EX DEMO

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APPLE Performa 450	£ 399	Passport Encore	£ 450
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Emagic EXPORT	£ 85	Passport MusicTime	£ 100
Emagic LOG2 MAC	£ 65	Passport Rhapsody	£ 250
Emagic Logic Audio	£ 269	Peavey PC1600	£ 329
Emagic Logic AudioPC	£ 649	Ricoh Scanner	£ 149
Emagic LogicM	£ 369	Roland CMU 800 R	£ 29
Emagic LogicPC	£ 199	Roland MC50MK2	£ 780
Emagic Micro Logic M	£ 99	Roland RAP10ATB	£ 159
Emagic MicroLogicPC	£ 99	Cubase 2.8MAC	£ 335
Emagic Notator SL	£ 199	Cubase 2.8PC	£ 275
EmagTDM exten	£ 149	Cubase Audio MAC	£ 675
Emagic UNITOR8	£ 285	Cubasis	£ 149
Fostex Mixtab	£ 99	Cubasis Audio	£ 249
Goldstar GSE X21	£ 60	Cubase Score Mac	£ 425
JLC syncmaster MAC	£ 29	Steinberg MUSICPC	£ 149
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Key MP128S	£ 199	Steinberg ReCycle	£ 175
Key MP128X	£ 129	Steinberg Time Bandit	£ 399
Key MS101	£ 120	Steinberg WAVE	£ 20
Key MS124	£ 150	Turtle Beach Maui	£ 169
MIDIMAN Syncman	£ 99	Turtle Beach Tahiti	£ 299
MOTU FREESTYLE	£ 149	Turtle Beach Tropez	£ 239
MOTU MIDIEXP	£ 349	Wave for Windows	£ 69
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Behringer Dualfex

EX2100 Enhancer/Harmonizer

PAUL WHITE finds Behringer's new 'more of everything' box a plentiful source of cheap thrills.

Put two or more engineers in a room, ask them to talk about exciters and enhancers, and the chances are that a lot of hard-held opinions will surface. There are those who believe that having to use an enhancer at all is tantamount to an admission that you haven't done your job properly, while those in favour may fail to agree on the relative merits of the harmonic generation principle and the dynamic EQ approach.

For those as yet unfamiliar with exciters/enhancers and their sonic effects, their general aim is to make everything sound bigger, louder, cleaner, and generally more attractive than it originally did. Most such devices work mainly at the top end of the audio spectrum, where they either use dynamic EQ to subtly emphasise transient detail, or they generate new, high-frequency harmonics from the existing upper mid and high frequencies of the programme material, and add these to the original sound. Either way, the result is a subjectively cleaner sound, with more separation between instruments and a greater sense of 'upfrontness'. The dynamic EQ system often sounds gentler, but on the other hand, it can only emphasise what already exists. If a mix is dull because there are no high frequencies present, then the dynamic EQ can do little to improve matters.

The harmonic enhancer or exciter synthesizes new high frequency harmonics which are musically related to the original sound, which makes it more successful when dealing with dull material. However, unless used sparingly, harmonic enhancement can sound rather harsh.

SOMETHING FOR EVERYONE

The Behringer EX2100 avoids getting involved in this argument by giving the user the option of both dynamic EQ (enhancement) *and* harmonic synthesis. The original exciters were pretty fussy as to what signal level was fed into the processing circuitry, so there was usually a separate Drive control with its own simple metering system. This has been eliminated in the latest generation of processors, and Behringer have their own automatic level control circuit, which simplifies setting up.

The EX2100 is a true 2-channel unit, and the only common control is the Bypass button. Both the inputs and outputs are electronically balanced. A single Process control sets the amount of harmonic synthesis or enhancement; turn clockwise from centre and you harmonize, turn counter-clockwise and you enhance, allowing any blend of the two methods to be used simultaneously. As with the Aphex exciter, a Tune control sets the frequency above which processing takes place, and this may be set anywhere from 1kHz to 8kHz. A further control, High Mix, determines how much of the processed signal is added back into the mix, and this works as the high frequency 'effects amount' knob.

A trend in recent years has been to add bass enhancement to this type of processor, so as to balance the subjectively more pronounced top end. The system used on the EX2100 uses a combination of EQ and phase manipulation to fill out the low bass and, like SPL's Vitalizer, a single control provides soft, full bass enhancement in one direction, and tight, punchy enhancement in the other. In the mid position, the Low Mix control has no effect.

IN USE

Using the EX2100 is simply a matter of connecting it into the circuit via suitable insert points (*not* via an aux send loop!) and then deciding on whether to enhance or excite, or a bit of both. If your material is already sounding good, then enhancement may be better, but if you're in full salvage mode, the harmonic synthesizer may well come up trumps. The Tune control has quite an effect on how harsh the result is, and as a general rule, the higher you set the tune range, the less the mid-range is affected. Somewhere between 2 and 4kHz seems best for most material.

After using the Mix control to add in the required amount of effect, you can bring in a little bass end, either hard or soft depending on the style of music. As with all harmonizer/enhancers, you have to keep bypassing the effect to remind yourself of how the original signal sounds, otherwise you can easily end up getting too excited!

BEHRINGER EX2100 £128

PROS

- Both HF and LF enhancement.
- Both dynamic EQ and harmonic generation methods of enhancement can be mixed.
- Effective low bass enhancement.

CONS

- No simple way to change the overall effect level — you have to juggle at least two knobs per channel.

SUMMARY

A very proficient and flexible, general-purpose enhancement tool at a budget price.

The HF enhancement side of the EX2100 certainly adds definition and clarity, but there's something slightly clinical and unyielding about it, unless it is used very sparingly. This isn't serious though, and the Low Mix control adds a great deal of depth and warmth — which is enough for most routine tasks.

SUMMARY

What I like best about this unit, aside from its ludicrously low price, is the way you can blend enhancement and harmonic synthesis. The overall sound quality is fine, with no unnecessary noise and plenty of headroom. Setting up a stereo mix means juggling with a whole set of controls, but it's quite clear what each control is doing, and there's nothing at all complicated about it. For those seeking excitement on a budget, the EX2100 would seem to be the one. You can buy better, but you'll have to pay a lot more. SOS

FURTHER INFORMATION

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DUALFEX
MULTIBAND SOUND ENHANCEMENT PROCESSOR MODEL EX 2100

Yamaha CBX-K

MIDI Sound Keyboard

The CBX-K1XG looks suspiciously toy-like, but conceals a versatile GM sound source and a host of MIDI controller functions behind its simple exterior. DEREK JOHNSON nearly loses it down the back of the sofa...

Back in September 1995's *SOS*, Paul Nagle briefly mentioned a new MIDI controller from Yamaha during the course of his MU50 sound module review. The CBX-K1 was a mini-keyboard aimed at desktop musicians and multimedia applications, providing easy note input for computer users at a low cost. Less than a year later, Yamaha have updated and improved it, and also coined an ungainly epithet for such a compact keyboard: the CBX-K1XG. Significant enhancements include a computer interface, a sustain pedal socket, and — best of all — a built-in General MIDI/XG sound source, complete with speakers and audio input.

LIGHT FUNTASTIC

Aside from the speakers, 3-digit LED display and redesigned labelling, the CBX-K1XG is, physically, almost identical to its predecessor: the casework, tiny keys, octave shift buttons (four octaves up or down for the full 128 note MIDI range), pitchbend wheel and assignable controller are the same. It will even run from batteries. The keyboard itself is velocity-sensitive, and can transmit virtually any MIDI data on any channel, including program changes (with Bank Select); controller information (including Aftertouch) via the assignable wheel; sequencer control messages (Stop, Start and Continue), and so forth. The CBX-K1XG isn't festooned with editing buttons; instead, the actual keys on the keyboard double up as function/parameter select buttons and decimal/hexadecimal numeric keypad. Accessing these functions and altering their value is done in a none-too intuitive manner, by pressing the purple Shift button and one of the keys, entering a value, and pressing Enter. See 'All Keyed Up' for a list of the keyboard's functions.

In addition to MIDI In and Out sockets, connections include stereo headphone and input sockets (both on mini jacks), and a pair of phono outputs. Note that while using headphones disconnects the main speakers, using the phono sockets doesn't — but sticking a jack into the headphone socket sorts this out. Finally, there's a PC/Mac interface and a power supply socket. Predictably, power comes from an external supply.

YAMAHA CBX-K1XG £339

PROS
- Compact and versatile.
- Velocity-sensitive keyboard.
- Built-in PC/Mac interface.
- Built-in GM/XG sound source.
- Comprehensive MIDI controller functions.

CONS
- Keyboard too small for some fingers.
- External power supply.
- All parameters reset on power down.
- Tinny sounding on-board speakers.

SUMMARY

Definitely a niche product, but given the number of PCs and Macs owned by musical wannabes, this could be a large niche. Anyone with cash and space restrictions who requires high-quality GM sounds, a MIDI interface and a usable, velocity-sensitive MIDI keyboard should look no further.

TINY TUNES

The CBX-K1XG's integral GM/XG sound module is actually a version of Yamaha's DB50XG PC daughter board, which is itself a slimmed-down MU50 GM/XG sound module. It provides 759 individual AWM2 sampled voices, 16-part multitimbrality, 32-note polyphony, and three independent effects sections with a total of 64 effect types. You can edit voices and effects, and since the CBX-K1XG can send virtually any kind of MIDI data, you can do this from the keyboard itself (the manual provides comprehensive MIDI spec). Be warned, though: editing is fiddly, since you have to use that aforementioned combination of Shift button and keyboard keys. Sonically, the CBX-K1XG can hold its own with the best

YAMAHA
XG
PITCH
ASSIGNABLE
OCTAVE
OCTAVE SHIFT
OCTAVE RESET

WRH

1XG

GM modules, and has all the extra sounds provided by Yamaha's XG-enhanced GM. The sound set is highly playable, and works really well with the average GM Standard MIDI File.

ALL KEYED UP: KEYBOARD FUNCTIONS

The following functions are available using the Shift button plus keyboard keys to change settings and send MIDI data:

- Sequencer controls: Stop, Continue, Start, Tempo.
- Program controls: Bank Select, Program Change.
- Reset: GM Off, Sound Off, XG On.
- System: Merge On/Off, MIDI Channel, Fixed Velocity.
- Wheel Assign: RPN, Controller, NRPN, Drum Number.
- Transpose up/down.
- Hexadecimal keypad: Numbers 1-F and 0.
- Hexadecimal Enter.
- Decimal Enter.

These are what Yamaha call Group A functions; a secondary collection, Group B, can be accessed by pressing Shift and Decimal Enter, and includes such functions as Song Select, Song Position Pointer, Bulk Dump Out (for sending a SysEx dump of all current settings to an external MIDI storage device), and a variety of more esoteric functions, a full list of which is provided in the manual.

YOUR FLEXIBLE FRIEND

The CBX-K1XG has lots of pluses, but there are a few minuses to point out first: volatile memory, bulky external PSU, and fiddly editing — the shift-key-value-enter system is not the most accessible I've seen. In their defence, Yamaha have been pretty clear in labelling the front panel, and without adding lots of extra buttons, it's hard to see how else they could have made the CBX-K1XG so functional. The manual, while informative, could be heavy-going for the beginner.

However, I was surprised at how playable the keyboard was: there's no escaping its smallness, but the velocity sensitivity makes a real difference. In addition, the CBX-K1XG doesn't take up much space on the desktop, and comes with a MIDI interface and decent sound source ready-installed. In view of all these points, I think this instrument offers good value for money: a GM sound module of this standard would set you back between £250 and £350, while even the cheapest controller keyboards cost around £150 and don't always have the full controller features of the CBX. This makes its retail price of £339 look very reasonable.

I wouldn't expect a classically-trained pianist to choose the CBX-K1XG as a first MIDI instrument, but it does have a definite market nevertheless. It would be an ideal purchase for the desktop musician at whom it is so obviously aimed, and other potential purchasers include musicians on the move — just add a laptop and your favourite sequencing software — and schools. All in all, a pleasing little keyboard that packs a bigger sonic wallop than its size would seem to indicate. SOS

FURTHER INFORMATION

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Rolls RP220 & ADB3

Mic Preamp & DI Box

PAUL WHITE checks out a couple of all-valve front ends to see whether eliminating solid-state circuitry really makes a difference.

These two Rolls units are extremely simple in concept, but where they differ from most of their rivals is that the audio signal path is entirely valve-based. Most valve mic preamps still use a solid-state input stage, but the MP220 mic preamp (badged under the name of the Rolls subsdiary Bellari) uses a transformer input followed by a two-stage valve (one dual triode) amplifier circuit. An instrument input and line setting allows the preamp to double as a DI box.

ADB3

Taking the ADB3 two-channel DI box first, this has an unbalanced jack input, and an XLR-balanced output. Duplicate input jacks are fitted to both front and rear panels, and the controls are limited to two pad/gain switches and a ground lift. Power comes from an external 12V power supply, sadly not supplied, which implies that the valves are run in low voltage mode.

The two pad/gain switches may be used in combination to provide gains of -20dB, unity or +20dB, and using the -20dB setting, it's possible to feed in speaker level signals. There's no metering and no clip LED — you just select the best gain option, plug in and play. Because of the high 4MΩ input impedance, this unit is ideal for DI'ing electric guitars and basses, though it could also be used to add warmth to keyboards.

MP220

The two-channel MP220 is a much more substantial, mains-powered affair occupying 2U of rack space, with a choice of XLR mic/line input or a high impedance (1MΩ) jack instrument input. Both balanced XLR and unbalanced jack rear panel outputs are fitted; there are in fact two parallel output jacks per channel, allowing the signal to be split. Each channel has an input gain control and an output volume control, as well as switches for phantom powering, and a 20dB mic/line selector which affects only the rear panel XLR input; not the Instrument input jack.

A five-section LED output level meter is fitted, and rear panel switches allow the XLR outputs to be switched from -10dBV to +4dBu for connection to mic or line level console inputs. The frequency response of both units is specified as being from 40Hz to 40kHz within +/-3dB (from 5Hz to 40kHz on the instrument input of the mic preamp), and the signal-to-noise ratio is quoted as 107dB.

IN USE

Both units are simple in concept as well as operation: the DI box accepts line, instrument or speaker level signals, while the mic preamp accepts low-impedance microphones, line levels or instruments. At low gain settings, neither unit colours the sound significantly, but as the input level is increased, there is a very obvious tonal thickening which makes any decent capacitor mic sound obviously 'valvey'.

Though the tonal change isn't drastic, it does add a certain throaty intimacy to vocals, while rounding out the bottom end quite nicely. However, because neither box has an input gain metering system, you have to set up the amount of 'drive' by ear. Even if you can't use the DI box with microphones directly, you can patch it in via console insert points to colour what you already have.

Dual Tube Microphone Preamp
Bellari
RP220

Used with electric guitars, the result was less dramatic than I might have expected, but again, the sounds were delivered with enhanced warmth and a hint of compression. The only negative point I discovered was that the DI box hums alarmingly if the gain is set to maximum and no input is plugged in.

MP220 £575
ADB3 £235

PROS

- Simple to use.
- Both units deliver the 'valve' warmth promised.
- The units are versatile in that the DI box can also accept speaker level signals, whereas the mic preamp will take mic, line and instrument levels.

CONS

- Some form of pre-output gain metering would really help setting up.
- Cosmetically uninspiring.

SUMMARY

Though both flexible and genuinely useful valve processors, the strong competition will limit their sales at the current asking prices.

SUMMARY

These two units actually perform very well, but given that they are priced to compete with the likes of the TLA Range, or the excellent Gas Cooker all-tube DI from Ridge Farm (see the reviews of the TLA mic preamp/DI and Gas Cooker in *SOS* August and June '95 respectively), I feel that more attention should have been lavished on the presentation. Also, I'm not convinced that the all-tube circuitry sounds significantly different to circuitry that's part-tube, part-solid-state, but when it comes to valves, so much is subjective. I don't feel the ADB3 DI box is really tough enough to spend its life on the floor, which is where DI boxes generally end up, and the external power supply isn't even supplied as part of the package.

These are both interesting products, which unquestionably do the job asked of them, but they either need to be cheaper or more lavishly packaged to lure the potential purchaser away from more established alternatives. SOS

FURTHER INFORMATION

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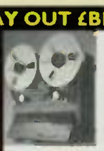

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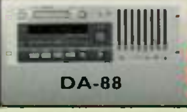

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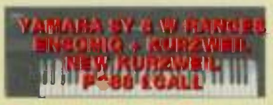

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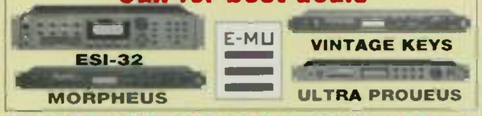

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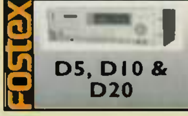

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These tiny and cost-effective line mixers could prove invaluable in all sorts of studio, live, and multimedia situations. DEREK JOHNSON thinks small...

It's a fact of life — no matter how many mixer or multitracker inputs you have, there'll always be times when you could use more, and if you've spent time and money choosing and buying your main mixer, it's a lot of hassle to get rid of it just for the sake of a few more inputs.

A cheaper and more convenient option is to add a sub-mixer — it'll cost money, but it needn't be much, especially if it's one of these tiny new mixers from US manufacturer Midiman. The MultiMixer 6 and MicroMixer 18 both offer sturdy build quality, low-noise performance and a lifetime guarantee, and have plenty of inputs for their modest price tags. Potential uses for them are practically unlimited.

MULTIMIXER 6

This is the simplest of the two mixers, a 6-input unit aimed at the multimedia market. Smaller than a video cassette, the MultiMixer 6 is powered by a 9V PSU and offers six input channels, each with a jack socket, level control and pan pot. A pair of master level controls, left and right output jacks, stereo headphone socket and power LED — and that's it.

The MultiMixer 6's natural home is in a desktop music/multimedia environment: the stereo outputs from a soundcard, CD-ROM, and perhaps a synth module could all be brought to one central point, before being amplified or monitored on headphones. Of course, any musician in need of extra, cheap inputs should also consider the MultiMixer 6: three stereo synths can be easily added to your main mixer or cassette multitracker via this tiny device. The absolutely cash-strapped or undemanding may find that the MM6 works as a sole mixer, straight to a stereo recorder, or on stage, especially given the built-in effects and panning facilities of most modern synths.

MICROMIXER 18

A larger mixer, but still only about the size of two video tapes, the MicroMixer 18 takes up little desk space, or half a 1U rack space, and an optional rack kit lets the MM16 slide out when you need to alter the knobs. It's also rather more versatile, offering a total of 18 inputs. The only compromise is that six inputs are configured as three stereo pairs without level controls, but the remaining 12 mono inputs each feature a level control, pan pot, two (yes, two!) auxiliary sends and a clip LED. The main stereo mix has a pair of left/right level controls (as does the headphone output) and a dual bargraph LED level indicator, and there are two returns (one stereo, one mono). This adds up to an impressive 21 inputs of one sort or another. All connections are on jack sockets, and power comes from a 9V PSU.

The inclusion of two aux sends takes the MicroMixer into a different league of usefulness. Although the lack of EQ lets it down for serious multitracking, recordists after extra channels to go along with their cassette multitrack — to mix sequenced sound sources sync'd to tape, for example — could do much worse, and certainly spend much more. Add a couple of modern synths, a couple of old monosynths, a couple of effects processors and a DAT machine, and you'd be in the budget home recording business — with plenty of inputs to spare.

CONCLUSION

It's now time to address two important considerations: sound quality and price. Both mixers have been designed to offer ample headroom and minimal noise — and the circuitry is so simple that this has been comfortably achieved. For most users, whatever is plugged in (ie. the average modern digital synth or effects processor) will generate far more noise and hiss than the mixers themselves.

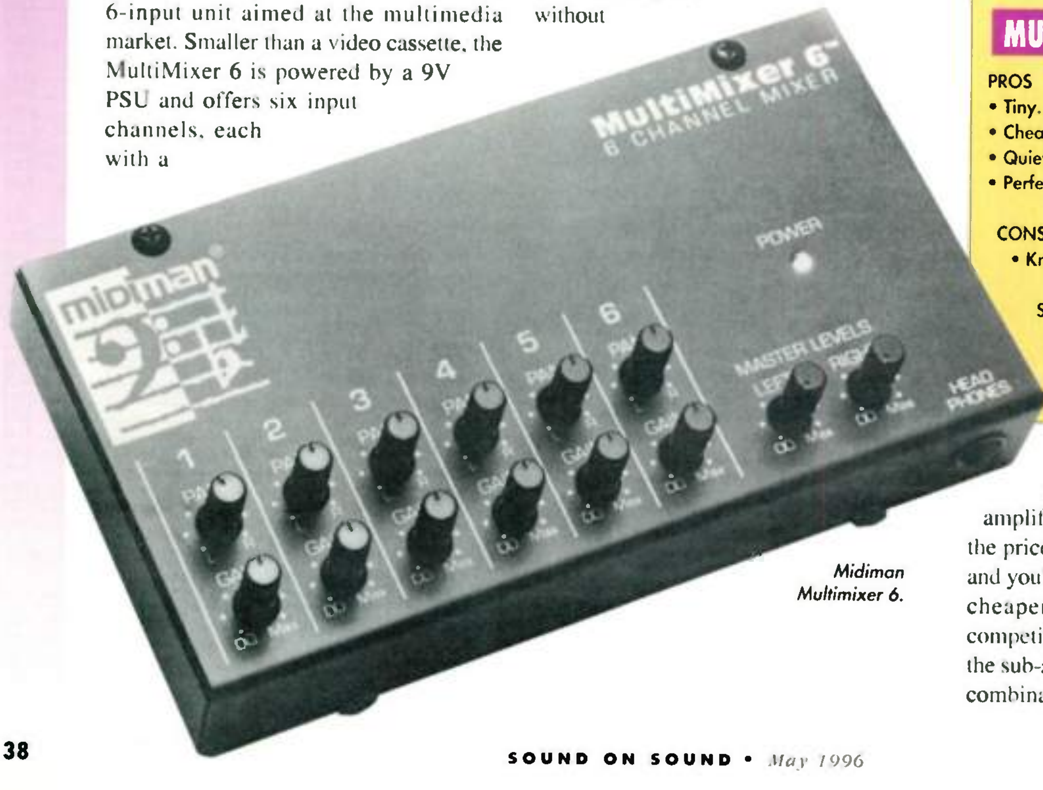
As for actual quality, the simple circuitry also means little coloration of sound: in fact, Midiman note that no signal passes through more than two amplifier stages from input to output. On the price front, at £69, the MM6 is cheap, and you'll be hard-pressed to find anything cheaper. The £199 MM18 has more competition, but none of the contenders in the sub-£250 mixer price bracket offer this combination of compactness and inputs.

MULTIMIXER 6 £69

PROS
- Tiny.
- Cheap.
- Quiet.
- Perfect for multimedia.

CONS
- Knob position visibility can be a problem.

SUMMARY
A very useful and inexpensive addition to your audio armoury.



Midiman Multimixer 6.

WRH

MicroMixer 18
18 CHANNEL MIXER
midiman

Midiman Micromixer 18.

Size and price aside, it is possible to make a criticism or two. I recognise faders are impossible on devices of this size, yet the knobs used are spindly and tightly-packed. These may be fiddly for some people, particularly when trying to fade a mix using the two master level knobs. They might also be prone to breakage, though the larger MM18 does have a raised protective lip around the edge. It can be tricky to actually see a pot's value in less than ideal lighting — a little white marker would have helped. And if you want to plug mics or guitars into either mixer, you'll need some sort of mic preamp or guitar DI box.

It's still easy to recommend both mixers to the live or studio musician. Either would be worth having around on a 'just in case' basis. You need never run out of inputs again. SOS

MICROMIXER 18 £199

PROS
- Lots of inputs for price and size.
- Two aux sends.
- Versatile.
- Quiet.

CONS
- Knob position visibility can be a problem.
- No level controls for stereo inputs.

SUMMARY
Extremely handy to have around, whether you want to use it as the sole mixer in a simple recording setup, for live submixing, or as extra inputs for your main desk.

FURTHER INFORMATION

£ MultiMixer 6 £69; MicroMixer 18 £199. Prices inc VAT.

A Midiman UK, Hubberts Bridge House, Hubberts Bridge, Boston, Lincs PE20 3QU.

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AVI Neutron

Nearfield Monitor Speakers

PAUL WHITE tries out these tiny, British-built monitor speakers — and discovers that small really is beautiful.

AVI is a British audio systems components manufacturer regarded as something of a rising star in the hi-fi world, and whose latest venture is into loudspeaker design. Their first product in this field is the tiny Neutron, measuring only 254 x 235 x 195mm. Hand-finished in natural cherrywood veneer, the Neutron is a passive, ported, two-way system using Vifa drivers; a 115mm inch bass/mid unit with a 25mm voice coil augmented by a 19mm soft-dome tweeter.

I spoke to designer Martin Grindrod, who spent over three years researching the project. He explained that although he's adhered to conventional technology, the Neutron challenges the accepted wisdom of loudspeaker design in some key areas, particularly when it comes to taking accurate and meaningful measurements. He stresses the importance of proper cabinet damping to minimise the effect of internal reflections, and maintains that the computer-based measuring systems often used in loudspeaker development produce meaningless results below 200Hz. Apparently, AVI has invested heavily in specialised test equipment, and has even constructed its own outdoor testing tower for making free-field measurements.

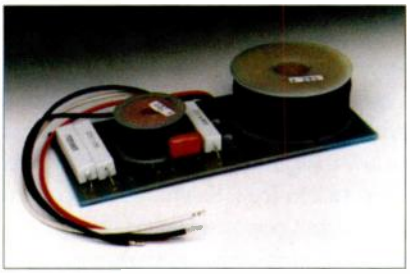
The crossover point has been set at 10kHz, well away from the vulnerable speech band, and air-cored inductors and metallised polypropylene capacitors are used in the fourth-order crossover filter. A second-order filter is used to drive the tweeter, and the overall response is flat within +/- 1.5dB up to 20kHz, with the bass roll-off starting at 70Hz. Apparently the tweeter is rated up to 40kHz, with only a 6dB roll-off at that frequency.

The bass/mid driver, which is recessed so as to be flush with the baffle, has a reassuringly large magnet, and a die-cast chassis supporting a doped paper, curvilinear cone suspended in a soft surround. Connection to the speaker is via rear-panel binding posts and the holes in the terminal are large enough to accept banana plugs or very heavy gauge cable. There is no provision for bi-wiring, and the speakers are not magnetically shielded.

LISTENING TEST

Appropriately, the speakers were driven from an AVI integrated amplifier which delivers up to 100 watts per channel, and the speaker stands placed close to a wall in accordance with the manufacturer's recommendations. These speakers, which have a nominal 8Ω impedance, are aimed primarily at the hi-fi market, but because of their size and their design brief for accuracy, I was keen to see how well they would fare in a nearfield monitoring situation.

Accepting the lack of really deep bass, which is inherent in any design, the Neutrons managed to sound full and smooth, with no trace of boxiness. The choice of a high crossover point appears to have paid off, because the whole of the critical mid-range is handled smoothly by the bass/mid driver, resulting in an open, detailed sound devoid of any harshness or nasty phase effects. These are very revealing speakers, partly because of their exceptional mid-range and high frequency integrity, but also because the mid-range isn't overwhelmed by bass, which is so often the case with full-range monitoring systems.



Because the Neutrons aren't magnetically screened, I did some tests using my Apple 14-inch colour monitor, and found that no problems occurred unless the speakers were brought closer than about ten inches from the sides of the monitor.

When it comes to the bottom line, these are quite expensive speakers given that you can buy a pair of JBL Control Ones for about half the price, but in their favour, I don't recall every having heard such an accurate or natural-sounding small speaker. Used in the nearfield, the imaging and detail delivered by these speakers is beyond reproach, and there's no shortage of level either, providing you have at least 50 watts per channel to play with — the quoted efficiency is 83dB for 1 watt at 1 metre. If you need quality, but space is at a premium, these are most definitely speakers to check out.

AVI NEUTRON SPEAKERS £499 PAIR

PROS
- Beautifully engineered.
- Detailed, non-fatiguing sound.
- Extremely compact.

CONS
- The Neutrons will inevitably be percieved as being at the top of the price range for small speakers.

SUMMARY
A highly accurate miniature monitor for those prepared to pay a little extra for small size and a high degree of audio integrity.

FURTHER INFORMATION

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Studio 1100 Specifications
- As 1176 but with 88 keys
- Also available with integral flight-case

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James Hallawell, pictured at the Royal Albert Hall during the recent Alison Moyet tour.

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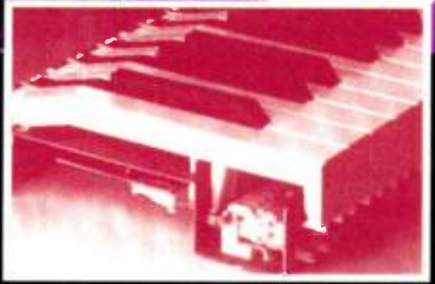

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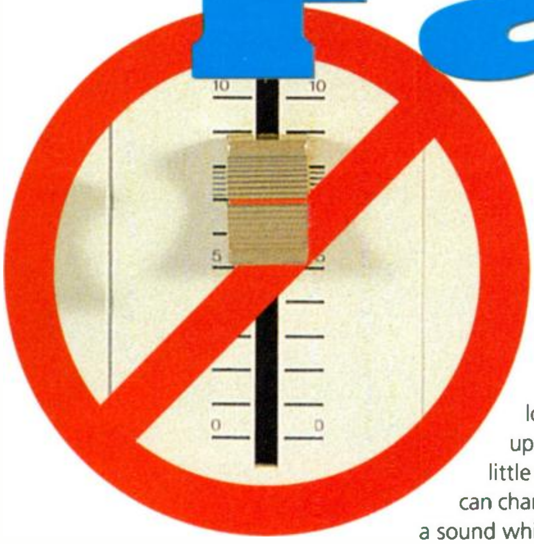
WRH

Don't touch that Fader!



***CRAIG ANDERTON* offers a few tips to help you balance your mix without relying solely on changes to relative volume levels — and gets in touch with his Neanderthal past. Additional material by *PAUL WHITE*.**

FADERLESS MIXING

Conventional wisdom has it that to make a sound appear louder in a mix, you just turn up the level — but by applying a little psychoacoustic theory, you can change the perceived loudness of a sound while barely affecting its level at all. By applying the correct techniques, you can make a sound sit at the front of a mix, or have it settle demurely into the background, and the results can appear far more natural than working with level alone.

Audio perception is inextricably linked with survival, and the human hearing system is most interested in the first few hundred milliseconds of a sound, because that gives clues as to whether the source of the sound is a threat — whether or not it's a sabre-toothed tiger, for example. Consequently, what happens during that first few hundred milliseconds greatly affects the perception of how 'loud' that signal is, as well as its relationship to other sounds happening at the same time. In other words, the sounds we register as most important and potentially threatening are the ones that grab our attention. If we develop this idea, we can devise different ways of changing the prominence of a sound in a music mix, without using traditional level changes.

Given two sounds of equal loudness that play at almost the same time, the one that started first will appear the more prominent. This is the basis of the Haas or precedence effect. For example, suppose you have kick drum and bass guitar hitting at the same time; if you want the bass guitar to be a little more prominent than the kick drum, try moving it ahead of the kick slightly. Conversely, to push the bass behind the kick, move it so that it sounds slightly later than the kick.

The way to move sounds depends on your recording medium. With MIDI sequencers or modular digital multitracks, a track shift function will do the job. With hard disk recorders or 'Audio plus MIDI' sequencers, you can simply grab a part on-screen, and shift it or type in a track delay. With analogue recording, a simple delay unit can be used to delay any track. You'll need to set the feedback to zero, the effect level to max and the direct level to off. The delay should be patched in via the appropriate mixer insert point, and you need a range that will allow you to set up between 1 and 50ms of delay. The effect must be set by ear, because if you go too far, the musical feel will be affected.

I'M SO EXCITED...

In nature, the closer a sound, the brighter it is, which means that both high-frequency EQ and enhancement are useful tools in creating a sense of proximity. If you want to bring just a couple instruments out from a mix, patch an exciter/enhancer or 'tube distortion' device (depending on whether you're looking for a cleaner or a grittier sound, respectively), and use it to process the sounds you want to bring out.

Most exciters are designed to work in console insert points, but with most models, you'll find that you can also get away with using them in the aux send loop, providing you turn the effect balance full up. If you have a unit that works OK this way, you have the benefit that you can turn up the aux send for individual channels, to make them stand out from the mix to a greater or lesser degree. Most people use enhancement devices to process an entire two-track tape, but they also work well when used in the way described above, because they allow you to create contrast between the different sounds in a mix. If your enhancer isn't happy working in the aux send system, you could patch it into a group insert and then route all the sounds to be treated to that group. Figure 1 shows an enhancer patched into the aux send return system of a console.

▶

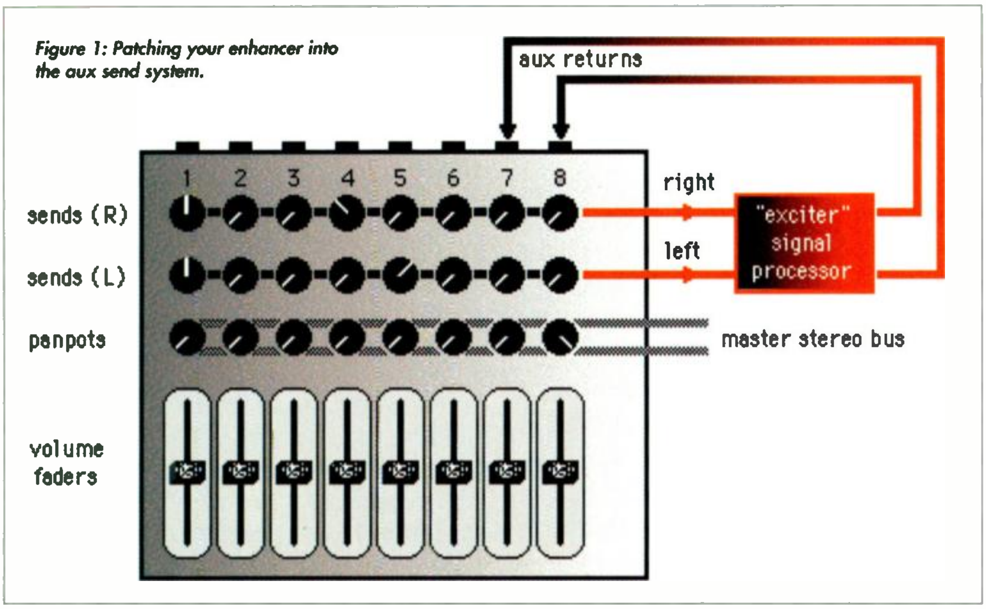


Figure 1: Patching your enhancer into the aux send system.

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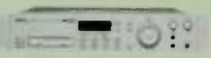

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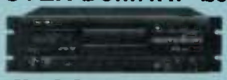

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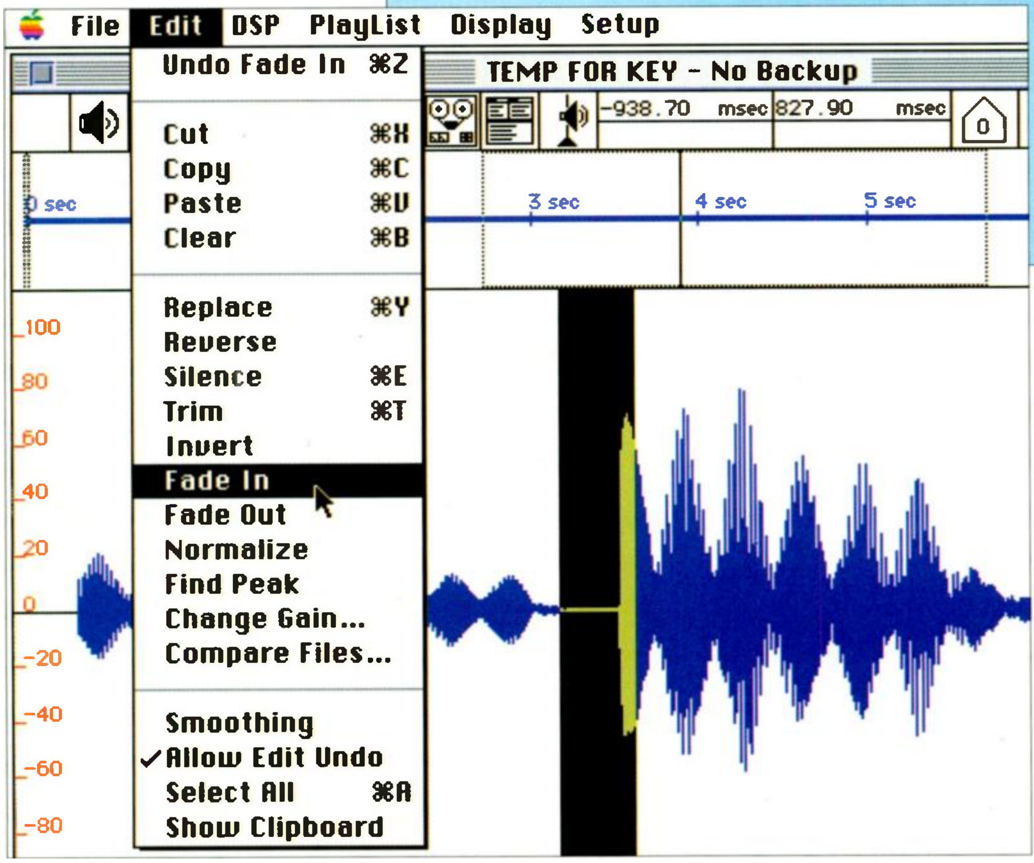
MELLOWED OUT

Just about any anti-digital diatribe focuses on how tubes, and analogue gear in general, create a mellower, more rounded sound compared to digital media such as CDs or DAT. No matter which side you take, one thing is clear: the sound is at the very least different — and you can use this to your advantage. As just one example of how to change the mix with tubes, try recording background vocals through a tube preamp, and the lead vocal through a solid-state preamp (or vice-versa). Assuming quality circuitry, the 'tubed' vocals should be less 'in your face' than the solid-state one, although some tube preamps behave as exciters and sound even *more* upfront, so let your ears decide.

HOW TO AVOID MASSIVE ATTACK

With a hard disk recorder or 'Audio with MIDI' sequencer, you can do some cool fade-ins to make an attack less prominent. However, if you do a fade starting from the beginning of a sound, you'll lose the attack altogether, so instead, extend the start of the fade to *before* the sound begins, as shown here. The audio then doesn't come up from zero, yet you definitely reduce the attack, which makes the sound less attention-grabbing.



Reducing the attack on sounds using an 'Audio plus MIDI' sequencer.

Percussion seems to work well through tubes too, especially when you want it to feel less prominent than the trap drums. If you don't have access to tube and digital sound processors, try out your mic collection to see how different they sound. The warmer mics can be used for sounds that you need to keep at the back of the mix, while the brighter mics can be used to push sounds to the front. Often, you'll find that different mics are capable of tonal nuances that can't be replicated with EQ.

Human hearing has a tendency to pay less attention to constant sounds, and you can use this to your advantage by slightly detuning your synth patches to make them more noticeable. This involves doing a little programming of your synth, but the effect is worth it. Take a choir patch that has two layered chorus sounds (the dual layering is essential). If you want this sound to grab the ear more, use a pitch envelope to add a slight downward pitch bend from slightly sharp to concert pitch on one layer, and a slight upward pitch bend to concert pitch on the other layer. The pitch difference doesn't have to be very much to create a more animated sound. By the same token, adding a little delay vibrato to a sound breaks up the monotony, making it more noticeable.

SHOT THROUGH WITH EQ

While movement is supposed to make a sound stand out, the regular movement imposed by a chorus unit has the effect of diffusing your attention, so if you want to weaken a signal, a chorus/flanger can help a lot. The phase interaction can also cause a real (as opposed to subjective) level drop, if you set the effect up properly.

Set the effect for a short delay (under 10ms or so), and use an out-of-phase output mix, where the output control which blends straight and delayed sounds reads -50 instead of +50. Alter the mix by starting with the straight sound, then slowly add in the delayed sound. As the delayed sound's level approaches the straight sound's level, a comb-filtering effect comes into play which essentially peppers the signal's frequency spectrum with holes. If you're trying to make a piano or guitar take up less space in a track, this technique

A CRITICAL PANNING

One common technique used to strengthen voices is doubling, where a singer sings a part then tries to duplicate it as closely as possible. The slight timing variations add a fuller effect than doubling the sound electronically. However, panning or centring these two tracks makes a big difference during mixing. When centred, the vocal lays back more in the track, and can tend to sound less full.

When panned out to left and right (this needn't be an extreme amount), the sound seems bigger and more prominent. Some of this is also due to the fact that when panned together, one voice might cover up the other a bit, and this doesn't seem to happen as much when panned. You also remove the risk of phase cancellation by panning the two takes left and right. Some singers are so accurate that when you pan their doubled vocals to mono (centre), you can hear the levels beating as the signals drift in and out of phase.

works well. Similarly, adding a lot of reverb can create the effect of distance. So, now you know why your heavily effected lead vocal never sounds quite as in-your-face as you might like!

As hinted at earlier, EQ is a very under-utilised resource for mixing. Turning the treble down instead of the volume can bring a track more into the background, without it becoming 'smaller'; just less 'present.' A lot of engineers go for really bright sounds for instruments like acoustic guitars, then turn down the volume when the vocals come in (or some other solo happens). Try turning the brightness down a tad instead. If you have an effects unit that can create EQ effects under external MIDI control, you can use a sequencer to automate these EQ changes for you — so you don't even have to expend the effort of moving little faders and switches.

BROAD BRUSHSTROKES

Though most mixes are initially balanced using the level faders, by applying the techniques mentioned here, you can make a mix appear more dynamic and less cluttered, without having to keep juggling the levels. If you're painting a picture, you don't place items in the background just by making them smaller, you also choose more subdued colours — and so it is with audio mixing. You can also use the ideas discussed to make background sounds more noticeable, which will allow you to mix them at a lower level without them getting lost. This can be important in a busy mix, where you find yourself running out of space all the time.

> *"If you're painting a picture, you don't place items in the background just by making them smaller, you also choose more subdued colours — and so it is with audio mixing."*

Even in a very basic home studio, you have a lot of options when it comes to mixing — and more coming along every day. Try some of these ideas, and I'm sure you'll add at least some of them to your repertoire of mixing techniques.

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Meet *El Presidente*

KEITH BARR OF ALESIS

Alesis made their name with their reverbs, but really came of age with the revolutionary ADAT digital multitrack. PAUL WHITE talks to the company's founder and President Keith Barr about the impact of ADAT, and the future of technology in music.

Despite the achievements of his company Alesis, Keith Barr seems less than comfortable with the crowds at music trade shows. Whenever I meet him, I always get the impression he'd rather be back at base, working on a new design. However, he's always ready to talk shop, so at the winter NAMM show in California, we escaped to the tranquillity of a back room for an informal chat, and what follows is the result of that conversation.

Alesis was founded when Keith Barr turned his back on designing MXR effects pedals, and instead developed the XTC reverb unit and the world's first ever ultra-low-cost digital reverb, the Midiverb. The last time I spoke to Keith in any depth was a year or two before the announcement of ADAT, and at the time, he saw tape as having a secure future as an audio storage medium for many years to come. Even with the recent dramatic falls in the cost of hard disk storage, tape is still significantly cheaper than disk as a storage medium, and ADAT has obviously been one of the big success stories in recent music history. I asked Keith if ADAT's success had taken him by surprise.

"It's overwhelming. I hadn't realised until this trade show just what a profound effect ADAT has had on the recording world. When I was younger, playing guitar and going into a studio running two inch, 16-track tape, a big board full of knobs and huge speakers — that was the ultimate. The notion that we would be building machines to bring that kind of capability into people's homes was astounding."

Last time we met, we were looking at the life expectancy of recording tape. Do you still think its future is secure?

"We researched various removable media concepts, and at present, it seems that only through very aggressive compression techniques would you be able to use today's alternative media technologies in a way that would allow them to compete with tape. I can't predict how long tape will last, but I would be surprised if it wasn't still going strong even ten years from now — no kidding. There's a great advantage in an inexpensive medium which you can just fill up with data and stick on the shelf."

Did you design the new ADAT XT so that the tape transport could be replaced by a disk drive of some kind, should the technology become available?

"Products like the XT are synergistic, because we find that's the only way to make a cost-effective product. If we did build a hard disk system, we'd have to take the same approach and build it from the ground up — we couldn't really modify ADAT technology."

Now that the ADAT XT has replaced the original ADAT, can we expect to see a new BRC coming along, or will the existing one do the job okay?

"System synchronisation issues, which is largely what the BRC deals with, are complicated, and it's probably a good idea for us eventually to think about a more up-to-date BRC — but I can't divulge any plans for one yet. You don't need to worry about selling your old one though — it will work fine with the XT!"

DIGITAL AUDIO

How do you feel about the analogue-versus-digital argument: the notion that digital sounds clinical?

"Introduce me to that guy! It all has to do with sample theory, information rate and a little bit of maths, I suppose, but ultimately you use your ears, and if you find something you don't like, you track it down and solve it. In a digital system, it could be a crummy filter here or a little extraneous noise there, or even something happening in the speaker system."

Is 16 bits enough, or should we be looking towards higher resolution systems in the future?

"It depends on what you need. There's a big difference between active signal-to-noise ratio and full-on dynamic range, and if a person wants to be a bit sloppy about recording levels, then a little extra dynamic range would be helpful. The current signal-to-noise ratio is pushing 90dB — the extraneous distortion and noise that introduces when a signal is present in a channel is so insignificant that I'm not sure, for any practical purposes, we need to go much beyond 16 bits. In terms of dynamic range, I'm sure 20-bit would be helpful, but it's not so much a question of how you print 20 bits to tape, it's how do you convert audio to 20 bits of digital? There are a lot of converters that claim to be 20-bit, but they are barely 17-bit in terms of dynamic range."

Do you think noise shaping techniques are helpful in extending the dynamic range of 16-bit systems?

"The results we've had from experimenting with noise-shaping systems are mixed. The results for some kinds of sounds yield an improvement, but for others, not necessarily. No system we make right now has a noise-shaping system in it; we've done some experiments in that area, and merely shifting where the noise pops up in the spectrum causes a change in the way the sound is perceived. It hasn't been demonstrated yet that it offers any great advantage.

"When you're talking about signals down in the least significant bits, you're not talking about meaningful information in the first place. Some background noise will always be present, upon which we place sounds that are, hopefully, pretty far up in the dynamic range compared to the noise. If you actually try to resolve tiny signals down in the least significant bits, where noise shaping really *could* be of value, you're really asking a lot of a system."

In my own experience, far more noise gets onto the recordings from the source material than can be attributed to the recording machine anyway. Would you go along with that?

"Well, you have to be careful about levels when you're tracking, but in general, I think you're probably right. You're going to get noise from mic amps, and from the electronic instruments you're recording. Perhaps we could go a little way beyond 16 bits in the future, but I can't see a need for 24 bits — which is what some people are now talking about."

"Do you realise it costs a billion dollars to make a plant that produces eight-inch silicon wafers in sub-micron geometry?"

▶

DIGITAL MIXING FOR HUMANS

Contrary to all predictions, you've yet to come up with a digital mixer to accompany ADAT. What are your reasons for holding fire in this area?

"That's the way of the future. The concept of digital mixing offers many advantages to both the user and to the manufacturer. One of them is economy; you can get more at your command, at a lower cost. The mixer can also be smaller, and the ability to integrate effects and multiple routing paths without needing a lot of patch cords is attractive.

"I feel that the biggest problem with digital mixing consoles at the moment is the human interface — the controls. With current technology, this might best be implemented using big CRTs or maybe colour LCDs, but these aren't cheap. There are pots that move, but you have to think about what their function is at every moment — it becomes a struggle trying to relate how you move this control and what the numbers changing on the screen mean. I feel that digital mixers will only become really practical, and ultimately dominate all mixing possibilities and make analogue obsolete, when we have controls and visual feedback mechanisms which are both very low-cost and responsive.

"The user has to be able to *interact* with the controls, rather than have to displace himself intellectually by thinking, 'I turn this knob, this number changes, therefore such and such happens'. The control surfaces and feedback surfaces must evolve before digital mixers dominate — as they ultimately will. As you might imagine, we are dedicated to that technology."

Does that mean that the electronics is developed to the point where it can equal the performance of a good analogue console?

"The signal processing chips could be built with absolutely mind-boggling capabilities, and they could be made at an unbelievably low cost. The problem is not in the the electronics, it's in the controls."

One of the pitfalls that I can already see is that you can get a well-thought out console like the Yamaha 02R, where all the usual controls are fairly easy to get at, but because there's so much more you can do with digital mixing systems, there's the temptation to add all kinds of new features that can't be accessed so easily. How do you avoid that pitfall?

"The grand promise of digital mixing is that you can multiplex a limited number of controls over a wide number of channels, yet it takes a lot in your head to keep track of everything. On the other hand, if you were to allow all the controls to be immediately available, you'd have a very large and very expensive control surface. If you want to multiplex a large number of functions via a small number of controls, your brain is going to become involved."

Do you see outboard gear remaining in separate boxes but digitally linked to the console, so that when you save a mix, you also save your effects and outboard settings?

"I don't think so. Today, with Windows on your computer, you can call up many windows, allowing you to access several applications simultaneously. Even with a traditional studio setup, you can't focus your attention on more than one task at a time, and on the board, you can only focus your attention on one *knob* at a time, so the idea you'd want separate devices present all the time will wither away, driven by economic demand. The challenge is: how do you organise the control surface to be so incredibly, intuitively responsive that you can at one moment be controlling a mixer channel, and the next an effects patch or a tape machine? It's like virtual reality without wearing the goggles."

Keith Barr of Alesis

adat
ALESIS

Digital 8-track to die for — the Alesis ADAT XT.

ON THE LEVEL

Perhaps you can help to clarify some confusion over digital metering? I've had readers phoning up asking why, when a steady tone on their console meters reads 0dBu, ADAT is reading it at around -15dB. I think I know why this was done, but I'd appreciate hearing your reasoning.

"With digital audio, peak reading meters are used, because everything is linear up to digital saturation, and beyond that we have clipping. Most mixing boards are set up with meters that are best suited to analogue machines, which means that you'll often go beyond 0dB to push the machine a bit harder, and you'll suffer a little more distortion due to tape saturation. In other words, mixers have a certain amount of headroom above 0dB, and most people are expected to push their signals into that region. Even when the meters are reading below 0dB, transient peaks may still be well over 0dB.

"Headroom, when applied to digital recording, makes no sense, because you can't push the signal beyond 0VU. If you put a sine wave into your mixer and it reads 0dB, then you will get a reading of around -15dB on your ADAT — but if you put in a microphone and your drummer hits his sticks together, where the meters on the board go and where the meters on the ADAT go will be different. The meters on the desk will barely move, but you may still have clipped the ADAT."

So if you had made the ADAT read 0dB at +4dBm (or -10dBV), the user would either always be running into clipping, or be forced to use the mixer at an unusually low level, which would probably compromise the gain structure of the mixer?

"It's really a matter of education, as the industry outgrows the older notions of nominal level, and enters the digital world — where only peak levels matter."

And it doesn't help that different manufacturers of digital equipment tend to settle on slightly different levels — there's no real standard, from what I can tell.

"It all comes down to what you want to record — if you want to record sine waves, you don't need any headroom, but if you want to record kick drums, you need lots. I don't know if a standard is actually required, because one day it's likely that everything will be done using peak reading meters. Perhaps the only place we need a standard on nominal levels is at the mastering stage, so that when we play back any two pieces of music over the same system, they come out at the same perceived acoustic level. That's the only place, other than broadcast, that I see standards being beneficial."

People often tell me that they push their ADATs into clipping, but they don't hear any

HAPPINESS IS A BAG OF CHIPS

You've obviously been very successful, to the point where I suspect you would no longer have to do this for a living if you didn't want to. That being the case, what keeps you going and what fires your enthusiasm the most?

"I love doing this, but what I'm really excited about is designing integrated circuits. I was raised on vacuum tubes, and I felt like the luckiest kid on the block when my daddy bought me a bag of 100 silicon transistors. It wasn't until I was about 20 that there were such things as analogue ICs. There were also simple op-amps, which you could wire up to make filters and other fun things, and I immediately went off making fuzzboxes and phase shifters. But in the entire world of electronic design today, nothing, nothing comes close to the playground that is afforded by integrating analogue functions onto silicon. It is the most fascinating, wide-ranging, elegant and beautiful medium that any electronic engineer could be involved with.

"I do a lot of work in this area, and it shows up in a lot of our products in very strange ways. I'm not going to go into detail, but we can take a logic CMOS processor with its logic-type transistors on silicon wafers, and can configure devices transistor by transistor... to produce operational amplifiers, resistors, capacitor networks, temperature sensors and a hundred other things. You're in a medium where the electrical leakages are so close to zero, they bear no relationship to the leakages you see on a printed circuit board. When you're dealing with capacitances in the range 0.001pF, or current in the pA range *[one million, millionth of an amp — Ed]* scientific notation is required to get a grasp on how small things are, and how vast the capability is. We have only scratched the surface of what is possible using CMOS FETs on silicon. It is the most wonderful playground, and I'm standing on the diving board, leaping in and having a blast with it."

Does that mean you're still focusing on the music market, or have you looked at other IC applications outside music that you'd like to get involved with?

"The cost of the computer tools for developing and processing ICs is so great — and the size of the music industry is so small — that it's not cost-effective to get really deep into this kind of design work exclusively for music. There are many applications outside of music, and I wish to produce devices for those commercial applications. However, there will certainly be ideas that can be transferred to music and paid for in the process. Our efforts in the music business can only be improved by expanding into commercial integrated circuits. Do you realise it costs a billion dollars to make a plant that produces eight-inch silicon wafers in sub-micron geometry?

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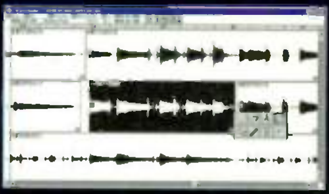

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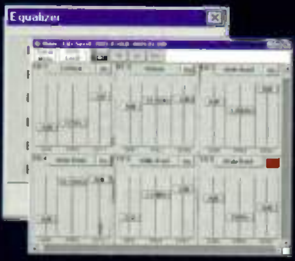

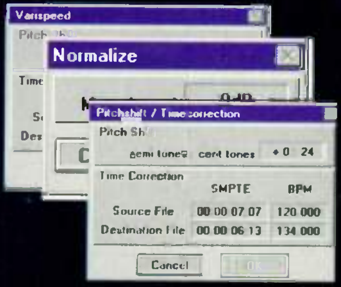
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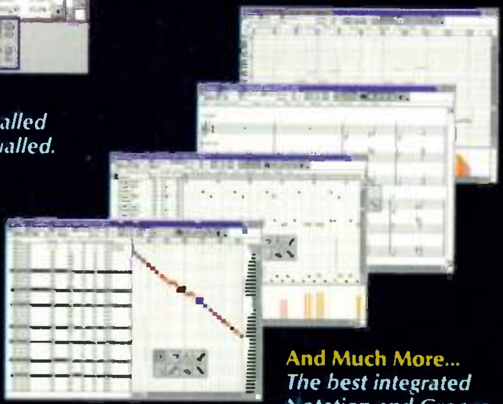

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distortion. Is there any form of analogue limiting in there, or is it just because short periods of clipping are difficult to hear?

"There's no limiting in ADAT, but different digital systems clip differently, and some digital systems clip terribly. The way numbers are represented in digital audio systems means that if the signal clips and there is no provision for what we call saturation limiting, then the peak of a sine wave, instead of just flattening a little bit, will jump to its opposite extreme level for a brief moment, resulting in a huge glitch which sounds terrible. We don't allow that to happen in ADAT or any of our signal processors, but some older digital products suffer from this problem — the one that helped give digital audio a bad name."

> *"I was raised on vacuum tubes, and I felt like the luckiest kid on the block when my daddy bought me a bag of 100 silicon transistors."*

CONJUGATING 'VERBS

Alesis has a strong name in the effects market, but are there any new effects out there to create? Are we destined to keep finding new ways of combining and refining the old ones?

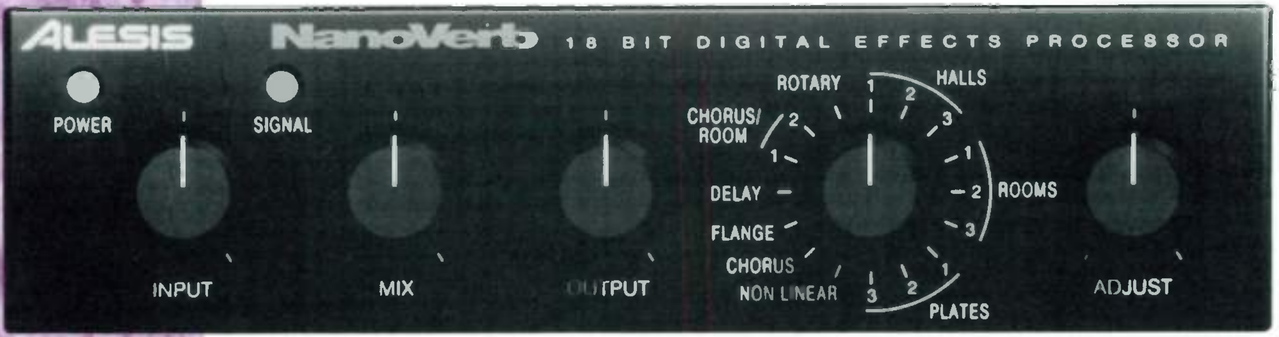
"We walk into a room, we clap our hands and we get this marvellous echo coming back, so we work on putting it in a box. Or you move your head and experience this funny flanging sound — we realise what it is, so we put it in a box. Effects don't start here from people imagining what could be generated by electronic processors — we hear natural phenomena, which we try to duplicate. All today's effects have grown from that."

Initially, your fascination was with reverb and how to make it available cheaply. Has everything been done in that area, or would you like to explore further?

"There's no end to reverb. It's like a violin — you can always make a better one. It remains an intellectual pursuit, but it's also a matter of trading off cost and performance, and refining the involved elements to come up with the best and most cost-effective solution. This is, by and large, a cost-driven marketplace, and I think we do very well in offering the right combination of quality and price."

That seems to be evident from your new effects processors. When you take the top off a Microverb IV, there's very little inside.

"You should look in the new Nanoverb — that's got a few of my analogue tricks in it [*see picture — Ed*]. The sound quality of our effects is much better than it used to be, before we found some conceptually simple ways to improve the algorithms — but that still involved a lot of hard work and sensitivity. Reverb algorithms are still hand-crafted things — I couldn't hand you a formula that would predict how a reverb would sound, although there are people who claim they can. The parameters that are hidden from the user are what make the difference to a reverb sound: their values are really important. When an impulse goes into a reverb, the order in which the successive impulses exit the reverb says everything about the tonality that you perceive, the impressions of repetition, of smoothness... And those things are very difficult to hand-craft, to get them to sound the way you want them to sound."



The incredible shrinking effects unit — after the Midiverb and Microverb, there's now the new Alesis Nanoverb. What next, the Picoverb?

Related to reverb is the concept of perception. Do you see any mileage in any of the 3D sound processes currently available?

"Let me talk a little bit about that. I want you to try an experiment someday with a white noise generator — get it from a synth, or tune an FM radio between stations. Connect to a single in-ear headphone to get a point source, and place it about 12 inches in front of your face. As you move it around or up and down, notice how the frequency response seems to change due to the shape of your outer ear. You'll hear resonances, high frequency losses and very abrupt transitions — moving it just one inch can cause a huge difference in frequency response. It's clear we get clues as to where sounds are coming from due to the expected frequency energy spectrum, and the perceived energy spectrum when we move our head. Very often, we'll move our heads just to see how a sound changes.

"You could try to replicate these tonal changes using filters, but you'd need to know exactly the shape of your head and ears to do it. I could build a set of filters and apply them to a sound in such a way that you would perceive the source as moving all around your head, but if you were to do the same experiment with someone else who had a different-shaped head and ears, it would be a different experience."

So do you think the difference between individuals is so great that we'll never get a system that works reliably for everybody?

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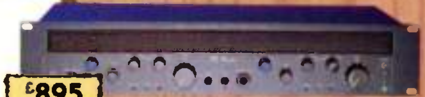

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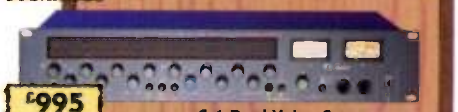

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Keith Barr of Alesis

"I don't really know enough about the differences between different people's hearing responses, but I will say that I cannot imagine in my wildest dreams that it will ever be universally effective. Maybe, to get futuristic for a moment, you could have your hearing analysed and the data put on some on some sort of card that you could swipe through a slot in your hi-fi system that would move the sound around just for you, but it might not move around so nicely for somebody else listening with you."

KEYBOARDS

I notice you have extended your keyboard range, so it's obviously an area you're pursuing. Is there anything else out on the market that interests you, or any new keyboard technology that you'd like to explore?

"We have excellent keyboards, but more than that, we have some excellent *sounds*, because we have some really neat people who just live their lives to make these sounds. They're the most inspired, creative people I've ever met and they're a joy to work with. To me, keyboards are good, solid instruments that humans play, and I'm not certain that anything wild or esoteric needs to be done. It needs to feel good and the sounds need to be satisfying. You can talk about modelling all day, but a good keyboard with nice sounds in it is something that most people will want for a long time. There is joy in playing a keyboard and being satisfied with what comes back; then there's the more technical experience of examining how sounds can be manipulated.

"Real-time control of things like filters can add life to solo parts without resorting to modelling, which is why the microprocessors that run these keyboards are much more important, ultimately, than the signal processing chip that does the number-crunching work. They have to scan the keyboard to see what's being played, they run the displays and keep track of all the voices to see where its filters are going — it keeps them busy.

Which of the products you've developed, other than ADAT, do you feel best about?

"You have to understand that I don't get fully involved with all these products, but I really like the original Microverb and the SR16 drum machine. The SR16 was a joint effort between Alan Zak, Marcus Ryle and myself; we did it in a very short period of time, and I think I can speak for them when I say it was thoroughly satisfying for all of us."

MACHINE-GUNNING A FEEL

On the subject of drum machines, is there anything that can be done to make fast-playing sounds more natural? Even on my Alesis D4, I still can't get tom fills to sound quite real. It's something about the way the samples interact and retrigger that isn't quite right.

"The pads that we've developed will help enormously from the playing point of view, but to get a really natural sound, you have to use multisamples. ROM is getting really cheap, and I think you're going to be able to look forward to sample playback devices that have more and more in them. For example, you might have ten snare drum samples under one key, so that each beat and each different amplitude of hit is slightly different. We'll certainly be looking at this area. Sample playback machines — be they keyboards, drum machines or whatever — I wouldn't ever like to see the company give up doing something like that.

"It's very satisfying to make a musical instrument, and clearly, all the things you're alluding to — multiple samples and different amplitudes, being able to play rapid rolls that don't sound like a machine gun — all that comes from the higher-speed microcomputers that are available now. Am I defining a new product here?"

FANTASY ISLAND

A few years ago Keith Barr came up with the 'Dream Studio' concept, where Alesis would eventually produce all the major items of equipment found in a typical studio. I wondered whether or not this vision had faded.

"Studios are evolving, and the technology is always changing direction — it's like chasing a chicken. We'll keep coming up with new products that we feel are of value to people working in this industry, and the direction it takes in the next year is likely to be slightly different from the direction we've plotted this year. The Dream Studio concept still seems valid, but it's hard to predict things too far ahead."

Not forgotten — The Alesis 'Dream Studio'.

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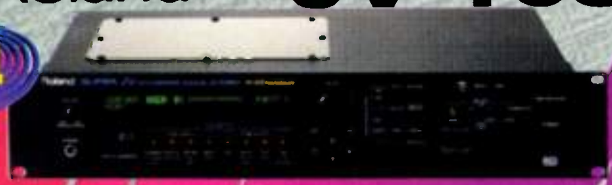

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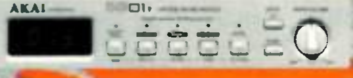

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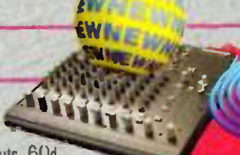

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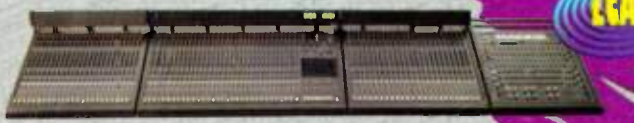

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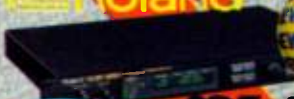

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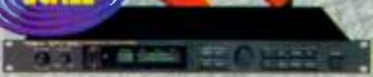

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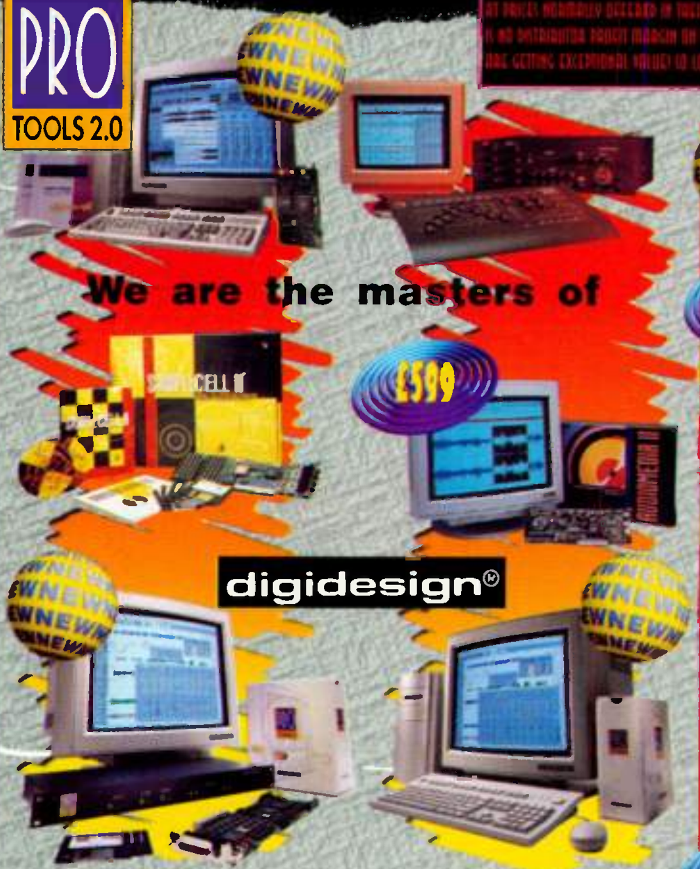

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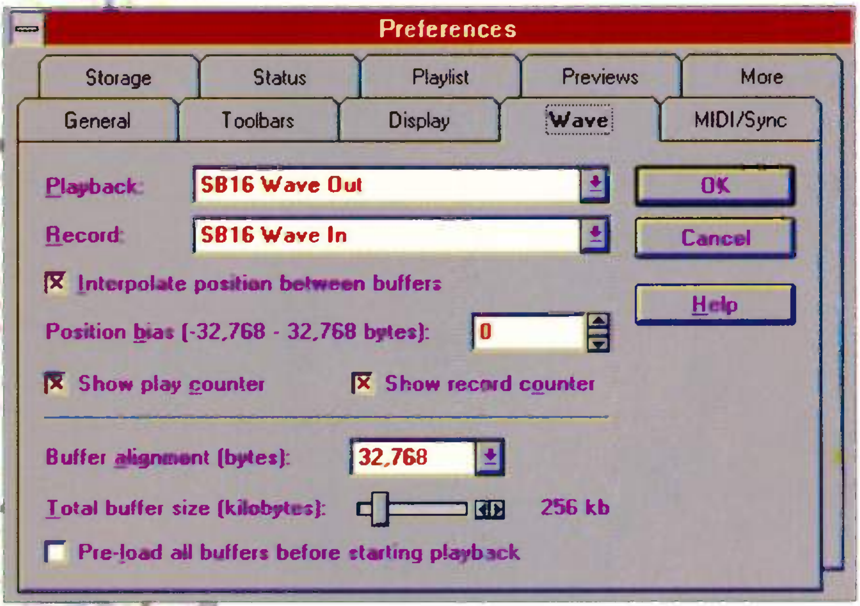
Window on the future

A major upgrade of this PC program makes it appeal to amateurs and professionals alike — but also provides some exciting pointers to the future of desktop audio. DENNIS MILLER takes a quantum leap in the dark...

SOUND FORGE v3.0 DIGITAL AUDIO EDITING SOFTWARE

Figure 1: The Preferences menu.



Playback: SB16 Wave Out

Record: SB16 Wave In

☒ Interpolate position between buffers

Position bias (-32,768 - 32,768 bytes): 0

☒ Show play counter ☒ Show record counter

Buffer alignment (bytes): 32,768

Total buffer size (kilobytes): 256 kb

☐ Pre-load all buffers before starting playback

SOUND FORGE v3.0 £499

PROS
- Huge toolkit.
- Native support for numerous Windows versions.
- Third-party plug-in support.
- Sampler support.

CONS
- No amplitude display scaling.
- Not cheap.

SUMMARY
Sound Forge is the leading wave editor on the PC and has a vast collection of processing and editing tools. With built-in support for bi-directional transfers to many popular samplers, MIDI and SMPTE time code triggering, and a clean, user-definable interface, it's an excellent program for manipulating audio data on the desktop.

The American software company Sonic Foundry is behind this 16-bit, stereo soundfile recorder/editor for Windows. Version 3.0 is a major upgrade, and combines dozens of processing options, an extensive editing toolkit, external sampler support, and MIDI and time code triggers, making it one of the most powerful Windows software applications in recent memory.

GRAND DESIGNS

Most wave editors are used to record, manipulate and play back sounds for audio projects on disk, but *Sound Forge* has designs on your entire studio. For starters, its Sampler Tool can be used to move Wave files between your PC and a sampler using either MIDI Sample Dump (SDS) or, if your sampler supports it, the newer SMDI interchange format. (You must have a SCSI card in your PC for SMDI, though it doesn't have to be your main disk controller.) The Sampler Tool provides setups for many popular samplers, including Digidesign's SampleCell II, and if yours is not on the list, an intuitive configuration menu will help you get started. You'll also find numerous loop control features in the Loop Tuner, to help you locate the perfect start and end points.

Next, you can synchronise the start of digital audio files and MIDI tracks by sending a Note On message from your sequencer or controller. *Forge* comes with a 'virtual' MIDI Router, which is a driver that allows you to send MIDI data directly across the PC buss, so you won't need a second computer to use this option. If you work with audio for video, you'll also appreciate the ability to use SMPTE and MTC to trigger files. To synthesize your own samples, there's a powerful FM synthesis engine that offers four operators, each with its own amplitude envelope, and 13 different algorithms for designing sounds. You can also create static waveforms, using an additive synthesis feature.

Whether or not you can squeeze all your work onto the desktop is scarcely a material consideration, when there's so many great tools for carefully crafting your music. Among the more familiar options are effects such as reverb and delay, as well as processing options like normalisation, time compression and expansion, and EQ. There's support for a wide range of sound file formats, which makes it easy to move your work among different computing platforms, as well as numerous unique editing options. Furthermore, nearly every aspect of the user interface can be configured to your liking. If you happen to find a must-have feature that's missing from this version, don't despair, as a number of plug-ins that extend the program's operation have recently been released (see the 'Plug And Play' boxout).

SUGGESTED USES

In case you've not realised by now, *Sound Forge* is well-suited to numerous digital audio ▶

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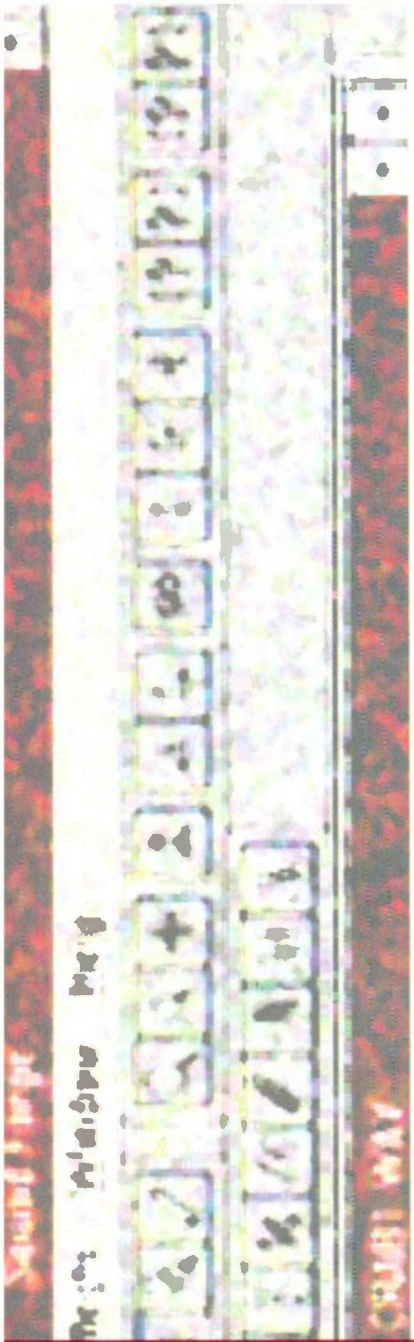

Sound Forge v3.0

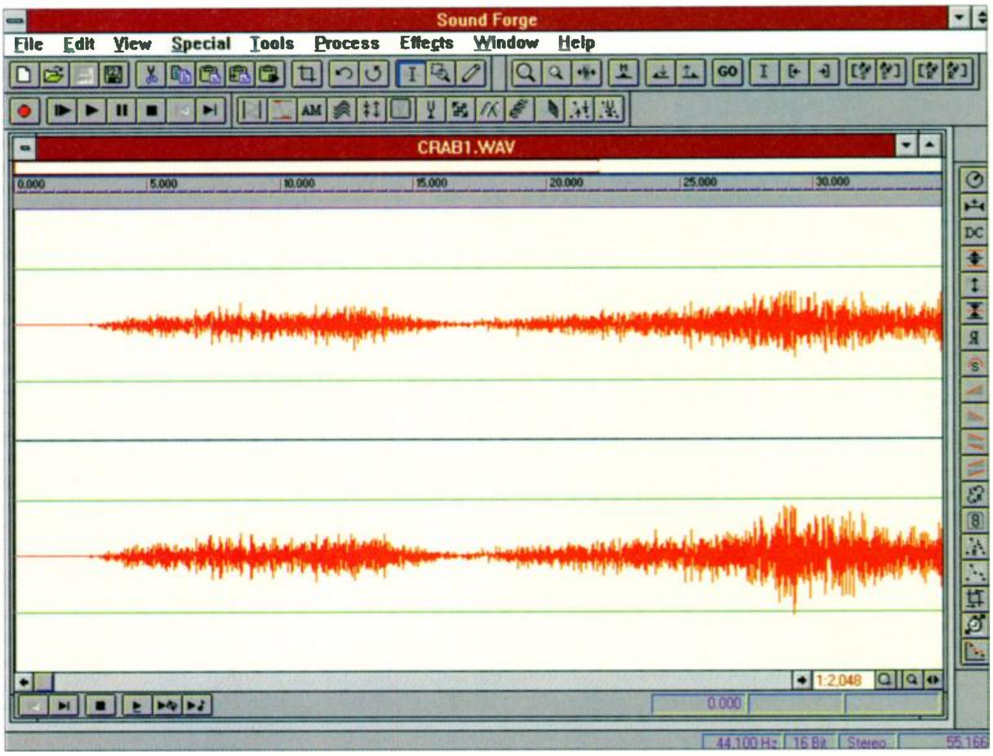

Figure 2: The main screen overview bar.

> *"Most wave editors are used to record, manipulate and play back sounds for audio projects on disk, but Sound Forge has designs on your entire studio."*

▶ applications. If you're a multimedia composer and need to create or process audio for presentations, computer games, or CD-ROMs, *Sound Forge* can do the job — and if your main interest is sound design for your own home studio projects, it can fit the bill there as well. If you own Digidesign's Session 8 or a Spectral AudioPrisma system, you could use *Forge* to enhance the options those systems offer, or maybe you just want to expand the editing capabilities of your sampler. Need to add a voiceover to a music bed for a radio jingle? *Forge*'s Mixer option makes that easy, and if your business is triggering live sound effects for stage productions, load up your portable with samples and bring *Forge* along to the gig.

I've had a lot of time to work with *Sound Forge*. Most recently, I used it to edit nearly one hour of audio for a theatrical project, and I've also put it to work designing sound effects for a computer game. I tested it extensively with my sampler, a Kurzweil K2000, and was very impressed with the speed of the SMDI transfer. I've also had the chance to use *Forge* to trigger files during a live concert, and for that, a Toshiba laptop, with its 16-bit audio output, was just right. I tested its SMPTE capabilities by making a number of recordings of some original film music, and then performing them using elaborate playlists whose events were triggered by time code coming from my video deck. Really quite a workout, I would say.

SYSTEM REQUIREMENTS

Versions of *Sound Forge* exist for every edition of Windows, including Windows 3.x, Windows 95 and Windows NT. The 95 and NT versions are true 32-bit applications, and run nearly twice as fast as standard 3.x Windows. There's also a scaled-down, entry-level version called *Sound Forge* XP, which does not accept the plug-ins mentioned elsewhere.

The requirements for Windows 3.x use are a 386SX or faster CPU (486DX recommended), 4Mb of RAM, a VGA or better graphics, a Windows-compatible soundcard, and a hard disk large enough to hold the amount of data you intend to work with — 5Mb is probably the minimum. You can calculate about ten minutes of stereo sound at CD quality for every 100Mb of drive space. Windows 95 and NT users will no doubt need the extra RAM and CPU power those environments require.

SETTING UP

Load up *Forge* and open its Preferences menu, and you'll encounter more options than you're likely to find in any other program (See figure 1). Here are the numerous settings that determine the program's appearance, plus MIDI and sync options, which Tool icons will appear on your screen, and much more. *Sound Forge* won't leave you wondering which settings are best for your system. Instead, it provides online help for every choice. If you need even more help, an extensive section in the user's manual is also devoted to maximizing performance. One useful tip *Forge* gave me related to screen redraw time: I was annoyed by the time it was taking to draw the waveform on screen when I first loaded a large file. By using the suggestion to alter the maximum zoom ratio when a file first loads, I cut the redraw time by a dramatic amount.

After a file is loaded, you'll also have access to short text messages that remind you what each

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icon's function is. These messages are displayed as you move the mouse over each button.

Sound Forge's main screen includes an Overview bar that displays an entire file, regardless of what segment is currently displayed on the screen (see figure 2). This is very useful for moving rapidly to any part of a large file. There are also buttons that allow you to zoom in and out, though this same task can be accomplished using the right mouse button. When you have many files open at once (the maximum depends upon how much RAM you have, but is approximately 50), the screen can easily become a bit crowded, but happily, *Forge* supports the Windows protocol in its use of automatic tiling and cascading of all open soundfile windows.

Elsewhere on the main screen you'll find a menu bar, a status line, several position and time indicators, plus tape-style transport controls. Toolbars, which are small groups of icons that provide access to most of the program's functions, are also displayed. You can move them anywhere you like, and even decide which will appear when the program first loads.

While working with *Sound Forge*, I was repeatedly struck by the flexible nature of its interface. There are many examples of this, but one worth noting is the ability to perform the same operation from different work areas. For example, if you've highlighted an area in a file from the main screen, and then open a menu item for altering the data, you can change the selection length direct from the open menu. Another example is the way in which you can access commands using different methods, including keyboard short cuts, mouse-click combinations, menu entries, or clicking on parts of the display itself. *Forge* also makes extensive use of the right-hand mouse button, which is rare in my experience. In most cases, this button brings up a menu of tasks that are suited to the area in which you are working. While so many options can be a bit perplexing at first, I soon found that the program's flexibility was truly exceptional.

RECORDING

Recording new files will surely be one of the most common uses for *Sound Forge*, and it is well-suited to the task. The two main recording options are Record to a new file, and Punch In and Out (with adjustable pre- and post-roll) of an existing one. There are also several modes available when recording, including Automatic Retake, where the program rewinds to the start of your selection after recording stops; and Multiple Take with Regions, in which a new region is

▶

PLUG AND PLAY

While *Sound Forge* packs a considerable punch, there are many new features that are now available as plug-ins for the main program. Among these are a Batch Converter, a Denoise/Vinyl Restoration Toolkit and a Spectrum Analyser. The Batch Converter accepts multiple files in any of 16 different formats, and converts them in a single pass to any of 15 formats. The supported formats include standard audio formats found on the Mac, Atari, Amiga and Unix systems. Not only will it do the conversion, but it also offers resampling and bit conversion at the same time, and there are numerous preset options that allow you to edit a file during the conversion. I work with a synthesis language called Csound that uses a rather arcane file format unlike those used by programs in more widespread use. Over the years, I've amassed dozens of files in this format, and using the Batch Convertor, I was able to convert them all to Wave files automatically.

Another plug-in is a vastly enhanced FFT window, with numerous view settings and one-click zoom in and out capabilities. Formerly, *Sound Forge*'s spectrum analyser had little to recommend it. While not as awesome as the analyser in Turtle Beach's *Wave for Windows*, one of the truly great displays of all time, the new FFT plug-in is perfectly serviceable, and actually offers more view options than the Turtle Beach feature. It's very useful for quickly determining the frequency components of a sound, which is an important prerequisite for effective filtering. From what I hear, the plug-in will also offer some form of resynthesis option in the near future.

Perhaps the most important of the existing plug-ins is the denoise and vinyl restoration tool. I've used the denoise option countless times to remove tape hiss and low-level noise signals that I have not been able to remove from my system. The denoise is simple to use: just give it a quarter-second fingerprint to build its filter from, then apply it to your file, and remarkably clean-sounding audio will result. A host of parameters are available for tweaking, but I've had excellent success using the presets. Vinyl restoration is also provided, and from my initial tests, I believe the *Sound Forge* tool offers results even better than the highly-touted DART system. Though it may not be a match for a multi-thousand pound, real-time Cedar hardware system, the vinyl restoration is very effective and a handy addition to any archivist's toolkit.

The available (and forthcoming) plug-ins from other manufacturers are no more difficult to add to the program than setting up a simple Windows application. Once installed, the plug-ins appear either in their own menu or directly alongside other features in the same category. I've long felt that a single program should be available to perform all my audio editing, and that jumping from one program to another merely to perform simple tasks is not really efficient. With *Sound Forge* and its plug-ins, it appears that we might just have got that program at last.

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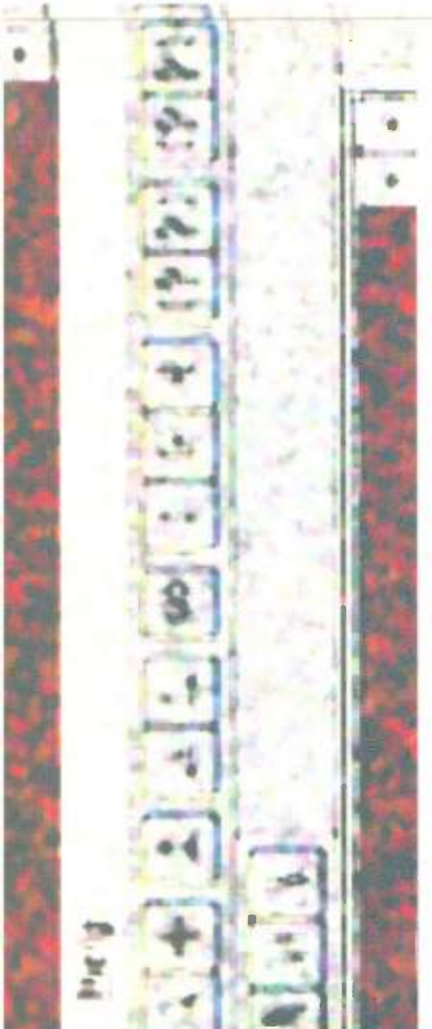
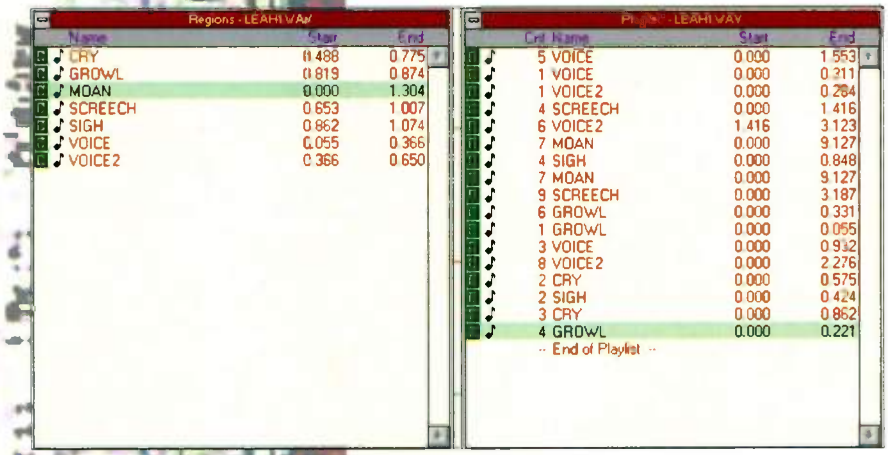


▶ create their own DSP routines using the ACM (Microsoft Audio Compression Manager) Filter also found here. To identify pops, clicks or other glitches in a file, you can use the Search Feature (or the plug-ins described in the 'Plug And Play' sidebar), and for laying a test tone onto tape, the sine wave option you'll find in the Additive Synthesis menu will do nicely. *Forge*'s FM Synthesis tool comes with many presets that I found immediately useful, though I wish the operators' frequencies could be controlled by envelopes, like their amplitudes. Nevertheless, I got great results by creating a long FM sound, then dumping it into my Kurzweil K2000. When I substituted my sound for the keymap in some of the Kurzweil's more radical programs, I built an entire bank of interesting textures in a matter of minutes.

PLAYBACK

Sound Forge offers many versatile options in its playback controls, some of which are more commonly found in a dedicated hard disk recording system. In addition to simply playing all or part of a file, *Forge* has a playlist feature that allows you to rearrange the material in a file without any cutting, copying or pasting. To build a playlist, highlight any part of a file, then select the Regions option from the Window menu, or press the 'Alt' and '1' keys together. The Regions list will then appear on screen (see figure 4). Simply drag the highlighted area to the Playlist, give it a name, and if you want, change its start or end time. You can also preview the region in this window, by playing it in looped or one-shot modes. Next, continue to create additional regions, and drop them into the Playlist window in any order, then set the number of times you want each one to play (from 1 to 999). Finally, press the small button that appears to the left of the region's name field, and the list will play from beginning to end. *Sound Forge* can automate this task through its Auto Region option, which will create regions for you, based on an amplitude threshold or a recurring musical duration — for example, a new region every two beats. And, of course, you can use the same region any number of times throughout the Playlist, or easily create an entirely new audio file on disk from the Playlist sequence.



Regions - LEAHI.WAV

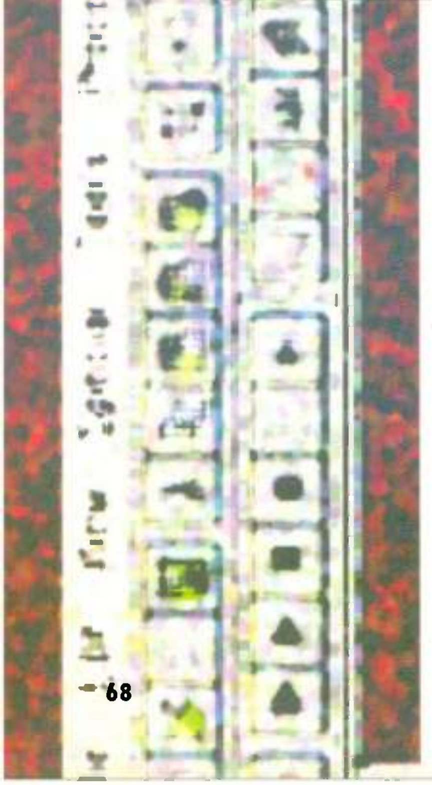
Name	Start	End
CRY	0.488	0.775
GROWL	0.819	0.874
MOAN	0.000	1.304
SCREECH	0.653	1.007
SIGH	0.862	1.074
VOICE	0.055	0.366
VOICE2	0.366	0.650

Playlist - LEAHI.WAV

Cnt	Name	Start	End
5	VOICE	0.000	1.553
1	VOICE	0.000	0.311
1	VOICE2	0.000	0.284
4	SCREECH	0.000	1.416
6	VOICE2	1.416	3.123
7	MOAN	0.000	9.127
4	SIGH	0.000	0.848
7	MOAN	0.000	9.127
9	SCREECH	0.000	3.187
6	GROWL	0.000	0.331
1	GROWL	0.000	0.055
3	VOICE	0.000	0.932
8	VOICE2	0.000	2.276
2	CRY	0.000	0.575
2	SIGH	0.000	0.424
3	CRY	0.000	0.862
4	GROWL	0.000	0.221

-- End of Playlist --

Figure 4: The Regions list.



While the Playlist is very useful for restructuring your material, the ability to trigger the list using MIDI events or SMPTE makes it an even more useful professional tool. To control the Playlist from an external source, assign each event a MIDI Note (On or Off) or SMPTE time, then send MIDI notes or timecode into the system, and the events will trigger exactly as you've specified. If your MIDI interface has a separate port to read SMPTE (like the Voyetra V24SM or MusicQuest 8Port SE), be sure to connect your cables properly, and set *Forge*'s MIDI input to that port in its Preferences menu.

Even without the ability to generate timecode, there's a way to automate the Playlist. Just use your sequencer to create a sequence of note triggers where you want them, then play the sequence and send the data to *Forge* using the 'virtual MIDI drivers' supplied. After installing these drivers through the Windows Control Panel, you should find an option in the MIDI setup menu of your sequencer for four Sonic Foundry Virtual MIDI drivers. Select one as the sequencer's output port, and do the same in *Forge*'s MIDI Preferences (as input, naturally). You'll then have MIDI data moving directly from your sequencer into *Forge* — be sure though, that you have enough RAM in your system to run both *Forge* and your sequencer at the same time. If you've ever worked with MCI commands to trigger audio files from your sequencer, you'll be impressed with how much more useful this method is. In addition to having more triggering options, the overall timing should be far more accurate.

SUMMARY

I've had the opportunity to review quite a few good programs, but *Sound Forge* offers as much potential as any I've seen. With a vast number of fine-sounding processing tools, extensive sampler support, and numerous well-designed editing features, the program offers something for users of all levels. And by including sophisticated synthesis techniques, such as the four-operator FM generator and other forthcoming features on plug-ins, the program moves into areas that I have yet to see in commercial software on the PC. Though I would normally complain about a program missing this or that feature, a multi-level Undo is the only important option that *Forge* does not provide. It's a real pleasure to work with a program that is so well integrated, and provides so much power. I can honestly say that this is a great piece of software. SOS

FURTHER INFORMATION

£ ***SoundForge* v3.0 £499.95;**
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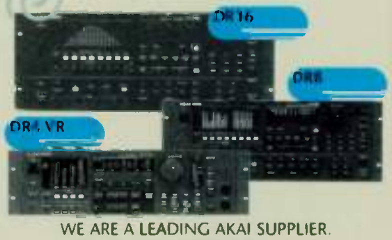

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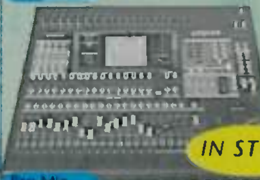

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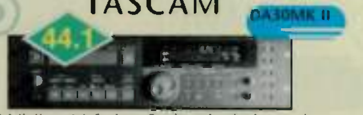

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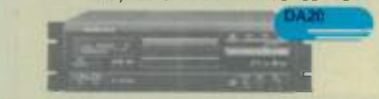

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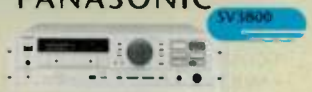

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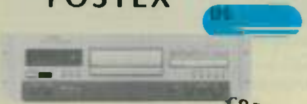

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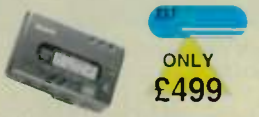

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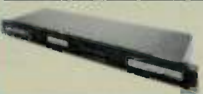

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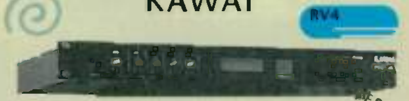

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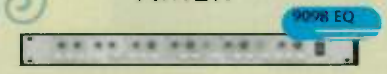

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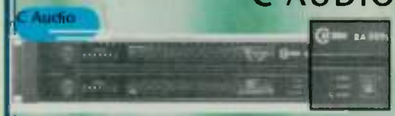

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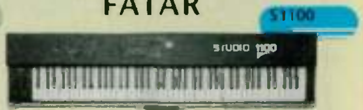

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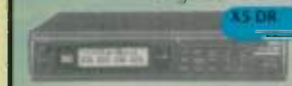

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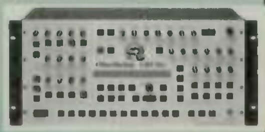
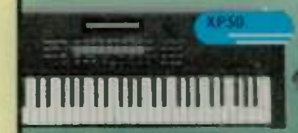


ROLAND



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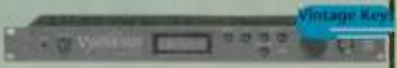

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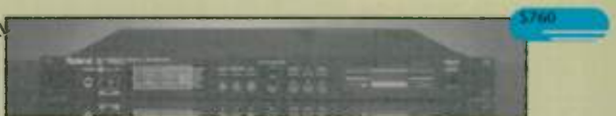

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CD-R may be the fastest growing mastering format, but its complicated subcodes and impenetrable protocols have made it anything but user-friendly. As prices tumble and software evolves, however, it's an increasingly accessible medium. MIKE COLLINS explains how he's mastered mastering on his Mac...

At last! The technology to master your own CD at home, and on a relatively affordable desktop system. That's what the latest generation of CD-R recorders promises, though some credit should also go to a new generation of software packages.

One of the most popular CD-R recorders is the Yamaha CDE100, which allows you to write discs at up to four times real-time speed — typically about 20 minutes a disc. Prices on this model are coming down — it is now available for under £1500 including VAT. However, for many purposes, the new generation of lower-cost CD-R recorders (which offer twice real-time recording speed) will easily suffice. Models such as the CDE102 from Yamaha or the CDR4220 from Plasmon are now selling for under £1000 including VAT, and are ideal for archiving your computer files to CD-ROM.

A couple of things to watch out for when shopping around for a CD-R recorder are whether it is compatible with the software you want to use, whether it supports Disk-at-Once mode properly, and whether it supports ISRCs and other codes you may need to input (if you're new to some of this terminology, check out the 'Bust That Jargon!' boxout elsewhere in this article). The new Sony Spressa 920 drive, for instance, like the Plasmon RF4100 drive, does not let you write ISRCs for each track, and some of the cheaper drives only allow you to create Track-at Once discs, which cannot be used for making CD-R masters.

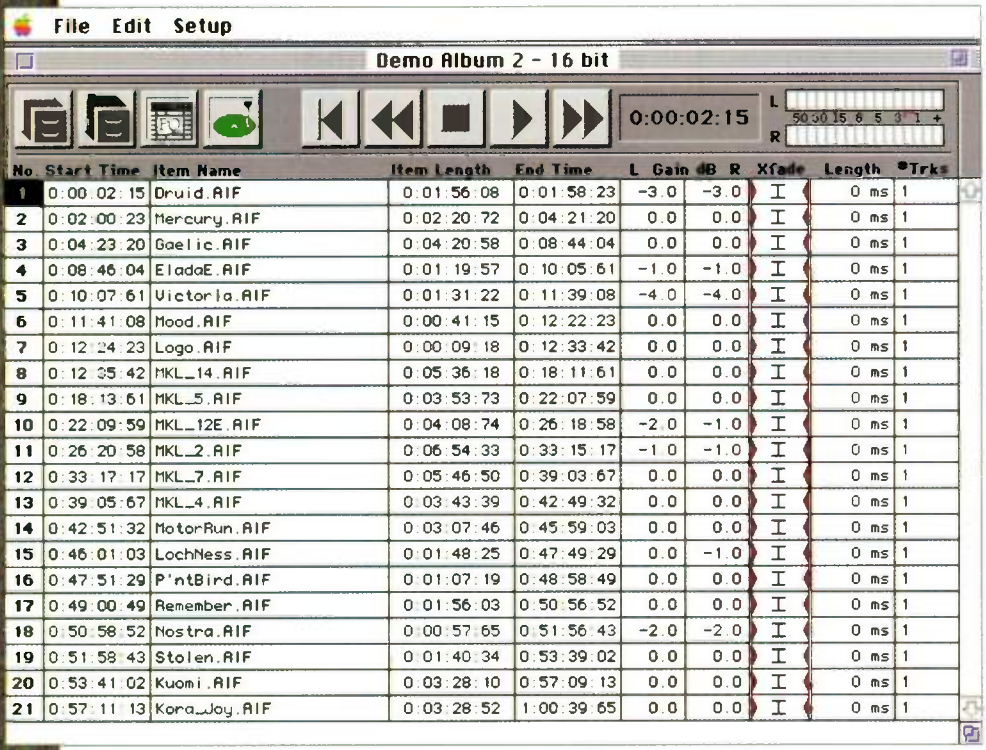
Most CD-R resellers are including software such as Astarte's *Toast CD-ROM Pro*, or Incat Systems' *Easy CD Pro* within the price of a bundled package. Using these programs, you can create Macintosh HFS CD-ROM discs, ISO 9660 discs for other computers, hybrid Mac/ISO discs, and various other types of CD-ROM and audio discs. These audio discs are very basic, and can be useful as reference discs, but are not up to the standard of a CD-R master (for sending to a pressing plant), as it is not possible to access PQ subcodes. Astarte do also offer the more advanced *Toast CD-DA* software, however, which does give you access to subcodes.

However, if you have a Digidesign AudioMedia, Sound Tools, ProMaster 20, Pro Tools, Session 8, or Pro Tools III system, then you will almost certainly want to use Digidesign's *MasterList CD 1.2* software, which not only gives you full access to all the subcodes and indexes, but also lets you set the gain of left and right channels independently, and gives you the option of using dither when burning your audio to disc. For this review, I decided to go with the Yamaha CDE100 and Digidesign's *MasterList CD*, although I also ran some tests using Astarte's *Toast CD-ROM Pro* and *Toast CD-DA* ▶

DON'T FORGET THE FALCON!

There are a number of devotees who have been attracted by the advanced features available at an affordable price on the C-Lab Falcon. The good news for Falcon users is that a software package, *CD-Recorder v1.0*, is now available which will work with the Yamaha CDE100 and CDE102. This is ideal for data backup, and can be used to create basic audio CDs for use as reference discs. *CD-Recorder v1.0* is available separately or bundled with the CDE102. Distribution is by Digital Media — contact John Sharp on 01422 340875 (fax 0181 656 2442) for more details.

MasterList CD *Main Screen.*



No.	Start Time	Item Name	Item Length	End Time	L Gain dB	R	Xfade	Length	•Trks
1	0:00:02:15	Druid.AIF	0:01:56:08	0:01:58:23	-3.0	-3.0	I	0 ms	1
2	0:02:00:23	Mercury.AIF	0:02:20:72	0:04:21:20	0.0	0.0	I	0 ms	1
3	0:04:23:20	Gaelic.AIF	0:04:20:58	0:08:44:04	0.0	0.0	I	0 ms	1
4	0:08:46:04	EladaE.AIF	0:01:19:57	0:10:05:61	-1.0	-1.0	I	0 ms	1
5	0:10:07:61	Victoria.AIF	0:01:31:22	0:11:39:08	-4.0	-4.0	I	0 ms	1
6	0:11:41:08	Mood.AIF	0:00:41:15	0:12:22:23	0.0	0.0	I	0 ms	1
7	0:12:24:23	Logo.AIF	0:00:09:18	0:12:33:42	0.0	0.0	I	0 ms	1
8	0:12:35:42	MKL_14.AIF	0:05:36:18	0:18:11:61	0.0	0.0	I	0 ms	1
9	0:18:13:61	MKL_5.AIF	0:03:53:73	0:22:07:59	0.0	0.0	I	0 ms	1
10	0:22:09:59	MKL_12E.AIF	0:04:08:74	0:26:18:58	-2.0	-1.0	I	0 ms	1
11	0:26:20:58	MKL_2.AIF	0:06:54:33	0:33:15:17	-1.0	-1.0	I	0 ms	1
12	0:33:17:17	MKL_7.AIF	0:05:46:50	0:39:03:67	0.0	0.0	I	0 ms	1
13	0:39:05:67	MKL_4.AIF	0:03:43:39	0:42:49:32	0.0	0.0	I	0 ms	1
14	0:42:51:32	MotorRun.AIF	0:03:07:46	0:45:59:03	0.0	0.0	I	0 ms	1
15	0:46:01:03	LochNess.AIF	0:01:48:25	0:47:49:29	0.0	-1.0	I	0 ms	1
16	0:47:51:29	P'ntBird.AIF	0:01:07:19	0:48:58:49	0.0	0.0	I	0 ms	1
17	0:49:00:49	Remember.AIF	0:01:56:03	0:50:56:52	0.0	0.0	I	0 ms	1
18	0:50:58:52	Nostra.AIF	0:00:57:65	0:51:56:43	-2.0	-2.0	I	0 ms	1
19	0:51:58:43	Stolen.AIF	0:01:40:34	0:53:39:02	0.0	0.0	I	0 ms	1
20	0:53:41:02	Kuomi.AIF	0:03:28:10	0:57:09:13	0.0	0.0	I	0 ms	1
21	0:57:11:13	Kora_Joy.AIF	0:03:28:52	1:00:39:65	0.0	0.0	I	0 ms	1

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software for comparison (see the boxout on *Toast* elsewhere in this article).

THE MASTERPLAN

MasterList CD has recently been updated to version 1.2, and the latest firmware revision for the CDE100 is version 1.10. Earlier versions of *MasterList CD* and of the firmware in the CDE100 had problems related to the copy-protect flags, which resulted in a click sometimes being heard at the end of the audio on the CD. Using *MasterList CD* version 1.2 with the CDE100 firmware version 1.10 sorts all ▶

BUST THAT JARGON!

This article is, unfortunately, full of jargon — it goes with the territory. I had to go through something of a learning curve to get up to speed with all the terminology related to CD mastering, so I'm now in a position where I can demystify some of it for you!

• BY THE BOOK — BUT WHICH?

The Sony/Philips standard for CD-DA (Digital Audio) discs is known as the 'Red Book', and Red Book CDs are what we all know as the audio CDs we buy in the record shops. The standard for recordable CD-R discs is known as the 'Orange Book', which defines the format of a write-once CD, not only for audio but also for computer data. The Orange Book effectively defines a superset of the Red Book specifications, so Red Book-compatible CDs can be created on a write-once disc.

Disk-at-Once mode is where you write the whole disc in one pass, while Track-at-Once mode lets you write one or more tracks, put the disc to one side for some time, then write some more tracks until the disc is filled up. Most newer CD-R drives, including the CDE100, support Disk-at-Once recording, to let you create 'Red Book' standard discs, and you can supply these to a mastering facility to press discs in volume from. In Disc-at-Once mode, the writing laser is never turned off during the write process, and the disc is written from beginning to end without stopping: first the table of contents, then the lead-in, followed by the audio data and the lead-out. In Track-at-Once mode, the laser in the CD-R recorder always stops writing between each track, before and after the lead-in, and before writing the lead-out. If you try to produce a CD-DA disc in this mode, various errors will show up when it is tested at the CD mastering facility — and the disc will most likely be rejected.

The important thing to remember here is that some CD recorders can only write using Track-At-Once mode to create 'Orange Book' standard discs — and discs written in this way cannot be played until the final recording has been made to the disc. In a variation of Track-at-Once mode, so-called 'multi-session' CDs can be written to at different times — which is useful if you want to just use part of the CD at first, and add more data later as it becomes available. Multi-session discs also conform to the 'Orange Book' standard, and can be played back with any number of completed sessions written to the disc, unlike the Track-At-Once discs.

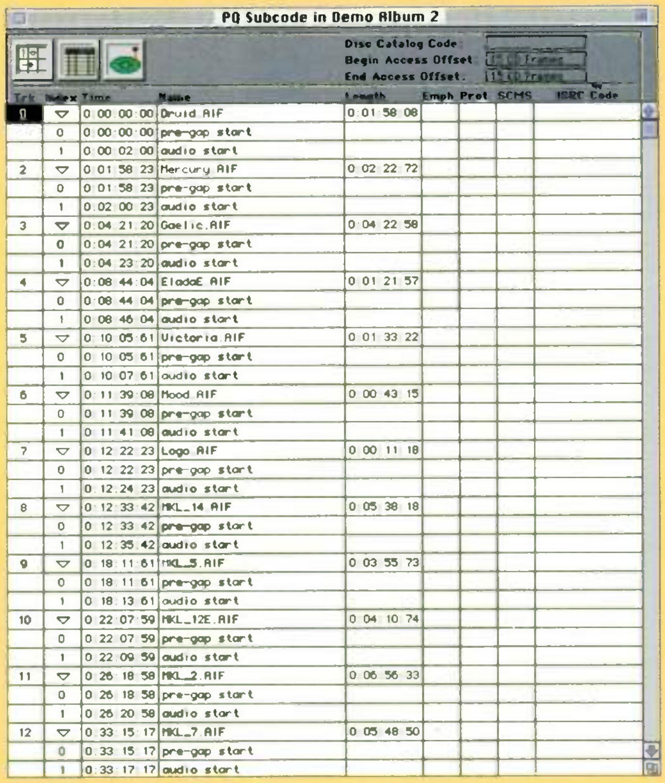
• SUBCODES & MARKERS

All audio CDs have eight channels of subcode data interleaved with the digital audio data — the P, Q, R, S, T, U, V and W channels. With normal audio CDs, only channels P and Q are actually used by the CD player, while channels R to W are used to store video information on CD + G discs, and MIDI information on CD + MIDI discs. The P channel information tells the CD player when tracks are playing and when they are not, while the Q channel describes track and disc running times, copy protection and emphasis information, disc catalogue barcode, ISRC codes and so forth. The barcode and ISRC codes information is normally supplied by the record company.

ISRC's are International Standard Recording Codes, which are code numbers used to uniquely identify audio recordings. The publishers and record companies can use these numbers to refer to their records of who did what on the recording — to identify all those who should share in the royalty income from the recordings, including producers, engineers, artists, musicians, composers, and so forth. The use of ISRCs is not mandatory for Red Book Audio discs, as it is with Mini-Disc for instance, but increasingly, the major labels such as Sony are including ISRCs — which has got to be good news for the creators of the recordings.

The copy-prohibit 'flag' prevents any digital recorder from recording that track. This is not the same as the more recently-developed SCMS (Serial Copy Management System) code, which allows data to be copied once, but prevents second-generation copying of the material to another digital recorder. SCMS prevents you making a a copy of a copy digitally (although you can always make an analogue copy!). However, the Yamaha CE100 does not let you write SCMS flags, so you will need to use a Sony CDW900E if you need this feature.

The Emphasis 'flag' tells the CD player to use its analogue de-emphasis circuit. This is the circuitry built into every CD player after the D/A convertor, which corrects the high-frequency emphasis boost applied before recording in some earlier, low-cost CD player/recorders such as the popular Casio models. It is quite easy to forget about this, and digitise audio which includes an emphasis boost. You can easily tell that the track has a high-frequency boost when you compare it with the original, and usually the effect will not be very pleasing.



Trk	Index	Time	Name	Length	Emph	Prot	SCMS	ISRC Code
1	▽	0:00:00:00	Druid.AIF	0:01:58:08				
	0	0:00:00:00	pre-gap start					
	1	0:00:02:00	audio start					
2	▽	0:01:58:23	Mercury.AIF	0:02:22:72				
	0	0:01:58:23	pre-gap start					
	1	0:02:00:23	audio start					
3	▽	0:04:21:20	Gaelic.AIF	0:04:22:58				
	0	0:04:21:20	pre-gap start					
	1	0:04:23:20	audio start					
4	▽	0:08:44:04	EladaE.AIF	0:01:21:57				
	0	0:08:44:04	pre-gap start					
	1	0:08:46:04	audio start					
5	▽	0:10:05:61	Victoria.AIF	0:01:33:22				
	0	0:10:05:61	pre-gap start					
	1	0:10:07:61	audio start					
6	▽	0:11:39:08	Mood.AIF	0:00:43:15				
	0	0:11:39:08	pre-gap start					
	1	0:11:41:08	audio start					
7	▽	0:12:22:23	Logo.AIF	0:00:11:18				
	0	0:12:22:23	pre-gap start					
	1	0:12:24:23	audio start					
8	▽	0:12:33:42	MKL_14.AIF	0:05:38:18				
	0	0:12:33:42	pre-gap start					
	1	0:12:35:42	audio start					
9	▽	0:18:11:61	MKL_5.AIF	0:03:55:73				
	0	0:18:11:61	pre-gap start					
	1	0:18:13:61	audio start					
10	▽	0:22:07:59	MKL_12E.AIF	0:04:10:74				
	0	0:22:07:59	pre-gap start					
	1	0:22:09:59	audio start					
11	▽	0:26:18:58	MKL_2.AIF	0:06:56:33				
	0	0:26:18:58	pre-gap start					
	1	0:26:20:58	audio start					
12	▽	0:33:15:17	MKL_7.AIF	0:05:48:50				
	0	0:33:15:17	pre-gap start					
	1	0:33:17:17	audio start					

MasterList CD *PQ Subcode Editing Window.*

• INDEXES & ACCESS POINTS

You can have up to 99 tracks on a CD, and each track can have up to 100 markers, or Index Points within that track, numbered from 0 to 99. All tracks have an index 1, which should represent the start of the audio material in that track. If a track has a gap containing silence before it (after the previous track ends), then index 0 represents the start of that silence gap. When a CD player skips to a specific track, it locates to the index 1. When a CD player is told to jump directly to a particular track, it mutes its audio outputs, then searches across the CD to find the start of the audio in the track you want — which is the track's Begin Access Point (at the index 1). When it finds the right point, it unmutes its audio outputs and starts playing.

Because a CD player takes a small (but significant) amount of time to unmute its audio outputs, you can set a track's Begin Access Point slightly earlier, typically a little way into the silence gap before that track's audio, to make sure that the CD player's audio outputs will be completely unmuted by the time the audio starts. A similar situation exists at the end of a track: If a CD player is put into Random Play mode or told to skip to a track, when it reaches the end of the track it is playing, it will mute its audio outputs and jump to the next track to play.

The place at the end of the track where the CD player will stop playing before jumping to another track is called the track's End Access Point — which is actually the next track's Index 0 point (or the Index 1 point, if no Index 0 exists). To make sure the CD player completely finishes playing the audio before jumping to another track, the End Access Point should be set a little way after the end of the actual audio. CD recorders that only support Track-at-Once mode do not support Begin and End Access offsets, so if you are using one of these recorders, you will have to insert a little silence at the beginning and end of your audio tracks manually, using *Sound Designer II* or Pro Tools.

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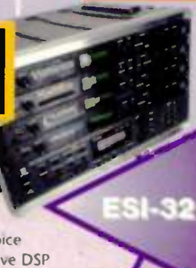

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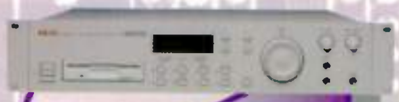

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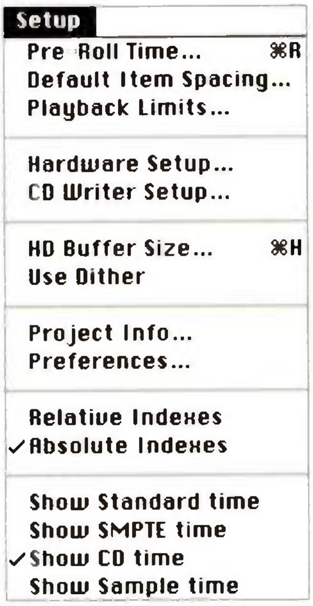
Living With CDE 100/102 & Masterlist CD

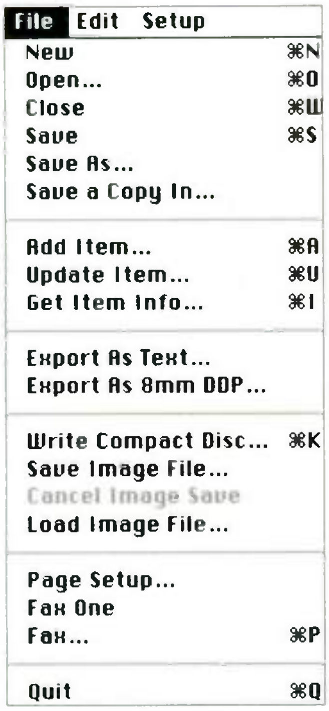
▶ these problems out. Also, support has now been added for seven new CD recorders, including the Kodak PCD225, Philips CDD522, JVC XRW2001, Pinnacle Micro RCD1000, Ricoh 1060C, Plasmon RF4100 and the Sony CDU920S.

MasterList CD lets you create both standard CD-R discs and Exabyte DDP tape masters — with Grey Matter Response's *Mezzo Master* software and any Exabyte 8500 family 8mm tape drive. Exabyte offers several advantages over write-once CD, especially if you already have an Exabyte drive for data backup or other purposes. For instance, Exabyte DDP tapes are written at two-and-a-half times real-time recording, with data error correction performed during writing. The 8mm tapes are also relatively inexpensive and can be written to more than once. Unfortunately, you cannot play these tapes back to hear the audio — the audio data is only accessible at pressing plants when the final CDs are made — so if you get two tapes confused, you might get a nasty surprise when your finished CDs return from the plant!



MasterList CD *Setup Menu.*

Using *MasterList CD*, your completed master tracks, whether sound files, regions or *Sound Designer II* playlists, are simply assembled to form the master list. The order and spacing of items in a master list are completely adjustable and non-destructive. File support includes *Sound Designer II* and AIFF 16 and 24-bit, mono and stereo files, as well as split-stereo files from Pro Tools. Transitions between tracks can be seamlessly smooth, using editable, non-destructive, RAM-based crossfades. For easy level-matching across the entire CD, the software provides location and level details of the audio peak within a selection, up to 100 auto-locate points for auditioning between tracks, and independent channel level adjustment from -96dB to +12dB in 0.1dB steps. Unfortunately, you cannot display or edit the autolocate points, which I feel is a major omission from this software.



MasterList CD *File Menu.*

MasterList CD supports the full set of PQ subcodes, and for a simple project scenario, the essential PQ subcodes required are automatically constructed as the master list is assembled — so no further editing is needed before the disc is written. For more complex projects, *MasterList CD* allows creation of up to 99 tracks per CD, with up to 100 index points per track. Index points may be manually entered or set using *Sound Designer II* markers or playlist region boundaries. Conveniently, you can print track sheets with both master list and PQ subcode information, or create ASCII field-delimited dumps for input to desktop publishing applications, databases and so forth. Another useful feature is that *MasterList CD* does not force you to go to *Sound Designer II* or Pro Tools to edit the start and end times of a file, region or playlist: these can be changed from within *MasterList CD* itself.

Once editing is complete, the entire master list is written to CD with just the click of a mouse, and the PQ subcodes are written simultaneously with the audio. Each master list can be fully auditioned using just about any Digidesign system to check track start positions, transitions and levels, and throughout the process you'll hear a true audio representation of your finished master — before writing the CD.

MasterList CD allows you to create an 'image file' before writing your CD. The idea here is that the image file contains an exact copy of all the data you want to write to the CD including all the audio, subcode data and any level changes or crossfades. This data should all be written contiguously (continuously, with no gaps ▶

MONGRELS & CROSS-BREEDS

There are several other types of CD-ROM disc which you can write using software like *Toast CD-ROM Pro*.

The Macintosh HFS format is used to create CD-ROM discs which will 'mount' on the desktop of any Macintosh computer, so that you can then use these as read-only storage discs — typically to archive your general computer data.

The ISO 9660 format is used for CD-ROMs that are intended for DOS, Windows, and other ISO file systems. These can also be read by Macintosh computers, but will have ISO 9660 or DOS format file names.

The Mac/ISO hybrid format allows you to create CD-ROMs that can be read on both Macintosh and ISO file systems — with data common to both file systems shared on the CD-ROM.

Mixed Mode CD-ROMs have the computer data as track 1, with the audio tracks following, although you are advised not to play the computer track back on an audio CD player, as this can lead to speaker damage.

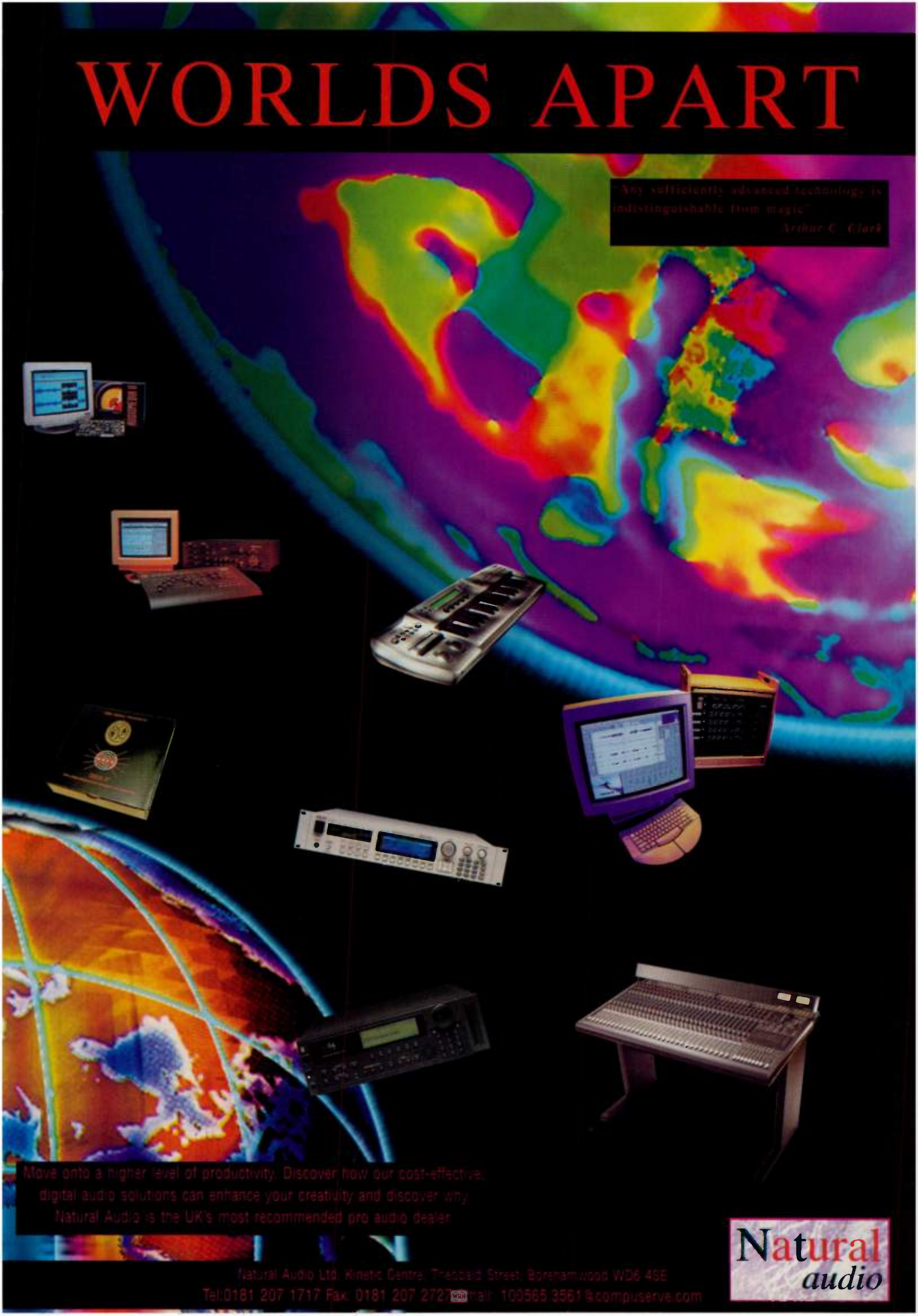
LABELLED WITH LOVE

What about labelling your discs? Up until now, there were only two ways to mark or label these: you could write on them with a felt-tip pen, or you could buy an expensive (£5,000 and up) bubble jet printer, and print directly onto the disc. There are two obvious problems with the pen: the disc doesn't look professional, and the ink comes off in the CD player, which can end up damaging the drive. The printer looks better, but it is far more expensive than the recorder itself.

There is now a third, simple and inexpensive method of labelling CDs, however. With the Neato labelling system from Rocky Mountain Traders, if you can print with a laser or inkjet printer, you can custom-design, print and apply centred circular labels to CDs without the risk of damaging either the disc or the player. The Neato labelling kit contains the two-piece Neato applicator, one hundred 113 mm circular blank labels, and both Mac and PC templates for *FileMaker Pro, Aldus PageMaker, Quark Xpress* and *CorelDraw.*

Rocky Mountain Traders can also supply extra blank labels in assorted matt and gloss colours, as well as printable clear polyester. The NEATO labeller uses a cylindrical basepiece, which allows you to place the circular self-adhesive labels onto CDs without leaving bubbles. You use the supplied templates to create the artwork on your computer, and then simply print it onto the blank label.

The kits cost under £100 including VAT, and can be obtained from Stan Grossman at Rocky Mountain Traders (freephone 0500 026103, or fax 0171 209 0645).



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▶ between the files) to a defragmented hard disk partition for best results, and once this image file has been prepared, it can be written much faster to the CD.

UP TO SPEED

So how fast can you write a CD? Well, this depends on various factors. Firstly, how fast is your CD recorder? Some models can only write in real time — in other words, if the audio is one hour long, the disc will take one hour to write. This is called 1x speed in the jargon. You can get recorders which support 2x, 4x, and 6x speeds, but this does not mean that your system will allow *MasterList CD* to write at these faster speeds. Your system includes the particular computer you are using, such as a Quadra or a Power Mac, and these run at different speeds. The various Digidesign audio cards also run at different speeds. Your hard disk drive also has to be fast enough, and be able to suspend thermal recalibration while it writes to disc.

> *"Some of the cheaper drives only allow you to create Track-at Once discs, which cannot be used for making CD-R masters."*

In practice, the Pro Tools I, Sound Tools II, ProMaster 20 and Audiomedia II cards running on a Quadra 840 A/V computer provide the fastest speeds, and allow 4x writing of 16-bit audio without creating an image file first. On the Pro Tools III and Session 8 systems, you will need to create an image file in order to write successfully at 4x speeds, and of the Macs, only the Quadra 840 A/V will achieve 4x speeds. All other Macintosh models will only manage 2x speed, achieved mostly using image files. This is because the Pro Tools III system is based on the Session 8 card, which was a lower-specification card intended to sell at a lower price than the Pro Tools I 8-track systems. The reason that you can get the highest speeds on a Quadra 840 A/V rather than on one of the more recent Power Macs is that the speed of the the NuBus and that of the CPU when running 680x0 code on this model outstrips that of any other Macintosh. Power Macs have to emulate in software the instructions to the 680x0 chip (the one used in all Macs prior to the Power Mac range), as Power Macs use the newer, Power PC CPU chips.

DITHERING ABOUT

One of the options in *MasterList CD*'s Preferences dialogue box (using Dither) needs some explanation. Dither is a special form of randomised noise, used to mask quantisation noise in digital audio systems. Digital audio's poorest distortion performance occurs at the lowest end of the dynamic range, where quantisation errors can occur — leading to distortion of the signal. If you introduce very low-level random noise, known as dither, this can reduce these quantisation errors to improve the subjective performance of your 16 bits.

Quantisation from 24- or 20-bit down to 16-bit resolution also results in a loss of sound quality, and an increase in low-level noise and distortion. ▶

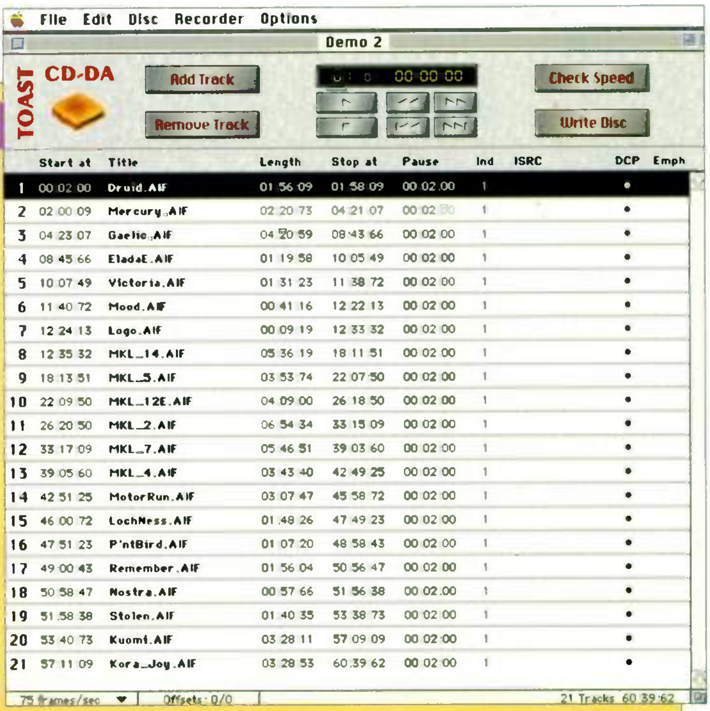
JUST A LITTLE BIT OF... TOAST

Astarte's *Toast CD-DA* is very straightforward to use. You open a new file, add the tracks you want on your CD, and set the track spacing, Catalogue Code number, ISRC codes, Emphasis flags, and Digital Copy Prohibit flags. You can use either AIFF or *SDII* files, and even import regions from *SDII* files if you like.

Once you have your list of files, you can audition these using the transport controls, and change the running order by simply dragging the files up or down in the list. Before burning a disc, you can use the Check Speed feature to quickly test the transfer rate from your hard disk, or if you want to be really sure the disc will write OK, use the Simulation Mode, which runs through a full-blown simulation of the whole procedure (and, of course, takes as long as writing a real disc!).

I also have a copy of Astarte's *Toast CD-ROM Pro*, which I use for archiving my Macintosh files to CD-R. This has an excellent feature which you can use to create a temporary hard disk partition of exactly the right size to match the capacity of your blank CD-R discs. I used this to create a temporary hard disk partition of 650Mb on my Micropolis 2217 1.7Gb A/V drive, copied my audio files onto this, and made sure that I defragmented this hard disk 'volume' using Norton *Speed Disk* every time I edited or replaced a file — to make sure that all these files were located contiguously on the hard disk. This way, I was able to use the 4x writing speed with the Yamaha CDE100 with no problems.

The CDs I burnt using *Toast* worked perfectly in my Denon CD player, and it was somewhat faster to use than *MasterList CD*, although I particularly missed the ability to set the gain of the left and right channels. This meant that to get all the levels correct, I had to go back and edit the original *Sound Designer II* files individually, after auditioning the list in *Toast CD-DA* first, and making notes about roughly how much to change the levels. So, if you want to make quick reference discs to give yourself some idea of how your tracks will sound playing back off CD through your hi-fi, I would call *Toast CD-DA* a viable alternative to *MasterList CD*.



	Start at	Title	Length	Stop at	Pause	Ind	ISRC	DCP	Emph
1	00 02 00	Druid.AIF	01 56 09	01 58 09	00 02 00	1		•	
2	02 00 09	Mercury.AIF	02 20 73	04 21 07	00 02 00	1		•	
3	04 23 07	Gaelic.AIF	04 20 59	08 43 66	00 02 00	1		•	
4	08 45 66	EladaE.AIF	01 19 58	10 05 49	00 02 00	1		•	
5	10 07 49	Victoria.AIF	01 31 23	11 38 72	00 02 00	1		•	
6	11 40 72	Mood.AIF	00 41 16	12 22 13	00 02 00	1		•	
7	12 24 13	Logo.AIF	00 09 19	12 33 32	00 02 00	1		•	
8	12 35 32	MKL_14.AIF	05 36 19	18 11 51	00 02 00	1		•	
9	18 13 51	MKL_5.AIF	03 53 74	22 07 50	00 02 00	1		•	
10	22 09 50	MKL_12E.AIF	04 09 00	26 18 50	00 02 00	1		•	
11	26 20 50	MKL_2.AIF	06 54 34	33 15 09	00 02 00	1		•	
12	33 17 09	MKL_7.AIF	05 46 51	39 03 60	00 02 00	1		•	
13	39 05 60	MKL_4.AIF	03 43 40	42 49 25	00 02 00	1		•	
14	42 51 25	MotorRun.AIF	03 07 47	45 58 72	00 02 00	1		•	
15	46 00 72	LochNess.AIF	01 48 26	47 49 23	00 02 00	1		•	
16	47 51 23	P'ntBird.AIF	01 07 20	48 58 43	00 02 00	1		•	
17	49 00 43	Remember.AIF	01 56 04	50 56 47	00 02 00	1		•	
18	50 58 47	Nostra.AIF	00 57 66	51 56 38	00 02 00	1		•	
19	51 58 38	Stolen.AIF	01 40 35	53 38 73	00 02 00	1		•	
20	53 40 73	Kuomi.AIF	03 28 11	57 09 09	00 02 00	1		•	
21	57 11 09	Kora_Joy.AIF	03 28 53	60 39 62	00 02 00	1		•	

75 frames/sec ▼ Offsets: 0/0 21 Tracks 60 39 62

Toast CD-DA *Main Screen.*

However, if you have a Digidesign audio card, and really intend to have discs pressed from your CD-R master, or want to make sure all your levels, timings and subcodes are correct, then *MasterList CD* is the only sensible choice.

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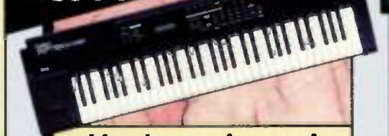

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Spacially Quality

Descending Moses-like from the Mount, Lexicon's new dedicated reverb processor brings intelligence from the company's top-end reverbs. PAUL WHITE gets a debriefing...

LEXICON PCM90 DIGITAL REVERBERATOR

Lexicon's sleek, 1U-sized PCM90 looks on the surface to be very similar to the PCM80 introduced a couple of years back (and reviewed in *SOS* December '94), but appearances can be deceptive. It has virtually the same operating system as the PCM80, the same front panel control layout and pretty much the same block diagram, complete with digital I/O — but there are major hardware and algorithmic differences.

For a start, the PCM90 is more of a reverb processor than a multi-effects unit, and while the PCM80 uses one Lexicon Lex II chip supplemented by a Motorola 56000 DSP, the PCM90 uses dual Lex II chips, making it much more powerful as a dedicated reverb processor.

While some of the PCM-style reverb algorithms have been retained, the PCM90 also includes algorithms brought in from the high-end Lexicon 480L and 300L, perhaps the most notable being the 300L's Ambience algorithm. The dual Lex chips also allow the PCM90 to function in a true split mode, and one very flexible split algorithm taken from the 480L is included, enabling two different mono-in, stereo-out reverbs to be set up at once. Plans are in place for an expansion card offering further split reverb functions which utilise one Lex II chip per algorithm, and this is expected later in the year. There are five stereo reverb algorithms in total, and though the PCM90 isn't a multi-effects unit, there are additional parameters in some of the algorithms that take the effects further than basic reverb, by incorporating delay, modulation and EQ.

Like the PCM80, the PCM90 comes with a library of presets, and these cover all the usual acoustic spaces and plates, plus a few oddball effects. The presets are arranged as five banks of 50 patches, grouped into Halls, Rooms, Plates,

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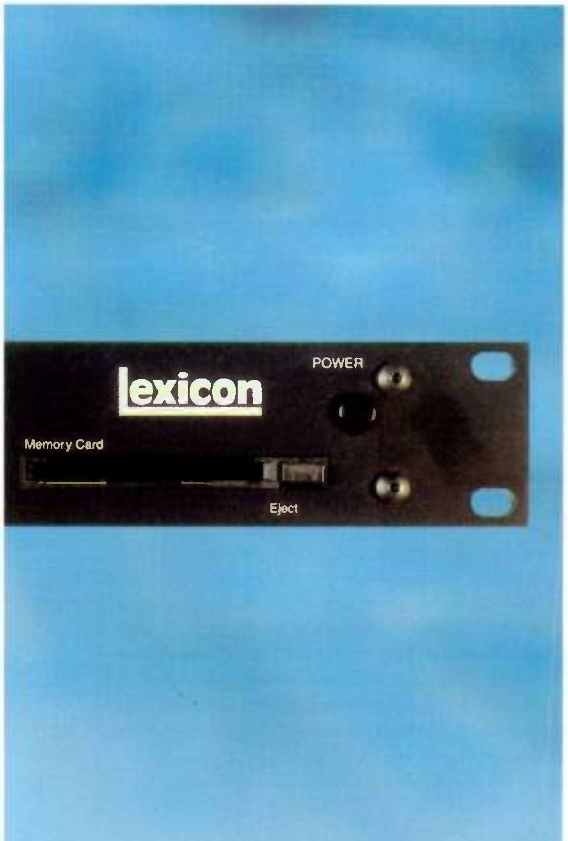
Post and Split, with one bank per section. A new addition to the operating system is Keyword sorting, which allows you to tag your favourite patches so that they can be reviewed, database-fashion. Each preset comes with up to four Keyword tags, but you can change these in Edit mode if they don't meet your needs. In theory, if you want to pick a Drums/Percussion reverb, you can do a Keyword search to view only the patches you've tagged with Drums/Percussion.

One of the really friendly features of the PCM80 was its dual-complexity user interface, which Lexicon describe as Go and Pro. In Go mode, you get to access a limited range of parameters — only the ones likely to make the greatest difference to a patch. In Pro mode, you can go deeper, to adjust all the available algorithm parameters, or even create custom controls. The custom controls aspect is a useful one, and each patch in the PCM90 can have one or more of its most important parameters assigned to the front panel Adjust knob, which enables you to change, for example, the reverb decay time without having to enter Edit mode at all. Up to four additional custom controls can be created for each effect.

A full MIDI implementation is included for remote program selection, plus real-time control and a powerful set of tempo controls. This means that the rate of tempo-related effects can be tapped in from the front panel, effect tempo can be locked to an external MIDI device, and there's even the option to generate MIDI clock from the tempo you've tapped in. Tempo may be used to control LFO rates, delay parameters and so on, and there's provision to select different rhythmic tempo divisions for the various parameters in a patch. For example, the LFO might be set to run at twice or four times the delay rate. If a patch is designed to work with Tap Tempo, simply hitting the Tap button twice locks in a new tempo.



The editing parameters are arranged as a matrix for easy access via the front panel plasma display, and the system includes comprehensive modulation facilities which have some parallels with the approach taken by some modular synths. For example, sources including LFOs, envelopes, switches, envelope followers and sample and hold can be assigned to various effect parameters, allowing the effect to either change with time or be in some way modified by the input signal itself. Up to ten modulation patches can be set up per effect, and you can control multiple destinations from a single source, or have several sources acting on the same destination parameter at the same time.

THE HARDWARE

The surprisingly deep 1U case provides a very simple set of front panel controls, a two-line, 20-character plasma display, and a back panel full of I/O connectors. Level switching is provided for 0dBu balanced or -20dBu unbalanced operation. The input connectors are hybrid XLR/jack sockets that can accept either type of connector. The outputs are available on both jack and XLR, with further phono connectors to provide the S/PDIF digital inputs and outputs. You could write a small book on all the digital input and output options, as these include the ability to add various levels of SCMS, to include pre-emphasis or not, and to sync to internal or external clock at either 44.1kHz or 48kHz sampling rates. Various error messages help locate potential interfacing problems.

The full complement of MIDI In, Out and Thru sockets is present, and the mains feeds into the unit via a standard IEC mains lead. MIDI mapping facilities are included, along with comprehensive patch-chaining options and very thorough parameter dumping and reloading options via SysEx. Front panel changes are also transmitted in real time via MIDI.

A card slot allows the internal, 100-patch user memory to be expanded to 1000 patches using 1Mb PCMCIA cards, and remote control is available using an optional conventional dual footswitch and volume pedal, the latter providing dynamic parameter control. A single memory card may also be used to store up to five complete PCM90 setups.

The internal memory is segregated into five banks of non-volatile factory presets, plus two user banks which Lexicon calls Registers. Each bank comprises 50 locations, so users without memory cards can store up to 100 of their own patches. The Control button gets you into the system parameters section, where things like MIDI and memory card formatting are dealt with, while Edit lets you access and change the parameters of whatever effect is currently loaded, and Tempo is used to access and set tempo-related effects. In any editing mode, the parameters are arranged in a matrix of up to 10 columns and 10 rows. The matrix is navigated using the Select knob and the Up/Down buttons, and each parameter name is displayed as you access it. As a rule, the things you are likely to want to adjust most often are located near the top of the stack, with the more obscure stuff on the bottom layers. Navigating through the parameter list is very easy, with good consistency of layout from one algorithm to another.

LEXICON PCM90
£2589

PROS
- Top-end Lexicon reverb sound.
- Hugely flexible programming options.
- Friendly operating system.

CONS
- Patch-changing is quite slow.

SUMMARY

Though not as flexible as the PCM80 multi-effects, the PCM90 provides more sophisticated reverbs that owe a lot to the 300L and 480L models. This is probably the most affordable way yet to get the true high-end Lexicon reverb sound.

▶

> "Comparing a high-end Lexicon to a cheap reverb is like comparing a 3D movie to real life."

PATCH 'N' GO

Earlier, I mentioned the Go and Pro edit modes. Go mode includes a row of 'soft' matrix parameters that can be changed to provide you with your own custom set of easy access parameters. Essentially, these are simply parameters chosen from the full parameter list that are deemed to be most useful. Like the PCM80, the '90 powers up in Go mode, so that some of the parameters are hidden from you. Switching from Go to Pro (in-depth) mode is accomplished from the Control mode menu, in which case the full parameter list becomes available. Another feature retained from the PCM80 is the on-line help system. Most operations are organised so that the switch functions occur when you release a switch rather than when you press it, so if you press and hold a switch for any length of time, a helpful prompt message will pop up. Once the message has appeared, the switch will not perform any action upon its release, so if you decide you had the right switch all along, you'll need to go back and hit it again.

Patches are selected using the Select knob and then loaded into memory using the Load button; they may also be called up via MIDI. Because the reverb algorithms are so complex compared with those found in most other units, the loading time is a little over one second, which can seem quite a long time when you're waiting for it. Though I fully understand why this happens, from an operational point of view it makes it difficult, or sometimes even impossible, to change patch cleanly, in mid-song. The bypass function can be configured to operate in a number of ways, so you can mute either the input to the effect or the effect output, and a compare function is provided so that edited patches can be compared with the original version.

Some of the PCM90 features come straight from the world of computers, and one such is its capacity to remember the last ten effects you loaded, so that you can go back and see the history of what you did, even if you've forgotten the patch you used. The Keyword search is also similar to a computer database search, and a list of 50 keywords is provided, where up to four can be attached to each patch. As shipped, the unit searches alphabetically, so that all the effects are visible. In Control mode, you can pick a different keyword for sorting.

IN USE

Though the PCM90 is very approachable, it has so many hidden depths and possibilities (not least when it comes to MIDI and digital interfacing), that there's a very real danger of spending the whole review getting bogged down in the fine detail, whereas most of you are probably more interested in the effects algorithms and what they actually sound like. As touched upon elsewhere (see the 'Algorithmics' box), the PCM90 creates its effects from five different algorithms, which the manual describes as Random Hall, Ambience, Rich Plate, Concert Hall and Chamber/Room.

From what I can see, any delay elements in the algorithms tend to be true stereo, in so far as the left and right inputs are processed independently, but I'm assuming that most of the traditional reverb effects are created by feeding both channels into the reverb processor, and then using this to generate a set of left and right reflections based on the mono sum of the left and right input. This corresponds to what happens in most real-life acoustic environments, though as we shall see later, there are opportunities for split reverb patches using the Chamber/Room algorithm.

From the subjective viewpoint, I don't see how anyone can be disappointed in the PCM90, because it is a thoroughbred Lexicon reverb from top to bottom. I always remember the clean, detailed sound of Lexicon reverbs, but when you put the PCM90 side ▶

ALGORITHMICS: THE LEXICON SOUND

The key to the Lexicon sound is to be found in the algorithms they use, and the powerful hardware needed to run them. Lexicon's algorithms are unique, and the exact details are a closely guarded secret.

Random Hall is designed to emulate a real building, and combines both reverb and delay. Room Size, Spread and Shape can be tweaked to modify the room character, by varying the envelope with which the reverb builds up and then decays. The procedure is to choose a room size first, and then adjust the other parameters to suit. At higher Shape settings, the reverb takes on a dual decay characteristic, and during discussions with Lexicon's Dr David Gressinger a few years ago, he revealed that this was one of the key elements in making a hall reverb appear natural.

This algorithm incorporates Lexicon's Spin function, which modulates certain reverb parameters to prevent modal resonances predominating at certain frequencies during long decay times. Very high settings can cause a chorus-like modulation, so this feature should be used sparingly unless you're aiming to create an unnatural effect. The algorithm includes a stereo width option that can be controlled dynamically to create surround effects, though there are warnings about mono incompatibility if this feature is used to excess.

The Ambience algorithm comes straight from the 300L and has the uncanny ability to add supporting reverb without obscuring the original sound. If you want a sound to remain focused but take on a sense of space, this is the one to go for. Again, delays are included for both the left and right channels.

Rich Plate combines delay (with feedback), and a reverb algorithm based on the sound of classic studio plates. The sound is very smooth, very dense and has a bright coloration which works well on vocals, drums and hard brass sounds. As with all five algorithms, pre-delay is included, as is control over the reverb diffusion.

Concert Hall, as the name suggests, is designed to emulate real buildings used for musical performance, and the reverb is designed to sit behind the original sound rather than loom out at the listener. The reverb build-up is relatively gradual, and the included post-reverb compression may be used to shape the reverb decay. A feature of this algorithm is a spatial equaliser which comes right at the end of the signal chain, but before the output width control. This has the effect of controlling the stereo width at low frequencies.

Finally, there's the Chamber/Room algorithm which provides true split reverb performance, where the left-hand input is processed via one Lex II chip, and the right-hand channel by the other. Stereo delay is available on both channels, as is pre-delay, echo feedback and an output high-cut filter. The reverb itself is designed to be unobtrusive, allowing it to be used in a number of general-purpose applications, and it is also capable of emulating small, coloured rooms. An Infinite parameter allows the reverb decay to be frozen, and the outputs from both reverbs are mixed together in stereo before appearing at the output.

In-depth editing of any of the above algorithms involves dozens of parameters, but the matrix system puts the most likely candidates for adjustment near the top of the list. Further modification to the effect can be made by bringing the modulation matrix into play, or by using external real-time control from MIDI, or the connected volume pedal.

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▶ by side with the competition, you also realise how immensely warm and well-integrated Lexicon sounds are. From a purely personal viewpoint, I would have found this machine flexible enough if they'd just provided 256 presets with decay and pre-delay controls, (a kind of high-end Alex), but as it is, you can either edit in incredible detail or stick to a broad brushstrokes approach. Unless you're working on sounds that are going to be heard in isolation, broad-strokes editing (such as that offered by Go mode) may be all you ever need. The modulation facilities are less important to my mind than they are on the PCM80, where they can really add movement and interest to complex multi-effects, but again, there are bound to be some users with the time and enthusiasm to make serious use of them. The beauty of the system is that you don't have to get involved with anything deep and mysterious unless you want to.

> *"The beauty of the system is that you don't have to get involved with anything deep and mysterious unless you want to."*

SUMMARY

Once again, I've got to the end of a Lexicon review with the feeling that I've only just scratched the surface of what is a hugely flexible reverb processor rivalled only by Lexicon's 'car-priced' high end units. Some may see £2,600 as being on the expensive side for a box that only does reverb, but Lexicon still do reverb like nobody else, and the PCM90 is as near to perfection as you'll get at this kind of price. Sure, you can buy cheap Lexicons like the Alex and Reflex, and great value they are too, but there really is little comparison between what they sound like and what the PCM90 sounds like. The emulations of real spaces are thoroughly convincing, and yet you still have the ability to construct abnormal or gimmicky-sounding spaces, which is useful both in music and film/video post-pro work. Lexicon's reverb seems to become a *part* of the original sound — it doesn't sound 'stuck on' as some reverbs do — and you seem to be able to add a lot of reverb before losing clarity or intelligibility. There's also a lot less graininess than you get from cheaper units, which suggests a much higher reflection density.

Comparing a high-end Lexicon to a cheap reverb is like comparing a 3D movie to real life: the movie might be initially impressive, but it's a real relief when you take off those irritating glasses. Reverb is the most important effect in the studio, and it pays to buy the best you can afford. It's probably also relevant that clients in paying studios are invariably impressed by the Lexicon name on the equipment list. I'd weld this unit into my rack if I thought there was the slightest chance the guys at Stirling wouldn't come around armed with an angle grinder (or worse still, an invoice), so in the time-honoured tradition of all the great tragedies of literature, I'm just going to have to love it and leave it. SOS

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Gilding the Lily

You might expect Björk's eclectic repertoire and capricious temperament to make the task of arranging and sequencing her live shows a nightmare. As PAUL TINGEN discovers, however, for Guy Sigsworth, that's half the fun...

GUY SIGSWORTH • BJÖRK LIVE

Björk's recent UK tour raised more than a few eyebrows, and not just because of her electrifying stage presence — likened before now to a cat on bonfire night. Yet for the Icelandic singer's strange, idiosyncratic music to have broken through to a mainstream audience is no mean feat. A bizarre cocktail of the latest developments in all sorts of techno styles: dance, house, ambient, trip-hop and swingbeat, it also embraces elements of world music, folk, classical, Renaissance, jazz and even big band music. A lot of it is far-out stuff, and not the kind of thing that one expects to appeal to the man or woman in the ▶

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▶ street. Yet Björk is currently very popular, something that can be measured from the success of hit singles like 'Venus As A Boy', 'Big Time Sensuality', and 'It's Oh So Quiet', and her two solo albums to date, *Debut* (1993) and *Post* (1995). These have attracted such diverse producers as Nellee Hooper in the first case, and a combination of Hooper, Tricky, Howie Bernstein and Graham Massey (of 808 State) in the latter.

However, it's one thing for an artist to sell a lot of records on the back of a few relatively catchy and approachable singles and a unique image; it's quite another to watch thousands of punters dance along enthusiastically in a cold and characterless hall like Wembley Arena to a largely technology-driven show that features some of the weirdest sounds and most heavy-duty, hardcore techno rhythms ever heard on these shores. What's more, Björk's extraordinary, throaty vocal style and often very abstract vocal lines, largely devoid of what we would normally call 'tunes', gave them very little to sing along to. Yet they loved it anyway, cheering loudly as the elfin singer roamed the impressive stage set, which featured a mixture of images and forms from the worlds of industry and nature.

Guy and Alexander, singer with Acacia.

BLOSSOMING OUT

Guy Sigsworth is currently working with Alexander, singer and the other half of Acacia, writing and recording material for a forthcoming album. To this end, he's building his own home setup, consisting of an Akai S3200XL, Oberheim Matrix 1000, Roland JD800 and Vintage Keys, Yamaha DX11, Emu Proteus World and Proteus Orchestral, Roland D110, a trusty Atari ST running *Notator* and a Mackie 1604 mixer.

For live purposes, Acacia employs the services of guitarist Mauritzio Anzalone and Indian percussionist Ansaman Biswas. Sigsworth describes their music as "pop melodies with very strange arrangements."

With Guy's ear for a good tune, and experience in working with much weird and wonderful music, Acacia's debut single, 'Hate (Radar)' is exciting some interest. There's also a tour to look forward to!

Significantly, and typically, Björk had done very little to make life easy for her new-found audience. Unlike most acts who reach Wembley Arena, she had chosen not merely to reproduce the arrangements and sounds of the songs of her albums. Instead, a 4-piece band, consisting of Briton Trevor Morais on drums and octopads, the Japanese accordionist Coba, Londoner Guy Sigsworth on keyboards and harpsichord, and the Iranian Leila Arab on the mixing desk, worked their way through largely familiar material in a very unfamiliar fashion.

This was remarkable, since somewhere backstage there was clearly a sequencer performing a lot of tasks, and most technology-based bands tend to slavishly reproduce the same sequences live as they use earlier in the studio. Combined with reports that Björk's shows can vary wildly from night to night, it made the whole thing rather intriguing.

MODULAR MAKEOVER

The person best placed to shed light on the mysteries of Björk's live show is keyboard player Guy Sigsworth. He's been part of Björk's live band for three years, and was responsible for translating and arranging the material on Björk's albums for live performance during this second world tour. When I spoke to him a few days after the Wembley gig, last January, he had just left Björk's band, because his own band, Acacia, had been landed a major record deal. Living in a basement flat only a stone's throw away from Abbey Road Studios, Sigsworth explained that the scale of the differences between Björk's albums and live shows were due partly to the way he had re-sequenced and rearranged the material, and partly to the onstage role of Leila Arab, whose treatment of much of the sequenced material amounted to a virtual 'live remix'. Sigsworth explains:

"*Post* was recorded with a range of different producers, and when it came to arranging the album material for live performance, only Graham Massey was available to give me program numbers, samples, patches and sequence information. So I went into a recording studio and re-sampled a certain amount of sequenced material off the multitracks — mostly analogue 24-tracks — using an S3000, and rebuilt the sequences that we needed in my Atari/Notator sequencer. I created a more or less complete model of each track, and took these sequences to the rehearsal studio when the band came in. Then, it was a case of deciding which parts to give to the live band, and which sequences to give to Leila to mess around with.

"Björk doesn't like the idea of slavishly reproducing her albums tracks live, and so Leila's role was to bring a live element into the sequences. She certainly surprised us many times, bringing down choruses to almost nothing where we expected something big, radically distorting and manipulating the sounds of certain parts, and so on. In many ways, her role was the most spontaneous of us all — she was probably the only one who ▶

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▶ never played the same on any one night. This was why we also decided on an irreducible minimum set of sequences, anchor parts that were essential for the band to always know where we were. They went straight to the front of house — nobody was allowed to touch them. But there weren't too many of those sequences."

Seal, whose first album was partly co-written with Guy Sigsworth.

FREE SPIRIT

Thirty-five year-old Sigsworth has not always been at the cutting edge of modern electronic music. On the contrary, his background as a musician couldn't be further removed, and is in the areas of early music, avant-garde classical music and ethnomusicology, subjects which he once studied at St Catherine's College in Cambridge. Later, he went on to study harpsichord at the Utrecht Conservatory in the Netherlands, and subsequently worked as a harpsichordist with the European Baroque Orchestra and the English Chamber Orchestra.

"*One of the things I love about working with Björk is the extreme contrast between the strict rhythms of the sequencer, and the completely free time of the acoustic tunes.*"

Despite his classical background, Sigsworth points out that he has always been "into modern stuff and electronics", and that he was *already* playing around with sampling in the mid-'80s, on one of the very first affordable samplers, the 8-bit Green Gate DS3, which ran on an Apple computer and also sported a 4-track sequencer. "From an audiofile point of view it was ghastly, but from a creativity point of view it was great, and I learnt a lot from working with that machine," he recalls.

Sigsworth's first break into non-classical music came through his brother, a documentary film maker, who asked him to score one of his films. Building on his experience with the DS3, Sigsworth had built his own home studio, made up of "cheesy budget gear", such as a Roland S330 sampler and Yamaha DX11 synth. A chance meeting with Seal in a squat in North London resulted in the singer inviting the keyboard player to help him out with his debut album — he'd been impressed by the demos Sigsworth had recorded on his home setup. It catapulted the classical musician straight to pop success, for he co-wrote several well-known Seal tracks with the singer, such as 'Crazy', 'Wild', 'Violet' and 'The Beginning', and also played keyboards on the singer's debut album. From this, Sigsworth went on to work with Adamski, Tim Simenon (he co-wrote the gorgeous ballad 'Winter In July', and played live with Bomb The Bass), Hector Zazou, Nokko (a big Japanese pop star), and even produced a record by US heavy metal band Naked Truth — thus detaching himself as far from early music as is imaginable.

PILLAR TO *POST*

When friend and Simply Red drummer Gota was invited to play on Björk's first world tour in 1993, he in turn suggested Sigsworth to her as a keyboard player. On this first tour, Sigsworth's role was limited to playing the "disciplined" keyboard parts, whilst his fellow keyboardist, the legendary Bernie Worrell, worked out on the more fancy parts. The 7-piece band — "no guitars, which appears to be a golden rule with Björk," performed most of the material live, with the exception of only three songs that used some sequencers, "because there was no other way of doing them live".

For her second album, *Post*, Björk almost passed Sigsworth by — his contribution was limited to playing harpsichord on one track, plus a B-side — but she then virtually promoted him to musical director, entrusting him with the job of translating the album arrangements for live purposes. Guy explains the course of events:

"By the second album, Björk had decided that she wanted both more technology, and more natural, acoustic stuff, and to pull out the things in the middle. I was to play keyboards live, but increasingly, she wanted me to play instruments like harpsichord and pipe organ. She asked me to put the band together, though it was her idea to have Leila — who had played some keyboards on the first tour — to mix and treat sequences live on stage.

"There were a lot of strings on the album, arranged by the famous Brazilian arranger Eumir Deodato, because both Björk and I agreed that sampled strings sounded really 'yuk'. I suggested that we use an accordion for the sustained and/or string parts. We were lucky to find Coba, who is well-known as an artist in Japan. Drummer Trevor Morais was Björk's idea; she knew that he was adept in playing with Octopads, and would be comfortable with being a kind of rhythmitist, rather than a traditional rock 'n'roll kit drummer.

"Trevor had an Akai S3000 with samples, both

OUT OF THE ARK

Although Sigsworth originally programmed Björk's sequences in an Atari computer, it was decided to switch to a more reliable hardware sequencer for live performance.

"We transferred the sequences to a Roland MC50. We took two, in case something went wrong — in fact, we had doubles of every piece of gear that we took with us! I was the one who pressed the sequencer Start button, whilst a backstage tech changed the programs. The sequencer triggered an Akai S3000, which contained mainly beats, plus a Oberheim Matrix 1000 and Vintage Keys. If a particular sound on the album wasn't that unique, I tended to program a fair imitation into the Vintage Keys or Matrix.

"Leila received 8 channels of S3000 on her 24-track Soundcraft Spirit desk, and she also had an extra S3000, which she could play from a small Ovation keyboard, to trigger sounds she wanted to throw over the top, or for making links between songs. Her treatment gear included an Eventide H3000, which had some very bizarre programs in it, and various other units that she would fall in and out of love with. At the latest stage of the tour, she fell in love with the Boss SE70, the incredibly cheap half-U rack box. It has great simultaneous effects, and a ring modulator that she thought was brilliant."

his own and samples that had been taken from the record. At the beginning of the tour, he used a Simmons kit. Later he had KAT Octopads, which are much smaller and allowed him to instantly switch between acoustic and electronic drums. Sometimes he was reproducing parts from the album, but at other times he was creating completely new parts. I'd programmed the sequencer to supply both Trevor and myself with clicks, which we could listen to via headphones when we wanted, because obviously we couldn't drift. But one of the things I love about working with Björk is the extreme contrast between the strict rhythms of the sequencer, and the completely free time of the acoustic tunes. They are a complete antidote, where everything is in theatrical, not machine timing.

"'It's Oh So Quiet', for example, was done with me on celeste and piano, Coba on accordion and Trevor on Big Band-style drums. The nature of that song, with its stop/start rhythm, is that the tempo has to be really flexible, so we didn't use sequencers on it. 'Venus As A Boy' was performed with just me rippling away on a harpsichord, and was also completely in free time. There were a few other tunes which were performed in free time without the sequencer, one of which featured just Coba and Björk. The accordion is a beautiful instrument for that, where you can swell through chords and then suddenly stop."

Even if some of the non-sequenced songs could be erratic, the timing of the sequenced tunes had to be as tight as possible — and Sigsworth explained that this involved him having to go through a lengthy process of sampling many of the album multitrack sections note by note, and rebuilding the sequences note for note, rather than lifting material in longer stretches:

"The S3000 has three minutes and 10 seconds of stereo sampling time, so I could have peeled song stretches from the multitrack, or created 8- or 16-bar loops, but I decided not to do that, because a sequencer can drift sometimes, and even with 8-bar sections that would sound unmusical. So if timing was critical, I broke the samples down to single notes, whereas if it wasn't so critical, I used two-bar loops — but never longer. Also, in the course of the tour we sometimes wanted to change the tempo of certain pieces, and obviously, the more loops you have, the harder that is."

NEW TRICKS FOR OLD DOGS

Both Guy and Leila use Akai S3000 samplers on stage, in his case with a Oberheim Matrix 1000 and Emu Vintage Keys, fed through a Mackie 1604 mixer, and played from a Kurzweil PC88 mother keyboard. He has more portable companions, however:

"I also always carry a little Korg 01/W with me, because it's a very good, general purpose thing. It's not the best synth in the world, but it's really good during rehearsals or in a hotel room, to get some ideas going, because it's very quick and easy to find approximations of other things on it.

"At the front of the stage, I had a Rogers electronic harpsichord. It's a brilliant instrument, distributed by Roland, but with its built-in speaker, it's really meant for the performing classical musician, not the rock market. It has two manuals, and the harpsichord sounds have been sampled very well, especially the key release sound, which is an essential part of harpsichord playing, and which is usually absent from commercially available harpsichord samples. It feels like a real harpsichord; they've thrown in samples of pipe organ and celeste, and it even has Sound Canvas sounds in it, though I didn't bother with those."

Björk's World Tour has taken Guy's beloved Rogers to the Far East, but this time with two new keyboard players. With Acacia's signing, Guy has his hands full. At this rate of progress though, it can't be long before he can afford an electronic harpsichord of his own. Living on the edge does have its rewards! SOS

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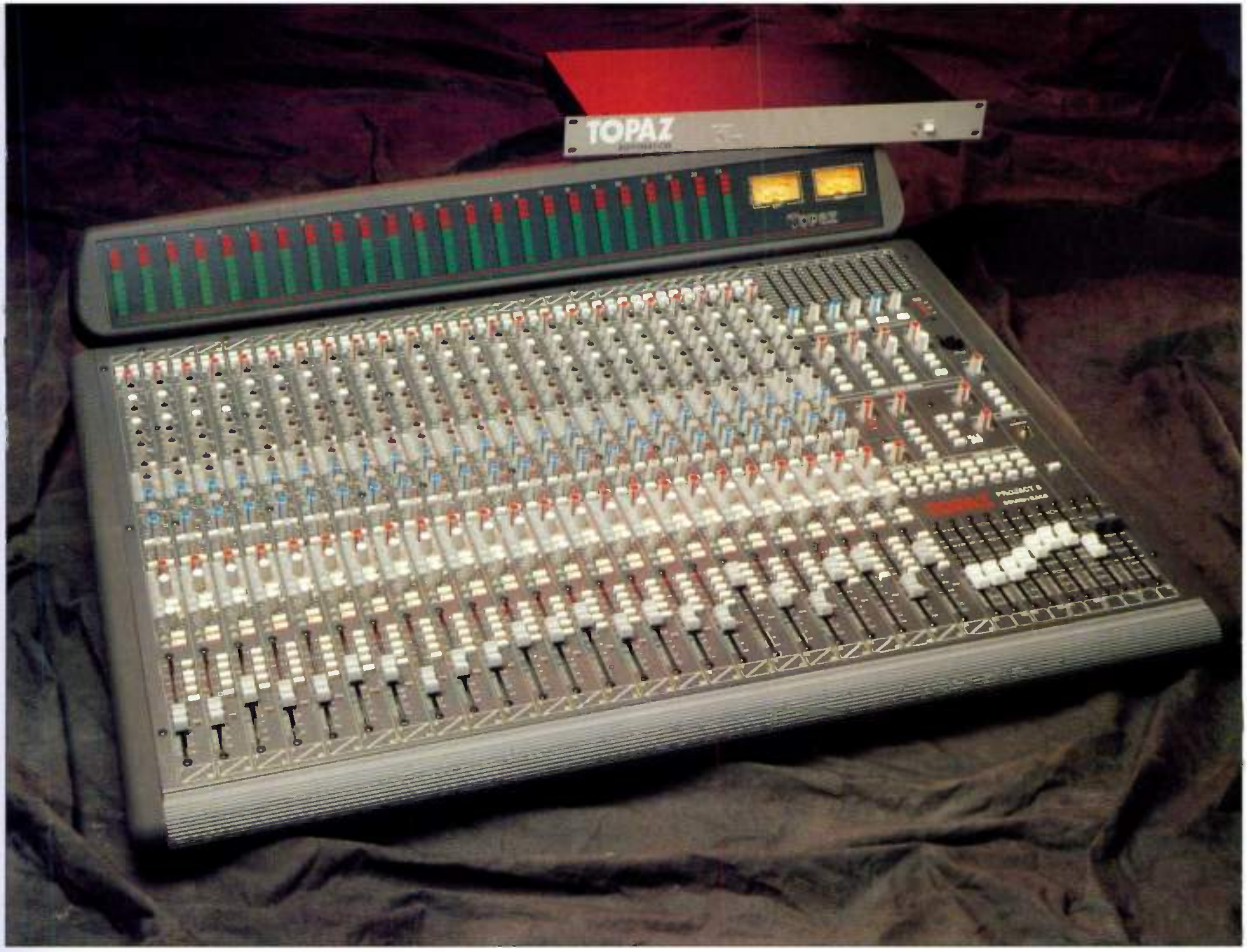

Back seat driver

What can you do if you've been tempted by the automation facilities offered by digital desks like Yamaha's 02R, but your finances just won't stretch that far? In the first of two reviews of affordable automation systems in this issue, PAUL WHITE considers the Soundtracs option for those who already own an IBM-compatible PC...

SOUNDTRACS TOPAZ PROJECT 8 MIXER & AUTOMATION SOFTWARE

Based on their earlier Soundtracs Topaz mixer (see the review in *SOS* June 1994) Soundtracs' Topaz Project 8 is an 8-buss, in-line console, but unlike some in-line designs, where you have to split the EQ to service both the main and monitor signal paths, the Topaz has a 4-band EQ permanently in the main channel path, and a further 2-band EQ dedicated to the monitor path. In most other respects the console is quite conventional, both in layout and operation, and the main thrust of this review is to concentrate on the VCA automation option available for the console. For more details on the specific features of the console, see the 'Topaz Project 8' panel elsewhere in this review.

The introduction of a low-cost, dedicated automation system for the Topaz Project 8 makes it much more interesting, and because the automation runs on an IBM-compatible PC, the designers have had the opportunity to create a very user-friendly graphical front end (the minimum PC required is a 25MHz 386, though a 33MHz 486DX or better is recommended). Apparently, a Mac version of the software was also planned, but this has been abandoned due to the Mac's poor market penetration in the studio!

Based on those fashionable analogue devices, VCAs, the Topaz Project 8 automation system is a little different to most, in that it doesn't interact with the console faders or switches. In this respect, it's more like the other affordable automation system we're looking at in this issue, the Mac-based Mackie Ultramix system (see review on page 180), but unlike the Ultramix system, all control is done on the Project 8 automation via the computer and

WRH

mouse — there's no outboard fader pack option. Topographically, the VCAs are situated adjacent to the console insert points, but as the VCA cards are located inside the main console body, the only external connections comprise one ribbon cable for every eight channels of the console. These plug into the 1U rackmount automation controller, and other than a mains switch and a rotary MIDI channel selector, this box has no user controls. It all makes for a very tidy installation, the downside being that you can't use this automation system on any console other than on the Topaz Project 8 and the previous Topaz.

On the back of the Automation rack box is a MIDI In and a MIDI Thru socket, the MIDI In being needed to receive data from the PC running the included automation software, and Thru to carry MTC (derived from the external sync source), to any other machine that might need it. A green status LED on the front panel confirms MIDI activity. No MIDI interface is included, so the user has to provide one, ideally a Roland MPU401 or equivalent, though many others will work. This system syncs to MIDI Time Code (MTC) only, and it is up to the user to provide a source of MTC, either from a sync box or from other hardware such as an Alesis BRC.

When the Automation rack unit is switched off, relays bypass the VCAs, providing a convenient means of taking the VCAs out of circuit while recording. Though the VCAs are very high quality, purists will still prefer to pass signal through them as few times as is possible.

Because the VCAs are in series with the channel signal path, the channel faders must be set at unity gain position before mixing commences. If the faders are down, no signal will pass through the channel, regardless of the VCA setting. However, because this is a VCA-based system, it can automate only the channel fader levels and the mute functions — EQs and Aux sends have to be set manually in the usual way, which means that you need to keep careful notes if a session needs to be reloaded in the future.

The price of an automated Topaz Project 8 console plus the PC needed to drive it comes pretty close to that of Yamaha's 02R, which offers the seductive combination of moving faders, complete recall and digital interfacing with Alesis ADAT and Tascam DA88 digital multitracks. While this doesn't detract from the high quality and good value of something like the Topaz package, it does mean you have to think very hard about whether or not you have sufficient reasons for sticking with analogue, especially if you use digital multitrack.

INSTALLATION

Apparently, the hardware required for the automation can be retrofitted to an existing Soundtracs Topaz — but it isn't designed to be used with any other mixer. It is important when installing the software that the MIDI interface and its drivers are installed first. That's because the Topaz automation software looks for an installed MIDI driver, and then configures itself to talk to it. Installation should be straightforward, especially if you're running Windows 95, and once you're done, you can boot up the software and click the On-Line screen button to establish MIDI communications. If everything in the PC is happy and you have a MIDI lead from the PC interface's MIDI Out to the Automation rack MIDI In, the green front panel LED on the rack will flash, to let you know MIDI is being received. If this doesn't happen, (and predictably, it didn't in my case), you may well have a problem with your MIDI driver software.

Being a newcomer to PCs, I did everything by the book — but there was still no green light. The software is supposed to auto-detect the MIDI driver, but in my case, it was auto not-detecting it! After several phone calls and some detective work that required me to become rather better acquainted with my .INI, AUTOEXEC.BAT and CONFIG.SYS files than I might have liked, it turned out that with my combination of hardware (an AWE32 SoundBlaster

▶

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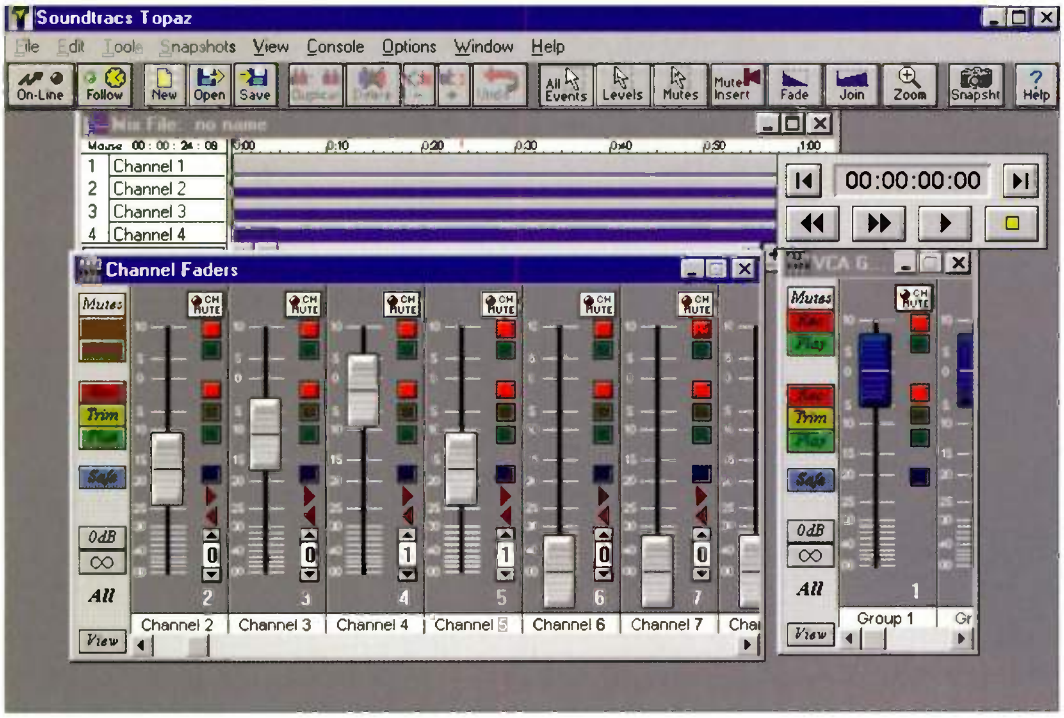
PROS
- Clear user interface.
- Good audio performance.
- Easy to use.
- Cost-effective automation.

CONS
- Mouse control only.
- Limited number of effects sends on mixdown.
- Automation can only be used on the Topaz and Topaz Project 8.

SUMMARY
Available in both 24-channel and 32-channel versions (hence the two prices), this is a simple but fully-featured automated mixing console offering on-screen level and mute control from a standard PC. A suitable PC and MIDI interface must be provided by the user.

> *"Because the automation is PC-based, the designers have had the opportunity to create a very user-friendly graphical front end."*



Topaz Project 8 automation software.

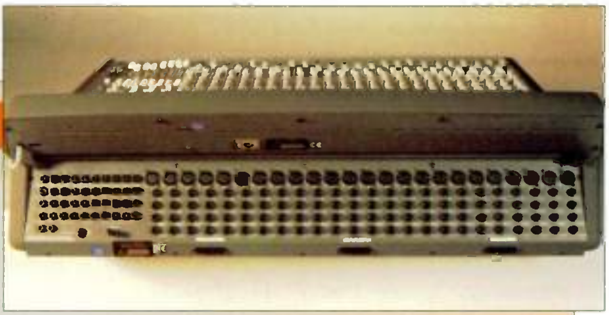
Soundtracs Topaz Project 8 & Automation Software

soundcard) and Windows 95, there was a bug in the Topaz software that prevented it from finding the MIDI interface unless the system was set to internal (test mode), rather than external MIDI sync. I got the system running in internal sync mode with no problem, and a couple of days later, a revised version of the software arrived which allowed me to work to MTC with no problem. Strangely, the system ran perfectly using the original software on a friend's system, which is fitted with a Roland RAP10 card. The original software is also reported to run fine on the AWE32 card under Windows 3.1! Whatever the problem was, the software should be cleared for Windows 95 by the time you read this review.

AUTOMATION FACILITIES

The system is based around three main screen windows, the most important of which is the Main Fader window, and as the name suggests, this gives you a graphical representation of the console faders, along with buttons to activate the various automation modes. The faders may be dragged up and down using the mouse, and mute buttons can be clicked on and off as the mix progresses, but as you never get a mix right first time, there's also provision for correcting sections — rather like ▶

THE TOPAZ PROJECT 8



The rear view. Most of the connectors are quarter-inch jacks, apart from the XLR mic inputs.

Despite the fact that it comes in a cardboard box about the size of a small Welsh village, the Topaz Project 8 is a compact, but by no means cramped, 8-buss recording console available in either 24 or 32-channel formats. Designed for the project studio environment, the majority of the audio connectors (except for the mic ins), are on quarter-inch jack connectors located on the rear panel, and an optional full-width meter bridge is available if required. All channels have both line and switchable phantom-powered mic inputs (on XLR), and the in-line format means that the number of channels available on remix is double the number of basic channels. Furthermore, there are four dedicated stereo effects returns, so there's no need to use valuable input channels to handle effects.

The main input channel is equipped with a 4-band EQ comprising two sweep mids and shelving hi/low controls with a bypass button, as well as a phase switch, a Flip button to swap the mic/line inputs with the Tape inputs for mixing, and a Buss button which sets up the channel's Tape Out routing. With the Buss button up, the channel feeds directly to the correspondingly numbered tape output, whereas leaving the button up causes the tape out to be fed from the appropriate Group Out in the usual way.

The Monitor section has its own 2-band shelving equaliser, and the console has a total of six Aux Send busses which are shared between the Main and Monitor signal paths. Aux 1 control is pre-fade and is fed from the main channel path, for use as a foldback send. Aux 2 is also pre-fade, but is fed from the Monitor section. Aux 3 is post-fade, for use as an effects send, and may be switched into either the main channel or Monitor signal path as required. Aux 3 may also be switched to feed Aux Buss 5 by pressing the Aux 5 button. Aux 4, which is also a post-fade effects send, is similarly switchable between main channel and Monitor signal paths, and may be routed to either Aux Buss 4 or Aux 6. This is an inefficient use of sends as the two dedicated pre-fade sends are of little use when mixing. This leaves only two post-fade effects send knobs to be shared between the main channel and Monitor signal paths when you come to mix, which is less than generous. On the plus side though, you don't have to share the EQ, because both the main and monitor signal paths have their own dedicated EQ sections.

Both the monitor and main channel sections have their own Mute and Solo buttons, as well as level and pan controls. The Monitor level control is a rotary pot, while the channel is controlled using a 100mm fader. Full 8-buss routing is provided via the usual array of routing buttons, and the Pan control. Illumination is provided for both the Mute and Solo buttons, though the Mute lamps are not connected to the automation system. The main signal path has an insert point on a TSR jack, as do the Groups and the main stereo output.

The Master section of the console provides control over the six Aux Send Masters, as well as housing the four stereo returns. Long faders are provided for all eight Groups, and each Group has separate Left and Right switches for routing into the stereo mix. This allows individual subgroups to be placed centre-stage, rather than having to use two Groups. The Monitor mix can be added to the main stereo mix at mixdown by using the Merge button, and the Control room source can be selected from the main mix, the monitor mix, Tape A or Tape B. Further switching is available for two sets of monitor speakers, and the monitoring can be switched to mono for mono-compatibility checks.

A separate studio section allows the musicians' monitor mix to be fed from any combination of the main mix, the monitor mix, the control room mix, Aux 1 or Aux 2. Talkback facilities are included, though you have to provide your own mic, and this can be routed to the Studio output, the Groups, Aux 1 or Aux 2. The headphone output carries the control room signal, and bargraph metering shows the eight Group levels plus the stereo mix. When a channel is solo'd, its level is also shown on the L-R meters, enabling the input gain trim to be optimised. An optional meter bridge provides bargraph meters for each channel, plus dual moving-coil VU meters for the main outputs. The mixer power supply is external, and the supply voltages are shown on three LEDs below the console's stereo meters.

User options include the ability to switch between +4dBu and -10dBv levels for the multitrack and stereo tape in/outs, but this involves a degree of disassembly, and is best done by a service engineer.

Technically, the mixer is very quiet, with low crosstalk, and the SSM Analog Devices IC mic amps help contribute to this. The audio frequency response is essentially flat from 10Hz to 40kHz, and there appears to be plenty of headroom. Overall, the sound is clean and musical, with plenty of range on the EQ. I'm also pleased to find the mid EQ can be swept right down to 50Hz, allowing it to tackle bass problems that the shelving low filter might not be able to cope with.

Other improvements over the original Topaz include redesigned cosmetics, smoother rotary pots with double bushing, and anti-glare trim. The tight tolerance EQ has also undergone some improvement, both on the main input and monitor channels.

The Topaz Project 8's in-line channel strips in close-up.

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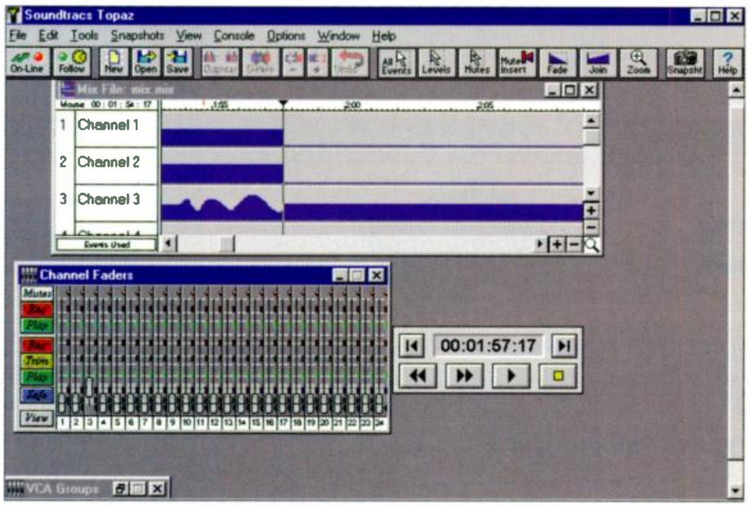
▶ dropping in on a tape machine. You can also move fader and mute events off-line, by selecting them using a rubber band tool and then nudging them. This is more akin to editing with a sequencer, and a useful Join tool lets you construct a linear level change between any two points you select. A similar Fade tool allows fade-outs of any length to be imposed on any number of simultaneous tracks.

You can also store and recall snapshots of all the fader and mute settings, which could be useful for mixes where a lot of things have to change at the same time. The first ten snapshots can be recalled directly from the keyboard, but if you use more than that, you have to press a few more buttons to coax them back to life.



The automation software showing all of the channels on the 24-channel Project 8. Above this are the graphical representations of the fader data for the first four channels.

MAKING PASSES

Every time a new mix pass is made, you have the choice of keeping it or discarding it, and mixes may be saved to any designated hard or floppy drive attached to the PC. Unless you want to overwrite previous mixes, you have to manually change the mix title each time you save to disk. I would have liked to have seen an option that added a mix version to the file name, so you could automatically keep all the histories of a mix without having to keep typing in new names.

The graphic Mix window provides a visual representation of the fader and mute data for each channel, with levels presented as envelopes on a time line. You can zoom in on this either horizontally or vertically to provide the desired degree of detail when editing. The ability to nudge mute events forwards or backwards in time is potentially very useful, as is the ability to create fade-outs. You can also copy data from other mixes, which might come in handy if you're doing an extended remix of a song you've worked on earlier.

The third main window is entitled Groups, and here you can construct up to eight Groups, where two or more channel faders can be brought under control of a single Group fader. This isn't linked to the console Group system in any way; it's simply a way of creating VCA subgroups so that multiple channels can be controlled by a single fader. When the Master fader of a Group is moved, the other channels move proportionally, just as they would in a real subgroup, and no data is recorded into the Group fader as such — all data is stored under the individual channel faders. Record, Play, Trim buttons and so on are provided adjacent to the Group fader, and these have the effect of acting as masters for whichever channels are in the Group. Similarly, operating the Group Mute button drives the mute switches in the grouped channels, providing a convenient way of muting multiple channels. Unfortunately, you can't allocate a channel to more than one group at once.

Only one window can be active at a time, though the on-screen faders continue to move, even if the window isn't selected. All windows may be dragged around the screen in the usual way, while a further floating window provides basic Stop, Start and Fast Wind MMC commands via the MIDI Thru port on the rack unit. This section also operates the automation when you're in the internal sync mode.

Looking more closely at the Fader window, you'll see eight buttons alongside each fader, as well as a numeric window where you set which Group the fader should belong to. If zero is set, the fader is ungrouped. A further set of buttons is placed at the extreme left-hand end of the window, allowing global control of the automation status. These affect all channels except those set to Safe, and further buttons are provided for setting all the faders either to their off position or their 0dB position. The View button also enables the Fader window to be scaled down, so that more faders can be shown at once — but at the expense of visual resolution.

The channel Mute switch operates like the switch on the desk, but does not link to the button LED on the console itself. Instead, it mutes via the VCA, rather than an electronic switch, as you'd expect in a mute-only console. Both the mute and fader have their own Record buttons, so that you can record the fader and mute events together or independently. When either the fader or mute is set to record, any changes made while MTC is running are recorded. Similarly, both the fader and mute sections have their own Play buttons, which allow previously recorded automation events to control the mix. You can still turn mutes on and off manually in Play mode, but the changes won't be recorded. You can move faders in Play mode, but again, no new data is recorded and the fader snaps back to its recorded position as soon as you release it.

KEEPING IN TRIM

In common with most VCA automation systems, the Project 8's system has a Trim mode which allows the fader to be used to modify existing automation data rather than to replace it. The best way to think of this is that in Trim mode, any fader movements are either added to or subtracted from the data already recorded, so if you go into Trim and then push the fader up by 5dB, you'll end up with all the same automation moves as before, ▶

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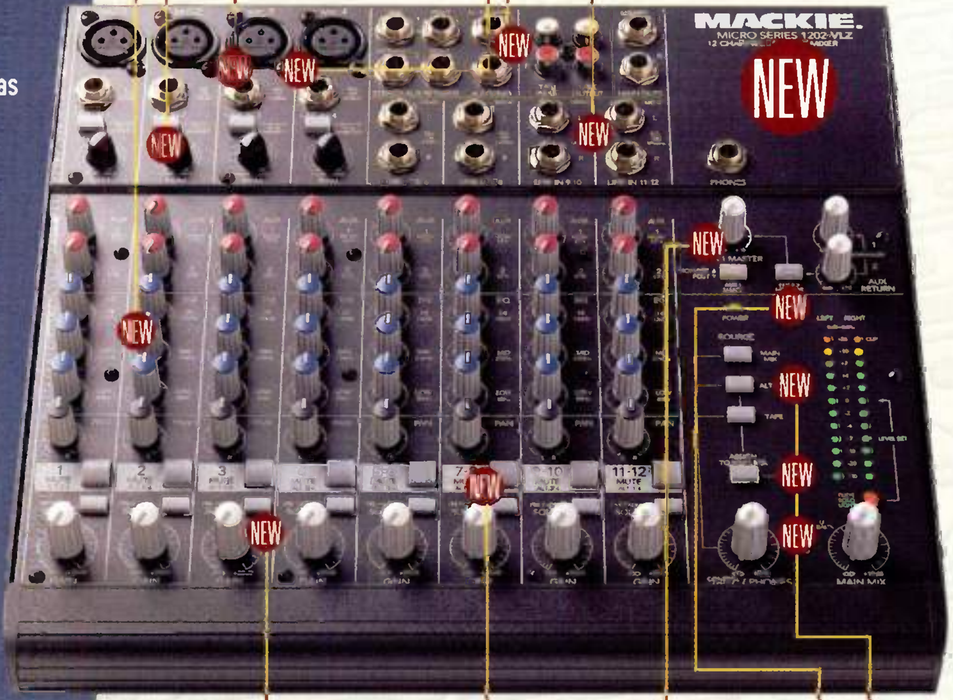

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Soundtracs Topaz Project 8 & Automation Software

but 5dB higher. Trim is useful for fine-tuning a mix that's almost right, and to show the actual automation level as well as the physical fader level. A True Level indicator line appears on the fader scale after the first mixing pass has been made, so you can see what the VCA level is *really* doing.

When you put a fader into Trim mode, nothing happens until you grab it, at which time it moves to the -10dB position to give you plenty of plus and minus trim range. Grabbing the fader also puts the channel into record mode. A nice addition to Trim is Auto Nulling, designed to prevent abrupt level changes when you drop out of Trim mode, and you can set the number of SMPTE frames (up to a maximum of 100) over which the level fades from the punch-out value to the previously recorded value. Hitting the Trim button gets you out of Trim mode and allows the auto nulling to smooth the join for you.

> *"This type of automation falls far short of total recall... but provides the essentials of mix automation in an easy-to-use format."*

An alternative, and equally useful way of working is to use the Manual Nulling feature, which works as follows. If you drop out by hitting Play instead of Trim (and have Auto Nulling turned off in the Options menu), the fader stays in record mode, with the record button flashing until you move the fader through the -10dB position, where the current and recorded data are equal. At this point, the system drops out of Record, leaving a perfectly smooth transition. If you leave Auto Nulling switched on, it simply does this before you get a chance to move the fader.

Another standard VCA automation feature is Isolate, and this may be selected either for the mutes or faders. In Isolate mode, the selected channels are isolated from the automation system, and so respond only to manual changes made via the mouse. No new data is recorded if moves are made while in Isolate mode. In Safe mode, the mutes and faders behave as though they're in Play mode, except that you can't make any alterations using the mouse, and any safe channels are greyed out.

Adjacent channels may be stereo-linked, allowing two channels to be controlled from a single fader and set of buttons. Right at the bottom of the on-screen channel is the Group select window, which has up and down arrow buttons so that you can click the number up and down, just like a mechanical thumbwheel switch.

IN USE

The main difference between using the Topaz Project 8 automation and something like my own Optifile Tetra system is that there is no physical control link between the console faders and the software — everything has to be done from the screen. Other than that, the software is actually very easy to use, and the screen graphics are beautifully crisp and clearly set out. Creating subgroups is easy, linking two or more channels for ganged operation is just a matter of clicking on arrows, and when you've completed a mix pass, a dialogue box reminds you that you either need to save the new mix data or bin it.

Because you have to use the mouse to move faders, the best way to work seems to be to set up a nominal mix and then fine-tune it, though different engineers will discover their own favourite ways of working. The off-line editing in the graphical mix window is limited to sensible things you might actually want to do, so the procedure is fairly simple. To select mix data, you simply box it using the rectangle tool, after first choosing the icon that determines whether you're editing mutes, levels or both. Selected data can be moved backwards or forwards, copied, or erased altogether, while further tools allow mutes to be inserted, fades drawn across a selected area, or different levels joined by a straight line. It's all very nicely thought out, and unless the mix is really busy, not being able to get your hands on real faders may not bother you at all.

No compromise in sound quality attributable to the VCAs was evident, and the VCAs snap quickly out of circuit when the automation is switched off.

SUMMARY

The Soundtracs Topaz Project 8 is a good example of a quality, budget recording mixer and the high engineering tolerances ensure that the pots all feel very firm, despite them not being fixed directly to the front panel. The EQ is flexible, with a gratifyingly wide range and the provision of a second, dedicated EQ for the monitor section is excellent. The aux send situation is less satisfactory, as the two dedicated pre-fade sends are of little use when mixing — but then you can never have everything you want in a budget desk.

This type of desk automation does of course fall far short of total recall, as it doesn't affect aux or EQ settings, but given the limitations of any VCA system, it provides the essentials of mix automation in an easy-to-use format with on-screen emulation of a moving fader system.

If you're not a PC wizard, I suggest you buy the MIDI interface card from the same dealer as your Topaz system, so that if any compatibility problem does arise, it doesn't become your problem. From what I've experienced of PCs so far, this advice applies to just about everything you can load, plug or slot into one!

Because there are now more automated recording options coming onto the market, both analogue and digital, the decision of which one to go for is no longer a clear one. For those users who already have a PC equipped with a MIDI interface, however, the Topaz Project 8 provides a tidy and cost-effective solution for those who want to retain the convenience of conventional analogue mixers.

FURTHER INFORMATION

£ **Topaz Project 8 mixer (24:8) £2937.50; automation (hardware and software) £1410; meter bridge £821.33.**
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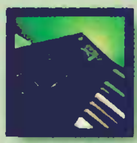

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It can all go without a hitch; recording, overdubbing, even the mixing — but the finest ingredients do not always guarantee a feast. PAUL WHITE explains how a little forethought and planning can make all the difference to your final mixes...

We've all done it — spent hours working on a mix, only to feel like tearing it all down and starting again. The more work you put in, the worse it seems to get. Yet when you listen back to your early work, often done on a 4-track with virtually no outboard equipment, the results can be surprisingly good. This, at least, should give you some clues as to what's gone wrong with your later mixes. If your equipment is simple, you're forced to work simply — recording as few parts as you need to make the song work.

The only effect you have, if you have any at all, is probably reverb, and your mixing facilities may well only have treble and bass EQ. The outcome is that you record the individual sounds more or less as they are, balance the result, and that's about it. In my case, my first reverb was a spring unit that was so twangy, I had to use as little of it in the mix as possible. Any guitar effects were added during recording, and were usually confined to chorus or echo. Because there were no DI solutions to guitar recording around at that time, I miked up my amplifier.

So, what does this reveal? Basically, it tells me that if you record the various elements of a good performance without messing about with them, and then adjust the balance, the result will be at least acceptable, and at best, excellent. It's true that some things can be improved by using EQ and other forms of processing, but a good rule is to at least record everything with no EQ, because then, if the mix isn't working out, you can easily get back to a clean slate by re-setting the channel EQs to flat.

Some engineers insist on adding EQ when recording, but I don't subscribe to this way of working myself. You don't know what EQ a sound finally needs until you hear it in context with the rest of the mix, and if you're building up a mix in layers by overdubbing, how can you possibly know what EQ you'll eventually need? What's worse is that if you do make a mistake, it's virtually impossible to un-EQ a sound, so that it sounds as it did originally.

THE ARRANGEMENT

A good mix starts with a good performance of a suitable musical arrangement, and unless everything is in tune and in time, there's virtually nothing you can do to fix it, short of sampling the few bits that work, and building a new arrangement out of the rubble. That kind of work is outside the scope of this article, though mix salvaging is something we'll be looking at in the near future. However, one very common problem you *can* do something about is arrangements that get too busy, resulting in all the sense of space and separation being lost.

A good arrangement will also take account of what instruments are playing at the same time, so that you don't end up with three things playing at once, all occupying the same space in the musical spectrum. While instruments such as brass and strings blend nicely, the whole point there is to create an ensemble effect which can really be treated like a single sound. If, on the other hand, you have a middly bass guitar, a low, thick synth pad and a woolly-sounding rhythm guitar, then the chances are that the mix is going to sound confused. Again, some engineers tackle this problem by trying to force similar sounds into being different by using heavy EQ, but the only really satisfactory approach is to choose the right sounds at the outset. EQ should be regarded as a

> ***"EQ should be regarded as a tool for fine polishing, not as a large hammer and chisel."***

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tool for fine polishing, not as a large hammer and chisel. Invariably, there are exceptions to this rule once you start getting creative, but when it comes to making instruments and voices sound good, I've always found that the less EQ you can get away with, the more natural the results.

If you're creating sequenced music, MIDI gives you the choice of changing sounds before you get as far as the final mix. Even so, you still need to be careful, because many modern synths sound so rich and impressive that they can take up all the space in your mix. This is particularly true of factory presets that are designed to sound impressive when played on their own in the shop. Creating thinned-down versions of some of the factory presets can be a good idea, but it's always better to create your own sounds if you can.

INSTRUMENT SOUNDS

Continuing on the subject of sounds, you may find that once the recording has been made, you have far less control over things like electric guitars and basses than you think. For example, it's virtually impossible, using a conventional desk EQ, to thin out a humbucking guitar sound to produce a single-coil sound, or vice versa. However, I've already said that hearing sounds in isolation is of little help, because they sound so different when everything else is up and running. So if you're recording a band with two guitar players, you should really get them to play together in the studio, so you can see how the sounds work together. This is even more important if you are planning to record the guitars independently. A common mistake made by bands with little studio experience is that they use far too much guitar overdrive. While this may be fine live and for studio solos, two guitars playing wall-to-wall fuzz power chords all the way through a song is a sure recipe for migraine at mix time.

> *"If an instrument or voice can't justify being there, then why have it?"*

What goes for the guitar goes for the bass too, and you often find that a bass that sounds rich and punchy on its own, just sounds dumpy or soggy when everything else is going. What's not often appreciated is how important the lower mid frequencies are in making a bass sound full, and if you don't believe this, listen to a good record on a small radio or mini hi-fi. You'll get little real bass from such a system, but what's going on in the 80Hz to 150Hz region still provides the illusion of depth. If you can get the bass player to play along with the guitarists or whatever else is in the mix, while you listen to the result from the control room (or from a test recording), you'll get a better idea of how things are going to sound. If you're DI'ing the bass via a DI box, adding compression can significantly improve the sound, but there are occasions on which miking the amp is the only way to get a good sound.

One very important point here is that the sound of an instrument changes very significantly, depending on how it is played. Put two drummers on the same kit and they'll sound quite different. If you hit drums hard, then it *sounds* as though you're hitting them hard, but you can't make a quiet drummer sound loud, simply by turning him up in the mix — he'll just sound like he's thwacking a hot water bottle with a wet haddock! If this looks like being a problem, don't be afraid to talk it over with the musicians. Bass guitars also suffer dreadfully if they aren't ▶

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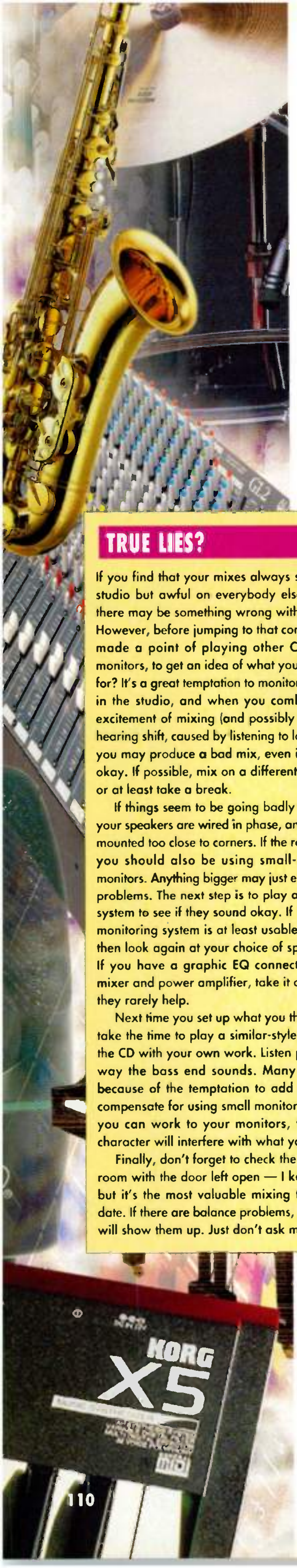

Match before you *mix*

played with confidence and power. No amount of EQ, compression or anything else will help, so again, have a word with the player before recording.

BALANCE

Once you have the required tracks on tape, you have to set a balance, and the more tracks you have to play with, the more there is to go wrong. If the vocal keeps drifting in level, you should consider compressing it, and in a typical pop mix, I like to hear a good balance between the bass, drums and vocals before I start to add the other instruments.

It's here the musicians' egos can become a problem, because you'll sometimes find there are parts that can be best used very low down in the mix. If the player in question is feeling insecure, however, they may be wondering why they aren't as loud as the others in the band. That's one advantage of working with a sequencer, I suppose — computers don't have attitude problems. Also, don't rely on the pan controls to keep your sounds separate. Get the mix working in mono first, and only then pan out the various elements. This will also help ensure that your mix is mono-compatible, though you must check this again, after adding any effects.

The other reason for not getting too hung up on EQ'ing sounds until everything is playing, is that not everything can be at the front of the mix — some things must take a back seat, which may mean they sound slightly dull or insipid when heard on their own. That doesn't matter, though, because they're not *going* to be heard on their own. Assuming it's an upbeat song or dance track, the vocals will need to be somewhere near the front of the mix, and the rhythm section right behind them, with rhythm guitars and keyboards playing a supporting role. Thinner guitar sounds such as you get from a single-coil pickup leave plenty of space in a mix, and cut through effectively, even when they're quite low in volume — whereas thicker, humbucking sounds can be overpowering, while still having a tendency to merge in with other sounds.

EFFECTS

Before you switch on an effect, ask yourself "Why am I doing this?". Once you've paid out for a good multi-effects unit, there's a temptation to use it wherever possible, but you already know this is wrong. Effects are there to create illusions, and before you can start, you have to decide what illusion you wish to create and why. Most Western music is designed to be heard indoors, so the first illusion to construct is that of an indoor environment, and for this you only need a little reverb. Other than concert halls and bad venues, few listening rooms have huge amounts of reverb: you just need enough to create the effect of your music existing in three-dimensional space. Add too much reverb, and your sound will recede into the distance.

Another consequence of adding reverb to instruments indiscriminately, is that the space in your mix starts to disappear, and as has often been quoted, the spaces in music are as important as the notes. If you don't have a reason to use it, turn it off, and if you do need to use it, use it sparingly. Similarly, if the lower mid section of your mix seems awash with confusion, switch off the reverb returns for a moment, and see how much your use of reverb is contributing to the problem. The same is true of echo effects, and while chorus is less likely to steal your space, it can have the effect of putting the treated instrument 'out of focus'. Chorus creates the illusion of movement, which can smear your stereo imaging, and I find that repetitious modulation can get annoying. By all means use it to round out a pad sound, but if you're about to add it to a guitar, ask yourself if there's a good reason for doing it.

SUMMARY

So far, I've covered just a few of the major things that go wrong with mixes. Ultimately, a mix is just a balance of instruments and voices that provide a pleasing result, and the more you process and manipulate the various elements without reason, the less natural the result is likely to sound. It's rather like photography — put a good subject in front of a camera, make sure the lighting is okay, and you have a respectable picture. If you then start to touch up that picture using something like a computer graphics program, you may be able to change the colour balance, move trees out of the background and give the donkey on the left two heads, but unless you're a real expert (and have the very best tools), it's never going to look as natural as the original. The first rule should always be 'if it ain't broke, don't fix it'.

Perhaps the second rule should relate to the ingredients of the mix, and if an instrument or voice can't justify being there, then why have it? It's rather like cooking a curry: if you throw in the entire contents of your spice rack every time you cook, you'll never get any variety, and the flavours will be confused and overbearing. And the third rule? The third rule is that if you can get a good artistic result by breaking the first two rules, then that's fine too. This talk of curry has made me hungry, so I'm off to phone the take-away now...

TRUE LIES?

If you find that your mixes always sound great in the studio but awful on everybody else's music system, there may be something wrong with your monitoring. However, before jumping to that conclusion, have you made a point of playing other CDs through your monitors, to get an idea of what you should be aiming for? It's a great temptation to monitor everything loudly in the studio, and when you combine this with the excitement of mixing (and possibly with a temporary hearing shift, caused by listening to loud music all day), you may produce a bad mix, even if the monitors are okay. If possible, mix on a different day to recording, or at least take a break.

If things seem to be going badly wrong, first check your speakers are wired in phase, and that they are not mounted too close to corners. If the room is fairly small, you should also be using small-to-medium sized monitors. Anything bigger may just emphasise the room problems. The next step is to play a few CDs over the system to see if they sound okay. If they do, then your monitoring system is at least usable, but if they don't, then look again at your choice of speakers and room. If you have a graphic EQ connected between your mixer and power amplifier, take it out of the circuit — they rarely help.

Next time you set up what you think is a good mix, take the time to play a similar-style CD, and compare the CD with your own work. Listen particularly for the way the bass end sounds. Many mixes go wrong because of the temptation to add excessive bass to compensate for using small monitors. Also, the nearer you can work to your monitors, the less the room character will interfere with what you hear.

Finally, don't forget to check the mix from the next room with the door left open — I keep repeating this, but it's the most valuable mixing tip I've learned to date. If there are balance problems, the next room trick will show them up. Just don't ask me why...

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SUMMARY

If you want just one keyboard to do *everything*, you simply must check out the XP80. Quality sounds, effects in abundance and a built in hardware sequencer make this a great one-stop solution for live or studio use.

I used to think all the built-in instrument demos were somehow faked. I mean, did *anyone* ever get a complete song out of a Roland D110? It seemed so easy in the shop, but once back home, all it took was a bass line, a melody and a few chords to make all those precious notes disappear. A few minutes with the Roland XP80, however, and I've changed my tune: not only is it *possible* to produce complete songs, I've actually done it!

Described as a Music Workstation — with hardly a mention of the word 'synthesizer' in the manual — the XP80 has evolved from the rich gene pool of Rolands JV/JD (and even D-series) synths, married with the popular MC range of hardware MIDI recorders. The XP80 is endowed with 64-note polyphony, quality effects, a 60,000-note sequencer and various performance controls. Shrewdly, Roland have provided room for expansion, in the form of their JV series of plug-in boards. With the maximum of four installed, this gives instant access to almost 1700 patches. A staggering amount, but don't assume it makes your programming skills redundant — there's still *plenty* to keep you busy!

PHYSICAL LAYOUT

Roland have opted for a traditional black, slimline appearance with plenty of hard plastic buttons, a continuous alpha dial, a 3.5-inch DD/HD floppy drive (for song and patch data) and a 320 x 80 green-ish LCD. I don't think this quite rivals the display of, for example, the Korg Trinity, but it presents a large amount of information clearly, supplying graphical views of effects settings, key ranges, filters and so forth. The review model had a quirk, in that its contrast settings rendered the screen invisible at settings below 4, and from 5 up to 10 there was no discernable difference. Four screen text types are available, but again, on the review model I could see no difference between them.

Continuing our guided tour, the back panel sports two sets of stereo outputs. One has effects, the other is a direct out for external processing. Alongside the three MIDI ports are five sockets for pedals; one is dedicated to sustain/hold, but the rest are assignable from a wide range of options and MIDI controllers. Unusually, there is also a separate output for the sequencer's click, with a separate level control pot — but no sign of the XP10's 'to host' connector, for a direct link to PC or Mac.

The keyboard has a very light, shallow action: *too* shallow in my opinion, and I'm no concert pianist. It is, however, very fast, and anyone contemplating the XP80 will know after playing it for five minutes whether or not it will suit their style. Performance controls include two assignable sliders, Roland's 'stick' (for bend and modulation), and four further

WRH

Roland XP-80
MUSIC WORKSTATION
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& EXPANSION

sliders which allow quick edits of the filter and envelope, or become a simple mixer. These controller values are all recordable over MIDI.

For the first couple of days, I had the synth but no manual. I'd love to be able to boast how, with my years of experience, skills honed on unfriendly instruments like the Yamaha DX7 and Korg S3, I mastered every feature. Alas, this wasn't quite the story — 'intuitive' is not the word I'd use to describe the XP80. The LCD and softkey approach is a great improvement on the XP50, however. The panel is laid out in a confusing manner, and for a while I stumbled around like a kid presented with his first typewriter. However, once the manual arrived, things improved considerably.

SOUNDS

If you've heard any PCM-based synthesizer in the last five years or so, you'll have an idea what's in store; what you might *not* have expected is the sheer quality that oozes from every pore of the XP80.

The user area houses 128 patches, 32 performances (16-channel multi setups) and two drum sets. The preset area has a further 512 patches (including a General MIDI set), 64 performances and eight drum kits. Even without expansion, this is a whole bunch of sounds, and if I'd spent half the time playing them as they demanded, I'd never have finished writing this review. Unlike its smallest brother the XP10, Roland's GS logo is entirely absent. Instead, plain vanilla General MIDI allows playback and creation of GM files. I dutifully dug up a few old favourites, and discovered nothing untoward.

The factory patches are mostly excellent — with silky strings, crystal-clear acoustic guitars, powerful brass and the usual assortment of strange, synthetic textures which make good use of the resonant filter. The instrument samples are first rate, with the possible exception of the rather kazoo-like saxophones, and there's surely enough variety here to satisfy the most discerning player. With so much at your fingertips, the chances are there will always be something pretty close to what you need, be it breathy choirs, pounding basses or swooshy pads. One of the softkeys presents a patch list, which is a great way of getting around, especially as the alpha wheel occasionally seems to pedal in the opposite direction to what you expect. Oh, and being Roland, the drums are simply the business...

PROGRAMMING A BIT

You could be forgiven for thinking that with its plethora of classy factory sounds, there is no need to learn to program the XP80. In fact, it has several powerful tricks up its sleeve that make for a rewarding experience, whether tweaking existing patches or boldly creating something new. Check out Julian Colbeck's review of the XP50 in *SOS* June '95 for more details, but here's a quick run-through for those of you who don't keep back issues:

▶

"Congratulations to Roland for including dedicated on/off switches for the three effects sections — a great aid to programming."

An individual Patch can comprise up to four layered Tones. The more Tones you use, the fatter or more complex the sounds, but the payback is reduced polyphony (although a patch using all four can still play a healthy 16 notes). Patches can be grouped together in Performances — multitimbral setups with each part having its own MIDI channel.

Try to think of Tones as complete, one-oscillator synthesizers, tied together in any of ten different structures, ranging from simple oscillator-filter-amplifier routings to more radical settings using ring modulators (to create metallic harmonics), or a booster (to add distortion or simulate pulse width modulation). The TVF — Time Variant Filter — has a powerful resonance (watch those speakers), which is a little harsh to my ears. It may be set as Low Pass, Band Pass, High Pass, PKG (peaking) or Off for each tone. Thoughtful combinations of structure and filter settings should provide interesting opportunities for years to come. I thought the band-pass filter was particularly good, ideal for the sort of nasal sweeps that sit so well in a crowded mix.

If you want to simulate old analogue gear (and why not?), there's an 'Analog Feel' setting to introduce a welcome air of unpredictability at the Patch level. Or individual Tones can use 'Random Pitch Depth', which, if used to excess, sounds more out of tune than the average Memorymoog. In subtle amounts, however, it comes close to reproducing those warm string synthesizer sounds that never quite sample properly. Every Tone within the same Patch can have differing amounts of random pitch depth, so you can really muddy things up nicely, if that's your bag.

Each Patch has an associated tempo setting, since several parameters, eg. LFO speed and tone delay (a user-definable period before the tone sounds) are tempo-aware. If you slave to the sequencer clock, and experiment with these, some great, pulsing rhythms magically appear. A liberal sprinkling of MIDI-sync'd echo from the multi-effects unit can further compound things, but we're straying from the path of good taste here...

As well as the usual sine, sample & hold, square and triangle modulation waveforms, a new one (to me) is 'Chaos wave', which is a kind of tempo-ignorant sample & hold. A 'random' LFO wave can add a 'Smurfs on helium' feel if applied to pitch, and is very effective when modestly applied to the filter. The LFOs have both fade-in and fade-out options, which permit unusual touches such as 'add modulation only after key release'. Once I began exploring the XP80 in depth, I could have spent weeks just trying different combinations of waveforms, structures, filters, cross-modulation and other settings — but I dutifully put these aside, so I could investigate the sequencer.

MC HAMMERED

It's been some time since I looked at a hardware sequencer, so it was a pleasant surprise to find the inclusion of Groove Quantise, Fit To Time, event editing, Data Thin and tempo/signature maps. Only one song can be resident in memory at a time, regardless of its size. Saving and loading individual tracks is possible though, and it seemed strange that such an otherwise well-featured MIDI recorder had a resolution of only 96 pulses per quarter note. This compares poorly with most software sequencers (*Cubase* uses 384 divisions for its quarter

EFFECTS

Congratulations to Roland for including dedicated on/off switches for the three effects sections — a great aid to programming. The sheer quality of the effects couldn't fail to impress, divided into reverbs (lovely and warm), chorus (rich and lush) and 'EFX'. This features distortion, flanging, EQ, enhancer, compressor, various chorus and delays and composite effects. See the XP50 review for a full list.

Much of the synth's (sorry — 'workstation's') character is derived from the way individual tones or patches in a performance can be processed, and I'd love to have been able to add external instruments too, but sadly that's one option not provided. But many of the effects parameters can be modified by the performance controllers, thus giving considerable scope for developing an expressive repertoire of solos.

DANCE
Super Sound Set
60s & 70s
Roland

SECRET WEAPONS

Up to four JV-series expansion boards can be fitted at a time. I was lucky enough to be supplied with three of Roland's latest, which I installed in about five minutes. Internal expansion is good. It removes the worry that some light-fingered git can upgrade himself at your expense, should you leave your keyboard unattended in a public place (say at a gig). The expansion banks may be accessed directly via the shift key — eg. shift-7 takes you to bank C. I don't think it would have hurt Roland to have printed this on the front panel, as it's hardly obvious. Each board contains 255 extra waveforms and 255 patches. Both the Dance set and Super Sound set have an additional eight drum kits.

• DANCE SET (SR-JV80-06)
Made in collaboration with AMG (sampling CD gurus), this was actually my favourite of the three — odd really, because I've always seen drum loops as the musical equivalent of painting by numbers. With numerous loops, hits, scratches, zaps, vocals and samples from Roland's TR808, TR909, TB303, SH101 and others, it's the perfect palette for creating instant club fodder. There are some cool ambient sweeps, and so many effects that even a sad old bastard like me managed to pull out something to meet with the grudging approval of my teenage daughter (buying my loon pants next week). Of course, the disadvantage is that anyone else with the dance set can use the same distinctive loops and samples, but this doesn't seem to worry any of the enthusiastic XP owners I've spoken to.

• SUPER SOUND SET (SR-JV80-07)
A mixed bag of mainly conventional instrument samples taken from Roland's SO-PCM cards. Particularly notable were the harps, brass, electric pianos (even better than a DX7), orchestral hits, guitars and drums. An absolute pearl of a patch, 'Deep Cave' recalls trickling water droplets with stunning accuracy, and shows off the character of the reverb beautifully. Other atmospherics are good too, although few matched the calibre of the internal banks. Still, there's an abundance of useful raw material here, despite overlaps with many existing waveforms.

• KEYBOARDS OF THE 60s & 70s
(SR-JV80-08)
This board contains a wealth of organs, clavinets, electric pianos and several Mellotrons. There should be enough rock organs here to keep an aspiring Keith Emerson happy, with a range of gritty Hammonds, cheesy Farfisas and Voxes. The Fender Rhodes and Wurlitzer piano samples, when played via a weighted keyboard, were superb and kept me occupied into the early hours. The Mellotron, too, is well represented by various strings and choirs, although I missed its haunting flute. Some of the Mellotron patches even included the scratchy sound of tape heads, for added authenticity! This was my least favourite of the bunch, but only because there were too many variations on the same theme.

Roland XP-80
MUSIC WORKSTATION
64 VOICE
4x EXPANSION

notes, for example) and would certainly not persuade me to throw aside monitor and mouse for everyday use.

Once you get past the basics, using the sequencer is pretty straightforward, whether you need real or step time. Don't worry about mistakes, as you can list events and edit each individually later, using filters to limit the data on the screen to the type you want. I enjoyed shortening the gate time of individual parts to create some of those resonant acid blips, or shifting whole tracks in time to generate interesting rhythmic 'accidents'. Loop recording is a doddle, allowing you to build up layers of music, erase mistakes, audition without recording, and all without stopping. You can assemble the bare bones of a song very quickly, then overdub afterwards. Once recorded, a song is volatile, so it's important always to remember to back up to disk — I only got caught out once by this!

Groove Quantise allows you to overlay an existing musical 'feel' on the timing or velocity of your own recordings. There are over 70 preset grooves supplied, with space for a further 16 of your own. Grooves can be applied gradually, which is useful, as the chances of hitting on something that works first time are remote. Personally, I think this feature works best when used against step-time recordings, since it often takes as long to find a groove that complements your style as it would to play it that way in the first place. Tempo and time signature changes are well catered for, with separate 'tracks' for each, as is synchronisation with the outside world. A special section in the manual deals with linking the XP80 with the wonderful Roland VS880 hard disk recorder. With these two working together, you have a complete MIDI and Audio recording system in a very convenient package. You can switch tracks on and off during playback, and loop entire songs if you wish.

By specifying a chain of songs to play in order direct from disk, I think the XP80 would be more than adequate as a backing band. It's somewhat bulkier than a DAT machine, but at least you can do more than just hit 'play'! The disk drive hums away to itself whenever a disk is present — this is apparently to enable fast ▶

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SAMPLE SHOP

Our regular look at the hottest new sample CDs and CD-ROMs.

CREATIVE ESSENTIALS VOLS 1-10

(MIXED-MODE AUDIO CD/CD-ROM)

This massive project from Time and Space consists of 30 CDs, although so far, only the first ten have been released. The idea is that each sample CD contains between 200 and 400 samples in both audio format and as WAV and AIFF files. The WAV files can be loaded into PC multimedia systems and soundcards, while the AIFF files mean Mac users aren't excluded. The second bunch of discs is due this month, with the final set planned for the autumn. All are priced at just £19.95 each, and the technical sampling quality is as high as we've come to expect from T&S.

Looking at the discs available so far, in no particular order; *Electric Dreams* is filled with obviously electronic synth sounds, as opposed to emulative sounds, and has something for every electronic musician, whether your forté is techno/dance or Tangerine Dream/Jarre soundscapes. Strident, ring-modulated tones abound, with many of the sounds electronically processed to further increase the coefficient of weirdness — lending many of them a '*Doctor Who* meets *Bladerunner*' feel. Not a disc for migraine sufferers!

Dream Zone is rather more cerebral, but it's still more trance than new age, with lots of agitated synth sounds, evolving atmospheric textures, arpeggios and analogue loops. Good for sci-fi, techno and film work, but probably too intrusive for relaxation tapes. Given that the material was created by Ian Boddy — the acknowledged master of weirdness — this isn't too surprising!

Trance Formation kicks off with a whole range of atmosphere-laced, sequenced arpeggios, some of which are melodic and gentle, while others are cutting and industrial. These are followed by modulated filter sweeps, electronically generated rhythm patterns, evolving synth textures, sample and hold filter pads, bass drones, sweeps and ring-modulated tones. Obviously, the title tells you where the material is aimed, but this excellent collection has applications everywhere, from soundtracks to traditional electronic instrumental music. A great collection.

Dance Vocals is a neatly recorded selection of single vocal phrases, both female and male, mostly in a 'soully' style. Most fall back on the 'Ooh Baby' and 'Give it to me' type of clichés, but they're performed with such style and sincerity that it really doesn't seem to matter what's being sung. The CD doesn't tell you what key the samples are in, but it shouldn't take too long to figure out!

Spices of India is mainly occupied by rhythmic loops (tempo provided) based on tablas, dholek, wajroo and so on, but there's also a small selection of vocals, chants and sitar sounds. All the rhythm loops have a wonderful air of ambience and life, but I would have liked to hear more vocals and more instruments. Still, at the asking price, this CD is still a bargain, and there are hundreds of samples packed onto this disc.

PERCUSSION GROOVES
Creative Essentials
Sampling CD Series
BRASS ELEMENTS
Creative Essentials
Sampling CD Series
TRANCE FORMATION
Creative Essentials
Sampling CD Series
RHYTHM GUITAR & FX
Creative Essentials
Sampling CD Series
SPICES OF INDIA
Creative Essentials
Sampling CD Series
AUDIO
WAV
AIFF
Time+Space

Guitar Rhythm and FX is a compilation of rhythm guitar work, mainly on DI'd electric guitar with a little added chorus (rather like a Rockman-type sound). The recording quality is clean, and the rhythms, while not excitingly new, are designed to be musically useful, and cover numerous styles from funk and disco to country and pop. For the retro brigade, there are numerous wah-wah examples too. Although there are one or two bends, and there could perhaps have been more in the way of solo licks and phrases, on the whole this is a very practical collection of sounds that will be welcomed by those who don't actually play the guitar.

Guitar Separates also seems to include a lot of subtle chorusing which might, in retrospect, have been better left to the discretion of the user. The aim here is to provide single note-set samples for creating multisamples, with further samples of major and minor chords, harmonics, single strums, power chords, slides and so on. There are also a few steel and nylon-strung acoustic guitar samples at the end, and though the recordings sound fairly standard, that adds to their versatility. Like the previous CD, this disc will be welcomed by non-guitar playing composers.

Percussion Grooves starts out with a selection of simple latin rhythms played on individual instruments, which means they can be layered to create different rhythms if you want. For example, there are shaker, triangle and tambourine parts, as well as the more obvious conga rhythms. Next come the more complex rhythms featuring two or more instruments, but even these have plenty of space, which means they can be used as one ingredient in a track rather than taking over the whole thing, as so many loops tend to do.

Despite its apparently simple feel, this is a particularly useful disc, as it allows you to add real percussive parts to your music rather than adding a complete rhythm section. Quite often, a couple of human parts are all that's needed to make your drum machine pattern come alive. I think this CD will see a lot of use.

Brass Elements comprises lots of handy brass section phrases, many reminiscent of early Tamla Motown hits or big band material. There are also excursions into funk, as well as stabs and sustained multisamples. Multisamples are provided for whole brass sections, trumpets, alto sax, tenor sax and flugelhorn, and all the section samples make use of panning to separate the various elements of the section, so you can rebalance the riff's instruments with just your stereo balance control.

While the parts heard in isolation lack the power and sparkle of a finished recording, they are all clean, precise and very live, leaving you in full control as to what effects or processing will be used. Considering the giveaway price of this disc, it's amazing how much quality material is on there.

Global SFX: When I first put this disc on, I thought I'd trashed my CD player — all I got was whirring, clunking and grating. As it turned out, that's exactly what I was supposed to get, because this is a disc of over 200 sound effects, the first being video and cassette machines fast-winding and braking. There are also U-Matic machines, cameras, telephones, typewriters,

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alarms, flushing toilets, doors and work noises, before we make it to the great outdoors to be greeted by lawnmowers, streams, rivers and waterfalls.

After a brief respite in the form of a selection of percussive noises, we're back to real life, with various environmental sounds including the betting office, the dog tracks, the park and launderette, followed by sirens, planes, trains and automobiles. There's a whole section of car-related effects, then the disc finishes off with various footsteps, followed by drinking and burping.

Though by no means a complete collection of sound effects, this disc provides a good range of stock sounds at a bargain price. I'm surprised there was no sea, rain or thunder though — I thought these were obligatory! *Paul White*

£ Audio CDs £19.95.
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ROBOTS
& COMPUTERS

ROBOTS & COMPUTERS

(AUDIO CD/AKAI, ROLAND & SAMPLECELL FORMAT CD-ROM)

This audio CD sound library is designed to appeal to anyone working in the Kraftwerk genre, which means that most of its synthetic sounds are clinical, stark or vaguely industrial, rather than soft and lush. However, they're all absolutely perfect for Teutonic-style electronic music, as the opening demo so ably proves. There are a few exceptions to this rule, including the Mellotron Strings, Choir and Cello, plus a few softer pads, and everything is generously multisampled where necessary, with up to 20 different samples per sound in the Synthesizer Multisamples section alone. You also get a handful of looped rhythm patterns at tempos between 80bpm and 130bpm, again, in perfect keeping with the overall style of the collection.

But the most weird thing about this CD is the robots connection: every track is announced by an electronic voice, ranging in style from 'Stephen Hawking' and Speak-and-Spell to Cylon-type vocoder voices. There's even a complete section devoted to electronic speech, where you will find computer-generated voices electronically enunciating numbers in both English and German.

The content of this CD breaks down into loops, single (non-multisampled) sounds, electronic speech, pads and strings, Mellotron, basses, drums, rhythm effects, synth multisamples and organs, with around 2000 individual samples in all. Everything is uncompromisingly sampled and beautifully presented, but as mentioned at the outset, this collection is pretty application-specific. Worth four stars — but only if you're a Kraftwerk fan. *Paul White*

£ Audio CD £59.95; CD-ROM £149.00.
Prices include VAT and UK p&p.

LOOPISMS 6

(MIXED MODE AUDIO CD/PC CD-ROM)

The *Loopisms* series of budget CDs just keep on coming, and D-Zone obviously reckon they're onto a winner, as Volume 6 follows almost exactly the same format as other CDs in the series.

Track one contains WAV file data for all of the drum loops that appear later on the CD in audio format. Also contained within this data track are demo versions of *Cubasis*, Software Audio Workshop's hard disk recording programme, and a shareware version of the game *Doom*, for those in-between moments of boredom in the studio.

In familiar style, tracks two to 25 contain the drum loops, and rather good they are too. The quality of the programming seems to be improving with each release, and there is a good deal of stylistic variety. The 24 loops range from 64 to 165bpm, and for CD turntable users (both of you), each loop is repeated for over a minute and a half. There seems to be a fair amount of sonic depth to most of the loops, but there doesn't appear to be much creative use of the stereo field, giving a good deal of the loops an 'almost mono' feel. As with other *Loopisms* CDs, all the loops are repeated at the end of the CD, unprocessed and in mono.

STAR MOUSE MATS

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OLD WELLINGTON BOOT

LOOPISMS
SIX

The second half of this CD (tracks 26 to 50) is devoted to vintage keyboard samples. These are divided into a number of smaller sections (Piano, Organ, Bass, Pad, FX, etc), and each section contains ten samples. All the samples are recorded exclusively at middle C with no multisamples. This is all well and good for most bass, percussion and FX sounds, but renders nearly all the Piano, Organ and most of the pad sounds virtually unusable outside of a 4-note playing range from middle C. This is a shame, because the recording quality and variety of sounds is very high indeed. There are loads of great PPG, Juno, ARP, Moog and Matrix-type sounds to play with. Any techno-head will have hours of fun with all the basses, pads, wizzes and bleeps here, but anyone looking for a more conventional sound source will surely be disappointed with the lack of flexibility that only having a middle C sample can offer.

Loopisms 6 is very much a mixed bag. It's an interesting idea to include some demo software, and the quality of the loops is improving all the time, but I can't help thinking that the format could be improved considerably. The sleeve notes are practically unreadable against the 'arty' background graphics, and although the selection of sounds is both varied and of a very high quality, the lack of multi-samples will always relegate this kind of CD to the 'semi-professional' pile. However, the potential of D-Zone's producers and programmers is obvious, and with the CD going for such a low asking price, it's easy to overlook the gripes. A little more thought as regards the format, and D-Zone will truly have a product to be proud of. *Paul Farrer*

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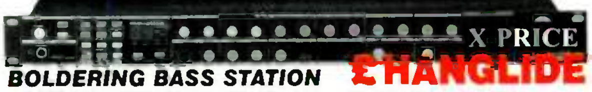

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IN THE STICKS

Shuttle Diplomacy

AKAI DR16 HARD DISK MULTITRACK RECORDER

Though hard disk recording offers possibilities far beyond those achievable with magnetic tape, it often sports a vastly more complex user interface, which can alienate the tape-based faithful. But Akai's new 16-track hard disk recorder seeks to meet the tapeheads halfway. DAVID MELLOR plays ambassador...

I don't think any recording musician can complain of a lack of choice when it comes to picking a new digital multitrack recorder. If you've decided analogue is old-fashioned and not worth considering, you can still choose from a wide range of Alesis ADAT-compatible machines, Tascam or Sony Hi-8 digital 8-tracks, Fostex, Roland and Vestax hard disk multitrackers — and, of course, the Akai DR4d and DR8. If none of these take your fancy, you could even consider a computer-based multitrack recorder such as Digidesign *Session*, Pro Tools *Project*, OSC *Deck*, or one of the 'MIDI plus Audio' sequencing packages... the list could go on.

Two distinct advantages tape-based systems have had over hard disk systems, until now, are the quantity of tracks available, and quantity of inputs and outputs. The purchase of two ADATs to give 16 tracks is an affordable option for many — if not for the masses. However, similarly affordable hard disk systems have found it difficult to get beyond the 8-track barrier, and most of those who use the power of a personal computer to achieve more tracks have to go through the computer's inadequate stereo inputs and outputs — a severe limitation.

AKAI DIGITAL
POWER
ON
OFF
0
6
14
−dB 50
1 2 3 4 5 6
TRACK
METER
1/9
2/10
3/11
DIGI
D IN
1/9
2/10
3/11
LEVEL
MIN
MAX
PHONES
9-16
REHEARSAL
MIX
MIXER
1
2
3
4

But now we can include the Akai DR16 on our multitrack shortlist. It provides 16 tracks of hard disk recording at a value-for-money price. What's more, it has 16 individual outputs, so mixing can be achieved in the analogue domain using the console of your choice. Inputs are only eight in number, but you can record from any input onto any track, and the only limitation is that you can't record more than eight signals at once, which isn't a factor for most styles of recording. The DR16 is, in fact, amazingly similar to the DR8 in appearance and operation. If you turn to the DR8 review in *SOS* August '95, you will find it very hard to spot the difference between the two in the photographs. There is only one button with a different label and function (and, of course, metering for all 16 tracks). Furthermore, if you already know how to operate a DR8, you'll understand the DR16 in about five minutes. If you read this in conjunction with the DR8 review, then be assured that the DR16 is everything the DR8 ever was, and more.

REPLACING THE TAPE?

The DR16 is a replacement for a digital or analogue multitrack recorder in the studio. It isn't as versatile at editing as some computer-based hard disk recording systems, but that isn't really its function. Where a system like Pro Tools almost invites you to record in a non-sequential way and build up a project from building-block elements, rearranging to taste as you go along, the DR16 is best viewed as a very slick and fast multitrack recorder, with extra editing capabilities.

An instructive comparison is with analogue multitrack. Not a lot of people know this, but in professional 24-track analogue studios it's still common for 2-inch tape to be cut and edited. It happens even at the top end of the music recording business; either to join the best parts of two or more takes, or to restructure a song before mixing. In either of these situations, no-one really starts out with the intention of editing, but it is done as and when necessary. You can do this with modular digital multitracks, but it isn't by any means an intuitive procedure, and you need more than one unit, with the appropriate editing controller. It is for this reason that in many studios, the digital revolution has come unstuck.

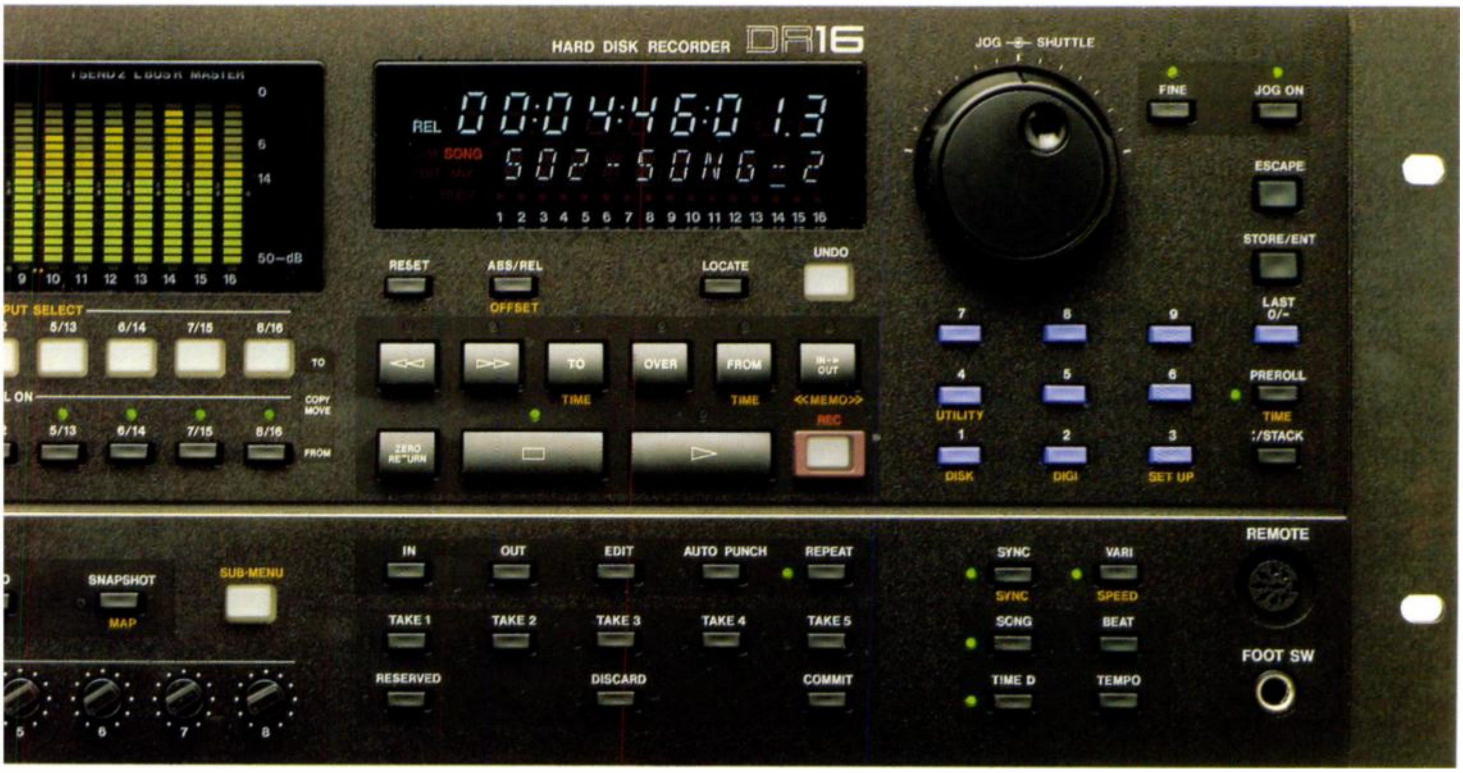
The DR16 has an imaginative solution to this editing conundrum. If you want to repeat a section, all you do is mark the start and end times, select all the tracks you want to copy, locate to the point where you want to insert the section, and press the button. Likewise, to copy only certain

AKAI DR16 £3999

PROS
- Slick to operate.
- All the editing facilities you need for multitrack recording.
- 16 tracks from one hard disk.
- Full range of synchronisation interfaces available.

CONS
- Panel layout not as simple as it could be.
- Internal hard disk still audible.

SUMMARY
A thoroughly professional piece of equipment. It might take some time to learn how to use all of its facilities, but it will speed up your multitrack recording from the first day out of the box.



tracks, say to use the backing vocals of one chorus several times, is a quick and simple procedure. But you do need to view the song as a whole entity that you are snipping chunks out of, rather than as an assembly of building blocks, as you would with a computer hard disk editing system, or an audio sequencer. This is an important point to understand. Akai are offering a fast multitrack recorder with editing facilities in a self-contained unit. It won't do all the tricks that some computer-based systems will, but the computer systems will find it hard to compete with the DR16's combination of speed, price, ease of use, and the ability to slot easily into a pro environment.

Connection to your mixing console is exactly the same as any multitrack recorder, except that there are only half as many inputs as outputs. If you only have an 8-buss console, or never record more than eight tracks at a time, then this won't make the slightest bit of difference. Connections are on balanced jacks rather than XLRs, which would probably take up too much room, or multipin connectors, some of which have a tendency to become unreliable after repeated use. Sensitivity switches optimise the levels for connection to pro or semi-pro gear. Unfortunately, Akai do not have a remote control available at the moment, although one is promised for later this year, so the DR16 itself will have to be positioned conveniently close to your console, and angled appropriately. Otherwise, you will find that operation isn't quite as easy as you would probably like it to be. Fortunately, Akai have either found a source of hard disk drives which are quieter than that fitted to the DR8 I reviewed last year, or they are using a resilient mounting of some kind. Some hard disk drives are very noisy in operation, but the one in the review model is very much better. I still wouldn't be entirely happy to record through a mic in the control room though.

GETTING STARTED

Once your main connections to the DR16 and its location are sorted out, you're ready to start using it straight away. There's no need to slot in a tape of course; just power up and you're ready to go. If you have provided your own hard disk then you will need to format it, which takes a short while. Once this is done, you should have a minute's worth of single-channel recording at your disposal for every five megabytes of hard disk capacity. A 1Gb disk would therefore provide about 12 or so minutes of 16-track recording, or more if not all the tracks are recorded for the entire duration of the material.

Amazingly enough, all you have to do to start recording is arm the tracks, and press Record and Play — a simple concept still largely unexplored by some computer-based hard disk system designers. To arm tracks 9 to 16, and to edit them as well, you have to press the '9-16' button, since there are only eight Record Ready buttons and indicators. If you think about this a little, you might start to worry that it could be possible to set one or more of tracks 1 to 8 to Record Ready status, then press the 9-16 button, and at some later time hit Record and accidentally erase those tracks without being aware of it. It certainly is possible to do this, but if you always fill up the first eight tracks before switching over, then it shouldn't happen to you. The DR16's instant copying facilities will allow you to group your tracks in any logical order at any time after recording, so I doubt if this would be a problem in practice. There's always an Undo button if the worst comes to the worst!

It is only when you have made your first recording and you are ready to play it back that you will fully appreciate the operating speed of hard disk systems. Rewind time is as close to zero ▶

> *"If you're one of those engineers that regards winding and autolocation time as thinking time, you're going to have to think more quickly to keep pace with the DR16."*

WRH

▶ as makes no difference, no matter how long the recording. And when you start to take advantage of the 100-point integral autolocator, you will be flying around the song as though you had just hitched a ride on a rocket! Your musicians won't be able to keep up with you. Having said that, if you're one of those engineers that regards winding and autolocation time as thinking time, you're going to have to think more quickly to keep pace with the DR16. I have also heard it said that with a tape machine, particularly a reel-to-reel, when you just want to wind back a bit without going to the bother of setting locate points, you can tell how far it has gone by listening to the swish of the reels — so much so that you don't even think about it consciously. The DR16 doesn't imitate this of course, but there are fast forward and rewind buttons which scroll through the audio at a moderate pace, with an audio cue facility, if you hold Play while pressing the wind key. You may find you don't need to use these buttons once you've made the mental adjustment away from tape.

An automatic punch-in facility is provided, which is actually useful — unlike some recorders where auto punch is far too complicated to be worth bothering to set up. All you do is perform the operation manually, in time-honoured fashion by holding Play and pressing Record to punch in, and pressing Play to punch out. The DR16 will remember the punch in and out points without you having to do anything, and you can redo the punch as many times as you need, simply by selecting 'Auto Punch' before hitting Play, each time, until (for example) the singer has hit the right note. Like the DR8, the DR16 also has a 'take' facility, where you can easily store up to five versions of a performance, and audition them all before committing to the best of the bunch.

EDITING FUNCTIONS

As I said earlier, the DR16 doesn't use the building block style of editing that you would find in a computer-based hard disk recording system, or with some of the more upmarket stand-alone hard disk recorders. Segment-based editing can be very useful, and almost vital for spotting sound effects to picture, but it isn't the only way of working. One thing the DR16 *doesn't* have is an LCD display of any kind. All you get are flashing LEDs, timecode displays and level metering. From this seemingly sparse information, you can do virtually everything you could possibly need in the natural course of multitrack recording. You can't pitch-shift or timestretch a dodgy note of a vocal, but the DR16 is so easy to use that you are more likely to encourage the singer to have 'just one more try'. Getting the recording right is infinitely preferable to fixing a bad performance later.

When it does come to editing, the DR16 has a very good range of functions. You can mark out ▶

AKAI DIGITAL
MT8

The optional MT8 mix controller.

SYSTEM INTEGRATION

One of the strong points of the DR16, besides its excellent recording and editing facilities, is its ability to integrate with a wide range of other equipment, through optional interfaces where necessary. As standard, the DR16 has AES/EBU and S/PDIF digital inputs and outputs, so you can source material from DAT, and use the internal digital mixer to lay it back to DAT without ever leaving the digital domain. An optional ADAT optical interface is also available, so that whatever you can achieve with DAT, you can achieve four times faster with the DR16, including backup and restore.

Synchronisation options are many and varied if you're prepared to expand on the standard DR16; it has options for sync to SMPTE/EBU timecode, MIDI Time Code (MTC) and Machine Control (MMC), and also MIDI clocks and song position pointers. It can slave to one source of sync while generating another, for instance locking to SMPTE/EBU timecode while generating MTC, or responding to MMC commands from a MIDI sequencer and converting these commands into the 9-pin protocol to control a professional video recorder. Timecode is always referenced to the clock rate of the digital audio, so that the 44,100 samples of audio always correspond exactly to 25 frames of video, which is important.

• EXPANDABILITY

There is a compromise to be made by manufacturers between providing equipment with enough functions to do the job, and allowing flexibility for future expansion. You don't need to expand anything in the DR16 (like you are often virtually forced to do with samplers, for instance), but if you have special requirements, then there is an interface with your name on it. Options include (see the pricing at the end of this review for a full list):

- MIDI Time Code synchronisation and MIDI Machine Control (see above).
- SMPTE/EBU timecode synchronisation (see above).
- Additional SCSI interface.
- ADAT optical interface (see above).
- RS422 and bi-phase interfaces (used in professional post-production applications).
- Additional buffer memory for use with optical disks.
- Digital EQ board (see below).
- MT8 mix controller (see below).
- Video display option.

• DIGITAL MIXING & EQ

The DR16 incorporates a 16-channel digital mixer with two analogue auxiliary sends and snapshot automation, which is certainly useful, but a little bit fiddly on account of having to access each parameter before adjusting it. The MT8 mixing accessory provides real knobs and faders, and makes the digital mixer almost as easy to use as an analogue one! Only eight channels are provided, but the MT8 can be switched to channels 9-16 quite easily. To use the digital EQ controls, the DR16 itself must be fitted with the optional EQ card. The MT8 is surprisingly easy to use, but since each channel can control two tracks, you will often find that the position of the knobs and faders, which are not motorised, don't correspond to what is happening audibly. If you see this as a drawback, and have the money to spare, you could always dip into your pockets and buy another — the DR16 will support it.

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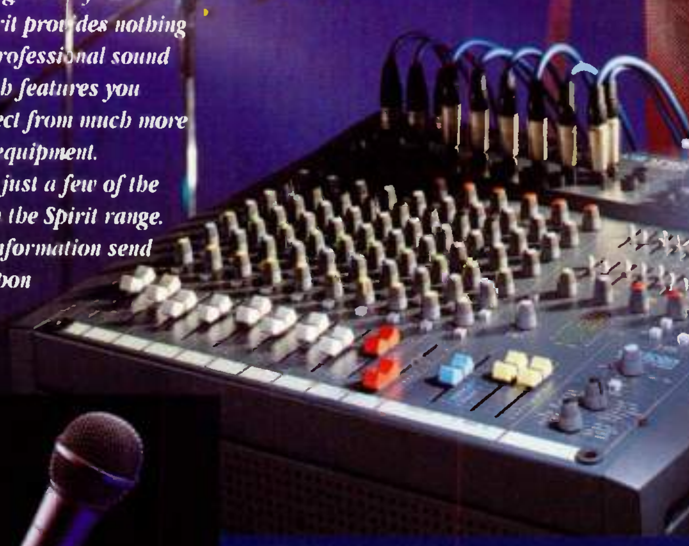

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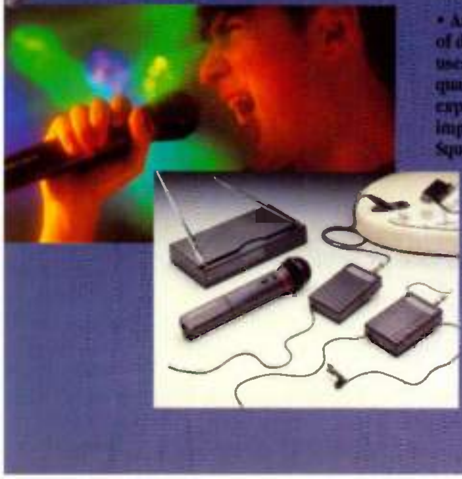

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▶ the start and end of a section, and copy it with up to 99 repeats to any other track at any point in time, overwriting the material on the destination track. Alternatively, you can make a space in the destination track by shunting subsequent audio further down the line if you wish. If you didn't want to retain the audio in its original position, then the Move function works in a similar way.

You can create a section of silence in a track using the Insert function, erase a section, or delete it and close up the gap. Slip moves the section you have marked forward or backward to the edit point. Slip Track moves the entire track forward or backward to the edit point. Any of these operations can be performed on a single track, or a number of tracks simultaneously.

The essential thing to note is that with the DR16, you decide what you want to do, you do it, undo it if necessary and try again, but once it is right you just get on with the next thing. With some systems it is very tempting to keep every option open absolutely as long as possible until the last moment before mixdown, and even beyond, creating not only vast quantities of data but a continuing air of uncertainty over every element of the project. The DR16 encourages positive decision-making, and when it comes to the mix, your recording will be perfect, because all the decisions you made were carefully thought out at the appropriate time, rather than put off until some mythical 'later'. And if there really is an option that you want to keep open, you can just make a copy of the segment and leave it in abeyance somewhere on the disk, until you are able to make up your mind.

> *"The DR16 encourages positive decision-making, and when it comes to the mix, your recording will be perfect, because all the decisions you made were carefully thought out at the appropriate time."*

Finding and marking the start and end of segments is done with the assistance of a jog/shuttle wheel. Believe it or not, audio editing *can* be done without a waveform display, and the DR16 gives you the appropriate tools. I remember complaining about the DR8 that the jog/shuttle wheel wasn't as precise as I would have liked, and the DR16 is the same. However, there are 'To', 'From', 'Over' and 'In to Out' buttons which allow you to check your edit points very quickly from just about every angle, so you would never be in any doubt whether you were in the right place.

PERFORMANCE

The Akai DR16 manages to record and replay 16 tracks from one hard disk, and this is no mean achievement. This level of performance demands a fast hard disk, and an awareness that if you edit a recording really intensively using a lot of very short segments, then tracks may be dropped on playback. This is something which is inherent to all hard disk systems, and if you really push the DR16 hard you will get muting. Although there are activity lights for each track which go out if a track is muted, I would have liked alarm bells and flashing beacons, because it's easy to miss a problem like this during the mix, and only become aware of it some time later when nothing can be done about it.

In normal use, and even under quite extreme degrees of editing, all will be okay. Akai mention one limitation concerning how many tracks you can record and play at the same time. The DR16 has 32 'voices', and so can record or play a maximum of 32 tracks at a time. Although this would seem to be more than enough, edits are performed using quick real-time crossfades, which take up two voices while they are being performed. Also, to make instant drop-in available, the DR16 continues to 'play' each track inaudibly in the background, while recording on that track using another part of the disk. This means that three voices could be in use for each track, which at some point, in theory, could exceed the 32-voice limit. An interesting problem, but if the experience of Akai's DD1500-users is anything to go by, an entirely theoretical one. This upmarket workstation has been in use in top pro circles for around 18 months now, and the number of complaints to Akai has been nil [*so, you didn't read last November's 'Sounding Off', then, David? — Ed*].

I had absolutely no quibbles with the DR16's sound quality. Bat-eared users may wonder whether there is a difference between outputs 13-16 which have 20-bit convertors, and outputs 1-12 which are 'only' 18-bit, but I'll be damned if I can hear it. These last four outputs can also be used for the mixed stereo output and auxiliary sends, hence the difference.

SWEET SIXTEEN?

In conclusion, the DR16 is very slick and professional in operation, and it sounds great. With hard disk recorders like this available, and truly practical removable hard disk storage on the point of becoming a reality, I'm starting to wonder whether cassette-based modular digital multitracks have much of a future.

FURTHER INFORMATION

£ **DR16 £3999 (without disk drive; Akai can supply DR16s with a 2Gb drive pre-installed for about £4600); IB801S SCSI interface board £199; IB802T SMPTE interface board £249; IB803M MIDI interface board £199; IB804A ADAT interface board £249; IB805R RS422 interface board £249; IB806B bi-phase interface board £249; IB807V VGA monitor interface board £TBA — expected to be around £600; EQ16 16-channel digital EQ board £699; EQ8 8-channel digital EQ board £449; DL16 remote and mixing controller £TBA — expected to be around £1500; MT8 mixing controller £499; ALX50 remote cable (50cm) £24.99. All prices include VAT.**

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New Releases

96th Street by BLACKBEAT

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- Roland SH3A monosynth
- Roland TR606 drum machine
- Sequential Circuits Pro One
- Sequential Circuits Prophet 5 with Poly sequencer
- Yamaha TX7 expander

SELECTED ALBUM DISCOGRAPHY

SAINT ETIENNE		
Foxbase Alpha	Heavenly	1991
So Tough	Heavenly	1993
You Need A Mess Of Help To Stand Alone (compilation)	Heavenly	1993
Tiger Bay	Heavenly	1994
Too Young To Die (compilation)	Heavenly	1995
KATMANDU		
Katmandu	Vinyl Japan	1995
THE NORTHERN PICTURE LIBRARY		
Alaska	Vinyl Japan	1993
THE FIELD MICE		
For Keeps	Sarah Records	1991

▶ mains hum, with a bit of music in the background, but it was all good practice. I actually built a synth as well — which sounded a bit like a vacuum cleaner when I'd finished it.

"Things got serious when I bought a Portastudio, the original Tascam 144, which was brilliant and opened my eyes to what was possible. The thing I regret is that in order to buy it, I sold a set of Moog Taurus bass pedals which are probably worth a fortune now!"

Ian got to grips with the Tascam in his spare time, because he still had a day job at British Telecom. While the job restricted his studio work, it paid off in another important respect:

"The best thing it did was get me working with computers early on — so when computers started to invade music, I knew a lot of the basics already."

In 1987, Ian left BT and turned Cat Music into a commercial 8-track facility. Thanks to his understanding parents, he set up shop in an upstairs bedroom at the family home. One of his first clients, Bob Wratten of indie band The Field Mice, still returns to Cat Music (Ian will start work on a solo album with him in the near future). It was through him that Ian met Saint Etienne's Bob Stanley and Pete Wiggs:

"Bob Stanley wrote a piece about The Field Mice for *Melody Maker*, and when he and Pete wanted to record a demo, they asked Bob Wratten where he had done his stuff. So they came to me one day and did 'Only Love Can Break Your Heart'. They were using a different vocalist at this point. Sarah [Cracknell, now the regular St. Etienne vocalist] didn't come in until around the time of 'Nothing Can Stop Us'."

Photo courtesy Piers Allardyce.

The songs raised interest in Saint Etienne's debut album, *Foxbase Alpha*, released in 1991. It went on to earn a nomination for Best Album in the Mercury Music Awards, and established Stanley and Wiggs' reputation as songwriters. Ian was happy with the record, but found it difficult to grasp the band's musical approach at first:

"Initially, the band seemed shambolic in the way they approached things — I'm quite methodical. They just came in with a bunch of records and played me a Neil Young song ('Only Love...') in 3/4 time, which they wanted to use a 4/4 drum beat with. I couldn't see how it was going to work, but they managed to bend the vocal to fit the 4/4 time.

"After a couple of sessions, I began to think, 'Hang on, perhaps they've got the right idea here,' because we were having an awful lot of fun. So they changed my attitude to a lot of things, especially sampling and using loops."

POST-MODERN POST PRODUCTION

Despite Saint Etienne's use of sampled drum loops and riffs, the first impression people get of their music is often a '60s groove, with lots of weird twists (try listening to 'Wilson' on *Foxbase Alpha* — it sounds like the tape machine was having a very bad trip). Ian denies the band wanted to create a 'trademark' sound, adding that their fondness for '60s music has possibly been over-emphasised:

"I don't think it had an enormous bearing on the recording process, apart from the fact that Bob would come in and say, 'Here's a sound on a record — how did they do that?'. It was things like heavily compressed drumkits and pianos.

"One of the first things he brought in was a Joe Meek recording, which was fairly distorted and heavily compressed. He's also a John Barry fan, so we tended to use strings quite a lot."

Of Ian's instruments, the band favoured the Korg M1 and Sequential Circuits Pro One, which was used to filter external sounds and provide analogue noises. Ian's main workhorses are his samplers, an old Emu Emax I and an Akai S1000 keyboard. These are central to his work with Saint Etienne:

"If there's any kind of pattern to the way we work, it's a mass sampling session at the beginning. Bob, Pete and Sarah will come in with a melody and some bits on record, to suggest what they want to do, then we just play around. A track's not finished until it's on DAT. Quite often, we get to a state where the music's finished from my point of view, and then Bob or Pete will say, ▶

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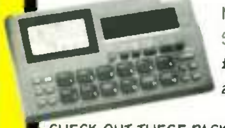

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▶ 'I'm not sure about that.' At that point, we can literally be one day from the finished mix."

KATMANDU

After three years working with St Etienne, Ian was given an opportunity to branch out, when the Vinyl Japan label made him an offer he couldn't refuse:

SO TOUGH — THE MAKING OF 'AVENUE'

The song 'Avenue' from Saint Etienne's *So Tough* album remains the band's most ambitious piece of work. Ian recalled putting it into shape:

"'Avenue' seemed to go on forever. I had to get the master reel out a while ago, to look something up, and the track sheet's all over the place, so I guess that has to be the most complex track. I remember it was recorded in sections (at RMS Studios, used while Cat Music was being refurbished), and cut together in the edit, Beach Boys-style. The intro's quite interesting — it was recorded on a Walkman in Pete's car on the way to the studio, with a playback of the track up to that point coming through the car stereo. That's why it sounds so bad! It was done to get a contrast when the track comes in properly — a device to make it sound big."

"I did a nine-minute ambient B-side with The Northern Picture Library called 'When Stars Die', for Vinyl Japan. They then asked me if I wanted to do some stuff myself in a similar vein. I'd always wanted to do something instrumental, so it grew from there."

Working under the name Katmandu, Ian experimented with everything he could lay hands on, to get the key ideas or sounds from which each track could develop. Percussionist Paul Pritchard was brought in to 'loosen up' some of the tracks, prompting Ian to explore the sonic properties of another upstairs venue: "A lot of Paul's sounds were recorded in the bathroom, with lots of compression to bring up the room sound. We did record a couple of things while they were held in the toilet bowl — this was inspired by the *War Of The Worlds* radio play, where the sound of the Martian spacecraft opening up was actually a coffee jar being opened in a toilet!"

I asked Ian how he would like his solo output to develop: "I don't know if I'll ever be completely solo, because I need other people to work with. My main thing is songwriting, but I'm not very strong on lyrics, so I tend to collaborate on everything. Really, what I'm doing with Katie (Marne) is the closest I'll get to solo things. I'm co-writing and producing with her, so there's a lot of me in what we're doing."

Ian's other recent work, with Brian Foley and Paul Hughes of Universal, has given him more control than before over recordings. This is because, like Ian, Brian and Paul use a Tascam MSR16S tape multitrack and an Akai S1000:

"If they've got something good on a demo, we can keep it, because it's either S1000 format or 16-track."

TALKING SHOP

Ian does pick out some favourites amongst his gear. For example, his Studiomaster Series 2 desk was chosen because of its EQ and MIDI muting — but Yamaha's O2R has caught his eye for a very good reason:

"I like the idea of being able to recall everything. At the moment, I spend an hour after every mixing session writing down all the settings I've used on the mix, in case it's needed later on."

Most of Cat Music's equipment was selected for its usefulness, not because it was the hottest gear at the time. Ageing Alesis and Yamaha effects units have been spared the small ads, thanks to their individual quirks. An Atari 520ST with 105Mb hard drive remains the only computer — Ian still uses *Cubase* for the ST — while on the synth front, a Korg M1R rubs shoulders with a Cheetah MS6 ("Good for wacky noises, but a real pig to program"). And because no modern pop studio would be complete without some analogue relics, Cat Sound has its own unique collection: the SCI Pro 1 and Prophet 5, Logan String Melody, Roland SH3A and TR606, and a Korg Rhythm 55 preset drum machine.

WHAT AN ATMOSPHERE

Another reason Ian keeps old equipment is that the atmosphere in a studio is as important as anything else: "A studio is somewhere to work that doesn't make you feel like you're working. I hate studios that are in basements, because you lose track of what time of day it is. Tied in with that is working reasonable hours — I never have a clock in the studio, because I'm more interested in making the music sound good than saying 'either pay me more money, or finish.' If you want to sum it up, it's somewhere to sit around or lie around in — Saint Etienne spend most of their time lying down here, mainly because there isn't room for any decent chairs."

Physical discomfort aside, Ian looks forward to recording with Bob Wratten again, and hopes *Katmandu* will bring some offers of soundtrack work. His career seems to have come full circle, because he now welcomes the chance to play live with Katie Marne or Universal when their albums are complete. These are bound to confirm Ian's place as one of the country's most innovative producers, and should bring the same level of success earned by his work with Saint Etienne. As they might put it, nothing can stop him now... SOS

ONE MAN AND HIS MICROPHONES

A vital ingredient of the Saint Etienne sound is Sarah Cracknell's voice, which adds emotional power to Bob and Pete's melodies. Ian outlined his techniques for capturing a good performance:

"You get to know how long it will take for a singer to reach their peak, and you have to know the 'curve' where their voice gradually gets better and then worse. Some people give their best on the first take, whereas others take an hour or so to get warmed up properly. The message there is to always have 'Record' on, even on run-throughs.

"The Beyer MC740 I use is very nice, and transparent. By the time it goes through my Drawmer 1960, it sounds a bit more human. I tend not to EQ things too much, because one thing I learned early on is that a lot depends on the quality of your EQ."

As well as the Beyer/Drawmer combination, Ian likes to use a Shure SM58 recorded through a guitar amp for a 'crunchy' sound. On *Katmandu*, he put the SM58's durability to the test with another unusual experiment:

"On the track 'Creation', there's a squealing noise, which is me standing in front of the monitors and whirling the mic round my head. It was fed through a Sansamp and a DDL to get a weird feedback effect."

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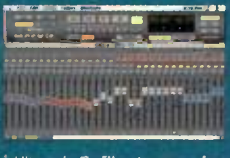

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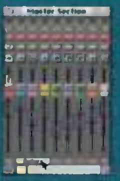

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Above: Three screen shots from Ultramix Pro™. Top to bottom: Main screen, Edit Fade Curves window, Group/Master Section

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[1] Ultramix Pro™ software requirements: 25mHz or faster 68030, 68040 with color QuickDraw support & System 7.X (Mac IIci or newer) or Power Macintosh® or compatible, 8 MB total RAM, color monitor, 2MB hard disk space

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184. Roland SB-55 Sound Brush	£300
185. Ensoniq TS-12 Workstation	£1200
186. Yamaha QY-8 Music Station	£100
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189. Yamaha TG-300 module S/H	£175
190. Roland JX-3P synth S/H	£160
191. Yamaha TX-81Z synth Module S/H	£79
192. Roland JV-30 Synth	£350
193. Casio VZ-8M module S/H	£75
194. Roland MC300 Sequencer S/H	£199
195. Yamaha REX50 Effects S/H	£79
196. Yamaha QY-8 music station	£100
197. Roland JD-990 synth S/H	£650
198. Yamaha TG-500 synth module	£399
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200. Yamaha DX-7S FM Synth S/H	£250
201. Roland D-110 synth Module S/H	£150
202. Roland MT120 Seq / Mod. S/H	£299
203. Roland U20 Synthesizer S/H	£299
204. Novation Bass Station S/H	£199
205. Roland E86 Keyboard S/H	£799
206. Kurzweil KMP1 Piano Module S/H	£250
207. Korg P3 Piano Module S/H	£79
208. Korg Poly 800 Mk2 Synth S/H	£169
209. Yamaha TG55 Module S/H	£199
210. Kawai K4R Synth Module S/H	£249
211. Roland U110 Rack Module S/H	£159
212. Novation Bass Station S/H	£199
213. Roland JS30 Sampler	£300
214. Evolution EVS1 Synth Module	£75
215. Ensoniq EPS Sampler (2Mb) S/H	£300
216. Kawai K-1M S/H	£150
217. Rhodes 660 Keyboard	£300
218. Roland MS1 Sampler	£250
219. Roland E70 Keyboard	£500
221. Ensoniq SQ1+ Synthesizer S/H	£375
223. Korg M-1 Synth S/H	£500
224. Korg Poly 61 synth S/H	£150
225. Yamaha TG-300 Synth Module	£250
226. Ensoniq Mirage Mark 1 Sampler S/H	£250
227. GEM WS-1 Workstation S/H	£375
228. Roland Juno 6 synth	£250
229. Kawai K-4 Synth. S/H	£250
230. Crumar Bit 99 synth S/H	£99
231. Kurzweil K-2000 Synth module	£1299
232. EMU Classic Keys synth module	£299
233. EMU Proteus FX synth module	£299
234. Yamha FB-01 FM synth module S/H	£40
235. Yamaha SY-35 synth	£350
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241. Boss DR-5 Drum Machine S/H	£160
242. Roland SPD-8 Midi Drum Pad	£175
243. Simmons Trixer mixer	£200
244. Roland RA50 Rhythm Arranger	£175
245. Roland TR-505 Drum box S/H	£69
246. Roland R-70 Drum Machine S/H	£250
247. Sequential Circuits Tom Drum box S/H	£100
248. Yamaha RM-50 Drum Module S/H	£200
222. Roland R-8M drum module	£250
249. Yamaha RX8 Drum Machine S/H	£99
250. Yamaha DD14 Drum Pad S/H	£70

SEQUENCERS

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251. Roland RA-95 Real Time Arranger	£580
252. Viscount RD70 Data Filer	£120
253. Yamaha QX-7 Sequencer	£20
254. Roland MC-300 Sequencer S/H	£150
255. Alesis MMT-8 Sequencer S/H	£50
256. Roland PL100 Sequencer S/H	£99

HOME & STUDIO RECORDING

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257. Pair Roland MS30 Monitors S/H	£50
258. Soundcraft Spirit 16/8/2 LC	£895
159. DAC DR-2000 140 Meg Hard Drive	£150
160. Yamaha NS-10M Monitors	£199
259. Tascam MTS-30 Tape Synch	£39
260. Yamaha NS-10M Monitors	£199
161. Spirit Studio 16.8.2 Mixer	£999
261. Fostex 380S Portastudio S/H	£400
262. Denon DRM-400 Cassette deck	£50
264. Tascam GS30D Guitar Preamp	£20
162. Akai DR-4D Hard Disc Recorder	£750
163. Kenwood DP-4060 5 Disc CD	£140
164. Kenwood RA-1060 amp	£99
165. Teac AX-5030 amp	£150
166. Tascam 424 Portastudio	£370
265. Fostex R812 Mixer (24 inputs)	£400
266. Yamaha MT-2X 4 track S/H	£199
267. Simmons Midi Mixer S/H	£75
268. Fostex 2016 Mixer S/H	£150
269. Tascam GS30D Guitar Preamp	£20
270. Allen & Heath GS1 Mixer	£820

MULTI EFFECTS & SIGNAL PROCESSORS

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271. Boss ME6 Guitar Effects	£100
272. Zoom 9002 Effects (S/H)	£85
141. Peavey Autograph EQ. Marked	£200
142. Behringer Edison FX unit	£150
273. Yamaha FX-500 FX S/H	£99
274. Zoom 9150 FX S/H	£179
143. Digitech TSR-24 Multi FX	£410
144. Peavey SGT Multi FX	£299
275. Digitech GSP5 Guitar Effects S/H	£129
276. Zoom 9050 FX processor	£300
277. Alesis Q-2 Reverb	£350
278. BBE 461 Sonic Maximiser	£75
279. Dod 431 31 band mono graphic	£100
281. Alesis Midiverb 2 S/H	£75
281. Digitech GSP Legend Effects S/H	£200
282. Lexicon LXP1 Reverb S/H	£149
283. Alesis Microverb 3 Effects S/H	£99
284. Alesis 3630 Compressor S/H	£150
285. Digitech TSR24 Effects	£410
286. Roland GS6 Guitar Effects S/H	£99
287. Marshall 9004 Pre-amp S/H	£69
154. AMR AEQ-2800 28 Band EQ	£149
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288. Yamaha R100 Effects S/H	£79
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293. BBE Sonic Maximiser S/H	£100
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296. Falcon 030 Computer S/H	£249
297. J L Cooper Fademaster S/H	£99
298. Samtron 14" SVGA B/W Monitor	£50
299. Apple Mac LC Computer with Monitor	£350
300. Atari Mega 4 Computer. No Monitor S/H	£250
301. MotU Midi Mixer (Rackmount)	£249
302. Atari Falcon 4/65 Computer	£400
303. D2D D4D 4 Track Falcon Software	£50
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306. Roland PG-200 Programmer	£75
307. Micropolis 1 Gig AV drive	£200
308. Ultimate A Frame Display Stand	£70
309. Roland 1.8Mb Flash RAM for MS1	£75
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SALVAGING ARCHIVE TAPE RECORDINGS

What do you do if a valuable master tape that you've had on the shelf for the past 15 years tries to weld itself to the playback head as soon as you try to play it? Swear loudly, then pop it in a low oven, advises master chef JEAN-PAUL WHITE...

You may have read about a tape problem dubbed 'sticky shed syndrome', but it's not until you try to play back a tape afflicted by this condition that you realise how serious it is. Oxide sheds at an alarming rate, and what's more, it sticks like glue to the heads and tape guides. The first thing you notice is a physical screeching noise *[even when you're not listening to Celine Dion — Ed]*, as the moving tape is 'bowed' by the contaminated heads or guides, and this physical modulation transfers itself to the audio. The top end is usually dramatically reduced, and after just a few minutes of play, the friction may cause the machine to grind to a halt. On occasions, the tape actually sticks to the heads, and pulling it off can dislodge more oxide, increasing the risk of irrecoverable dropouts. We're warned often enough about the problems created by storing tape inappropriately, but in my case, these reels of Ampex 456 had been stored in a dry domestic environment at nominal room temperature, for around 15 years. There *are* better storage conditions, but on the whole, I'd expect a 15-year-old tape stored in this way still to be playable, so what went wrong?

WHALE'S REVENGE

At least part of the answer lies in that great '70s crusade, to 'save the whale'. As a result of the environmental lobby in the US, tape manufacturers Ampex were stampeded into abandoning their traditional whale oil tape-binder (the binder is the material used to fix the tiny particles of magnetic oxide to the tape's flexible backing tape). Ampex's synthetic substitute, perhaps because it was formulated without the normal research and development, has since undergone some form of chemical breakdown, and at the same time, absorbed moisture from the air. The problem was identified, and improved formulations substituted to clear the problem, but that still left thousands of reels of tape around the world that were literally rotting away. What, if anything can you do to recover material archived in this way?

A few years ago, several articles and papers were published on the subject, and the general consensus was that baking the tape at a precisely regulated temperature for between 12 and 24 hours would drive the water from the binder, making it stable enough to play. The baking temperature quoted was between 50 and 55°C, so before I could put these methods to the test, I had to find a suitable, temperature-controlled oven.

COUNTING CHICKENS

Having asked around, a friend of mine said he could borrow an incubator of the type used for hatching eggs, and as it turned out, the

▶

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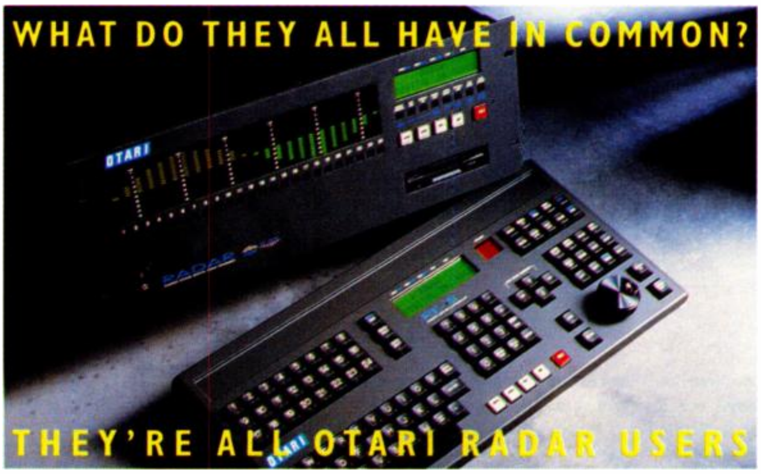
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GROWING OLD GRACEFULLY

The rather short history of the cobalt-doped iron oxide tapes used for DASH, Pro-Digi and ADAT suggests these tapes resist degradation in humid environments rather better than some analogue audio mastering tapes. Higher technology digital tapes use metal particles (MP) instead of iron oxide, as their magnetic component. The tendency for such finely divided iron particles to oxidise in microseconds when exposed to air tended to create pretty firework displays in development laboratories. It was feared this strong tendency to oxidise, albeit at a much lower rate, would limit the life of MP tapes.

In the event, MP passivation techniques have been developed, so that well-chosen MP has a similar life expectancy to that for other tapes. When considering the relative merits of analogue versus digital recording formats for archiving, remember the phrase 'analogue degrades gracefully' and that, while storage space costs money, a 'chunky' format with wide tracks tends to be inherently more robust then its more compact brethren.

Finally, try and make an educated guess what machines, and spare parts for them, will be around to play back your masterpieces 20 years hence! *Justin Underwood*

temperature control system could easily be set to 50°C. A thermometer was placed inside the unit to check the temperature, and then the worst of all my archived tapes was placed inside. Inside the incubator is a fine wire netting shelf, so I put the tape directly on this and left it to cook for 24 hours. If you haven't seen an incubator before, it is simply a box fitted with a thermostatic heater. There's a perspex lid with a small hole in the centre, which allows air to flow through the box, and small holes in the base allow fresh air in. Because part of the job of baking is to drive off any moisture, you should leave both sets of holes unobstructed.

After 'cooking', the tape was removed, allowed to cool for ten minutes and then threaded up on my freshly-cleaned Tascam 32. Aside from a few minor dropouts near the start, where the tape surface had been damaged by previous attempts to play it, the tape played back surprisingly well, with no trace of sticking. The heads were also reasonably clean afterwards. I transferred the entire contents to DAT without any additional processing (apart from a little help from a plug-in Waves Q10 equaliser to freshen up the top end), so that I could clean it up later using *Sound Tools* and *DINR*.

Having made the process work once, I went on to treat the rest of the tapes in my collection, just to prove that the treatment wasn't a fluke. With the benefit of hindsight, there are a few rules you should follow if you find one of your tapes suffering from sticky shed syndrome. Firstly, and most importantly, don't continue trying to play an affected tape once you realise there is a problem: you could cause more damage than the sticky shed syndrome itself. For example, if you pull large chunks of oxide off the tape, you're bound to get dropouts. If the recording is commercially valuable and the tape is Ampex, then contact Ampex (see 'Call The Experts'). If you're doing the job yourself, the next step is to put the tape back into normal storage, until a means of baking it can be found.

FOLLOWING FOOTPRINTS

When an old tape is taken from storage, there is a risk that softening of the coating may have caused layer-to-layer adhesion in the wound pack. Ensure a recorder known for gentle tape handling is used, and that a tape op, or other competent person, stays close to the recorder while the tape unwinds for the first time. If significant layer-to-layer adhesion has occurred, clicking sounds will be heard as the layers are pulled apart. In such a case, there is a risk that some of the magnetic coating may be adhering so strongly to its adjacent back-surface, that lumps of coating are stripped from the front coat! If such 'sticky clicking' is noted, it is probably wise to heat-treat the tape before attempting to unwind it. An 'if in doubt heat treat it before doing anything else' approach also has the advantage that any print-through resulting from heat treatment is in the same footprints as the print-through due to long-term storage.

There has been some confusion as to how long tapes remain playable after treatment, and whether repeated treatments are effective. Tapes should replay satisfactorily for at least three months after treatment if they are kept in a low-humidity environment. If kept in, say an airing cupboard after treatment, they will probably remain playable for ever! The heat treatment process can be usefully repeated. If tape has degenerated after the first treatment, it can be restored again by a second, or subsequent treatment. Laboratory testing of 1980-vintage 456 tape included 14 cycles of accelerated ageing and recovery by heat treatment. Degradation to a non-playable condition and restoration to playable condition was demonstrated for each cycle. *Justin Underwood*

CALL THE EXPERTS

Quantegy Europa (or Ampex, as they then were) established a UK facility for heat-treating open reel tape in 1983, and have carried out the heat treatment process ever since, free of charge, at various locations around the world. The procedure usually starts with a telephone enquiry from a tape user. The enquirer is then sent details, including the address of the UK tape distribution centre, where heat treatment is carried out, and a 'Release Form'.

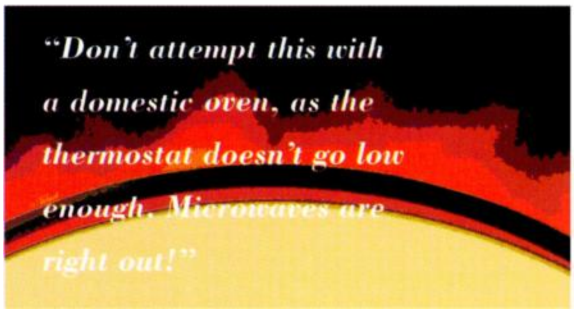
The Release Form is an acknowledgement of the incalculable value of many of the masters passing through the process. It carries a statement that Quantegy will take every practicable care of customer's tapes, will use its best efforts to restore them to playable condition, but cannot accept responsibility for damage or degradation due to accidents such as building fires or the like. Quantegy's legal department requires that the Release Form be signed by the tape owner, or person primarily responsible for the tapes, and that the signature be witnessed, before processing starts. No charge is made for processing, but the customer is expected to pay the transport costs (both ways). *Justin Underwood, Product Manager, Quantegy Europa.*

FURTHER INFORMATION

A Quantegy Europa Ltd, Unit 3, Commerce Park,
Brunel Road, Theale, Berkshire RG7 4AB.
T 01734 302240.
F 01734 302235.

DOGGED DETERMINATION

The incubator seems the ideal way of heating tape, but it is important that no part of the tape is in direct contact with any metalwork or any part of the heater. The wire mesh shelf is ideal, as it allows for even heating via the warm air in the box, and not via conduction. Check the temperature of the baking system to ensure that it stays stable within the 50-55°C range, and simmer for 24 hours. Don't attempt this with a domestic oven, as the thermostat doesn't go low enough. Microwaves are right out!



"Don't attempt this with a domestic oven, as the thermostat doesn't go low enough. Microwaves are right out!"

After cooking, play the tape as soon as it is cool, and take this opportunity to replace any dodgy splices that may have dried out over the years. Once you're happy the tape plays OK, clean the machine again and transfer the recording to your preferred medium — and if it's digital, make sure you get as high a level as possible without clipping. SOS

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Master Of Ceremonies

QUASIMIDI CYBER 6 MASTER KEYBOARD

With its advanced arpeggiator and innovative real-time control, the Cyber 6 is the master keyboard that reconciles computer sequencing with live extemporisation. Could it be that Quasimidi have found the keyboardist's Holy Grail? PAUL WARD hangs up his air guitar...

I suspect that I'm not alone in never having bought a dedicated, 'master' keyboard. Somehow, whenever it comes to the crunch, a keyboard that can produce sounds of its own always wins out for me. At least some of the blame for this must lie with manufacturers, most of whom have been content to offer us little more than sound-less synths with a couple of keyboard splits thrown in for good measure. With the Cyber 6, however, Quasimidi have taken the bull by the horns, and come up with a much more innovative approach. If I tell you they've given it the sub-title 'The Real-time Enhancer', it will give you some clue to the Cyber 6's overall philosophy.

JUDGING BY APPEARANCES

The Cyber 6 is a five-octave non-weighted keyboard, decked out in a fetching red livery. The design is a near twin of the Quasimidi Raven, and with the exception of the 'please-superglue-me-in-before-I-fall-out-and-get-lost' screen overlay, is reassuringly robust. Perhaps the only oversight in terms of ergonomics are the protruding control knobs — flush-mounting would have made them less vulnerable to decapitation!

In keeping with its aspirations for real-time control, the Cyber 6 has provision for two foot switches and a continuous control pedal. Further onboard controllers are supplied on the front panel in the form of a sprung pitch wheel, two non-sprung modulation wheels and the aforementioned trio of control knobs. Footswitch 2 has a screen dedicated to it, allowing the control to conform to the settings in the master keyboard programs, or be designated to functions such as sequencer start/stop, or Motivator hold (of which more shortly).

The usual MIDI In, Out and Thru are present and correct, with the happy appearance of a second MIDI out. Yes, folks, the Cyber 6 is capable of addressing both of the MIDI outs independently, for 32-channel operation! Lovely.

▶

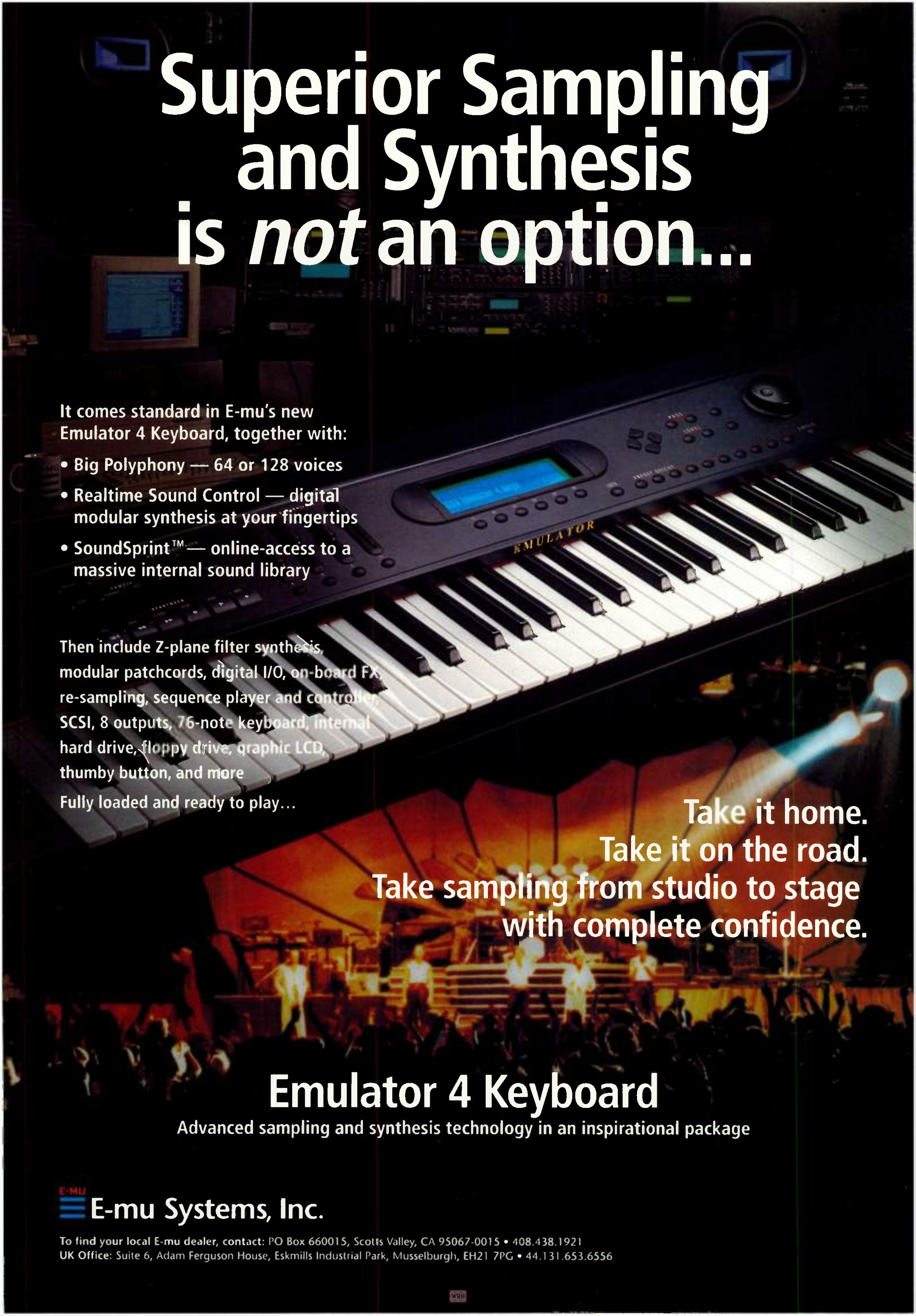
QUASIMIDI CYBER 6 £999

PROS
- Very flexible master keyboard facilities.
- Excellent real-time control options.
- Those Motivators really are the business!
- Powerful sequencer with loads of recording options.

CONS
- Editing can become tedious with the cursor and +/- keys.
- Lack of a built-in disk drive means data must be stored via SysEx transmissions.
- I had the truly awful preliminary manual (the real version is out now, fortunately)!

SUMMARY

Quasimidi's 'Real-time Enhancer' delivers just that — a way to bring flexibility and creative interaction to pre-recorded, sequenced material. This is a device that repays a little effort with a truly inspiring set of tools — making your live performances a cut above the rest. With a decent manual, the Cyber 6 will go far!



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Quasimidi Cyber 6

LOW-KEY OPERATOR

As a master keyboard, the Cyber 6 is capable of simultaneously controlling up to eight sound sources in eight independent keyboard zones. Each zone is given a low and high key, with no restriction as to how the zones are made to overlap. You could, for instance, have each of the eight zones covering the whole of the keyboard, or define eight smaller groups of keys sitting side by side. Each of the zones may be set to mono or poly play mode, and a 'zone status' parameter defines whether the zone will transmit all MIDI data including note data, controller data and program changes only, or control data only. The latter status is especially helpful in making use of the 'Motivators', which I'll come to shortly. Bank, program number and volume are also programmable for each zone.

Zones can be transposed up or down by up to three octaves. By using the same MIDI channel on two or more zones, and selecting different transpositions for each of them, some thick octave-split basses or single-finger techno chords can easily be created. While we're on the subject, selecting transposition values or key ranges are made simple on the Cyber 6, by holding down the enter button and pressing a key on the keyboard.

All of the Cyber 6's available real-time control sources may be switched on or off for each zone. The operation of each controller may also be 'inverted'. This could allow, say, easy cross-fading between two sounds by use of the mod wheel. In this example, you could set the wheel to increase the volume of one zone's sound source, while the same controller, but in inverted operation, works on the volume of the second zone's sound source. In this way, moving the wheel will simultaneously fade one sound in and the the other out. MIDI controller numbers are freely assignable to each of the physical controllers for each program.

The Cyber 6 allows you to calibrate its response to the continuous control sources, allowing minimum and maximum values to be specified. In the case of key velocity, you can also choose from eight preset velocity curves to better suit your playing style.

Once you are happy with your master keyboard program, you can name it with up to eight characters — arguably a tad on the short side these days — and store it for recall at a later date. Whilst scrolling through the 128 memory locations in the search for somewhere to save your latest killer program, the display shows the name of the program currently held in each patch, before you choose to overwrite it.

In general, this adds up to a very flexible set of master keyboard facilities that could certainly make live playing a much less traumatic experience. But the Cyber 6 has plenty more tricks up its sleeve.

A QUESTION OF MOTIVATION

When I mentioned the 'Motivator' in my review of Quasimidi's Raven synth recently, I said that this was the device that my arpeggiating life had been waiting for. The Cyber 6 offers *two* Motivators — I think I'm in love! The name might not mean much, but you try thinking of a word to describe what is effectively a super-arpeggiator *[sounds like one of our competition tie-breakers — Ed]*. Sure, the Motivators are capable of all the basic functions one might expect from an arpeggiator, but they also go much further.

Each Motivator offers three basic modes of operation: Arpeggiator, Gater and Chord. In Arpeggiator mode, the Motivator is as sophisticated as they come, with options for speed, timing resolution, gate time, octave range, note sorting, note repetition, hold mode, single-shot playback, automatic pattern length correction... the list goes on! To go into detail would take up most of this review, but suffice it to say that I've never seen a more comprehensively specified example. Most worthy of individual note is the ability to edit the actual rhythm and velocity pattern of the generated arpeggios — I don't remember seeing this on any other arpeggiator I've ever come across. Additionally, each step of the arpeggio can access any one of eight MIDI channels, giving the player the ability to generate some truly inspiring multi-timbral arpeggiations from the simplest of chord patterns — brilliant!

The Motivator's 'Gater' mode is inspired by the trick of using MIDI volume commands to simulate the action of a noise gate in side-key mode, to generate the now familiar 'Shamen-esque' triggered gating effect. The rhythm of the gated pattern is edited in much the same way as the arpeggiator, by making use of the first 32 white keys, to indicate whether a step should play

> *"The 8-track sequencer in the Cyber 6 is a no-nonsense affair that has you achieving results almost in spite of yourself."*

MASTER OF ONE

Perhaps the simplest use anyone might wish to make of a master keyboard would be to play the keyboard on a single channel and have the relevant synth module respond accordingly. Also, one might wish to alter the program number currently assigned to the module, the volume that the voice is currently playing at, and to switch to a new MIDI channel to address a different synth.

Quasimidi obviously understand this basic usage, and have supplied a mode in which all of the above (and even the Bank number) are available for editing on a single screen. This is such an elegantly simple way to work, it made me question why we accept more convoluted methods with such equanimity!

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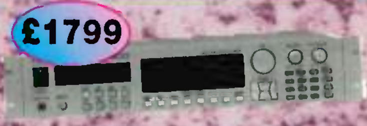
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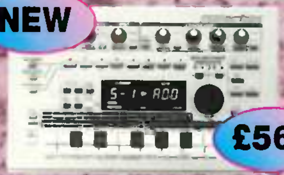
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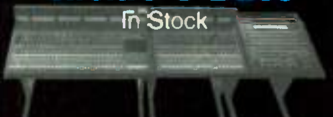

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THIS MONTH'S QUASIMIDI MANUAL QUOTE:

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or be silent, and the input key velocity denoting the value of the generated controller data. Any controller can be assigned to the Gater, not merely volume, so creating rhythmic filter steps or pitch bends is just as easy.

Rather than change controller data to produce rhythmic effects, Chord mode actually re-triggers the chord you hold down. Since each step of the rhythm has the option to make use of any of the Motivator's eight MIDI channels (or 'instruments', as Quasimidi term them), it's even possible to generate wave sequences. With the tempo slowed right down and some judicious editing of attack and release times on my trusty Kurzweil K2000, I suddenly discovered a new instrument in my studio, capable of those complex, evolving sounds that I haven't heard since giving up in exasperation at the Korg Wavestation's malevolently-engineered operating system. The Cyber 6 really *can* breathe new life into your existing synths — how many master keyboards can make that claim?

QUASIMIDI CYBER-6

Once created, a Motivator setup may be stored in one of the 64 memory locations, to be put to use in any of the programs you create. A Motivator has its own instrument, bank/program number and volume level, and these are selected when you call up a program that makes use of that particular Motivator setup.

Real-time control of the Motivators is possible by specifying a control source for both the gate time and dynamics of the Motivator-generated notes. The action of the controller may be inverted for one of the Motivators. The Motivators may even be set to trigger from any of the internal sequencer tracks, allowing, for instance, a hi-hat pattern to step the arpeggiator.

And what happens when you stumble upon an unrepeatably inspired pattern of notes when playing with the Motivators? How can you ferret this wondrous moment away, to be used in a song later? Just hit the Motivator 'Snapshot' button, and the fruits of your labours will be copied into the Cyber 6's sequencer, for a number of bars of your choice. Quasimidi have obviously been listening to musicians!

INTRODUCING THE SEQUENCER

The 8-track sequencer in the Cyber 6 is a no-nonsense affair that has you achieving results almost in spite of yourself. Operation is extremely easy, if a little fiddly on occasions, due to the small screen and amount of button-pushing involved. Quasimidi have chosen a pattern-based sequencer, which is certainly well suited to the dance market in which their machines are arguably best known. A maximum of 99 patterns are held at any one time, each of which is assigned its own time signature, speed and quantise grid value. Within a pattern, each of the eight tracks is given an associated MIDI channel, bank number, program number and volume. Each track may also be transposed up or down three octaves and given a length in bars (shorter tracks are looped to fit the length of the longest track in the pattern). Since, on playback, it is possible to transpose patterns in real-time by use of the keyboard, each track can also be told whether to take any notice of such transpositions — drum and percussion tracks would be protected in this way.

Normal real-time recording is supported, with options for overwriting previously recorded data or overdubbing, and an ingenious method of re-recording velocity data by use of the second mod wheel. Controller data may be overdubbed on its own, once the note data has been entered. Takes may be quantised, and the last take undone to help prevent accidentally over-recording a track. Quasimidi have also implemented a TR909-style recording method, by making use of the keyboard to enter beats into a drum grid. The system works in a similar way to entering rhythms for the Motivators, and is a highly usable way to enter drum grooves.

The age-old problem of recording rolls is taken care of too, since it is possible to set all of the Cyber 6's keyboard to play the same note — this should certainly make building drum maps easier, without having to duplicate the same sound over several keys, to allow rolls to be recorded. Not content with this, the Cyber 6 also offers one further recording mode, where notes and timing are entered from the keyboard on separate passes. This array of recording options should satisfy just about anyone, and used in combination, they provide a very creative environment in which to work.

Data may be copied between tracks within a pattern, or to tracks in any other pattern. Patterns may also be copied, and there are options to pass only those parameter settings (program, volume, controller assignments, etc) most likely to create a blank pattern for the same song. Track-bouncing is possible, allowing complex structures, such as drum patterns, to be recorded across several tracks on the same MIDI channel — allowing various quantise settings to be used within the same rhythm.

Once you have a goodly collection of patterns in the Cyber 6's memory, the time comes to begin making use of them in 'Chains', to turn them into a song structure. The Cyber 6 will hold a maximum of 99 chains. At each step in a chain, you can specify the pattern to be played, a master keyboard program to be selected when the step becomes active (or 'none' to leave things as they are), a number of bars for which the chosen pattern will play (a zero in here causes the pattern to play until a new step or chain is selected — ▶

SLIGHT WHINGE CORNER: THE USER INTERFACE

Having made use of other Quasimidi equipment, such as the Raven and Technox, I found myself sorely missing their data entry dial. It took some time to convince myself that the page dial doesn't moonlight as a data entry dial, and in the process I often found myself mistakenly skipping across several pages of parameters, when I had meant to edit a value. I also became nostalgic for the Raven's four 'soft' knobs under the display, which allowed editing of on-screen values without having to first position the cursor. The cursor left/right and value plus/minus buttons seem something of a backwards step, in the light of Quasimidi's previous user interfaces.

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useful for extending songs when playing live), a transposition value, and whether or not the pattern will respond to real-time transposition from the keyboard. Steps may be deleted or inserted, and chains can be deleted along with their associated patterns, if required. It is the Cyber 6's ability to combine pattern chaining, the selection of master keyboard programs, and the associated real-time control of the results that makes me itch to take this machine onto a stage! Want to extend that middle eight? Fine. Want to mute the chords while voicing a few improvised stabs over the closing section? No problem. The Cyber 6 is capable of all this and more, to turn a live performance into an opportunity to respond to your audience's reaction — which is something sequencer users have found great difficulty in achieving up to now.

All the current data can be dumped as a MIDI SysEx file, for sending into a second machine, or archiving to a SysEx librarian. Quasimidi have made the SysEx implementation a very flexible part of the Cyber6's armoury, allowing for various combinations of data to be transmitted, for maximum flexibility. For instance, a chain and all of its associated patterns may be transmitted as a single dump.

> *"This is a machine that makes you put your computer-based sequencer to one side and take a fresh look at the way you make your music."*

SUMMARY

It's hard to fault this machine. A disk drive (or option to fit one) would be nice, and I would like the number of sequencer tracks to be increased to take more advantage of the 32 MIDI channels available. I might suggest that the data wheel or 'soft' knobs of the Raven be brought to the Cyber 6's front panel. I might even carp about the small display size and the number of button presses to get some jobs done. But I have to say that these are relatively minor points in a machine that delivers a lot of control and musically creative power in a neat, self-contained package.

This is a machine that makes you put your computer-based sequencer to one side and take a fresh look at the way you make your music. It's also a machine that allows you the luxury of taking creative musical decisions during a live performance. Real-time Enhancer? You bet it is! Quasimidi's only problem now will be how to enthuse musicians jaded by years of exposure to less creative, less user-friendly master keyboards and sequencers. This is not the kind of device that lends itself to a quick tinker in the local hi-tech music store — you have to take time to understand what the Cyber 6 can do for you. A lot of musicians out there could benefit from the Cyber 6 — and I count myself amongst them. SOS

ALSO IN THE BOX...

The Cyber 6 comes with a good smattering of demo programs and sequences to allow you to get a feel for its capabilities. The demos are divided into those specifically designed to work in conjunction with Quasimidi's Quasar and Technox synth modules, and others that follow the General MIDI specification. These form a good starting point for exploring the Cyber 6 and, if the GM examples are anything to go by, the combination of a Quasimidi synth and the Cyber 6 are a force to be reckoned with. All of the factory settings may be recalled at any time, by paying a visit to the initialisation screen.

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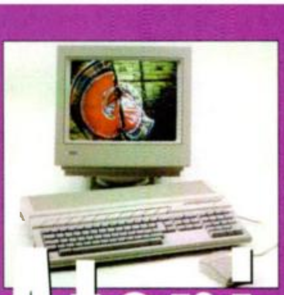


Atari NOTES

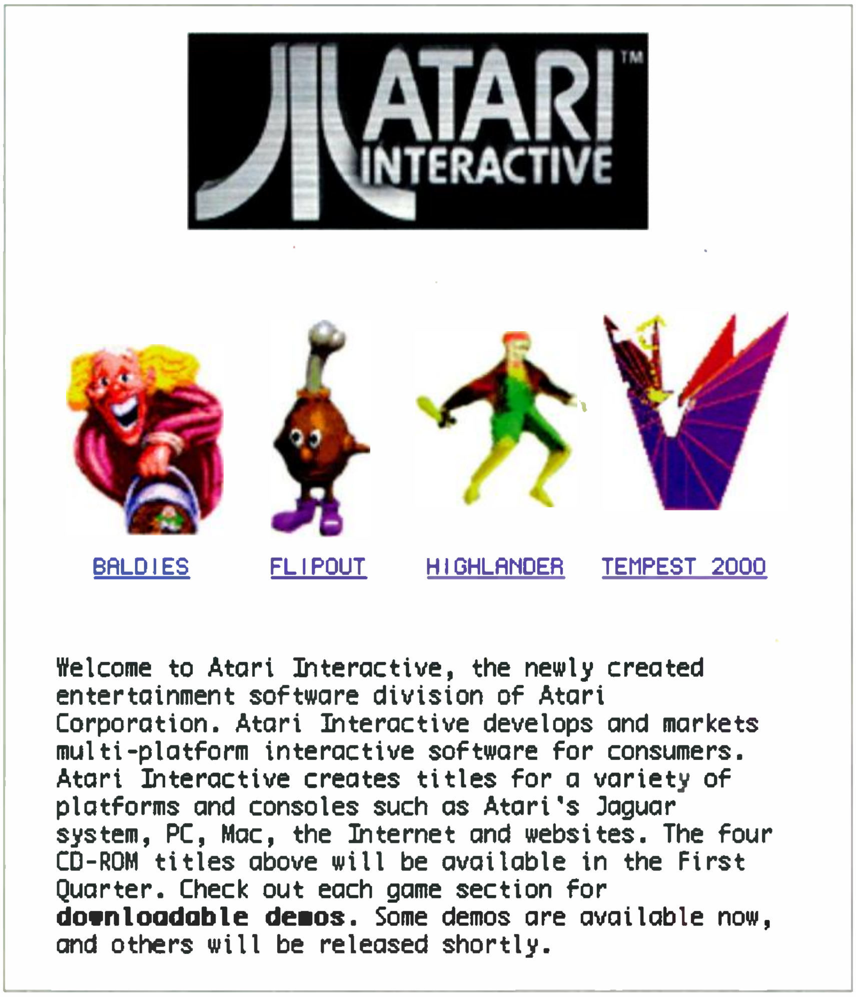
Hell hath no fury like a platform scorned, and Atari's neglect of the Falcon drives the mild-mannered OFIR GAL to rancorous recrimination...

Anyone trying to second-guess the logic behind Atari's business decisions is on a sure track to insanity. It's not that they make bad business decisions — obviously, as Atari is still a going concern — but logic? Forget it. Just try to make sense out of the latest press releases to come from Sunnyvale, California.

Last year, Atari made it quite clear in several statements that it is no longer interested in computers, conceding defeat to the mighty PC-compatibles. Atari, we were told, was going to concentrate its efforts on its games console — the Jaguar. What exactly was meant by 'efforts' is anyone's guess, but they seem to have failed — the Jaguar is now retailing at $99, less than half its original price. Apparently, this move was planned even before the Falcon was launched. So much for building consumer confidence.

A few months later, and further announcements talk of Atari moving into the 'PC entertainment arena', or in other words into games publishing. A new division called Atari Interactive is to produce a range of games for the Jaguar, Mac and PC. A quick scan of their internet pages reveals that only one game, *Tempest 2000*, is actually available. Three other games are to be released soon. Atari, we are told, will continue to support the Jaguar. Read what you will into that, but they said the same thing about the Falcon — and MultiTOS development was completely and quietly abandoned.

I don't know if this move was also planned before the Falcon release, but I doubt if that was ever the case. My guess is that Atari released the Falcon because it was relatively easy to do so, and the management was playing things by ear. Had the Falcon become a success, further models that were already in development would have followed. As things turned out, the Falcon wasn't much of a success, partly due to PC and Mac prices falling at an alarming rate, and also because the Falcon was late — very late.



Welcome to Atari Interactive, the newly created entertainment software division of Atari Corporation. Atari Interactive develops and markets multi-platform interactive software for consumers. Atari Interactive creates titles for a variety of platforms and consoles such as Atari's Jaguar system, PC, Mac, the Internet and websites. The four CD-ROM titles above will be available in the First Quarter. Check out each game section for **downloadable demos.** Some demos are available now, and others will be released shortly.

Atari Interactive's Web page promises many products for several computer platforms, but currently features just four games. Only one demo is currently available for the PC, and the Falcon isn't even mentioned.

BUYOUTS AND MERGERS

Atari has now merged with JTS, a relatively new hard drive manufacturer. JTS may be a new name, but the people behind it have been involved in hard disk making for some years, heading companies like Seagate and Conner among others. JTS is concentrating on a new generation of 3-inch drives for portable computers, and the new company will maintain the JTS name, while Atari Interactive will become one of its independent divisions. "We are very excited about its [the new company's] prospects" said managing director Jack Tramiel, the man who was just as excited about the Falcon not that long ago. The merger cost Atari $25,000,000.

Atari also published its sales and profit figures for 1995. These show that Atari lost nearly $50,000,000 in 1995 compared to a net income of almost $10,000,000 in the previous year. Most of the income in 1995 came from a licensing deal with Sega, which was the culmination of Sega's use of some old Atari software patents related to game programming. Consequently, the company had to lose some more of its workforce.

▶

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Atari NOTES

Rumours of another deal abound on the internet. Apparently, Wizztronics have bought or licensed the rights to TOS and the Falcon, and is planning a major upgrade to TOS. If the name Wizztronics sounds vaguely familiar, that's because they have been promising an 040-based Falcon accelerator called the Barracuda for the last two years. I have not managed to speak with anyone who actually *saw* a working prototype of the accelerator, so this deal does not inspire much confidence either.

Is any of this of any significance to the average Atari owner? Probably not. It's been a long time since Atari participated in the development of new products, and an even longer time since it led the scene. Jack Tramiel certainly knows how to get Wall Street excited — Atari share prices are going up again, just as they did when the Jaguar was announced. It only serves to add to the 'feel bad factor' on the Atari scene. It's a great shame to see an excellent computer platform wasting away. When you think about it, it's amazing that a ten year-old computer is still in service in many recording studios around the world.

END OF THE *WORLD* AS WE KNOW IT

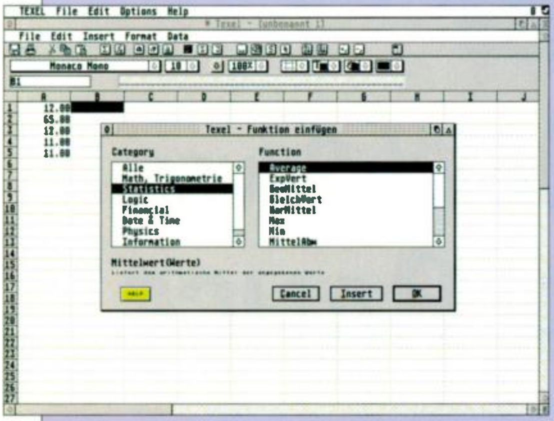
As if you haven't had enough bad news already, Specialist Magazines, publishers of *Atari World* have gone into liquidation. *Atari World* rose from the ashes of *ST Review*, when the latter was bought by Future Publishing and promptly closed down. The magazine was launched mainly thanks to the efforts of Neal O'Nions of Compo UK, which has also gone into liquidation, and Vic Lennard, editor of *ST Review* and author of numerous articles and books about MIDI and Atari computing — most notably in this very column before the current author took it over! The magazine was aimed at the more serious Atari user, covering topics such as DTP, MIDI and programming among others. After 11 issues it became clear that the magazine could not be sustained, and the decision was made to end its short life.

Although *ST Format* is still going in a somewhat reduced capacity, the closure of *Atari World* is regarded as very bad news by both the industry and users. Several parties have expressed interest in buying the title, and discussions of a rescue plan are taking place — but no final decisions have been made as yet. Sources at Pearson's, publisher of *ST Format*, have indicated that publication of *ST Format* is to continue for the foreseeable future, so there's still some hope. SOS

ATARI NEWS IN BRIEF

• CREATIVE ACCOUNTANCY

System Solutions (0181 693 3355) have announced a new spreadsheet for the Atari range. *Texel* is an *Excel* lookalike, and looks very promising. The lack of a professional spreadsheet application for the Atari has driven many users to the PC, but *Texel* is aiming to fill this gap in the market. Price and release date were unavailable at the time of writing.



Texel is a brand new professional spreadsheet from System Solutions. It looks promising, but is not available just yet.

• FUNKY FALCONS

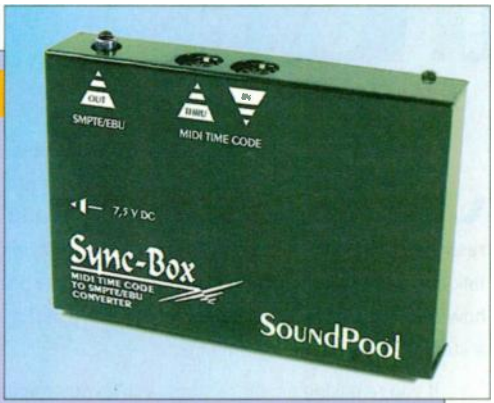
System Solutions also have C-Lab Falcons in stock. The company has just released several new products for Atari users. The *Ultimate Cubase* CD-ROM (£69.95) contains 240 drum loops, 1200 samples, 300 MIDI files and more. The loops and samples are stored as AIFF files readable by *Cubase Audio* and other audio applications, and the MIDI files conform to General MIDI.

• GOING BY THE BOOK

The popular programming reference book, *The Atari Compendium*, is now available on CD-ROM (£24.95) in HTML format, readable by any internet browser. The CD includes additional source code examples in BASIC and C. E-Copy (£29.95) is a floppy disk utility capable of formatting and copying disks at great speed. It runs as a desk accessory or a stand-alone program and is fully compatible with *MagiC v4*.

• MASS CONVERSIONS

SoundPool have released two new synchronisers. The cheaper model provides MTC-to-SMPTE conversion and costs £149, while the more expensive model features each-way conversion and more, at £249. Both models were specifically designed to work with Atari computers, but they are fully compatible with any MIDI sequencer and all computer systems. SoundPool have also produced a patched version of AHDI (the Atari hard disk driver) that works with hard disks larger than 1Gb.



The new synchronisers from SoundPool provide a cost-effective solution to the sync problem.

• FASTER BIRDS WITH OXO

Two new Falcon accelerators are rumoured. The Hawk030 runs at 50MHz, while the OXO Centurbo is supposed to run at a staggering 80Mhz. A new version of *ZeroX*, the sample editor, is in the works. The current version allows Falcon owners to transfer samples to and from a sampler at high speed via SCSI. The new version extends this to all Atari models equipped with a SCSI host adapter (available for less than £100). More details as they arrive.

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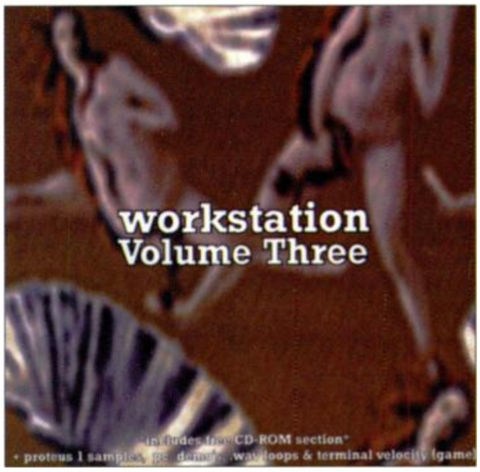
the choice. It's even compatible with SoundBlaster games, should I ever find the time to try one out! The card is available from Et Cetera Distribution, who can be contacted on 01706 228039.

LOOPISMS AND TWIDDLY BITS

While I'm on the subject of multimedia development, it can be quite time-consuming to put together a soundtrack that captures the mood required, especially if you need a piece of music that is not your usual style. Two audio products that can help you out — in different ways — are the *Loopisms* and *Workstation* sample CD-ROMs from D-Zone, and *Twiddly Bits* MIDI files from Keyfax software. D-Zone's sample and loop CDs have recently been re-released in CD-ROM and WAV format, and a number are also available in AWE32.


workstation
Volume Three
includes free CD-ROM section
• proteus 1 samples, pc demos, wav loops & terminal velocity (game)

D-Zone's Workstation 3 CD-ROM.

D-Zone audio files can be used in two ways; the drum 'loops' can be used on an audio track of a digital audio sequencer (eg. *Cubasis Audio*, *Procyon Audio*), or downloaded to a soundcard's sample RAM to be triggered by MIDI, and used as the basis of a rhythm track. Or, you could use the instrument samples — recorded from popular synthesizers — with a RAM wavetable (eg. AWE32, Gravis Ultrasound) card to create a musical instrument. Obviously, in both these cases you would need to 'master' your multimedia sound files to WAV file somehow — perhaps by mixing down to a decent tape format (DAT or DCC) and recording the material back onto your hard disk. Or, if your PC is powerful enough, by using the simultaneous record and playback facilities on your soundcard to mix the music straight down onto your hard disk.

The D-Zone CD-ROMs also have demo versions of various music applications such as sample editors and MIDI/audio sequencers, so you can try before you buy. Most of CD-ROMs in the series also contain at least one playable demo version of a popular computer game — *Doom*, for instance — for those with plenty of free time on their hands. Prices start from around £13, so they're very good

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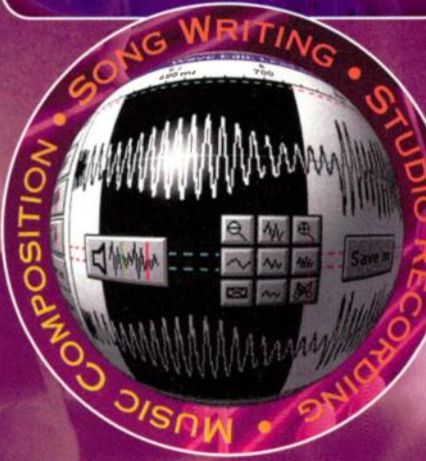

THE PC MUSIC HANDBOOK

I guess that if you're reading this column there's a good chance that you will be interested in the musical applications of the PC. This gives me an ideal opportunity to plug the 2nd Edition of *The PC Music Handbook*, which is being released this month by PC Publishing. The book was co-authored by Roger Evan — an experienced jazz pianist, synthesist and music copyist — and myself, and covers all the basic technologies involved in using the PC to make a cheerful noise. It also gives examples of system configurations for various musical applications. The book is available (using MasterCard/Visa) direct from the publisher (PC Publishing) on 01732 770893 (fax: 01732 770268) or via the World Wide Web from their on-line catalogue (http://www.compulink/~route66/publish/pcp/books.htm). Members of CiX who are 'joined' to the Route66 conference can get it at a discount by looking at the 'books' topic.

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Keyfax's 'Twiddly Bits' MIDI files take a different approach: rather than providing the raw sounds, their disks contain MIDI performances from top session musicians, which you can include in your own sequences. It's like getting a virtual session musician to play on your songs. The disks are made up of MIDI files with various short sections of music, categorised by type. So for instance, there will be a file of funk bass riffs, or conga patterns and so on, with each file containing 16 examples, ie. one on each MIDI channel.

There are 25 different style disks in the range, with such luminaries as Bill Bruford and Steve Hackett showing off their chops. Since the files are MIDI data, they don't take up much space and are supplied on 3.5-inch floppy disks, with comprehensive sleeve notes describing the contents. The range is quite large and the prices pretty reasonable — check them out by contacting Keyfax on 01734 471382. SOS

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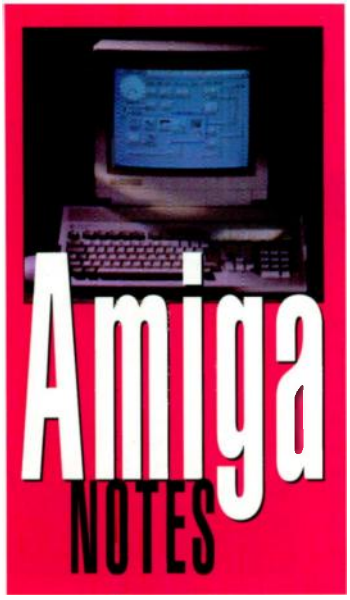


Amiga NOTES

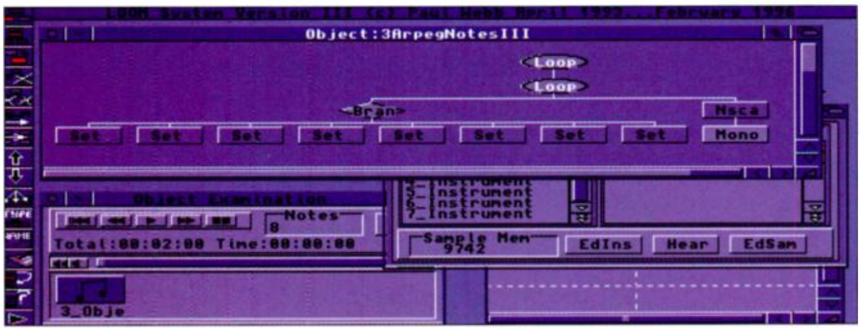
It might be an unorthodox style of musicianship, but anything that adds strings to the Amiga's bow is to be welcomed. PAUL OVERAA gets tangled up in LOOM...

This month sees the first official release of an Amiga internal sounds algorithmic music composition package called *LOOM*. Written by Paul Webb, it is being distributed by SeaSoft Computing, and is essentially an object-oriented package that allows music to be created by assembling objects (notes, chords, arpeggios, drum patterns and so on). Phrases can therefore be built up and manipulated, and all this output can be used as the basis for forming larger sections of music. Objects can themselves be manipulated and transformed by other objects, and indeed much of the power of *LOOM* comes from its ability to use existing object hierarchies; musical objects defined within the boundaries of other objects.

It's pretty obvious that an immense amount of work has gone into *LOOM*, but there is one fly in the ointment. The underlying ideas connected with the *LOOM* system are complex by their very nature, and even the basic themes are not going to be that easily understood by most musicians. Object construction involves things like flowchart-style algorithm creation, and when you add the use of recursion (a programming technique whereby a routine gets things done by calling itself), the use of networks and the use of generators based on mathematical formulae and so on, I'm sure that many potential users are going to take one look at the manual and the ideas behind the program, and run!

To be fair, I ought to point out that there is some help provided with *LOOM* — for example, you get around 200 predefined drum patterns, and a whole disk full of predefined object files. But as far as actually using *LOOM* as an everyday tool for creating music... well, it's going to take quite a lot of effort. The package is going to be great for experimenting with an area that is still on the cutting edge of modern music theory, but given that most musicians want to play music and keep the technical stuff as far into the background as possible, I can't really see *LOOM* appealing to the masses. Chances are, to get the best from the program, you'll need either to be a programmer in the first place or be particularly interested in algorithmic music composition systems as a subject in its own right.

As far as competition goes — quite simply there isn't any — and there's certainly not been anything like *LOOM* on the Amiga before. This alone will ensure that the package will create interest amongst Amiga users. The only snag is ▶



An immense amount of work has clearly gone into the new Amiga LOOM music package.

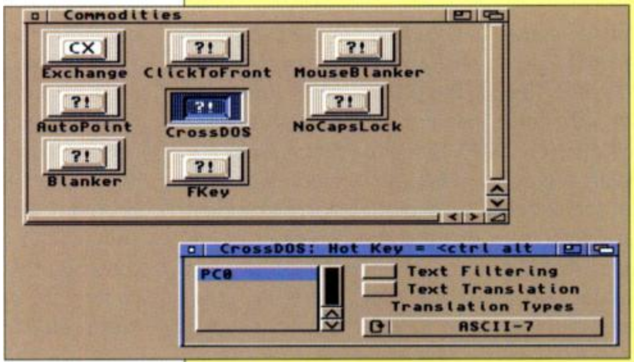
TIP OF THE MONTH: USING MIDI FILES FROM DOS DISKS

When purchasing MIDI files for the first time from the many suppliers who provide arrangements on DOS-formatted disks, Amiga users often hit two snags: Firstly, they'll load a MIDI file, only to be told that the file is corrupt or otherwise unreadable. This is invariably the result of incorrect CrossDOS settings — when reading MIDI files from DOS disks using the Amiga, it is essential to turn off the CrossDOS text translation and filtering options!

The second problem involves the doc/text files that come on DOS disks. These do not have icons, so although you'll be able to see the files by using the Workbench Window menu's Show All Files option, you won't be able to read those files by double-clicking on the 'pseudo-icons'. The solution in all such cases is to add a real icon to the file. Inside the Workbench Tools drawer (floppy disk-based users will find this on their Extras3.0 disk) there is a utility called IconEdit that allows you to create new icons.

If you run IconEdit and select Project from the Types menu, then select New from the program's Project menu (clicking on 'Start New' in the requester window that appears) then you'll generate a new default project icon. If you then select Save As, and save the icon file to the same disk and drawer as your docs file, you'll store a permanent copy on disk. (You can, incidentally, use the same name as the file, because IconEdit will automatically add the required .info icon filename extension to the name you supply).

Once the icon is available, select it, and then choose Information from the Workbench Icon menu. In the window that appears, you'll see a box called Default tool. Just enter the name of the editor or file viewer you wish to use, click on the Save gadget, and the next time you double-click on your new icon, your MIDI song docs file will be automatically loaded into the desired program, ready to view. This works even if you've kept your files on the same DOS disk (rather than copying them to an Amiga disk). In this case, however, you must turn the CrossDOS text translation and filtering options ON in order to view the file!



☐ Text Filtering
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Translation Types
ASCII-7

When reading MIDI files from DOS disks using the Amiga, you must remember to turn off the CrossDOS text translation and filtering options!

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Amiga NOTES

▶ that the *LOOM* system is large, and requires a minimum of 4Mb of RAM to run. The current version is available for £30 (+ £1 p&p) and users of earlier, experimental, versions of the program can get the manual and upgrade for £10 (+ £1 p&p). There is also a MIDI version of the program being developed, although a final release date for this has not yet been set. You can obtain more details from SeaSoft Computing, on 01903 850378.

SERIAL KILLERS

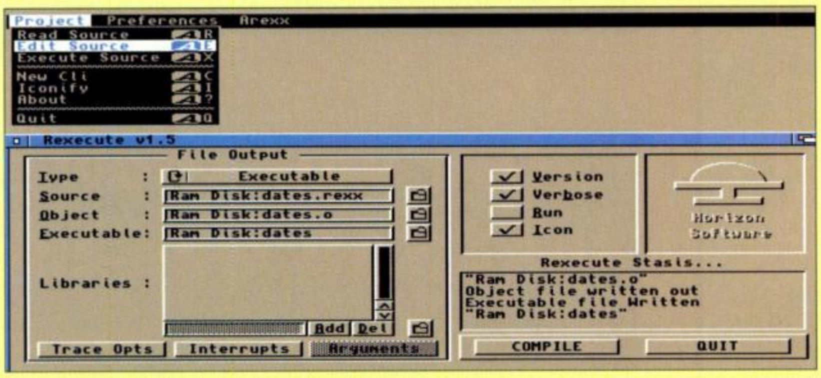
Over the last year or so there has, for obvious reasons, been a fairly thriving market in second-hand Amigas. It's not just older machines like the A500 and A500+ that can be picked up; even A1200s and A4000s are being regularly advertised at prices that are about half of the going rate of new machines. One worry that has been voiced in several letters I've received is whether early Amigas such as the A500s and A2000 are suitable for sequencing applications. People have also been worried that because early machines were relatively slow compared to current offerings, there could be MIDI-specific timing problems.

As far as the speed issues are concerned, it's certainly true that the Amiga's serial device (the piece of software used to provide a high-level interface for controlling the serial hardware) has improved over the years, but the Amiga's serial chips have always been able to cope perfectly well with the high serial transmission rates (baud) needed for MIDI. More to the point, all commercial sequencers by-pass the Amiga's serial device software, and control the underlying serial port hardware directly — so they've never been restricted by any serial device software limitations. In short, MIDI timing is rock-solid, even on old Amigas!

Having said that, it is probably best if old machines, and by that I mean those running Workbench 1.3, are avoided. This isn't because these machines can't be used for serious MIDI work: version 1.6 of the Amiga's Dr T's *KCS* sequencer, for instance, was powerful enough for serious use and small enough to run on an Amiga with just 1Mb of memory. The trouble is, such early versions of the *KCS* sequencer just can't be bought these days, and the most recent version (*KCS* version 3.55) is really aimed at machines that have a couple of megabytes of available memory.

The other reason for steering clear of Workbench 1.3-based machines is that Workbench 1.3 is now regarded universally as being obsolete. This is because by the time that the subsequent version of the Amiga's Workbench appeared, Release 2 (or Release 2.04 to give it its full name), an awful lot of improvements had been made. Further improvements came with Workbench 3 (which you'll get with all A1200 and A4000 machines). The stopping-off point as far as second-hand machines are concerned, however, is this: almost all current Amiga software now regards Workbench 2.04 as the minimum environment that should be available on a machine — so, if you buy an Amiga that doesn't have at least this minimum O/S version, then you'll cut yourself off from a lot of useful software! SOS

AMIGA NEWS IN BRIEF



Type : Executable
Source : Ram Disk:dates.rexx
Object : Ram Disk:dates.o
Executable: Ram Disk:dates

☑ Version
☑ Verbose
☐ Run
☑ Icon

```
"Ram Disk:dates.o"
Object file written out
Executable file Written
"Ram Disk:dates"
```

Rexecute — the Amiga's new ARexx compiler.

• AREXX COMPILER
Horizon Software have just released a new ARexx compiler called *Rexecute* that can turn your ARexx scripts into a form that can be executed by just double-clicking on the script's icon. Needless to say, this eliminates the need for messing around with IconX and creating supporting AmigaDOS script files when wanting to run things like *OctaMEDPlayer* ARexx scripts directly from the Workbench. In addition to this, the *Rexecute* package provides some high-powered library facilities which will be of use to many serious ARexx coders. *Rexecute* costs just £14.95 (including p&p), and is available from Horizon Software. For more details, contact Horizon on 01621 778778.

• RBF SOFTWARE JOINS THE SURFERS
With *OctaMED Sound Studio* now nearing completion, registered *OctaMED* users seem keen to get the latest info on the new package. Net surfers amongst you may therefore like to know that RBF Software are now on the World Wide Web at: http://www.compulink.co.uk/~octamed/

• GETTING CRAFTY
MIDICraft have just released a couple of MIDI file compilations on Amiga disks. The first, *Essential Jarre Vol 1*, contains ten of Jean-Michel Jarre's well known scores (including *Oxygene* material). The second, *Rob Hubbard C64 Classics Vol 1*, provides a sort of Amiga musical flashback to the days of the Commodore C64 computer. Each disk costs £12 and comes configured to General MIDI, with all relevant text files listing score and GM details supplied. You can also get the material as *Music X* performance files, as *Bars&Pipes* song files, or in DR T's *KCS* ALL format. MIDICraft, incidentally, are currently developing a MIDI Net CD-ROM which will contain all kinds of Amiga MIDI software, MIDI and *Music X* files, and various MIDI tutorials. At the moment, the idea is to bundle it with the Craft Brother's next audio CD album, *The Second Coming*, which is due to be released in about two months' time. Contact MIDICraft on 01928 563762 for further information!

While music technology software continues to develop into new areas on other computer platforms, notably digital recording, the Amiga has begun to lag further and further behind in recent months. The announcement publicised in last month's Amiga Notes is typical of the way the market is heading — Blue Ribbon Soundworks, producers of flagship Amiga sequencer Bars&Pipes Professional, *have pulled out of Amiga software to concentrate on PC software development. To reflect this shift in the market, we at Sound On Sound have decided to bring the regular Amiga Notes column to an end this month. Nevertheless, we will continue to notify readers of new Amiga releases via our news pages.*

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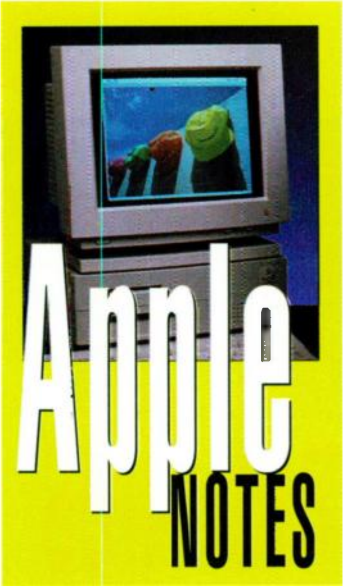

Apple NOTES

Internet audio is going places — and nowhere faster than for the net-surfing Mac user. MARTIN RUSS looks at the latest developments.

Early in February, LiveUpdate, a small software company in snowy Wilmington, Massachusetts, USA, released a small plug-in for the Netscape browser. It's an interesting comment on Macintosh World Wide Web (WWW) surfers that their 'overwhelming' response caused LiveUpdate to accelerate their Mac release schedule, with the result that the Macintosh version was released a couple of weeks later.

Crescendo allows MIDI Files to be played in the background of a WWW page — which means that huge audio files in incompatible formats (AU,AIFF,WAV...) are no longer the only way to provide music whilst you surf. It requires Netscape 2.0, Mac System 7.5 and the ubiquitous QuickTime 2.1 — which might give a clue as to where the default MIDI File playback instruments are coming from. At the moment, the Mac version of *Crescendo* needs to load in the whole of the MIDI File before playback can start, which can be a disadvantage given the slow download of files using 14.4K modems, but *Crescendo Plus* starts playback as soon as the MIDI File starts arriving. *Crescendo Plus* is only available for Windows 95 and Windows NT at present, with Windows 3.1 and Macintosh versions due later in the year.

Crescendo is a Netscape 2.0 plug-in — a little piece of software that adds functionality to the Netscape WWW browser. The download file is a tiny 20Kb .sit.hqx file, and this explodes into a folder of just 48Kb, including a 'read me' text file. No hard disk space problems here! LiveUpdate intend to release more 'real-time' audio and music products, and their WWW site is well worth a visit: http://www.liveupdate.com.

Crescendo 1.0 is shareware, with a $9.95 fee, and a 12 month automatic update via e-mail. *Crescendo Plus* has the same one year support, but costs $19.95, and is available *free* to full-time students, faculty and staff of higher educational institutions, as well as libraries.

Crescendo!
Enhancing the Web with Music!

SOURCES

In this column, I often mention those little bits of essential shareware that can make life with a Mac much easier, and people are always asking me for a good, reliable source of them. Well, there are the PD and shareware libraries, as well as bulletin board systems (BBS) — and the internet itself has huge resources in the form of FTP sites. But one of the most convenient ways of getting software has to be the CD-ROM. CD-ROMs come as an option with most Macs (and most PCs too!) these days, and even adding an external drive

HOW IT WORKS — SLIP AND PPP

Last month's 'How It Works' section gave an overview of all the software that you need to make an internet connection. Several people have commented that it made it look rather complicated, so this is probably a good point to compare the internet and MIDI. Both require a physical interface to the network (telephone or MIDI). Both need a 'driver' to enable the computer to work with the interface (SLIP or PPP for the modem, and an 'Interface Driver' for MIDI). OMS, FreeMIDI, or even the obsolete MIDI Manager is roughly comparable to MacTCP and IP (Internet Protocol). And the applications or programs on top then communicate with the network via the underlying 'stack' of software.

Just as with MIDI, once you have the software set up, you will only use the 'top-level' applications, and the details of how everything underneath works aren't that important. The only time when you need to have an understanding of what is happening is when you set it up in the first place. Otherwise, you might install part of the required software, and miss out one important piece of the stack — with the result that nothing will happen! The same thing happens if you don't install all of the required MIDI software, of course.

So, back to SLIP and PPP. These are the interface between the generic networking software of MacTCP/IP, and the network-specific hardware which is the modem. There are two modes of operation: setting up and everyday use. Setting up requires you to supply a few bits of information about the modem and the people at the other end of the telephone network: the Internet Provider (Demon, CIX, Cityscape, Compuserve, Delphi, etc). Everyday use might occasionally involve choosing which phone number to use, but normally you won't need to do anything at this level.

So the setting up of SLIP or PPP is probably going to be a once-only event, although it makes a lot of sense to keep a note of exactly what you type in, because you never know when you will have a hard disk problem. You do backup your disks, of course, don't you? The help and advice that you get to help you set up SLIP and PPP varies — some Internet Service Providers (ISPs) are very helpful, whilst others leave you to figure it all out for yourself. Some ISPs are very focussed on IBM/PC-compatible users, rather than Mac users, although almost all of the setup information for SLIP or PPP is the same for Mac or PC! Just ignore anything that mentions *WinSock*, and concentrate instead on the setup details.

Right, so we have a SLIP/PPP setup dialogue box on screen that requires some empty fields to be filled in. Some of the required information is obvious: 'your name' is usually there somewhere, and the telephone number of the ISP is going to be needed as well. The ISP should have told you about your 'user name', or you may have specified it yourself. You will need to have prepared your own personal password: real words like 'password' or 'martin' are not recommended! Avoid the obvious: use a combination of letters, numbers and perhaps a symbol. '75$apqlm' is one example *[Yeah, right Martin, nice and easy to remember — Ed]*.

Not so immediately obvious is the type of modem that you are using: it is almost a certainty that your particular modem is not listed in the pop-up box in the dialogue. Luckily, this probably does not matter, since almost all modems nowadays will respond to a 'standard' set of commands called Hayes commands. Selecting the 'Hayes compatible' option should work with most modems. If not, then you need to contact the ISP. Probably the most potentially trouble-prone part of the whole setup is making sure that the SLIP/PPP software talks to the ISP's own server software — it is rather like a short conversation. The ISP server says who it is, and then asks for a user name. The SLIP/PPP software replies with your user name, and the server then asks for a password. After the password has been passed across, then the server may ask for a protocol, which is where the SLIP/PPP software says SLIP or PPP, as appropriate.

The details of setting up SLIP or PPP software may vary for different ISP servers, but the basics are of this form. Most ISPs will tell you how to do this in some detail, and may even supply pre-prepared scripts which do it automatically. But it's always interesting to know something about what is happening behind the scenes, and it is not impossible to get a corrupted setup file! I should know, since it has happened to me twice so far. I now keep backups of all the setup and preference files for my internet and Email software.

Next month, I will look at MacTCP.

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Apple NOTES

with SCSI is remarkably low-cost. There are some wonderful games too: try *Myst* if you fancy spending several weeks on a mysterious island!

For many years now, my prime sources of Mac shareware have been just two places. The Arizona Mac User Group's (AMUG) *BBS in a Box* CD-ROMs were originally designed to enable bulletin board operators to provide large quantities of PD and shareware to their clients, but anyone can buy them. The current set is three CDs full of compressed software, and they are updated every six months with a new release. Once you have bought the initial disks, the updates drop in price, provided you register with AMUG. I buy every other update, and the last set of CDs cost just $49. For nearly 2Gb of compressed software, that sounds like a bargain.

If it isn't on *BBS in a Box*, then it is probably on the Info-Mac CD-ROM. This is a snapshot of the latest contents of one of the largest Mac software archives at Stanford University. Typically, the 650Mb of uncompressed software costs about $49 from publisher Pacific Hi-Tech.

Although I get these CD-ROMs direct from the USA, you may well find them at your local computer dealer, or by mail order from the usual Mac suppliers. In either case, they represent a cost-effective way of obtaining more software than you are ever likely to use (or be able to pay for!).

VAPOUR TRAILS

Press releases, specification sheets, technical documentation... more and yet more pages of information about Apple products. With all the changes at Apple over the last few months, some of them are bound to get out of date. As tangible proof of this, you only have to look at the review I did of Opcode's *Studio Vision Pro Version 3.0*, in the March 1996 issue of *SOS*. In the panel where I describe the hardware, I mention the Apple AV NuBus card.

Now, I first heard about the card on a specification sheet for a PowerMac, where it described how it added AV functions to non-AV Power Macs. I found it mentioned again in the technical support documentation, and finally, I saw someone advertising it in a magazine. It wasn't until after the magazine had come out that a puzzled *SOS* reader rang up and asked why he couldn't find one. Further research showed that although there are mentions of such a card in several places, no-one seems to have seen one, and anyway, it only adds the video AV functionality, which does not help a Power Mac user with audio.

So I can only offer my abject apologies. I was rather convincingly led to believe that something existed, when it appears that it probably does not, and anyway, it doesn't do what it sounds like it should. In a world full of vapourware of various shades, it's very embarassing to be caught out. Rest assured that I will try and be more vigilant in future. I am reminded of the words of a highly talented past colleague: 'trust no-one'. SOS

APPLE NEWS IN BRIEF

• REWORKING

The revised versions of current Power Macs equipped with Firewire (the fast serial peripheral buss) which were due this autumn are now unlikely to appear. Instead, a PCI-buss card will provide Firewire capability in existing models. Apple is concentrating on producing new Macs to a standardised form, which was previously known as the Common Hardware Reference Platform. This should allow choice of operating system: MacOS, Windows NT, Novell Netware, various flavours of Unix, and perhaps even IBM's OS/2 Warp.

• REDUCTIONS

Apple are reducing prices of Power Macs again. 7200s, 7500s, 8500s, and 9500s have been reduced in price by about 10%. Contact Apple on 0800 127 753, or better still, stop a passing Apple dealer and buy one!

• COPLAND

In a move towards a softer release approach, System 8.0 may be released early (maybe even later this year, or early next year) with restricted functionality, and further features added later. Some of this may be due to the ongoing restructuring within Apple, although competition from Windows 95 and Windows NT may also be responsible. Many of the features that will be retained in Copland will extend and simplify the use of the Finder, with lots of finding, display and searching refinements. Also due to appear is the 'CyberDog' internet interface, which should bring WWW access into more applications via the OS.

• ALWAYS

Nope, not the film with Holly Hunter and Richard Dreyfus, but a new area on Apple's World Wide Web servers, which aims to be a celebration of Apple, and not the dry technical information that you find elsewhere. There's some rather good rumour-countering, and an explanation of OpenDoc and its non-connection with Lego. Definitely an alternative to doom, gloom and Apple-bashing. Go to:
http://always.apple.com

• NET CURTAINS

Whilst everyone else is writing obituaries for eWorld, Apple's fledgling online service, I'm saddened by its demise. By the time you read this, eWorld will be no more. Some commentators have joked about the 150,000 subscribers, and others have mocked the friendly, caring community atmosphere that seems to have distinguished eWorld from almost every other online service. I don't think this is fair. eWorld showed that it *is* possible to have an online service which appeals to everyone, not just twenty-something male computer geeks. Hopefully, the 'huge mailshot, bundled everything' people will learn a thing or two from eWorld's virtual neighbourhood approach. Once again, I get the feeling that Apple was breaking new ground that others will reinvent in years to come.

ON THE NET

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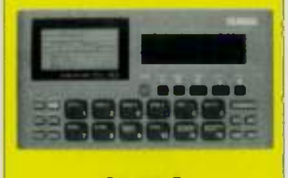
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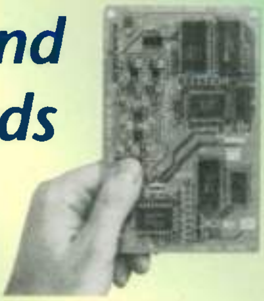

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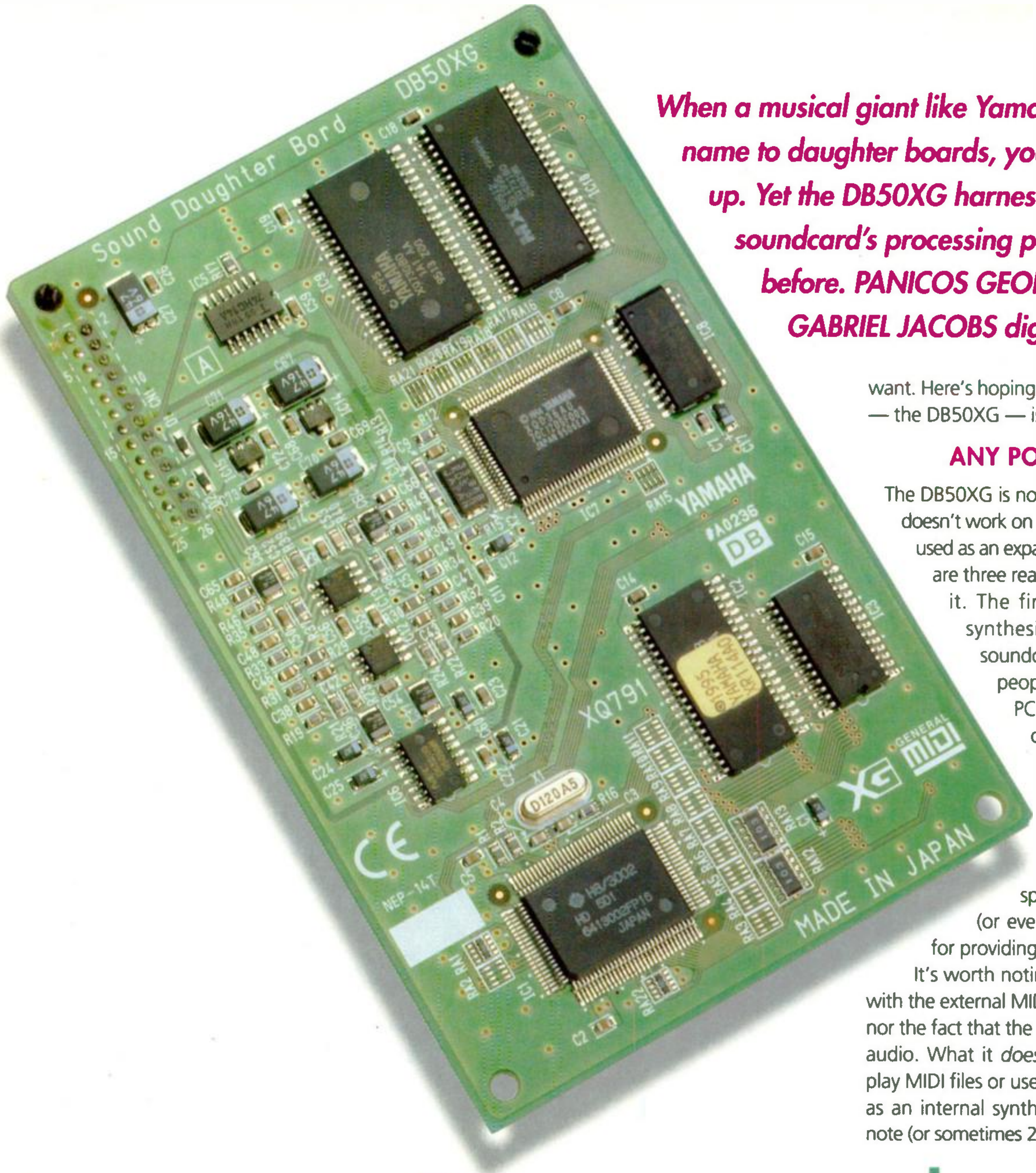


When a musical giant like Yamaha start putting their name to daughter boards, you know something's up. Yet the DB50XG harnesses your PC soundcard's processing power as never before. PANICOS GEORGHIADES and GABRIEL JACOBS dig the new breed...

Piggy-back

YAMAHA DB50XG PC SOUNDCARD DAUGHTER BOARD

YAMAHA DB50XG £129

PROS

- Lots of sounds.
- Internal effects and processing can produce the perfect mix.
- Lots of instrument performance control.

CONS

- Accessing the card's full power without hassle requires the XG Editor.

SUMMARY

Excellent quality, comparatively inexpensive synthesizer expansion daughter board that works with PC sound cards to add (MU50-, MU80- and QS300-compatible) sounds. Can be used to increase polyphony and multitimbrality. Three internal effects sends and channel-insert effects provide a clean and versatile mix. In our view, the best PC sounds on the market at the moment.

A few months ago, when we reviewed the Sound Edge — Yamaha's first multimedia PC soundcard — we noted that for all these years Yamaha had played a backstage role, by producing sound chips for other soundcard manufacturers without developing its own card. We also implied that the Sound Edge possibly heralded a quite new outlook on Yamaha's part.

Well, Yamaha has now clearly decided that the computer market is a fertile one, and they're going into PC soundcard production with a vengeance — to the point where they're making other manufacturers a bit nervous, to say the least. *They* may be worried; we're not. On the contrary; we're more than happy to have music companies, as opposed to computer companies providing hardware, since they should know what musicians want. Here's hoping that Yamaha's new soundcard — the DB50XG — is the first of many.

ANY PORT IN A STORM

The DB50XG is not a *full* PC soundcard, in that it doesn't work on its own. Rather, it's meant to be used as an expansion to another PC card. There are three reasons why you may want to use it. The first is to provide good MIDI synthesizer sounds, if your existing soundcard doesn't have them. Most people nowadays buy multimedia PCs. But many soundcards which come pre-installed in multimedia PCs, and many that are part of multimedia upgrade kits (bundles which usually include a soundcard, CD-ROM drive, a few CDs and speakers), only include an OPL3 (or even the older OPL2) sound chip for providing MIDI synthesizer facilities.

It's worth noting that this has nothing to do with the external MIDI interface socket on the card, nor the fact that the card is capable of 16-bit digital audio. What it *does* mean is that if you wish to play MIDI files or use the card with your sequencer as an internal synthesizer, you'll only get an 11-note (or sometimes 22-note) polyphonic synthesizer, using FM-type sounds. If you're after the 'true sound' of instruments, this won't be good enough for you. And even if you're after synthesizer-type sounds, the 2- or 4-operator FM sounds on these cards are not as rich as you can get with more modern synthesis methods based on sampled sounds. FM synthesis is, after all, over 10 years old.

However, many of these soundcards provide a standard 26-pin internal connector, to which you can attach a daughter board. This is officially known as a WaveBlaster expansion port, because it was trademarked by Creative Labs for the SoundBlaster 16. For reasons of price, the

WRH

SoundBlaster 16 came as a basic model, providing only an FM synth on board, and a WaveBlaster expansion slot. WaveBlaster is a daughter board with a wavetable (sampled sounds) synthesizer on it. The bottom line to all this was that you didn't have to pay the extra £50 to £100 if you weren't really interested in good synth sounds.

Other manufacturers followed suit, and soon music companies (who weren't in the soundcard business, but who already had lots of good synthesizer sound chips) started producing daughter boards for soundcards — Korg, Roland, Kurzweil, Ensoniq ... and now Yamaha.

The second reason for considering the DB50XG is to provide an additional synthesizer with increased polyphony and multitimbrality. Even if your card does have a good synthesizer on board, and also includes a WaveBlaster expansion slot on it, you can still use the DB50XG to literally add a second synthesizer to it. What you get is another 16 MIDI channels and added polyphony. The audio outputs of the DB50XG are routed through the soundcard and mixed in parallel to the audio output of your card's internal synth. So if you have a card which already offers a 32-note polyphonic synth (like the SoundBlaster AWE32), and you add a DB50XG, you can turn it into a 64-note polyphonic synth — all on a single card!

I should add, however, that the DB50XG's polyphony ranges between 16 and 32 notes, depending on the complexity of the sounds you use. Each DB50XG sound is made up of one or two elements, and there's an equal distribution between 1-element and 2-element sounds in the card's sound library. So you could say that an average of 24-note polyphony is what's practically achievable on the DB50XG.

The third reason why you may wish to buy the DB50XG is because you already know and like its sounds. And there's a good chance you *may* know them, because they're based on the same synthesizer chips as those found in the Yamaha MU50 and MU80 sound modules, and the QS300 keyboard. They are indeed impressive.

Rider

The chip on the DB50XG contains 12Mb of sounds compressed to a 4Mb ROM. In fact, there are 676 sounds and 21 drum kits in total. The card works in two modes. In XG mode, it provides 480 melodic sounds and 11 drum kits. XG is Yamaha's answer to Roland's GS. Like GS, XG provides compatibility with General MIDI, but adds variations to existing sounds (in additional sound banks), as well as employing digital effects. In addition, the card can also be set to emulate a TG300B, where it provides 579 melodic sounds and 10 drum kits.

ABSOLUTE CONTROL

Although the individual sounds on this card are good, there are other cards on the market with equally good sounds (based on a Korg M1-type chip, or the Roland Sound Canvas), and some with even better sounds (based on a Kurzweil chip). However — and we do stress this — the *overall* sound achieved with the Yamaha DB50XG is definitely better than anything else we have heard on a PC.

There are two reasons for this. The first is that the DB50XG offers greater control over sound expression than any other PC card on the market. Aftertouch, PitchBend, Modulation, Portamento, Pan, Volume, Expression, Hold, Sostenuto and SoftPedal can all be altered in real time. And that's not all. You can also edit sounds in real time and alter their harmonic content, their brightness, attack and release time using MIDI controllers. Individual drum sounds can be tuned, panned and have their sound characteristics altered, again in real time — including the amount of signal that is sent to the card's onboard effects.

This brings us to the second reason why this card sounds so good — those onboard effects. Imagine a mixer with three global effect sends, and insert points for every channel. This card has them all. Two of the global effects are Reverb (11 types) and Chorus (11 types). The third is Variation, and there are over 40 of them (including Delays, Echoes, Phasers, Distortion, Flangers, Wah Wah, EQ and more). The variation effects can also be used as insert effects, so that they only affect individual MIDI channels. And you can even route part of the signal from one effect to be processed into another, as well as edit effect parameters in real time.

All this control not only enables you to create more sound variations than on other cards, but you can also create a more clean and professional mix through a single stereo audio socket. We all know that the single stereo audio output is the death of most cheap music equipment, but in this case, we have the birth of good sound, because if you can process signals individually *with* their effects, you don't have to pass them through lots of mixer channels which add noise and distortion — and you end up with a much cleaner stereo signal.

SUMMARY

The sonic quality of this Yamaha card is very good, though we must stress that since its audio output is routed through your existing soundcard, it will depend on which other manufacturer's card you are using. And here's a surprise: unfortunately, the DB50XG *does not* work with Yamaha's own Sound Edge card, because the Sound Edge doesn't have the necessary 26-pin connector. But there's quite a choice of cards out there which *do* have this feature. The manual includes all the MIDI messages, and installation is painless. You also get a free CD containing demo MIDI files and some copyright-free MIDI clip art files, which you can use in multimedia presentations. It all adds up to a quantum leap in the music-making potential of your PC.

FURTHER INFORMATION

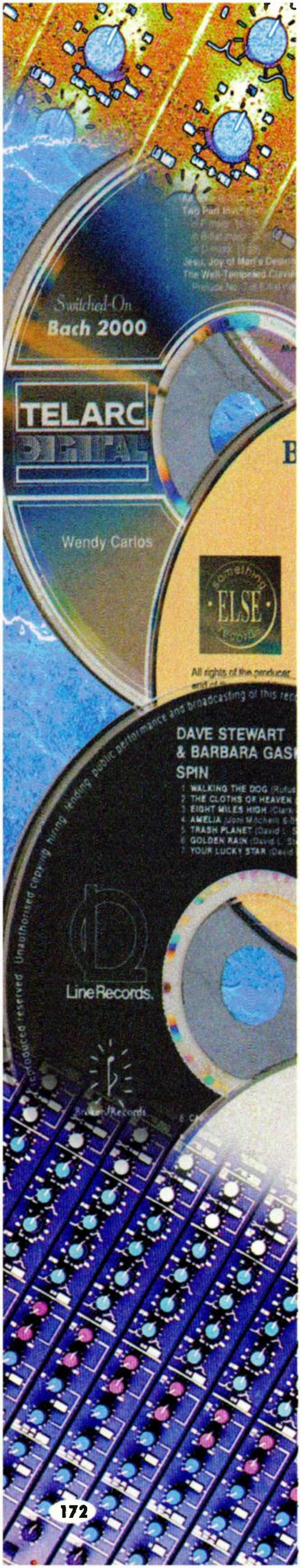
£ DB50XG daughter board for PC soundcards £129;
XG Editor £25. Prices inc VAT.
A Yamaha Kemble Music UK, Sherbourne Drive,
Tilbrook, Milton Keynes MK7 8BL.
T 01908 369269.
F 01908 368872.

WHO SHARES WINS

There's no such thing as a free lunch — and there's a down side to the myriad control options of the DB50XG. You have to do everything by sending MIDI messages and controllers from your sequencer. That can be time-consuming as well as intellectually demanding. In fact, if you're not good at maths, forget it: unfortunately, the MIDI language wasn't written for musicians, but for the manufacturers' technical personnel. Constructing MIDI System Exclusive messages is beyond most people's grasp.

However, Yamaha bundles a shareware XG Editor (you can upgrade to the registered copy for £25), and this is a must if you want to use all the card's interesting facilities without getting bogged down deciphering MIDI messages from the manual. The XG Editor can run in parallel with your sequencer software in Windows (or Windows 95), so you can record settings in real time, or use it to construct SysEx messages, save them and then import them into your sequencer. It certainly makes things easier, and in many cases — possible.

> *"The DB50XG offers greater control over sound expression than any other card on the market."*



How to become a Record Prod

PART 5 — CHOOSING A STUDIO

An 'unplugged' session is going to require a very different studio from a techno track bursting with MIDI bells and whistles. Beyond that, choosing a recording studio is down to that elusive spiritual ingredient, 'the vibe'. DAVID MELLOR investigates pop psychology...

Once you become a top record producer, you will be able to book one of the top studios. A top studio will of course charge a top price, but since the record company will be footing the bill (and charging it to the band's future royalties), all you have to do is make sure you come out with a damn good record. While you're still an aspiring producer, your budget will be more limited, perhaps to what you yourself can afford. You will be looking for a compromise between the kind of setup you're familiar with at home, and a good commercial studio with the kind of facilities you can't afford. Commercial studios can be split fairly arbitrarily into three types: demo studios, mid-range, and 'cost no object'. Let's take a look at what you will get from each of these three types of studio.

RAGS TO RICHES

No studio owner will describe their facility as a demo studio, but at the lower end of the price range you will encounter compromises that will reduce the likelihood of being able to make a top-quality recording. Some demo studios have a general air of crustiness. They obviously don't employ cleaners on a regular basis, the staff are miserable and surly, the equipment, though once good, is now falling apart, and you or your engineer have to work around dead channels and dodgy patchbay connections. You think I'm joking — I'm not. I have a lot of respect for anyone who can make money out of operating a recording studio, such is the competition, but there surely must be a marketing opportunity for a studio that can provide a clean, efficient working environment at a reasonably low cost. To be on the safe side, you would need to look at the upper division of demo studios to have a reasonable degree of confidence that you will be able to get good quality work done.

Moving into the mid-range league of studios, what you will tend to find is a studio that was once very well set up, but is now looking rather tired, both in terms of equipment and decor. Decor may not be important to you if you can live with torn carpets, lumpy sofas, and equipment which is 10 to 15 years old, and looks it. But as long as the equipment is well-maintained, then it doesn't matter how knocked about it appears, nor how old it is (within reason). If you don't need an awe-inspiring environment to do your best work, you can make a great recording in a mid-price studio — as top producers continue to prove. There is also something to be said for a slightly downmarket atmosphere, in that it doesn't intimidate you or the performers. For many styles of music, you need to be totally relaxed and comfortable within your surroundings to perform at your best. And just as you will feel comfortable in your old worn-out jeans and trainers, then an old, worn-out studio (but with good equipment maintenance) may be just right for you.

If you're working with a top act, then you will almost certainly want to work in a first-rate studio. A well-respected American artist who flies first class from Los Angeles to the UK and checks into a good five-star hotel will not wish to be downgraded to a two-star studio for recording purposes! A good studio should be like a five-star hotel, with recording facilities instead of a swimming pool. The control room will have coffee and tea on tap, and there should be cafés and watering holes close by.

Mid-range and top studios should have good acoustics. What you want from a studio's acoustics is a debatable matter, but you will be looking for freedom from outside noise, a pleasant acoustic environment to perform and record in, and an accurate control room for judging the mix. Some studios specialise in mixing, and have only limited recording space, or none at all. The 'sound' of a studio is an important factor, and it is not unknown for producers to use studios on both sides of the Atlantic on a single project, because they have distinctive sounds that suit certain instruments, or combinations of instruments. Also, consider the physical size of the studio. If you have 30 string players to accommodate, you need plenty of elbow room!

ucer

EQUIPMENT

Frequently, the selection of a studio will be governed by the equipment that the producer or engineer recommends. Even the record company, if they have become aware that a lot of hits are being made using a particular mixing console, will start to think that some of the magic might rub off.

As far as the choice of mixing consoles goes, there are three types: SSL, Neve... and the rest. SSL and Neve still seem to be front runners, and other manufacturers' consoles, good though they may be, just haven't been able to achieve the same status. The reason why Neve is so popular is that the company have been making consistently excellent products since the early '60s. This kind of track record has made Neve number one, and if you are recording in a studio with a Neve V series console, then you have no excuse for not getting it right! SSL haven't been going for quite as long as Neve, but they made an important breakthrough in console design, with what was practically their first product — they incorporated a computer into the console, which could control the multitrack remotely and automate the mix. Studios liked it, bought it, and suddenly it seemed like hit after hit was produced using an SSL console.

These days, a producer will choose a Neve studio for its prestige value. Another producer will choose SSL because he started off as an engineer on SSL, and that's what he is most comfortable with. Judging from the comments of people I have spoken to, there isn't a lot of crossover between the two consoles — you like one or the other, although you will find the occasional producer who will record on Neve and mix on SSL, to get the best of both worlds.

If Neve and SSL are joint top of the console league table, can you make a hit on any other console? Of course you can. Pick a studio with a top-of-the-range Amek, DDA, Euphonix, Focusrite, Soundcraft or Trident, and you are unlikely to be disappointed, since all these consoles and others have made hits; just not as many as Neve or SSL.

Parallel to the choice of console is the choice of multitrack format. It is just as important, but you have more flexibility, since you can hire any multitrack you like, and bring it into the studio of your choice. Mixing consoles, in comparison, are very firmly fixed assets. As a top producer, you will be choosing from four formats: 24-track analogue, 24- or 48-track DASH digital, ProDigi 32-track digital or Otari Radar. It seems that ADAT, DA88 and Pro Tools haven't made it into the top league yet as a main recording medium, although they are often used as a component in the recording process.

Twenty-four track analogue machines are still very popular, probably because all the major studios have them already, and the damned things just won't wear out. It seems that a properly maintained 24-track can go on just about forever. Many producers still prefer the sound of analogue tape, so I suspect that 24-track machines will be around for decades to come. Whether or not manufacturers will continue to make new ones is another question. King of the 24-tracks is probably the Studer A800, with the Otari MTR90 MkII next in line. The A800 is not a current model, and you could argue that the more recent Studer models are better, but A800s are everywhere, and people love them. Synchronise two of them together, ▶

> *"A good studio should be like a five-star hotel, with recording facilities instead of a swimming pool."*

London's Metropolis Studio boasts a 72-channel Neve VR console.

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Wendy Carlos

How to become a Record Producer

and you have 46 tracks of pure analogue magic (you lose a track on each for sync). Furthermore, they will probably be included in the basic rate for the studio. Remember to budget for lots of tape. £300 of tape (two reels for 46-track) lasts just over 15 minutes, at 30 inches per second!

CUTTING A DASH

If you have a little more money to spend, then you might look at working with the DASH format. Sony and Studer make DASH machines, although the Sonys are far more common. The 3324A is the model you will see most often, and for certain styles of music it is considered to be a workhorse machine. People who know Sony DASH machines speak very highly of them, and the premium you will pay to have one on your session (even if the studio owns it, usually) will be worthwhile.

Although Mitsubishi pulled out of the digital audio market several years ago, there are still many 32-track ProDigi machines around doing good work. In our home and project studios, we often fall into the trap of always chasing the latest gear. In pro studios, 'tried and tested' is more often the motto. ProDigi isn't perfect, but many well respected artists and producers are happy to work with it. The other multitrack recorder I'd recommend isn't a tape recorder — but it thinks ▶

THE STUDIO OWNER'S VIEW — JERRY BOYS

Jerry Boys.

Jerry Boys is the owner of Livingston Studio, a twin studio complex in Wood Green, North London, with SSL 48-track and Amek 24-track rooms. He is a widely respected engineer, with credits including The Beatles, The Rolling Stones, Jimi Hendrix, Kate Bush, and more recently, Everything But The Girl, Lisa Stansfield and REM.

- CHOICE OF STUDIO

"One factor is the type of record a group is making; is it a largely MIDI-based record, or is it a 'musician'-based record? In the latter case, they would need a decent recording room with proper acoustics, and a good selection of microphones.

"In the former case, they might need other technological-type facilities. Most of the upmarket studios would try and cover both areas, but their main rooms would be leaning towards 'musician' recording. Like ourselves, they would all provide a basic computer, software, some sort of sync interface, and a few sound modules. Some studios have a separate MIDI room as part of their facility."

- RATES

"In this day and age, we try and be competitive. We are not among the cheapest, but we offer excellent value for money. Price-wise we're in the lower third of the top tier. We range between £475 per day in our smaller room, and £650 in our bigger room — plus VAT."

- HOUSE ENGINEERS

"Our house engineers are important, and have become a more important feature in recent years. In the '80s, it became the fashion not to use house engineers, but it has sort of come back in fashion. I guess it is because they are often cheaper — but they're often better too, because they know the studio and how it works, and how it sometimes *doesn't* work!"

- THE CONSOLE

"The console would be a major factor in a producer's choice, whether he wants SSL or Neve, or something cheaper or different. We have an Amek room, and people will choose that if they perhaps don't want to go SSL, but also if they are on a relatively tight budget. Most of the major manufacturers' consoles are OK in terms of sound these days. It's really down to ease of operation and whether they have the facilities you want. The top-line consoles like Neve and SSL have sounds of their own, and they have automation systems that people are familiar with."

- GEOGRAPHY

"We find geography is important. People come to us because we are a long way geographically from the record companies! They like to feel they are locked away from involvement with the A&R department, shall we say. On other occasions, where the A&R people are having a strong input, we may lose the gig because we are not close to the record company."

- VIBE

"I think the most difficult thing to quantify would be what we call 'vibe'. I think that's the one thing where you can, as a studio, create your own unique space in the world. Most studios these days are built by competent acousticians, and they have equipment from the same manufacturers. There is not a lot of difference, apart from the mixing console and the colour scheme. What you can influence, and where you can carve out a particular character, is the vibe. We try to be very informal, and yet efficient at the same time."

- RECREATION

"We provide private lounges for both studios. There's a general entertainments area upstairs with a pool table, music, TV, satellite and all that sort of thing. If you have got a band in, a lot of people want to be able to sit somewhere outside of the control room. Wood Green is well endowed with all sorts of restaurants and takeaways: Chinese, Malayan, Greek, McDonalds, Pizza Hut. There are plenty within ten minutes walk, and many within half that distance. We provide a kitchen here, and some people cook for themselves."

- MAINTENANCE

"Maintenance is important in terms of keeping people happy while they are with you, and you hope then for return work. It is an area that is quite expensive, and you have to be careful that you provide a proper level without spending too much money. We have a guy who comes in three times a week, and then he's on call the rest of the time. Then there's normally myself or another experienced engineer on site. A lot of faults are not really faults; they're operator errors. Most things, in fact, get sorted out by someone who's already here. On the odd occasion when we do get a major breakdown, the maintenance engineer can be here within half an hour."

Studio 2 at Livingston.

BANDWIDTH

Backing vocals without the dropped notes; without the tantrums; always in time (and always on time) and truly affordable - for musicians and bands of all levels. DigiTech have brought harmonisation a long way since the early 'Pinky & Perky' sounding units on the market a few years ago. Now any act can benefit from classy, complex harmonies of stunning realism and accuracy, giving the sound 'width' without the usual associated wagebill.

The simple-to-use and affordable **MIDI Vocalist** has been designed for musicians who want instant vocal harmonies without programming. It creates, automatically, up to five part natural-sounding harmonies from one voice input.

STUDIO VOCALIST

DigiTech
STUDIO Vocalist

- Natural harmonies and pitch correction
- Full frequency response (20Hz - 20kHz)
- Separate outs for each voice
- XLR and 1/4" jack ins and outs
- Gender Bender technology
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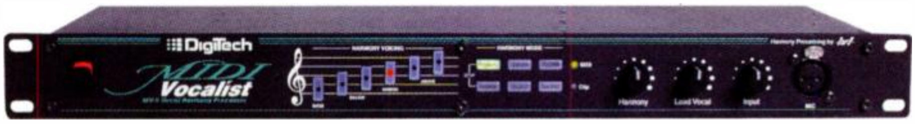
- Optional Digital I/O

Aimed at the demanding professional needing high quality vocal thickening, harmonies and pitch-correction, the advanced **Studio Vocalist** offers total programmability and a host of features such as individual voice outputs and 'Gender Bender' technology which allows the choice of male or female-sounding harmonies.

MIDI VOCALIST



- 4 voice detune for vocal thickening
- Vocoder mode for triggering harmonies via MIDI notes
- Chordal mode for automatic vocal harmonies
- Scalic mode for dynamic harmony motion
- Front panel XLR/mic. connection
- 1/4" line level input
- Bypass activation (external f/switch)

For the technically minded, the Studio Vocalist boasts full (20Hz-20kHz) bandwidth to capture more of the voice's natural overtones. However, impressive specifications only tell half the story. For only £9.95 (inc. P+P) our demo CD will reveal the Studio Vocalist's amazing musicality.

Alternatively arrange a demo at your DigiTech dealer and the Vocalists will speak for themselves - breathtakingly realistic vocal harmonizers to widen your band's horizons.

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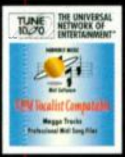
STANDARD MIDI FILES: THE REVOLUTION



Standard MIDI Files (SMF) discs contain MIDI data for complete backing tracks of popular songs when used with MIDI sound sources such as synthesizers and drum machines. The Tune 1000 and Heavenly Music ranges of Standard MIDI Files have pre-programmed harmonies, fully compatible (via Vocoder mode) with the DigiTech Vocalist range.

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Switched-On
Bach 2000

How to become a Record Producer

it is! The 24-track Otari Radar digital multitrack will probably need to be hired in specially, but machines similar to it (such as the new, 16-track Akai DR16 reviewed in *SOS* this month), are doing much to break down prejudices. You'll find that these have the simplicity of tape, with the editing capability of hard disk. If you need more tracks, hire a couple!

Aside from the mixing console and the multitrack, everything else is pretty much the icing on the cake. But you would expect a well equipped studio to have a good mic selection, a well-stocked outboard rack, a grand piano, maybe the odd MIDI keyboard and sampler if you are lucky, and an assistant engineer to help you out with all those knobs and buttons!

I have mentioned maintenance already, because it is vitally important. Also important is the line-up of the equipment. Analogue recorders need regular alignment, ideally for each session, to perform at their best. This is particularly necessary if you plan on recording some instruments in one studio, then taking the tape elsewhere for further work. It also helps if the assistant engineer zeros the console by setting every switch and every knob to a neutral position, making it a blank canvas on which you can paint your sound picture.

BOOKING THE STUDIO

Although you can book for shorter periods, it is common to book studios by the day. A 'day' will be around 14 hours, which means that either you get out at the appointed time, or move onto another hourly or daily rate. Alternatively, you can block-book a studio, in a 'lock out' arrangement. These means that you have 24-hour access to the studio, and you can leave all your equipment set up between sessions. A block booking will attract a special rate of course, but you have to bear in mind that time will be wasted while you and your musicians are sleeping, or even taking days off over long periods of recording. Residential studios often operate on a lock-out basis.

Studios won't like me saying this, but rates are often negotiable. It depends how much clout you have of course, but a major record company will expect to see a discount — somewhere between modest and bailiff-inducing. Indeed, the reason why many studios have gone bust is because record companies have been playing off one studio against another, to drive rates down. Obviously, business is business, and it comes down to survival of the fittest, but for what you get in a top studio in terms of equipment, acoustics and accommodation, the price you pay is often extraordinarily good value, if you consider what a decent studio costs to set up and run.

The quoted rates would include standard equipment, analogue multitrack and an assistant engineer. If you need an experienced engineer, then expect to pay according to the depth of that experience — you know what you get when you pay peanuts! Having the piano tuned will be extra, as may be the use of the studio's Hammond organ or other exotic equipment. Studios normally prefer to supply tape, rather than allowing clients to bring in their own. Obviously this is another profit centre for them, but it allows a degree of quality control, and certainty that the tape machines will be lined up correctly for that particular brand and type. If you do bring in your own tape, as you may if a project has been started elsewhere, then expect to pay the studio a handling charge to cover editing, leadering and labelling etc, as you would pay corkage if you took your own bottle of wine to a restaurant.

If your session goes on until the early hours, then you will have to pay taxi costs for the studio's staff, and any telephone calls you make will be logged and charged to your session. Don't forget the VAT on top of all this. You may negotiate a discount for payment in advance, but if you don't, bear in mind that you probably won't be taking any tapes away until you have paid in full — not unless you are known to the studio anyway, and have set up an account with them. All of these extra costs may seem alarming, but they are all part of the recording process, so just keep in mind how much money you hope to make at the end of it all! SOS

THE PRODUCER'S VIEW — STEPHEN STREET

Stephen Street is a producer with both a musical and an engineering background. Bands he has produced include The Smiths, Blur, The Cranberries and Catatonia.

- CHOOSING A STUDIO

"Initially, the main thing is that it has got to sound right. I have to be able to put up a mix or something that I have done, and be happy with the way it sounds in the control room. There has got to be a good playing area for the band to record in. You have to capture people at the peak of their performance. They have to be relaxed and in a good frame of mind. You want something that is conducive to that kind of session, so for me it's a good, well-arranged control room where I can set up a few bits of gear that I take round with me. I want a little bit of space, but I'm not a great lover of huge control rooms. There was a time when a lot of studios were building huge control rooms and tiny little playing areas, and I am not very keen on that."

- ACOUSTICS

"I prefer wood rooms to stone rooms. Having said that, I have been using Maison Rouge for the last few years and that has a stone room, but I have been pressing them to try and put some wood down."

- EQUIPMENT

"It's nice to have a good selection, but it is not the main thing for me — the main thing for me is a well-maintained desk, well-maintained machines and good-sounding speakers."

Stephen Street.

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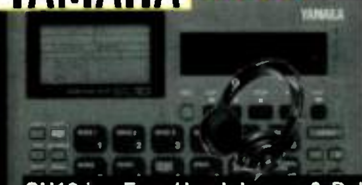

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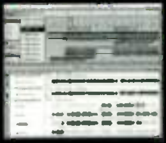

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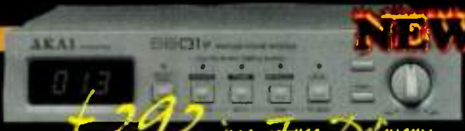

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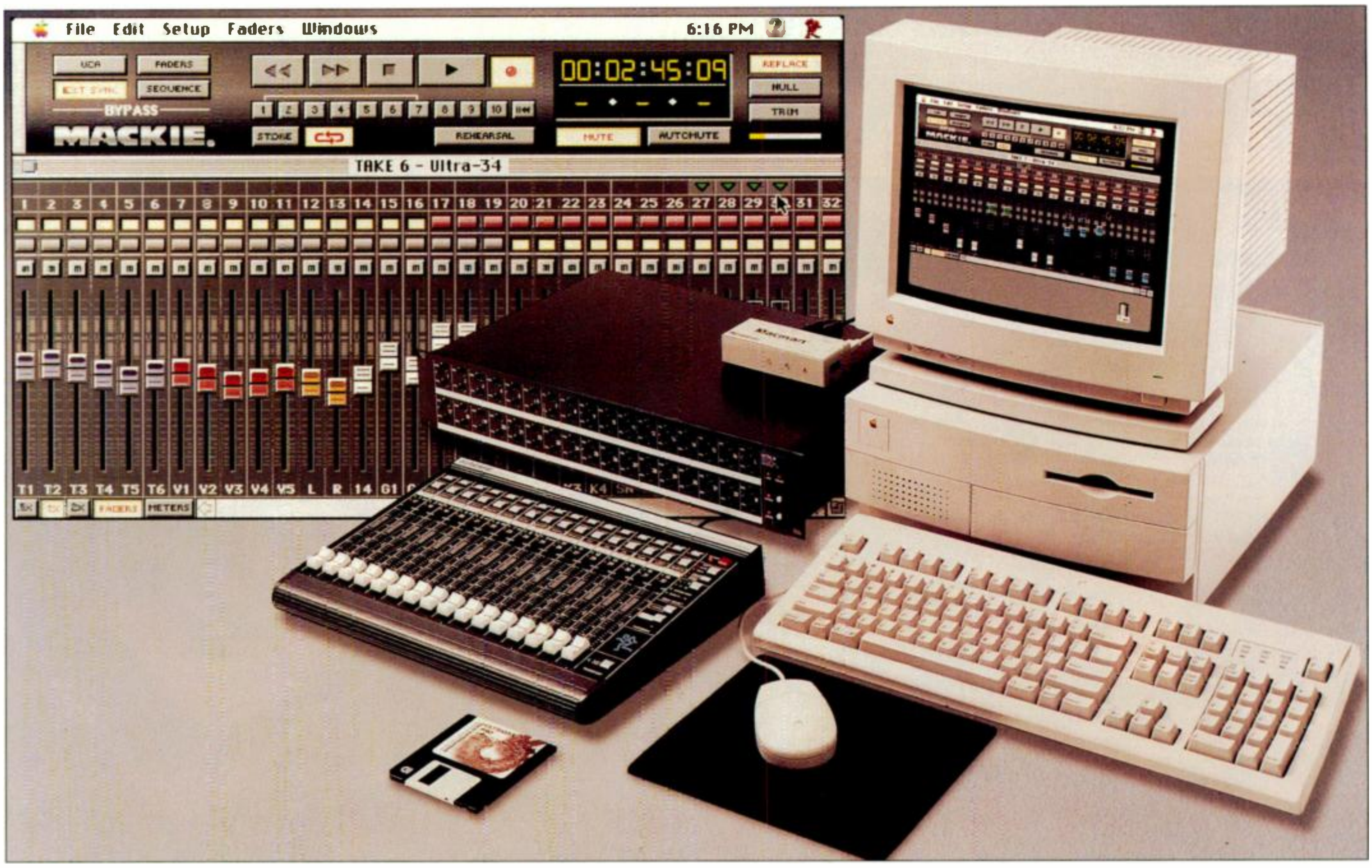

Mixing on AUTOPILOT

MACKIE ULTRAMIX AUTOMATION SYSTEM

Although aimed primarily at Mackie owners, Ultramix is an automation system that will run on other desks too with the aid of a modestly-equipped Mac — promising the home studio everything but the motorised faders. BERNHARD SPEYER investigates...

Mackie's success in the project music sector of the market comes down to a combination of sonic performance, build quality and price, and to continue the philosophy of offering hitherto expensive features at affordable cost, they've introduced a powerful new mix automation system. Ultramix has been developed to add automation to Mackie's existing line of consoles, although in theory, it could be used with just about any console that has channel insert points. The system records and plays back fader levels and mutes using a high-quality VCA system, as opposed to moving faders — but it's not an 'integrated' automation system, in that it doesn't work directly from the faders on your desk. This saves having to have the desk modified, as is the case with most other automation upgrades. The cost is thus significantly lower than a big-name VCA or moving fader upgrade.

WHAT YOU GET

The Ultramix system comprises three parts. The first is the 2U Ultra34 Cell Gain unit, which houses the 34 VCAs, and all the relevant audio inputs and outputs to connect to your mixer. The second component is Ultrapilot, the hardware user interface, containing 16 long through-faders plus the necessary buttons. Lastly comes the brain: the *Ultramix Pro* software which comes on one floppy disk, bundled with the latest version of OMS.

The software runs on Macintosh computers only, but a relatively modest machine will do the trick, and with Mac users keen to upgrade, you could pick

▶

MACKIE ULTRAMIX SYSTEM £2493

PROS
- Comprehensive mixing and editing features, including the valuable Automute function.
- Good audio quality.
- Expandable.

CONS
- Awkward group system where you can only work on 16 channels at a time.
- External hardware won't appeal to everyone.
- Software for Macintosh only.

SUMMARY

A very powerful mix automation system that can be used with virtually any mixer to provide fader and mute VCA automation at an attractive price.

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Germany's respected Fachblatt magazine summed it up: *"At the moment, the ULTRAFEX is obviously the most powerful psychoacoustics processor available. Excellent workmanship. Sensational price."*

The ULTRAFEX is already one of the world's best-selling sound enhancement devices, whether for live acts like hard-and-heavy Metallica, Def Leppard and Aerosmith, or in thousands of professional studios such as Lucas Arts LA. The new ULTRAFEX, its full spec and sensational price backed by Behringer's reputation for quality (and a *five* year warranty), sets even higher standards. And your music deserves the best.

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up a suitable second-hand model very cheaply. The minimum requirement, however, is a 030 processor running at 25MHz with 6Mb of available RAM and System 7.1 or higher. I had Ultramix running on a Powerbook 180 with 8Mb of RAM without any problems, but I had to strip my system folder down to the bare essentials. Extensions Manager (a shareware utility) might be useful if you don't want to evict all those extensions and menu items permanently. Ultramix itself uses only 3Mb, but you have to allow extra memory for mix information and, of course, for your System software.

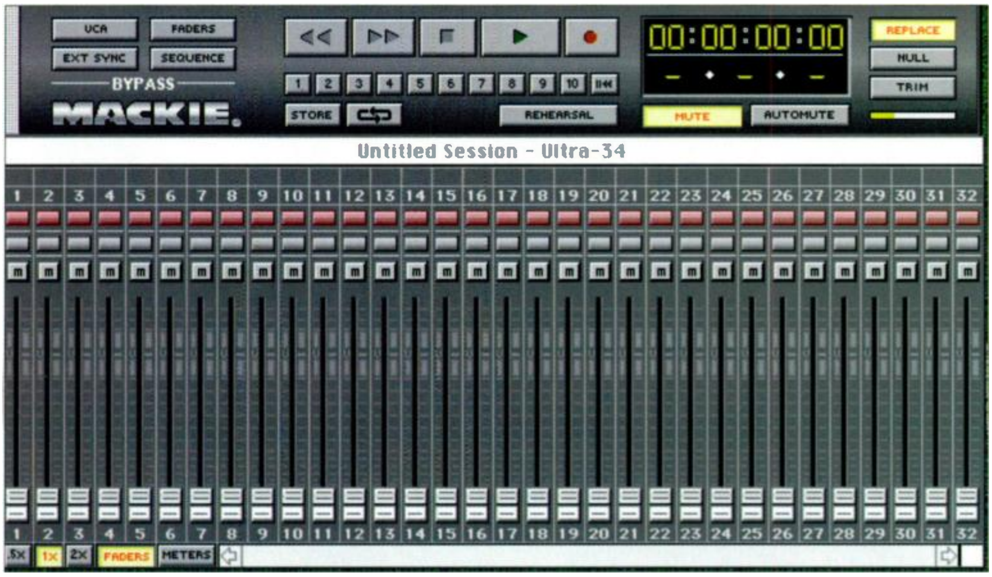

Figure 1.

The Ultramix software talks to the Ultra34 Gain Cell unit via MIDI, with the Ultrapilot acting like a MIDI fader box. Because MIDI can only resolve 128 discrete steps, Mackie has used an extremely efficient smoothing algorithm to eliminate zipper noise. Setting up is a matter of installing the software on your Macintosh, connecting the Ultra34 to your MIDI interface and plugging up all the insert send and returns (including the master fader). The Automation hardware has its own insert points, so you don't lose the ability to patch processors into your mixer. Once the Ultrapilot is connected to the Ultra34, you are ready to try a mix.

FEATURES

Once a basic mix has been recorded, you will inevitably want to make changes, and Ultramix supports an impressive repertoire of edit functions (see panel). In the top left-hand corner of the main screen, shown in Figure 1, is the bypass section. Switching to Bypass sets all VCAs to unity gain and stops any mix information from playing back, but I would have preferred a hard bypass, to keep the signal path as short as possible during recording. Ext Sync switches between Ultramix's internal sync clock and sync from an external source (multitrack, or MIDI sequencer). Faders disables all faders, and Sequence stops playback of Standard MIDI Files (this facility is great if you favour the all-in-one approach, but I myself prefer to keep MIDI sequencing and mixing separate). The familiar transport controls include ten auto-location buttons, together with a Loop and Rehearsal switch. Next to the transport controls is the SMPTE display, and directly underneath is a bar counter displaying the position of the SMF.

On the far right we find all mode buttons: Rehearse, Null, Trim, Mute and Automute. The little white line underneath the Trim switch displays the amount of available memory. Below the Main Window is the Session Window, which shows all 32 channels. Clicking directly above the channel number selects the channel (indicated by a small green triangle), ready to be cut, copied or pasted. Below the channel number are the Record Ready switch, a 'softkey' and a mute switch, together with the channel fader itself.

The 'softkeys' have two functions, but the basic default is Solo. Clicking on the softkey solos the selected channel, while muting all others. The second function, Fade In or Fade Out, can be selected from the faders menu. Switching from the fader display (the one currently displayed) to the meter display turns your monitor into a 32-channel, full-colour meter bridge, at no extra price!

The Ultrapilot can control up to four Ultra34 units, providing a maximum of 132 channels and 32 VCA groups using bank change commands. The Ultrapilot has sixteen 100mm long-throw faders, above which are the Record Ready buttons, plus a row of softkeys. These softkeys, together with modifier switches (found on the right: Shift, Locate and Soft mode) give access to nearly all functions found on the main screen.

MIXING

If you have used an automation system before, you'll find Ultramix very straightforward. Before you start to record fader moves though, have a look at the on-screen faders. There are two types: white or solid faders, and the transparent faders (see Figure 2). Understanding what these different faders do is vital. The transparent fader represents the physical controller position. If you move a fader on the Ultrapilot without being in record, you will see a transparent fader moving up and down the screen, but you won't hear a thing. The moment the Record Ready button and the Master Record button are pressed, the transparent fader turns solid white, and you will hear the sound. The solid fader shows the recorded or actual VCA level, whilst the transparent fader shows the controller position for that particular channel.

Because Ultramix is not an integrated mixing automation system, setting up a basic balance for a mix with Ultramix is slightly different from conventional systems. The first step is to set all ▶

ULTRAMIX FUNCTIONS

- Replace mode to record new fader moves, or redo new ones from scratch.
- Trim mode to update/merge previous moves with new ones.
- Null mode, auto drop, to ensure seamless transition (once in 'record', it behaves like Replace mode).
- Rehearse mode, so you can practice your moves
- Channel Mute.
- Automute function (as the name suggests) automatically mutes channels if the input signal drops below a user-definable threshold, rather like a gate.
- Eight colour-coded VCA subgroups.
- Event editor (very powerful!).
- On-screen input metering (excellent if you don't have a meter bridge on your desk).
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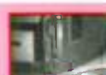

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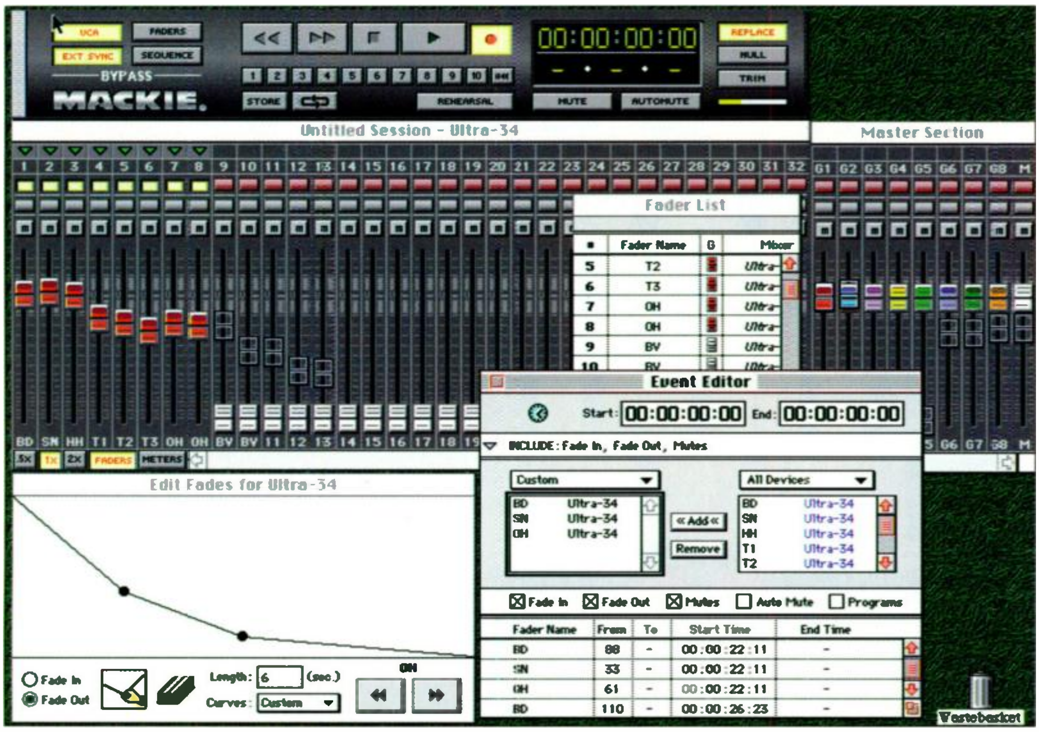

Fader List

#	Fader Name	G	Mixer
5	T2		Ultra-
6	T3		Ultra-
7	OH		Ultra-
8	OH		Ultra-
9	BV		Ultra-
10	BV		Ultra-

Event Editor

Start: 00:00:00:00 End: 00:00:00:00

INCLUDE: Fade In, Fade Out, Mutes

Custom

BD	Ultra-34
SN	Ultra-34
OH	Ultra-34

All Devices

BD	Ultra-34
SN	Ultra-34
HH	Ultra-34
T1	Ultra-34
T2	Ultra-34

☒ Fade In ☒ Fade Out ☒ Mutes ☐ Auto Mute ☐ Programs

Fader Name	From	To	Start Time	End Time
BD	88	-	00:00:22:11	-
SN	33	-	00:00:22:11	-
OH	61	-	00:00:22:11	-
BD	110	-	00:00:26:23	-

○ Fade In ● Fade Out Length: 6 (sec.) Curves: Custom

Figure 2.

> *"The system offers all the facilities you tend to find on other professional VCA mixing systems, and in some cases, Ultramix gives you more."*

channel faders on your mixing desk to unity gain, otherwise none of the moves you are going to record will be heard. Next, sort out all your tracks into logical groups, making sure that you don't have any groups spread over two banks, for example, 16-17 or 32-33 and so on. This is not a must, but it will make life a lot easier, so repatch the mixer inputs where necessary. Nearly all mixing can then be done from the Ultrapilot, or with the mouse (see below) with only your mixer's effects sends or EQ settings requiring direct adjustment.

Setting the levels for the first 16 channels is straightforward. Select Replace mode and Internal Sync, then set all tracks to Record Ready and press the Master Record button. This turns all transparent faders into solid white faders, which then follow every move you make on the Ultrapilot. Run the tape or your sequencer, and get a balance. Once you are happy with it, select Ext Sync and record a pass. You can then get the next 16 tracks up on your screen, and do the same. Obviously, you only have 16 physical controls on the Ultrapilot, and sadly, trying to get a balance for more than 16 tracks at a time is slightly inconvenient, as the Ultrapilot's bank switch command is destructive; if you switch from bank A to bank B, with all tracks in Record, you lose all VCA settings in bank B. The way around this is not to use the Ultrapilot for channels above 16, and resort to the mouse and screen instead to set nominal levels for these channels.

I spoke to Robert Tudor from Mackie (the godfather of the Ultramix software) about this problem, and he told me that there is a possibility that a future version of the Ultrapilot might have motorised faders, similar to the Yamaha 02R. Whenever you change a bank, the faders on the Ultrapilot will change their position to the new VCA settings, and not the other way around. This is the only real niggle I have with Ultramix — the other concerns the rather sparse preliminary manual supplied to early users, but by the time you read this review, the 'revised' manual will almost certainly be available.

POST-RECORDING

What can you do with Ultramix once you've recorded your first 'pass'? Let's start with an Ultramix feature that makes so much sense, you wonder why nobody else has developed it: Automute. No need to spend hours cleaning up your tracks by hand. Automute listens to all the channel inputs, and if the input signal drops below a pre-defined threshold, (low, medium or high), it mutes the respective channel until the level comes back up, just like a gate. I should mention that Automute events, manual mutes and fader moves are recorded separately. This means that if you decide halfway though the mix that you want to redo the levels for the lead vocals from scratch, but you want to keep all the mutes; no problem, simply select Replace mode, press Record, and all the VCA levels can be rewritten, leaving the mutes untouched.

Trim mode is used to update previous moves with new ones. The original mix data is kept, but your new moves either add to or subtract from the original mix level. Null mode is similar to the Replace mode, in that it replaces old moves with new ones, but with one crucial difference: no new data is written until the transparent fader level passes through the solid fader showing the actual VCA level. This way, Null mode avoids sudden level jumps when punching in. It would have been nice if the same principle could have been applied to the dropout, but there's always the possibility that a future update could include it if enough people think it is worthwhile.

Rehearsal mode does exactly what is says. You can try things out before you commit yourself, but one of the three record modes must be enabled for the software to know what it is you want to rehearse. There are also eight colour-coded VCA groups at your disposal. All faders assigned to a VCA group will change their colour accordingly (nice touch!) and follow the moves and cuts of the designated master fader. This is very useful if you need to trim all your drums, or you want to create an interesting effect for a breakdown section. In a future version of Ultramix, you will be able to ungroup a fader and choose whether or not that channel should retain the group information. Basically, this means that you'll ▶

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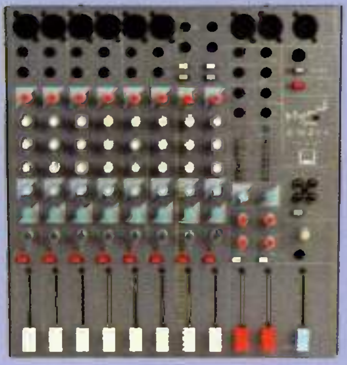

Perfect for applications with a wide range of input sources, the Si 12-2-1 has facility for: 8 mic inputs, 12 line inputs and almost unique to a mixer of this type switchable RIAA equalization to allow the use of turntables with magnetic cartridges

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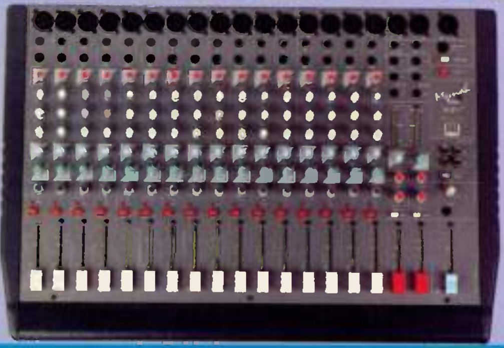
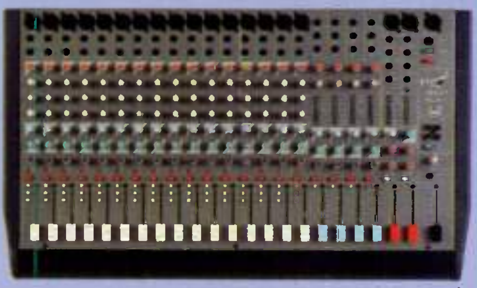


The Mynah Plus 16-4-3



In addition to all the input features of the 16-2-1, the 16-4-3 has four full function sub groups. These sub groups can be used for single fader control of multiple inputs, four or eight track recording and zoned outputs to name but a few applications. An extremely versatile mixer!

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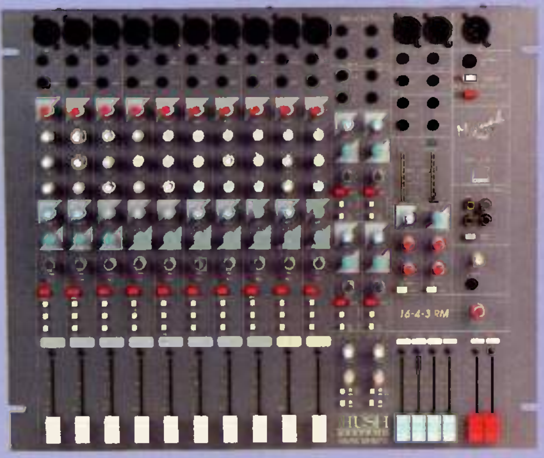

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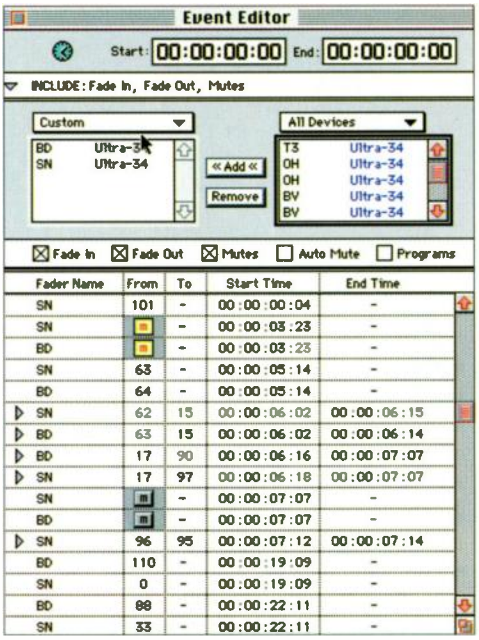
have access to an unlimited number of groups, by creating a group, recording cuts and fader moves, then un-grouping the faders and retaining the group information. This way, you can use one VCA group over and over again.

OFF-LINE EDITING

Most of us are familiar with MIDI sequencers, and editing MIDI information. Edits in Ultramix are much the same — you can cut, copy and paste whole channels. For example, if you decide that you want to move the lead vocal from channel 13 to channel 29, all you have to do is click on fader 13, select Cut from the Edit menu, click on fader 29 and select Paste. Done. The same principle applies if you record some tricky cuts and fader rides on the first chorus, and you don't want to do the same thing on the second, third and fourth chorus.


Event Editor
Start: 00:00:00:00 End: 00:00:00:00
INCLUDE: Fade In, Fade Out, Mutes
Custom
All Devices
« Add «
Remove

BD	Ultra-34
SN	Ultra-34

T3	Ultra-34
OH	Ultra-34
OH	Ultra-34
BV	Ultra-34
BV	Ultra-34

☒ Fade In ☒ Fade Out ☒ Mutes ☐ Auto Mute ☐ Programs

Fader Name	From	To	Start Time	End Time
SN	101	-	00:00:00:04	-
SN	m	-	00:00:03:23	-
BD	m	-	00:00:03:23	-
SN	63	-	00:00:05:14	-
BD	64	-	00:00:05:14	-
▷ SN	62	15	00:00:06:02	00:00:06:15
▷ BD	63	15	00:00:06:02	00:00:06:14
▷ BD	17	90	00:00:06:16	00:00:07:07
▷ SN	17	97	00:00:06:18	00:00:07:07
SN	m	-	00:00:07:07	-
BD	m	-	00:00:07:07	-
▷ SN	96	95	00:00:07:12	00:00:07:14
BD	110	-	00:00:19:09	-
SN	0	-	00:00:19:09	-
BD	88	-	00:00:22:11	-
SN	33	-	00:00:22:11	-

Figure 3.

All off-line editing is done in the Event Editor as shown in Figure 3, with the exception of cutting and pasting whole tracks. You can filter out any unwanted events from the display (playback isn't affected) by checking or un-checking, Fade in, Fade out, Mutes, Automutes, or Programs (Program Change commands). Now you can delete individual mute events, or shift them a few frames either way, extend or shorten fade-in or fade-outs, manipulate their starting or end levels, copy whole verses, and so on. If you have a large enough screen, or better still two monitors, you can leave the Event Editor open all the time. This way, you can monitor all the new moves you record. Most of the time you probably won't need the Event Editor, but it's good to have it there when you do need it.

Another great feature is Modify Levels, where you can select a channel and choose how much level you want to add or subtract. There are also more esoteric choices you can make, relating to things like minimum level, maximum level and fixed level.

CONCLUSION

The introduction of Ultramix will further narrow the margin between the 'big players' and the smaller project studios. The system offers all the facilities you tend to find on other professional VCA mixing systems, and in some cases, Ultramix gives you more. The system can be expanded by adding further Ultra34 units, and the sonic performance is excellent.

If you are used to integrated mix systems, it might take some time for you to get used to mixing from the Ultrapilot without touching the faders on the desk, but it all works fine. I feel that at the moment, nothing comes close to Ultramix in this price range. SOS

FURTHER INFORMATION

£ Ultramix system £2495. This consists of the *Ultramix Pro* software, the Ultrapilot hardware controller, and one Ultra34 Cell Gain unit. Extra Ultra34 units can be purchased at a cost of £1495 each.
Prices include VAT.

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FADE AWAY AND AUTOMATE

Right at the top of my list of Ultramix's 'extra goodies' are the user-definable fades (in and out), where you can define the shape and the length of fades for each fader individually, as shown in Figure 4. If you like a particular fade and want to use it on another channel, simply give it a name and save it! A whole library of pre-defined fades can be built up this way. You can even call up a nice fade and add it to an otherwise finished mix.

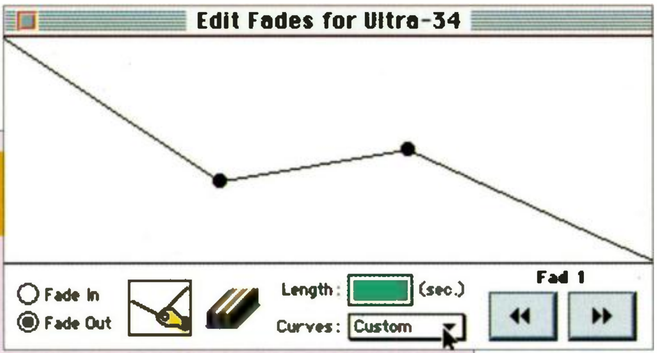
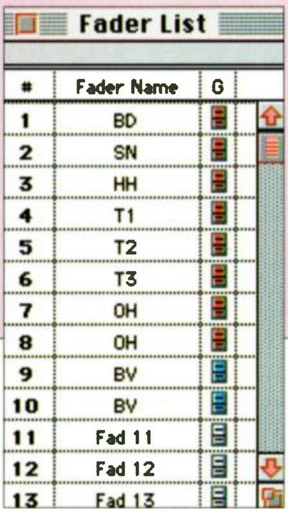


Figure 4.

There is also a facility to name your faders as shown in Figure 5, and if you own MIDI-controllable effects, you'll be pleased to hear that Ultramix offers dynamic control over your outboard gear through optional effects control modules. Third-party developers can write dedicated effects control modules, which you simply load into Ultramix. The first one available (from Mackie) is for the Lexicon LXP1, with more to follow in the near future.

Pre-defined Tracksheets can be printed out in a matter of seconds, complete with your studio name, while Auto-Save helps you to regularly backup your work, without having to think about it. Saving after each pass worked best for me. Ultramix numbers each mix in increments; Mix 1, Mix 2, Mix 3 — this way you are always safe, should disaster strike. It also gives you the opportunity to go back a few mixes, if you feel you've taken a mix in the wrong direction.

Figure 5.



#	Fader Name	G
1	BD	▮
2	SN	▮
3	HH	▮
4	T1	▮
5	T2	▮
6	T3	▮
7	OH	▮
8	OH	▮
9	BV	▮
10	BV	▮
11	Fad 11	▮
12	Fad 12	▮
13	Fad 13	▮

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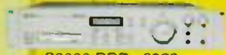
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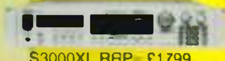
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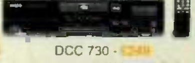
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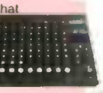
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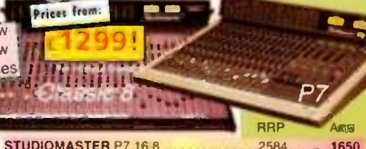
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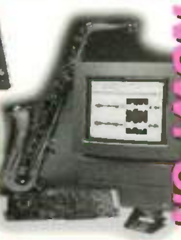

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THE MYSTERIES OF METERING

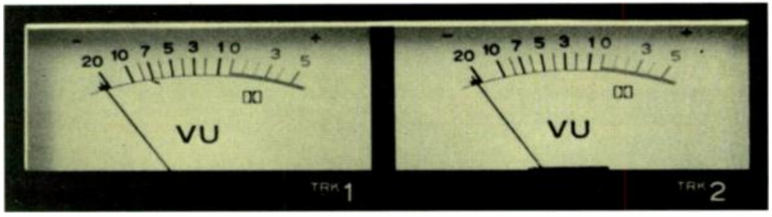
All mechanical meters are VU meters, all bargraph meters read peak levels — and both types will give the same reading if you feed in a test tone. Reasonable enough assumptions, but wrong on all counts, as PAUL WHITE explains.

The really wonderful thing about standards is that there are so many of them, and nowhere is this more evident than when you look at metering. This article examines the complicated issue of metering standards, but those unfamiliar with the general terminology of metering (eg. dBu, dbv, and the conventions of 'plus 4' and 'minus 10' operation) are advised to check out my article from *SOS* February 1994, 'dBs Explained', which should clarify many of the terms used here.

Tape machines have meters, mixers have meters and signal processors have meters, but what do they actually tell you? To take the last point first, most meters are designed to tell you when the piece of equipment to which they belong is being fed the correct signal level. Metering is vitally important, because all electronic devices have a lower signal limit (where the signal is so small it is overpowered by the circuit noise), and an upper limit where the signal reaches the unit's maximum level — whereupon clipping occurs. By using a meter properly, you can choose a signal level which is as high as possible without clipping, which will produce the best possible signal-to-noise ratio.

THE NEEDLE & THE DAMAGE DONE

The first type of meter built specifically for audio use was the VU meter, VU standing for Volume Units. The idea was to build a meter that would produce a reading similar to the loudness or volume level perceived by the listener. The way the human ear hears sound is that very short-duration sounds appear quieter than longer bursts of sound at the same level. Moving coil meters can be built to simulate this characteristic pretty well, because the inertia of the mechanism limits the speed at which the meter can respond to transients. Put a drum beat into a VU meter, and the meter will barely have begun its climb than the beat will have ended, and the meters start back down again.



VU meters measure the RMS (root mean square) value of the input voltage: a sine wave that alternates between plus and minus 1 Volt, peak to peak, will actually produce a reading on a voltmeter of 0.707 volts, which is what you'd get if the voltage in the sine wave were averaged out into a steady DC voltage. Because the dBu scale used for audio is also an RMS-based scale, steady sine waves or test tones should result in complete agreement between the VU value and the dBu value. For example, a mixer designed to operate at a nominal +4dBu should be outputting exactly +4dBu when the VU meters read 0dB, providing the input is a steady sine wave tone. One exception to this is to be found on some of the newer Mackie mixers, where they have decided to make the VU meter read 0VU for 0dBu. This means that you can use the mixer at either +4 or -10, and the meters will always tell you the *actual* signal level at the output — a practical and sensible option.

VU meters work fine with analogue tape, because analogue tape has quite a lot of headroom above its nominal operating level, during which the level of distortion increases progressively, unlike digital systems which merely clip. For this very reason, when used with digital systems, VU stands for Virtually Useless, because the peak levels produced by something like a drum kit could be driving the digital recorder into clipping while the VU meter is reading around -10dB or less.

One myth it is important to dispel is that only moving coil meters are VUs: you can also have bargraph VU meters, because the characteristics of a bargraph meter depend entirely on the circuitry driving them. A line of LEDs has no mechanical inertia — so in theory, they can be made to respond as fast or as slow as you like.

▶

[2]By the seventh day God had finished the work he had been doing; so on the seventh day he rested[c] from all his work.[e] [3]And God blessed the seventh day and made it holy,[f] because on it he rested from all the work of creating that he had done. *(Genesis)*

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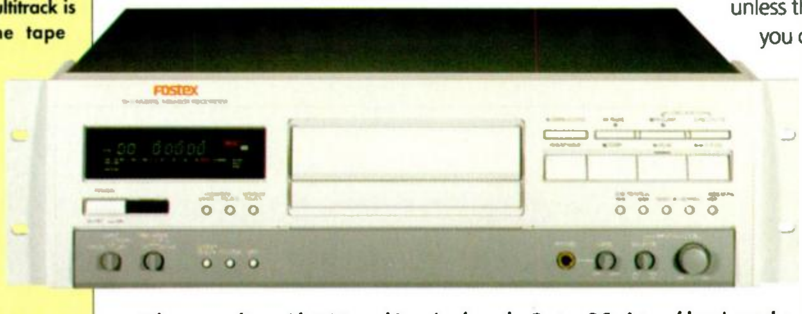
PPM

Peak Programme or PPM meters are more in keeping with the digital age, because they are designed to respond fast enough to show any signal peaks that might cause distortion. Some also incorporate a peak hold facility, where the highest peak levels are displayed for several seconds to make sure you don't miss them. However, they still don't read absolute peak values, because clipped peaks shorter than a millisecond or so are generally inaudible. Unlike the VU meter which reads an RMS or average value, the PPM reads the voltage between the negative and positive signal peaks — which explains why you don't see the same reading when a steady sine wave is fed into a VU meter and a PPM meter.

In fact, if you take an EBU standard PPM meter, it will read 8dB higher than a VU meter monitoring the same signal in the same system. This difference equates to the difference between a reading of 0.707 Volts and 2 Volts, the peak-to-peak reading you'd get from a +/- 1V sine wave. Of course, in real life, you can calibrate a meter to read anything you like, and the BBC have theirs calibrated so that a 0dBu sine wave reads +6dB on their PPMs. Some standards go one further, and rationalise that both types of meter should read the same, so some European and Scandinavian PPMs may read exactly the same as a VU meter for a steady sine wave input.

As if that wasn't confusing enough, you can also have moving-coil PPM meters. All you have to do is design the drive electronics to hold the peak level until the meter has had time to respond, and you've cracked it. The peaks may register a fraction late, but they'll still register.



When recording with DAT machines (such as the Fostex D5 pictured here), set the recording levels as high as you can without pushing the signal into clipping.

A CLIP ROUND THE EAR: SETTING LEVELS FOR DIGITAL RECORDING

The only golden rule when working with either DAT or digital multitrack is to use the meters on the tape machines themselves, and watch the peak levels, because in digital recording, it's the peak levels that count. The traditional notion of nominal operating levels isn't really relevant to digital, and whereas with analogue we aimed to get the meters bouncing around the 0dB point, with digital systems the only rule is: record the highest peak level you can, without allowing the machine to clip.

DIGITAL MULTITRACK

A potentially confusing situation arises when using analogue mixers with digital multitrack machines, because the meters on the mixer and multitrack don't match up, not even when you put in a steady state test tone. Even if your mixer has true PPM meters, the chances are that the levels still won't match. Why?

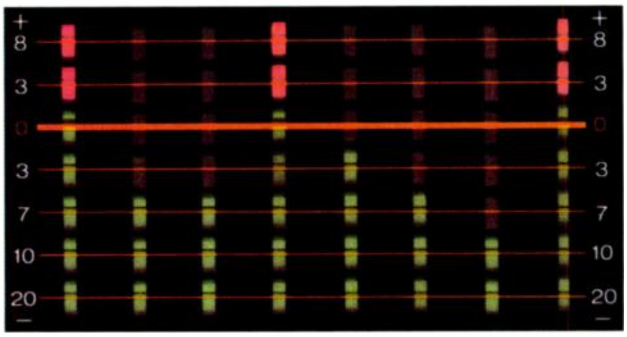
I've spoken to several different people about this, and they all come up with slightly different answers, but as a rule, digital multitracks are calibrated so that a 0dB test tone (measured either VU or PPM) coming out of a mixer will read several dBs below 0dB (clipping) on the digital multitrack. This makes a lot of sense, because mixers are designed to be driven 'into the red', and if you have a model with VU meters, you could be a lot further into the red than you imagine.

Digital machines won't tolerate any overload unless the period of clipping is so brief that you can't hear it, so calibrating the input electronics in this way is one way of helping the user stay out of trouble. It also means that the mixer can be driven a little way into the red, as normal, to make the most of the available headroom. Similarly, when the signal comes back from a digital tape recorder, it's often hotter than you expect, for exactly the same reasons. That means when you're mixing from Alesis ADAT or Tascam DA88, you might find your mixer once again flicking into the red, even though the meter readings on the multitrack are below 0dB.

On my desk, which has moving coil meters and is calibrated to run at +4dBu, a 0VU test tone reads around -15dB on my ADAT. Even allowing for the difference of 8dB between PPM and VU metering, this still leaves around 7dB of artificially introduced headroom. To put it another way, your digital machine won't clip until the mixer output exceeds +7dB PPM.

USE YOUR HEAD (ROOM)

When recording to analogue, the meters can only give you a rough guide as to what the right recording level should be, and if they're VU meters, the readings will be different for percussive material and music with more sustained sounds. Add this to the fact that modern tape can often accept a lot more level before saturating than older types, and it soon becomes apparent that the only way you can really define the limits is to make a few test recordings at different levels, to find at what point distortion becomes audible. After a little experience, you get used to what to expect from a VU meter with different types of input material, but as far as I'm concerned, reading a VU meter is still as much an art as it is a science! SOS



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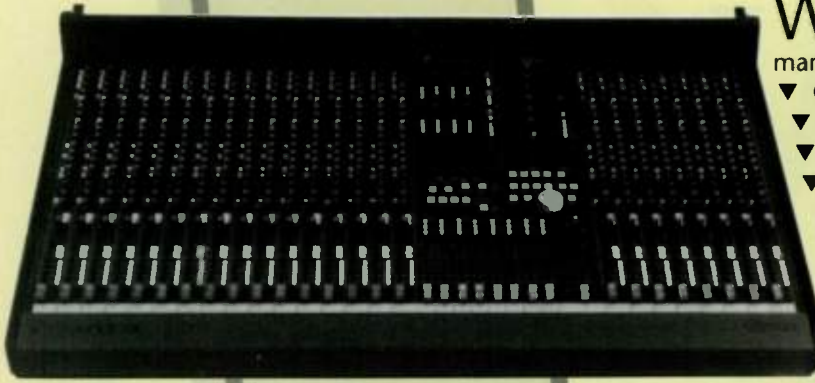
Soundcraft GHOST



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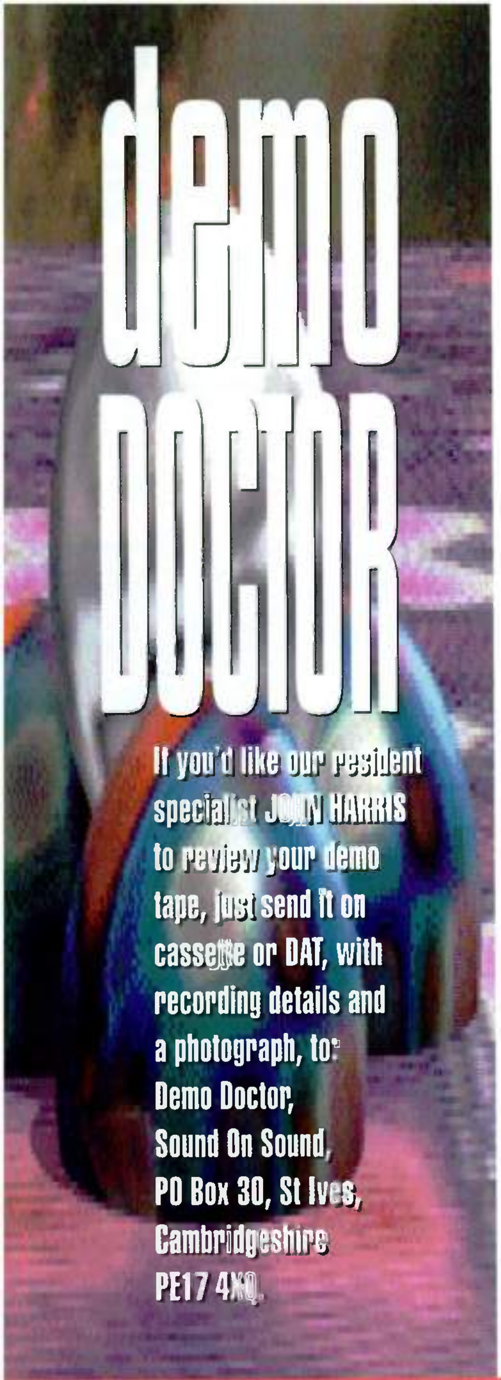

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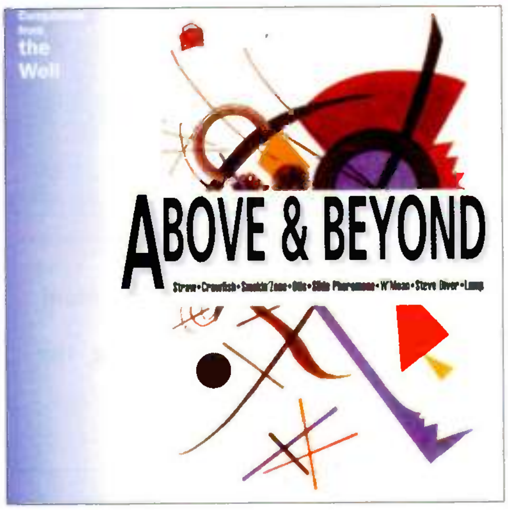

Recording Venue: Home
Recording Equipment: Apple Macintosh running Session 8 hardware and *Logic Audio*, Sony HR MP5 processor, Digitech valve effects processor, Sony DTC60ES DAT recorder, Soundcraft Spirit Rac Pac desk.

This anthology of the various artists of Hertfordshire's Well Studio is in the form of a CD compilation. Although the studio's proprietors Dave Patrick and Simon Burgess suffered 'the constraints of time' during these recordings, the quality is rather good. The opening track, 'Oh My God' is proof of that, with a well-balanced pop/rock mix based around a strummed acoustic. It's very interesting listening to this kind of energy pop, because of the similarities with many of the bands I've worked with. The arrangement is tight and well-constructed, the playing is of a good standard, but there's something in the production that just doesn't make the jump between demo and pro recording.

So what is this special something? In this case, it's the energy of the mix. Part of it is down to the performance: the guys aren't really quite letting their hair down. Yet it's also because the sound itself is a little controlled. Heavy compression and a little enhancement would make these mixes very punchy. Pat Collier's mixes of The Wonderstuff are a good example. They sound really crap, over-toppy and over-compressed on big monitors, but are really exciting on small speakers and the radio. Sometimes it's just a case of having the confidence to go for it. The closest example on this CD is 'These Days' by Otis.

Having said that, I think all the bands featured on this demo CD have had good value for money. Dave and Simon don't seem to impose a 'studio' sound on any of them, apart from a penchant for room reverb. The bass end sometimes lacks warmth, but is always tightly controlled. ☐

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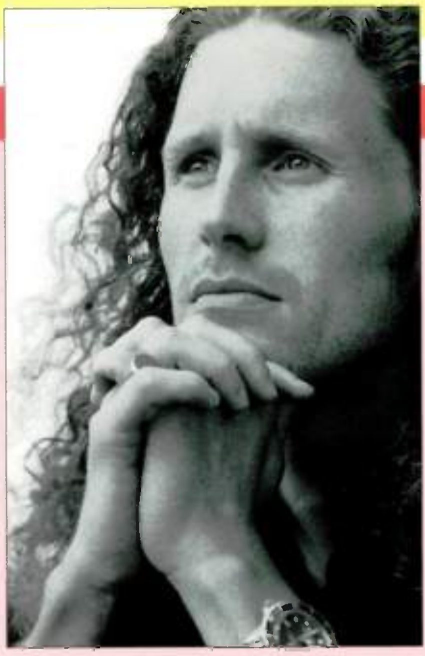
BEN LITTLEWOOD



Recording Venue: Home
Recording Equipment: Ensoniq ASR10 synth, Korg M1 synth, Boss DR550 drum machine, Yamaha Pro Mix 1 desk, Fostex RD8 ADAT, AKG C414 microphone, TLA valve DI box.

Ben is an Englishman living in Holland, where he is trying to get a recording/publishing deal. It seems that the instrumental backing was mixed first and the vocal added later on all the tracks. This is not that strange a thing to do, but inevitably you must be careful to leave space for the vocal in the mix.

This material is pretty standard MOR rock, with some nice chord voicings and choice of vocal reverb. The first song, for instance, is a ballad that builds from vocal and electric piano backing to a full production with strings, brass and a big drum sound. It wouldn't sound out of place on an American movie soundtrack. The mixing is strong, the arrangement sound, if unadventurous, and the vocal performance more than competent.

I preferred the second song, where the large production theme is carried on, but Ben is more adventurous with the drum sound at the start, using reverb to change it dramatically. On both songs, the vocal sound is really excellent. The combination of an AKG C414 and TLA valve preamp works a treat to produce a warm, fat vocal sound with no lack of presence. This sits well against the pad chords, occasional power chords and tightly controlled backing mix. And I have to say that I was impressed by the way Ben managed to make the vocals sit with this pre-mixed backing track. You can't spot the join, and the moulding of vocal to backing is achieved by his warm vocal sound and a choice of pre-delayed reverb.

top tape

This is a tape on which any of the three songs could be a hit single for an established artist. My only real criticism is that they are all ballads, and it would have been nice to hear Ben's fine rock voice on a more raunchy, upbeat song. ☐

LONSBORO

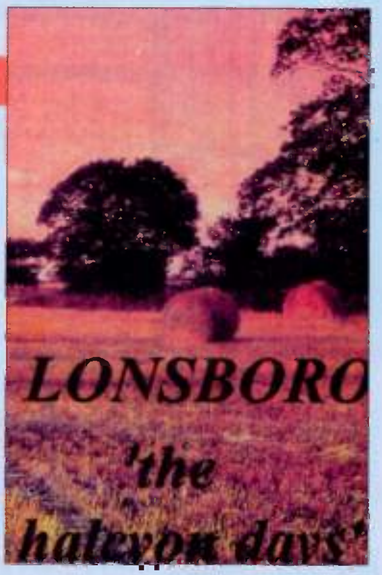
Recording Venue: Home
Recording Equipment: Atari 1040 STE running *Cubase v2.0*, Mackie 1202 desk, Akai S01 sampler.

Under the heading 'Restraints, Complaints and a Plea Bargain', Andrew Selby of Lonsboro talks a little about the frustrations of music technology. One of these is having to use the built-in effects in keyboard modules, and I think many readers will concur that they are a compromise when using a tapeless system for recording and mixing. Andrew actually gets around some of the difficulties by sampling drum sounds with the right effect from his Korg Workstation into his Akai. Yet it's often worth borrowing or hiring an effects unit for a mix — sometimes you can come to a reciprocal agreement with another recording fanatic. I would suggest that Andrew looks out for a delay, at least for his dance creations. In the race to upgrade to multi effects units by most PA's and studios, delay units can fetch up on the second-hand market pretty cheaply.

Despite his reservations, the recording quality is very good, made usually direct to cassette or DAT. For dance, in fact, the main problem with Andrew's mixes is that they sound squeaky-clean. Those hi hats need to be messed up by some phase, and the strings muddied and wrenched around by some good, old-fashioned flanging. He could try double-tracking the hats from the Atari, and introducing a slight delay on one track. However Andrew's ahead of me on this one, having tried it on a loop for the second composition. Here, some MIDI dropout resulted on the O1/W, already under pressure for notes from the rest of the piece. On the up side, the rolling wave sample on track one, with maximum release on the SO1 as a makeshift reverb was a good idea, but I couldn't quite hear enough of it.

In the hunt for some EQ variation in the general Korg sound, Andrew has sampled the Korg strings. Whether he used the Mackie in line with the sampler and added EQ that way is not made clear. Yet even simple desk EQ, with its sweep mid can be very effective when applied to the full bandwidth of synthesized strings — especially when used subtractively. For the main melody, the Korg dual delay effects parameter has also been well utilised, with a high feedback rate. But despite being rather inventive, the 'trance' nature of this piece requires some tempo-related delay effects to mess the sound up. Even a medium feedback used on delay can introduce phase effects too.

Other ways I might suggest to alter EQ would be to mike-up the sound through your hi-fi and sample that, or move the speaker into a live area of the house, like a bathroom, and sample the sounds from there via a microphone. If changes in EQ are what you are after, it doesn't even need to be a good quality mic! ☐

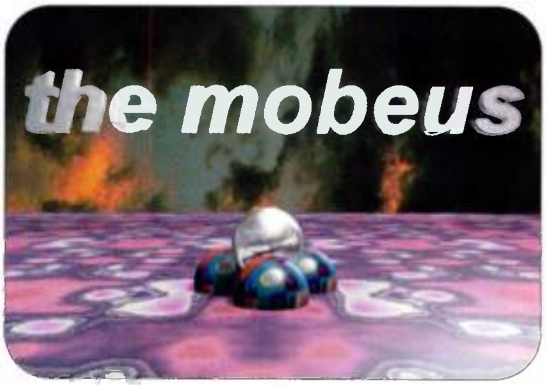


THE MOBEUS

Recording Venue: Home
Recording Equipment: Atari STe with 2Mb RAM running *Cubeat*, Emu Emax II sampler with 280Mb hard disk, ART Multiverb Alpha 2.0, ART Multiverb LT, Soundcraft Spirit Folio Si 18-2 mixing desk.

Describing themselves as 'hard trance with melodic lines' Martin Ayrton and Pascal Eloy are looking for something new in dance. Judging by the amount of demos we get which say the same thing, the scene would seem to be fragmenting as never before — but then the gregarious club culture provides plenty of avenues for experimentation and creative inspiration. At one end, there's the overtly mainstream, post-handbag house of 'Be As One' by Sasha and Maria, and at the other, the aggression of hardcore industrial techno.

The Mobeus lean more towards techno, but with melody and a good grasp of what keeps you dancing, especially on the economical 'Jazz Mag'. By far the best track and mix on the tape, it uses some standard rhythm techniques to keep things going — fours on the woolly kick drum, twangy synth loops and extensive use of filter modulation. The open hi-hats hint at the usual syncopated-four pattern, but are much more interesting, with unexpected broken eights coming as a relief. This mix holds the interest, developing as it runs from a soft looped fluting synth melody into a sort of synthesised didg sound. This is achieved with a growling low drone with sparks of opening filter — a nice touch that brings the mix closer to trance dance. Effects are well-chosen and used, although the duo only have limited gear. As you might expect, the higher sounds are treated to a dose of in-tempo delay, but there are also some nice backwards sounds using reverb.



Playing live 'with not a DAT machine in sight' the Mobeus have seen the future of dance music, I think, and are staking a claim in it. They also have a page set up on the internet called 'A Cyborg's Eye View'. Besides promoting themselves, this page also features other Blackpool and Lancashire bands, as well as a record shop, at: mayrton@cev.u-net.com. ☐

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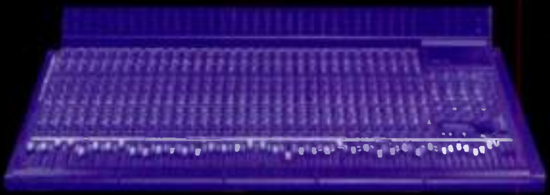

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Sibling Rivalry

ARP AXXE & LITTLE BROTHER

The mighty ARP were in existence for little more than 10 years, but introduced a sound which is as much a part of synth history as the Minimoog. DEREK JOHNSON rehabilitates two of the ARP clan's poor relations...

Think ARP, and most of you will think of the classic 2600 modular synth. Take a couple of 2600 oscillators, add a keyboard, and you get the Odyssey — another name to conjure with. Split the Odyssey in half, and you've got the Axxe, released in 1975 as an easy-to-use, affordable slice of ARP, and these days one of the few chances of getting the ARP sound into your setup for around £200.

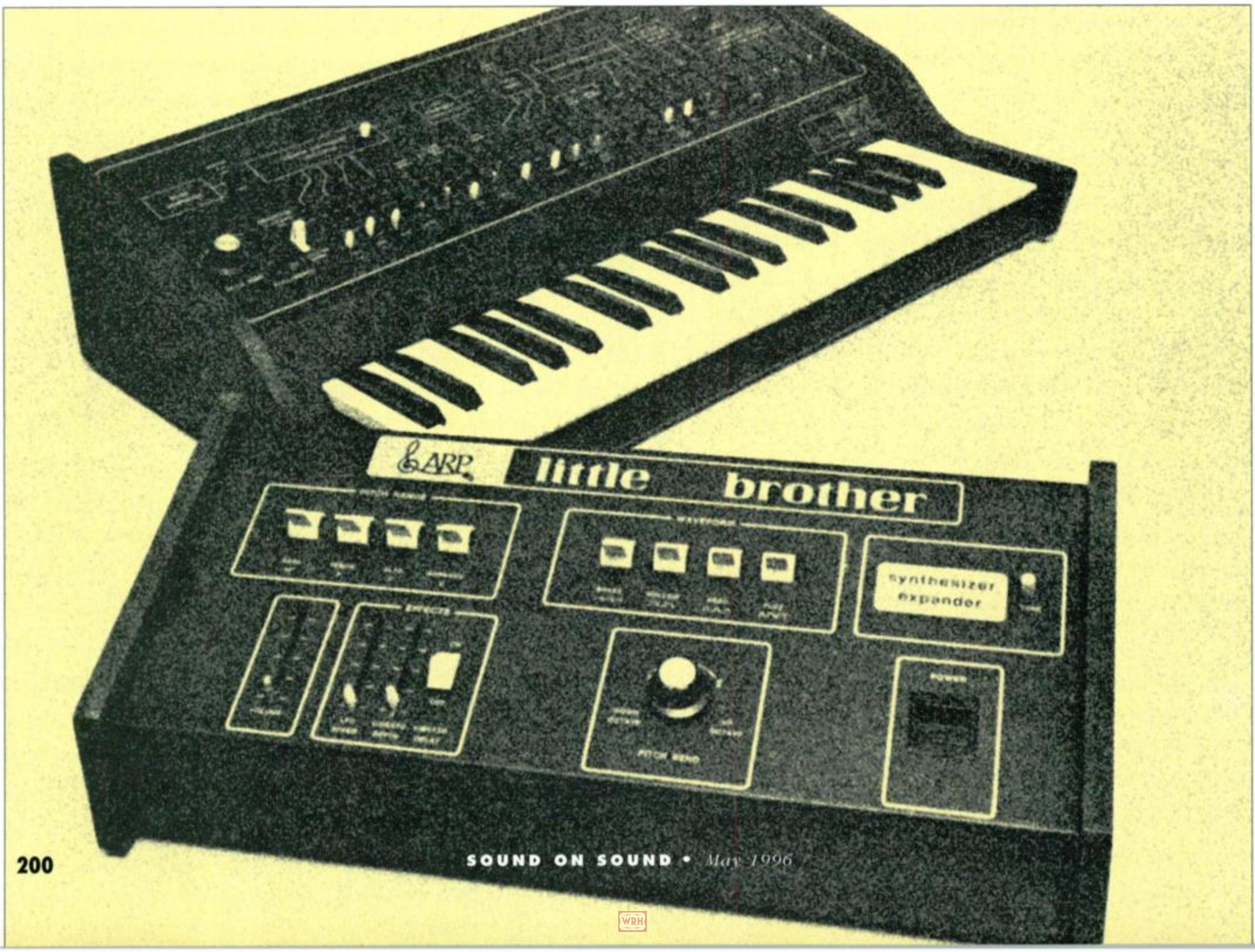
All these names — 2600, Odyssey and Axxe — should be familiar to the clued-up synthesist. But ARP also released a number of odd and often-overlooked instruments. One such was the Little Brother, a single-voice expander module designed to interface with and expand the sonic capabilities of other ARP synths. As it happened, the Little Brother became a popular pairing for the Axxe, increasing its oscillator power in the process, and the duo were often marketed to musicians as a package. Yet it's hard to say how many of these packages were sold, since Little Brothers practically never turn up on the second-hand market, unlike Axxes.

AN AXXE TO GRIND

Physically, the Axxe is of its time, equipped with a three-octave keyboard — standard for a mid-'70s monosynth — wooden end cheeks (walnut, actually), and a collection of 23 sliders and sundry switches. Depending on the vintage, the Axxe comes with either a cream or a black front panel (just like the Odyssey), and apparently there are also some variations in the front-panel screening colour. These differences don't seem to have any effect on the value of the instrument, however.

In common with many an entry-level monosynth, the Axxe comes with one of everything: one Voltage Controlled Oscillator, one Voltage Controlled Filter, one Low Frequency Oscillator and one Envelope Generator. This would normally be a formula for restricted sound-making potential, but this is an ARP instrument, and as such makes a little go a very long way!

The front panel layout is not entirely logical, but a screened graphic flowchart, and a refreshingly clear manual, help make sense of it. To the left, there's the first batch of oscillator controls: the VCO can be modulated by the LFO (sine and square wave options are available), the ADSR Envelope Generator, and Sample & Hold. Oddly, the VCO level sliders are placed in the Audio Mixer section, just before the VCF, rather than with all the other VCO controls, where you'd expect them to be. The Axxe's VCO offers triangle and square waveforms, plus noise — all with individual level sliders. A pulse width slider allows the ▶



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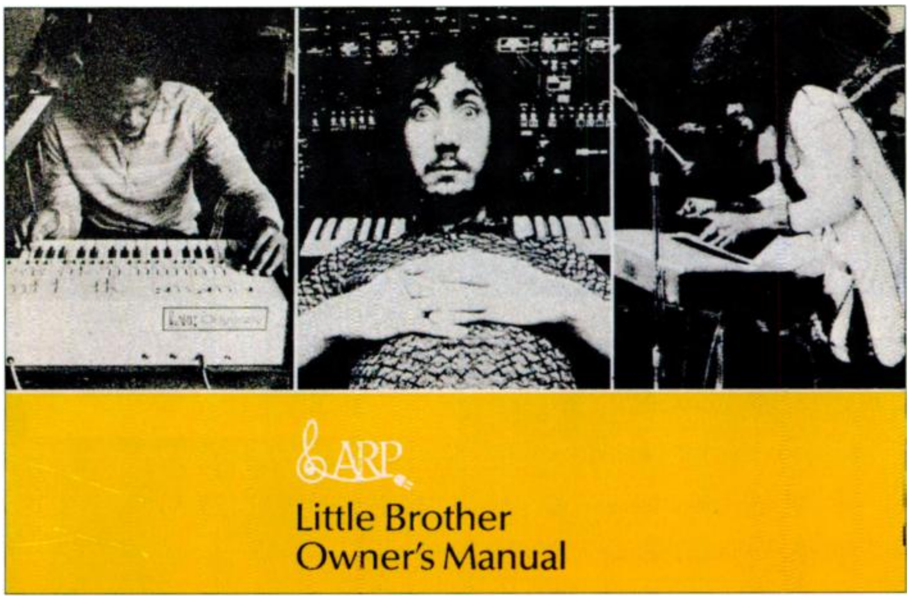

ARP

Little Brother
Owner's Manual

Pete Townsend was among the many ARP fans back in the '70s, as the promotional pics adorning the Little Brother's manual showed.

▶ square wave to behave like a variable pulse wave, and the pulse width has full modulation controls — from the LFO and EG.

The low-pass VCF comes with frequency and resonance controls, and can be driven into self-oscillation, producing a perfect sine wave. Once again, modulation sources include both the LFO and EG. In addition, a slider labelled Keyboard CV/SH/Pedal allows a choice of control options: the keyboard itself, sample & hold, and an external foot pedal. Interestingly, the foot pedal input can easily accommodate a control voltage input, allowing the Axxe's filter to be controlled from any device that can generate a CV. After the filter comes the VCA, which behaves as a volume control for the whole synth. There are two controls: VCA Gain allows signal to be output at all times, while the EG lets signal pass only when a key is pressed.

The Envelope Generator is a typical four-stage Attack, Decay, Sustain and Release device. Obviously, the EG does double duty for both the VCO and VCF, but the comprehensive controls allow you to make the best of this situation. Other controls include a Keyboard Repeat/Auto Repeat control, allowing notes to repeat at the LFO's rate with or without a key held down, a portamento slider, and the Sample & Hold switch. The final control on the front panel depends on which vintage of Axxe you're looking at: older machines will be equipped with a (non-centre detented) pitch-bend knob, while later machines — and possibly retrofitted older ones — come with an implementation of ARP's Proportional Pitch Control.

On most ARP instruments, PPC consists of three rubber pads: one each for pitch bend up and down, and one for modulation. The harder you press, the more effect is applied. This system didn't really catch on outside the company, and players were apparently divided as to its efficacy. With hindsight, it seems a good system, if a little hard on the old digits — the pads need quite a fierce pressing to get them to work. In practice, they offer something a little different from wheels and joysticks, and they always return to zero without getting lost or throwing the tuning out. Unfortunately, PPC-equipped Axxes only have one pad, with a switch for the three alternatives. This is rather less intuitive and useful than the full system.

Interfacing is a high point with ARP products, and the Axxe is no exception: ins and outs are provided for CV, gate and trigger, and there's also an audio input (which will take anything, including the Little Brother), along with the footpedal input.

HE AIN'T HEAVY...

The keyboard-free Little Brother was designed as an extra voice for any ARP synth. You need to connect the CV, Gate and Trigger outs from the Axxe to equivalent Ins on the Little Brother, and connect the audio out from the module to the audio in on the Axxe (note that the Little Brother also has its own audio input). The module could also be used in this way with any other (non-ARP) synth that has an audio input and the right standard of gate and CV inputs.

The Little Brother's spec is deceptively simple: four basic voices (Brass/triangle, Hollow/square, Reed/pulse and Fuzz/dynamic pulse), and four octave settings (16-, 8-, 4- and 2-foot) comprise the sound-making facilities on offer, plus a simple LFO with speed, depth and a delay switch, and a volume control. That really is it, although any combination of the eight voice switches can be used at once, for a bigger sound. However, plumb it into the Axxe, and the two become one. Your Axxe now has a fairly complex extra voice, and an extra LFO. This is because the Little Brother's LFO is provided with an output socket, which can be easily patched into the Axxe's footpedal socket, where it can be pressed into service modulating the Axxe's filter, totally independent of the Axxe's own LFO.

The simple, single-oscillator nature of the Axxe may make it slightly less versatile than other, more well-endowed analogue synths, but this same point also makes it a doddle to use. The manual is excellent: a novice working through the examples will find him/herself finishing a comprehensive course in analogue synthesis, and that's as valid to a newcomer to analogue synthesis in the digital '90s as it was back in the pre-MIDI '70s.

Not surprisingly, the Axxe produces a typical ARP sound. That means 'edgy and precise' rather than 'warm and fat', as with a typical Moog instrument. However, it is perfectly possible to extract a wide range of usable musical and abstract sounds from the Axxe. In the same way that Roland's essentially single-oscillator SH101 has become a legendary bass machine, so the Axxe can deliver the goods at the bottom end, with an uncluttered tone that doesn't dominate a track. And the Axxe does this without the advantage of a sub-oscillator, which the SH101 has. Lead lines are also a breeze — the (pink) noise generator is chunky, the filter quite cutting, and although generally a simple

MIDIFYING YOUR ARP

Using either or both of these units with MIDI is as simple as plugging leads into a MIDI-CV converter: common volt/octave CV and positive triggering is used (you don't strictly need to use the trigger input). Both can be used on one channel, since whichever one you connect to your MIDI-CV converter can simply have its connections daisy-chained to the other. One unwanted side effect of using an external device to control the Axxe is that the excellent sample & hold facilities are lost: they only function when played from the Axxe's own keyboard.

The up-side is that you have access to huge note range: the Axxe seems to track whatever you send to it, resulting in *really* low bass notes (count the clicks) and hypersonic highs, if you want them. Using a MIDI-CV interface also adds to the sonic abilities of the Axxe, since the the foot pedal input responds well to a control voltage. If your MIDI-to-CV interface can generate an extra CV, velocity (or any MIDI controller) from a keyboard could be used to open the filter in real time, and this would be recordable into a MIDI sequencer. It gets even better if this extra CV can be modulated by an LFO, as with Kenton's sophisticated Pro 4 MIDI-CV interface. Assign an LFO — and the Pro 4's LFOs are more complex than the Little Brother's — to an auxiliary CV output, and you have essentially added an extra, independent LFO to the Axxe/Little Brother combination.

WRH

machine, the Axxe allows complex sounds to be created quickly and easily.

ARPING ON

The Axxe doesn't pretend to be anything more than a single-oscillator synth, and within its own terms is an outstanding machine, but I will mention one or two negative points. First of all, the front-panel sliders: whilst these provide a great way to tweak sounds, in the Axxe's case, it's not easy to use them accurately: they're slightly stiff, and the calibration marks are not very helpful. Quickly recreating sounds on stage would not be easy to do with any certainty.

On older machines without PPC, you'll find getting the Axxe back into tune after using the pitchbend knob a bit of an adventure, and the same goes for the Little Brother. With the Little Brother, the solution is to turn the pitchbend knob full up or down (the shift in either direction is exactly one octave), tune the module with the master tuning control, move the pitchbend knob to the middle and fine-tune the 'Brother to the Axxe with the pitchbend knob.

It's not easy to price the Axxe and Little Brother, especially as the market seems to have hit a small trough. The accepted classics and trendy machines are still selling well, but there is more price variation within the 'second division' than there has been for several years. Bought separately, you could expect to pay up to £200 for the Axxe, depending on condition (a noted classic synth reseller recently had one for £179), and maybe £150 tops for the Little Brother. A Little Brother is unlikely to be spotted on its own in this country, and if you did spot a pair, they might set you back perhaps £350 to £400. That compares favourably to an Odyssey (which can run to £500), and gives you a taste of the sound of the desirable 2600 for a fraction of the price.

There is something very pleasing about this pair of synths: the classic ARP design and the sound make them irresistible. Both units come with excellent interfacing possibilities, making them work especially well with today's modern MIDI-CV interfaces. As a pair, they are a monster: this is one case where the whole is definitely worth more than the sum of the parts. SOS

ME & BABY BROTHER

In some ways, adding a Little Brother to the Axxe is much like using the SH101's sub-oscillator — its simple design allows it to fatten and fill out the Axxe's sound in a subtle manner, bringing the synth more into line with the sonic possibilities of, say, an Odyssey (albeit an Odyssey with just one EG). Due to its varied range and waveform settings, though, the LB's potential is much greater. Convincing multi-oscillator stacks can be created, and low (8' and 16') settings help to bring a growl to Axxe bass lines. Slightly detune the Little Brother's output, and you'll get an even richer effect.

The additional LFO really does expand the abstract sound possibilities: as I write, the Axxe and Little Brother are in the corner, producing a mellow, semi-random split octave meander, whilst the filter is independently howling slowly open and shut, producing a vibe reminiscent of the wind and wolves in the *Winter* section of Walter/Wendy Carlos' seminal *Sonic Seasonings* multi-record set. I've also had the duo produce startling recreations of '70s John Carpenter movie backdrops without even trying very hard. Complicated, moving sounds are easy, single EG notwithstanding.

On a technical level, I've found the tuning of both synths to be very stable. The occasional tweak after a few hours use is all they need, and there is none of the abominable tendency to drift that other classic synths show.

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KORG POLY 800 MKII (Built-in digital delay), VGC, home used only, £160 ☎ Dave 01723 354647 (Scarborough)

KORG T3 Home use only, with manuals etc, £800 ☎ Nick 0121 743 3796, 0378 187620

KORG T3 manuals, sound disks, mint condition, £850, Proteus 2 XR, £300, Roland D50, manuals, sound card, £430, Roland R5 drum machine, mint condition, manuals. All home use only ☎ Chris 01253 347189

KORG X2 Boxed, as new, extra disks, £1,050, also ESi32 sampler, extra disks, Folio Lite mixer, offers. All mint, home use only ☎ Paul 0121 313 1666 (day), 01283 820002 (eves)

KORG X3 Unused, boxed with manual and stand, £750 ☎ 01705 369794

KORG X3 mega workstation. As new, with stand, £800 for quick sale ☎ Dave 0115 932 6451.

KORG X3 4 months old, boxed, guaranteed, extra sounds (1000), mint condition, £800 (neg), Kawai 4R, mint condition, manuals, hardly used, bargain, £250 (neg). ☎ Dan (room 110) 0181 874 4772 evenings

KORG X3 with extra sounds disk, £750; Roland JV90 with 56-note poly expansion board, £950 ☎ Matthew 01303 238457.

KORG X3 workstation, one year old, VGC, manuals, boxed, five sound disks, plus two tier stand, £700. ☎ 01296 23017

KORG X5 synthesizer. Immaculate condition Boxed as new, also comes with padded keybag, £500. ☎ 01902 843256 (Wolverhampton).

KURZWEIL K2000 As new, £1,295; Roland Juno 106, £375, Atari 520, £75; Alesis Datadisk, £175; Toshiba Satellite Pro laptop with Emagic Logic and Midiman, £3,295 (£4,900 new) ☎ 01733 327008 evenings

KURZWEIL K2000 keyboard, version 3, 16Mb RAM, sample option board not fitted, 540Mb internal hard drive and fan kit fitted, excellent condition, still under warranty, £1,799 ☎ Robin 0171 794 3843

KURZWEIL K2500R/S 2Mb RAM, 8/32-layer channels, floppy/ROM updatable, £2850; K2000 V2.7 keyboard + fan/kit/0 RAM, includes 130, TB303 emulators £1,400, JV90 + 2 cards/24 poly, £780; Rocktron Hush 2CX noise eliminator, £170. ☎ Mark after 4pm 0113 246 9254.

MOOG PRODIGY Boxed, manual, superb condition, £300. ☎ Ian 0121 707 5624 eves.

MOOG PRODIGY Perfect condition, home use only, £275. First to see will buy. ☎ 01384 483990 (West Midlands).

MOOG SONIC SIX synth Fully serviced VGC Offers. ☎ 01623 645659

MOOG TAURUS 2 Bass pedal, analogue monophonic synthesizer. Great sounds. Original Moog vinyl carry bag and flightcase for pedal board, stand and power supply. All cables. Beautiful condition. ☎ 01535 645233.

NOVATION BASS STATION rackmount synthesizer. Very good condition. Contains original presets, £280 ono ☎ Mr Armstrong 0161 792 1431.

NOVATION BASS STATION Analogue keyboard with full MIDI spec, including real-time control over functions such as frequency and resonance etc. Is capable of extremely wide range of fat sounds including TB303 emulation. 1 year old, mint condition, boxed with manual. Forced to sell for financial reasons £200 ☎ Andy 01245 354777 (day), 0181 524 0224 (eves).

NOVATION BASS STATION and Boss DR660 Good condition Both boxed with manuals, £350 the pair or swap for Mackie 1202. ☎ Andy 01978 755703 (Wrexham).

NOVATION BASS STATION (keyboard version). Analogue, MIDI, excellent condition, £249, Roland U20 synthesizer, £400, Boss DR660 drum machine, £225; Philip Rees TS1 synchroniser, £75. ☎ 01933 678608.

NOVATION BASS STATION keyboard. Six months old Hardly used Excellent condition, £250. No offers. ☎ 01952 413975

NOVATION BASS STATION Rack sound module, two months home use only, all boxed with PSU and manuals, £260; Voce V3 organ module, as new, £750. ☎ 01787 311885 (Suffolk).

NOVATION BASS STATION Boxed as new, hardly used, £220 including courier delivery. ☎ Kez 01208 873649.

OBERHEIM MATRIX 1000 Perfect condition, hardly used, £300 ono; also a few Akai and Roland CD ROMs available, offers. ☎ Chris 0181 748 4631.

OBERHEIM OBX 8-voice MIDI retrofit serial 800806 (rare), swap for Roland JD800, Jupiter 8, Memory Moog or £900; Roland JX3P, £275; Phophet remote controller + f/c, £300 or WHY. Wanted: synthesizer circuit diagrams; Linndrum; Roland Promars; DC2, Elka synthex. ☎ 01202 734739.

PEAVEY DPM35E+ on-board sequencer sample player, effects, £650. ☎ 0171 587 9266 day, 01798 875592 eve/we (West Sussex)

QUASIMIDI TECHNOX 9 months old, £595, Yamaha TG100 sound module, £195 ☎ Ben 0161 445 6490 (Manchester).

ROLAND A80 master keyboard, 88-note hammer-weighted action, 4 MIDI outs, prog faders, buttons, multi zoning, full MIDI spec, VGC/wm, £725 inc UK delivery (no offers). ☎ 01698 286789.

ROLAND D5 9-part multi synth with arpeggiation, pitchbender, full MIDI. Never gigged, with PSU and manual, £200 ☎ Steve 0171 470 8822 (10-6) or 01322 288397 (eves) (Kent).

ROLAND D20 workstation, £400; Roland U20, couple of dodgy keys, £300; Boss DR550, still in box, £80. ☎ Glen 0378 641536. Can deliver to East London/Essex.

ROLAND D20 Excellent condition as home use only. Super LA sounds plus disk drive and 9-track sequencer, includes stand and all original manuals, £400. ☎ Jeremy 01959 533384.

ROLAND D50 plus 7 ROM cards, plus case Mint condition £495. ☎ 0121 753 0171.

ROLAND D50 £400; Korg Wavestation, £450; Yamaha TG55, £250; Ensoniq SQR, £250, Roland S220 with library, £250. ☎ Tony 0181 940 2235.

ROLAND D50 Boxed with manuals, £375. Logic 2.0, £200. Harman Kardon CD player, £120. ☎ 01829 732427.

ROLAND D50 synth, 8 ROM cards, hard case, classic synth, £350 Quick sale. ☎ 0191 287 1720 (Newcastle).

ROLAND D50 synthesizer, £450; Yamaha TG77 synth module, £550, Alesis Quadraverb GT effects unit, £250. All ono. ☎ 01792 466573.

ROLAND D70 with extra PCM and ROM card set. Comes with flightcase, full manuals and box, £750 ono. ☎ Dan 0121 557 9392 (home), 0121 633 4742 (work)

ROLAND D70 Mint condition, 76 velocity/aftertouch-sensitive keys. 30-note polyphonic. Filters, fully programmable. £650. Boxed. Manual. Possible swap Jupiter 6/8. ☎ Phil 01253 863471 after 5.30pm.

ROLAND D70 AND JV1080 D70 and flightcase, £550; JV1080, £850; MC50 sequencer and MRM software, £350; Alesis SR16, £125 ☎ Phil 01245 267572 (Chelmsford).

ROLAND E16 MIDI intelligent synthesizer keyboard for sale As new, unused £350 including books and foot pedal. ☎ 01782 542666

ROLAND JD800 with case and wave cards, £1,200 only, plus Korg Delta analogue synth and strings, £200. ☎ Richard 01865 711415 (eves)

ROLAND JD800 Boxed with manual, £1,295; Roland MC50 sequencer with various software, manuals etc. £300. ☎ 01203 305293.

ROLAND JUNO 6, 60, JX3P, D50, Korg D58, DW8000, DSS1, Poly 61, 61M, Casio CZ101, SZ1, CZ3000, 5000, DX5, DX7, TG55, TX216. ☎ Gordon 01670 523363.

ROLAND JUNO 6 Mint condition, flightcase, manuals, £185; Boss DR550 drum machine, MIDI, PSU, good condition, £90 No time wasters please. ☎ Rob 0802 813009 (Croydon).

ROLAND JUNO 60 programmable synthesizer, analogue, not used, absolutely mint condition, offers please or exchange WHY ☎ Gary 01536 417495.

ROLAND JUPITER 4 for sale. Please call me for details ☎ Alex 01752 789454.

ROLAND JUPITER 6 Classic MIDI analogue synth, excellent condition, well cared for, £650 ono. ☎ Andy 01482 448674 (Hull)

ROLAND JUPITER 6 As new, boxed with manual, MIDI compatible, insane range of sounds, £850 ono. ☎ Tony 01785 250395.

ROLAND JV880 Home use only, excellent condition, manual, £480; Tascam MM1, immaculate condition, MIDI mute, 20-channel, 4 aux, 4 Out, manual, £499. ☎ Pascal 0181 368 1877.

ROLAND JV1000 with vintage expansion board and case, £1,350; Yamaha TG500 module, £450. All includes boxes and manuals. All pristine condition. ☎ Steve 01207 270759.

ROLAND JX3P plus manuals, classic synthesizer, excellent condition, never gigged, £225 including courier delivery. ☎ Kez 01208 873649.

ROLAND JX3P 6-voice polysynth. Hard case Extra sounds. £250 ☎ Guy 0181 312 0656 (S E London).

ROLAND JX3P analogue synth, 6 -note polyphonic, MIDI, PG200, manuals. Good dance/techno sounds See SOS Feb '96, £200. Wanted: Casio FZ1 - p/ex? ☎ Andy 01524 62371 eves (Lancs).

ROLAND JX8P synth with flightcase, £350; Alesis Midiverb II, £90; Shure SM58 microphone (unused), £60; Dixon 3-tier A-frame stand, £70; Oberheim Cyclone arpeggiator, £80. ☎ Steve 01526 323468.

ROLAND JX10 analogue synth, digital oscillators, no tuning problems, lovely action, as new condition, boxed, manual, any trial, £550 ono. ☎ 01547 529196.

ROLAND MKS30 Planet-S analogue MIDI sound module with PG200 programmer. Very good condition, £450 ono. ☎ Glen 01932 567614 (M25).

ROLAND MKS70 SUPER JX synth module plus cartridge, £650; Yamaha Q2031 stereo 31-band graphic EQ, £250, Beyer M88 quality dynamic microphone, £150. ☎ Dave 01875 835380.

ROLAND M-OC1 Orchestral module, hardly used, mint condition, superb sounds, £400. No offers. ☎ Jerry 0402 227911 (Manchester).

ROLAND MT32 Multitimbral sound module. Good condition, £100 No offers. ☎ Bryan 01209 214147.

ROLAND MT32 £100. ☎ 01902 663191.

ROLAND SH101 monophonic synthesizer, boxed with modulation grip, ideal for collector, £250. ☎ 0114 248 2760 eves or answerphone in day.

ROLAND SH101 synth with Kenton Pro 2 MIDI to CV convertor. Both immaculate. £300 or will split; Korg Poly 800 MkII with built-in effects, £140. ☎ John 01728 648213 (Suffolk).

ROLAND SH101 Rare blue, modgrip, boxed, manual, PSU, VGC, £350, Bass Station rack, unused, £330; Powertran vocoder (analogue slag with 14 filters), £275; DJ70 sampler, £700 ono; Spirit Folio 18:2 mixer, £200. ☎ Ian 01432 266752 (Hereford).

ROLAND SH101 PSU, £225; Philip Rees MCV MIDI converter, mint, £125 or £300 the pair. No offers. ☎ Paul 0181 505 0637 (Essex).

ROLAND SH1000 monosynth, good condition, case, offers? ☎ Phil 0116 269 8410 (Leics), 0589 386162 mobile

ROLAND SUPER JX10 analogue master keyboard, 76 keys with split. Great MIDI spec, with case, £575 ono. Also wanted Roland system 100 unit 102. ☎ 0171 254 0825.

ROLAND TB303 bassline. Perfect working order, £600 ono; Roland TR606 analogue drum machine, £110 ono. ☎ Pat 0171 790 1640 in room G06. Leave message if unavailable.

ROLAND U20 in flightcase, VGC, £450 ono or swap WHY. ☎ Richard 0181 366 4108, e-mail Richard@snowcat.demon.co.uk.

ROLAND U20 multitimbral synth HQ, 61-note keyboard, VGC, with manual and percussion expansion board. Reluctant sale, £390 ono. ☎ John 01453 836647.

ROLAND U110 with two sound cards, £225; Alesis Microverb, £70; Roland PG1000 programmer, £175; Yamaha QX5 sequencer, £60 Will listen to offers. ☎ Pete 01438 365614 (Herts).

SEQUENTIAL CIRCUITS multitrack analogue, MIDI, 6-part multitimbral, 8 outputs, 5 octave velocity-sensitive keyboard, built-in sequencer, arpeggiator, rare synth. £400. ☎ 0141 638 6687.

SEQUENTIAL CIRCUITS PROPHET 600 Six-voice analogue programmable polysynth, 100 presets, MIDI, unison (12 oscillators), sequencer and arpeggiator. Both transmit MIDI. Manuals, factory preset tape. Flightcase. Mint condition. ☎ 01535 645233.

SEQUENTIAL PRO 1 Immaculate, £325; Korg Poly 6, £300; Roland JX8P, immculate, £375, Roland JD800 flightcase, £60. ☎ Gavin 0117 940 9306 (Bristol).

SEQUENTIAL PROPHET T8 £1,200 ono. ☎ Adam 0171 916 7415

SWAP MY ROLAND JD800 for your Emu ESi32. ☎ Brian 01707 323417 after 4pm.

TECHNICS KN2000 As new, boxed with manuals, £1,550 ono. ☎ 01964 624123.

TECHNICS SX-WSA1 Virtual acoustic modelling workstation, 6 months old, home use only, boxed with receipt plus manual plus new sounds. £1,750 (rrp £2,500). ☎ 0181 342 8137.

RECORDING

A STUDIO CLEAROUT Allen & Heath GL-2 mixer, £650; 2 x AKG C1000S mics, £125 each; Symetrix 511 noise reduction, £200; Dynamix 16:2 mixer, £200; Fostex 350 8:4:2 mixer, £250; Fostex GT10 4-track plus 5th sync track, £300; Ampex 456 2-inch tape, £25 per reel. ☎ John 0115 924 2088.

AKAI MG1214 multi-track and mixer. Immaculate condition with box, manual and 15 brand new tapes. One of the best machines around. £2,500 ☎ Michael 0181 802 0748.

AKAI MG14D 12-track analogue tape deck, c/w ML14 autolocator. Boxed, as new, home studio use only, £1,000. Buyer collects. ☎ 01225 743855 (Bath).

AKG 451 cardioid condenser microphone, £200; Soundtech ST200CL dual compressor/limiter, £100. ☎ Matt 0181 766 7931.

AKG C28B vintage valve microphone and power supply, beautiful sound on vocals or instruments, rare opportunity to purchase this classic sought-after original valve microphone, £1,000. Will consider p/exing or swapping outboard effects. ☎ Ricky 01482 448767

ALLEN & HEATH SABRE 24:16, 40 channels with EQ on mixdown, good condition, home use only, MIDI muting. Cost £9,000. Offers around £3,000. ☎ 01604 588618.

ALESIS BRC remote control unit, hardly used, £800 ono. ☎ 01483 277708.

ALESIS ADAT v3.06 650 hrs, very clean, + EDAC multicore, £1,200; JL Cooper data sync + connecting cables for ADAT, £100. ☎ 01993 850847.

ALESIS MIDIVERB I reverb unit, ex cond, home use only, PSU, £30. ☎ Chris 0121 308 0769 (Birmingham).

APPLE CD300E plus dual speed CD-ROM drive with all accs. Boxed as new. £150, great sounds, K2000 CD-ROM, 500Mb quality sounds, £100; A2D sampling CD, £35. All as new. ☎ Chris 01563 533965.

ART FXR multi-effects, R100 reverb, £100 each; Fostex XR7; Emu Morpheus; JBL Control 5s; Korg M3R, O5RW; NS10s; Tascam 8-track + mixer + Sony DAT. Offers. ☎ 01608 810095 (Oxford).

AUDIO TECHNICA 4-TRACK recorder, phantom power, swept mids, meter bridge, £400; Yamaha DX11, f/case, £250; Roland TR727, £150; Yamaha RX21L, £40. ☎ 01634 364507 (Kent).

BBE 362 MKII sonic maximiser, boxed, mint, manual etc, £145; Samson MPL1502 high spec mixing desk, boxed, mint, manual, under guarantee, £199. ☎ Dave 0191 372 2621 eves (Durham).

BEL BF20 stereo flanger chorus. Excellent condition. £450. Please call Ed. ☎ 0171 735 0798.

BEL 2-channel noise reduction, £40; two Accessit companders plus power supply, £35. ☎ Tony 01709 556274 (South Yorkshire).

BEYER DYNAMIC MODEL M260NC ribbon microphone. Perfect condition. Recently serviced with new capsule in case, £130. ☎ Ian 0117 939 3070 (Bristol).

BOSS RRV10 stereo digital reverb/delay; Boss RBD10 digital delay Both £65; Tascam 22-2 open reel mastering recorder, £295. All items in excellent condition. ☎ 01276 61746.

BOSS SE70 Multi-effects, £310; Emu Proteus 2, £300; Digitech Vocalist 2, £290; XR400 Midimate, £100; Isopatch 428 patchbay, £30; 1 pair Tannoy 12-inch dual concentric speakers, very large cabinets, £80. All very good condition. ☎ Alan 0151 339 1167.

DAT TAPES Box of ten high quality DATs, unused, £30. ☎ Mark 01934 863291.

DIGIDESIGN SESSION 8 + Cubase Audio PC. Unopened, £1,700; Roland M240, £400; Yamaha RM50 + 4 Simmons pads, £350; MIDI mixer automation, 16 VCAS + mutes in 1U rack, £350. 8U SKB wanted. ☎ 01268 559284.

ENSONIQ DP2 2 months old, bought in error, shop won't refund, transferrable warranty, still in box with receipt, cost £700, sell for £595; also Lexicon Alex cost over £350, sell for £239. ☎ Paul 01302 538304.

FOSTEX 812 mixer with MIDI mute. Home use only, box and manual. £475. ☎ 01904 782350 (York).

FOSTEX A8 with R8 head, mint reproduction, serviced, £400 inc 19-inch rack, ears and loom. Also Bokse SM9, SMPTE MIDI-sync inc remote, 1unit, does everything, £150. ☎ Steve 01525 237845

FOSTEX B16 multitrack recorder. Requires slight attention. £700 ono. ☎ 01625 434160.

FOSTEX B16 £900; Seck 18:8:2 desk, £450, or together, £1,300 including loom and tapes. ☎ 0385 786830 (Manchester)

FOSTEX B16 16-track recorder, just serviced with stand, loom and tapes, good condition, bargain, £1,250. ☎ Gordon 01908 606936.

FOSTEX DMT8 hard disk multitracker, as new, £1,230; JL Cooper PPS2 SMPTE/MIDI or FSK+ synchroniser, as new, £80. ☎ 01933 678608.

FOSTEX E16 £1,950 ono; Soundcraft Spirit 16:8:16:2, £1,100 ono; various reels available, looms included. ☎ Chris 01734 860973.

FOSTEX E16 Recently serviced, great condition, £1,650 ono. Call the Big Noise Recorders on ☎ 01222 233144

FOSTEX E16 plus stand and looms, £1,250; Proline Gold 16:8:16, £900; Cheetah MS6, £200; Yamaha FX500, £160; RFX MIDI pedal, £40; 60-way patchbay, £40, Roland SH1 plus flightcase, £300. Part exchange for Wavestation AD, 05RW or SY85. ☎ Tony 01322 863807

FOSTEX MODEL 80 8-track recorder. Home use only, £600. ☎ Andy 01992 560341

FOSTEX MTC1 synchroniser, controls R8 transport and recording functions from sequencer and converts SMPTE to MTC. Bought with tape machine but never used, £120. ☎ Quee 0131 667 6450.

FOSTEX R8 8-track recorder, home use only, very good condition, several reels of Ampex tape, offers. ☎ Chris 01883 625750.

FOSTEX R8 quarter-inch 8-track with remote and loom, very good condition, £900 ono; JL Cooper PPS100 SMPTE unit (it does a few other tricks), home use, boxed, £60. ☎ Stephen 01273 565754.

FOSTEX R8 8-track, looms and MTC1 sync-up unit, a number of Ampex tape reels, £850, boxed, manuals, home use only. ☎ Phil 01245 267572.

FOSTEX R8 with MTC interface, £700 ono; also Seck 12:8:2 mixer, £400 ono. Both very good condition, both for £1,000. ☎ Terry 0191 428 2403 (Tyneside).

FOSTEX R8 Virtually unused. Perfect condition. Boxed with manuals. Literally as good as new. £950. ☎ D Jones 0973 733843 anytime.

JBL CONTROL 1+ studio monitors, 150W each, new, unused, £250. ☎ John 01642 316096.

JBL CONTROL 10 speakers plus tripod stands, perfect condition, studio use only but perfect for live use, £1,300 new but will accept £800 ono. ☎ Chris 0181 748 4631.

LEXICON LXP15 £500, Valley PR2 with commander, leveller and DSP cards, £550. ☎ 01565 633790 (Cheshire).

LEXICON NUVERB card for Macintosh. Classic Lexicon sound. Very little used, about a year old. Make me an offer! I need over £800 to help puchase its replacement. We have no more Mac Nubus slots available! ☎ Bob 0171 477 8275 days, 01487 814227 evenings.

LINEARPHASE STUDIO MONITORS Three-way speakers. New, boxed, 240W per side, cost £1,000. Make me an offer. ☎ 0116 285 4547.

MCI CONSOLE JH416 24:16:2, P and G faders, quadraphonic equipped ☎ Stu 01745 360446.

MIXER FOR SALE 6:2 with auxiliary and mic sockets, mint condition, £100. ☎ T Powell 01327 341319 (Northampton).

MXR STEREO 15-band graphic equaliser, £124, Maxell 1" tapes, £12 each, Boss 6.2 mixer, mains powered, £149. ☎ 01865 776587

PEAVEY PARAMETRIC EQ 4-band, also Peavey 2-channel compressor, de-esser, GR50 Roland guitar synth. £350 the lot. Home use only, will split. ☎ Robb 01623 514777 or 0115 965 4121.

PRODUCTION TEAM with track record, equipment and clients waiting need studio space (London area), suitable for live bands. All situations considered ☎ Julian 0956 412209.

REVOX A77 (1104) for sale, excellent condition. With 17 reels Agfa PE tape ☎ Jeff 01709 863220

ROLAND M480 6U rackmount mixer, 48-channel or 24 stereo channels, 6 effects loops, very quiet mixer. £575; also Roland MT32, £155 ono. ☎ 0117 950 5297

SAMSON MIXPAD 9 £175, brand new ☎ Gordon 0171 265 1096

SECK 18:8:2 black mixing desk, £550-600; Fostex 450 mixing desk, £180-200; Yamaha DX7, £200. ☎ Richard 01784 453979 or 464373

SECK 18:8:2 mixer. Home use only. Good condition, £520 ☎ Andy 01992 560341 (Essex)

SONY DAT DTC690 Less than 100 hrs use, £330 ono; also 10 DAT tapes, 74 min, offers! ☎ 01224 861319 (Aberdeen).

SONY DTCD7 DAT with £120 optical In/Out lead, £90; Sony DAT microphone and adapter, all perfect condition, £475 ono. ☎ 0191 271 1456.

SONY DTC1000ES with HHB sample rate conversion, recent HHB service, low use, manuals, remote, excellent condition, £530 ono. ☎ Jon 01993 850847

SONY MZ1 portable minidisk recorder, as new with all original manuals and packaging etc. Includes 5 blank disks, £300 ono ☎ Andy 0151 336 6657.

SOUNDCRAFT SPIRIT FOLIO LITE mixer, excellent condition, brilliant sound, boxed with instructions, £180 ☎ Graham 01803 616348 (Torquay).

SOUNDCRAFT SPIRIT STUDIO 16:8:16, excellent condition and sound, home use only, boxed, £1,200 ono, LA Audio 32-channel silent MIDI mute processor, very creative tool, immaculate condition, £300 including insert loom, boxed. ☎ Stephen 01273 565754.

STUDIO MAGNETICS AR2400 2-inch 24-track tape machine. Fully professional with remote and 8 memory autolocate, hardly used, immaculate condition, similar in size and specifications to Atari MX80 £4,500 ☎ Ricky 01482 448767.

STUDIOMASTER 12:2 mixer, 5-band EQ, 2 aux, 1 aux foldback. Suit live band or home MIDI studio setup. Quick sale, £350 ono. ☎ 0116 267 7728.

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STUDIOMASTER CV2 16 8:2 mixer, MIDI mutes, 5-band EQ, pristine condition, £1,100 ono. ☎ Danny 01253 875085.

STUDIOMASTER DIAMOND CLUB 16 2 mixer, 3-band EQ etc. As new, £250. ☎ 01638 743052 (Cambs).

STUDIOMASTER MIXDOWN 16:8:16 mixing console plus Studiomaster IMP1 MIDI muting system. Both in A1 condition with manuals, £825; also Fostex R8 8-track recorder plus Fostex MPC1 sync unit, A1 condition with manuals, £825. ☎ Stuart 0973 367477

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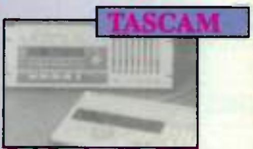

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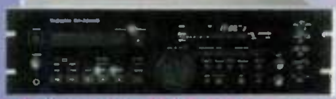

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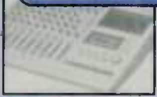

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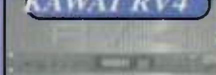

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TASCAM 238 Sym cassette 8-track recorder, home use only, great for vocals; plus Sansui 12:6 2 mixer Both boxed with manuals, £700 or will split. ☎ John 01728 648213

SAMPLERS

AKAI S900 £450, Yamaha TG100, £210; Yamaha V50 workstation, £250, Alesis Microverb 3, £90, Atari Stacey 4/40, no hard drive hence £150, mono monitor, £60. ☎ Carl 0161 795 5397.

AKAI S950 sampler. Many sounds with sampler. £850 ono. ☎ Rick 01323 491683.

AKAI S950 Still boxed, excellent condition with sound library, £675 ono. ☎ 0161 720 9816

AKAI S950 sampler, perfect condition with manual, £675 ☎ Matt 0161 225 8612

AKAI S950 with 2Mb upgrade and library. Home use only, box and manual, £600 ☎ 01904 782350 (York).

AKAI S950 sampler, £600, Steinberg Avalon version 2 sample editor (ST), £120; Teac model 2A 6.4 mixer, £90; Teac 3440, £150 (needs repair). ☎ Dave 01974 261318 (Dyfed).

AKAI S950 sampler, expanded memory, excellent condition, £790; Roland D50 synth, M-EX multi-tone expansion fitted, £475 ☎ Phil 0171 272 3726

AKAI S950 sampler, unexpanded, £750; Sony DTC77ES DAT + remote, £550 ono; single Technics SL1210 + flightcase, one year old, £320. All mint condition, boxed, home use only. ☎ 0115 979 1894.

AKAI S1000 2Mb, immaculate, £1,200; S950, £650, Kawai K4R, £310, Alesis Quadraverb Plus, £250; DR4 with 1Gb, £1,200, DD1000, £3,000, XE8, £100. ☎ 0181 759 8540

AKAI S2000 6Mb, plus Zip drive, 2 months old, still boxed, £1,095, Emu ESi32, 1 week old, new version, still boxed, £895 ☎ Mike 0181 891 1866

AKAI S2000 10Mb, CD-ROM drive, boxed, 4 months old, £1,300. ☎ Stephen 0181 767 5497.

AKAI S2000 sampler, latest model, boxed, new, cost £999, sell £650 ono. ☎ 0116 251 7165 (Leicester).

AKAI S2800 sampler with 8Mbs of memory and SCSI interface. VGC. Bedroom use only, £1,000. ☎ Phil 01455 282483 (South Leicestershire).

AKAI S3000 8Mb, £1,500; Akai CD3000, 8Mb, £1,200, Akai CD3000i, 8Mb, £1,500; 8Mb boards, £300; digital interface board, £250; SCSI board, £150; filter board, £300 ☎ David 0151 709 8811

AKAI S3000 for sale, 16Mb memory, SCSI, including 4U SKB flightcase. Immaculate condition, £1,600, Korb M1 plus extra sounds and software, £550; Emu Procussion, £200 ☎ Steve 01223 812808.

AKAI X7000 sampling keyboard with expanded memory, manual and sound library, good condition, £350 ☎ Darren 0181 541 0322 after 6pm.

DAC R4000 MKII 88Mb SyQuest drive c/w 6 carts (original brand SyQuest), filled with K2000 sounds All as new, £475 ono. ☎ Chris 01563 533965

EMU EMAX II TURBO sampling keyboard, 8Mb RAM, new hard drive Must be sold Make me an offer ☎ 01580 763094

EMU EMULATOR E3XP rack with loaded 430Mb internal hard disk. £1,750 ono. SyQuest 44Mb removable drive system with ten cartridges, £300 ono ☎ 0161 367 0016

EMU ESi32 sampler, excellent, powerful machine, boxed, as new, superb sound quality, £910 ☎ Graham 01234 217964.

EMU ESi32 2.10 software, unopened, instructions, features over 17 improvements, £20 or swap for 4U flightcase or copy Emu CD-ROM library ☎ Jason 0181 904 4782 (London).

ENSONIQ ASR10 sampler keyboard, 10Mb, internal effects, sounds excellent, 175-second sample time, boxed as new, quick sale, £1,295 Output expander, additional 6 outputs, £100. ☎ Graham 01803 616348.

ENSONIQ EPS 4 x memory, 8 output expander, SCSI interface, superb sound library, £650 ono, Steinberg Avalon sample editor, dongle, manuals, registered, £80. ☎ John 01603 787216.

COMPUTERS AND SOFTWARE

256K SIMMS Two available, upgrades a basic Atari 520STE to a full 1Mb for just £8. ☎ 01354 695239.

AMIGA 1200 6Mb RAM, 127Mb hard drive, MIDI interface, GVP Genlock. Excellent for multimedia, VGC (still boxed), £600. ☎ 01386 832391 (Worcester).

AMIGA A600 with 2Mb, £150; Patchmeister librarian plus Sequencer One plus Octomed, £50 ☎ Dave 0181 577 3868.

APPLE MACINTOSH PLUS with hard disk; Opcode MIDI interface and Music Shop sequencing software, £350. ☎ Martin 01453 833245.

ATARI 520 STE 1Mb, SM124 monitor, mastertracks, disks, books, etc. £100 ono. ☎ 01224 861319

ATARI 1040 STE plus hi-res monitor, Cubase and other software, £200; Yamaha TG100 tone module, £150. ☎ Mark 01903 249672.

ATARI 1040 STE Good condition with mouse and manuals, £100 ono ☎ 0181 688 1578 (evenings).

ATARI 1040 STFM 1Mb, SM124 monitor, mega hard disk; Roland/Steinberg 10-track sequencer, 2 x Roland modules, CM32L plus CM32P, LA and PCM sound modules. Complete home recording/music system. £475; also available Korg DW600 synth, £160. ☎ Mike 01908 320798.

ATARI FALCON 030 computer with 4Mb RAM, £450 ono. ☎ 01203 592061 (Coventry).

ATARI FALCON 4Mb, 65Mb HD, desktopper case, 14-inch SVGA monitor, £650 ono; Cubase Score (Atari), latest version, boxed, £350. Both for £950 ono. ☎ Stephen 0181 767 5497.

ATARI KEYBOARD Editor/librarian for Roland D70, £35; Roland D10, D20, D110, MT32, £35; Korg M1, £35; Kawai K1, K1 MkII, £35. All with manuals for Atari ST computers. ☎ 0181 883 4329 or 0860 482822

ATARI MEGA 4 SM125, Quantum 100Mb, Digidesign Sound Tools dig I/F, analogue I/F, Sound Designer II, Cubase 2 0, complete sequencing, hard disk recording package, £595 ono. ☎ Chris 01563 533965.

ATARI MEGA ST with Philips CM8833 colour monitor, £200 ono Wanted also Teac DX4D DBX unit. ☎ 01579 382850 (Callington).

ATARI ST 1Mb, just add SIMMs to expand to 4Mb. Sorry, no monitor (works with TV), but ideal back-up machine and still the best for music, good condition, £115 ono. No time wasters, please. ☎ 01354 695239.

ATARI ST COMPUTER with hi-res monitor, mouse, sequencing software, 05DD WP, all leads. Mint, £240; Korg DSS1 sampler keyboard, £495. Wanted: TR909, TB303, MC202, JD800, S2800. ☎ 01252 370550.

ATARI STE 1Mb, mouse plus software including Sequential, £100. ☎ Kez 01208 873649.

ATARI STE 2Mb, SM124 + ext drive, mouse, joystick etc, £149; Midex + 2 In/4 Out MIDI/SMPTE interface, £139; Proteus Synthworks editing software, £29; Atari Cuetrax/Studiomodule, £24. ☎ 0181 995 1977.

ATARI STE computer, 1Mb c/w Cubase, Notator, mono emulator, games, joystick, etc. Immac cond, complete MIDI sequencing system, only £160. ☎ Dave 0802 813008 or 01689 842016 (Croydon).

ATARI STE 1Mb, extra memory, monitor, Notator SL3.1, video manual, £280; Boss DR550 II, £100; Roland D10, £350. All boxed with manuals and many extras. ☎ Martin 01284 830047 (evenings).

ATARI STFM 1Mb, hi-res monitor, Cubase V2 1, £250; Akai SG01V vintage module, £260; Roland MDC1 dance module, £395; Yamaha DX21 synth, £175; Yamaha PSS51 keyboard, £125. ☎ Steve 01553 674076 (East Anglia).

SEQUENCERS

AKAI PROFESSIONAL ASQ10 99-track, 64 MIDI output channel sequencer, manuals, £400. ☎ Eddie 0181 643 6401.

ALESIS MMT8 8-track sequencer, easy to use Good condition. £65. ☎ 01454 772237 (Bristol)

ATARI SEQUENCING SETUP ST high-res monitor complete with leads etc. Was used in home studio with Cubase/Notator, £210. Can help with set up if required. ☎ 01884 257487

KAWAI Q55 16-track digital MIDI sequencer. Excellent condition with manual £150 ☎ Tanya 01787 881598

ROLAND MC50 sequencer inc power supply, manuals and MC500 MIDI file converter, £300 ovno ☎ 01795 537068 (eves).

ROLAND MC50 £350, manuals, home use only. ☎ Phil 01245 267572.

ROLAND MC50 sequencer with MIDI file converter, VGC, £275, Sony DTC750 DAT, £195; Kawai K1 keyboard, £195, Korg 05RW module, £295; Boss SE70 effects, £350. ☎ 01909 733049.

ROLAND MC500 MKII Mint condition, boxed with manuals, £450 ☎ Terry 0131 668 3366.

DRUM MACHINES

AKAI MPC60 MKII sampling drum machine and sequencer, fully expanded memory, very good condition, £850 ono. ☎ 01856 874785 anytime.

AKAI XE8 drum expander with 2 sound cards, £110 ovno. ☎ Bob 0171 385 3332 after 6pm.

ALESIS D4 drum module 16-bit stereo samples with twelve trigger inputs for external pads, plus four outputs. Immaculate condition, £230. ☎ Gurj 01462 678685 (Herts)

BOSS DR5502 drum machine, as new, £130; Korg DDD5 drum machine, £60; Alesis MMT8 sequencer, £130. Sorry, no offers. ☎ Paul 0973 472538/01494 526472 (Bucks).

BOSS DR660 drum machine. The best inc 808/909 sounds. Loadsa kits, reverb, chorus etc. Manual, PSU inc, excellent condition. £220. Can post if required. ☎ 01933 678608.

BOSS DR660 drum machine, £200 ono. Mint condition, manuals, PSU. Selling due to upgrade. ☎ Joe 0171 258 7286.

BOSS DR660 Top machine inc 808 + 909 kits, MIDI, easy to use sequencer, boxed with manual + PSU, £260 ono. Wanted: Atari monitor, prefer SM144. ☎ 01858 575353 anytime

CASIO RZ1 drum machine with separate outputs Also can sample four sounds which can be used with drum machine sequencer Looking for quick sale hence £70. ☎ Paul 0956 432965.

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ROLAND 626, R5, R8, TR77, Yamaha RX15, 17, 21. ☎ Gordon 01670 523363.

ROLAND R8 drums, boxed with manual and PSU, excellent condition with 808 and 909 sound cards. £300. ☎ Rich 0117 949 2989 (Bristol).

ROLAND R70 drum machine, manual, boxed, mint, never gigged, TR808 sounds onboard, £375 ono; Teac 6:2 mixer, offers invited. ☎ Dave 01782 304140 (Stoke On Trent).

ROLAND TR505 Good condition with manual, £70 ono. ☎ Darren 01328 856055.

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SEQUENTIAL DRUMTRAX analogue drums, excellent condition, comes with additional rare kick and tom sound chips plus all manuals. First £200 secures. ☎ Lee 0831 262589 or 01274 602621 after 7pm

SOUNDMASTER SR88 analogue drum machine, classic machine from the early 1980s, works in step time, features include trigger outputs, tom control and tempo control, and foot switch. Very good condition, £40 ono, or swap for something musical. ☎ Mr Mullin 0161 723 5523.

YAMAHA RX7 drum machine, classic, full MIDI, perfect cond, £195 ono. ☎ Meredith 0374 233537.

YAMAHA RX17 Perfect working order with manuals, £90. ☎ 01483 724768.

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KORG M1 2000 excellent, original programme and combi voices for Atari or Alesis data disk. £30 ono. ☎ Daniel 0113 294 1407, (Leeds).

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KORG WAVESTATION voice crystal number 3 ROM card. Good mixture of sounds. £25. ☎ Dave 01642 459355 after 5pm.

MARSHALL 50W guitar amp, (combo), channel switching, spring reverb, VGC, with cover and pedal, £149; Hughes & Kettner 'Red Box MkIII' speaker simulator, £49. ☎ Dave 0191 372 2621.

MARSHALL 8015 keyboard combo, 4-channel, EQ, 15-inch speaker, 150 Watts, £300. ☎ 0171 587 9266 day, 01798 875592 eves/we (West Sussex).

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SKB SEMI FLIGHTCASE 8U, £60 ono. ☎ Sam 0121 778 3986.

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TASCAM 434 4-track, £425; Roland R70 rhyhm composer, £300; Alesis MMT8 sequencer, £110, Microverb 2, £75; Viscount RD70 MIDI filer, £150. ☎ Tony 01222 236036.

YAMAHA BC1 BREATH CONTROLLER Works with CS01 analogue, all FM synths, any instrument with a breath controller input or Anatek's Wind Machine, good condition with snazzy silver pouch and instruction sheet, £25. ☎ 01354 695239.

YAMAHA PSS780 MIDI keyboard, stand, PSU, tutorial package with audio/video cassettes, MIDI leads. Replay PC sound card/MIDI interface, leads, Atari STFM, IBM PC compatible, offers. ☎ 01480 406415 evenings.

YAMAHA WT11 wind synth. 1 month old including Patchman patches. £200. ☎ Martin 01785 817016.

WANTED

APPLE MAC SOFTWARE wanted. Logic Audio, Cubase (Audio), vision etc. Must be able to work on Power Macs. ☎ Nad 01922 23329

APPLE MACINTOSH QUADRA 950 Any configuration considered, cash waiting, sensible prices please. ☎ 01604 588618.

ART SGE II guitar FX processor; Fostex DCM100 MIDI line mixer (or equivalent); Roland U110 PCM cards; Korg M1 manual. Last item urgent! ☎ Kevin 01242 230489.

ATARI SM144 high resolution monitor wanted. Will consider Atari SM124. ☎ Ricky 01482 448767.

BOSS MICRORACK RAD10 19-inch rack shelf (2 required) or BMR5 micro rack unit. Also rack ears for Boss DE200 delay. Cash waiting for right price. ☎ 01354 695239.

BSS DPR402 noisegate or Drawmer noisegate wanted. Cash waiting. ☎ 0181 883 4329 or 0860 482822.

CASIO FZ10M rackmount sampler. ☎ John 01269 597631 (South Wales).

CHEETAH MS6, MS800, Roland PG800, Chase Bit 99 (white), Korg Poly 6. All must be ex cond, also Roland 303, 909 etc. ☎ Gordon 01670 523363.

DIAMOND heavy duty fretsaw machine wanted. Cash or p/x Yamaha SY99 complete with disks, instruction books etc and cash adjustment or sell for £1,000. No offers. ☎ 01485 540536 (Norfolk).

DIGITECH MIDI VOCALIST and Lexicon PCM70 or 80. Cash waiting. ☎ Paul 01302 538304.

DIGITECH VOCALIST 2 wanted. Cash waiting. ☎ Chris 01494 437093.

EMU EMAX II RAM wanted or exchange my Emax II for your Emax II Turbo and I'll pay up to £250 cash difference. ☎ Bruce 0181 342 9316.

ENSONIQ ASR10 Will swap EPS 16+ w/2Mb upgrade and Roland A80 Promaster keyboard. Also EPS 16+ SCSI, Waveboy disks, updated OS etc. ☎ Rohan 01698 286789.

FALCON/CUBASE AUDIO setup, Atari or C-Lab. ☎ 0141 638 6687.

GERMAN MUSICIAN pays for TB303, £500; TR808, £250; TR808 MIDI £350; TR909 £500; SH101, £150; MC202, £150. Call or fax me. ☎ 0049 5152 61676, Fax: 0049 5152 8179.

KORG WAVESTATION A/D sounds. Vocoder effects etc. Atari ST format or card. Have most sounds so could swap. ☎ Rod 01772 752368 (Preston).

KORG WAVESTATION PCM cards and Korg MCR03 cards, Soundblaster AWE32, Yamaha DB50XG. ☎ Dave 01745 360446.

KRAFTWERK INSPIRED electronic percussionist 18-20 required for electronic band. Must have own kit. Demo to: Synthlead, 17 Inchkeith Place, Springboig, Glasgow, Scotland, G32 0BS. (Glasgow area only).

MEMORY MOOG wanted (or Memory Moog Plus). ☎ 01535 645233.

MIDI WIND CONTROLLER WX7/11. Must be well looked after and in good condition. ☎ Ian 0117 939 3070 (Bristol).

MOOG SOURCE wanted. Must be in very good condition. Will pay £600 cash. ☎ Jeff 0191 285 0818.

NOTATOR PROGRAMME for Atari STE. ☎ Marcus 0121 449 0916.

ROLAND A80 mother keyboard controller in good condition wanted. ☎ Dave 01482 472470.

ROLAND D50 with PG1000 and cards, manuals etc. Cash waiting. ☎ Ian 01582 599995.

ROLAND JUPITER 6 wanted. Will pay £600. ☎ Ian 01432 266752 anytime (Hereford)

ROLAND JX8P WANTED with PG800 programmer. Cash waiting for right price. ☎ 01843 587098.

ROLAND MKS50 synthrack with PG300 programmer, MSQ700 sequencer, S220 sampler, Simmons III drum synth, MC202. Contact Andrew Slegt, 2 Spring Crescent, Widcombe, Bath, BA2 4HZ.

ROLAND PC200 MKII or Goldstar GMK49 controller, MIDI keyboard, also Zoom 9120 effects unit plus 6 unit SKB rack. All must be in good condition. ☎ Wayne 01782 630238.

ROLAND PROGRAMMER for D110. Manuals essential. Details and price to Dave. ☎ 01443 450758.

ROLAND S550 SCSI upgrade and S550 CD ROMs. Call and quote price. ☎ 01354 695239.

ROLAND TB303 TR909, SH101, MC202, Akai S2800, S100, JD800, M1, Atari mono monitor, DAT, any other samplers, synths, etc considered. Prophecy, Trinity. No dealers/inflated prices. ☎ 01276 31010.

ROLAND TB303; TR909; TR808, MC202; OSCar duplicate manuals, £10 each. SH101; TR606; TR505, HRT6; JX3P; Kawai K1; Yamaha CS70M, CS5 manuals, £5 each. ☎ 0114 248 2760 evenings.

ROLAND TR707 drum machine wanted. ☎ Lee 0161 723 5523.

SIMMONS SDS drums (Roland Octopad II, SPD8, Emu E-Drums considered). Swap for Roland JX8P synth or pay cash. Must be working condition. Require Sequential Drumtraks manual, £30 paid (or copy). ☎ 01526 323468.

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2 Tracks

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£599
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SCOOP
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£499
NEW BOXED

NEW, USED & EX DEMO

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Denon DCD715	£ 234	Sony DTCA8	£ 849
Denon DN770R	£ 530	Sony MDS302	£ 479
Denon RMK	£ 47	Sony MZR3	£ 399
Fostex D10	£ 2,697	Sony TCDD10 PRO	£ 2,899
Fostex D5	£ 875	Sony TCDD7	£ 439
Marantz PMD320	£ 434	Sony WMD6C	£ 299
Marantz PMD321	£ 511	Tascam 102MKII	£ 279
Marantz PMD502	£ 499	Tascam 112MK2	£ 599
Marantz PMD510	£ 704	Tascam 202MK2	£ 349
PanasonicSV3700	£ 1,644	Tascam CD401MKII	£ 739
PanasonicSV4100	£ 2,579	Tascam DA20	£ 679
Philips DCC170	£ 249	Tascam DA30MKII	£ 999
Philips DCC951	£ 280	Tascam DA60	£ 4,463
Revox B77	£ 2,499	Tascam DAP1	£ 1,399
Sony DTC1000ES	£ 549	Tascam SYD6	£ 584
Sony DTC60 ES	£ 569	TEAC V375	£ 99
Sony DTC690	£ 469	TEAC W416	£ 90

Multitracks

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INC. 1GIG HD

8-track stand-along random access recorder that features jog/shuttle, MIDI Machine Control and MIDI Time Code, S/PDIF as standard as well as 4-in, 8-out balanced connectors. Options include ADAT digital interface, SCSI port for computer hook-up, sync card for additional units, 4 extra analog ins etc..

NEW
"DARWIN"
£3199
INC. 1GIG HD

TASCAM 238S + SPIRIT Folio Rac Pac

INCLUDES LOOMS

The 238S is based on the transport of the £1000 plus 122 pro mastering machine and with the addition of the ground breaking Dolby S noise reduction gives superb recordings time after time. Other features include record all 8 tracks at once, shuttle control, large bar-graph meters, digital counters, auto punch in/out Soundcraft's Rac Pac makes the ideal partner for the 238S and offers a highly flexible all-in-one rackmountable 8 track recording package

With up to 28 inputs at mixdown, 3 band mid-sweep EQ, great audio performance, four true sub-groups and 6 auxiliary sends, the Rac Pac can cope with a wide range of recording envionments and has plenty of room for expansion. Our offer also includes 2X 8-way looms Very limited stocks - order now to avoid disappointment !

PRICE CRASH
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£1599
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Akai IB110D	£ 199	Fostex R8	£ 699
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PHILLIPS
DCC951

18 BIT

DCC now has 18 bit sampling at 48 kHz with advanced data reduction techniques The DCC951 is a full-size machine in a sturdily built case. It features Philips new Turbo drive high speed mechanism, title recording, full indexing & location facilities. SP/DIF ins and outs, full remote, plays analog cassettes with Dolby B & C noise reduction, auto-level optimisation and microphone input. Portable DCC170 also available at £249. Unbelievable deals exclusive to Turnkey. Sound-on-Sound say

"Digital compression makes little or no subjective difference to the recorded result. In fact recordings sound frighteningly similar to DAT" .... Check one out today!

RRP £349
£249
NEW BOXED

FOSTEX
D5

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Exclusive scoop purchase on a genuine professional machine brings quality within reach of the rest of us. Now that Sony's domestic machines are discontinued, this is one of the cheapest DATs around, but just look at the spec list. 19" rackmount, 44.1 kHz analog recording SCMS-free operation, error detection indicators, balanced ins and outs on XLRs, AES/EBu professional digital connections as well as all the usual DAT features from the makers of the indsutry standard D20B timecode machine. Huge reduction

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£869
NEW BOXED

DIGICON
SCMS STRIPPER

FACTORY DIRECT

Only £99 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 optical 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.

SPECIAL
£129
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XRI SYSTEMS

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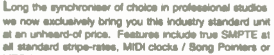
RRP £299
£159
NEW BOXED



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NEW
DR-16
£3699
INC. 1GIG HD

P. A.

ELECTRO VOICE
SX200

300 watts

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RRP £1399
£999
NEW BOXED

SPIRIT
Powerstation PA mixer

R.R.P. £1299, £CALL

Another winner from Soundcraft, their first entry into the powered mixer market is sure to be a success Based around the well-known Folio 12, and also featuring a 2x300w amplifier, dual 7-band graphic and a built-in Lexicon Alex! Check out these amazing package deals .

Powerstation + 2 x JBL MR825	£1749
Powerstation + 2 x Peavey Hisys2	£1669
Powerstation + 2 x JBL M330	£1999
Powerstation + 2 x Bose 802	£2299

Add 4 SM58s + stands, spkr stands and cables for £499

Mixers

SOUNDCRAFT SPIRIT STUDIO

OUTSTANDING OFFER on 16 or 24 CHANNEL DESKS

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Just take a look at the spec · 16 or 24 channels (inline providing 40 or 56 inputs at mixdown), legendary EQ, (4 bands with 2 sweepable mids and shelving high and low band), patented IC pre-amps with individually switchable phantom powering, 6 true auxiliaries etc. etc.

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With top artists like M people and Portishead joining the impressive list of users, there's no reason to miss this unrepeatable opportunity to invest in on one of the few pieces of music technology that has really made a difference.

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FOLIO SX
Multitrack recording console

BRAND NEW DESIGN

Brand new mixer from the superb Soundcraft Spirit range - call for details.

NEW PRODUCT
£699
NEW BOXED

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Small mixers by Soundcraft

AVAILABLE IN 10 or 12 CHANNELS

3 band mid-sweep EQ, 2 auxiliaries (1 switchable pre/post fade) professional grade Neutrik connectors, superb clean signal path and compactness make them unbeatable value for money, phone for unbeatable price!

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AKG CK91	£ 139	Beyer M88TG	£ 319
AKG D112	£ 217	Beyer MC740	£ 1,174
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AKG WMS100HTCV	£ 880	Groove MD2	£ 1,146
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AKG WMS100PTG	£ 939	Neuman TLM170	£ 1,825
AKG WMS100PTP	£ 939	Neuman TLM170R	£ 2,028
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Audio Tech AT4033	£ 499	Senheiser 531	£ 149
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AKG C12VR	£ 2,575
AKG C3000	£ 285
AKG C401B	£ 76
AKG C401PP	£ 112
AKG C402B	£ 93
AKG C402PP	£ 116
AKG C407B	£ 78
AKG C407PP	£ 118
AKG C408B	£ 116
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Bose 502P	£ 1,399	Fender SR8520P	£ 699
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Bose 802C	£ 385	JBL EON15	£ 999
C Audio RA2001	£ 999	JBL M330MKII EACH	£ 704
C Audio RA3001	£ 1,299	JBL M350MKII EACH	£ 821
C Audio ST400	£ 699	JBL M355MK2 EACH	£ 763
Dynamix DPA400	£ 199	JBL MR825	£ 680
Dynamix Splr Control	£ 19	JBL SR4715A	£ 1,244
EV S200X	£ 999	JBL SR4726A	£ 1,526
EV S200XEQ	£ 369	JBL SR4733A	£ 2,032
Fender 110ELC	£ 129	Peavey CS1000X	£ 799
Fender 112ELC	£ 146	Peavey CS400X	£ 569
Fender 115ELC	£ 166	Peavey CS800X	£ 649
Fender 8520PD	£ 808	Peavey EUROS1PM	£ 279
Fender ESPL3001	£ 319	Peavey EUROSY1M	£ 180
Fender ESPL3002	£ 499	Peavey EUROSYS1	£ 125
Fender ESPL3801	£ 329	Peavey EUROSYS1PM	£ 295
Fender ESPL3802	£ 550	Peavey HiSys 2XT	£ 350
Fender LX1504	£ 289	Peavey HISYS4XT	£ 550
Fender LX1506	£ 349	Sabine FBX 1802	£ 1,523
Fender MX5200	£ 367	Sabine FBX 901	£ 670
Fender MX5216	£ 1,820	Sabine SL 610	£ 335
Fender MX5224	£ 2,349	Sabine SM 610	£ 387
Fender MX5232	£ 2,995	Samson S6	£ 429
Fender PCN2	£ 375	Samson S8	£ 549
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Fender PX2208D	£ 1,409	Stmatr Drmnd PRO12:2	£ 586
Fender PX2212D	£ 1,585	Stmatr Drmnd PRO16:4:2	£ 1,005
Fender PX2216D	£ 1,738	Stmatr Drmnd PRO24:4:2	£ 1,174
Fender SIDEKICK	£ 99	Stmatr Drmnd PRO8:2	£ 451
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Fender SPL2915	£ 737	Yamaha P1500	£ 499
Fender SPL6000	£ 575	Yamaha P2500	£ 599
Fender SPL9000	£ 751	Yamaha P3500	£ 699
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Fender SR4150	£ 379	Yamaha YS215E	£ 189

FOLIO RACPAC
Rack mixers by Soundcraft

NEW LOW PRICE

This excellent addition to the Folio range is a sure-fire winner combining superb sound quality with a fantastic list of features . 3 Band EQ with Mid sweep, 6 auxiliary sends, high-pass filters rackmountable (includes swivelling connector field) up to 28 inputs on mixdown, 4 true sub-groups plus separate mix bus, insert points and direct outs on every channel. STOP PRESS, Tremendous reduction

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£699
NEW BOXED

NEW, USED & EX DEMO

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FRONTLINE 8:2	£ 99	Sndcrft Ghost32	£ 5,170
Mackie 16	£ 2,800	Sndcrft Ghost32MB	£ 740
Mackie 24	£ 3,100	Sndcrft Ghost32ST	£ 441
Mackie 24E	£ 2,749	Sndcrft LIVE3/12	£ 1,174
Mackie 32	£ 3,800	Sndcrft LIVE3/16	£ 1,299
Mackie BRIDGE16	£ 649	Sndcrft LIVE3/24	£ 1,875
Mackie BRIDGE24	£ 699	Sndcrft LIVE3/8	£ 799
Mackie BRIDGE32	£ 799	Sndcrft LIVE3EXP	£ 684
Mackie CR1202	£ 250	Sndcrft Protracker	£ 762
Mackie CR1202VLZ	£ 339	Sndcrft RACPAC	£ 699
Mackie CR1604	£ 650	Sndcrft SpiritAuto16	£ 2,740
Mackie LM3204	£ 849	Sndcrft SpiritAuto24	£ 4,472
Mackie M8E	£ 799	Sndcrft SpiritAuto32	£5,608
Mackie SC 8 SIDECAR	£ 269	Sndcrft SPIRLC16	£ 1,706
Mackie SR24:4	£ 1,495	Sndcrft SPIRLC24	£ 2,421
Mackie SR32:4	£ 1,999	Sndcrft SPIRLC32	£ 3,292
MIDIMAN minimixer	£ 69	Sndcrft SPIRST16	£ 1,189
NICHE audio cntrl mod	£ 99	Sndcrft SPIRST24	£ 1,589
PHONIC 6:2	£ 89	Sndcrft SPIRST32	£ 2,399
Samson MIXPAD9	£ 199	Soundtracs MACRO14	£ 428
Samson MPL 2242	£ 649	Soundtracs MAX324	£ 1,938
Samson MPL1204	£ 499	Soundtracs MAX332	£ 2,291
Samson MPL1502	£ 269	Soundtracs MINI12	£ 323
Sndcrft DC2000 24	£ 13,790	SoundtracsTopaz32	£ 3,877
Sndcrft DC2000 32	£ 17,138	Speck XTRAMIX	£ 2,999
Sndcrft DC2000 32pb	£ 20,857	Spirit Folio 10:2	£ 329
Sndcrft DC2020 32	£ 23,408	Spirit Folio 12:2	£ 369
Sndcrft DC2020 32pb	£ 27,600	SRea NEM 24.2	£ 149
Sndcrft Folio 10:2	£ 380	SRea stage mix 8:2	£ 199
Sndcrft Folio 12:2	£ 447	Stdmstr Diamond 12:2	£ 434
Sndcrft Folio 12:2R	£ 447	Stdmstr Diamond	£ 502
Sndcrft Folio 4	£ 1,049	Stdmstr Diamond	£ 338
Sndcrft Folio LITE	£ 321	Stdmstr P724:8:24:2	£ 3,289
Sndcrft Folio SI	£ 499	Stdmstr P732:8:32:2	£ 4,054
Sndcrft Folio SIRACK	£ 540	Tascam MM20	£ 299
Sndcrft Ghost16MB	£ 529	Tascam M2616	£ 1,195
Sndcrft Ghost16ST	£ 423	Tascam M2624	£ 1,595
Sndcrft Ghost24	£ 4,348	Yamaha Promix 01	£ 1,499
Sndcrft Ghost24E	£ 3,643	Yamaha 02R	£ 7,049
Sndcrft Ghost24EXMB	£ 576	Yamaha PROMIX01	£ 1,599

Mics

AKG C3000
Large Diaphragm Mic

INC FREE BOOM STAND

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

RRP £399
£299
NEW BOXED

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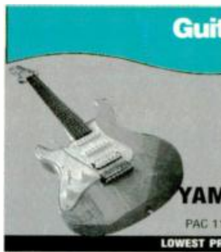
Senheiser MD504	£ 93	Sony ECM909A	£ 70
Senheiser ME64	£ 130	Sony ECM999	£ 370
Senheiser MKH80	£ 2,500	Soundcraft DM01	£ 321
Shure SM57	£ 59	Soundcraft GM01	£ 321
Shure SM58	£ 95	Soundcraft HS	£ 73
Shure BETA57	£ 199	Soundcraft IM01	£ 64
Shure BETA58	£ 185	Soundcraft LM01	£ 321
Shure BG1.0	£ 40	Soundcraft VM01	£ 64
Shure SM57	£ 110	Soundcraft VM01S	£ 64

Guitars



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PAC 112Pacifica

LOWEST PRICE EVER

The Yamaha PAC112 was voted Number One budget guitar for the past two years. Massive bulk purchase makes this unbelievable value for money. Order now to avoid disappointment

PRICE CRASH
RRP £199
£159
NEW BOXED

ZOOM
4040

FX PEDAL BOARD

Megadeal on top quality FX pedal board features include 25 digital and analog effects, 6 effects simultaneously plus compression and ZNR noise reduction Built-in expression and volume pedals, MIDI out, built-in tuner, 80 patches, switchable input gain, buy now while stocks last !

RRP £379
£299
NEW BOXED

MARSHALL
DRP1

DIRECT RECORDING PRE-AMP

The Marshall DRP1 makes getting a fantastic sound through any system a cinch. Now you can have Marshall tone straight through a PA, studio monitors or direct onto tape (it also makes a great headphone practice amp Controls include pre-amp volume, gain boost, bass, middle and treble, master volume and line-output level An LED indicates battery strength (unit can also be mains powered by a DC adaptor) These units are the last ever - incredible price

RRP £109
£49
NEW BOXED

GUITARS - 0171 379 6766

NEW, USED & EX DEMO

BOSS ME8	£ 299	Gibson LP E8	£ 1,099
Crate G40CXL 2CH	£ 199	Gibson LP Stnd+	£ 1,899
Crate G40CXL 2CH	£ 199	Heartfield Dr. Bass	£ 299
Crate G60XL combo	£199	H + K Tuberman	£ 199
Digitech BP10	£ 499	Marshall 8080	£ 329
Digitech RP5	£ 299	Reuter 2408	£ 169
Epiphone Les Paul	£ 369	Rickenb360	£ 1,179
Fender 4X12 cab	£ 149	Rickenbacker 360	£ 769
Fender Jap Strat	£ 399	Roland G110P	£ 499
Squier LSG 15W AMP	£ 79	Roland GP100	£ 739
Squier Prec.Bass	£ 199	TexasRoad 1X12Combo	£49
Squier Strat	£ 129	Yamaha diversity sys	£ 99
Fender USA Std Strat	£ 799	Zoom 1010	£ 149
Fender USA Strat	£ 599	Zoom 2020	£ 199
Gibson ES335	£ 1,499	Zoom 3030	£ 235
Gibson LP Classic +	£ 1,649	Zoom 4040	£ 299

D. J.

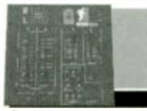
GEMINI GMX2
Entry-level DJ mixer

SPECIAL OFFER

Massive saving on this pro-mixer features including 2 long-throw pro line faders Replaceable cross-fader LED channel displays for left and right signals Inputs switchable from line/CD to phono levels Balanced microphone input with separate fader. Also includes variable echo for the mic signal.

DJ STARTER PACKAGE
£399 : GMX2 mixer, 2 x BJ1900 decks, free stanton carts & headphones

RRP £199
£ 9 9
NEW BOXED



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End of line clearance deal brings you this digital sampling mixer at an unbelieveable price. Features include 2 line inputs, 2 phono inputs, XLR mic input with talk-over auto-ducking feature. Removeable cross-fader, dedicated monitor fader and digital sampler with large stop-start button. Main channels feature 110 mm proline faders and master section has 10 LED meters Starter pack with 2x KAM DDX380 direct drive decks, stanton carts and headphones - £649

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Still the club standard after many years, SL1200s are still going strong. This incredibly low price includes a free Stanton cartridge. Package deals available with many mixers, please call to enquire.

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See the rest of our ad on pages 26-32

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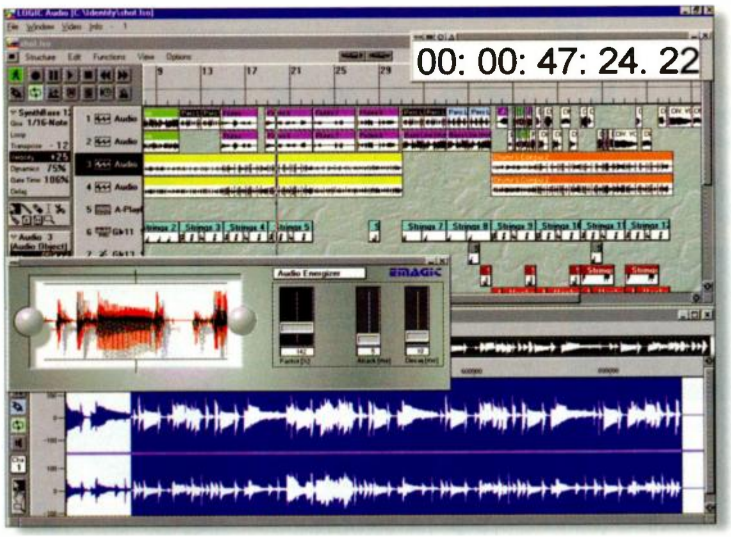
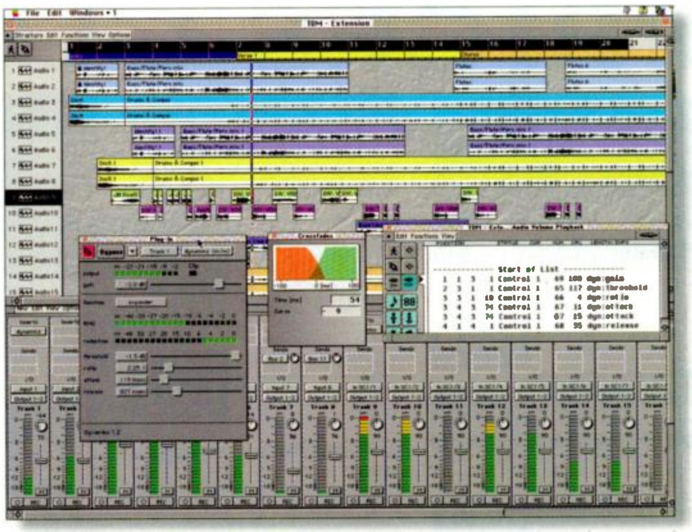


Logic Audio 2.5 for Windows.



Logic Audio 2.5 for Macintosh.

EMAGIC

LOGIC AUDIO v2.5

for Macintosh and PC

Emagic's *Logic Audio* program is one of the best solutions available today for musicians who want to integrate digital audio with MIDI information in the most seamless and comprehensive way.

Until now, the extensive audio processing capabilities of *Logic Audio* (such as the Time and Pitch Machine, Audio-to-Score Streamer and Audio Quantise Engine) have only been available on the Apple Macintosh platform (see Paul White's review of the Mac version in *SOS* February '96) — but Emagic have now announced *Logic Audio* 2.5 for Windows 95 to join the Mac version.

The Windows 95 version of *Logic Audio* includes the same powerful set of features as the Macintosh version, such as virtually unlimited tracks, a 960ppqn sequencer resolution, fully integrated scoring and printing, fully integrated digital audio recording, a stereo sample editor and, of course, one of the most comprehensive set of digital audio editing tools around — the Digital Factory.

Logic Audio for Windows 95 includes, as standard, multimedia driver support for a wide range of 16-bit soundcards. As on the Macintosh, additional hardware support will be available in the form of *Logic* extensions. Extensions for Windows will include the DAE (Digidesign Audio Engine) extension, CBX extension and Soundscape extension, with more to come in the future. The DAE extension enables *Logic Audio for Windows* to utilise Digidesign's Session 8 and new Audiomedia III PCI cards, along with standard 16-bit soundcard support. Emagic are the first Digidesign development partner to integrate the new DAE for Windows 95 into a MIDI sequencing package.

The CBX extension enables *Logic Audio for Windows* to utilise Yamaha's CBXD5 and D3 digital recording processors, along with standard 16-bit soundcard support. The DSP functions available within the CBX can then be accessed and automated from within the program.

With features like these, *Logic Audio for Windows* looks set to follow in the footsteps of *Logic Audio* for the Mac, and set new standards for the PC platform.

Two lucky people will benefit from this month's competition, as we have one copy of each version of *Logic Audio* to give away — PC and Mac. Simply answer the worryingly easy questions on the left, dream up a rib-tickling and generally diverting tie-breaker, and then post the entry to the address shown, to arrive no later than the closing date: **Friday June 7th 1996.**

Prize kindly donated by Sound Technology (01462 480000).

the small print

1. Only one entry per person is permitted. 2. Employees of Sound On Sound Ltd, Sound Technology, and their immediate families are ineligible for entry. 3. No cash alternative is available in lieu of the stated prizes. 4. The competition organisers reserve the right to change the specification of the prizes 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

1. *Logic Audio 2.5* is available for —

a. Sinclair ZX80 (runs in all 640 bytes of RAM!) ☐
b. Mac & PC ☐
c. Archimedes' Abacus ☐
d. Cray mainframe ☐

2. *Logic Audio PC* is capable of supporting —

a. 16-bit soundcards only ☐
b. the Digidesign Audio Engine (DAE) only ☐
c. the Yamaha CBXD5/D3 only ☐
d. All three. ☐

3. *Logic Audio PC* is the —

a. first ☐
b. first igneous ☐
c. first spongy ☐
d. first vegetable ☐
sequencer to integrate DAE for the PC.

4. What sequencer resolution does *Logic Audio* have?

a. 960 pulses per quarter note ☐
b. 96 beats per eighth note ☐
c. 960 pulses per litre of spicy rice ☐
d. 90 pulses a minute (pretty healthy really...) ☐

TIE-BREAKER

Emagic's range of software sequencers is entitled *Logic*. In not more than 30 words, suggest a reason why this might be the case.

....

....

....

....

....

....

....

Would you like to receive news about new products from Emagic? If not, please tick box. ☐

Which version of *Logic Audio* would you like to win? Please tick the appropriate box (one or the other — entries for both will not be accepted).

MAC ☐ WINDOWS ☐

Name ....
Address ....
....
....
....
Daytime tel. no ....

Emagic Logic Audio Competition

Post your entry to: *SOS Emagic Logic Audio Competition, Sound On Sound, Media House, Burrel Road, St Ives, Cambridgeshire, PE17 4LE.*

HERE ARE 10 VERY GOOD REASONS WHY YOU SHOULD BUY OUR LOGIX "K" SERIES COMPUTERS

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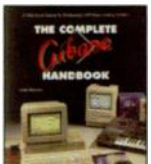
BEST SELLERS

THE COMPLETE CUBASE HANDBOOK

2nd Edition



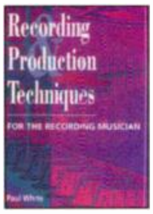
by Udo Weyers

After a short break, the definitive Steinberg Cubase Hanbook is back in print. This *new edition* is once again filled with real world applications and down to earth explanations of how to use all the powerful features offered by Cubase in all its many forms. *The book is now relevant to all three platforms (Atari, Mac and PC),* and the main attraction of the revised text is its focus on Cubase Score. The Complete Cubase Handbook is a not-to-be-missed purchase for users of Steinberg's highly popular software.

CODE B195 **£29.95**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

RECORDING & PRODUCTION TECHNIQUES



by Paul White.

This highly informative book by SOS's own Editor demystifies the techniques used by professionals in the recording of contemporary music. It reveals how to make full creative use of all manner 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**

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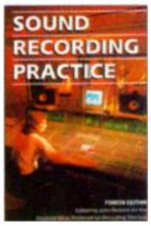
SOUND RECORDING PRACTICE (4th Edition)

NOW IN PAPERBACK!



by John Borwick

This now classic text reaches its Fourth Edition, and has been *enlarged and revised* to cover up to date developments in the recording industry. The contents of this 600+ page is too diverse to summarise in such a short space. Suffice to say that every serious recordist, whether amateur, semi-pro or professional should have a copy of this book.

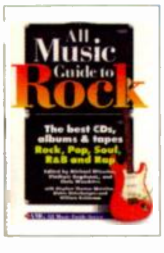
CODE B107 **£19.99**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

RECOMMENDED READING

ALL MUSIC GUIDE TO ROCK

NEW



From doo-wop to hip-hop, this is the most complete guide to the best CDs, albums and tapes in all genres of this music, both mainstream and alternative. Compiled by dozens of top music critics, 15,000 recordings by 2,500 performers are listed, rated and reviewed — including bootlegs, imports, out-of-print albums, and "cult" artists.

Easy to use and fun to explore, the All Music Guide to Rock also gives you major artist bios and discographies, essays exploring dozens of rock styles and influences, music maps, and more.

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PROFESSIONAL COMPOSING

CODE B298 **£3.95**

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PIANO — Evolution, Design & Performance

NEW

By David Crombie

This is the most spectacular and informative book ever assembled on the history of the piano. At its heart is a stunning collection of more than 150 pianos ranging from the instruments's earliest roots to today's magnificent upright and grand pianos.

This important new book is an essential purchase for every piano player and every musical instrument enthusiast, bringing alive the most fascinating and wide-ranging collection of pianos ever seen in one book.

CODE B308 **£19.95**

Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

THE COMPOSER'S GUIDE TO MUSIC PUBLISHING

(2ND EDITION)

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**

Postage: UK £2.50 Europe £6.95 R.O.W. £9.50

MUSIC & NEW TECHNOLOGY

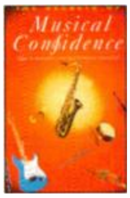
by Gabriel Jacobs & Panicos Georghiades

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

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

TAPELESS AUDIO DIRECTORY

(4th Edition) *By Yasmin Hashmi*

Completely updated, this 4th edition is the only international buyers guide to over 200 professional digital audio workstations and systems aimed at cart replacement and broadcast automation.

The comprehensive listings include target markets, hardware and software specifications, operational features, networking and file translation, future development plans, training and customer support, costs and suppliers details for USA, Europe and Far East. The Directory not only covers all existing systems, but those soon to be launched and those on which development has been halted. It also provides a comprehensive explanation of the terminology, with useful tips for potential purchasers.

CODE B304 **£14.95**

Postage: UK £2.50, Overseas £4.50

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

MULTI-EFFECTS FOR MUSICIANS

by Craig Anderton

Occasional SOS contributor Craig Anderton adds to his long list of music technology-based books with this comprehensive look at multi-effects units. The book helps you with what to look for when buying a new unit, how to use it when you've got it home, and provides a collection of tips to help you get the most out of your device. 137 Pages

CODE B306 **£10.95**

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INTRODUCING DIGITAL AUDIO

2ND EDITION

by Ian R Sinclair

Explains digital audio – CD, DAT and sampling – non-mathematically. The updated 2nd edition adds information on oversampling and bitstream techniques, plus a glossary of technical terms.

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THE ART OF DIGITAL AUDIO

CODE B248 **£49.50**

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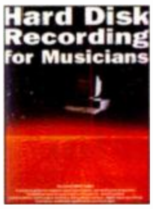
HARD DISK RECORDING FOR MUSICIANS



by David Miles Huber

More of a digital recording overview, this book looks at digital audio in all its forms. Huber discusses the equipment, the techniques and processes of digital audio. Computer-based sound editing, digital audio workstations, digital signal processing techniques, sampling and real-world applications in music, film, video and broadcast environments are covered plus multimedia. The text is designed to be understood by newcomers, while delivering information of value to professionals. *182 pages.*

CODE B307 **£15.95**

Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

SOUND FOR PICTURE

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

STUDIO MUSICIAN'S JARGONBUSTER

by Godric Wilkie

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, amidst illustrative graphics, the whole work is extensively cross-referenced, and worth its weight in gold.

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HIGHLY RECOMMENDED

CREATIVE RECORDING EFFECTS & PROCESSORS

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by Paul White

The first in this major series, Effects and Processors is a complete guide to the outboard equipment which has today become an integral part of popular music.

A comprehensive analysis of studio effects and signal processors, it provides detailed coverage of each piece of equipment: how it performs its respective task, what effect it has on the sound, and its role in creative music production.

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CREATIVE RECORDING TWO MICROPHONES & RECORDING TECHNIQUES

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by Paul White

A complete guide to understanding and using microphones in a recording environment.

In plain English, it explains how the different types of microphone work, discusses the advantages of the various different types, and shows how they can be used to get the sound you want onto tape.

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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

CREATIVE RECORDING THREE ACOUSTICS, SOUNDPROOFING & MONITORING

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By Paul White

Soundproofing, Acoustics and Monitoring is designed to take the mystery out of studio design, whether you run a bedroom studio or a commercial recording facility.

In plain English, it explains how soundproofing works, how you can change your room acoustics to give the optimum monitoring environment and how to choose and use your monitor system.

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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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**

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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.

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ATTENTION SOS SUBSCRIBERS! You are now entitled to a 10% discount off all books

SAMPLERS

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.

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WHAT'S A SAMPLER?

By Freff

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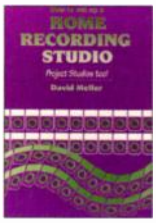
RECORDING

HOW TO SET UP A HOME RECORDING STUDIO

NEW



UPDATED & EXPANDED

By David Mellor

If you are thinking of setting up a home studio, a project studio or a DJ studio, this book is the place to start. It takes a highly practical 'nuts and bolts' type of aproach to help you produce an efficient and productive studio. It covers soundproofing, keeping the sound in and the noise out, acoustics, studio layout, and studio equipment, and advice on the kit you are likely to need. The book ends with an invaluable questions and answers section, a glossary of terms and a list of contacts.

CODE B116 **£8.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE MUSICIANS GUIDE TO HOME RECORDING

NEW

by Peter Mclan & Larry Wichman

(Revised and Updated) This is the book every serious songwriter, musician, and home recordist needs, with a new chapter on MIDI and the lastest digital recording technologies. A problem-solving guide as well as an instructional text, it is designed to expain in simple terms how professional recording techniques can be applied at home.

CODE B314 **£16.95**

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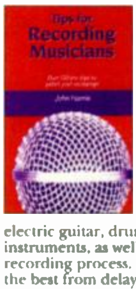
TIPS FOR RECORDING MUSICIANS

NEW



by John Harris

Today's studio equipment is affordable but sophisticated, and it takes a lot of know-how to use all this technology effectively. This book details the equipment you need - mics, effects, tape machines, etc. It has separate sections on recording of vocals, electric guitar, drums and acoustic instruments, as well as the use of MIDI in the recording process. You will learn how to get the best from delay and reverb, as well as effects like compression and gating. There are some useful tips on using the mixing desk and post production work. All in all it's a handy guide that will improve your recording techniques at a stroke.

CODE B309 **£8.50**

Postage: UK £1.50, Europe £3.95, R.O.W. £3.50

PRACTICAL STUDIO TECHNIQUES

by Tom Misner

This book and audio CD package comes from the School of Audio Engineering's Tom Misner. It's an excellent source of basic recording facts and figures, and if you want concrete examples of the subjects discussed, then listen to the free mixdown demonstration CD.

CODE B301 **£15.00**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

RECORDING TECHNIQUES FOR SMALL STUDIOS

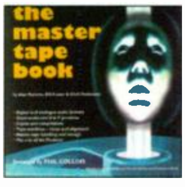
by David Mellor

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 list 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 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.

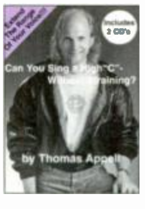
CODE B194 **£15.00**

Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

MUSIC BUSINESS

CAN YOU SING A HIGH "C" WITHOUT STRAINING

NEW



by Thomas Appell

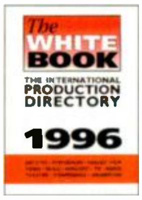
This book features extensive coverage of the vocal cords and explains clearly how to sing high notes without going into falsetto, and without straining. You'll learn how to extend the range of your voice, and why most singers either strain or "break" into falsetto when attempting to sing above their normal range. It comes with 2 CD's jam-packed with over 2 hours of vocal examples and exercises that you can practice with. Many singers have increased their range by several notes after the first week of practice. If you can't sing high notes without straining, but would like to know how, then this book is for you. 122 pages.

CODE B319 **£24.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE WHITE BOOK INTERNATIONAL PRODUCTION DIRECTORY 1996

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 **£46.00**

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88 SONGWRITING WRONGS & HOW TO RIGHT THEM

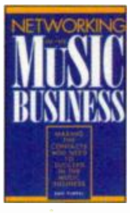
by Pat & Pete Luboff

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

NETWORKING IN THE MUSIC BUSINESS



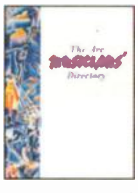
by Dan Kimpel

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

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**

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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.

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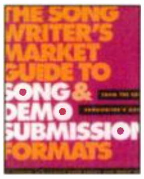
THE SONGWRITER'S MARKET GUIDE TO SONG & DEMO SUBMISSION FORMATS



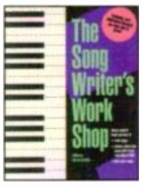
From the Editors of Songwriter's Market

If you've got the songs and you've got the contacts, this book will help you to choose a format that will get your demo heard as well as overall packaging and presentation and dealing professionally with publishers, A&R reps and other industry people. Plenty of example documents (lyric sheets and letters) are given, and the book is nicely rounded off with a glossary and index. Hardback.

CODE B258 **£12.95**

Postage: UK £2.50, Europe £5.95, R.O.W. £9.95

SONGWRITER'S WORKSHOP



Edited by Harvey Rachlin

If you want to work systematically at improving your songwriting skills, then try this book: it's divided into four individual 'lessons', each of which is backed up by audio material on cassette. This allows you to listen in the car or walk around with your personal stereo and still absorb useful information. The four sections are: On Songwriting by Janis Ian (yes, *the* Janis Ian); Making Demos by John Barilla; Understanding MIDI by James Becher; and The Art of Pitching Songs by Teri Muench (ex-A&R director with RCA and publisher). Also included is an intro, a quick and breezy glossary and an index. Includes two cassettes.

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MUSIC BUSINESS AGREEMENTS

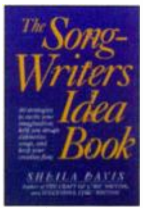
by Richard Bagehot

Written by a practising music business solicitor, "Music Business Agreements" can be seem as a legal textbook for the UK music industry. Don't let the formal tone put you off: this book is a mine of information with reference to real-life problems and examples, and a helpful question and answer appendix. Expensive, but invaluable. 522 Pages.

CODE B303 **£58.00**

Postage UK £2.50, Europe £5.50, R.O.W. £8.50

SONGWRITERS IDEA BOOK



by Sheila Davis

If you want a textbook, this is it: 250 pages of serious, intelligent insight into songwriting. Loads of good advice and a friendly tone make this a useful read to anyone, whether beginner or seasoned pro. The focus is firmly on lyrics rather than music, and the prominent references to poetry terminology shouldn't really be a surprise. Use Davis' 40 strategies and you to could soon be "designing distinctive songs". Hardback.

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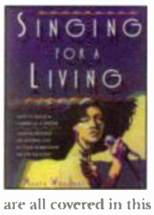
SINGING FOR A LIVING



by Marta Woodhull

The title says it all. If you're already a singer, this book gives you everything you need to know in order to exploit your talent further: looking after your voice and voice exercises, business advice and marketing and audience interaction are all covered in this straightforward book.

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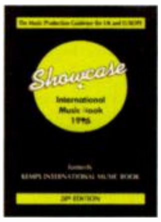
NEW



The music industry equivalent of *Yellow Pages*! over 500 pages crammed with all the latest information, including new phone and fax codes for record companies, recording studios, music publishers, equipment manufacturers, artist management, producers, PA and lighting hire, and more. Plus a USA section.

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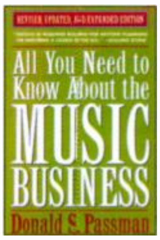
ALL YOU NEED TO KNOW ABOUT THE MUSIC BUSINESS



by Donald S Passman

This book is a must: the author manages a portfolio of high profile clients and teaches music business law at the University of Southern California, and has produced a clear overview of the music business. He starts at the beginning of your career, with advice on choosing a manager, lawyer and agent, and moves through getting a record deal, songwriting and music publishing and finishes with details of copyright, mechanical royalties, songwriter deals, films and more. An exhaustive and entertaining read. 415 Pages.

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SOS Book Shop

BEGINNING SONGWRITER'S ANSWER BOOK *by Paul Zollo*

If you're just starting out as a songwriter or haven't progressed very far, perhaps you have questions about the art and business of songwriting that you can't find answers for. Chances are, they're covered in this book. Over 200 of the questions songwriters most often ask are answered in this book. There are 11 chapters, covering subjects such as lyrics, theory, song structure, collaboration, demos, publishing and the music business. Some answers - such as "What makes a professional-sounding demo?" are actually mini-articles - and an index allows you to target subjects without wading through the text. A friendly, informative read.

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THE 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.

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TG33 QUICK OPERATIONS

by Bobby Maestas

Instant access to Yamaha's neat little Vector Synthesis sound module. Loads of examples, well illustrated. 115 pages.

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YAMAHA SY55 GUIDE

by Bobby Maestas

A good helpful look at this arguably overlooked instrument; technicalities are explained in context of music throughout. 153 pages.

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MIDI INFORMATION

MAKING THE MOST OF MIDI

NEW

By Paul Overaa

This is a MIDI book unlike any other. It explains the fundamentals of MIDI and MIDI sequencing for the beginner, and it goes much further, dealing with issues that will be of help to more established users. Advice on MIDI fault finding, help for musicians using sequencers with live bands, MIDI messages and MIDI files, plus programming material. So if you are a keen first time user or a MIDI veteran, there will be something in this book to interest you.

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MUSIC TECHNOLOGY REFERENCE BOOK

by Peter Buick & Vic Lennard

Written by Peter Buick and Vic Lennard (author of SOS's Atari Notes column), this book offers information at your fingertips and is an indispensable reference source for the musician or sound professional in the recording, broadcast, live, video, computer, multimedia, post production and theatre industries. It includes comprehensive MIDI spec, General MIDI, MTC, MSC, and SysEx information. It also includes charts, check lists, useful hints, tips, and ideas, plus a glossary, list of contacts and a comprehensive indexed, it is also organised into convenient sections. 150 Pages.

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THE MIDI COMPANION

By Jeffrey Rona

A breezy run through MIDI that would suit the absolute beginner, this book is well-illustrated, clearly expressed and explains the technical bits in as close to non-technical language as the subject matter allows.

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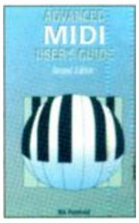
ADVANCED MIDI USER'S GUIDE (2nd Edition)



by R A Penfold

Most MIDI users do no more than scratch the surface of MIDI's potentialities. But dare to dig a bit deeper and you'll find a whole new world of creative possibilities.

With the Advanced MIDI User's Guide, you'll learn how to optimise your MIDI system to get the best results from your particular setup, and you'll find out how to use gadgets like switchers and mergers to enhance your system. If you want to incorporate a multitrack tape recorder into your MIDI system there's a section on synchronisers, SMPTE and MIDI time code, and retro freaks will learn how to hook up that dusty old analogue synth to their MIDI systems.

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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**

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PRACTICAL MIDI HANDBOOK (3rd Edition)

by R A Penfold

This book is completely updated, and features a section on General MIDI. It provides a "straightforward, non-mathematical introduction to MIDI", and features a full glossary of MIDI terms.

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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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

MIDI FOR THE PROFESSIONAL

by Paul D Lehrman and Tim Tully

Co-written by SOS contributor Paul D Lehrman, this substantial, exhaustive work covers pretty well any aspect of MIDI that you could think of. As an overview of what MIDI is and does in 1994, this 239 page book couldn't be better.

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MIDI SURVIVAL GUIDE

by Vic Lennard

Whether you're a beginner or a seasoned pro, the 'MIDI Survival Guide' shows you the way. No maths, no MIDI theory - just practical advice on starting up, setting up and ending up with a working MIDI system. Contains over 40 cabling diagrams, and how to: connect synths, sound modules, sequencers, drum machines and multitracks; how to budget and buy secondhand; using switch, thru and merger boxes; transfer songs between different sequencers, get the best out of general MIDI , and understand MIDI implementation charts.

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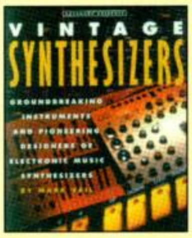
SYNTHESIZERS

VINTAGE SYNTHESIZERS



By Mark Vail

This well-illustrated, 300 page book covers synth history, interviews with designers and overviews of important instruments. Mark Vail's book could be the most entertaining and useful synth book yet – check out the definitive history of the Minimoog, complete with pre-production designers' sketches. While not strictly a buyers' guide, there is a comprehensive section to sourcing, valuing, upgrading and servicing classic instruments.

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KEYFAX 2

by Julian Colbeck

1989 version of Keyfax 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 covered in this indispensable guide. Still a great buy.

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Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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.

CODE B201 **£12.95**

Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE MUSEUM OF SYNTHESIZER TECHNOLOGY

by Martin J Newcomb

If you liked our feature on the opening of the Museum of Synthesizer Technology in October, but haven't got the time or the cash to visit in person, then the next best thing has to be the museum's guide book. This 118 book is printed on glossy paper and contains full-colour pictures of a large selection of exhibits from the museum, together with some descriptive text and company backgrounders. The text reads a little like a fanzine, but the hardcore synth fanatic will want this book for the pictures. In these pages you will glimpse instruments that you are unlikely ever to experience in the flesh: an exceedingly large Roland System 100 modular set-up, an EMS Synthi 100, an ARP 2500, a large Emu modular and what must be the comprehensive collection of Moog equipment anywhere. The Museum of Synthesizer Technology book is yours for £24.95, plus postage.

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Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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.

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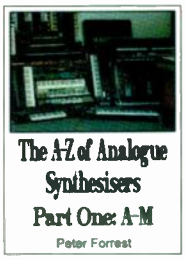
THE A-Z OF ANALOGUE SYNTHS PART ONE: A-M



by Peter Forrest

The author has aimed to make his book a complete rundown of all the major analogue synths and keyboards ever made, and on the evidence of this first volume, he seems to have succeeded. The book is useful and detailed, and shows evidence of the massive amount of research and effort put in by Peter. He gives pocket company histories and detailed data on the instruments produced - but note that a few entries for a few particularly obscure instruments and companies are limited due to lack of data. The book also provides a comprehensive overview of the qualities of various instruments; charts and tables assess second hand values and maintenance levels necessary to keep a given instrument playable as well as such intangibles as sound quality, collectability and user interface. The A-Z of Analogue Part One, which is limited to 8000 copies worldwide, also features 96 colour pictures of classic instruments.

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DRUM PROGRAMMING — A Complete Guide to Program and Think Like a Drummer

By Ray F Badness

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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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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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By Rene-Pierre Bardet

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By Rene-Pierre Bardet

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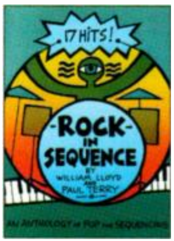
NEW



by William Lloyd & Paul Terry

The latest book from the authors of Music In Sequence and Classics In Sequence is now available: Rock In Sequence offers detailed scores of 17 rock and pop hits from the '50s to the present day, alongside a collection of helpful sequencing tips. Songs are included from the likes of the Beatles, Led Zeppelin, Abba, Eurythmics, Blur and more. Rock In Sequence 112 pages.

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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.

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MUSIC IN SEQUENCE

by William Lloyd & Paul Terry

Still one of our best-selling books. Easy to follow, practical guide to making real use of your sequencer, written by people who really understand music and how to create it using today's technology. This brilliant, unique book carries the SOS seal of approval.

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1000 KEYBOARD TIPS

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SOLID GROOVES

By Dieter Petereit & Herb Quick

128 pages dealing with both bass and drums, the 'heart' of the pop group, together. Although written primarily for drummers and bass players, anyone interested in understanding rhythmical music in popular styles will find this book invaluable.

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COMPUTERS & MUSIC

THE COMPLETE SOUND BLASTER

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The Complete Sound Blaster

by Howard Massey

Explains in simple, non-technical terms: how to install the Sound Blaster hardware and software for use in both the DOS and Windows environments, the two sound processes used by the card, MIDI, the Sound Blaster's MIDI capabilites, and the many different applications for the Sound Blaster, including the various software utilities provided with the card, and many of the third party support products that enhance its operation.

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Postage: UK £1.95, 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 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.

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COMPUTERS AND MUSIC

By R A Penfold

2nd edition. Covers hardware and software applications. Excellent glossary of jargon, and now bang up to date.

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SEQUENCER SECRETS

Sequencer secrets

Ian Waugh

Ian's book aims to "go beyond the manual" in telling you how to get the best from your sequencer. The book features 29 hands-on sequencing projects and is suitable for use with all software sequencers. The book hopes to help you optimise your MIDI system and use your sequencer to create all sorts of useful effects. A troubleshooting section helps you track down stuck notes, double notes and so on.

CODE B299 **£6.95**

Postage: UK £1.50, Europe £4.50, R.O.W. £6.50

MULTIMEDIA, CD ROM & COMPACT DISK – a guide for users and developers (2nd Edition)

by Francis Botto

Ppractical guide to CD ROM and interactive multimedia aimed at both users and developers. Virtually all platforms and technologies are covered in this book - CD-I, CD ROM, CDTV, Macs, PC clones etc - and a comprehensive range of appendices include a glossary, and lists of development tools, manufacturers, and existing CD ROM titles. All aspects of system development - from image capture to sound - are covered.

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MUSICAL APPLICATIONS OF THE ATARI ST's

Musical Applications of the Atari ST's

By R A Penfold

Includes a general introduction to MIDI, a handful of MIDI add-on circuits (Thru box, MIDI switcher and so on), plus a collection of programs, in Fast BASIC, that allows you to use the ST's internal sound generator and create little MIDI applications.

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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.

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Written by John Vasey.

How to set up and operate sound / lighting equipment for the performance of amplified music or any kind of touring production.

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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.

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Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

LOUDSPEAKERS FOR MUSICIANS

CODE B284 **£3.95**

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INTRO TO LOUDSPEAKER& 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 £1.50, Europe £6.95, R.O.W. £9.50

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

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 £1.50, Europe £5.50, R.O.W. £8.50

ELECTRONIC PROJECTS

ELECTRONIC PROJECTS FOR MUSICIANS

CODE B068 **£10.95**

Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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

PRACTICAL ELECTRONIC MUSIC PROJECTS

CODE B289 **£4.95**

Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

ELECTRONIC MUSIC LEARNING PROJECTS

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

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

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

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 PROJECTS FOR VIDEO ENTHUSIASTS

by R A Penfold

Projects for the video and camcorder user, including dynamic noise limiter, automatic audio fader, video faders, video wipe and video crispener.

CODE B288 **£4.95**

Postage: UK £1.50, Europe £6.95, R.O.W. £9.50

SOS Videos

JUST ARRIVED!

MACKIE ULTRA MIX VIDEO GUIDE

NEW

This highly informative video for the Ultramix automation system, clearly demonstrates how to set up and use Ultramix's many time-saving features to get the best from your system. The cost of the video may be redeemed against the purchase price of an Ultramix system, making the video a good way to try before you buy!

CODE V066 **£9.99**

Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND G800

NEW

G-800
ARRANGER WORKSTATION
video manual
Roland

Presented by Roland UK's product demonstrator Sara Reybould, this video covers every essential feature and function of the Roland G800. Sara provides the user with a wealth of knowledge on this sophisticated instrument, with recourse to many practical examples and close-up shots of the LCD screen. The video was produced in association with Roland USA and Roland UK to ensure that the content is accurate and informative.

CODE V060 **£19.99**

Running Time 92 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND GR09

NEW

Presented by Roland UK product demonstrator Nick Cooper, this application-based tutorial video for the Roland GR09, produced in association with Roland USA, covers every function completely. Covered topics include; the GK2A Synthesiser Driver, pickup sensitivity, use of the tuner, what a patch consists of, use of the pedals, patch edit 1 & 2 (including layering and detune, chromatic function, reverb & chorus, edit target, pitch shift), the use of external midi devices, saving to an external sequencer & more.

CODE V061 **£19.99**

Running Time 57 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND JV-1080 VIDEO MANUAL

JV-1080
SUPER JV SYNTHESIZER MODULE
video manual
Roland

Roland's amazing JV-1080 synthesizer module is covered in detail in this informative video. Presented by Tim Walter the video the video guides you through the basics, and leads you painlessly onto the advanced features. The video even shows you how to fit the expansion boards & gives demonstrations of some of the wonderful sounds they contain. Once again this video has been produced in association with Roland UK & USA to ensure that everything it contains is accurate, and relevant to the new and more experienced users alike.

CODE V046 **£19.99**

Running time: 80 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND XP-50

NEW

This XP-50 video owners manual is produced by Roland Corporation US and covers all the major features of the instrument in detail. This is an application based video that provides many examples of how your new found knowledge can be applied. Just a few of the 30 separate topic areas covered are: Effects, Choosing Sounds, Loading a Song, Loop Recording, Copying a Track to Pattern, Making an RPS Set, Track Editing, Multitrack Recording, Patch Editing, Creating Splits & Layers in a Patch.

CODE V063 **£24.99**

Running time: 63 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

WINDOWS 95: WHAT WILL YOU LEARN TODAY?

NEW

Start!
Windows 95

This video is aimed at new Windows 95 users and goes from basic to in-depth advice, covering topics such as minimum hardware requirements and common problems, and providing useful tips and tuition. The video also features Labyrinth's Video Index System to help the user locate particular topics, by means of on-screen timecode and an index booklet.

The video is written by computer journalist Ian Waugh.

CODE V065 **£19.99**

Running time: 74 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

EVERYTHING YOU WANTED TO KNOW ABOUT PCs BUT WERE AFRAID TO ASK!

Everything you wanted to know about PC's but were too afraid to ask!

Written by Ian Waugh

This video has been produced in response to the number of potential PC buyers and existing new users who do not fully understand the jargon and basic operating procedures associated with PCs.

It covers everything from 'What is a PC' to the 'Internet'. There is even a Windows tutorial, and a DOS basics section. (Over 120 different sections.)

It includes a booklet listing all the main and sub sections along with their respective TimeCode number for easy access when used as a reference tool.

CODE V048 **£19.99**

Running time 91 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

KORG PROPHECY VIDEO MANUAL

Written by Phil MacDonald

Korg's new Prophecy Synthesizer now has its own video manual!

The video covers all the major features over 6 sections, with lots of examples of the amazing effects that are available using the 'log' and 'mod' wheels. The video's visual interest is maintained by the extensive use of Chroma Key and multi camera effects. This is a video that is ideal for new owners, and those who want to know more about the Prophecy before they make a purchase.

CODE V049 **£14.99**

Running time: 36 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

BOSS ME-8

NEW

ME-8
GUITAR MULTIPLE EFFECTS
video manual
BOSS

Nick Cooper (Roland UK product Demonstrator) explains every single feature & function of the ME-8 in detail. The unit is clearly explained in a logical sequence with examples given of how the functions effect the available sounds, a perfect aid to new users of the ME-8 and those who would like to get that little bit more from it. Just some of the main points covered are: What is a Patch?, Selecting a Patch, Copying a Patch, Edit Mode, Using The Effects, Control Effects, The Tempo Function, Manual Mode, and lots more.

CODE V064 **£19.99**

Running time: 72minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND MS-1 VIDEO MANUAL

VIDEO
MANUAL
Roland

This video manual has been produced by Roland Corporation US, and has been designed to provide the user with tuition, and examples of how to apply your new found knowledge in various applications. There is also a comprehensive "Tips & Tricks" section to give you that extra edge!

CODE V047 **£24.99**

Running time: 50 minutes (approx)
Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND GP100

NEW

Presented once again by Nick Cooper, this video manual for the Roland GP100 covers every aspect in detail with many practical demonstrations. Everything you need to know is covered; topics include; an explanation of COSM, layout, typical setups, initialisation, global settings, use of the tuner, selection and editing of patches, and use of the FX loop and harmonist.

CODE V062 **£19.99**

Running Time 45 Minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND TDE-7K DRUM SYSTEM

TDE-7K
COMPACT DRUM SYSTEM
video manual
Roland

Roland's TDE-7K Compact Drum System Comprises the TD-7 Percussion Sound Module, MDY-7 Cymbal Pad Holder, FD-7 Hi-Hat Control Pedal, MDS-7 Drum System Stand, PD-7 Drum Pads & KD-7 Kick trigger. You may have a different configuration to what is shown in the video, but no matter!, Roland Product Specialist Gary O'Toole shows you how the complete kit is put together. Gary concentrates on the TD-7 in detail, showing how the parameters are set up, and giving demonstrations of how the sounds are derived and altered. Good use is made of the visual side in this video with muli-camera shots, a 'birds eye' view of the entire Kit shows Gary's playing abilities to the full. As you would expect from a production aided by Roland UK & USA, this video shows you everything you need to know.

CODE V045 **£19.99**

Running time 65 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

YAMAHA PSR6000 ELECTRONIC KEYBOARD VIDEO MANUAL

YAMAHA
PSR-6000
ELECTRONIC KEYBOARD
VIDEO MANUAL

Yamaha's PSR6000 is a home keyboard with a difference, and offers many professional features plus excellent sound quality. Tim Walter starts at the beginning and makes the instrument look easy and fun. His enthusiasm is catching, and, yes, the PSR6000 is a very capable instrument. The tape runs to 75 minutes, which makes for excellent value.

CODE V029 **£19.99**

Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND GR-1 GUITAR SYNTH

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. Each step is patiently explained and demonstrated by Roland's guitar synth specialist, Jay Stapley.

The Advanced tape 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. If you own a GR-1 or are thinking of buying one, do yourself a favour and order these indispensible videos.

CODE V014 ONLY **£29.99**
FOR 2 VIDEOS

Total Running time: 4 hours. Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

STEINBERG CUBASE

This manual is presented by Chris West, Steinberg expert. It's very much a practical, 'get up and running' video, showing the novice user exactly how to install and begin using Cubase, whether they're running the program on an ST, Mac or PC computer — there's even a basic background on using the computers themselves! All of Cubase's controls are shown, explained and demonstrated in depth. Once you're familiar with the basic controls, Chris takes you slowly through recording your first session, followed by overviews of the various edit screens. It's rather like having an expert tutorial that you can run again and again in the comfort of your home, until you can use Cubase like a true pro.

Topics covered include; the main screen, customising names and outputs, copying and pasting between arrangements, MIDI filter, cycle mode recording, the tool box, all edit screens.

CODE V011 **£29.99**

Run time: 1hour 30 minutes Format VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

KORG AX30G TONEWORKS VIDEO MANUAL

TONEWORKS
TONEWORKS
AX30G
G1 G3
G2 VIDEO MANUAL

The Toneworks series of guitar processors from Korg gets a real work out on this 55 minute tape. Korg's guitar demonstrator Steve Fairclough whizzes through the G1, G2, G3 and the flagship AX30G and provides clear explanations of how each units works. And to put the units into context, there's lots of footage of Steve showing off the sonic capabilities of each processor (not to mention his prowess as a guitarist).

ORDER CODE V028 **£19.99**

Postage: UK £1.75, Europe £4.95, R.O.W.£6.95

BAND IN A BOX 6.0 BASICS

FOR WINDOWS

Designed to get the new user, and those less familiar with Band In A Box, up and running quickly and easily. Experienced users can also benefit from the in-depth tutorials which cover Basic MIDI, MIDI Connections, Custom Patch Maps, Screen Layout, Juke Box, Printing, Recording & Editing Melodies, Importing & Editing Styles, Drum Editor, Masks, Assigning Instruments.

CODE V031 **£34.99**

Running time: 88minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

3 CAKEWALK 3.0 VIDEO MANUALS

CAKEWALK 3.0

For Windows

A collection of three videos on the Cakewalk Professional system for Windows, covering just about everything you would need to know to become totally proficient with Cakewalk.
If you own Cakewalk Home Studio — no problem! The videos cover everything Cakewalk Home Studio is capable of and more...

BASICS

Basic MIDI, Step & Realtime Recording, Playback Features (on the fly), Editing Features, Graphic Views, The Inspector Menu, Menu Overiew, The Control Bar.

CODE V032 **£34.99**

Running time: 120 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

BEYOND BASICS

This video explains Customising Cakewalk, Extrack Merge, more graphic Views, Advanced Editing, the Settings Menu, Synchronisation, Embedding Wav Files and more...

CODE V033 **£34.99**

Running time: 113 mins
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

CAL

Programming Fundamentals, Creating a Program, Creating a CAL Program, How to use CAL Programs, CAL Examples, Automating Tasks, Tips on working with CAL, Creating Computer Music, Troubleshooting.

CODE V034 **£34.99**

Running time 90 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

PLEASE REMEMBER: POSTAGE IS PAYABLE ON ALL MERCHANDISE

OVERNIGHT DELIVERY OPTION: ONLY £5.00! See Order Form for details

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. Topics covered include: sequencing page, score editing, lyrics and text, graphic arranger mode, hyper edit, the printer page, using the part box.

CODE V012 ONLY **£19.99**

Running time: 2 hours 20 minutes Format: VHS(PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ENCORE 3.0 FOR WINDOWS

The basics of Encore for Windows is covered, with in-depth tuition over 83 minutes. Everything you need to get up & running is here. Basic MIDI, Score Layout, Accidentals, Key Signatures, Note Editing, Step Time Entry, Adding Staves, Click Setup, Record Setup, Linear View, Quantisation, Editing, Printing, Staff Position & Spacing, and much more...

CODE V036 **£34.99**

Running time 83 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ROLAND JV-90 SYNTH

Roland's JV-90 synthesizer gets the treatment in this informative Labyrinth production. Virtually every facet of the JV-90 is covered, from the basic functions to more advanced programming. Chris Allen guides you through the powerful features this instrument has to offer. Produced in association with Roland UK & USA to ensure that everything it contains is accurate, and relevant to new and more experienced users alike.

CODE V044 **£19.99**

Running time 70 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

CUBASE 2.6 BASICS

FOR WINDOWS

Practical guide to Cubase for Windows covers all the basic functions, ideal for the new user and those who need added insight into this complex system.
Contents: Basic MIDI, Value Selection, Arrangments, Arrange Window, Transport Functions, The Inspector, The Toolbox, Quantisation, Grid Editor, Step Recording, and much more.

CODE V035 **£34.99**

Running time 85 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

KORG X3

This video offers an easy way in to this powerful workstation. 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 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.

CODE V018 **£19.99**

Running time: 55 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

PERFORMER 5.0 BASICS

FOR MACINTOSH

Expert tuition covering the basics and more for Performer 5.0. This video will provide you with all that you need to know, covering all the major topics: Basic MIDI, Tracks Window, Multitimbral Operation, Patch Changes, Time Signature & Meter, Real & Step Time Recording, Event List/Graphic & Notation Views, Regional Editing, Quantisation, Transposing, Copy/Cut/Paste/Merge & Erase, Loop Recording, Track Palette, Device Groups, Counter Window, and much more.

CODE V042 **£34.99**

Running time 87 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

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 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".

CODE V016 **£19.99**

Running time: 90 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

THE EMAGIC LOGIC TUTORIAL VIDEO VOLUME 1

Produced by Emagic themselves, this video once again sees Tim Walter (featured on the excellent Notator video) in the tutor's chair. There are plans for a series of videos which become ever more detailed and informative, but for now Volume 1 takes you through the first steps of getting the software up and running, and covers virtually all the controls you'll need. *This video is valid for all versions of Logic, whether being run on an ST, Mac or PC.* Presentation is rather intriguing, with a mobile camera that helps to hold the interest more than the average training video and some interesting graphics that aid comprehension and help to quickly find specific tutorials and bits inside tutorials. Contents as follows:
- Tutorial 1: The Arrange window and basic sequencing
- Tutorial 2: Playback parameters & Toolbox
- Tutorial 3: Controlling MIDI data flow
- Tutorial 4: Manipulating sequence data
- Tutorial 5: Moving around in Logic
- Tutorial 6: Windows and key commands
- Tutorial 7: More sequencing
- Tutorial 8 Score
- Tutorial 9 Looking at the Event List
- Tutorial 10: Editing the Event List
- Tutorial 11: Using the Environment
- Tutorial 12: The best of the rest (HyperEdit, Matrix Editor, Cycle Mode and more).

CODE V023 **£29.99**

Total running time 70 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

KORG X5 SYNTH

Korg's new X5 synthesizer, reviewed in SOS' January 1995 issue, now has its own video manual. Presented by Tim Walter in an entertaining and lighthearted manner, and explains all basic aspects of Korg's highly affordable instrument in very clear terms. If you're in any way daunted by your new purchase, or want to get a feel for the instument before laying out your cash, this is the video for you.

CODE V027 **£19.99**

Running time 55 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ANALOGUE HEAVEN

Remember our feature on the opening day of the Museum of Synthesizer Technology which we ran back in October 1994? Wish you'd actually been able to attend?
Well, now you can have the next best thing: the museum has released a fascinating 50 minute promo video that features footage shot on the day as well as a lightning tour of the facility. The program is hosted by SOS contributor Julian Colbeck. The tape opens with synth pioneer Bob Moog making the inaugural speech and officially opening the museum, followed by a nostalgic run through one of his old modular systems. Analogue Heaven makes diverting viewing for anyone interested in vintage synths, represents good value, and offers the perfect companion to the Museum's guide book, also available from SOS Bookshop.

CODE V026 **£12.95**

Running time: 50 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

BOSS DR-5 DRUM MACHINE

Presented by Nick Cooper (Roland UK Product Specialist) this video covers all the functions of the DR-5 in a clear and concise manner. Produced in association with Roland UK & USA. By using the information gathered from Roland 'helplines', particular attention has been paid to the areas that many users find most difficulty in. This makes it of interest to beginners and experienced users alike. Nick imparts the information with ease and a professional manner, making it enjoyable and entertaining.

CODE V043 **£19.99**

Running time 57 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

MASTER TRACKS PRO 4/5 BASICS

FOR WINDOWS & MACINTOSH

All the basic functions of Master Tracks, from installing the software to advanced editing. Everything you need to know to get you started and beyond in easy to understand step-by-step instructions.
Basic MIDI, Track Editor Window, MIDI Settings, Screen Layout, Conductor Window, Transport Controls Window, Inserting Measures, Step & Real Time Recording, Event List Editor, Piano Roll Editor, Quantising, and much more.

CODE V041 **£34.99**

Running time 105 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

HOW TO GET A RECORD DEAL

The facts you need from the people who know. 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 pros 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

YAMAHA QY300 VIDEO MANUAL

Complete overview of Yamaha's new QY300 sequencer/sound source. Presented by Joe Ortiz of Heavenly Music, the video offers a hands-on tutorial on what is potentially a very powerful piece of hardware. Starts off with a runthrough of QY300 features, followed by a clear, step-by-step tutorial that introduces you to creating your own sequences and styles. As a bonus, the video comes with a free disk loaded with 6 new QY300 styles and 6 demo sequences.

CODE V025 **£19.99**

Running time 69 minutes Format VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

4 FINALE 3.0 VIDEO MANUALS

FOR WINDOWS & MACINTOSH

Four superb videos covering the Windows Version and four for the Macintosh version. From Basics through to the most Advanced topics in Power User, these detailed videos will guide you through Finale, giving you the knowledge you need to become a Finale expert with ease.

BASICS

MIDI setup, Tool Palette, Default File, Customising Templates, Drawing Slurs & Expressions, Key & Time Signatures, Metatools, Music Spacing & Allotments, Printing, Measure & Page Layout, and much more.

CODE V037 **£34.99**

Running time 123 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

BEYOND BASICS

Custom Instrument Library, Font Size, Pickup Measures, Measure Number Enclosures, Chord (midi & manual input), Finale Chords, Guitar Fret Boards, Mirroring, Mass edit Menues, Transoping, Alternate Notation, Moving Layers, and much more.

CODE V038 **£34.99**

Running time 92 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ADVANCED

Clef Changes, Text Blocks, Tempo Tool, Multi-measure Rests, MIDI Tool, Making an Ossia, Optimising Staves, Custom Score Layout, Page Tool, Multiple Windows, Tiling Pages, and much more...

CODE V039 **£34.99**

Running time 75 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

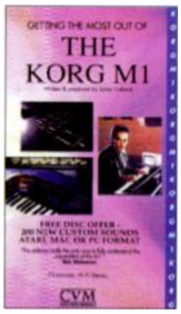
POWER USER

More Options Menu, MIDI Tool, Optimising Staves, Using Clip Files, Grouping Staves, Using a Macro Program, Shape Designer, Importing MIDI Files, Multiple Windows, Short Cuts, Hints & Tips, Advanced MIDI Topics, Tiling Pages, and much more...

CODE V040 **£34.99**

Running time 108 minutes
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**

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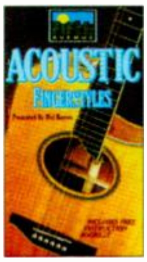

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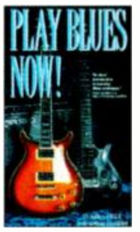

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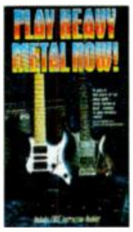

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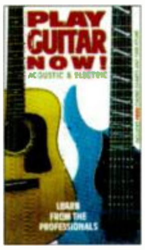

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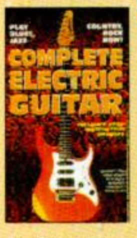

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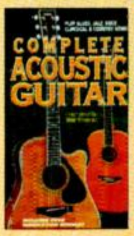

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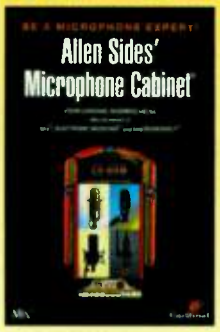

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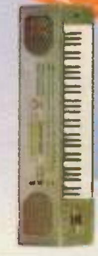

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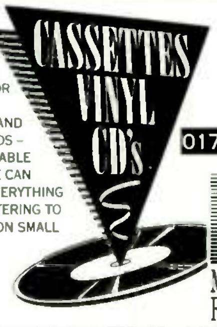

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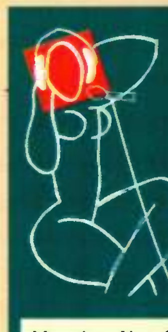

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WRH

sounding OFF

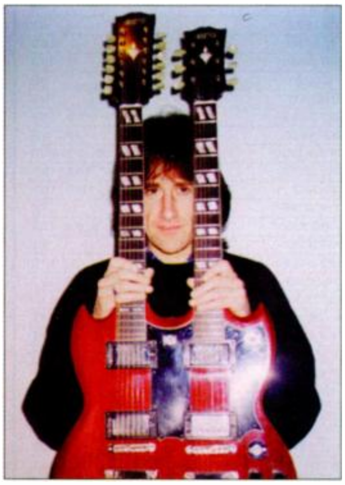
Music journalist RIKKY ROOKSBY considers the effect technology is having on music, and tries to extract some of the digit from digital.

The last 40 years have seen staggering advances in the ability of technology to shape, replicate and record sound, and one of the aims of this process has been to stimulate and assist creativity. Technical advances in amp design, effects and recording have enabled us to achieve sounds that were previously either out of our reach or didn't exist at all. The benefits and freedoms resulting from this cannot be underestimated. In the mid-'60s, bands were making albums on 4-track tape. Within 20 years, technology had created the 4-track cassette, putting multitrack recording within most people's reach. Never in the history of demos had so many tracks been recorded by so few pairs of hands onto such narrow tape.

But technology can also have a negative effect on music-making. George Martin was recently quoted as saying that the problem today was that technical advances meant people could make impressive demos of sub-standard material. Half an hour spent listening to Radio 1 is enough to convince anybody that there is a lot of lazy songwriting going on. All too often, technology facilitates laziness, blunts sensibilities, and distracts people into a futile and sterile quest after perfection. The result: repetitive, soulless music. How many records are you hearing on the radio that you know will be played in 10 or 20 years time?

Take the humble click track. Can you imagine the HamburgerPlatz Symphony Orchestra being told to play with a click? Laugh? They'd nearly sue. But then, of course, a symphony has tempo changes in it. Can you imagine a Chopin Prelude played absolutely strict, with no rubato? You'd kill the music straight away. So why has recording with a click become so common? If the band you're recording speeds up slightly because they get excited, so what? Why remove the excitement? When was the last time you heard a hit single with a tempo or time signature change?

Let's take another example that relates to music being 'soulful' — and by that I mean expressive; being 'ensouled' by the performer. Consider the role of intention in music. When a drummer lays down a drum track in 'real' time, the sound is the result of a human being physically hitting the drums with a stick. The act is intentional in duration, time, rhythm and force, and above all, intentional in expressing an emotion. The human being wills and physically creates an acoustic event in the environment via the medium of a tool, an instrument; in this case, the drumkit. The purest expression of intent in this sense is the one that needs no tool: the human voice, where the body is the tool.



As human beings, we are equipped to sense such an intention. Where does that leave drum machines and sequencing? Okay, let's concede that a drum machine is programmed by a human operator; programming is a creative and intentional act. But when you push the start button, the machine is working by itself; the link between the human being and each snare hit is no longer there. There is nothing *behind* each of those sounds — they are not expressive or ensouled. The intention lies in the program, which is at another remove. If this is so, the essence of music has gone. We have a facsimile of music-making, or what might be termed 'virtual music'. This is why a sampled vocal phrase triggered repeatedly (as in much dance music) sounds so jarring and unnatural: it is human emotion overridden by technology.

Another *cause celébre* is the 'perfect', no-mistake recording. When I first started listening carefully to records it was the glitches, the spillage of sound and snatches of people talking on fade-outs that added to the fascination. Take the intro of The Police's 'Roxanne', with its false piano chord and laughter, or the ridiculous amounts of amp hiss at the start and end of Oasis's 'Cigarettes and Alcohol', or Marc Bolan saying "Once more" at the end of 'Metal Guru'. These touches are aural fingerprints, evoking the human presence and realities of music-making. Such things add enchantment.

Then there's the effect digital recording has on music, in contrast to recordings made on tape. It's interesting to note those recent *SOS* ads by a certain company pushing digital hard disk recorders. In no uncertain terms, they declare tape to be as dead as a very extinct animal. Not for me, it isn't. I'm in the market for an 8-track, just at the moment that Fostex and Roland have launched their digital 8-tracks on the market at a fraction below the cost of a reel-to-reel machine, complete with CD-quality sound, 'virtual tracks' and non-destructive editing. And yet I've decided to go down the reel-to-reel route. Why?

First, it's a fair cop, constable: I confess a sentimental attachment to the medium upon which all the music I love has been captured. Second, for many people, digital may be a more 'transparent' medium, but not necessarily a more musical one. Is it technophobia that makes people describe CD sound as 'clinical and cold', and analogue as 'warm and comfortable'? How many times have you heard people say CDs are more tiring on the ears? If digital is so great, why are companies like TL Audio inventing units like the VI-1 valve interface to put 'warmth' back into the signal?

But it's not just the *technical* impact that digital recording has on music; consider also what people do with the music as a result of the freedom digital recording offers them — things nobody could be bothered to do with tape as it was too time-consuming. 'Effortlessly cut and paste that perfect chorus throughout a tune', go the ads for digital recorders. If you listen to any great song, each chorus will be slightly different in the way it's performed, and those differences are *important*. What's the point of repeating for the sake of it? Picture the scene — Engineer: "That first 'Baby!' was great, Otis. We'll sample that through the rest of the song." Tape is dead? Or is digital the perfect medium for a revolt into monotony? SOS

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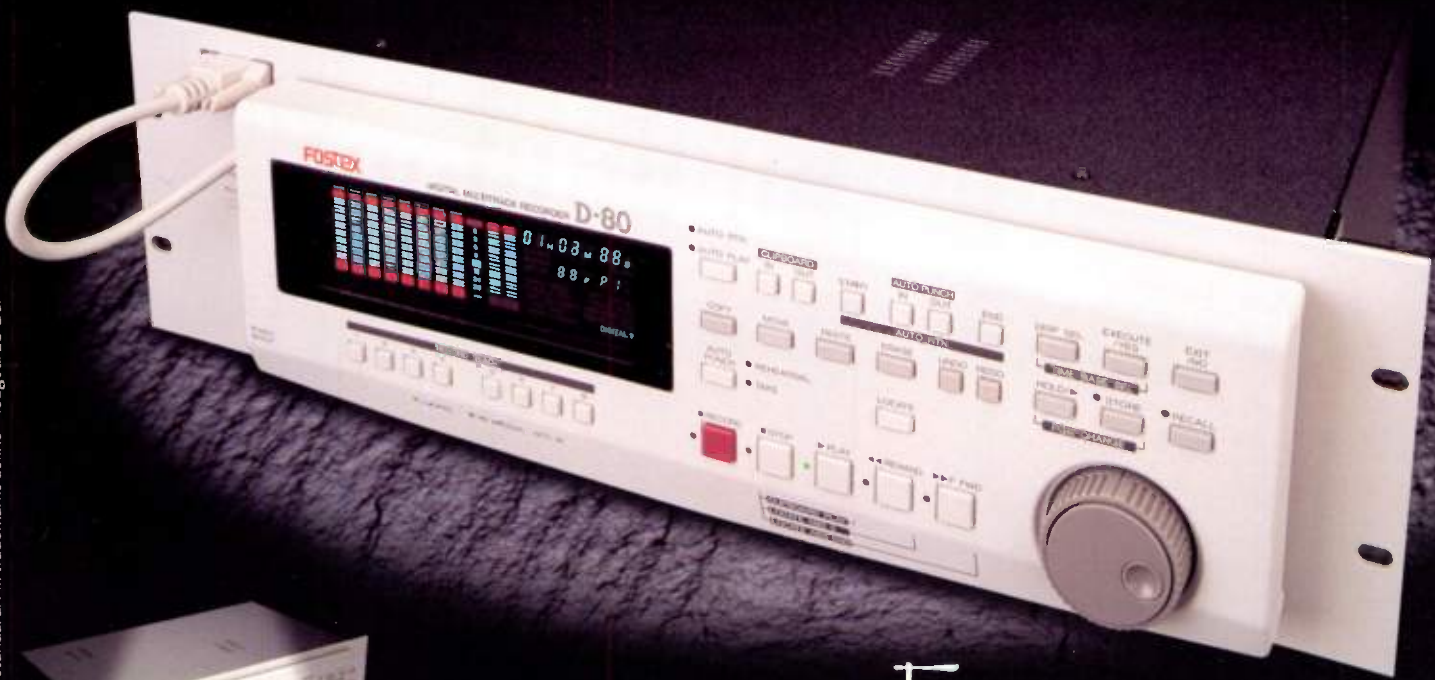

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