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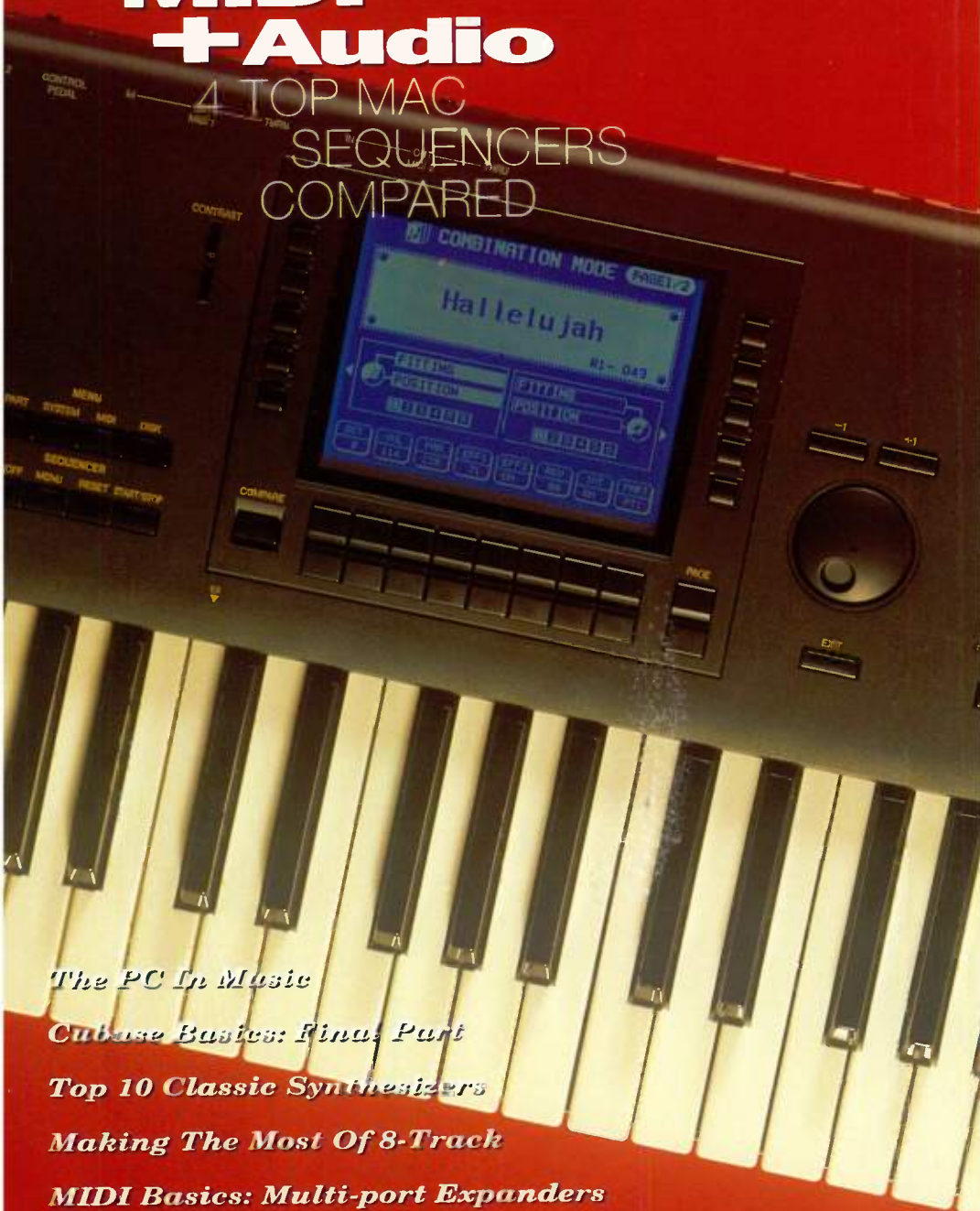
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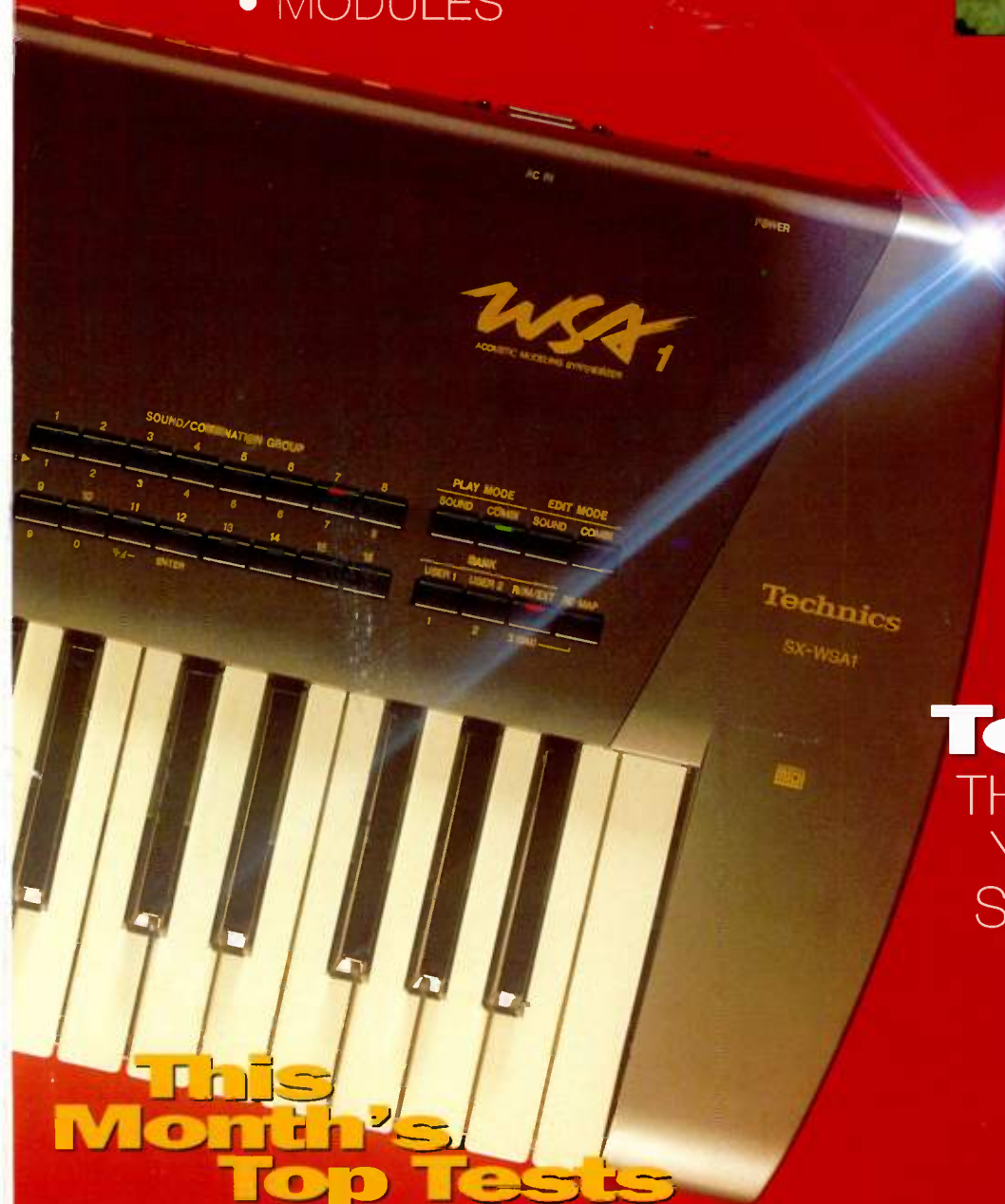
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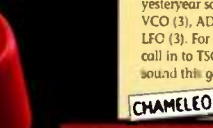
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One reason why this month's issue of *SOS* is so megalithically huge is that the magazine is now 10 years old — and if that makes you feel nostalgic, I hope that our in-depth look at The Beatles' latest exploits (p.106) will help reinforce that feeling (in the nicest possible way). Traditionally, anniversary issues provide a great excuse to look back as well as to speculate about the future, and not being one to pass up such an opportunity, I'm going to stick with convention and do exactly the same!

SOS started life in 1985 at a nexus in the development of electronic and recorded music — the domination of

videos and computer games. *C'est la vie...*

The future of music recording and electronic music production is quite clearly converging with that of the computer, and we often hear scare stories of music being swallowed up by some kind of multimedia monster. But as long as we listen to music in our cars or while riding on the tube, I believe stand-alone music will always have a future. However, the way we create music is changing all the time, and even if we go back to playing everything rather than programming it, the music of the future is more likely to be recorded into a computer than into a tape recorder. Computers are big business, next to which the music industry is a mere minnow, but that situation does afford certain

advantages — the music industry can benefit from the economies of scale enjoyed by the likes of IBM and Apple. If those same computers had to be developed purely for music applications, they'd probably cost around 10 times what they do now.

As data storage grows faster and cheaper, archiving digital music onto some form of removable

disk will become as cheap as archiving to tape (see Iomega Zip Drive, p.72), but I foresee tape and tapeless recording (see Fostex DMT-8, p.78) continuing to run side-by-side for a number of years yet. What we will see is more and more outboard equipment being replaced by plug-in computer cards and software modules. Synths and samplers are the obvious candidates, but now that the virtual mixing console is a practical proposition, we're likely to see cards containing effects, processors, and pretty much everything else you might expect to find in a studio, bar the microphones and monitor speakers. As with previous developments in music technology, this will further democratise the process of making release-quality music, but the challenge for us is to set aside enough time to work with our instruments and to develop our musical talents to ensure that we can come up with music that's worth releasing.

Finally, on behalf of everybody at *SOS*, may I thank all readers and advertisers for their past, present, and future support — without it, *Sound On Sound* would not be what it is today: the longest established and most successful hi-tech music and recording magazine in Europe. Thanks!

Paul White Editor

When I were a lad...

analogue synthesis had just been broken by the likes of the Yamaha DX7 (see Julian Colbeck's 'Top 10 Synths' feature, p.186), digital effects that cost marginally less than a semi-detached house were starting to appear, and home computers were being pushed into service as MIDI sequencers as an alternative to playing *Space Invaders* or *Breakout*. Eight-track analogue tape recorders were becoming affordable and most drum machines still sounded like a Yetti tap dancing on a bag of crisps while sneezing into a very large piece of aluminium baking foil. (Ironically, those same drum machines are now commanding fortunes on the secondhand market, in spite of the fact that you can access all their sounds via countless sample CDs — or sneeze into your own baking foil if you're hard up.)

Affordable sampling represents another great step forward, of course, and prices have continued to tumble as the machines become ever more powerful (see Akai S3000XL, p.136), but we've also witnessed changes in the way that music is made and perceived that are not always for the better. Real performance is finally making a comeback, but we passed through a dangerous period where, instead of practising their instruments, musicians were instead spending hours gazing into the cold eye of a computer sequencer. It's just possible that the mechanistic chart music which followed was largely responsible for the decline of music as a major driving force in society. During my schooldays, music was a life or death matter and the subject of many an impassioned school yard argument, but now it seems to be merely something else to consume. I hope that the recent emergence of bands and artistes who rely on personality and performance can help reverse this trend, but I suspect we'll never return to the 'golden years', when music didn't have to compete with



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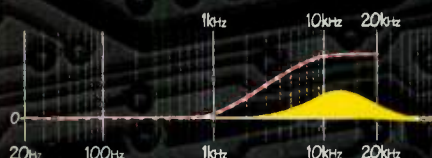
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Send your letters, tips and comments to: The Editor, Sound On Sound, Media House, St Ives, Cambridgeshire, PE17 4LE. Or email us — from CompuServe on 100517,1113 or from outside CompuServe, on 100517.1113@compuserve.com

MARTIN RUSS: SON OF GOD?

In the December 1994 issue of SOS, Martin Russ reviewed the Marion Systems MSR2 analogue synthesizer module, and gave details of the System Exclusive (SysEx) format. I recently purchased a Marion Systems Pro Synth (approximately half a MSR2) and I want to control



synth parameters with my Peavey PC1600 MIDI mixer. Marion Systems give no mention in their manual of the SysEx format required to send messages that the Pro Synth will understand. Turnkey are the UK distributors, and say that they don't know the format, and phone calls to the USA have also proved unsuccessful.

My question to Martin is: how the hell did you manage to get the information you printed in your MSR2 review? Are you the Son of God? Do you possess mysterious powers? Who knows? I certainly don't, so would it be possible for you to tell me the SysEx codes for editing parameters on the Marion via the MIDI controller, or advise me of the source you used for the information you printed in the MSR2 review. Thank you for your time.

Jeremy Birchell
Potters Bar, Herts

Martin Russ replies: No mysterious powers on my part, just thoroughness. Marion didn't give any details at all of the MSR2's MIDI implementation, so I just performed a SysEx dump into my System Exclusive analyser and printed the results. My analyser is a simple patch in Opcode's Max (which you may have seen mentioned in Apple Notes — it's a superb graphical object-oriented MIDI programming language for manipulating MIDI) which shows the length and first few bytes of the dump, and is very useful for just this sort of investigation. I included the details so that anyone who was interested could get a head start at hacking into the Marion MIDI SysEx — but this looks like a good time to let everyone know how it is done.

Reverse-engineering a piece of equipment's MIDI

implementation is a tedious task, but it's surprising what can be done. The first thing to do is find out the manufacturer ID, by examining the SysEx dumps that the piece of equipment sends out. Looking through the first few bytes can give lots of clues about the SysEx format — send all the dumps which the equipment supports and tabulate them all. In most cases, you should find a pattern — for example, when sending single patches, just one byte will change because that's the byte that indicates which patch is being sent. Often, manufacturers use the obvious numbers: so a byte of 00 might indicate single patches, 01 could be bulk patches, whilst 02 could be combinations, 03 bulk combinations, and 04 everything.

The single patch dump is probably the most useful, because many manufacturers use the positioning of parameters in this dump as a marker for parameter change messages: so you might well find that the 34th byte can be altered by sending a message with 34 as the parameter number. Finding out what the 'edit parameter' SysEx header is requires some guesswork. The clues may be in the SysEx dumps: in the example above, I might start trying 05, followed by a parameter number and value, then EOX (or a checksum and then EOX if the SysEx dumps used checksums). If a few random values don't do anything, then I might try 7F, parameter number and value, and so on. I have some simple Max utilities which can be set to run through whole ranges of numbers, sending a SysEx message each time, and I merely check to see if anything has changed. Patch names are often the first few bytes of a patch dump, and have low parameter numbers for editing — so seeing a character change in the patch name on the display means that you have hit pay-dirt. If this does not work, then you start looking back at the header. Bytes with values of 00 or 01 that don't change with SysEx dumps may be used as a send/receive marker, so try setting them to different values.

A combination of patience, guesswork, and time can often turn up some very useful information. Of course, if any reader already knows the Marion Pro Synth SysEx format, I'll be glad to pass the information on to Jeremy. Letters to the above address, please.

PS. The above description is just a tiny bit of the contents of my forthcoming book on MIDI, which should be finished sometime next year. ☐

NOT THE MARION KIND

In last month's review of the Marion Pro Synth, your reviewer Paul Nagle seems to have somewhat missed the point of the instrument. Phrases such as 'attempting to recapture the sound of analogue monosynths', 'analogue impersonations' and 'analogue-style sounds' give the impression that he thinks this is not a real analogue synth, but instead uses some kind of modern trickery. This is not the case — the Pro Synth is based around the same designs Tom Oberheim has been using for years, but with many improvements made possible by advances in electronic components.

Mr Nagle makes a couple of other complaints about the machine, which I feel are largely unjustified:

- The unit does have an external power supply — but this significantly cuts the cost, which would have been around £100 higher had an internal power supply been used, as the Pro Synth is produced in relatively small quantities by a small company. It is worth noting, however, that it is now supplied with a much more substantial PSU.
- The Pro Synth is indeed 'only' 8-note polyphonic — but this is eight times more than, for instance, the Novation BassStation, and for less than twice the price. The Pro Synth's two outputs are again twice as many as the BassStation (I don't wish to criticise this instrument, but it is a good reference point), and as soon as new European CE regulations can be met, an add-on will be available to give eight stereo outputs, which should sell for under £200.

Whilst I appreciate that sound is subjective, I feel that Mr Nagle's negative comparisons of the Pro Synth with the Jupiter 8 and Minimoog are a little unfair. The presets are perhaps more aimed at the American market rather than the UK dance scene, but programming is so straightforward that this should not pose a problem for this kind of customer, who would usually want to programme their own sounds anyway. If customers are

(Continued on page 10) ►

More and more top producers are discovering the satisfaction that comes from working with Spirit equipment in the studio.

These peoples' reputations depend entirely on conjuring professional masters from raw tracks, so they won't accept anything less than the best when it comes to choosing the tools of their trades.

Here are just some of the Spirit products that are becoming standard issue in big and small studios everywhere.

STUDIO FAVOURITES



SPIRIT STUDIO

Standing the test of time, Spirit Studio has been used to create hundreds of top singles, albums and soundtracks

16, 24 and 32 channel frames • In line design with up to 72 inputs available at mixdown (32 ch) • Up to 32 discrete tape sends available • 8 Bus Group Section and Stereo Master • 6 Aux Sends • 4 Stereo Effects Returns • 4-Band EQ with two swept mid controls • PFL soloing on all channel & monitor inputs • All input channels balanced • Fader Flip facility • Version available with Fader Automation (Spirit Auto)

ABSOLUTE 2

This professional nearfield monitor system has gained many converts from the far-from-perfect industry standard monitors

High definition Linear Phase design • Superb sonic accuracy • Neutral, balanced sound for accurate monitoring • Full Magnetic Compensation • 25mm ferro-fluid cooled soft dome HF driver • 165mm cone LF driver • Gold-Plated Terminals with Bi-Wiring capacity

FOLIO Si

This stereo input mixer for keyboards provides DAT-quality sound with professional features in a compact, rugged package

• 18 inputs: 8 stereo plus 2 mono • 3-band EQ on inputs 1 to 14 • 2 high quality mic inputs • 2 Aux Sends, Aux 1 switchable pre/post fader • Free-standing and rackmount versions available



ADRIAN UTLEY

Co-producer and co-writer with Portishead

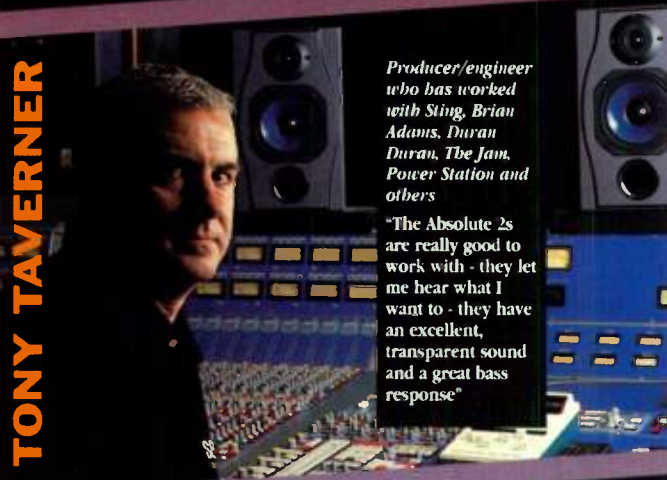
"The Spirit Studio console has a very musical EQ and is extremely clean, essential for preserving the character of the 'vintage' instruments I use. The Absolute 2s have a warm, rounded bottom end and I can listen to them all day without wearing out my ears."



TONY TAVERNER

Producer/engineer who has worked with Sting, Brian Adams, Duran Duran, The Jam, Power Station and others

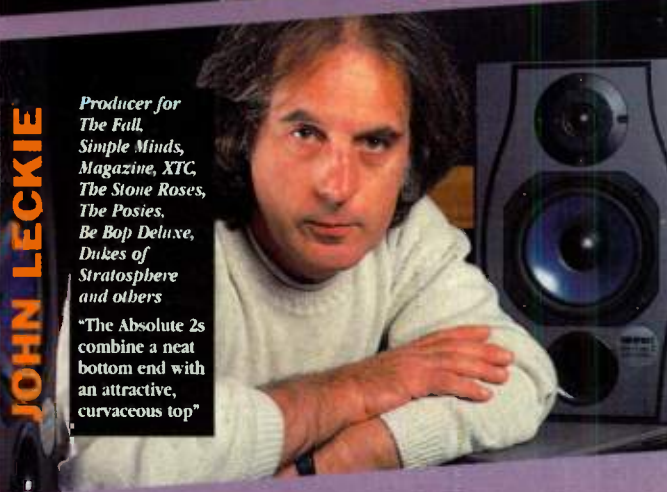
"The Absolute 2s are really good to work with - they let me hear what I want to - they have an excellent, transparent sound and a great bass response"



JOHN LECKIE

Producer for The Fall, Simple Minds, Magazine, XTC, The Stone Roses, The Posies, Be Bop Deluxe, Dukes of Stratospheer and others

"The Absolute 2s combine a neat bottom end with an attractive, curvaceous top"



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This 4-Bus 8U mixing console provides up to 28 inputs at mixdown. It is perfect for recording to digital multitrack and is equally at home in a live setup

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• 4 Stereo Returns plus 2 Stereo Effects Returns • 2-Track Tape Return routable to Mix • Global Phantom powering



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Cranborne Industrial Estate,
Cranborne Rd, Potters Bar,
Herts EN6 3JN, England.
Tel: +44 (0)1707 665000
Fax: +44 (0)1707 665161



SPIRIT

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For free brochures and a booklet written by pro-audio journalist Paul White on how to get the best from your mixer in a variety of situations, simply complete and return the coupon to the address shown. I am interested in: Studio Auto ☐ Absolute 2 ☐ Folio ☐ Folio Rac Pac ☐

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What instrument(s) do you play?

What magazines do you read?

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

WRH

SOS

Crosstalk

► unable to get down to Turnkey to try the Pro Synth out, we are so confident that the combination of real analogue sounds, easy programmability and huge range of synthesis functions will be to most peoples' tastes that we are offering a seven-day money-back guarantee on the unit. Call us on 0171 379 5148 if you are interested!
Rupert Pfaff
Manager, Turnkey

Paul Nagle replies: *Taking Rupert's points in order:*

- *I believe I described the Pro Synth's architecture accurately, and my point was that the 'advances in electronic components' Rupert mentions failed to convince my ears. Personally, I don't care what goes on under the bonnet of a synth to achieve a sound I want — in fact, I have just bought a Korg Prophecy which is capable of producing a wide range of 'analogue' sounds, yet is totally driven by software.*
- *In a short review such as this, I did not feel it would have been easy reading to justify every opinion expressed, and, on balance, I probably erred on the side of kindness in deference to the great 'Uncle Tom' himself.*
- *I'm pleased to see that an improved external power supply is now being supplied, and welcome any additional outputs. I feel at least a couple of individual outputs should have been provided in the first place, as the Pro Synth is multiimbral but has no internal effects processor.*
- *Surely when a synth is advertised with copy lines like: 'classic analogue' and 'sounds better than a Matrix 12!', comparisons with such instruments are valid? When I reviewed the Pro Synth, it just so happened that I was looking for an 'analogue in a rack' and was rather hoping my search was over. I don't make judgements based purely on presets (as demonstrated in my glowing Microwave review in SOS August '95) and my taste is probably closer to the American sound than the UK dance scene anyway.*

As you say, sound is subjective. However, I also think that quality shines through, and can be recognised as such by many long-term analogue users. I did spend quite some time programming the Pro Synth, but found that the raw material just didn't excite me. It's my responsibility to give an honest report of this — otherwise reviews simply become extended brochures. Nevertheless, I applaud your seven-day money-back guarantee, and wish you well with the synth. ☐

WE ARE NOT MU-SED

I have a complaint to make concerning the Yamaha MU50. After reading the reviews of both the MU80 and MU50 in *Sound On Sound* [see SOS May and September '95 respectively — Ed], I decided to buy myself an MU50. I play a 76 Fender Telecaster and was attracted by the option of plugging my guitar into the MU50's external audio input and mixing its sound with the MU50 while the

has trouble accepting low-level signals, such as those from an electric guitar. The problem is undoubtedly particularly pronounced because Mr Ashby-Clarke was using a guitar with a single-coil pickup.

Nevertheless, Yamaha's manual does not warn you that you may have a problem when using an electric guitar with the audio input, and even contains a large picture depicting a guitar plugged directly into the MU50. Furthermore, the advertisement for the MU50, which appeared in the same issue as Paul Nagle's review, states that the "direct input lets you mix external sources with the MU50's voices" — with no indication that there may be limitations on the sources you use. We passed Mr Ashby-Clarke's comments on to Yamaha. They composed a reply to him, which is reproduced



latter played back MIDI files. However, when I got the synth home I found that though the audio input does work, it does not have enough headroom sensitivity to allow me to plug in and play along, even when the guitar is at full volume.

Being generous, I would say the guitar is received at the module at a level of about 60 in MIDI volume terms. Considering most individual MIDI files play back at around MIDI volume 100, my guitar can only be used as a faint background rhythm, not as a lead part. Yamaha's manual implies that you can use a guitar in this way, so I feel there is a problem with the unit that should be rectified.

I contacted Yamaha, and it was suggested that the problem could be solved by raising the 'A/B Input Level' from the editing page in my synth. However, it turns out that this is a parameter relating to the processing of external audio signals by the internal effects — and this is a feature only available on the MU80, not the MU50!

R A Ashby-Clarke
Northants

below. In the meantime, readers hoping to plug electric guitars or other low-level instruments into the MU50's input should consider using a preamp to boost their signals.

Dear Mr Ashby-Clarke; Thank you for your recent communication regarding the MU50. The owners' manual does imply that a guitar can be directly connected to the audio input which, in its strictest sense, is true. Within the MU50 it is possible to mix the audio input with the synthesizer sounds and onto the audio outputs. We do, however, appreciate that when this facility is used with a MIDI file with volumes of over 100, it does become difficult to get the guitar to an audible level within the mix.

With the MU80, it is possible to boost the input signal to a far greater degree because the input is processed by the internal DSP. The input on the MU50, however, is designed for line-level signals such as PC soundcards or other synthesizers, and does not pass through the effects processors before the output stage. We have asked that future owners' manuals explain this point more clearly.

Your contract of sale lies between yourself and your dealer, and we are unable to intervene with any discussions you may have regarding changing your MU50 for an MU80. However, please accept a selection of our promotional goods for any inconvenience caused.

Peter Peck
Marketing Manager
Pro Music Division
Yamaha-Kemble Music (UK) Limited ☐

Matt Bell replies: *Some audio sources are more equal than others! Paul Nagle checked out the MU50's external input by plugging in a synth and had no problems, although he was surprised to find he couldn't access the internal effects to process signals plugged into the audio input, as you can on the MU80. It would seem that while the MU50's output is ideal for line level signals such as synths, tape machines and CD players, it*

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*manufacturers selling price inc. VAT

Shape of THINGS TO COME

By Derek Johnson & Debbie Poyser

Damon Albarn, frontman of current media darlings Blur, has purchased a pair of Tascam DA88 digital multitrackers for use in the basement studio of his new pad. The DA88s were recommended by Blur producer Stephen Street (interviewed in SOS July 1994), who uses his DA88s extensively in the studio with the band. Damon's DA88s replace a Tascam 238 8-track cassette recorder — that's quite a jump: "I demo'd the last three



DAMON DEMOS WITH DA88

albums on the 238, and some of the vocals, harmonies and sounds that I just couldn't recreate in the studio, ended up being used on the albums." The new multitracks join Damon's other equipment, an eccentric collection that includes a Hammond organ, a Moog Opus 3,

Sequential Prophet 5, several pre-MIDI drum machines, and a Neumann TLM193 mic.

A TEAC UK, 5 Marlin House,
The Croxley Centre, Watford,
Herts, WD1 5YA.

T 01923 819630.

F 01923 236290.

KURZWEIL K2000 SOUNDS OK

Synth sound specialists Sounds OK have a treat for K2000 owners, in the shape of two new volumes of samples. Volume 1, *Matrix 12*, is packed with samples of the legendary Oberheim Matrix 12, including "thick brass, lush strings and powerful bass". From these multisamples, Sounds OK programmers have created over 30 Programs capturing the sound and feel of the Matrix 12. Volume 2, *VectorWaves*, also contains over 30 Programs, using samples taken from synths which feature wave-sequencing, wavetables, and vector synthesis, including the PPG Wave 2.2, Waldorf Microwave, and Korg Wavestation. Each volume costs £19, or buy both for the special price of £34 for the two. Note that your K2000 must have sample RAM fitted to use these disks.

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

T 01276 22946.



NOW HEAR DAT

HHB have produced a flexible new headphone monitor matrix upgrade for their PDR1000 and PDR1000TC PortaDAT DAT machines. The upgrade costs £175 and provides Stereo, Mono Left, Mono Right, Mono Sum and MS Stereo modes, selected with a robust rotary switch, allowing location recordists much more control over headphone monitoring. The device is fixed to the left side panel of the machine, and replaces the clock backup battery panel. It can be installed by HHB or an authorised distributor or service agent.

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

T 0181 962 5000.

F 0181 962 5050.

METRO 3 NOW SHIPPING

OSC are now shipping *Metro 3*, the latest version of their Mac MIDI sequencing software, designed specifically to work with OSC's own *Deck II* digital audio software. The software requires only 1Mb of free RAM, and offers groove quantise, a new drum grid display, 90ppqn resolution, a new Tracks window, a user-configurable graphic edit window, and MIDI Bank Select support. The package comes with

a new, fully-updated users' guide. The one thing that *Metro 3* doesn't provide is notation-based editing, transcription or score printout — this is a conscious decision on OSC's part to keep the RAM requirements of the software as low as possible and the price down. OSC's research also shows that 75% of users can't actually read or write conventional music notation anyway! *Metro 3* retails in the UK for £199; a bundle comprising *Metro 3* and *Deck II* is also available for £499. *Deck*, meanwhile, continues to retail on its own at £399.

A Natural Audio,
Kinetic Centre, Theobald St,
Borehamwood WD6 4SE.

T 0181 207 1717.

F 0181 207 2727.

E 100731.1221@compuserve.com

**SOS can be reached on CompuServe;
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Our full Internet address is 100517.1113@compuserve.com.**



SMALL BOX, BIG MIX

Mackie's popular MicroSeries 1202 12-channel compact mixer (which they like to call the 'Swiss Army knife' of mixers) has been improved by the addition of no less than 12 new features. The 1202VLZ, as it's now called, has all the facilities of the original 1202 (four mic inputs with phantom power, four mono inputs and four stereo line inputs, two aux sends per channel, two stereo effects returns, four channel inserts, headphone monitor with level control and 12-LED peak meter display), plus new features including:

- 3-band EQ.
- Separate stereo buss.
- Solo.

- Balanced XLR outputs (mic or line level).
- 60dB of gain via XLR mic input (channels 1-4).
- High-pass filter (identical to 8-Bus and SR series) on channels 1-4.
- New monitoring/cue section.
- Very low impedance (VLZ)

circuitry for low noise and minimal crosstalk.

Also coming from Mackie, and shown at the 1995 New York AES show, is the Ultramix Universal Automation system, which consists of the Ultra-34 VCA gain cell, *Ultramix Pro* software for Apple Macintosh, and the UltraPilot fader pack. Together, these components provide everything you need to automate up to 32 channels plus stereo L/R. The system is compatible with "virtually any" mixer and Mac computer, and the Ultramix software is OMS-compatible and features graphic editing, auto gating and MIDI file playback capability.

A Key Audio Systems Ltd, Unit D, Chelford Court, Robjohns Road, Chelmsford CM1 3AG.

T 01245 344001.

F 01245 344002.



HACKER YOUNG: THEY ARE THE MANAGEMENT

Chartered accountants Hacker Young have joined forces with a music business solicitor and a music industry manager to set up an artist management company. The company, called BBC Personal Management, is building up a roster of artists, songwriters and producers, which already includes Adamski. The company is the brainchild of chartered accountant Craig Williams, who has a well established reputation in the music industry. He's joined by lawyer Brian Reynolds and manager Barry Campbell, both of whom have much experience of the music business.

T Craig Williams
0117 973 8926.

Those of you looking for bargains amongst yesterday's hot new gear should look no further than ABC Music. Their latest selection of end-of-line instruments includes Akai's S01 16-bit entry level sampler for £549, Alesis' S4 Quadrasynth 64-voice polyphonic rack module for £499 (that's a £500 saving

DISCOUNTS IN STORE AT ABC

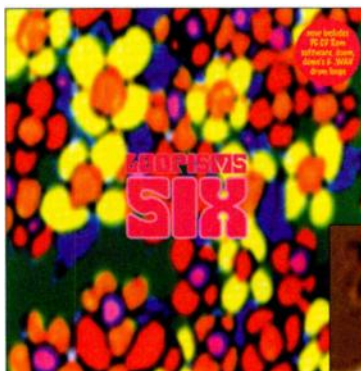
on the original RRP), Korg's Audio Gallery GM module (with Mac connectivity) at £169, and Yamaha's QY20 for just £299. Contact ABC for a copy of their latest brochure, which contains full details of all special offers.

A ABC Music, 56-58 Surbiton Road, Kingston, Surrey KT1 2HT.

T Freephone 0800 132193.

D-ZONE SIGN WITH TIME & SPACE

D-Zone have signed a deal with Time & Space, making T&S worldwide distributors of the D-Zone range of affordable dance sample CDs. To coincide with this occasion, D-Zone have announced two new CDs: *Loopisms 6* and *Workstation 3*. *Loopisms 6* features dance-based loops and 215 classic keyboard samples, plus a PC CD-ROM partition that includes a copy of ace game *Doom*, demo music software and .WAV copies of the loops. *Workstation 3* again features dance loops plus a selection of samples from the Proteus 1, and a PC CD-ROM partition, this time featuring shoot 'em up *Terminal Velocity*,



demos and .WAV files of the loops. Other CDs to look forward to include a .WAV compilation of all the loops from *Loopisms 1-6* on a CD-ROM and a similar collection aimed at SoundBlaster AWE32 users.

Diverse Media, the company which owns D-Zone, is opening its CD mastering service to the general public; a CD single with no more than four tracks and 25 minutes costs £125, an album of



between 25 and 74 minutes costs £229, and a CD longer than 74 minutes costs £249.

A Time & Space, PO Box 306, Berkhamsted, Herts HP4 3EP.

T 01442 870681.

F 01442 877266.

Shape of THINGS TO COME

Things move swiftly in the hi-tech music world; only one month after we mentioned the Sound Ideas range of sound effects CDs (see last month's Shape Of Things To Come, p. 12), the UK distribution has changed. The range is now exclusively handled by De Wolfe Ltd; contact them for all further pricing and availability details.

T 0171 439 8481.

Metallica's live engineer, 'Big' Mick Hughes used Audio Technica 4050 mics for the band's guitar cabinets at the Donington Monsters of Rock show this summer. Hughes is



quoted as saying that using the 4050s was like "plugging the guitars straight into the PA."

T 0113 277 1441.

Spirit have announced that from September 22, all their mixing consoles will be marked with the new CE logo, denoting full compliance with the European Union regulations regarding electronic emissions that come into force in January 1996.

T 01707 665000.

Newly-opened Blast Furnace Recording Studio claims to be the first studio of its kind in Northern Ireland. It offers 24-tracks of digital audio, courtesy of three ADATs, a DDA DMR12 desk, Genelec monitoring, DAT mastering, Cubase on a Mac, plus a full complement of processors and MIDI gizmos. Their special launch rates, which include engineer, are £150 per 12-hour day, or £500 for a five-day package; these prices will be available until the end of January 1996.

T 01504 377870.

PORTISHEAD PRODUCER MOVED BY THE SPIRIT

Portishead producer Adrian Utley has installed a 24-channel Spirit Studio mixing desk in his new, expanded studio. Adrian, interviewed in SOS back in June, says: "I'm really pleased with the Spirit. Because I use a lot of vintage gear, it's vital to have a console that doesn't add extra noise to the system. The Spirit Studio is so transparent it feels as if it's almost not there! I also like the warm and musical EQ." Adrian has also taken delivery of a pair of Spirit Absolute 2 monitors, which were bought for their "rich low end" and their "accuracy".

A Spirit by Soundcraft, Cranborne House, Cranborne Industrial Estate, Cranborne Road, Potters Bar, Herts, EN6 3JN.

T 01707 665000.

F 01707 660482.



CAUGHT IN THE NET

The music business is discovering the Internet with a vengeance; Danish pro audio hardware manufacturer TC Electronic are amongst the latest manufacturers to get themselves a presence on the Internet. Their new Web site can be found on: <http://www.tcelectronic.com>, and will provide illustrated information and technical specs for their full range of products.

Arbiter Pro MIDI here in the UK can now be reached via their own Web page, accessible at:

<http://www.demon.co.uk/arbiter>; in addition, the company can be emailed by beaming messages at:

arbiter@cix.compulink.co.uk. The Web page will initially contain information on Fatar, Passport, PG Music, Voyetra, Musicator and Samplitude products.

Also on the 'net are UK mixer specialists Soundtracs, who can be e-mailed at: sales@soundtracs.co.uk or support@soundtracs.co.uk.

And it's not just hi-tech and recording companies that are getting on line: premier guitar company Fender have their own site, called FenderWorld, at: <http://www.fender.com>.



FLOYD ON THE PHONE

and Them, and customers will also receive a catalogue of Roger Dean's paintings. Phonecard anoraks may find the special collectors' pack to be an attractive buy, as it features all four Pink Floyd cards, plus two additional limited edition cards; the set is available from BT Phonecard Direct, on LoCall 0345 697721. Otherwise, it's down to your local Phonecard agent; WH Smith, most newsagents, BT shops and many supermarkets stock phonecards.

BT's latest issue of phonecards is a limited edition set of four featuring artwork originally produced by Roger Dean for Pink Floyd album covers. The £2 cards will also entitle buyers to a £2 discount on the new London Philharmonic/Pink Floyd CD *Us*

IT WORKS FOR THEM



EDDI READER

BETH GIBBONS (PORTISHEAD)

IAN DENCH & JAMES ATKIN (EMF)

It'll Work For You

If you want a mixing desk that really works for you when you're songwriting, arranging or working on the production that really will get you that recording contract – then look no further than the GS1 from Allen & Heath.

A true 8-buss in-line desk with 32 inputs plus dedicated tape sends and returns for just £899 excl. VAT

– that's much less than you'd have to pay from other manufacturers. And look at what else you get – MIDI muting/MIDI machine control – variable input configurations – 5 aux sends – meterbridge as standard – expandability



– and the sonic excellence that you'd expect from Allen & Heath.

The GS1 outperforms conventional designs. It has the latest in Mic pre-amp developments, low noise performance (-127dB EIN), a flat frequency response (10Hz-30kHz +0/-1dB), the Mic input to Insert Send is rated better than 300kHz (-1dB), and you get 3-band with mid sweep EQ. Phantom power is available on all channels.

Plus you get to mix on genuine ALPS 100mm faders – no faking about on 60mm jobs! The GS1 is a proper professional-standard desk that will really work for you.

GET WORKING TODAY WITH ALLEN & HEATH'S GS1
IT'S THE BIGGEST LITTLE MIXER IN THE WORLD!



Harman International Industries Ltd
Unit 2 Borehamwood Industrial Park, Rowley Lane, Borehamwood, Herts WD65PZ, England
Tel: 0181 207 5050 • Fax: 0181 207 4572

Shape of THINGS TO COME

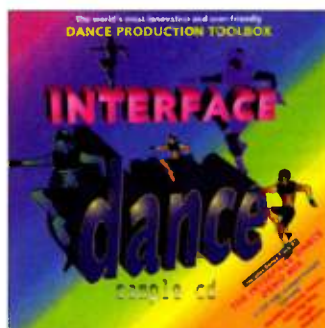
XP FREEBIE

Roland's new XP10 GM/GS synth, a spin-off from the XP50 workstation, comes with a few little surprises for the first buyers. Inside the XP10 box, they'll find not only their synth, but also a registration card entitling them to a choice of benefits (including various software or a year's free membership of the Roland Owners Club), plus a free copy of Roland *Cubase Lite* for the PC. This expanded version of *Cubase Lite* has 32 tracks and manuals, and a suggested value of around £100.

After the limited introductory period, there'll still be goodies on offer: later buyers will find a registration card which, when returned, entitles them to £100 worth of PC or Mac music software, including *DoReMix* song creation software and *SC-Pro* tone editing software, plus owners manual and serial cable for either Mac or PC. The PC version also includes a MIDI driver for Windows.

With all this software going begging, you'd expect the XP10 to be particularly suited for use with a computer: and, of course, it is, courtesy of the switchable Mac/PC port, which does away with the need for a separate MIDI interface and makes the XP10 one of the few keyboards to be so equipped. The XP10 has an ideal entry-level price of £599.

A Roland UK Ltd, Atlantic Close, Swansea Enterprise Park, West Glamorgan SA7 9FJ.
T 01792 702701.
F 01792 310249.



(INTER)FACE THE MUSIC

A new company called Interface Dance have produced a sample CD which aims to provide samples for every kind of dance music. Styles include Euro/Nu-NRG, Techno, House, R&B, Jungle and Hardcore, and the disc contains samples of drum sounds and loops including TR808/909, multi-sampled synths, basses, vocals and FX for "all the dance genres". According to Interface, many of the featured sounds have been gathered from pro dance studios around the UK and Europe, including those used by the likes of Capella, Hardfloor and Rollo. The disc costs £49.95 including UK p&p and is available from Interface at the address below. Expect an SOS Sample Shop review sometime soon.

A Interface Dance Ltd,
PO Box 8320,
London W11 4WR.
T 0171 243 1050.

CBX D5: IT'S EMAGIC!

Yamaha's CBX D5 hard disk recording add-on for software sequencers is now being supported by Emagic's *Logic Audio 2.5* for the Macintosh. Since *Logic Audio* can communicate with a NuBus card and an external SCSI device, the AudioMedia, Session 8 or Pro Tools user can add an extra four tracks of digital audio by simply installing a CBX D5; since Yamaha's box has its own CPU, it doesn't need a large host computer to run. The CBX D5/*Logic Audio* extensions bundle retails for £1699.

Other bundles allow PC and Atari ST



users to add digital audio to their system; bundles for these users include a copy of Steinberg's *Cubase Audio*.

A Yamaha (UK), Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL.
T 01908 366700.
F 01908 368872.

STEINBERG & SESSION 8 DEALERS

ABC Music - Bristol

ABC Music - Kingston

ABC Music - Windsor

Andertons Music - Guildford

Axis Audio - Stockport

Digital Village - Barnet

Eddie Moors - Bournemouth

KGM Studio Specialists - Wakefield

Media Spec - East Kilbride

Millenium - Nottingham

Music Connections - Birmingham

Music Connections - Borehamwood

Music Connections - Bristol

Music Connections - Chelmsford

Music Connections - Chelsea

Music Connections - Southampton

Music Labs - Euston

Sound Control - Glasgow

Sound Control - Manchester

Sound Control - Newcastle

Sutekina - London WC2

The M-Corporation - Ringwood

Turnkey - London WC2



PC audio tools



Cubase Audio technology provides exactly the right tools for digital recording and editing on any computer platform - Mac, Powermac, Windows PC or falcon.

Now Steinberg offers you the complete professional solution for Windows PC's with the new PC compilation - Cubase Audio for Windows plus Digidesign's Session 8 - **at the unbelievable price of £ 2,585 inc. VAT.**

Key Audio Features:

- 8 tracks of digital hard disk recording
- Audio Editor: the Cubase Audio Editor gives you sample-accurate non-destructive editing. It's easy to get rid of un-wanted audio or even improve timing by moving parts.
- Wave Pool: the Wave Pool includes a number of useful digital processing features including pitch correction, time correction, tape pitcher, reverse, normalize....

- Total Recall EQ & mixing: Mixer Maps are included to give you complete automated control over EQ parameters and level.
- Stereo Cue- and 4 Aux-Sends
- 44.1/48 khz Sample Rates
- 8 analogue Ins and Outs
- S/PDIF digital I/O
- Word Clock (optional hardware required)

And of course Cubase Audio also includes all the features of the industry standard Cubase Sequencer combining the famed user-friendliness of Cubase with leading edge Digital Audio Technology.
Step ahead with Cubase Audio !



Harman Audio
unit 2 Borehamwood Industrial Park
Rowley Lane Borehamwood
Hertfordshire WD6 5PZ
Tel: 0181 207 5050
Fax: 0181 207 4572
A Harman International Company

Steinberg
steps ahead

Shape of THINGS TO COME

Our review of Roland's new range of sound modules which appeared in the October edition contained a small error. While most of the modules in the range do in fact retail at £499, the MGS64 super GM module actually lists for £599. Apologies to Roland for that one!

T 01792 702701.

Beyerdynamic mics and wireless systems are finding favour with increasing numbers of pro musicians: Iron Maiden are embarking on their 1995-96 World Tour armed exclusively with Beyerdynamic gear — the NE700 UHF diversity wireless system with TGX80 mic capsules for vocals, the S350G wireless system for guitars, and backbone guitar amps and drums miked with conventional Beyer mics. The NE700 is also being used for a rather different kind of music: country music artist Tanya Tucker is taking the system on her current tour.

T 01273 479411.

Unity Audio, the new pro audio company formed by Kevin Walker (ex-Stirling Audio) has announced a couple of exclusive distribution deals. Unity will be handling UK distribution of Dynaudio Acoustics monitors, the Inward Connection range of esoteric valve products, and the Speck Electronics range of rack-mounting mixers.

T 01920 822890.

Steinberg have announced a couple of useful price reductions. The ACI ADAT Computer Interface has dropped £130 to just £349, including VAT. A generic piece of hardware, the ACI will run with any MIDI Machine Control-compatible sequencer, and drivers are provided for Mac, Windows and Atari ST. *Time Bandit*, the time and pitch correction software for Mac and Power Mac, now retails for just £329. *TimeBandit* will process any mono or stereo audio file in AIFF or Sound Designer I and II formats.

T Harman Audio
0181 207 5050.

PC USERS TAKE NOTE

Distributors Software Partners announce the UK availability of the European *Capella* music notation program for Windows PCs. At just £119, the program is certainly cost-effective, and Software Partners claim it's also quick and uncomplicated in use, with "outstanding" graphics and layout. The company also operate a free Helpdesk to answer initial questions about setting up and getting started. If you'd like to test out their claims for yourself, a demo disk of the program is available for £5. If you run a DOS PC, *Capella* isn't denied to you either — a demo disk is also available for DOS, and the full version of the DOS program costs just £69.

Capella was developed by Professor Hartmut Ring, a computer graphics and software technology expert at the University of Seigen, in Germany, with the assistance of Hans Ullrich Werner, a violinist and lecturer. More than 25,000 copies of *Capella* have been sold in the last two years, and *Capella* is now the top-selling product in its field in Germany. Notable features include:

- Four different ways of entering music.
- MIDI file export of music.
- As many parts as necessary, for orchestral scores.
- Lyrics and dynamic markings anchored to text.



- Any or all parts may be extracted from a score.
- Automatic transposition includes correct accidentals.
- Variable score printing sizes.
- Compatibility with TrueType fonts.
- User manual with nine tutorials and reference section.

- Context-sensitive Windows Help system.

For multi-part music playback, a Windows-compatible soundcard is required, although a single part can be played through the PC's speaker.

A Software Partners,
PO Box 201, Station
Road, Claverdon,
Warwickshire CV35 8ZU.

T 01926 842998.

F 01926 842384.

DIGIDESIGN ON THE MOVE

Hard disk recording specialists Digidesign, who are now a wholly-owned subsidiary of Avid Technology (specialists in digital video technology) have recently moved from Soho in London to Avid's European HQ, at the Pinewood film studios complex.

December sees Digidesign going on the road, on a tour of selected dealers to demonstrate to the public the latest Pro Tools developments. Demos will feature Pro Tools v3.2 software and developer's TDM Plug-Ins for Pro Tools and other software applications, as well as showing the system's integration with MIDI sequencers.

Details of times and bookings can be obtained direct from the dealers; confirmed dates include:

- December 6: Sound Control, Glasgow, 0141 204 2774.
- December 7: Sound Control, Manchester, 0161 877 6464.
- December 8: Dawsons, Warrington, 01925 632591.
- December 11: Music Connections, Birmingham, 0121 212 4777.
- December 12: Digital Village, Barnet, 0181 440 3440.
- December 13: MusicLab, London, 0171 388 5392.
- December 14: M Corporation, Ringwood, 01425 470007.
- December 15: Natural Audio, Borehamwood, 0181 207 1717.

A Digidesign, Avid Technology Ltd,
Westside Complex, Pinewood
Studios, Iver Heath, Pinewood,
Bucks SL0 0NH.

T 01753 653322.

F 01753 654999.

HW & PLASA: OPEN ALL DAY

HW International and PLASA (Professional Lighting And Sound Association) recently co-hosted an information open day at the Shenley Church Inn, Milton Keynes. The day was sponsored by Shure, whose products are distributed in the UK by HW International, and



Shure representative Geoff Ingle took the opportunity to introduce a new Shure product, the SCM810E Automatic Mixer. The new desk is intended mainly for conferencing applications, and features a noise gate system which can differentiate between constant background noise and speech, to ensure that each speaker is picked up only by his or her nearest microphone.

Guests were welcomed by John Rupp, Managing Director of HW International, and Brenda White of PLASA's Special Projects office, after which the day's opening discussion began. This explored microphone specifications, and Terry Billau of Electronic Services, Wolverhampton,

DIGITECH'S FOUR-WAY STRETCH

The flood of new effects units from Digitech continues unabated, with the release of the new Studio Quad, a digital device featuring four completely independent inputs and outputs, which can be configured as two true stereo processors or four independent mono processors. As

Quad the strongest signal you anticipate using, and it will automatically set the right level for you. A large custom graphic LCD helps with effect routings and parameter editing, and the large illuminated buttons are designed to be seen on a darkened stage or in



well as an array of reverbs, delays and modulation-based effects (chorus, flanging, etc), the Studio Quad, based on Digitech's own S-DISC (Static/Dynamic Instruction Set Computer) technology, also

a moodily-lit studio. The Studio Quad comes with 128 factory preset programs and another 128 user memory locations. Inputs and outputs are on quarter-inch balanced TRS jacks, and the unit has a respectable 20Hz-20kHz frequency

response. The retail price is a friendly £499.

If your budget doesn't quite stretch to a Studio Quad, you could check out the new R512 effects processor from Digitech sister brand DOD. The new unit aims to be quick and easy to use, with basic editing, and offers true stereo effects or the capability to process two independent sources in mono. Features include:

- 32 effects combinations with 15 presets each, for a total of 480 presets.
- Noise reduction with adjustable threshold.
- Two adjustable parameters for each effect or effect combination.
- Effects including reverbs, delays, chorus, flange, pitch-shift, phase, tremolo, and panning.

The DOD 512 will retail for £199.95.

A Arbiter Pro MIDI, Wilberforce Road, London NW9 6AX.

T 0181 202 1199.

F 0181 202 7076.

LIVE CORNER

explained how to select the most appropriate mic for various circumstances; later, independent consultant Doug Edworthy talked about the uses and design of audio frequency induction loop systems for the hard of hearing. Wireless systems were covered by Brian Copey of ASP Frequency Management, who talked about frequency allocation in the UK and Europe, referring to the threat to wireless microphone licenses from the ever-increasing demand for frequencies by commercial radio and television, and cellphone users.

The day went so well that HW International's Dennis Harburn suggested it might become a regular event. *Mike Skeet*

A HW International, 167-171 Willoughby Lane, London N17 0SB.
T 0181 808 2222.
F 0181 808 5599.

SENNHEISER'S WIRELESS WORLD

Sennheiser have released two new UHF radio mic systems, the 1081 and 1083. Both are single-channel with switchable frequencies, and

both carry a price tag of £1643 making them very cost-effective for UHF systems. The 1081 is a handheld transmitter, with a fully integral antenna, incorporating Sennheiser's own new high-quality dynamic supercardioid capsule and offering a dynamic range of 114dB. The 1083's belt-pack transmitter provides a 50mW output and is supplied with a Sennheiser MKE2 Red Dot miniature omnidirectional condenser clip mic. Both transmitters have a 16-channel selector switch, on/off switch and sensitivity switch. Both are powered by a standard 9-volt PP3 battery. UK-approved UHF Channel 69 frequencies will initially be supported by both systems, with other UHF frequency bands becoming available early next year.

A Sennheiser UK Ltd, 12 Davies Way, Knaves Beech Business Centre, Loudwater, High Wycombe, Bucks HP10 9QY.
T 01628 850811.
F 01628 01628.

MIX TO THE MAXI

Soundtracs' Topaz Maxi front-of-house console is now in production. Soundtracs have used feedback received about the preview model Maxi, shown earlier this year, to refine the production models, and cosmetic changes and performance enhancements have resulted. The Maxi aims to provide bands, clubs, churches and theatres with features

not previously available on consoles within their budgets. It's available in both 24-channel (£1799) and



Topaz Macro.

32-channel (£2466) versions; both models are equipped with two stereo input channels, and both can be re-configured at the touch of a button as stage monitor consoles, using the eight aux sends as monitor outputs. The Maxi also accepts Soundtracs' Topaz VCA fader and mute automation system, a feature which should be of particular interest to theatre and audio-visual technicians.

The Topaz range has another new addition in the shape of the Macro Plus (£821), a big brother for the Macro (£469), which almost doubles the Macro's capacity with a total of 20 mono and two stereo inputs. In other respects, the Macro

Plus is identical to the Macro, with the same 3-band EQ on mono inputs, two aux sends, and Solo facility. While the Macro Plus is recommended primarily for sound reinforcement, Soundtracs also suggest it will be popular for recording and submixing.

A Soundtracs plc, Unit 21D Blenheim Road, Longmead Industrial Estate, Epsom, Surrey KT19 9XN.
T 0181 388 5000.
F 0181 388 5050.

JHS AT PLASA

This year's PLASA Show saw John Hornby Skewes out in force with a range of new products, including two new Ross powered mixers, the MT650 (£599) and 850 (£649), and a larger, live-orientated desk, the RCS2842 (£2699 complete with SKB road case). Respected amplification manufacturers Hughes & Kettner showed another string to their bow with the Target range of mixers, including the compact and rackmountable 16:2 model at £799 and the desktop/rackmount 10:2 at £599. H&K amps, including two new models, were also there, as were SKB Cases and JHS's Scanner radio mic system, which made a big impact with its £199 price tag.

A John Hornby Skewes, Salem House, Parkinson Approach, Garforth, Leeds LS25 2HR.
T 0113 286 5381.
F 0113 286 8515.



Topaz Maxi 24.

Shape of THINGS TO COME

If you think the words 'music' and 'technology' only came together as one concept in the latter part of this century, think again. The traditional acoustic piano was no less a technological breakthrough in its time than the microchip-based instruments most often featured in this magazine, and has continued to be refined and improved until the

THE PIANO IN PRINT



present day. For a complete overview of the piano's history, we can recommend a new book, called simply *Piano*, written by SOS contributor David Crombie. David is no stranger to book publishing — many will recall *The Complete Synthesizer*, from the mid-'80s — and this new book is as approachable an introduction to the history and technology of the piano as you could expect to find. The painstakingly researched text is accompanied by a large collection of colour plates, many commissioned for the book, along with a discography of historical instruments on CD. It's a large format, hard-backed book, running to 112 pages; 96 pages are in full colour, and 32 of those provide eight-page fold-outs. Sumptuous is a word that comes to mind, and the book's £19.99 price tag seems more than reasonable for what's on offer. *Piano* is available from the SOS Bookshop, order code number B308.

A Sound On Sound Ltd,
Media House, Burrell Road,
St Ives, Cambs PE17 4LE.
T 01480 461244.
T 24 Hour Hotline
01480 461786.
F 01480 492422.

THEY'VE GOT RHYTHM (AND BLUES)

Heavenly Music Productions have added to their respected range of building block MIDI files with the release of *Rhythm's Greatest Hits Volume 2* and *Ultimate Blues Volume 2*. The first disk features over 50 song-length dance patterns in styles including techno, rave, jungle, acid, ambient and more for just £14.99. *Ultimate Blues Volume 2* has been released as a result of the overwhelming customer response to *Blues Volume 1*, and features 10 blues and R'n'B jam files for a preview price of £14.99. Heavenly are also producing a range of SoundBlaster AWE32 sound fonts, a large library of SBK files featuring electronic, acoustic and synth sounds, as well as sound effects. Customers can mix and match their own SBK disk for £3.99 per file (minimum order two files).

Heavenly's recent change of address is complete with a new presence on the Internet: their new email address is shown below.

A Heavenly Music Productions, PO Box 3175, Clacton, Essex CO15 2RP.
T 01255 821039.
F 01255 821039.
E heavenly@ortiz.demon.co.uk.

2turnkey complete



All areas of music need different storage solutions whether you have a computer based hard disk audio system, a sampler or mixing console automation. A complete range of CD-ROM, removeable cartridge, rewriteable optical, DAT and hard disk drive systems that are fully Digidesign or sampler compatible.

420Mb Segate Drive £129
1Gbyte AV Drive £280
128Mb MO Drive £399
SCSI CDR 2x speed £1,249 Plus FREE software



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

MIDI Package

- Performa 630 8/250 & CD-ROM
- 14" Performa Plus Display & keyb'd
- Cubase/Logic or Vision & ParisWorks

£1,199

Session 8 Package

- 7100/80 16/350 c/w keyb'd
- 15" MultiSync Display
- Session 8 Core & 882 Interface
- 1Gbyte AV Hard Disk

£4,295

Audio Media Package

- 7100/80 8/350 c/w keyb'd
- 14" Performa Plus Display
- AudioMedia II & Sound Designer
- 1Gbyte AV Hard Disk

£2,895

ProTools III Package

- 7100/80 16/350 c/w keyb'd
- 17" MultiSync Display
- ProTools Core & 882 Interface
- 2Gbyte Barracuda Hard Disk

£7,895

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

Tape	
Alesis ADAT	£1,830
Fostex RDB new	£2,550
Tascam 122MK II	£425
Revex B77	£385
Tascam MSR16 dbx	£3,400
Tascam DA88	£900



32ch DC2000 £11,000

Direct-to-Disk

Digidesign ProTools	£2,978
D design AudioMedia II	£680
Akai DR8 with 1919	£2,250
Phillips 2x CDR522	£1,701

Samplers / Synths

Akai CD3000	£1,871
Emu E111xp	£1,386
Peavy DPMCB	£1,102

Telephone: 0171 240 4036 Facsimile: 0171 497 0690

adj (1927.) : installed and ready to operate

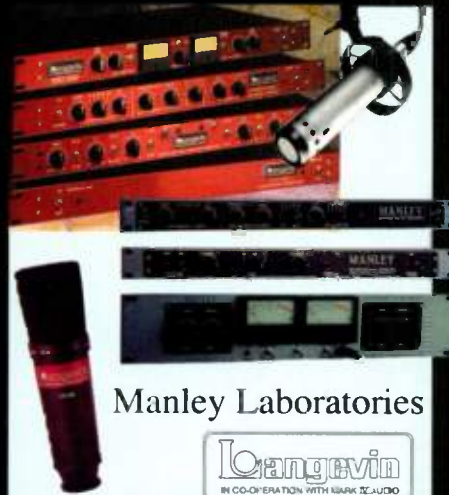
Akai's professional samplers now have XL tagged on the end. As a result the **S3000XL** is now **£1,530** & the **S3200XL** **£2,978** which is unbeatable value for the features. Both take SIMMS come with the Akai's MESA sample editing software for the Macintosh. The S3000XL comes as standard with SCSI & digital connections & the S3200 has the new **EB16** multi-effects board, 'a true 4 channel fx processor' providing a range of standard fx, up to six simultaneously.

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



We have on permanent demo all of the available Modular Digital Multitracks whether it is an **ADAT**, the **Tascam DA88** or the **Fostex RD8**. Yamaha's awaited **02R** digital console is expected in this month, call for a demonstration. We also have in stock a range of new and ex demo consoles.

Spirit 24 Studio & ADAT	£3,400
Mackie 24/8 & DA88	£POA
Soundcraft DC2000	£11,000
Soundcraft Sapphire 24	£5,999
Yamaha 02R	£5,999



Manley Laboratories



David Manley's vacuum tube designs use only the highest quality components. He is the only authorised user of the original Western Electric passive EQ circuitry found in the original Pultecs. Both the EQP1 and Mid Frequency EQ monoblocks use this classic design for an equally classic sound. The Langevin range of discrete electronic outboard use the same Pultec designs and built to the same military grade



The **Waldorf Wave** is the programmer's synthesizer with an unmatched sound quality. The Wave's new operating system update includes transport controls for any configurable MIDI sequencer and new sets of Performances are soon to be released.

New in stock are **hardware editors** for the **MicroWave** and **Oberheim Matrix 1000** and are a must for any owner of one of these synths. Both have 'knob control' of all the important parameter (i.e. Filter Cutoff/Res, ADSR) all housed in a sexy little box with wood end cheeks!

Waldorf's new **Miniworks Analogue Filter** makes it now possible to address the legendary filter of the MicroWave with any audio signal, whether from a sample, mic or guitar. A resonant 24dB low pass filter, ADSR envelope curves. Via a sequence, all settings can be operated in real-time a MIDI controller.



Waldorf MicroWave V.2 synth	£1,099
Waldorf Wave synthesizer	£5,350
Waldorf 24db MiniWorks Filter	£199
Gekko Chords & Trigger	£59
MicroWave Hardware Editor	£315
Matrix 1000 Hardware Editor	£315
MicroWave Signature ROM Cards	£49
MicroWave Bass / PPG ROM Cards	£35

Langevin CR3A Mic	£295
Langevin EQP1 Pultec	£949
Langevin Dual Mic Preamp	£995
Manley Baby Valve Mic	£999
Manley Ref Valve Mic	£1,895
Manley Valve Pultec EQ	£1,499
Manley EL01 Opto Limiter	£1,499
Manley Gold Ref Valve Mic	£3,895
Call for a catalogue	

All prices exclude VAT E&OE



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

Microphones Korg M1 2003R £1,446 Roland JV1000 £591 Manley Valve Mic ne £990 Manley Reference Valve Mic £1,499 Neuman KM35 £315 Neuman TLV133 £POA Audio Technica 4033 £POA	DAT Sony DTC-600 £416 Sanyo DTC-60 £510 Tascam DA-30 mk II £950 Sanyo PCM2300 £790 Computers OpCircle Studio 5 £830 MOTU MTP II £POA UL Compe: CS1 £425
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Outboard Manley Pultec EQ NEW £1,301 Manley Lim new £1,815 Langevin micpre-EQ £1,099 Langevin dual E/O Lim £1,149 Doleman D5201 £254 Roland SDE330 £487 Drawmer DF320 £289 Sanyo MP5 new £382	Analog Lexicon PCM40 £1,800 Lexicon LXP15 Mk II £POA Massenburg GML EQ £POA SSL G383FX new £2,382 SPL Vitalizer Stereo £488 Behringer Composer £229 Datt Bass Nine £212 Prograph VS £1,191 Oberheim Matrix 1000 £315
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Shape of THINGS TO COME



OUT WITH THE OLD AND IN WITH THE... OLD

Tascam has announced that its model 32 2-track and 34B 4-track open-reel recorders are to be discontinued after being available for many years. Newer, digitally-based formats are increasingly taking the machines' place in the AV, audio, broadcast and sound reinforcement markets, yet there still remains a significant demand for a professional, analogue 2-track open-reel machine, and Tascam aim to fill this demand with their BR20 Series recorder. The BR20 features microprocessor control, and offers seamless punch in/out, spot erase, accurate auto-locate and direct time location. Three variants are available: NAB 2-track, DIN stereo, and a machine with a centre timecode track.

A TEAC UK, 5 Marlin House, The Croxley Centre, Watford, Herts, WD1 5YA.

T 01923 819630.

F 01923 236290.

EDUCATION CORNER

GOING LIVE — GOING LATER

Soundcraft's Going Live Theatre training course has been rescheduled; the new dates are February 26 and 27, 10am to 5.30pm at The Players Theatre in London WC2. This is a full weekend seminar dedicated to theatre sound.

A Soundcraft Electronics Ltd, Cranborne House, Cranborne Industrial Estate, Cranborne Road, Potters Bar, Herts, EN6 3JN.

T 01707 665000.

F 01707 660482.

DONCASTER COLLEGE PLAYING SOLITAIRE

The newly equipped 24-track studio at Doncaster College features a Soundtracs Solitaire console as its centrepiece. The desk was installed by KGM Studio Specialists of Wakefield, and features automation and moving faders. KGM also supplied the college with multiple Alesis ADAT digital multitracks and a full package of Beyer mics and headphones. The college is now offering a BTEC National Diploma course in music technology, which paves the way for an honours degree in popular music and recording.

A KGM Studio Specialists, 18/42 Charlotte Street, Wakefield, West Yorkshire WF1 1UH.

T 01924 371766.

F 01924 290460.

A Beyerdynamic (GB) Ltd, Unit 14, Cliffe Industrial Estate, Lewes, Sussex, BN8 6JL.

T 01273 479411.

F 01273 471825.

T Doncaster College
01302 553862.

LOTTERY WIN FOR IMW

You probably weren't expecting to see the tentacles of the National Lottery gripping the news pages of your fave hi-tech read, but there is at least one worthy beneficiary of the millions being handed out. Islington Music Workshop have scored £73,000 in Arts Council Lottery Grants, and together with assistance from Solid State Logic, Islington council and their own resources, they have managed to buy a brand new SSL 4000 G+ mixing desk, with automation and Total Recall. This fabulous desk has been installed in IMW's refurbished 24-track studio. IMW apparently received the lottery grant due to their proven track record: 12 years of providing community access to pro training and production resources. A recent franchise with City and Islington College means that IMW can now provide a one-stop training and production facility, taking beginners through a two-day starter course in multitrack and MIDI technology, an eight-week certificate course and on to a 30-week diploma course (which includes training on the new SSL desk).

Contact IMW for a full list of upcoming courses. Note that the unwaged, disabled, students and Islington residents are eligible for concessions, and a number of courses are provided for women only. The workshop also report that as of November, full disabled access is available.

A Islington Music Workshop, 44 Peartree Street, London EC1V 3SB.

T 0171 608 0231.

F 0171 490 0120.

KEYBOARDS ON COURSE

Session keyboardist, contributing editor to Faber's *Rockfile* and ex-Guildhall School of Music professor Adrian York is setting up two new music schools: the Keyboard Institute and the Vocal School. The two schools aim to concentrate on contemporary music styles and trends. Courses will be flexible and geared to accommodate a wide variety of abilities and demands, from complete beginners to professionals. Special courses will be dedicated to more specific areas such as dance, R'n'B and songwriting. Courses will vary between 10-week part-time and one-year full-time, and private lesson packages can be arranged.

T 0181 878 3102

F 0181 255 3105.

SSR 4 NVQ

Manchester's School of Sound Recording, now in its 12th year, has become an assessment centre for those wishing to take an NVQ Level II in Audio Engineering. Students will now leave SSR with a diploma approved by the Open University Validation Service, along with 300 hours of studio experience.

SSR will be holding an open day on January 20, 1996; simply arrive at the school between 12 noon and 4pm, and you can have a look at the school's seven studios and chat to staff about courses and opportunities.

A School of Sound Recording, 10 Tariff Street, Manchester M1 2FF.

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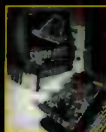
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See our Pro Audio advertisement on page 217

Emu Systems Sound Engine

GM Sound Module

Emu's Sound Engine is the first dedicated General MIDI module from the USA. DEREK JOHNSON explores GM the American way.

Hands up those of you who were intrigued, a couple of years ago, to hear that Emu were launching a General MIDI sound module? You're not alone. Yet their Sound Engine appears to have had a rather low profile since its release. The reason for this is obscure, although Emu's Dave Bristow noted a broad anti-GM feeling amongst American keyboard players when he spoke to *SOS* in October. Nevertheless, the Sound Engine exists, and its spec is promising: 32-voice polyphony, 16-part multitimbrality, 384 programmable presets, two digital effects processors, and a Mac computer interface.

You won't be doing any editing from the front panel of this stylish box, but this is par for the course where desktop music sound modules are concerned. Also par for the course is the GM sound set with which the Sound Engine powers up, and the bundled Mac software: Opcode's *Edit One* editor/librarian, with a free set of extra sounds, and the excellent *EZ Vision* entry-level sequencer. However, the lunch isn't entirely free, since the supplied *Edit One* is a cut-down version. If you want full patch editing, you'll need to pay for an upgrade.

There's not much to the module's controls: a button that determines whether the module is controlled over MIDI or via a Mac; a volume control; a headphone socket; and a collection of data-activity LEDs. At the rear, there's a set of MIDI

sockets, stereo input and output phono sockets and PSU socket. Er... that's it.

SWITCHING ON

On power up, the Sound Engine loads both its preset banks with the same set of factory GM sounds — 128 instruments and 64 drum sets. Though General MIDI doesn't actually specify this many drum sets, Emu's extra kits are all voiced in the GM fashion. Though two banks of sounds are available, only one bank at a time can be accessed, using System Exclusive — and SysEx also lets you switch the Sound Engine into its hidden Proteus mode. Indeed, one of the sound banks supplied with *Edit One* is identical to the original Proteus's main patch bank.

Presets use one or two basic waveforms, each with its own key range, envelope, effects settings, LFO, and so on. There are also alternate tuning tables and sophisticated MIDI controller routing, as well as Preset linking, for quick layers, crossfades or keyboard splits. Accessing these features requires a Mac (to run *Edit One*), or a profile for a generic editor for whatever computer you use. Software sequencers with MIDI mixer pages (Steinberg's *Cubase* or Emagic's *Logic*, for example) can also be tweaked to access the hidden depths, but you'll have to come to terms with SysEx to go this far. Luckily, the manual is a mine of SysEx information. Without using SysEx in some way, the Sound Engine has no operating system to speak of: at a basic MIDI Song File playback level, all program changes, volume levels, pan positions, etc. are taken care of remotely from within a sequence.

SOUNDING OFF

In GM mode, the factory sounds are a mixed bag. The majority are absolutely fine, certainly in the upper rank of GM modules. There are also a few gems where you'd least expect them. When was the last time you were impressed by the sitar, bagpipes or tuba on a GM module? Also noteworthy are the string sections, oboe (which has a nice

EMU SOUND ENGINE £565

PROS

- Room for 384 user patches.
- Proteus mode.
- Good GM sounds.
- Plenty of editing potential.
- Clear manual.

CONS

- Bundled software for Mac only.
- *Edit One* not full version.
- User edits lost on power down.
- A bit pricey.

SUMMARY

A GM module with hidden depths, which can be used as a straightforward preset sound source or switched into Proteus emulation mode for the more demanding user.

Proteus 2-like playability), synth pads and harpsichord. The GM drum kits are a low point, although they may suit some. Most strange is a pitched noise in the background of one or two cymbal samples.

Prospects are even better when you explore the non-GM side of the Sound Engine: the Proteus clone preset banks provided by *Edit One* bode very well for the module's sonic potential, and *Edit One*'s randomise feature produces some useful new patches. In this mode, the Sound Engine is almost a Proteus, bar one or two shortcomings in the sample ROM, and that has to be good news.

TYING UP

In a perfect world, the punchline would be that we've found a Proteus hidden inside a humble GM playback module, and available for tuppence. Well, the world's not perfect, and the Sound Engine costs rather more than 2p, but Mac owners may find that the (relatively high) asking price is acceptable bearing in mind the bundled software, and others may relish the chance of a virtual Proteus for a lower retail price than the (now discontinued) real thing. Add to this the fact that there are some nice street prices going and you may well find it's worth hunting down a Sound Engine.

SOS

FURTHER INFORMATION

- E** Sound Engine £565 inc VAT.
A Emu Systems UK, Suite 6, Adam Ferguson House, Eskmills Park, Musselburgh, East Lothian EH21 7PQ.
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Tech 21 Sansamp XXL

Hi-tech Overdrive Unit

PAUL WHITE tries out a new overdrive pedal that was clearly named after a very large T-shirt.

This latest Sansamp product incorporates Tech 21's specially-designed overdrive chip in a pedal. As it doesn't have a speaker simulator, you have to record via a device that does have one, or use an amp and mic it up.

At the heart of the unit is a complex chip, which is designed to model (in the analogue domain, of course!) the characteristics of a valve-powered guitar amp, right down to the push-pull output stage. The upshot is that the overdrive sound, and, equally as importantly, the responsiveness of tone, very closely matches that of a real amplifier.

The XXL's other claim to fame is that with the addition of the new Warp knob, it provides control over odd and even harmonics. The remaining controls (level, tone, and drive) are common to most stomp boxes, and in true stomp box tradition, a chunky bypass footswitch is provided. Power is supplied via 9V PP3 battery, though an external PSU may be used.

The Warp setting varies the available tones from overdrive through to a true tube

tonality, and at more extreme Warp settings the level of the note being played also 'pumps', in much the same way as a valve amp compresses due to power supply sag. Even the passive tone circuit is slightly out of the ordinary — when its control knob is fully clockwise, it is essentially flat, but as you approach the mid position, the low frequencies are boosted, so fattening up the sound. When the knob is turned right down, the high end is also cut, leaving a very smooth tone.

IN THE STUDIO

The beauty of the XXL in the studio is that you can plug it into any half-decent practice amp and create a huge sound that delivers noticeably more 'oomph' than most DI methods. Using an amp also gives you the chance to utilise real room acoustics in your recording. On the other hand, if you have a guitar preamp with an in-built speaker simulator already, you can use the XXL to vastly increase the range of available sounds.

My first test was to use the XXL with my little Fender Champ amp and a Strat, and the results were simply superb — especially at lower drive settings, where the tonality of the guitar and the responsiveness of tone produced a sound that can only be described as classic. At higher overdrive levels, the sound becomes more saturated and very punchy, which is ideal for rock work — even the Strat's single-coil pickups sounded very thick. Experimenting with the Warp

TECH 21 SANSAMP XXL £100

PROS

- Excellent range of convincing tones.
- Warp control really effective.

CONS

- Minimum drive level still too high for some powerful humbuckers.
- No speaker simulator built in.

SUMMARY

The XXL sets a new standard for overdrive pedals and will be welcomed by guitarists for both stage and studio use.

control revealed that the harmonic balance makes a considerable difference to the type of tone achieved, and the best Strat sounds came with settings above the halfway point.

When I tried the XXL with my PRS guitar, the tone was excellent again, but this time I found that it wasn't possible to turn the XXL's drive control down far enough to give me that elusive in-between blues tone.

CONCLUSION

Although aimed mainly at the live musician, this pedal can transform any small amp into a studio monster, and it also sounds good plugged into other preamps that have their own speaker-simulator circuitry. The Warp Harmonics control makes this unit more versatile than any other four-knob overdrive box I've used before, and the Sansamp circuitry produces a very convincing tube amp tone. As already mentioned, the drive range may be too restricted for those users who have powerful, humbucking guitars, and who want to get a subtle blues tone on occasion. The only way you can get the drive low enough is to turn the volume down on the guitar, and with most guitars, that results in some loss of top end. This limitation aside, the XXL is an excellent pedal which transcends the limitations of the usual overdrive box.

SOS



FURTHER INFORMATION

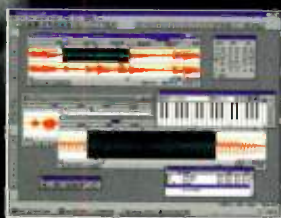
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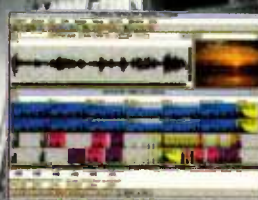


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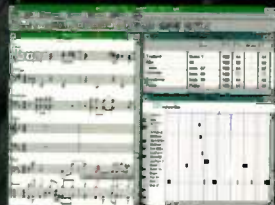
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B&W CDM1

Hi-fi Speakers

B&W's new hi-fi speakers turn in an impressive performance as small studio monitors as PAUL WHITE discovers. But can they compete with the dedicated monitors already on the market...?

B&W are one of the few British hi-fi loudspeaker manufacturers who have managed to maintain a prominent market position while sticking to basic engineering principles, rather than following the quasi-mystic fashions of the hi-fi tweeker. The CDM1s under review might look a little unusual, but even the cabinet shape is based on established principles, and the speaker system itself is a fairly conventional, two-way, passive arrangement in a ported cabinet. Although designed as hi-fi speakers, the CDM1s are quite capable of producing monitoring level SPLs when used in the near field, and the tonal integrity holds together well up to surprisingly high levels.

At the heart of the system is a 165mm bass/mid driver comprising a woven Kevlar cone suspended in a substantial die-cast basket, and driven by a 31mm voice coil. Handling the top end is a free-mounted, 26mm, alloy dome tweeter, incorporating a high-power voice coil working in a magnetic fluid-filled gap for cooling. Feeding the two drivers is a passive crossover, which, when combined with the natural characteristics of the drivers, produces a 4th order filter characteristic with a crossover point at 3kHz. The resulting system has a usefully wide frequency range, covering 64Hz to 20kHz +/- 2dB, and is only 6dB down at 46Hz and 25kHz. This isn't as extended as you'd expect from a larger mid-sized, or main monitoring system, but is more than adequate for nearfield work, and is much less likely to excite modal

resonance problems in small rooms which have little, or no, acoustic treatment.

Considering their small size, the CDM1s are surprisingly efficient at 88dB for 2.83V input at 1m, which, in non-technical terms, means that an amplifier capable of delivering between 50W and 120W will give you sufficient wellie for monitoring without clipping. For hi-fi use, you can go as low as 30W per channel, but in the studio, I'd be inclined to think along the lines of 75W a side, or more, unless you are in the habit of always monitoring at restrained levels. Although nominally rated as 8Ω speakers, the impedance drops to almost half that value near resonance, so be sure to use an amplifier capable of driving 4Ω loads or below.

The cabinet itself deserves comment, as apart from being very stylish, the radiused edges are there to reduce cabinet edge diffraction, and while the sloping tweeter baffle may look like a cosmetic add-on, it was probably introduced to deflect baffle reflections away from the listener. The tweeter itself is free-mounted (not fixed directly to the baffle), so that it still points directly forward, and a mesh dome is fixed over it for protection.



Connection to the speakers is via chunky terminals on the back panel, and two sets of terminals are fitted for those who prefer bi-wiring. The holes in the terminal (which accept either bare wires or banana plugs) are generously

large, and should accommodate all but the most esoterically butch speaker cables.

PERFORMANCE

I tested the CDM1s using an amplifier rated close to the top end of their power handling range, and found that I could achieve quite deafening monitoring levels without the clip LEDs so much as winking at me, but in order to preserve what's left of my hearing, I quickly dropped the level to something more sensible, and put on the usual selection of test CDs. Overall, the speakers deliver a well-balanced tonality, which makes them very suitable for general purpose mixing work, with the usual caveat that the bass lacks any real depth, and even though it does pick up at higher listening

B&W CDM1 £599

PROS

- Overall accurate tonal balance.
- Compact and very stylish.
- Only modest amplifier power required.

CONS

- Disappointing cost-to-performance ratio.

SUMMARY

Had I been given a £300 pair of speakers to review that sounded this good, I would have had no hesitation in recommending them, but given the actual price, I feel the sound quality doesn't quite make the grade.

levels, there's still no real punch.

As I have said on more than one occasion, loudspeaker design is about balancing compromises, and in the case of the CDM1s, some of the compromises show if you listen for them. For example, such bass as there is can start to sound just a hint 'tubby' when you crank up the level, and if you gently tap the cone of the bass driver with the amp switched off, the resulting pitched thud seems to be at the frequency of the offending tubbiness, which suggests the system is a little under-damped. This effect is only slight, and by no means spoils the performance of these monitors, but at £600 a pair, it is something you should be aware of.

The top end is surprisingly smooth for an alloy tweeter, but still isn't as smooth as you'd expect from a well-designed, soft-dome tweeter. On well-mixed material, you notice just a slight lack of focus in the upper registers, but on anything that's mixed over-brightly, the sound takes on a slightly ragged edge, hinting at something misbehaving in the 5 to 7kHz part of the spectrum. Compared with some established nearfield monitors, this effect is fairly subtle, but it still needs to be mentioned.

On balance, the B&W CDM1s are a good example of small loudspeaker design, and even though they're not perfect, they do acquit themselves pretty well. For a user working in a small room with limited space, the CDM1's are a viable choice for nearfield monitoring, although I have to admit that given this kind of budget to spend on a monitoring system, they wouldn't be top of my list. Perhaps the high price of the CDM1s is partly down to the stylish cabinet construction, but in the studio, most of us are more concerned with value for money and sound, than appearances.

SOS

FURTHER INFORMATION

- £ £599 inc VAT.
A B&W Loudspeakers Ltd, Meadow Road, Worthing, BN11 2RX.
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Presence Audio ZYP A2S

Miniature Nearfield Monitors

PAUL WHITE checks out what must be one of the smallest serious monitors ever.

When you're working within a desktop environment (as is usually the case when hard disk editing, composing for multimedia, or even MIDI sequencing), there's often no room for conventional monitors, and even regular nearfields are usually too bulky. The trouble is that most so-called AV speakers are underpowered and wildly inaccurate, which leaves a problem just waiting to be solved. In fairness, compact speakers (such as JBL's Control Ones reviewed way back in *SOS* March '87) perform well in this role, but even they are designed to sound impressive rather than to be absolutely accurate.

Presence Audio, a British company, has identified a gap in the market for a compact, high-performance monitor, and

shielded A2ST versions. Adhesive damping panels are fitted inside the cabinets, which are also filled with long-fibre wool. Both drivers are built in the UK: the tweeter is a 1-inch, alloy-domed unit, and the bass/mid driver features a solid alloy cone suspended in a soft rubber roll surround. The crossover frequency is at 3kHz, which is high enough to keep it away from the vulnerable vocal part of the spectrum. The overall frequency response is stated as extending from 80Hz to 20kHz, although as no indication is given as to how many dBs down the response is at these two extremes, the figures are pretty meaningless.

With a nominal impedance of 8Ω, the speakers can handle up to 50 Watts (again, there is no indication as to whether this is a continuous, peak, or average rating) and the published sensitivity is 87dB per Watt at 1m. What this translates to in practice is that with an amplifier rated at between 50 and 75 Watts per channel, adequate monitoring level is available providing the speakers are set up in the near field, which, in the case of desktop operation, is unlikely to be more than three feet from the listener. Connection to the speakers is via rear panel binding posts.

PERFORMANCE

I tested the monitors using an AVI 100 Watts per channel S2000 MI hi-fi amplifier, largely because this has a reputation for exceptional accuracy. The source material came from a Marantz CD52, which, although not the most esoteric of players, does stack up well alongside more costly machines for playback quality.

The speakers are optimised for use close to a wall so that the boundary effect comes into play to extend their bass performance, so I set them up on stands just a few inches from the wall and rummaged in my box of test CDs for some suitable material.

The first thing I noticed was the depth and punch behind the bass end — boxes this small have no business hitting you like that! Of course, to get such a high level of bass out of such a small box, the bass driver moves quite a long way, which is why the power handling is limited to 50 Watts, but there's still enough level for serious nearfield monitoring. As the system employs

ZYP A2S £275

PROS

- Well-balanced sound with impressive bass extension.
- Excellent stereo imaging.
- Magnetically shielded version available.

CONS

- Relatively costly.

SUMMARY

High performance in a small package; ideal for situations where space is a problem.

metal-coned drivers, I was expecting a rather brash sound, but the bass/mid driver actually seems to be quite well damped, and even the tweeter sounds only marginally splashy — far less so than most of the metal-domed systems I've heard. Overall, the sound is a touch hard, but its tightness, combined with the depth of bass, balances this out quite nicely and prevents it from becoming excessively fatiguing.

As you might expect from such small drivers, these monitors home in on every detail of the sound and deliver a very precise stereo image. The cabinets are apparently designed for horizontal use, but because the drivers are in such close proximity, this doesn't adversely affect the imaging, or restrict the optimum listening position to just one precise point in space. Even so, I still think I'd be inclined to stand the speakers vertically, even if it does mean the logo is sideways. Perhaps a rotating logo like the one on JBL's Control Ones would be a good idea?

The ZYP A2S's don't rival a good pair of conventional-sized monitors for accuracy, but they come a lot closer than you might imagine. I don't think I've heard a better-sounding speaker of this size, although the JBL Control Ones, which are only slightly deeper, have a higher power handling capability at the expense of a less impressive bass performance. In a desktop environment, the ZYP monitors come close to being ideal, but for use near a computer monitor, the shielded A2STs are recommended. **SOS**

FURTHER INFORMATION

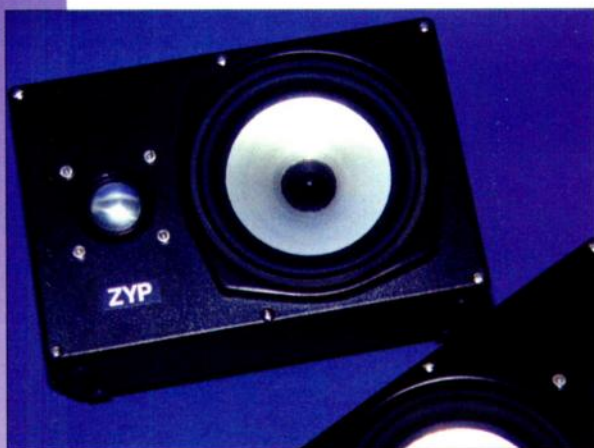
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although there are inevitable compromises in building a speaker in a cabinet measuring 8.75 x 5.75 x 4.5 inches, the ZYP A2S monitors surprised me both in their general accuracy, and the amount of true bass end they projected. They are certainly equal to the task of MIDI programming and most aspects of digital editing, as well as monitoring in small studios.

Housed in mirror-image, non-parallel sided, black powder-coated, cast aluminium cases, these two-way passive monitors are surprisingly heavy, weighing in at 3.5 kilos each, or 4.0 kilos for the magnetically-

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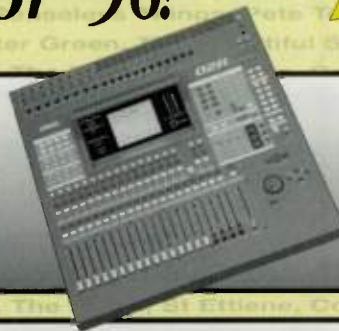
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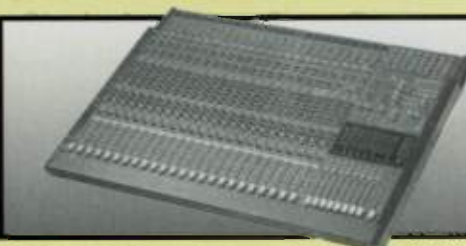
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BBE 362NR

Sonic Maximizer

BBE's new Sonic Maximizer combines enhancement with single-ended noise reduction. PAUL WHITE finds out whether the marriage of the two systems is a happy one.

As most regular *SOS* readers will know, BBE's patented process is a means of enhancing an audio signal to improve the sense of detail and transparency, but unlike the Aphex system, which is based around harmonic synthesis, BBE's is more

noise reduction to clean up master recordings or sweeten old mixes, and now BBE have taken the step of combining both processes in a single 1U box.

The BBE 362NR is a dedicated stereo unit with ganged controls, and is optimised for -10dBV applications. Jack and phono In/Out connectors are provided, both offering unbalanced operation only. The DNR (dynamic noise reduction) circuit comes right at the end of the signal chain before the output sockets, and is actually very simple, being based around a frequency-conscious envelope follower, which in turn controls an LED/LDR combination. The LDR (light dependent resistor) forms part of a straightforward RC (resistor/capacitor) filter, and as the resistance changes, so does the roll-off frequency of the filter. In practice, as the signal level falls to the

If the threshold is too high, audible high-frequency loss may become evident, whereas if it is too low, the noise reduction won't be as effective as it could be. The Release control should normally be set as fast as possible without producing any audible noise pumping effects.

IN USE

As expected, the enhancement side of the 362NR works pretty much as on the BBE units I've used on previous occasions, and although I still hold to my opinion that the results you can achieve using this process aren't quite as crisp and dramatic as when using a Vitalizer, or Aphex, the BBE process is arguably more subtle, and consequently more difficult to over-use. With well-recorded material, the BBE 362NR enables you to add a worthwhile degree of warmth at the low end, as well as clarity and space at the top end, and



concerned with redistributing the harmonics that are already present. Apparently, the process was first devised to counteract the phase smearing that occurs in typical passive loudspeaker systems. It does this by breaking the audio spectrum down into three bands, then applying small delays to the lower two bands. The signal is delayed by around 2.5mS between 20Hz and 150Hz, whereas mid-range signals between 150Hz and 1200Hz are delayed by just half a millisecond. Above 1200Hz, the signals are not delayed, but are subjected to some form of dynamic amplitude control which has the effect of emphasising high-frequency, transient detail. As heavy processing can cause the top end to overpower the bottom end, a low-frequency equaliser permits the user to add boost at 50Hz to compensate.

It's well proven that all types of enhancer can make a significant contribution to musical clarity, but because all increase the amount of high frequency energy in the signal, albeit slightly, there's always the risk of emphasising any noise already present in the input signal. Many people, including myself, have at some time or other used a combination of enhancer and single-ended

point where noise might become a problem, the filter starts to close, removing progressively more of the high frequencies which, in most cases, should be mainly noise. The BBE part of the circuit is handled by BBE's proprietary chip.

CONTROLS

What's going on beneath the casing might be pretty clever stuff, but the user interface is really very uncomplicated. Once the BBE process is switched in via the Bypass button, a Process control sets the intensity of the enhancement by varying the amount of top frequency band information, and a Lo Contour knob adds the 50Hz bass boost if desired. Clip LEDs are fitted to both input channels which come on at 3dB below clipping, and a status LED shows when the BBE effect is active.

The noise reduction section is equally lucid, and aside from its own bypass switch, labelled Function (again with a status LED), there's only Threshold and Release to worry about. Threshold determines the level at which the SNR system starts to reduce the top end, and must be set carefully by ear. Release governs the time it takes for the dynamic filter to come into action once the signal level has fallen below the threshold.

because the process is based on the existing signal, it doesn't tend to become over-harsh, even when the Process control is wound right up.

The SNR (single-ended noise reduction) side is equally smooth, but because there is no metering to show you what activity is taking place in the filter department, you have to keep switching the bypass switch in and out as you set the threshold, to make sure that you aren't compromising the top end. Once you've set the threshold for minimal tonal change at normal signal levels, you should find that the noise during low-level passages has been noticeably reduced. The key here is that noise can only be reduced and never totally eliminated, so there's no point using the BBE 362NR to try and disguise a poor recording. On the other hand, if the noise contamination is relatively modest, the 362NR can certainly make a noticeable improvement without altering the wanted part of the signal. It's worth noting that the process isn't only suitable for using on complete mixes — slightly noisy synths or even guitars can be cleaned up at the recording stage, then when you come to mix, you can use the 362NR again if you need to.

BBE 362NR £336

PROS

- Smooth, natural sound.
- Easy to operate.
- Useful combination of enhancement and single-ended noise reduction.

CONS

- Less effective at freshening up dull sounds than harmonic enhancers.
- No noise reduction metering.

SUMMARY

A useful and intuitive processor that can add a touch of magic to well-recorded material, but is perhaps less well-suited to salvaging sub-standard recordings.

CONCLUSION

To BBE or not to BBE; that is the question. If you're into adding subtle refinements to your music, then the answer is unquestionably yes, the 362NR will do a good job, it won't ruin your tonal balance, and it includes a useful noise reduction system to boot. As with all the other enhancement methods, it does manage to open up the mix nicely, but if you're into dramatically changing the tonality of your mixes so that you can carve the ears off bats at 100 paces, then maybe one of the other systems would suit you better. One of the main tenets of the BBE process is that nothing is synthesized or added, but sometimes, when you're working with an intrinsically dull sound, the capability to add new harmonics is a lifesaver.

In its favour, the BBE is very easy to set up, especially if you haven't had much prior experience with enhancers, and the SNR capability for noise taming is extremely useful providing you don't expect too much of it. I feel that too many records are mixed with far too much top end, the result being that they are fatiguing to listen to. As implied earlier, the BBE system is the least likely to cause harshness problems if used over-zealously.

The BBE process has been around for a long time — it works well, and only first-hand listening tests will tell you whether or not you prefer it to the competing systems. I can find merits in all the available approaches, but nobody offers a single unit that combines all the attributes of the different enhancement systems, so in the end, the decision is purely a subjective one.

SOS

FURTHER INFORMATION

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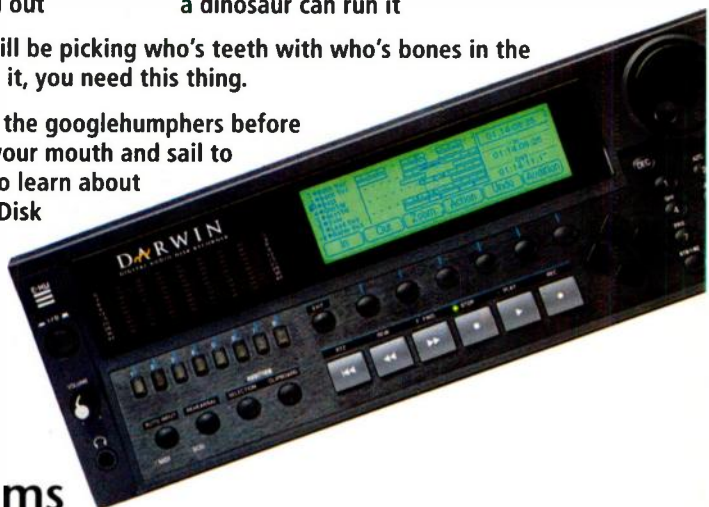
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Audio Technica

Back-Electret Vocal Mic

PAUL WHITE tests Audio Technica's latest low-cost back-electret mic and discovers that its performance is out of all proportion to its size.

Only a few short years ago, Audio Technica was just one amongst many microphone companies fighting for a place in the big league, but the launch of their AT4033 professional vocal mic changed their market position almost overnight. Here was a relatively low-cost mic that seemed to 'out-classic' the classics — in fact, many of the big names who'd been asked to try out the AT4033s refused to

Home recording has become very sophisticated of late, and most people realise that in order to obtain professional results you have to use good microphones. Studio professionals use capacitor mics for most serious vocal and acoustic instrument recording, and over the past few years, we've seen the development of several fine-sounding low-cost capacitor mics based on the back-electret principle. The AT873R is one such microphone, and although its compact format and hypercardioid response make it ideal for live work, its attractive price, combined with a very solid audio performance, puts it squarely in the frame as a home-recording mic.

There are numerous back-electrets already on the market, ranging from very cheap models designed to be stuck on top of camcorders, to top-end mics, such as Audio Technica's own AT4033 and Bruel



part with them. The success of the AT4033 was followed by the more recent introduction of the AT4050 multi-pattern studio mic, which again compared favourably with established models, many of which were considerably more expensive. Having forced themselves into the collective consciousness of the pro market, Audio Technica have now turned their attention to the live and home recording arenas.

& Kjaer's ruthlessly accurate studio mics. The very cheap models tend to suffer from low sensitivity, and although they have a better high-frequency performance than most dynamic mics, they have little else to offer. The AT873R is unusual in that it is one of the least expensive back-electrets around, yet its sensitivity is considerably better than a typical dynamic mic, and closely approaches that of a quality studio capacitor mic.

LET'S GET PHYSICAL

The AT873R comes complete with soft case and stand clip. Physically, it is a very unassuming mic, but you only have to pick it up to realise that it's very solidly put together. Unscrewing the tough wire basket reveals the capsule, which is supported on a shock-resistant mounting; the preamp circuitry is hidden away in the handle and operates from conventional 48V phantom power. Being a hypercardioid mic, the AT873R exhibits a proximity effect, which results in an increase in bass end when used close up. To prevent this becoming excessive, the low end of the mic's response is gently rolled away, resulting in a nominally flat frequency range of 70Hz to 20kHz. The sensitivity is quoted as 14.1mV at 1Pa, and as a guide for comparison, a budget back-electret mic might make it up to 5mV/Pa, whereas a really good studio capacitor mic can belt out around 20mV/Pa. The signal-to-noise figure of 67dB at 1kHz at 1Pa is also quite respectable, as is the dynamic range of 113dB. There's no built-in pad, or even an on/off switch for that matter, so you can't expect this mic to give of its best when placed half an inch from a heavy metal snare drum, but it does work well as a drum overhead mic, as well as for general acoustic instrument work (including guitars).

The 100Ω output impedance of the AT873R means that it is suitable for any mixer or multitracker that has been specified for low-impedance mic operation, but as there is no battery power option, the mic can only be used in systems where phantom powering is available.

THE SOUND

There is one school of thought which says that mics shouldn't have a sound, they should just tell it like it is — but I've been around long enough to know that in a blindfold test, the honest mic (if there is actually such a thing), rarely turns out to be the preferred one, especially when it comes to recording vocals. What we tend to go for is a mic that presents the sound in a slightly idealised fashion, giving the impression of honesty, yet still flattering the sound being recorded — rather like a portrait photograph taken with sympathetic lighting.

As the AT873R employs a relatively small capsule, I was expecting it to sound somewhat clinical, but its inherent top-end

AT873R

clarity is combined with a degree of low-end warmth, resulting in what I call a very 'comfortable' and open vocal sound. Inevitably, I did a direct comparison against one of my AKG C1000s, and was surprised to find the AT873R significantly more sensitive. Tonally, the AT873R is generally brighter and crisper-sounding, but isn't in any way brittle or aggressive.

The hypercardioid response doesn't seem to cause any problems in the studio, provided you don't work too close to the mic. In fact, the (slight) additional separation you get from using a hypercardioid mic can actually be very welcome in multi-player sessions. The AT873R's only weakness seems to be its susceptibility to popping — an element shared by just about every small mic I've come across. It's all down to physics Jim — to make a mesh pop filter work effectively, it has to be at least a couple of inches away from the mic, so add 50p to

your overall budget for a chip pan splash guard to use as an external pop filter.

SUMMARY

Despite its unassuming appearance, the AT873R is a very serious little mic, which combines good sensitivity with a workable balance of warmth and crispness. The handling noise is reasonably low (should you be thinking of taking it on gigs with you), and as well as making a great vocal mic, the AT873R is a particularly good choice for acoustic instruments — especially nylon-strung acoustic guitars and other difficult instruments that low-sensitivity mics tend to struggle with.

If price is no object, then you can find any number of better mics than the AT873R. If, however, you're looking for a mic that can turn in a studio-quality performance for less than the VAT on a classic capacitor mic, then I have no hesitation in recommending that you put

AUDIO TECHNICA AT873R £200

PROS

- Good combination of clarity and warmth.
- Attractive price.
- High sensitivity.

CONS

- Lack of battery powering option means you need phantom power to use this mic.

SUMMARY

The AT873R is a good budget choice for vocal and acoustic instrument recording, including drum overheads, but it is less suitable as a close drum mic in very high-level situations. Two would make a versatile and cost-effective stereo setup. Highly recommended.

the AT873R right at the top of your short list. There's no doubt in my mind that this mic has what it takes to become established as a firm project studio favourite. **SOS**

FURTHER INFORMATION

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Beyerdynamic DT250

Headphones

Enclosed headphones that are sensibly priced, comfortable, and sound as accurate as a pair of good monitors — is it possible? PAUL WHITE finds out.

Headphones tend to fall into two general categories: the open-style phone and the fully enclosed phone. Open phones can sound extremely good, but tend to be bass-light, and, of course, sound can get in as well as out. Closed phones, on the other hand, offer far better isolation against sound escaping or unwanted sound getting in, and can offer a much greater impression of deep bass, but their weakness lies in a tendency to sound boxy due to the airtight enclosure used to seal the driver to the ear. Beyerdynamic's new DT250s came as rather a surprise in that they seem to offer the best subjective qualities of both types of headphone.

CONSTRUCTION

The DT250s are relatively small enclosed phones which just fit over the ears, cushioned by soft, velvety pads rather than the usual fake leather. They aren't completely field-serviceable like the DT100s or DT150s, but the signal lead is unpluggable to prevent disaster when the drummer trips over it! A gold-plated stereo

jack is fitted to the lead, and this has its own adaptor system so that it can either present itself as a quarter-inch jack, or as a regular mini headphone jack. The headband has a reasonably positive adjustment system and is comfortably padded.

With a nominal impedance of 80Ω, the DT250s have a quoted frequency response of 10Hz to 30kHz, but as with all headphones, the bass performance is affected by how well the phones fit the listener. As many as 13 different variations on this phone are available, numbered



DT250 to DT292 V.11, 12 of which come with headset mics, and six have only a single phone for those who need to work with one ear free. However, the review version is perfectly conventional in all respects.

SOUND

Beyerdynamic have an excellent reputation for both microphone and headphone design, but I didn't really expect the DT250s to sound as open and uncoloured as they did. I checked them out with a variety of test CDs and was immediately impressed by the overall tonal honesty, and by the sense of deep, tight bass. I tried an A/B comparison between the DT250s and my ATC SCM20 loudspeakers, which were adjusted to produce the same subjective sound level, and found that the tonal balance was

uncannily similar, right down to the bass response. Surprisingly, I could hear no trace of boxiness due to the sealed enclosure. In fact, on changing from one source to another, the only real difference was that with the headphones, I couldn't feel the bass coming through my feet — perhaps an in-sock, low-frequency transducer could put that right!

When it comes to stereo imaging, the DT250s are very precise, but suffer from the same problem as all the headphones I've ever tried inasmuch as the soundstage doesn't appear to be in front of you, but instead seems to pass through your head. Different people perceive headphone sound in different ways, but design engineers acknowledge that creating a headphone image which appears to be in front of the listener is very difficult.

CONCLUSION

As the DT250s are so tonally accurate they can take the place of conventional monitors for the preliminary stages of mixing, although the final mix should still be checked over monitors if you are to be confident of its accuracy. These headphones are also excellent for keyboard programming late at night where you want to hear your music at an exciting level, but where your neighbours don't share your enthusiasm.

On the other side of the glass, the DT250s make fine performers' headphones due to their good isolation properties, their overall honesty, and their ability to really push out the volume when asked to do so. They're comfortable to wear, are as secure as most headphones, and the removable lead helps prevent expensive accidents.

I have to say that I'm very impressed with the DT250s, and think you'd have to spend quite a lot more money before hearing any significant improvement. The DT250s are great all-rounders, equally suited to life in the control room or the studio. They make the original DT100s sound like a transistor radio hiding in a coconut shell, and the bass response makes my otherwise excellent open phones sound distinctly lightweight. I'm going to resist sending these back for as long as possible!

505

BEYERDYNAMIC DT250 £116

PROS

- Accurate, rather than flattering sound.
- Solid bass response.
- Good acoustic isolation.
- Comfortable to wear.

CONS

- Not fully field-serviceable.

SUMMARY

A sensibly-priced enclosed headphone combining tonal accuracy with good sound isolation, good bass response, and the ability to put out plenty of level.

FURTHER INFORMATION

- E** £116.33 inc VAT.
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ART MDM8L

8-Channel Compressor/Limiter

PAUL WHITE tries out ART's new 'digital safety net', and discovers it has a great deal of creative potential.

The great thing about digital recording is that it doesn't suffer from the colorations and non-linearities of analogue tape — what you put in is pretty much what you get out. The bad thing about digital recording is that — well, it just doesn't sound like analogue, does it? On a more practical level, digital recording means that you have to take care never to overcook your recording levels. What might sound like a pleasing hint of overdriven warmth on an analogue machine can sound like a blender full of broken glass on a digital recorder.

ART's MDM8L 8-channel analogue compressor/limiter sets out to solve both

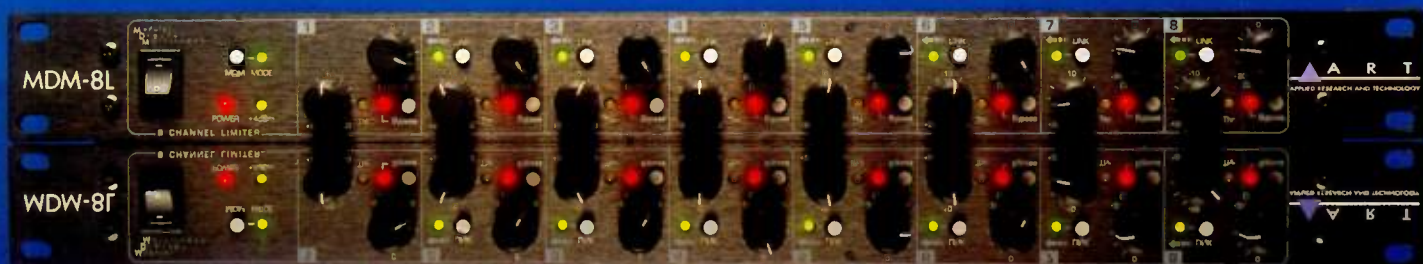
stereo pairs, or up to eight channels may be linked. In Manual mode, the front panel controls are used to set the input gain (and hence the amount of compression), and the output level or makeup gain. There's also a second mode, termed MDM (Modular Digital Multitrack), which is accessed by a the Mode button adjacent to the main switch. This mode sets the output level ceiling of all eight channels, and brings in the compression some 6 to 8dB below the limiter threshold, adding a touch of warmth. You are most likely to use this second mode if you want the MDM8L to protect your digital multitrack or hard disk recorder from overloading. In this mode, a rear panel master level switch sets the desired output level: -10dBV for unbalanced systems and +4dBu for balanced.

LAYOUT

Powered directly from the mains, the MDM8L comprises eight identical channels, each of which has an Input Level control, an Output Level control, and a

little overshoot (for the sake of character), while the limiter is much faster at 100 microseconds, although the compressor release time appears to be programme-dependent and varies from 100mS to 2S. The Input Gain control has a range of +20dB to -40dB and is used to set the signal level against a fixed threshold, a status LED indicating when gain reduction is taking place. The Output control provides +/-20dB of gain control when in Manual mode, but is inoperative in MDM mode to prevent the preset maximum signal level being exceeded; control over the output level in MDM mode is only possible via the rear panel master output level switch, situated between the jack sockets and the mains inlet. This is, in turn, inoperative in Manual mode.

Although the signal connections are on jacks only, they are all electronically balanced, both inputs and outputs. Even though the compressors have few controls, ART have designed them to sound musically useful over a range of applications — the MDM8L is most definitely not intended simply as a nursemaid for your digital multitrack. The linking option means



sets of problems at a stroke — it uses limiters to keep an eye on your recording level, and it adds compression to emulate the warmth of analogue tape saturation. It can't reintroduce wow and flutter, and it doesn't promise to bring back tape hiss, but then there are some analogue 'benefits' that you can well live without!

Technically, the MDM8L is simply eight compressors in a box, each channel also incorporating a separate, fast peak limiter. As with any other compressor, the channels of compression may be used separately as

Bypass switch. All but the first channel have Link buttons which tie that channel's operation to that of the nearest unlinked channel to its left. Both the Bypass and Link buttons are fitted with status LEDs.

The unit offers no control over attack and release time, or a separate threshold control for the compressor and limiter. As far as I can tell, the thresholds are linked so that the compressor always comes in a few dBs before the limiter, and the compression ratio is preset at 2.5:1. The attack time for the compressor is set at 1.5mS to allow a

that stereo signals can be treated without the stereo image wandering all over the place, and the programme-dependent release time is designed to ensure that the compression sounds as natural as possible, regardless of the dynamics of the incoming signal. On paper it sounds great, but what's it like in practice?

TESTING TIMES

It's quite clear that the MDM8L was designed for the benefit of the ADAT and DA88 user, so I patched the unit in line

ART MDM8L £585

PROS

- Very easy to use.
- Sounds transparent when used in moderation, yet really thickens up the sound when piled on thickly.
- Useful combination of compression and limiting.

CONS

- No gain reduction metering.

SUMMARY

A very useful tool, both for digital recording overload protection and general purpose compression.

with the input of an ADAT and set about feeding it signals — both individual tracks and complete mixes. MDM mode proved to be quite accurately calibrated for ADAT use; compression starts several dBs before you hit the end stops, and the limiter steps in just as clipping is about to occur. Of course, the input gains can still be used independently, allowing more compression on some channels than others — it's just the peak levels that are kept the same.

Used discretely, the compression and limiting is reasonably transparent, but as

you pile on more gain reduction, the compressor action becomes quite audible, starting out as a warm thickening of the sound, and eventually resulting in an obvious pumping effect. I actually rather like the pumping effect, which helps add to the illusion of power and dynamics on rock tracks or strong vocals. As there are so few controls, the MDM8L is incredibly easy to set up — you simply use the input gain control to set the amount of compression you want, and though you don't get any fancy gain reduction meters, it's pretty easy to set the required degree of processing by ear. The only disadvantage of not having metering is that you might end up piling on more compression than you really need, with the inevitable result that any background noise in the source material is also raised. At least the Threshold LED lets you know when gain reduction is taking place, but I'd have been happier if ART had fitted a limit indicator LED as well, so that you could see when the limiter joins in the action. As it is, you get to see when the compression starts, but that's it.

CONCLUSION

As a general purpose compressor, the MDM8L is surprisingly flexible considering its simplistic control system. It is very

effective at fattening sounds, as well as simply keeping their peak levels under control. In MDM mode, the unit allows you to get maximum level onto digital tape, which in turn helps squeeze the best resolution from the digital format, and at the same time it means you don't have to keep worrying about clipping. In a live recording situation, this feature could be a life-saver, as performance levels never match up to what you hear during the soundcheck.

Ever since affordable digital multitrack came along, I've been nagging various manufacturers to build a simple 8-channel limiter, so now that such products are starting to come on line, I'd better confirm that I still think it's a good idea. As it stands, the MDM8L provides very effective insurance against clipping, but I have to admit that I was also pleasantly surprised by its creative potential when driven hard.

SO5

FURTHER INFORMATION

- £ £585 inc VAT.
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MIDI • PART 5 basics

PAUL WHITE looks at
the benefits of using
a multi-port MIDI
interface.

This month, I'm taking a brief look at a computer peripheral which rarely creates excitement, but which is an absolute essential for many computer musicians — the MIDI interface. Those still using Atari STs have an advantage in that the machine comes with a built-in MIDI interface, but in the case of the other computers popularly used in music, you have to provide your own. PC interfaces generally come as plug-in cards, whereas Mac interfaces are invariably boxes that connect either to the modem or printer port. In the case of the PC, it's as well to check that the interface will run alongside any other cards you have installed, such as soundcards (and music software for that matter), because there can be problems with conflicts or incompatible software drivers. If you buy your interface from a store that has good technical support, then you should be able to confirm this at the time of purchase, and even if you can get a cheaper deal from a box-shifting outlet, I'd still recommend you buy from a specialist unless you really know what you are doing. One of the most successful PC MIDI interfaces is the Roland MPU401, and you'll find that many of the third party cards state that they have MPU401 compatibility.

A possible alternative to the conventional MIDI interface is to buy a synth module with an interface built in, and there are already several GM-style modules on the market that can link directly to a PC or Mac. However, I didn't start this article just to tell you about basic MIDI interfaces, but rather to introduce the concept of the multi-port MIDI interface for those needing more than 16 channels.

THE MULTI-PORT MIDI INTERFACE

When MIDI was first introduced, 16 channels seemed perfectly adequate, but we now have multitimbral sound modules that can gobble up all 16 channels in one bite (pun intended!). This poses a problem if you want to use, and access several different synth modules at the same time. The solution is to gain more channels, but how is this possible when MIDI is limited to 16?

The answer lies in the multi-port MIDI interface, where there are two or more MIDI output sockets, each of which has its own set of MIDI channels. (This shouldn't be confused with an interface that has multiple Thru outputs, as these simply send the same information via all outputs to save you having to buy a separate Thru box.) In order to make use of a multi-port interface, you have to use

sequencing software that supports multi-port operation, but all the current market leaders (Steinberg, Emagic, MOTU, Opcode, and so on) have this facility. Within the software is a setup section that allows you to tell the system what type of interface you are using, and the most commonly supported models for the Mac (in addition to anything the software company might supply) are the MOTU MIDI Time Piece, the MOTU MIDI Express, and the Opcode Studio series interfaces. Software-specific interfaces for use with Ataris include Emagic's Log 3, C-Lab's Unitor and Xport, and Steinberg's Midex, although there's now a Log 3 for the Mac as well. The more sophisticated of these interfaces include SMPTE read/write facilities, SMPTE to MTC conversion, and a degree of programmable MIDI routing, as well as multiple MIDI Ins which can be merged. If you're running a system which includes a software editor/librarian package, then the ability to route the MIDI Outs of your modules back to the computer without repatching is very valuable.

This brings us back to the software — how are these extra channels named and used? Normally, the separate MIDI output ports are numbered A, B, C, D, and so on, and inside the sequencer software, the MIDI channel number may be followed by a letter. For example, MIDI channel 8 on MIDI port B would simply be Ch 8B. I've created a multiple column list in my own studio which shows me which synths are connected to which MIDI ports, and on which channels they are set to operate. Obviously a 16-part multitimbral instrument will take up a whole port if you intend to use all 16 channels at once, but 8-part modules or non-multitimbral modules can share a port in the conventional manner.

TAKE NOTE

It sounds straightforward enough so far, but there are one or two things it pays to be aware of, the most important of which is that with all the interfaces I've used, MIDI clock only comes out of port A. In other words, if you need to sync a drum machine or a second sequencer using MIDI clock, you have to connect it to port A.

Mac users should also note that you can have one MIDI interface connected to the modem port and another connected to the printer port — these can both be used at once. This makes defining the MIDI channel a bit more complicated, because now we have the channel number, the port letter, and an M for modem, or a P for printer. The actual order of letters and numbers may vary from sequencer to sequencer, but the idea is simple enough. Due to its two outputs, the Mac can support up to 32 channels using two single-port interfaces, but at the other extreme, you could use two 8-output interfaces to give you 16 sets of 16 channels, which should cover most eventualities.

One further benefit of using a multi-port interface is that MIDI data can be spread over the different ports to avoid data bottleneck problems. Each port is, in theory, as capable of providing MIDI data as a single conventional MIDI interface, but if you were to use all 16 ports, each running 16 busy channels, you might be asking rather a lot of your computer!

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beyond the boundary



ne of the most common sound-related questions we are asked at SOS concerns how the level of bass seems to increase when you move towards the back wall of your studio. Is it a 'hot spot', is it a room-specific problem, or what? The truth of the matter is that this is a perfectly normal phenomenon that will occur close to any solid wall, and is all to do with the so-called boundary effect. If the term sounds familiar, this could be because the boundary principle is also used by PZM, or boundary, mics which utilise

ALL ABOUT THE BOUNDARY EFFECT

The first lesson to be learned is that your monitoring position must be at least three feet from the nearest wall, otherwise you may be misleading your ears as to the level of bass that's really there. If you hear too much bass, you're likely to EQ some of it out, resulting in a mix which

sounds bass-light when played back in an average listening room.

If one wall can cause a 6dB bass rise, what sort of damage can two walls do? Position yourself in a corner, and you get in-phase reflections from two nearby walls, producing a 12dB increase in bass. If you now move your head down to floor level, you'll find that the floor joins in and adds another 6dB just for good measure. This is an interesting experiment to try, and also makes you see just how dusty the corners of your studio really are — you may even find a few lost plectrums amongst the dead spiders!

As far as you, the listener, are concerned, the boundary effect isn't a problem as long as you are able to stay at least a couple of feet from a wall. If you must sit closer due to space constraints, then you really should use relatively small monitors that aren't too heavy in the

bass, in order to avoid the frequencies that cause the most trouble. Furthermore, regardless of your system, you should play a few commercial recordings through it just so that you can get used to any little quirks your speaker/room combination may have.

MONITORS

As a typical loudspeaker projects low frequencies in all directions and not just forwards, the closer you stand your monitor to the wall, the more bass lift will be produced. Yes, the boundary effect comes into play for speakers too. Some small monitors are actually designed to be used close to a wall, and in



How to mount your monitors — given that the one shown above is near a corner, the distances between the monitor and the back and side walls have been kept as different as possible, and the whole speaker is mounted on a stand a short distance behind the mixer.

reflections from the surface they are mounted on to reinforce their low-frequency response.

Hard surfaces reflect sound at all frequencies, but the boundary effect (as it affects the listener's position in a room) becomes more pronounced at low frequencies, where the wavelengths of sound are correspondingly longer. When you move very close to a reflective surface, the low frequencies which bounce back are almost in phase with the direct sound you're hearing which, in effect, doubles the amount of bass you perceive. A boundary creates a 6dB lift at low frequencies, and this isn't limited to the back wall of a studio — it's just where most people seem to notice it first.

Hand^S Job.

Accurate monitoring is a must in the recording studio, but the perceived level of bass depends on where you are standing and where the speakers are positioned. PAUL WHITE explains why in audio, a boundary literally means a six.

their case the boundary effect is taken into account, so always read the manual that came with your monitors to determine their best position.

You should be able to put compact nearfield monitors, such as NS10s, about a foot from a wall without causing any serious problems, but getting them too near to a corner can cause significant low-end inaccuracy, especially if the speakers have an extended bass response. If you must put them near to a corner, make sure that the distances from the monitor to the back wall, and the monitor to the side wall are as different as possible. If they are identical, then any peaks or troughs in the bass response, caused by wall reflections adding to or subtracting from the direct sound of the monitor, will all occur in the same part of the audio spectrum. Keeping the distances different will at least tend to randomise any undesirable effects.

Finally, bear in mind that it isn't only walls that reflect sound; any hard, flat surface can do it, including your mixer and effects rack. That's why mounting your monitors on your meter bridge isn't really a good idea, because you get a lot of sound bouncing back from the desk, which interacts with the direct sound to produce inaccuracies in the frequency response. It is far better to put the speakers on stands a little way behind the desk, so that any reflections that do occur are at a shallower angle, and therefore less likely to end up at your ears. Recording is supposed to be without limits, but it will always have its boundaries!

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The e-64 will really make you squirm when you groove on its righteous audio resolution. That's what it's all about anyway, right? Right. The e-64 features the same pristine audio quality that you expect from the company that pioneered sampling technology in the first place. (Duh... we're talkin' Emulator here, guys.)

The bottom line? If you're shopping for a sampler, there's no comparison to E-mu's rock hard e-64. If you're not looking for a sampler, you should be. The e-64 has turned the page on what a sampler can do for your creativity and your music. Serious self stimulation.

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Alchemy

TECHNICS SX-WSA1 ACOUSTIC MODELLING SYNTHESIZER

Technics' first foray into the pro synth market, the WSA1, catapults them to the front of the pack. MARTIN RUSS discovers whether acoustic modelling synthesis really can create gold sounds from base metal.

When I reviewed the Technics KN2000 some time ago, I can remember thinking that with a slight change of emphasis that machine could become a genuine challenger to some of the major players in the pro synthesizer market. But at the time, digital pianos and sophisticated home keyboards were the order of the day for Technics, and I thought little else of it. So when I was offered the opportunity to test the company's first 'professional' synthesizer, the SX-WSA1, I was particularly intrigued because the KN2000 has indeed influenced many recent and forthcoming releases from traditional synthesizer manufacturers — particularly the adoption of large LCDs with lots of soft-keys. New manufacturers often bring a radical set of ideas to an established marketplace, and the WSA1 is no exception, as we'll discover...

WORKSTATION ETHIC

The WSA1 is actually the abbreviation for the slightly less memorable Technics SX-WSA1 (or the rackmount variant, the SX-WSA1R). It's a 'workstation' — which is often interpreted as merely the combination of a synthesizer and a sequencer. I must admit that my own bias has always been towards the synthesizer part — the workstation sequencer is usually relegated to the 'musical notepad' role in my mind. I've always preferred using a separate computer-based sequencer, because I like to see a graphical representation of the music, rather than just being able to hear the notes. Well, the WSA1 is probably the first workstation that I have seen which contains a sequencer that I might actually use for more than just a quick 16-note backing pattern.

But the main focus of any workstation is the sounds that it makes. After all, an onboard sequencer is merely a tool to help you present those sounds. The WSA1 is not just a preset sound engine coupled to a General MIDI playback device — this is a *true* synthesizer which happens to have a usefully powerful sequencer included. It's not very often that something genuinely different appears in the synthesizer world — I think we've all become jaded by too many variations of Sample & Synthesis (S&S)

technology. Most supposedly 'new' ideas turn out to be minor tweaks to old ideas, and very little in the way of innovation. Well, I'm happy to report that Technics seem to have avoided this well-worn rut and have succeeded in producing an instrument which is powerful and innovative, yet easy to use and versatile — and it's a neat amalgam of various technologies.

ACOUSTIC MODELLING

New methods of synthesis turn up rather too frequently. Dressing up old and tired ideas with new names doesn't really fool anyone for long, and each of the familiar methods has its drawbacks:

- Analogue synthesis is great for making synth brass sounds, but not much else.
- FM is great for tinkly pianos and evolving sounds (which are now so clichéd that they are about to come back into fashion!).
- S&S suffers from 'snapshot syndrome', where the sounds it can produce are so closely tied to the sample provided that every musician ends up sounding the same.
- Physical modelling is so complex that we aren't even allowed to programme it ourselves. Instead, we have to use fixed models created by experts.

The synthesis methods above (and others) all have one major flaw: players want to make, interact, and perform with sounds. Most synthesizers fail in this basic requirement, which is why breath controllers, foot pedals, ribbon controllers, and numerous other performance devices are used to try and provide some sort of improved performance interface between the user and the instrument. The catch is that most synthesis techniques just don't let you make quick, simple, intuitive changes to sounds — and as instruments become ever more sophisticated, it seems to grow harder, not easier to achieve this.

Thankfully, the WSA1 is startlingly different. It uses a synthesis method called 'acoustic modelling', which attempts to take the best parts of physical modelling and combine them with the familiar parts of S&S. In the process, it also provides gobsmackingly good user control. My personal rule-of-thumb for determining the viability of a synthesis method is the name: if it

TECHNICS SX-WSA1 £2499

PROS

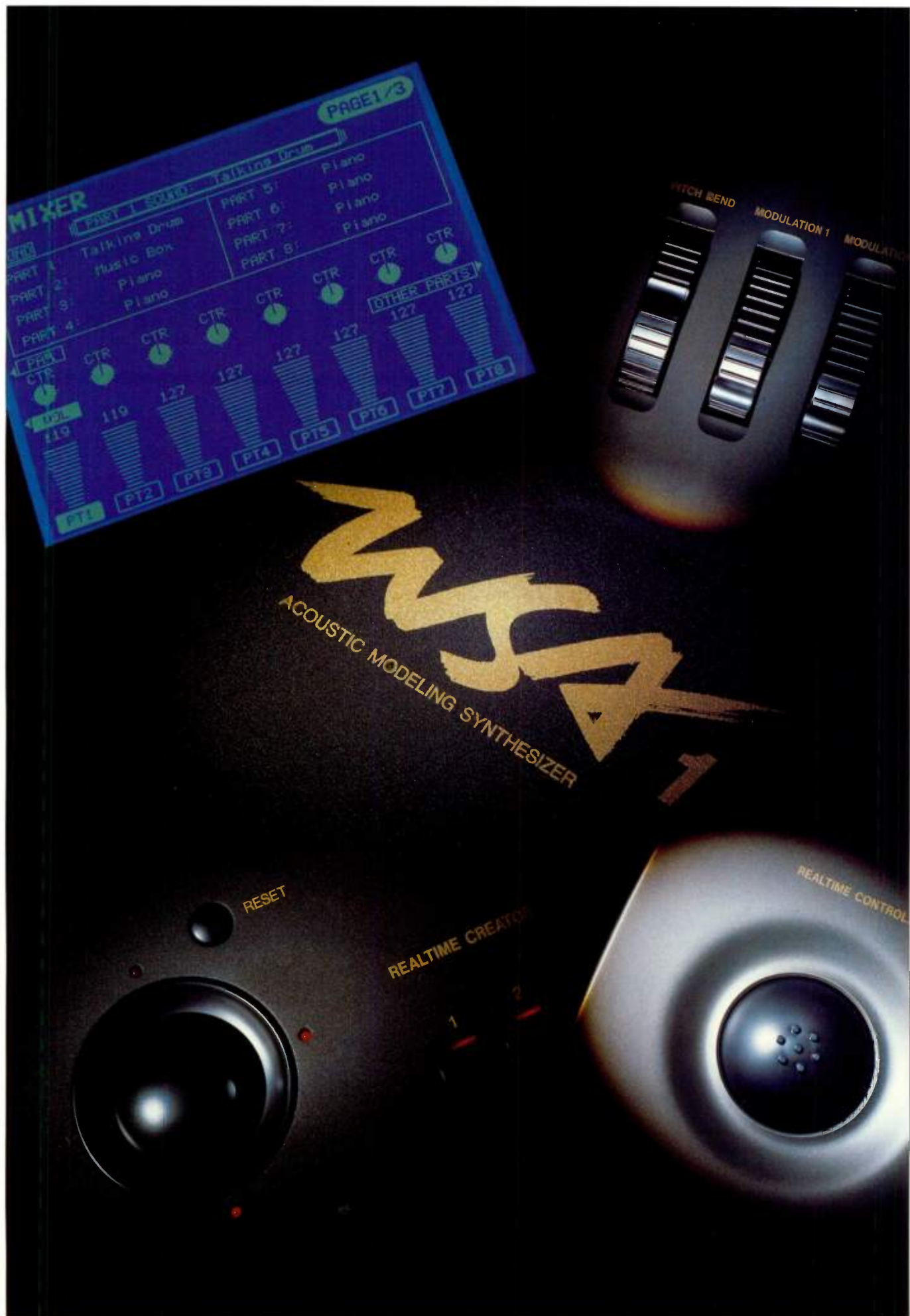
- A 'true' synthesizer with a wide range of acoustically modelled sounds, high quality effects, GM compatibility, and onboard sequencer.
- Powerful real-time timbral changes.
- Streamlined, simple to use, graphical user interface centred around the large display.

CONS

- I kept wanting to tilt the display upwards all the time.
- It's quite expensive — but leading edge technology is never cheap, and it does add a certain exclusivity.

SUMMARY

For a first foray into the synthesizer market, the WSA1 is a remarkable achievement. The Acoustic Modelling synthesis technique is intuitive, easy to use, and versatile. The sequencer is extremely usable, too.



Technics WSA1 Synthesizer



► makes sense then it's probably going to be a winner; if it is just technical gobbledegook, then the customers are going to figure it out eventually, and it might as well turn up at Christmas, stuffed and roasted. Rest assured, however — acoustic modelling is no turkey.

In a nutshell, physical modelling attempts to produce a mathematical model for a complete musical instrument. It then uses this model to produce sounds which emulate the behaviour of the real thing — often with astonishing realism. But the depth of detail required is formidable — you need to know a huge amount about the physics of the musical instrument, acoustics, and mathematics, and then convert this into software and electronics.

In contrast, acoustic modelling takes a step back, and looks at physical modelling in a different way. Instead of trying to work out how a complete instrument works, is there any way that the important elements can be encapsulated in a form

which provides control, but is easy to manage? It turns out that there is — and it stems from research into speech. When you speak, your vocal chords are vibrated by the air which rushes past them, and this raw sound is then modified by the complex set of tubes and spaces formed by your throat, nose, mouth, teeth, lips and tongue. A physical model of this would need to consider the velocity of the air, the pressure, the tension in the vocal chords, the space between them, their elasticity, and so on — and trying to work out exactly the mechanisms for how they vibrate could take a *long* time. A more pragmatic approach would be to ask what the raw sound produced by the vocal chords sounds like, and what sort of filter the throat, mouth and nose form.

Acoustic modelling does just this. It assumes that musical instruments can be split into three parts:

- **Drivers**, which produce the raw sound. Examples are the hammer hitting a piano string, or the plectrum plucking a guitar string, or the reed vibrating in an oboe.
- **Resonators**, which colour the sound from the driver. Most musical instruments exhibit some sort of resonance: often the whole of the instrument vibrates along with the sound to some extent, and the way that it vibrates affects which frequencies are emphasised and which are suppressed.
- **Modifiers**, which shape the coloured sound. Filters and Envelopes are familiar examples.

In a real instrument, the drivers and resonators are very closely connected, and interact with each other: the hammer hitting a piano string causes the string to vibrate, but the vibration of the string is affected by the fact that the hammer is touching the string, has probably stretched the string slightly when it moved the string, and has added in a low frequency thump. The act of setting the string vibrating depends on the hammer — you can't have the sound without it, but the hammer affects the sound. The two are inextricably interconnected. In acoustic modelling, the two elements have been separated but the same interactions can be produced by controlling the way that the driver and resonator are connected together — and Technics call this the 'connection'.

A SOUND SENSATION?

As you would expect from a modern synthesizer, the WSA1 delivers the usual mix of orchestral emulations, organs, pads, and special effects. Not a bad selection of factory sounds, although some of the synth pads are somewhat repetitious. I tried programming a few sounds myself (always the best way to really get to grips with an instrument), and decided that this repetition was probably due to the preferences of the Technics programmers, because I managed to programme my usual variety of wacky 'what the heck's that?' sounds with no problems.

The synthesis method does not have any major no-go areas, although wave sequencing is limited to the delaying of envelopes, so the gimmicky 'hold this key for a drum and bass pattern' sounds aren't possible. The most interesting thing about the sounds is the way that they sound 'sampled' — true even of the complex, synthesized, layered sounds; the acoustic modelling creates the same sort of resonances and timbral changes that your ear associates with real sounds. This has the effect of making the WSA1 sound rather like a good S&S machine, until you realise that you aren't hearing a mere sample playback!

The GM sounds are the usual mixed bag, but the overall quality is very high. The 'Tubular Bells' sound

suffers from a click at low pitches, whilst the 'Dulcimer' is far too big and beefy for the hammered dulcimer that I have heard — but at least it isn't just a mix of banjo and acoustic guitar! The 'Rock Harmonics' sound is superior to just about any sampled sound, mainly because it isn't just a replay of a single sample, but one that really shows off the strengths of the WSA1's unique acoustic modelling technique. Some of the 'Bass' sounds are restricted to the lower pitches (a consequence of modelling real instruments!) which means that GM MIDI Files which use 'Synth Chopper' as a lead sound may lose something. The 'Shakuhachi' is definitely not a sample playback, and is much less of a cliché than the usual GM sound.

The GM synthesizer sounds are wonderful: rich, subtle and leagues ahead of the rough, brash sounds you find in many GM modules. I fell in love with the 'Sci-Fi' (104) sound — which is rather different to my reaction to most GM synths. The latter 'Sci-Fi' sound uses three drivers to produce the sound. Yes, you read that correctly: the GM sounds are *synthesized*, not mere sample playback, which means that the real-time timbre controls still work! Technics have obviously put a lot of tender loving care into the WSA1 sounds.

With the WSA1, you get over 300 drivers and lots of resonators (you can couple together up to four of the 64 resonators to form even more complex resonators), and you get lots of control over how the driver and resonator interact. The connection/interaction part is quite interesting, because it really is very 'physical modelling' in its approach. Let's use the analogy of a bowed string. You can control whereabouts on the string you put the bow (Position), how hard you press on the string with the bow (Depth), and how the bow and string interact (which Technics call 'Fitting'). There's also control over how the position changes, and how the resonance changes (whether it is fixed or not). Only the drivers are fixed — you can alter all the parameters for the connection and the resonator.

If you listen to the raw drivers without any resonator, they sound very bright and the initial transient is highly emphasised, almost like high-pass filtering. But since most resonators act as band-pass or low-pass filters, connecting this driver to a resonator turns it into a more normal sound, except that by changing the resonator you can change the timbre. The WSA1 offers all manner of resonators — some which behave like strings, some like tubes and cones, others like flared tubes, drums, and even customised resonators.

But worry not — if you don't wish to get involved in the deeper aspects of programming, then the top level of the WSA1's edit pages allows you to choose just a driver and resonator, and these act as templates for all other parameters. Programmers can delve deeper and alter individual settings. Still, it's refreshing to find an instrument that offers both immediacy for the player and real depth for the programmer. When I began editing the WSA1, it took me some time to explore all the recesses, which is usually the mark of an interesting synthesizer. If you were frustrated because the Yamaha VL1 did not allow you to delve into it, then the WSA1 could be for you. Just remember that this is *not* a physical modelling instrument, although it's similar. What you lose is the transition between notes — whereas a physical model will move from one note to another in much the same way as a real instrument, the WSA1 will merely play two realistic notes, one after the other.

Once you have chosen a driver and resonator (and connected them together), then the rest of the WSA1 sound generation is the familiar S&S filter and amplifier, but with separate multi-mode filters (Hi, Lo, and Band-pass, with additional EQ) for each of the four tones which make up the sound. There are separate envelopes, LFOs and scaling for filter, amplifier, and pitch control of the sound, and the only thing that seems to be missing is a Sample & Hold waveform on the LFOs. Downstream of the individual sounds, there are the conventional layering, velocity switching, panning, and octave transposing features that you associate with good S&S instruments. Combis enable up to eight sounds to be combined in much the same way, and there's the standard 'one effect setting applies to the mix' assignment of the built-in effects processing.

AH, BUT...

No product is perfect and almost anything can be improved. Here are some of the minor imperfections that I found in the review model WSA1.

- The keyboard has sharp edges on the front of the keys that catch your thumb as you stretch for octaves with your right hand. Now I know that my hands should be slightly further forwards, but my bad playing technique is beyond redemption.
- You can hear some audio processing artefacts in the Filter if you apply big sweeps on quiet sounds. The 'zipper' / quantisation / clock breakthrough noise is not that obtrusive, and it might even be useful in some circumstances, but on very pure or quiet sounds it could prove annoying. The solution is to use the 'Auto Wah' effect, which can produce some wonderfully responsive resonant filtering effects.
- Some of the Driver samples contain rather

obvious loops, which cycle around if you sustain them. This is probably a result of squeezing so many sounds into memory, which I'm not complaining about! Most programmers will be able to minimise the audibility of these loops with a little bit of envelope or LFO modulation.

- The naming of sounds and disk files is a little awkward, because the soft-keys aren't ideal for choosing letters from lists. Use of the soft-keys is a little inconsistent: one screen will use them in one way, whilst another screen will adopt a different way to do the same thing.
- The increment and decrement keys don't always change positions in lists, as you might expect. I found that I kept trying to increment through the list of sounds when I should have been decrementing.
- I looked hard, but I couldn't find any Portamento facility.

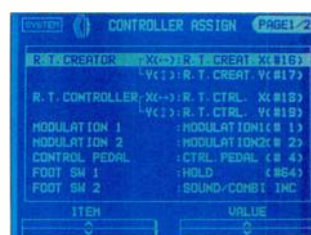
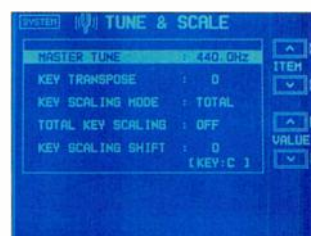
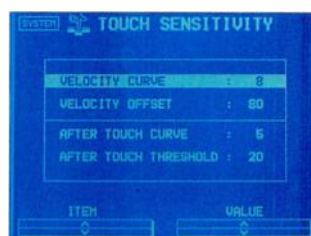
INTERNAL EFFECTS

The WSA1's effects processing comes in two parts: Digital and DSP. The 'Digital' effects are a neat way of pulling together all the detuning and envelope trigger delay edits that are normally part of the pitch controls. Instead, by choosing a chorus effect here, you alter the tuning of the tones, or by selecting an echo you force the envelopes to keep retriggering. It's a very clever way of providing one place where a variety of otherwise separate functions can be controlled.

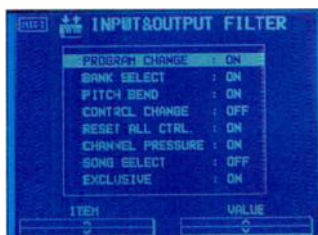
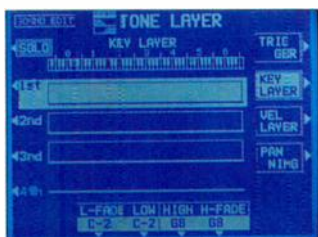
The DSP section is a conventional Digital Signal Processing type of effects unit. There are two general purpose sections and one optimised for reverb effects. The familiar collection of chorus, phasing, flanging, single and multi echoes, enhancer, distortion and EQ are all to be found here. Sound quality is high, and several parameters are available to be controlled by one or more performance controllers. So you can do things like opening up the filter with a modulation wheel whilst simultaneously increasing the reverb time. ▶

SX-WSA1 SPECIFICATIONS

- 64-note polyphonic.
- 32-part multitimbral.
- 32 MIDI channels.
- 61-note keyboard, Velocity & Mono Pressure sensitive.
- 2 Modulation Wheels.
- 2 Real-time Controllers
- 256 Preset ROM sounds.
- 16 Preset Drum Kits.
- 128 Preset ROM Combinations (Combis).
- 256 User sound memories.
- 4 User Drum memories.
- 128 User Combinations
- 3 MIDI Program Change remappings.
- General MIDI Program Change map.
- 12 Digital Effects, 44 DSP Effects, 12 Reverbs.
- 16-track Sequencer: 47,000 event capacity, 96 ppqn resolution, 10 Songs (chainable).
- Built-in DD/HD 3.5-inch disk drive.



Technics WSA1 Synthesizer



MODERN DESIGN

The WSA1 front panel follows the modern trend of being quite sparsely populated with few buttons and controls. It is dominated by a very large (320 by 240 pixels) backlit blue LCD, surrounded on three sides by 26 assignable soft-keys. Below this display are two sets of soft-keys, intended for up/down control of parameter values. These sense your finger pressure, and with a light touch move in single values, whilst pressing harder makes values change in 10s. This makes editing much faster, and very intuitive. Full marks for innovation here!

On the left of the display are the performance controls: one Pitch Bend wheel and two Modulation wheels, plus a 'Real-time Controller'. The latter is a combination of a trackball and joystick: you move it around and it springs back to the centre position automatically. Next to the volume control is the other major performance control, the 'Real-time Creator'. Although this resembles a smaller version of the joystick/trackball combination controller, it is actually more like a 2-way wheel: you move it around and it stays in position — with four LED lights to indicate the position, and a 'Reset' button to clear any movements you make.

These two real-time controls can each be assigned to two of the major controlling parameters of the Acoustic Modelling technique, and moving the controls alters the sound accordingly. The default setting puts the Fitting and Position parameters onto the two axes. Moving the control and playing a sound enables real-time changes to be made to its timbre. With the Fitting and Position parameters, the changes vary depending on the sound you are modifying. For example, the Piano sounds can be made brighter, more muted, more hollow in character, or thinner in tone — words really aren't adequate to describe what happens. Moving the controller around also produces a slight phasing or chorus effect as it moves, which players can put to good use as a performance effect. You really have to sit down and play

to vary the timbre that I began to miss this feature on my other keyboards! (Incidentally, you can save these settings with each sound for later recall.)

On the right of the display are the rotary dial, increment and decrement switches, plus the sound group selection and editing buttons. I didn't use these controls anything like as much as on other workstations or synthesizers. The LCD and soft-keys very quickly become the focus of your attention, almost to the exclusion of everything else. So, although you can use the soft-keys to select a value, and then tweak it with the rotary dial, you tend to use just the soft-keys because they are so conveniently placed. Sound selection is made by choosing a group number from the group buttons, and then pressing the soft-keys around the display to choose from the eight sounds in that group (this also fits into the General MIDI naming conventions).

The keyboard itself is quite springy, has metal weights built into the keys, and felt quite sluggish to my hands — but then I'm very used to my Yamaha SY99 keyboard. It is attack velocity and aftertouch (pressure) sensitive, and the velocity curve felt slightly too hard for my own playing style. However, a quick visit to the 'Touch Sensitivity' page of the 'System' menu enabled me to change the curve (10 options) and the velocity offset (1-127) of the velocity sensitivity, plus two parameters for the touch/pressure sensitivity. This is rather more user adjustment than you normally find on workstations, and is more like a master keyboard. Luxury!

Rear panels are boring. This one is no exception, but it does offer two sets of MIDI sockets (32 channels), stereo supplementary outputs, and space prepared for additional outputs and a digital audio output. The sockets are labelled along the top edge of the front panel (hurrah!), which is incredibly useful when you are always groping over the back of keyboards trying to connect things up.

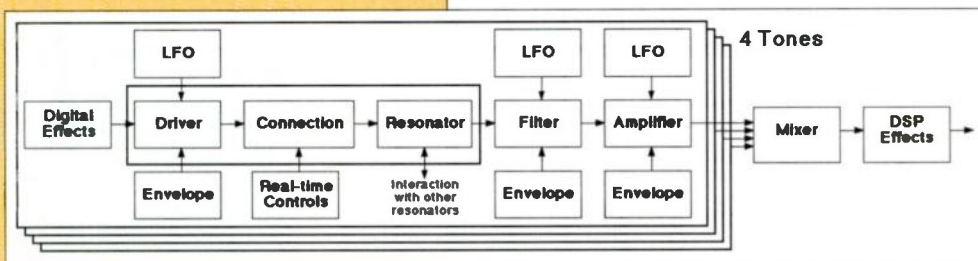
PERFORMANCE

64-note polyphony makes for lots of sustained notes, which appeals to my love of the sustain pedal, but the real-time controls are the winner here. Being able to take a piano sound and alter its tone with a single movement is wonderful, and changing the timbre of a solo sound while it plays is superb. I couldn't make these controls glitch, although sometimes the changes were a bit abrupt, so you need to move around slowly at first to find the 'hot spots'.

The wheels have a smooth, but slightly stiffer feel than I prefer. The detent in the second modulation wheel is very light, and the deep ribbing makes it difficult to find the notch, which can be very disorientating. The volume control is just black plastic with no white (or gold) line, and would be virtually unreadable on a darkened stage, which is

SONIC STRUCTURES

In the WSA1, Drivers, Connections, and Resonators pass through a conventional VCF/VCA synthesis section, and thus form a Tone. Four Tones combine to make a Sound. Combis are made from up to eight multitimbral layers and stacks of Sounds.



The first part is used for the Sound, whilst the first eight parts of the multitimbrality are used for Combis, and are assigned to the first eight tracks of the 16-track sequencer. Dual MIDI Outs mean that there can be 32 multitimbral parts overall.

around with these controls to appreciate how sophisticated the changes are — it's not at all like the VCF cutoff or vector mixing that you might have experienced on past synthesizers. After a short while, I got so used to selecting a sound and moving the Creator control



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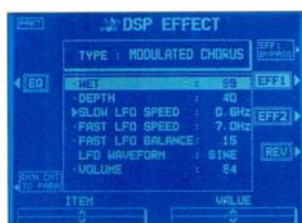
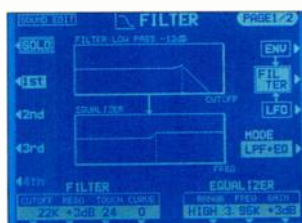


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Electro-Voice®

Technics WSA1 Synthesizer



► a shame because the metallic gold lettering should be very visible, even in monochromatic lighting.

The feet are made of hard, smooth plastic, rather than the soft rubber feet I prefer, and don't grip onto smooth surfaces very well. They also seem to be held on with plastic push-rivets, which look like they could get sheared off rather too easily. Given that this is Technics' first attempt at a professional synthesizer, these are minor criticisms, but I suspect that future versions will be more roadworthy, since the Technics staff I spoke to seemed to be very responsive to user feedback.

16-TRACK SEQUENCER

I don't normally like workstation sequencers, but this one was an exception. Whereas most workstations use the 'tape recorder' metaphor for their sequencer functions, Technics have provided an onboard 16-track sequencer which is much more like a midrange computer-based sequencer. You get real-time and step-time recording with looping, plus a master track to hold time signature and tempo information. But, most significantly, there is a piano-roll style display of the track contents, so you can see exactly what

you have recorded and edit it easily, without relying on your ears alone.

Technics have spent a long time getting the sequencer right, and it shows. Unlike the text-only interfaces that infest most workstation sequencers, the WSA1 has neat, structured menus with icons (see screen photos). In fact, the sequencer is probably more logically laid out than the synthesizer edit section — it certainly uses the soft-keys more consistently.

There are 16 tracks, plus the master 'tempo' track, and up to 10 songs can be chained together. Total capacity is about 47,000 events. Track and Part controls are presented visually using a 'mixing desk' metaphor, which makes the most of the graphical display and the soft-keys. I never normally read sequencer specifications in any depth, and I suspect that you don't either, but suffice to say that it performs all the usual track copies, dynamic processing, controller insertion and deletion, etc.

The sequencer saves its data as Standard MIDI Files, so transferring to a computer sequencer is a doddle. The WSA1 can play Format 0 files directly from DD (720K) or HD (1.44Mb) 3.5-inch floppy disks inserted in its built-in drive, which is very convenient for commercial MIDI File disks. However, you need to load Format 1 files into memory prior to playing them.

MIDI MATTERS

There are plenty of MIDI filters and switches available to control how MIDI data behaves on the WSA1. The assignment of controllers to MIDI Controller numbers is particularly clear and easy to understand, thanks in part to the superb display. Having two separate sets of MIDI connections enables more flexibility in how you connect up the WSA1. One set of MIDI sockets is intended for System Exclusive transfers and connections to the internal sound generators, whilst the other set is intended for connecting the internal sequencer to external MIDI modules. This gives a 32 channel MIDI implementation, rather reminiscent of the Gem S2.

A written manual covers the MIDI Implementation Charts and supplies comprehensive details of the WSA1's System Exclusive messages (Technics use a handshaking method of checking that SysEx dumps have been transferred correctly). Although the

DRIVING LESSONS

Although the drivers used in Acoustic Modelling are not really equivalent to the samples you find in S&S synthesizers, most people will nevertheless use them as a way of comparing the WSA1 with other synths. Due to the way most drivers are employed, they do not place the same emphasis on length/time and multi-sampling as conventional PCM samples do, and so Technics have been able to store a very large number in the 12Mb sample ROM. Although this is about the same size as many S&S instrument ROMs, Technics use proprietary compression techniques to maximise the use of the available space. As a consequence, it feels like a much larger ROM. In all, there are 315 drivers and the range covered is very wide — plenty of synthesis potential here.

The only drivers which are nearest to conventional samples are some of the drum sounds (sleigh bells, cymbals), where separating out the resonator and driver parts is very difficult. But for other drum sounds, the driver/resonator model works extremely well — the bass and snare drums

are an excellent; although the basic driver sounds usable on its own, feeding it through a resonator suddenly makes it sound more drum-like.

Although the essential samples are present to make this a GM-compatible synthesizer, the General MIDI sounds are quite individual — don't expect a 'clone' of other GM implementations. The 'Xylophone' is a fascinating example: whereas most GM sound sets merely transpose one xylophone sound downwards, the WSA1 uses acoustic modelling techniques for added realism. In non-GM mode, the default mapping of WSA1 sounds produces a very intriguing view of re-instrumenting GM — very much in keeping with my own preferences.

As always with a sample set, there are one or two unusual ones. The 'Seashore' driver has the waves crashing on the beach that you might expect, but there's a brief 'plink' sound in there as well. And the 'Brush Short' sound seems to be more snare than brush, but then it is intended to be passed through a resonator.

manual's coverage of MIDI is detailed and certainly on a par with the best I have ever seen, there is no separate Implementation Chart for the sequencer; instead, it is lumped in with the main chart for the whole instrument. Despite this, the MIDI manual gets '10/10' for clarity.

MANUALS

The other three manuals deserve a mention, too. There's the usual slim 'Getting Started' manual, which shows you how to get noises out of the WSA1 when you first unpack it. The 114-page 'Practical Applications' manual covers all the menu screens — although it often does not go deep enough into the function of all of the parameters. Extra details are provided in the 'MIDI' manual, along with additional information about the DSP and Digital Effects parameters, but the third manual is just a list of the factory sounds and drum mappings.

I'm afraid that I often find that synthesizer manuals don't go far enough in providing support for the user. Technics have concentrated on the menu screens, but this does not help with the 'How do I do this?' type of question. I encourage readers to complain about manuals, because it's the only way that manufacturers will improve them. Luckily, the WSA1 is easy to use and the operating system is very user-friendly, so I did not have too much trouble finding my way around, but a little more explanation would make so much difference.

CONCLUSION

It's always pleasing when a company new to this market produces a synthesizer, because they often bring with them fresh ideas and different approaches. The WSA1 takes a refreshingly alternative look at synthesis and its acoustic modelling delivers just about the right mix of player-friendly and programmer-friendly features. Technics seem to have a positive attitude to software updates — which can be very important insurance to a purchaser — especially with the

THE VIEW INSIDE

You can often learn more about a manufacturer by looking inside their equipment than you can from the outside. The interior is where everything is laid bare, because they don't expect you to ever look inside. So what's inside the WSA1?

When you turn it over to open it up, the first thing you see is an access plate which is used to enable the Wave Expansion board to be added — and probably the Output Expansion too. Inside, there's a linear power supply which provides the raw DC voltages for the circuit boards — the regulators are on the boards themselves. There's a small separate circuit board which provides the high voltage for the LCD's backlighting supply, and it comes complete with 'Warning: High Voltage' notices, in English and Japanese.

The main circuit board occupies the same area as this page, and it is a thoroughly up-to-date, mixed thru-hole and surface-mount technology, plated thru hole, solder resist and silk-screened board. It has very fine copper tracks: it looks like an '8 and 8' board or perhaps even better, which means that the tracks and the gaps between them are eight thousandths of an inch (or less). But with a couple of 208-pin PLCC 33 MHz custom chips on

the board, you need fine wires! In contrast, the four Operating System EPROMs are large 40-pin DIL chips.

The board has sockets already present for the optional expansion boards, but there's also the copper pads and mounting holes for a high density inter-board connector, as well as some mounting holes for a 'WM' expansion board. The socket was not fitted on the review model, although the pads were tinned with solder. I'm not sure if it would be possible to retrofit a surface-mount socket to the pads, but it looks as if the Wave Expansion board was not the only expansion which Technics may have originally planned.

The two MIDI opto-isolators were HP260Ls. The outgoing audio and MIDI sockets are RF filtered, and there was lots of screening and ferrite chokes on cable runs to keep emissions low. The WSA1 interior was quite neat and tidy, and certainly up to the high construction standards of other Japanese manufacturers.

Whilst the unit was open I took the opportunity to examine the keyboard contacts, and these turned out to be the collapsible dome variety, which partially accounts for the keyboard's springy feel.

first product in a field. They inform me that ROMs might be upgraded three or four times in a typical product lifetime, which means that any bugs stand a good chance of being ironed out. Review models are often slightly buggy, but with the exception of one minor bug which Technics told me about (and which will be fixed by the time you read this), I didn't encounter any problems.

So how about the competition? There are plenty of 'sample & synthesis' workstations around — even Korg's new Trinity seems to be another variation on S&S with the bonus of a plug-in Prophecy. If you're looking for something with a little more synthesis power, you are into Kurzweil K2500 territory, and that's about it. Now if the WSA1 was just a little cheaper, it might just be able to break the stranglehold that S&S instruments have on this market. Even so, anyone astute enough to go for a WSA1 can smile to themselves, secure in the knowledge that they have a true synthesizer which delivers rapid and intuitive real-time changes of timbre, and the nearest thing yet to affordable polyphonic physical modelling.

With a debut instrument like the WSA1, Technics have finally broken away from their 'digital pianos/home keyboards' image. Try a WSA1, you will be surprised — but be warned that the real-time control is highly addictive!

SOS

"It's not very often that something genuinely different appears in the synthesizer world... Technics have succeeded in producing an instrument which is powerful and innovative, yet easy to use and versatile."

PLANNED OPTIONS

Two optional extras are in the pipeline:

• WAVE EXPANSION BOARDS (SY-EW series)

The first wave expansion board is rumoured to be titled 'Dance' and will be the first of several. User feedback will probably determine the contents — so if you buy a WSA1 then please tell Technics what you would like to hear in the future. Only one wave expansion can be used in the machine at any one time, and they are circuit boards, not plug-in cards.

• OUTPUT EXPANSION (SY-ES1)

This circuit board fits in place of the blanking plate on the rear panel and provides two additional pairs of Sub Outputs, plus a S/PDIF digital audio output (coax) which carries the stereo output of the WSA1, and could be used to transfer audio in the digital domain from the WSA1 to a DAT or DCC recorder, or a digital mixing desk (perhaps Technics have other hi-tech goodies planned?). The data format is 20-bit linear quantised stereo at a sampling rate of 44.1kHz.

FURTHER INFORMATION

E WSA1 keyboard £2499; WSA1R rack £2199 inc VAT.

A Technics EMID, Panasonic Consumer Electronics UK Ltd, Panasonic House, Willoughby Road, Southern Industrial Estate, Bracknell, Berkshire RG12 8FP.

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ZERO CROSSING

ED BULLER • GARY STOUT • NODE

Not many bands would set up banks of modular and analogue synths in Paddington station and play free for the delight of weary commuters. Node did — but then that's the kind of guys they are... NIGEL HUMBERSTONE talks to half of the band about free-form composition, inspired mistakes, and the lack of sex-appeal in electronic music.

MODERN SYNTHS

Buller: "One of the irritating things about modern synths is that because they are sampler based, the sample is small and the loop is quite often atrocious, so you've got a terrible building block from which to start making a sound. Whereas something like the PPG Wave has digitally generated waveforms, all very high class, and they've got an awful lot of high harmonics in them."

But modern-day synthesizers are not totally spurned by Node. Gary Stout is perhaps the 'modernist' amongst the group and incorporates a Roland D50, JD800 and Akai S1100 in his setup. But in his defence he states "I use them so that I've instantly got the sounds there. But basically they're modern interpretations of analogue synths. In the case of the sampler, I use waveforms as raw data rather than specific sounds."

In electronic terms, a node is a point of zero current or voltage, whilst in general terms it is a point of intersection, a junction — which aptly explains its adoption as a name for the freeform electronic retro-pioneer group consisting of famed producers Ed Buller and Flood along with Gary Stout and Dave Bessell. The underlying impetus for the group is their passion for analogue technology.

Buller: "I've always wanted to do this kind of free-form electronic music with a group. Me and Flood had been talking about it for ages, but I think that both of us were worried that we'd end up in a studio being producers playing with their 'toys'. At that time me and Gary were doing the Suede album, and quite often if it had been a particularly bad day, we'd sit in a corner of an evening and just play."

An important milestone was an invitation for Node to perform at the opening of the Museum of Synthesizer Technology in Hertfordshire (see *SOS* October '94).

"We actually recorded the gig," recalls Buller. "Well, Flood, one of the most respected producers in the world, brought along one of the most battered DAT machines I have ever seen in my entire life! But it was a really great gig, with Bob Moog dancing in the garden."

Rob Deacon at Volume Records then got involved pretty quickly and the seeds were sown for Node to release their debut album on the new Deviant label.

"We didn't want to get involved with a big record company," explains Buller "because with Flood — who he is and what he does — we didn't want the whole thing being hijacked by some A&R man who got the wrong idea. It's really back to the whole idea of recapturing what was going on in the '70s."

The next step was a performance at the EMMA electronic music festival in Derby, a great experience, but by their own admission Node didn't really fit in with the melodic, new-age expectations of the audience. Retro it might be, but Node's music is an evolving blend of industrial harshness and experimental electronics.

Stout: "At EMMA we set up across the back of the stage and dropped a big curtain in front, because it can take anything up to four hours to set up, so we have talked about building wheeled trolleys so that we can have pre-wired gear set up and just wheel it on and off."

In a live situation, everyone on stage has a 16-channel Mackie mixer which they balance themselves with a L/R feed sent to the other

members' monitors and FOH. In much the same way, this was the procedure adopted for recording their album at Master Rock studios, where the only requirements were that there be a large recording area.

DIRECT TO DAT

The key element in Node's musical practice is that their recordings are made live and direct to DAT, with no multitracking or overdubs. But in order for this to work effectively, everyone sets up a palette of sounds using their headphones.

Stout: "Everyone previews their own sounds and then says 'let's go'. But no one actually knows what everyone else is doing. They might ask 'well what have you got there?', 'I've got this 'clinky' thing' — and that's it."

Buller: "One of the tracks on the album, 'Slapback' was a bit tricky to set up, as was 'Olivine', where we couldn't work out the parts, and that's where Dave came in useful. He'd work out the time signatures for us, which often didn't make it any easier. The thing about these machines is that they tend to generate quite complicated things without you realising it. With 'Olivine', Flood was doing a lot of the bassier stuff while I was doing the treble stuff — but the bar lengths and downbeats were constantly changing, which was a combination of delays and different sequencing lengths. And again, the great thing about this gear is that you can have a seven-note sequence running against an eight-note, running against a two-note, running over a three-note — which is pretty complicated stuff. 'Olivine' had a basic rhythmic structure so I knew that would work, but other sequences had to be pre-planned so they didn't clash with Flood's."

"The one thing we can't do is key changes, because by the very nature of a key change it's very difficult for us to all change key at the same time, although it happened once by accident! For the album, one of us used to go out into the middle of the room and shout 'OK, at the end of the next bar!' — but I like the fact that we're not all doing similar things at the same time."

Discussions are a prerequisite for establishing tempo, key and general theme for the piece to be recorded.

Buller: "We tend to have long chats about what we'll be doing. Me and Flood do a lot of the rhythmic stuff, so we make sure we're working together — and we just set a palette, if you like, of sounds that we've got and agree on a general direction. Gary and Dave usually end up doing a lot of the melodic stuff and we try to come up with two or three themes before we start, so for instance there'll be something like a five-note motif that we all agree upon. Invariably all the things we've



discussed are completely ignored and we go off at a tangent, but that's where it gets exciting."

Dave Bessell (whom Buller has known for 20 years) studies orchestral composition at Goldsmith College, and is the musical theorist behind many of Node's pieces — not that this holds much meaning, especially with Flood.

Buller: "We'll start reading out notes in the scale and Flood will say 'Oh, bollocks — I'll figure it out'. And invariably he'll come up with something that fits perfectly."

Bessell also plays treated guitar, which blends seamlessly with the other electronic instruments.

Buller: "There's guitar all over the album, especially on the track 'Slapback'. He originally went through an amp, but it was getting too 'guitar-like' so we persuaded him to go direct into the desk."

"Dave's the one who will be in the middle of the room discussing a dilemma or some aspect of the piece like the 'quadratic modulation'."

Stout: "He's the musical train spotter in the band."

Buller: "It's like he'll come up with these really good scales that we force ourselves to learn. For instance, on one occasion we adopted a Bartok scale, and there are several tracks on the album where we used these 'rules'. We have these rules, and everyone's idea of where to break the rules is different, so we have a huge grey area of taste. Flood tends to break the most rules and I think that's come from working with Eno, where he's picked up that kind of 'method' approach."

CLASSICAL APPROACH

Node's approach to recording has many similarities to the method used by classical and orchestral sound recordists, whereby multiple stereo takes are made, from which a master composite is later edited. Buller, whose father is a classical composer, cites another classical similarity of trying to get as much of the



NO SEX PLEASE — WE'RE ELECTRONIC MUSICIANS

During our meeting Buller and Stout would often break off at a tangent and discuss another related, but obscure topic. I had mentioned press photographs, and this led to an admission that they had briefly played with the idea of having politically incorrect images of models draped over their vintage equipment — the idea being based on the observation that electronic music is 'mens' music.

Buller: "Let's face it, electronic music has a majority male following. There's something fundamentally unsexy about electronic music, as far as the ladies are concerned. Kraftwerk's the only exception — because you can sing their songs — 'she's a model, and she's looking good' — great piece of music. What a band!"

► piece done in one take as possible. Stout also points out that like many modern-day classical players, they are so attuned to this working method that they often stop playing when a mistake is detected.

Buller: "Yeah, that does happen with us. We'll hear a mistake and there'll be a great lull for about five seconds as half the band consider stopping, and invariably the person who was seen to 'fuck-up' didn't 'fuck-up' at all — you know, it was 'inspired'.

"The hardest thing is keeping levels right; we've got to get the balances right so that we can hear each other. You've got to be able to hear yourself loud enough but also hear what everybody else is doing — and sometimes that can take hours."

I asked if there are ever times when the band don't know who is playing what — and maybe one person is playing the sound another person thought they had...

Buller: "Of course. Obviously we all have our own style of sounds, but often after a recording we'll be listening back and saying 'was that you?' Other times you'll be playing and hear this awful sound and wonder who's doing that — and of course it's you! And that's when it starts becoming fun — if you're thinking in a disciplined, controlled and scientific manner then you're not going to come up with the music that you really want to write. You have to go out of that and it's almost trance-like — I would describe it as ethnic, because I do think it is quite ethnic really. You sit down, play and drift off into your own little spaces and you start coming up with things for different reasons. And you're not intellectualising about it because the great thing with sequencers is that because they're repetitive it forces things on you."

Node's music comes about through the creation of

the right kind of atmosphere — some wine, maybe, during pre-session discussions, and afterwards whilst analysing the results.

Buller: "It's great when it all comes together, but frustrating when things don't gel. And that's what's strange about us having jobs as producers — we tend to see these things happening from the other side of the glass. With Node it's often difficult to pinpoint when something is going wrong, whereas as a producer it's your job to get people playing well together. We get situations where maybe me and Gary are in a particular 'mood'. Dave might have dropped out, and Flood is bored. You can see it on his face, and he'll patch up a few leads and launch in with this huge, completely 'at-odds' sound — and it works brilliantly. The thing is that you can either give up or hold your ground whilst he (Flood) drives a 'bulldozer' through this 'rose garden' that we've made. And that's what Node's all about really — it's those extremes."

PULSES

Strangely, a computer running *Cubase* is employed to act as a glorified metronome.

Buller: "That's sending out pulses, two to a bar, four to a bar and 16 to a bar — and we use Pro 2s and Pro 4s [Kenton MIDI-CV converters]. I tend to use my own pulse system, but Flood and Gary use pulses supplied by the computer. What I use is a Roland drum machine — I just take a sync pulse from the computer and with the drum machine I can decide what beat of the bar a sequence is going to trip over on, or a trigger is going to go to an envelope or whatever. So that means I can get fairly

PADDINGTON SHOW

"We'd always said that if we were going to do any gigs they should be in strange places", insists Stout. And to confirm that, Node recently performed (or legally busked, it might be said) in the cavernous surroundings of Paddington mainline train station. As a lifelong ambition of Buller who had frequently travelled through the station, the event nonetheless presented a huge logistical problem that required careful organisation and pre-planning.

Buller: "We went down for a provisional meeting, which was all pretty complicated because the company who manage the concourse are answerable to Rail Track, who own the station. We met this guy who was really into the whole idea, but explained what Rail Track said we could and couldn't do. One of the things they were worried about was us being loud and drowning out public addresses. So we suggested the easiest thing was for them to give us a feed from the public address system which we could put in our PA, and (using a noise gate and compressor) when

anybody spoke it would 'duck' our music in their favour. So we went upstairs to look at the cabling for their public address system — which was an incredibly tiny office with a little box and mic on top. Then they couldn't work out where the cabling went — it was chaos.

"The biggest problem was going to be noise. It started raining whilst we were there at this meeting and it was 90dB and that's bloody noisy! It was torrential rain falling on this huge glass roof. The actual noise floor of the place and the ambient sounds alone is around 40-50dB. There's also a resonant tone, so the whole idea is that we're going to play in tune with the environment. And there is a note, you can definitely sit there at the keyboard and play a note that's in tune."

For the event, 'get in' time was 10pm the night before, with everything finished at 5am, leaving only a couple of hours for sleep at a nearby hotel before the day's first performance at 7.30 am. Sadly, the morning show amidst London's unsuspecting commuters was



plagued by tiredness and malfunctioning equipment — especially Buller's Moog, which he admits is in desperate need of a 50,000 mile service! They received about three complaints, which Buller expected — he realistically sympathised that many travellers may not have wanted to have to hear their music.

The PA rig was flown, with a second flown system being placed at the other side of the station (wireless fed), but this remained inoperative due to an untraceable problem. Monitoring was via

wedges, one of which spontaneously combusted next to Buller, due largely to the vast frequency range that the Moog 3P puts out — purported to be as low as 2Hz.

During the evening rush hour, the second performance was much more of a success, attracting a crowd around the raised stage. The majority of the set was new material, interspersed with elements from earlier album sessions. Both performances were recorded onto two DAT machines (one dry, one ambient, to be released later as a live CD).



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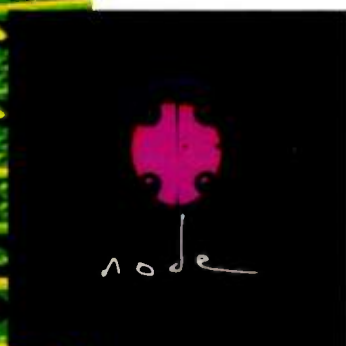
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► complicated rhythmical patterns going.

"The best way to describe it is that the computer is sending out different pulses which we put through various MIDI-CV boxes: the Kenton Pro 2 and 4, and the MPU101, on top of which you've got dials and can switch between MIDI channels — so you can select which pulse you want at any one time. These are then used as triggers for the equipment."

With literally banks of equipment to contend with, space is at a premium and mistakes can occur.

Buller: "At the Synthesizer Museum gig I'd placed the computer keyboard on the floor because there was no room for it, and during the set I stepped on the space bar, stopping the pulse. Now me and Flood have an agreement where we're allowed to do pretty dramatic things, but I remember the look on his face as he looked across, saying 'not *that* fucking dramatic!' But the whole idea of the band is that disasters will happen and you deal with them."

Apart from computers being used to provide timing stability, Buller has little time for their use as creative tools.

Buller: "Computers — and I've got to say this

— are the biggest problem because they are inherently restrictive and they tend to put the development side in a very small area from which you have to adopt a computer language."

But surely there is an operational language required for using analogue machines?

"Not really, because it's invented by the people who operate them."

"Analogue gear also gives you room for more experimentation. Whereas with a computer you have definite rules — if you type in blurb then the computer won't understand it. But if you touch a knob then it doesn't matter."

"It's this concept of logic, really — 'I'm a computer, I operate logically, tell me what you want'. Well, if I want a sound like a pear being dropped on to a washing machine, a computer's not going to understand that and you're going to be very limited."

Buller cites the frustrating experience of witnessing computer crashes and breakdowns as further justification for his aversion.

"That kind of thing's always happening — whereas with this sort of stuff [his analogue equipment] you know it's not going to work properly from the start, and the whole idea is for you to get a result out of it. There's almost something 'final' about computers because they do exactly what you want them to do. But the great thing about these [analogue] machines is that you may not know exactly what you want to do — you're after some degree of inspiration, a mistake or something that's going to drag you away from your thoughts."

EDITING

Following recording, very little is done at any 'mixing' level of post-production. The important assembly comes with digital editing.

Buller: "We have four stereo feeds which constitute our final stereo mix. The only other production is after we've done our stereo DAT, when we invariably stick it all back through the desk and muck about with it by sending it through a reverb or maybe a Leslie cabinet. But that's the only bit of post-production that goes on."

Stout: "We'll normally do three or four takes, because the gear has been set up specifically for that track, and then edit it all together."

Another reason for multiple takes during the album project is that invariably during a take, a piece of vintage machinery would break down or malfunction. Sound Tools was employed for editing, but for future recordings the group are considering using a 20-bit digital system, in order to capture the immense overtones and frequency range created.

Buller: "Matthew Denny at KPM, who used to produce Gong, suggested we use the Sonic Solutions 20-bit mapping system. Tangerine Dream have recently had all their stuff remastered and the difference is like chalk and cheese."

'Olivine' was one of the most edited tracks, but in general tracks would require no more than one or two long crossfades between different takes.

"We could have tried taking out sections that

THE PRODUCERS

Ed Buller and Flood's relationship stems from them both having the same management company — their extensive production, engineering and mixing credits confirm their position as two of the most sought after producers around. Flood is perhaps best known for his work with Depeche Mode and U2, and has the uncanny ability to reinvent an artist's career.

FLOOD'S PRODUCER CREDITS

- PJ Harvey: *To Bring You My Love* LP
- Tom Jones: 'A Girl Like You' single
- U2: 'Zooropa' LP and singles
- Curve: *Cuckoo & Doppelganger* LP's
- Depeche Mode: *Songs Of Faith And Devotion*, *Violator* LPs and singles
- The Charlatans: *Weirdo* LP
- Gavin Friday: *Adam & Eve* LP
- Erasure: *The Circus* and *Wonderland* LPs
- Five Thirty: 'Abstain' and 'You' singles
- Pop Will Eat Itself: *This Is This*, *Cure For Sanity* LP and 'Ciccolina' single
- Renegade Soundwave: *Soundclash* LP & singles
- Wolfgang Press: *Birdwood Cage* LP
- Nitzer Ebb: *Ebbhead*, *Belief*, *Showtime* and *Big Hit* LPs
- Nine Inch Nails: *The Downward Spiral* LP and various singles

MIXING CREDITS

- The Inspiral Carpets: *This Is How It Feels* 12-inch
- James: 'Come Home' 7-inch and 12-inch
- Nick Cave: *The Good Son* LP
- U2: Various tracks on *Achtung Baby*
- The Cranes: 'Paris and Rome' and 'Lilies' EP tracks
- The Boo Radleys: 'Lazarus' remix
- Massive Attack: 'Protection' 7-inch and 12-inch remix

ENGINEERING CREDITS

- U2: *Achtung Baby* & *The Joshua Tree* LPs
- Jesus & Mary Chain: 'Some Candy Talking' single
- Soft Cell: Various singles
- King: 'Love and Pride' single
- Wah: *Come Back* LP and single
- Nick Cave: Various albums

Ed Buller spent much of the '80s playing keyboards with the Psychedelic Furs, and has recently worked with Echobelly, Suede and the re-formed Raincoats.

ED BULLER PRODUCER CREDITS

- Suede: *Suede* and *Dogstar* LPs and singles
- Pulp: 'His 'n' Hers', 'Babies', 'O.U. She's Gone' EPs and singles
- That Uncertain Feeling: 'On The Edge' 7-inch
- Delicious Monster: Debut LP
- Ultra Vivid Scene: LP tracks
- Catwalk: 'Damascus' and

'Ballerina Country' EPs

- Primitives: 'Spells' EP
- Spiritualized: 'Feel So Sad' and 'Run' EP's and LP tracks
- Thieves: LP tracks
- Hollow Sunday: 'Wait For It' 7-inch
- The Boo Radleys: 'Boo! Forever' and 'Adrenalin' EPs, and *Everything's Alright Forever* LP

ENGINEERING CREDITS

- Thieves: 'Through The Door' EP mix
- Lush: 'Sweetness and Light' EP
- Hearthrobs: 'Turn Away' 7-inch remix
- Primitives: 'Smile' LP track mix
- Jennifers: 'Just Got Back Today' 7-inch
- Mica Paris: 'Great Impersonation' 7-inch
- Aswad: 'On and On' 7-inch remix
- Jim Capaldi/Eric Clapton: *Some Come Running* LP
- God: LP tracks
- David McComb: LP tracks
- Nomad Souls: LP tracks

MIXING CREDITS

- Slowdive: LP
- This Picture: 'Highrise' single

Node the debut album, is out now on Deviant (dvnt5cd). *Terminus*, recorded live at Paddington Station, will be the next single release.



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► didn't work", explains Buller, "but one of the things with this music that we do naturally, is that it doesn't work if you start taking bits out. It's difficult to explain, but things like that little 'lag' is doing the job, it's setting you up for another interesting bit."

PRODUCTION VALUES

The essence of Node and their whole approach to making and recording music is ultimately very different to the production work that Buller is normally involved with. Is it in some ways a release?

"Totally, yeah. With the production work my responsibilities are totally different. In many ways you're overseeing the development of a band and you work within certain guidelines. With Node it is an opportunity to say 'there are no rules'. I think a lot of bands we work with would love to be able to do this, just sit down, play, and that would be their record.

"We are getting better at playing and recording in this way. A lot of spooky things will happen — like we'll all do a key change at the same time. And that's what we're going for really — those musical moments which are unplanned and yet happen."

ANALOGUE ELECTRONICA

Flood's main equipment is his Roland System 700, whilst Buller exploits his Moog 3P.

Buller: "We tend to pile the systems up and have this competition to see who can have the highest stack, and Flood always wins but his gear is always in far more danger of falling down. Of course, this type of equipment has become very hip all of a sudden and ultimately very expensive. The good thing is that you have to be a very dedicated user to put up with that. It does take 20 to 30 minutes just to get a sound out of it. You've really got to treat them like you would an old car — you've got to be

prepared for suffering all the grief and consequences.

"I often find myself getting lost within the equipment, especially with the Moog, because it's so big a system. Invariably I'll end up in one corner where there'll be maybe five knobs that I've learnt what to do with, and you're made aware of the infinite possibilities just with these five knobs, let alone the rest. The great thing is that you can have something like a vibraphone sound just there and then 'whoops' it's turned into a gong."

Such is the equipment's inherent unreliability and uniqueness, that few attempts are made to memorise or catalogue presets.

Buller: "It's just not worth trying. If I have a patch up at home that I'm fiddling with, then I'll try to recreate it but I'm never going to get it the same. And that's part of the appeal, having one-off sounds that you can never repeat."

Buller has his Moog 3P modular system set up at home in what is best described as a small broom cupboard. The door is left open and the sequencer lights left running, to create a kind of therapeutic electronic 'folly'.

"Yeah, I just sit here looking at it — I'm quite sad really," jokes Buller. "I've always wanted one since seeing the cover of a Walter Carlos record."

Like Walter (now Wendy) Carlos, Buller has a great deal of respect for other technical pioneers in the advancement of analogue synthesizers — people like Christophe Franke.

"The whole idea of syncopated rhythms on sequencers, Franke came up with that. There was this whole thing going in Germany in the early '70s where Tangerine Dream were unfortunately always seen as 'highbrow', but they were so original. You listen to the guitar on U2's 'The Streets Have No Name' and then play 'Ricochet', and don't tell me that one didn't beget the other. I mean the whole idea

of syncopated rhythms and playing against yourself was Christophe. A lot of modern synthesizer technology came from those people as well: they liaised with the back-room boys that built the stuff. Modern synthesizer development came from people like Tangerine Dream and Kraftwerk building things specifically, and then that being reinterpreted later by manufacturers. The biggest mistake was sampling — Christophe came up with this thing called 'core memory' where using a lot of magnets you write 1s and 0s into a magnetic

programme, much like a digital memory but based on electro-magnetic currents. Using that he sampled — and this was 1976 — drum and voice sounds and had it on this little machine. He thought 'Christ, I should patent this', rang up the US patent office, and apparently Bell had beaten him to it for use in their phone messages.

"Nowadays synthesizer design tends to be based on market demands and what it wants rather than people coming out with great ideas and trying to sell them."

NODE EQUIPMENT

ED BULLER

- ARP Omni synth
- Kenton Pro2 MIDI-CV interface
- Korg Poly 60 synth
- Moog 3P (x2) modular system
- Moog 2P modular system
- Roland JD800 synth
- Roland Juno 60 synth

FLOOD

- Akai S1000 sampler
- Apple Mac Quadra 800 computer
- Eventide H3000 & H4000 Harmonisers
- Moog MiniMoog synth
- Moog Series 3C modular synth + sequencer
- Roland System 700 modular synth
- Oberheim 4-Voice synth

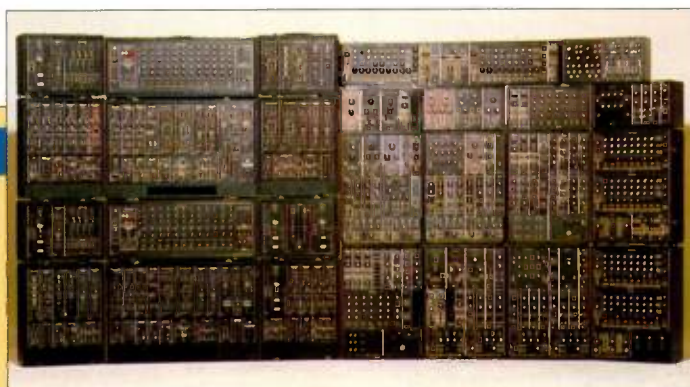
GARY STOUT

- Akai S1100 sampler
- Alesis Quadraverb effects
- Alesis D4 drum module
- Korg Poly Six synth
- Mackie mixer
- Roland D50 synth
- Roland JD800 synth
- Roland Juno 60 synth

DAVE BESSELL

- Alesis D4 drum module

- Atari STE 1040 computer running *Cubase*
- Digitech Whammy Pedal
- Emu Proteus 1 and 2 sound modules
- Gibson Les Paul guitar
- Marshall JMP1 Preamp
- Rocktron ProGap
- Roland volume pedal
- Yamaha RV1000 reverb
- Yamaha 10/10



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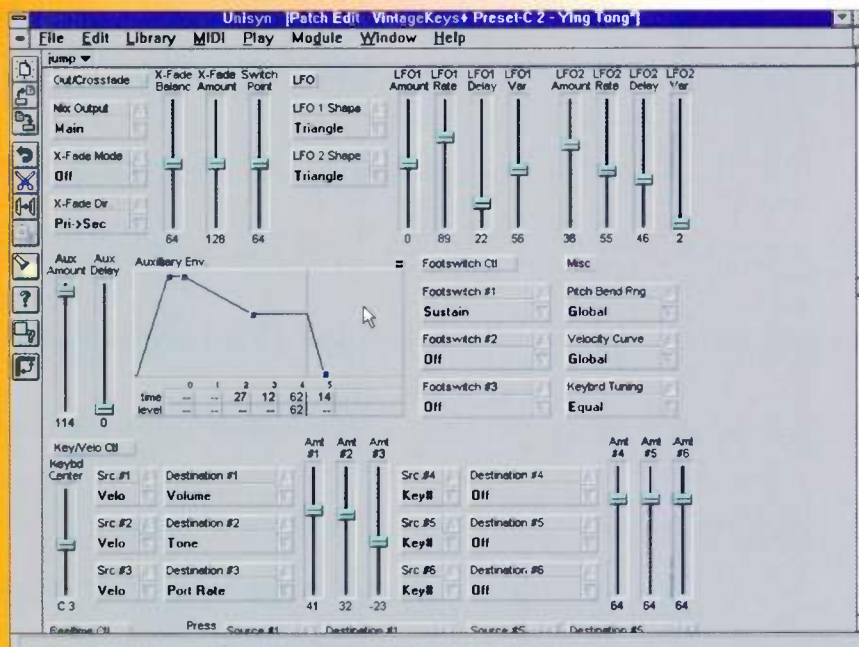
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Patch editing with Unisyn.

much other than send and receive, but the facility is welcome nonetheless.

SETTING UP

This is a procedure that will vary according to the size of your rig. It took me about 20 minutes to set up communication with nine instruments in my system, including telling *Unisyn* which MIDI port, channel and MIDI patchbay program each of them expect. Sadly there was no support for my Boss SE50 multi-effects, or my Korg S3 drum machine, and I guess it's still a little early for my sexy new Korg Prophecy.

The excellent manual talks you through configuration in a friendly and reassuring manner. *Unisyn* works well with a MIDI patchbay, making all the routings beautifully transparent, but even if you only use a simple manual switcher, *Unisyn* can remember this and prompt you when necessary. A quick check of connections can be made by selecting each instrument in turn and grabbing a patch or two. Then you're ready to start tweaking sounds and building libraries.

Once you're set up, a single click with the mouse connects you to each device. The Modules window maintains a complete status check and you can play each instrument either with the mouse, an on-screen keyboard, or your usual controller. Double clicking opens the edit menu, but I was disappointed to see the old X-Or limitation preventing opening of two edit windows at the same time. The edit screens are clear and logically laid out and I felt instantly at ease with their operation. Because some profiles are quite large, a small jump menu is provided to quickly take you to the most important areas of the edit screen.

As well as allowing you to edit existing patches using a familiar array of sliders and graphical envelopes, *Unisyn* contains a superb selection of randomise and blend options with the ability to mask those parameters most likely to cause chaos. Your new sounds can then be auditioned with a few mouse clicks.

Having created that killer new patch, you'll probably want to store it away, either within a Bank or a Library. Banks correspond to the patch locations in your synth and Libraries are any collection of patches which you catalogue using keywords and descriptive text. *Unisyn* has the best cataloguing method I've seen, but if you find there aren't enough keywords already provided, you can define your own. It then becomes an easy matter to retrieve all those D110 bass sounds that are resonant and have a fast attack, for example. *Unisyn* understands synths with strange architectures (such as the Korg Wavestation) and keeps track of 'parent/child' patches. So if you save a Wavestation performance, the program is intelligent enough to know that you also need the correct patches and wavesequences to make it sound correct when retrieved later. Shame the Wavestation itself isn't so smart! Online help is provided (though it's not context-sensitive), as is individual help for each profile.

If you need a complete snapshot of your system, you can tell *Unisyn* to go and request dumps from each instrument in turn, or from

Unisyn

Windows users looking for comprehensive and professional editor/librarian support for their MIDI instruments may not need to look any further. **PAUL NAGLE** perks up his patches with *Unisyn*.

MOTU UNIVERSAL EDITOR/LIBRARIAN FOR WINDOWS/MAC

Released back in 1989, Dr T's system eXclusive ORchestrator (X-Or) provided revolutionary control over an entire MIDI system, replacing a stack of dedicated synth editors and librarians. It was intended to grow with you, since new instruments could easily be added in the form of new 'profiles', and it was available for the Macintosh, PC, Amiga and Atari ST. In 1993, Dr T's sold the program to Mark Of The Unicorn and, although the Mac version quickly reappeared under the new name *Unisyn*, the PC version went into oblivion. Now that *Unisyn* for Windows has finally arrived, this patient X-Or owner is anxious to see if it was worth the wait.

Unisyn is a single program that allows you to edit a wide range of MIDI devices from a consistent-looking set of screens. Synths are accessed by a series of profiles, with the more complex instruments being separated into individual modules — there are six for the Korg Wavestation, for example. These profiles are sourced from a number of different authors (there's no provision for creating your own) and are free to registered users (see 'Unisyn Supported Instruments' box). Usefully, MOTU have provided several generic 'SysEx dump' profiles which allow you to obtain data from synths which are not currently supported — obviously you can't do

MOTU UNISYN £229

PROS

- An editor/librarian for the discerning synth explorer.
- Good range of import/export options.
- Excellent library organisation.
- Good looks and pedigree.

CONS

- Not quite crash-proof yet.
- Won't import SysEx files.

SUMMARY

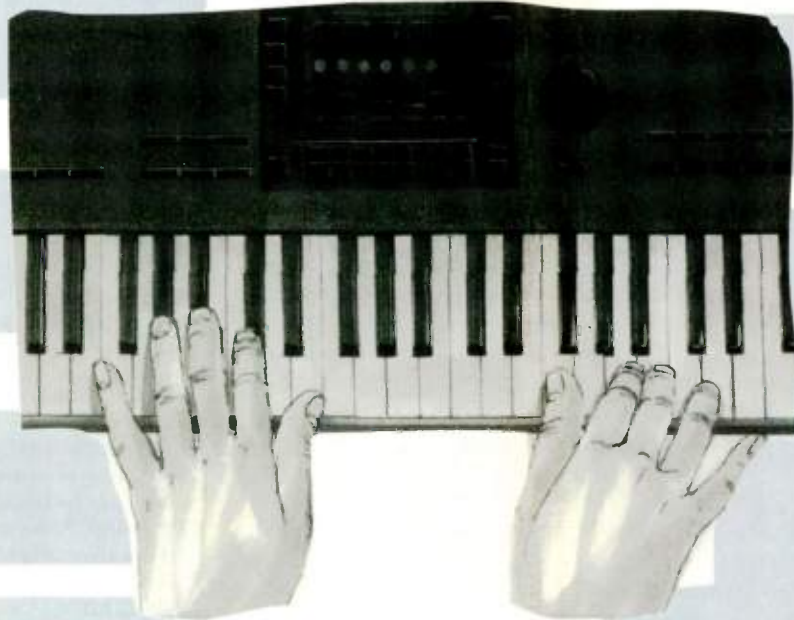
Quite simply the best generic editor/librarian I have yet seen for the PC or any other computer. Heartily recommended.

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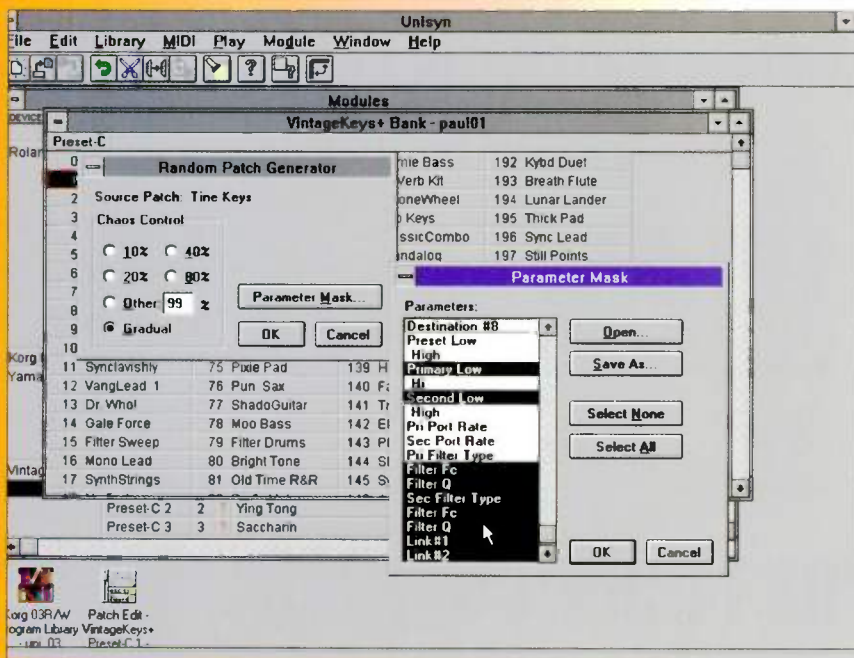
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MOTU Unisyn



Patch randomising.

SYSTEM REQUIREMENTS

- Version Reviewed: 1.2 for Windows.
- System Requirements: Any PC running Windows 3.1 or later.
- Also available for the Apple Mac at £279.

► specified subsets of them. It may be that some synths have your favourite banks living in them all the time, but others change on a regular basis. MOTU have provided the flexibility to store such 'performances' and to easily recreate them later. You can even export this to the Windows clipboard to be pasted at the start of a song, and if other people use your studio, *Unisyn* can keep track of the instruments they use without affecting your own. A nice touch.

X-Or stalwarts will be glad to know that an import feature has been provided for its libraries. Although this works OK, I found that it didn't handle my own keywords too well, making my patch catalogue look a little strange afterwards. *Unisyn* will also read X-Or banks, read and save Standard MIDI Files, and can save 'straight' SysEx files, a range of options which should accommodate most needs, although it won't import SysEx files, which some people will find

inconvenient. I certainly did. It lags behind Sound Quest's *MIDI Quest* by omitting the option to export patch names to a Cakewalk .INI file.

Incidentally, the program seems to be optimised for VGA monitor resolution, leaving plenty of wasted space down the right hand side — perhaps something for MOTU to address in the future.

CONCLUSION

As a long-time X-Or user, I've been waiting for this program for ages. I'm pleased to report that it's been worth the wait. For me, the multiple MIDI card support and improved profiles are just what I need — other X-Or owners with perhaps a single interface and a set of familiar profiles may still be tempted by the trade-in offer (see below). A couple of things I missed were X-Or's Bank-Library menu command, and the ability to define paths for all my profiles in advance, but neither of these caused any real grief. As with most software newly ported to Windows, X-Or crashed a couple of times — once almost certainly because I was receiving a large SysEx dump from one synth whilst soloing madly on another, which was still connected to another interface.

So what's the bottom line? If you have a large or growing collection of synths that you want to program, *Unisyn* is an invaluable tool. A few points could still be improved, but even as it stands, *Unisyn* is the best example of its kind I've seen. Finally, it's given me the chance to fulfil a simple ambition and end a review by saying "and I bought it myself!"

SOS

FURTHER INFORMATION

- £ *Unisyn* £229 inc VAT for a limited introductory period. X-Or Windows owners can upgrade for £149 (contact MusicTrack for details).
- A MusicTrack, PO Box 4, Arlesley, Bedfordshire, SG15 6AA.
- T 01462 733310.
- F 01462 733390.

UNISYN SUPPORTED INSTRUMENTS

- 360 Systems MIDI Patcher
- Akai MB76
- Alesis D4, HR16, MIDIVerb III, Quadverb+, Quadverb GT, SR16, Quadrasynth S4, Quadrasynth S5, Quadrasynth+ Piano
- ART Multiverb, Multiverb II
- Boss DS330
- Casio CZ101, CZ1000, CZ3000, CZ5000, CZ230s, CZ1, VZ1, VZ10M, VZ8M
- Digitech DSP128, DSP128 Plus, DHP-55, PMC10, Studio 5000
- DMC MX8
- Emu Morpheus, Proteus, I Orchestral, 2, 3, 1XR, 1XR Orchestral, 2XR, 3XR, FX, Protologic, MPS, MPS Plus Orchestral, Proccussion, UltraProteus, Vintage Keys, Vintage Keys Plus
- Ensoniq DP/4, DP/4+, ESQ1, ESQM, KS32, KT76, KT88, SD1, SQ1, SQ2, SQR, SQ80, VFX, VFX-SD
- JL Cooper MSB+
- KAT DrumKAT 3.5
- Kawai K1, K1M, K1 II, K3, K4, K4r, K5, K5M
- KMX MIDI Central 8x8 Patcher
- Korg D551, DVP1, DW6000, DW8000, EX8000, i2, i3, i4S, 707, DS8, P3, Symphony, M1, M1R, M1R/EX, M3R, Poly6, Poly800, EX800, T1, T2, T3, Z3, Wavestation, Wavestation EX, Wavestation A/D, Wavestation SR, 01/W, 01/WFD, 01/W Pro, 01/W ProX, 01R/W, 03R/W, 05R/W, X2, X3, X3R, X5, X5D, X5DR
- Kurzweil K2000, K2000R
- Lexicon LXP1, LXP5, LXP15, PCM70, Reflex
- Mackie OTTO 1604
- MOTU MIDI Mixer 7s
- Oberheim Matrix 6, Matrix 12 (librarian only), Matrix 1000, Xpander (librarian only)
- Peavey DPM3, DPM V3
- Rane MAP 33, MPE 14, MPE 28, MPE 47
- Roland A880, Alpha Juno 1 & 2, MK550, CM32P, CM32L, CM64, D10, D20, D110, D50, D550, D70, DEP5, GM70, GP8, GR50, JD800, JD990, Juno 106, JV35, JV80, JV880, JV90, JV1000, JV1080, JX8P, MK520, MK570, MK580, MT32, Pad 80, R8, R8M, SC33, SC50, SC55, SC55 MkII, SC155, SC88, U110, U20, U220
- Sequential Drumtraks, MAX, Prophet V, Prophet 600, SixTrack
- Sony DPS D7 (librarian only), DPS R7 (librarian only)
- Tech 21 SansAmp PSA1
- Waldorf Microwave
- Yamaha DMP7, DX21, DX27, DX100, DX7, TX7, DX75, DX7 II, DX7 II FD, TX802, FB01, KX88, KX76, ProMix01, RX11, SPX90, SPX90 II, SY55, TG55, SY77, TG77, TG33, SY85, TG100, TG500, TF1, TX816, TX216, TX81Z, V50

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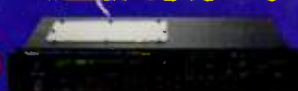
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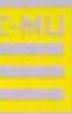
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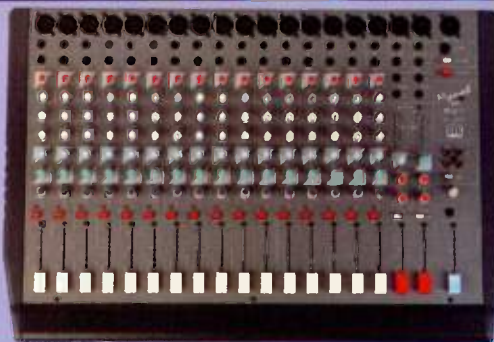


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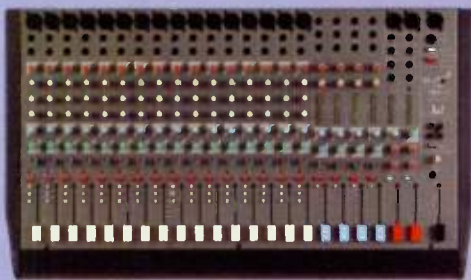
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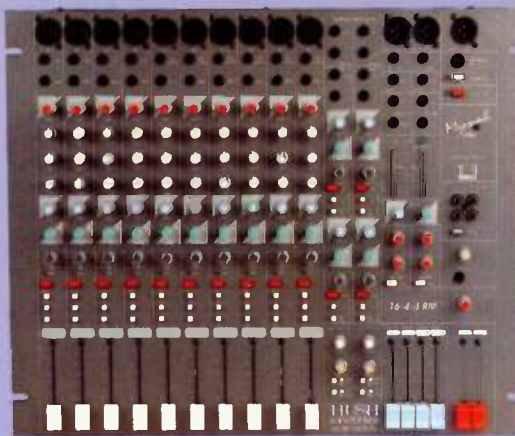
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Truly, Madly, DP

ENSONIQ DP/2 PARALLEL EFFECTS PROCESSOR

Ensoniq's move into dedicated multi-effects units has been unusually cautious. The DP/4 stereo parallel effects processor, released in 1992, was a bit of a breakthrough, with its provision of four independent and freely-interconnectable processors in a 2U package, and for the following three years Ensoniq were content to use this technology in their synths and samplers — until the release of the upgraded DP/4+, and now the DP/2.

One point against the DP/4 has always been its price. The new DP/4+ lists at almost £1,300, and while this price is reasonable in view of the facilities on offer, it does exclude some potential customers from joining the Ensoniq camp. Hence, the DP/2. While appearing to be half a DP/4+, the DP/2 actually scores over the more expensive unit in some areas — for example, it has 12 more basic effects algorithms (see 'Those Algorithms In Full' box), and 50% more preset memories. Given that the algorithms include some killer guitar-orientated effects, the potential market for the DP/2 is quite large, taking in guitarists, keyboard players, and the studio musician.

KEEPING UP APPEARANCES

Externally, the DP/2 looks a little like the bottom half of a DP/4+, with some minor differences. Gone are the chunky chrome-effect input and output level controls and large data-entry dial, the DP/2 adopting sober black pots in their place. The data-entry knob still offers a positive click for each move though, which is certainly welcome. The display is identical — 2-digit LED for preset and parameter numbers, and a 2-line x 16-character LCD for preset and parameter names and values. The buttons for navigating the system are all clearly named, although you'll need a look at one of the two manuals (one is a handy tutorial) to get to grips with what they actually do.

The inputs and outputs, situated on the rear of the unit, are on balanced quarter-inch jacks, and there are a pair of each. A duplicate of input 1 appears on the front panel (for ease of guitar use,

for example), and this takes precedence over the rear connection. Also at the rear are a pair of dual footswitch sockets, which can be set up to control several of the DP/2's functions. Unfortunately, they won't work properly with ordinary mono footswitches unless you perform the wiring modification provided in the manual. Lastly, there's a volume pedal input, plus a trio of MIDI sockets (In, Out and Thru).

Power is supplied via an external power pack. The handful of demerit points awarded for this are further compounded by the fact that: a) the PSU is huge; b) it requires a mains lead to be plugged into a flying lead; and c) the lead that connects to the DP/4 is not terrifically long — the power unit had a tendency to not quite touch the floor even when the DP/4 isn't all that far from the ground. I also discovered that it induces hum in guitar pickups.

THE LOOK INSIDE

Looked at simply, the DP/2 is half a DP/4+, and (in common with the Digitech TSR245, reviewed in October's issue of *SOS*) offers two separate true stereo effects processors, referred to in the manual as Effects A and B. The DP/2 can use these effects to process a single mono or stereo input Source (such as guitar or stereo keyboards), or two Sources (guitar and bass, or two mixer effect sends, for example). In the first case, your guitar or keyboards are processed by both effects (in series, in parallel, or with a choice of two feedback options), and in the second case, your mixer effects sends each have access to a fully independent effects unit. While this latter setup might sound limiting, as each independent 'unit' only has access to half the processing power of the DP/2, in practice it isn't really a problem, since many of what Ensoniq call single effects (or algorithms) in fact contain a chain of two, three or even four effects.

Not surprisingly, each algorithm has a number of parameters associated with it. These can be tweaked at will, and the resulting effect named

DEREK JOHNSON opens up the latest effects box from Ensoniq and finds that they do sometimes do things by halves!

ENSONIQ DP/2 £799

PROS

- Excellent effects, with something for almost everyone.
- Useful studio processors, such as EQ and compression.
- Usable as one mega multi-effects or two independent units.

CONS

- Complicated.
- Large, external PSU.
- Only one pair of stereo outs.

SUMMARY

The sound quality of the DP/2 is beyond reproach and the factory presets are useful and imaginative, making it a good studio all-rounder. However, the operating system could be a lot more straightforward.

It's a

Anyone into sampling or hard disk recording appreciates the need for a low-cost, high-capacity, archivable storage medium — and that's exactly what Iomega's Zip 100 drive delivers. PAUL WHITE gives it a spin...

ZIP!

IOMEGA ZIP DRIVE

Long gone are the days when your largest samples would fit onto a 1.44Mb high-density floppy disk with room to spare — nowadays, even an unexpanded sampler has 2Mb of RAM, while a fully expanded model might have as much as 64Mb, or even more (that's a lot of floppies!). The same can be said of hard disk audio recording — where do you back up your files if you want to re-use your hard drive?

Iomega's incredibly compact Zip 100 drive would appear to offer the ideal solution, and at a far lower cost than using SyQuest drives or similar devices. For little more than the price of an external floppy drive, the Zip 100 can pack up to 100Mb onto a single disk (cartridge) that's little bigger than a conventional 3.5-inch floppy, and though its access time is a little slower than that of a regular hard drive, it's still fast enough to treat as a conventional hard drive for backup purposes. The blue plastic drive casing itself may be mounted flat, or on its edge to save space (see photo), and power comes from a plug-in adaptor.

INSTALLATION

Being a Mac user, I opted to test the SCSI model which comes with driver software for both Macs and PCs. The installation sequence is initiated from the supplied floppy, and the remaining software comes on the 100Mb *Zip Tools* cartridge included with the drive. Along with the driver software, you also get a 'restricted' version of *Virtual Disk* which, essentially, maintains a catalogue of your removable drive files on your internal hard disk, plus a couple of demo games. The same cartridge is employed whether you're a Mac or PC user, but as soon as you execute the install procedure, the disk format is locked to match your computer. In other words, if you install the driver on a PC, you can't then install it onto a Mac as well, unless you buy a second *Zip Tools* disk.

In practice, installation is very straightforward

and from then on you can treat the Zip drive just like a large, fast floppy. There are a couple of things you need to be aware of, though:

- The drive's SCSI address can only be set to 5 or 6 (so check for possible conflicts if you use many other SCSI devices).
- There's an active termination switch on the Zip drive's rear panel, and if the drive is at the end of your SCSI chain, the termination should be switched on.

Once everything is up and running, inserting a disk causes its icon to appear on the desktop in the conventional manner. Unlike a floppy, there is no write-protect tab — write-protecting is done via the *Zip Tools* software, and there's also provision to create a password to prevent unauthorised access to your files.

As you might not always want to use the drive with your own computer, a simplified 'Guest' driver is supplied on the install floppy. If you carry a copy of this around, you can plug the Zip 100 into any Mac and read or write to it as normal but without the fancy password or disk management facilities. When you drag your disk icon to the trash to unmount it, the Zip drive door opens and out pops the disk, in true Mac style.

ZIP + SAMPLER

To use the Zip 100 drive with any SCSI sampler, it is necessary only to format the disk from within the sampler's own utility menu — you don't need to worry about drivers. I tried the Zip 100 drive with my Akai S2000 and it operated without a hitch. I also copied the operating system software onto the Zip drive, which makes booting up somewhat faster.

VERDICT

Considering its low price and high storage capacity, the Zip 100 would seem ideal for sample storage and the backing up of short to medium-length audio files, as well as for general data use. A higher capacity drive using 1Gb cartridges

IOMEGA ZIP DRIVE £169

PROS

- Low cost, high capacity storage.
- Lightweight and portable.
- Easy to use.
- Works with SCSI samplers.
- Works with Macs or PCs.

CONS

- Unlikely to be fast enough for most direct-to-disk audio applications.
- You need to buy an additional Install cartridge if you wish to use all the features of the drive on both Macs and PCs. However, the included Guest software on floppy should satisfy most users.

SUMMARY

An ideal means of backing up samples and short to medium-length audio files, as well as general computer data.

"I don't know about you, but my dilemma isn't whether or not to buy a Zip drive — only how many!"

(known as the Jazz drive) will be available from Iomega in the near future, but for most musical applications, storing data in separate 100Mb chunks is actually more convenient. Blank 100Mb cartridge prices are respectable, too — between £11 and £16 each, depending on quantity. I don't know about you, but my dilemma isn't whether or not to buy a Zip drive — only how many!

505

FURTHER INFORMATION

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Dawn of a New Era

FOSTEX DMT8 DIGITAL MULTITRACKER

PAUL WHITE visits the future of home recording, where tape heads never need cleaning, cassettes never jam and mistakes can be undone at the touch of a button.

Our recent product preview of the Fostex DMT8 disk-based multitacker sparked off more interest than Nick Leeson's bank statements, but what really impresses me is that Fostex already have the finished models on their way to the shops — this time there's no interminable waiting for vapourware to condense! Though it doesn't offer anything new in the way of technology, or even features, the DMT8 attains a high coefficient of uniqueness due to its ferociously aggressive price and its simple, deliberately cassette-like user interface.

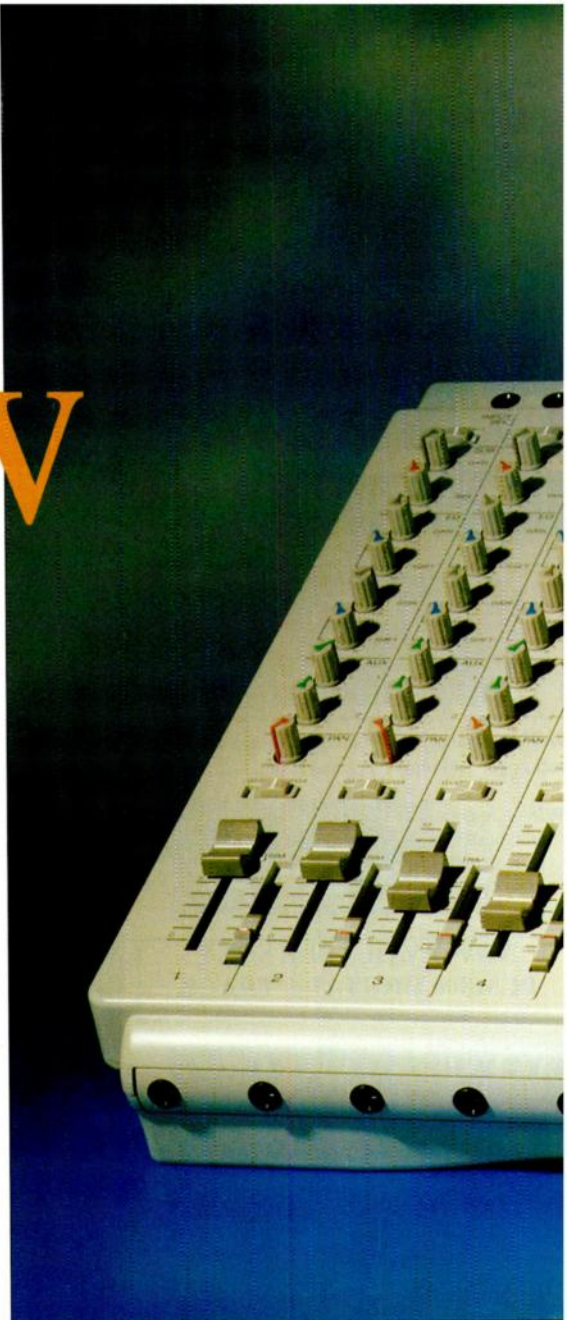
Packaged to look and feel as much as possible like one of Fostex's existing multitrackers, the DMT8 is a dedicated 8-track digital recorder based upon a 16-bit, 44.1kHz sample rate system, offering simultaneous recording on up to four tracks. The storage medium is a 540Mb internal IDE disk drive which can provide a recording time of around 12.5 minutes (for 8 tracks), just a couple of minutes less than you'd get from a double speed cassette multitacker. Recordings can be backed up to DAT via the machine's optical connectors, which takes around 45 minutes, but there is no apparent means of extending the recording time by adding an external drive or by increasing the size of the internal drive; an obvious limitation. No digital phono S/PDIF sockets are fitted but an inexpensive optical-to-phono adaptor is available from Fostex.

Though designed to operate much like a cassette multitacker, the DMT8 offers additional random access features unique to tapeless systems — such as cut/copy/paste editing and, perhaps most importantly, undo. There are no virtual tracks or playlist-type edit features, however, and the maximum recording time is fixed at 12.5 minutes regardless of whether you fill up only one track or all eight. The editing facilities are non-destructive — you can always undo the last move you made, and as I understand it, part of the disk is used for temporary file storage, so if you intend to do a lot

of editing, then it pays to leave a couple of minutes of disk space unused.

A jog wheel/shuttle dial is fitted for accurate edit point location and there's an Auto function that gives you an autolocator, auto return and play, and auto punch in/out with rehearsal mode and foot control option. This works very like its cassette counterpart, and to make life easier for those using sequencers, the DMT8 can transmit MIDI Clock with Song Position Pointers (via a 32-point internal tempo map), as well as MTC (MIDI Timecode) and MMC (MIDI Machine Control), making it possible to control and synchronise an external sequencer. Moreover, the display system can be switched to read bars and beats (as defined by the internal tempo map) and there's a built-in metronome, both of which make cut-and-paste editing easier as you can work in precise musical bars. Some means of importing tempo map information directly from a sequencer would have been a huge improvement over having to do everything manually, but at least the friendly operating system makes this process as painless as possible.

The DMT8 is a self-contained system with its own built-in mixer. This features 2-band sweep EQ



FOSTEX DMT8 £1500

PROS

- Very easy to use.
- Excellent sound quality.
- Direct access to recorder ins/outs.

CONS

- Recording time not expandable.
- No copying between tracks.

SUMMARY

An excellent alternative to the cassette multitacker for the user who doesn't find the maximum recording time of 12.5 minutes too restricting.



on each of the eight main channels, insert points and mic inputs on the first four channels, and up to 22 inputs (if you count the returns) on remix courtesy of a semi in-line format. Four subgroups allow up to four different mixes to be recorded to disk in one go, and the two auxiliary sends are centre-off types that can be fed from either the main or sub channels.

PACKAGE DEAL

Measuring just 568 x 121 x 432mm, the DMT8 sits comfortably on a desktop. The layout follows the convention of having the mixer section to the left and the tape/transport section to the right — except, of course, that this unit has no tape. Even so, the display, transport keys and track arming buttons are so tape-like that it's hard to believe there isn't a tape whirring away in there somewhere. As the DMT8 has the facility to store a tempo map, editing can be carried out to bar and beat locations rather than simply to time locations which, in a musical context, is generally more preferable.

Providing you have enough free disk space, the last edit you make can be undone, which is something tape can't offer. If, however, you don't

have enough free disk space to hold the undo information, then you get a warning which tells you that your edit will be irreversible. The basic edit types are cut, copy, paste and erase, and to ensure a smooth transition between edited sections, a 10-millisecond crossfade is automatically generated. In the event that you try to execute an edit that requires more disk space than you have left, an 'over' indicator will tell you by how much you're trying to exceed the remaining disk space, so that you can plan a more economic edit. If you end up with so many edits that the system has no room to cope with any more (around 250 max), you can backup your song to DAT via the optical port and then reload it; this prevents the hard drive from becoming too fragmented. Backing up takes four times the duration of the song length you're saving, and reloading takes exactly the same time. In addition to the audio, backing up also saves the relevant Setup data.

All the user information comes via a large plasma display which provides bargraph metering, record status indication, location time/position, and additional dialogue for information or warning. Six editable time memories can be used to handle autolocate, auto return and auto play,

"Providing you have enough free disk space, the last edit you make can be undone, which is something tape can't offer."

Finally, a product that is everything a



MULTI-EFFECTS PROCESSING
The term "multi-effects processing" has been used so frequently in the professional audio industry that even the meaning of the word has become obscure. It makes sense, then, that the company *responsible* for the multi-effects revolution should clear up the confusion by raising the standard... again. The new definition? Studio Quad. It means more simultaneous independent processing than ever before possible with one unit. It means arranging effects in the order YOU want them. It means more productivity for YOUR signal processing pond.

SOUND QUALITY FIRST...
DigiTech's proprietary S-DISC™ technology creates the warmest reverbs, cleanest delays, and richest pitch/modulation effects around. With 44.1 kHz sampling frequency, 18 bit A/D and 20 bit D/A Conversion and a greater than 90dB signal to noise ratio, the Studio Quad has the specifications to place it in a class of its own, and coming from the number one manufacturer of effects processors (both in The States and the U.K.),



where the designers and engineers are also musicians, those specifications have been channelled into producing new standards in natural sounding, accurate and musical signal processing.

MIXING BASICS
The Studio Quad offers the four elements used in nearly every mixing application: large reverbs, small reverbs, delay, and pitch / modulation (detuning, chorus, flanging, etc).

Four effects at once, each with its own input and output. Of course, if you really need four reverbs at once, no problem. Simply select them from the dozens of reverb settings found in our effects library. The Studio Quad can even submix the outputs for

you, saving those valuable mixer inputs for more important things. But for true power, four separate outputs are just a button press away.

LAYING IT DOWN...

Maybe you need a little help getting those studio tracks perfected. A little EQ here, a touch of chorus there, and maybe some gating to help eliminate the hum from the air conditioning vent...the Studio Quad is ready for the job.



And unlike processors, you're never left wondering how the Studio Quad is configured. The large custom LCD display always keeps you on top of the action, supplying you with all the information you need. The effect routings are constantly displayed in the algorithm grid, and 24 character names leave plenty of room for an accurate description of your custom programs. And if that's not enough, the large, brightly illuminated controls never leave you fumbling in the dark for the right button.

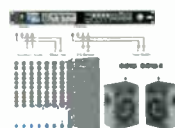
TAKING IT TO THE GIG...

Sure, it says Studio Quad on the front, but this product is right at home in any live application, too. Because of its extraordinary capabilities, you can leave two or three of the other processors at home. And as everyone knows, a

lighter rack is a happier rack.

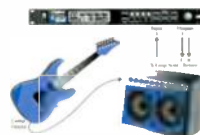
GOING LIVE...

Want to punch up the house mix with a stereo 6-band parametric equalizer? Need a sweet dual-chorus to help the vocals? How about a little slap delay? The Studio Quad does all that, *all at the same time!* Want to exchange the stereo 6-band parametric for a stereo 8-band graphic, all without leaving the current Program? Just hit that FX Edit button, dial up the new EQ and pick from one of the preset curves to get you started. No other product offers this kind of flexibility, these kind possibilities, especially in this price range.



KEEPING IT LEVEL...

Even the greatest digital sound processors can sound horrible if the levels are set wrong. The Studio Quad helps you get the most out of your investment with Auto Input Levelling. Simply send the Studio Quad the strongest audio signals you anticipate using, and then tell the Studio Quad to set the levels for you. No more guessing, no more mistakes, no more noise.



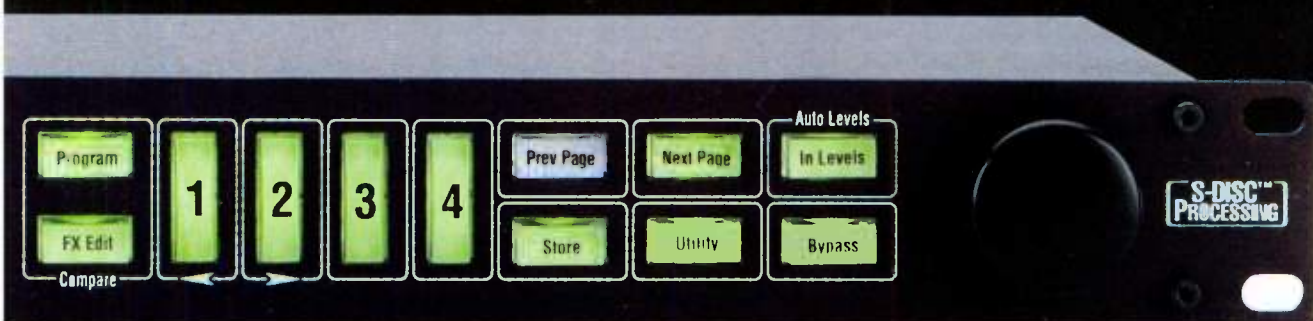
FEATURES:

- 4 independent ins and outs
- New oversize custom display
- New, easy-to-use interface
- Multiple input/output signal path routings
- S-DISC® powered
- The equivalent of 4 signal processors in 1!
- An extensive collection of Reverbs, Delays, Choruses, Pitch Shifters, EQ's and more
- Automatic input levelling
- Dynamic parameter modifiers
- Full MIDI implementation
- True stereo effects



4 inputs, 4 outputs: Multi-Effects

Multi-Effects Processor should be.....



MAKING IT YOURS...

Editing and customizing the effects to your needs will never be easier than this. The Studio Quad can display up to four parameters at once and full parameter descriptions can be seen by simply pressing and holding one of the four parameter buttons. TapIt-Tempo allows you to correctly set your delay times without reaching for the calculator. And if you need truly dynamic control your sound, try assigning a couple parameters to user definable LFOs or input sensitive modifiers.

INSTRUMENT APPLICATIONS...

Maybe it's a guitar, or perhaps a saxophone, that is needing the help of professional quality sound effects. The Studio Quad is ready to handle anywhere between one and four input signals, offering you the upmost in flexibility.

The possibilities seem endless. You can select from one of the professionally designed studio programs or create your own from millions (literally) of effect and routing combinations. You can even use it as a Processor / Sub-Mixer for your multi-timbral synth that has four outputs.

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All this adds up to a world-class digital signal processor that lets you concentrate on the reason you got into music in the first place...*the music*. Never before has one piece of equipment done so much for so little. Never before has signal processing been so flexible yet so easy to use.... At a price only DigiTech could deliver.

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MORE WORLD CLASS EFFECTS FROM...

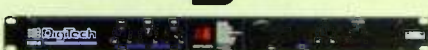


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DigiTech's STUDIO VOCALIST. The ultimate studio vocal processor designed for high quality intelligent harmonies, pitch correction and vocal thickening. Features separate outputs and optional Digital I/O.

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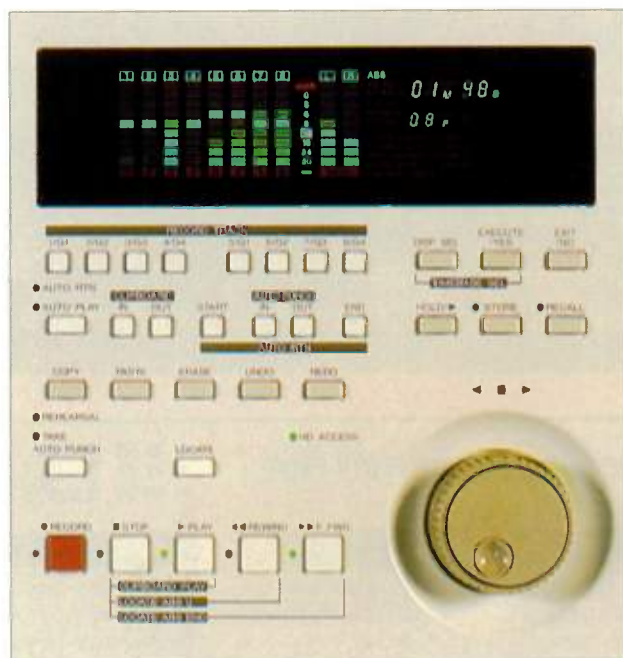
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1 2 3 4
IN
1 2 3 4
OUT

STUDIO Quad

redefined.

Fostex DMT8



- ▶ as well as auto punch-in/out. Furthermore, the Locate key has its own memory, which is very useful when you want to keep coming back to the start of any section you happen to be working on. As with most Fostex auto punch-in/out systems, the DMT8

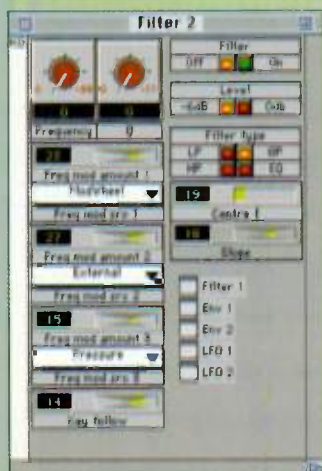
includes a Rehearse mode which lets you monitor the effect of a punch-in without actually committing it — once you are happy with it, you can go into Take mode and do it for real. A pre-roll value can also be entered so that the machine starts a few seconds before the intended punch-in point.

When sending MTC from the DMT8, all formats are available — including 30 drop-frame — and the MTC may be offset by up to six hours from the absolute time value (presumably for the benefit of people who take a long time to get their fingers around their guitar chords!). As hard disks can access any part of the stored audio data almost instantly, Fostex have employed some trickery to make the transport more tape-like and this includes the shuttle wheel, which makes it possible to fast cue the audio at up to 20 times actual speed. You can also hold down a wind or rewind button when the machine is in play mode to fast cue forwards or backwards. The inner wheel is used to find precise locations, right down to frame and sub-frame accuracy. As you move the inner wheel, the audio is scrubbed, and at slower scrub speeds a short section is looped, which makes it easy to find edit points on the beat.

When you fast wind the audio, a deliberate slowing of pace has been built in, so that you end up zipping through the recording at about the same rate as a DAT machine in fast wind. Without

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All three new models have a wide variety of new features as standard. Refinements to the user interface include a Multimode feature which allows the easy set up of multitimbral and layered sounds. MIDI file read/play function is built in. Bundled with the new range is MESA, a graphic editing package developed by Akai for the Macintosh™ MESA (Modular Editing System by Akai) comes with a choice of pre-configured control layouts as well as a versatile editor that allows you to design your own. Also included are a Wave editor, a File Manager and audio file transfer to and from AIFF and SD2 formats. Memory upgrades to 32Mb can be achieved using readily available SIMMS modules, and there are extra slots for an optional 16Mb of Flash RAM. A SCSI interface allows access to the huge AKAI sound library as well as those of other manufacturers.

The new EB16 4 channel digital effects board offers two full channels of multi effects, each allowing 6 simultaneous effects plus two extra channels of reverb, giving up to 4 reverbs in total! It can also be used as a two channel effects processor for external sound sources.

this feature, the disk would go immediately to the start or end, giving you no chance to find an in-between point. Once you've stopped the audio somewhere close to where you desire, you can use the jog/shuttle wheels to home in on the exact spot you are seeking.

The transport keys themselves look exactly like those found on a typical tape machine — there's a red Record button and grey buttons for Play, Stop, F Fwd and Rewind. By pressing two keys at a time, you can also replay the clipboard contents or jump to the start/end of your song. Track arming buttons below the display work in conjunction with the Record button to activate specific tracks, just as you'd expect, and pressing the Record button on its own switches any armed tracks from disk monitor (I nearly said tape monitor) to input source monitor status. In ready mode, the record LED and status LEDs flash, and in record mode proper they stay illuminated — just like a tape machine. Because hard disks don't have write-protect tabs, the equivalent function is provided in software within the Setup menu, but you cannot protect your recording on a track-by-track basis — it's either all write-protected or not, which I feel is a missed opportunity.

The Setup menu is where you set the time signature and tempo of the tempo map, and where the internal metronome can be turned on and off. The metronome signal itself comes up

on Sub channel 8, where you can control its level. You'll also find the DAT load and save routines as well as disk formatting in the Setup area alongside pre-roll time, MIDI sync out selection and frame rate, MTC offset, and the previously mentioned record enable/disable. Once you're in Setup mode, the jog wheel can be used to navigate through the various screen pages and the Yes/Execute key is used to confirm entries when values have been changed — all pretty standard stuff.

MIXER BASICS

The DMT8's mixer is basic by studio console standards, but it still has most of what you need to make good recordings, not least being the eight separate 'tape' outputs that let you route tracks to an external mixer instead, if you so wish.

Each of the eight mixer channels comprises a main Channel with EQ, and a Sub channel (normally used for monitoring during track laying), which has just level and pan controls. Having said that, there are two aux sends for use with effects and these work from a centre zero position, providing a send from the Sub channel when turned anti-clockwise and from the main Channel when turned clockwise. The Sub inputs can be used as conventional line inputs at mixdown but only the first four Channels have mic inputs, and these are on quarter-inch jacks with no phantom power. The four mic/line

TIME TO BACK UP

The time taken to back up the data on the DMT8 hard disk equates to four times the length of the song you are working on, so backing up the whole drive will take about 45 minutes. Loading data takes the same time, but if you don't have a DAT machine with an optical interface, you will need to buy the optional Fostex adaptor box.

...THE BEST JUST GOT BETTER!



The IB304F board adds a second bank of filters (resonant/low, band & high pass) and a third multistage envelope generator enabling advanced tonal manipulation of sound. (EB16 and IB304F are standard on S3200XL, optional on the other two models). Direct to Disk recording is standard on the S3200XL and S3000XL as well as a digital I/O and 8 individual outputs (Optional for S2000).

The new S-Series samplers are also powerful 32 voice polyphonic synthesizers, the specification including superb resonant lowpass filters, envelope generators, comprehensive LFOs, Portamento and extensive modulation facilities.

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Fostex DMT8

*"...the Fostex DMT8
is every bit as easy
to use as a cassette
multitracker..."*

► channels have insert points on stereo jacks and at the head of each Channel is a slide selector switch; this determines whether the channel is sourced from the Track or from the Input jack, rather like the Flip switch on a typical in-line mixer.

Wrongly described in the manual as a 'parametric equaliser', the EQ section comprises two sweep equalisers, the upper of which covers the range 1kHz to 16kHz and the lower of which spans 60Hz to 1kHz. Up to 15dB of cut or boost is available for tonal correction, but there's no EQ bypass switch.

Routing is accomplished by means of a 3-position slide selector switch and the Pan control. As on a conventional mixer, the switch selects the Group pair to which the signal is to be routed and the Pan control steers the signal between odd- and even-numbered Groups. This mixer has just four Groups, each with its own master level control and

a Left/Right routing button for use when mixing. The third position of the Group selection switch is a centre off, which serves instead of a mute button, but there is no Solo system of any kind. On the first four Channels, the Trim slider next to the main channel slider is used to set the mid/line input level; the same jack copes with both mic and line inputs. To keep the routing simple, there's no direct left/right routing — all the Channels are routed via the Groups and each Group level control has an adjacent button, used to patch the Group into the stereo mix.

Simplicity reigns in the master section of the mixer but there are two stereo effects returns which can be routed to one of the available Group pairs as well as to the main stereo mix; Aux 1 can feed Groups 1/2 or Left/Right, while Aux 2 can feed Groups 3/4 or Left/Right. Separate level controls are provided for the control room and headphone outputs, but although the Phones control has a staggering amount of level in reserve, it also picks up rather a lot of interference from the DMT8's internal disk drive and display circuitry if you use low impedance headphones. This is irritating, especially as the interference remains even when the headphones level is turned right down. With headphones of 80Ω or more, the interference is negligible.

CONNECTIVITY

Phono connectors are used to connect to the stereo mastering machine with further phonos fitted to handle the direct tape outs, the four direct record inputs, and a stereo buss input. The latter makes it possible to feed another mixer into the DMT8 without using up any valuable channels or aux returns.

Having direct access to and from the recorder section is a huge bonus for those who want to work at home but mix in a professional environment, and a further bonus is that the whole shooting match is mains powered, so there are no separate PSUs to worry about.

MIDI In and Out sockets are fitted to facilitate the use of MTC and MMC and there are two optical digital interface ports for connection to a DAT machine. Interestingly, the DMT8's mixer has an analogue-to-digital converter at the output, so the digital out port may also be used to pipe your mix directly to DAT. Whether this offers any advantage over the conventional analogue route rather depends on whether or not the DMT8's A/D converters are better than those in your DAT machine.

IN ACTION

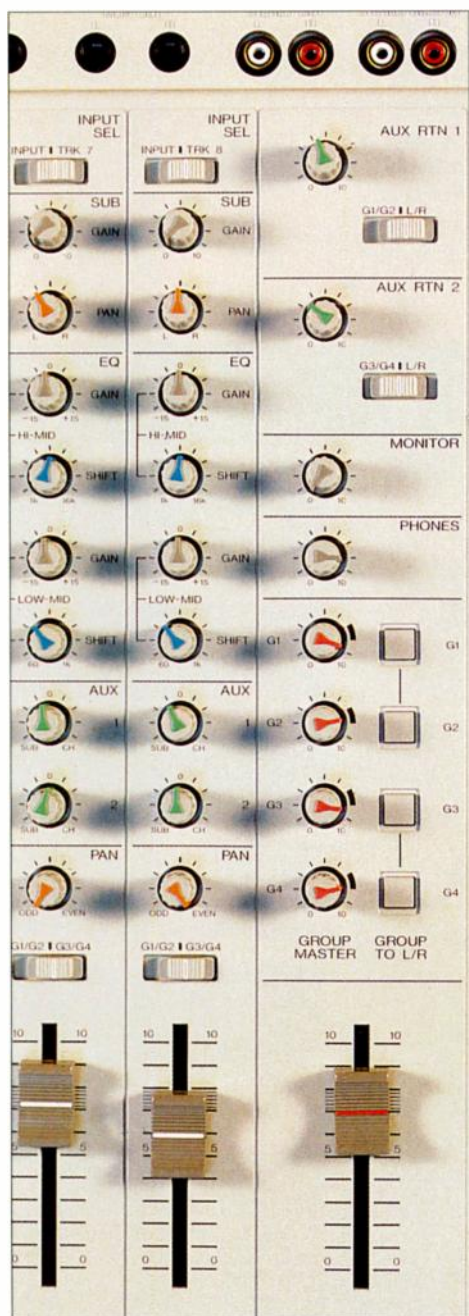
In most respects, the Fostex DMT8 is every bit as easy to use as a cassette multitracker, only the fast wind speed is much faster. If you are used to working with computer-based hard disk audio systems, what the DMT8 offers may seem rather basic, but I prefer to think of it as a conventional multitracker with the bonus of high quality digital sound and cut-and-paste editing.

Editing is very simple and reasonably quick — you just have to wait a few seconds while the machine creates a backup file (for undo purposes) and the edit is done. There are no clicks, no gaps and no audible glitches, but I feel the method of marking copy points on-the-fly could have been slicker. Providing you are recording conventional pop music, it's easier to work to the internal metronome and execute your edits to bar and beat locations, but classical style material could be trickier.

Turning to the physical feel of the machine, most aspects are very tape-like — except that the muted ticking noises coming from within the box betray the presence of a hard disk. The auto punch-in/out and locator functions work pretty much as they do with a regular tape-based system, but you need to be aware when editing that you can't paste in a new section which starts beyond the point at which you previously finished recording. To achieve this, you need to record an appropriate amount of silence (on any track), which has the effect of moving the song end point further along. Similarly, when you finish recording, it's important to stop the machine as soon as possible, otherwise you are unnecessarily filling up valuable disk space with silence. If you try to do anything illegal, the display usually shows a helpful prompt or warning.

One trick not described in the manual is recording on the first six tracks and then mixing to the remaining two. Because punching in and out is glitch-free (courtesy of a 10mS crossfade), you can use this technique to mix a complicated song in sections, and because the mixer has access to the digital output, you can pipe the result directly to a DAT recorder.

The mixer section works conventionally enough and the swept EQ is very flexible. You can get away with plugging a guitar directly into the inputs, though



a proper DI preamp will always give better results. Noise was never a serious problem during the test period, though not being able to use capacitor mics (due to the lack of phantom powering) is frustrating — with a digital recorder of this sonic quality, capacitor mics would be an obvious benefit in certain situations. Such noise as is evident undoubtedly emanates mainly from the mic preamp circuits, but this is very small compared to the noise present in most of the source material you are likely to record.

SUMMARY

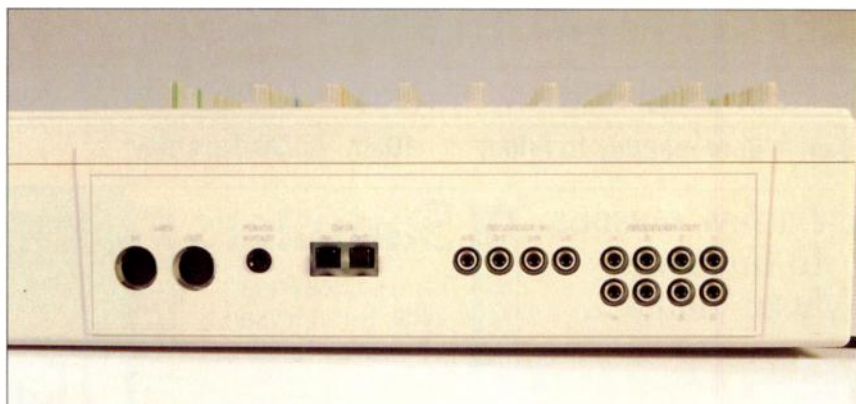
I believe that Fostex have got the DMT8 largely right, but there are a couple of weak areas — notably the lack of expandability and the inability to copy and paste from one track to another. I really can't understand why you can't copy data between different tracks — it would have made compiling vocals easier where you're trying to put together the best parts from three or four different takes. As it stands, any track-to-track compiling has to be done via the mixer routing.

In all other respects, the editing system works very smoothly, especially if you work in beats and bars. If you want to slave up a sequencer (the DMT8 acts only as the master), the MTC/MMC protocol allows you to synchronise a sequencer and control its transport functions directly from the DMT8 without using up a track to carry timecode. Unfortunately, it is not possible to use the DMT8 as a slave device, which means it is less suitable for soundtrack use.

The manual is generally adequate, though pretty obviously translated from the Japanese (by the Japanese!?). The technical spec section is very light on detail, telling us only that the frequency response is from 20Hz to 20kHz (but not within what limits), and no noise or crosstalk information is provided at all, despite the fact that there seems to be nothing to hide in this department.

In conclusion, I feel that the DMT8 will appeal mostly to the musician who wants digital sound quality and needs to perform the occasional edit, rather than to someone who wants an overwhelming number of sophisticated editing facilities. Furthermore, the four recorder inputs and eight separate outputs will appeal to music professionals who want to start a project at home, then mix it via a pro desk. Similarly, the direct inputs mean you can patch in external mic amps and such like without going via the onboard mixer. On the down side, as far as I can tell, Fostex aren't yet talking to any of the software sequencer companies with a view to having their hardware supported from within the likes of *Cubase Audio* or *Logic Audio*. This is a great opportunity not to be missed, because the DMT8 (at around £1,500) would be a great way to add eight audio tracks with eight separate outs to any MIDI-plus-audio sequencer.

Since backing up takes a relatively long time on the DMT8, this kind of system is probably best suited to those who work on one or two songs at a time, rather than those who work on a whole album at once, flitting from one song to the next. Future generations of digital studio may well



appear with removable media, which would be rather more practical for those working on large projects, but at the moment there's nothing else like the DMT8 at anything like the price. When you consider that this machine offers a digital 8-track recorder plus a mixer for such a low price, I don't see how it can fail to be successful.

SOS

FURTHER INFORMATION

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EDITING FACILITIES

The DMT8 can cope with simple cut, copy, paste and erase editing, but it's as well to check over the definitions of these functions, as not all are as you might expect...

- **ERASE** is simply the ability to erase data on one or more tracks, between the locator points you have set.

- **COPY** duplicates the data between the location points and transfers it to a clipboard. The manual is rather ambiguous as to whether the clipboard is real or virtual, and I get the impression that data is copied directly from the marked section to its new destination without being stored somewhere as a new file. In other words, the clipboard probably holds just the start and end information for the track to be copied, while the undo file is stored elsewhere on the disk. You can copy one track at a time or copy multiple tracks, and the data may then be pasted into a new location using the Paste command. Setting up the Copy and Paste locations is easy enough but requires at least three button pushes per location point. Start and end points may be captured on-the-fly with the Hold button, but you still have to make one pass to grab the start point and a second pass to grab the out point, unless the section you are copying is long enough to let you do both without running out of time. A more practical option would have been to use single button presses after first placing the system into Copy mode. Complexity-wise, Copy and Paste is about as straightforward as executing an auto punch-in/out sequence on a conventional cassette multitracker.

- **PASTE** places the copied data into a new location. Unlike playlist editing systems, however, this

overwrites any existing data at that location. One level of undo is allowed, so this need not be irreversible. However, you should avoid pasting into a location that overlaps the original copied data as this will, in effect, alter the clipboard data. In practice, this means that subsequent paste operations will paste in the altered data rather than that originally selected.

One serious limitation of the DMT8's editing system to my mind is that copied data can only be pasted back into the same track (or tracks, in the case of multiple copies) so you can't take the best bits from three vocal tracks, say, then compile a perfect take on a single track. If you try to paste more data than you have disk space to accommodate it, a warning message will appear in the display. You can get around this by bouncing via the mixer, but this means going back into the analogue domain. Similarly, all conventional bouncing occurs in the analogue domain.

- **CUT:** So far the edit commands mean much as you might expect them to, but Cut is the exception. As far as this machine is concerned, Cut means "erase all data beyond the marked point", and like Copy, it can be applied to any number of tracks between one and all eight.

- **UNDO/REDO:** Edits can be undone or redone using the Undo and Redo buttons, but these may only be utilised while the recorder is stopped. Only one step can be undone, so if you start recording again or make any other edit, your previous edit will become permanent. Similarly, you can't undo an edit if in the meantime the machine has been switched off.

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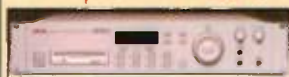
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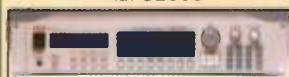
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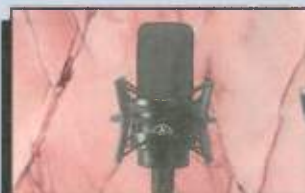
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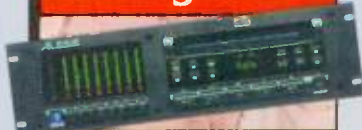
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Yamaha MT50

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- FX Send
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Several suppliers are offering a free CD-ROM drive with certain samplers, but if you take a look at the drive they are offering, it's probably a slow, out-of-date model with no additional uses.

The CD-ROM drive M.V. are offering free with any sampler over £1200 is also a portable CD player, photo CD compatible, the fastest dual-speed on the market, and has been praised this year in magazines from PC Pro and MacUser through to The Mix. The RRP of £299 says it all. If you already have the sampler of your choice, then pick up the ReNo at the M.V. exclusive price of just £199



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- Up to 150 separate projects and 300 virtual tracks across multiple drives
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RRP £3999

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However, some of the systems announced recently have made the DM-800 price tag look a little high, so Music Village has used its buying power to bring the price down to the level of these less fully featured systems. As a result we are now in a position to offer this professional system at the incredible price of just...



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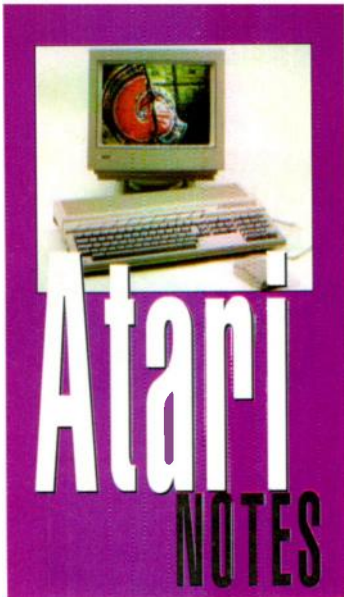
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The Atari range has undeniably been somewhat neglected in the race to produce the hardware and software necessary for integrated hard disk recording on today's computers. OFIR GAL takes a look at a German company who are determined to keep the Atari flag flying.

The Atari software scene can be depressing sometimes. We know we have a great music computer, but market forces seem to be against us. Even Steinberg, who owe all fame and glory to dedicated Atari users, are giving semi-pro PC-based products undue priority. But there is a small community of dedicated Atari programmers that still strive to produce quality software and hardware for musicians. SoundPool is one such company, committed to producing digital audio products for the Falcon. I had the opportunity of meeting one of the two founders, Thomas Baumgärtner, when he visited London along with Karl Brandt from System Solutions, the UK distributor of SoundPool products. After a lengthy demonstration of the full product range, I asked Thomas about SoundPool and how they got started.

A LITTLE HISTORY

SoundPool was born when Thomas Baumgärtner and Matthias Pohl used an ST to programme an algorithmic composing aid for the Roland E20. The program was called *Freestyle*, and it later provided the inspiration for *StyleTrax* — a Steinberg Cubase module. SoundPool's relationship with Steinberg continued when they created the Falcon Digital Interface (FDI) for use with *Cubase Audio*. The product was sold under the Steinberg banner and proved very successful. Thomas and Matthias followed it up by producing the FA8, providing the Falcon with eight analogue outputs. At the same time they were looking at producing digital audio applications for the Falcon, so started to bring in outside talents to help.

Their software range is impressive: "We are trying to produce a complete set of solutions, software or hardware, for professional musicians," Thomas explained, "from the initial recording to the mastering process. We use musicians and recording engineers to get feedback about the products, so that we can address their needs". SoundPool's programs push the Falcon to its limits, utilising the audio system and DSP to the full. The various digital audio programs work happily with

only 4Mb of memory and the internal IDE drive. Thomas explained the reasons for his visit: "We have been very successful in Germany and France, but less so in the UK. We think that this is probably because we did not have the facilities to demonstrate the capabilities of our products. System Solutions are now going to set up a demonstration system so that people can get a chance to appreciate what's on offer."

THE HARDWARE

After producing hardware for Steinberg, Thomas and Matthias decided to release the following products under the SoundPool name. The S/PDIF Interface is an FDI-compatible device that plugs into the DSP port and provides coax and optical digital I/O. It also replaces the Falcon internal clock with the more standard 44.1 and 48kHz frequencies. It is compatible with *Cubase Audio*, *Logic Audio*, and all SoundPool products. It enables the user to bypass the Falcon audio system and digitally record to or from a DAT machine.

The Analog 4 and Analog 8 Interface boxes are Steinberg FA8-compatible. They contain four or eight 16-bit D/A converters with a flat frequency response of 20Hz to 20kHz. The devices support any sampling frequency, and work alongside the S/PDIF Interface. They are supported by *Cubase Audio*, and allow users to bypass the inferior Falcon audio outputs.

The Sample Rate Converter, as its name suggests, converts all sampling rates to the industry standards 32, 44.1 and 48kHz. It cancels the Serial Copy Management System's copy protection, allowing you to clone digital masters as many times as you like. It features both coax and optical I/O, and can also serve as a master digital clock in the recording studio.

The MO4 is the only SoundPool hardware product that is not Falcon-specific. It works with all Atari computers, adding four MIDI Out ports or 64 MIDI channels. It plugs into the printer port and is compatible with any MROS-compliant programs, including *Cubase Audio*.

ZERO-X

Zero-X is a sample editor for all Atari computers, although a Falcon is highly recommended. On a Falcon system, SCSI can be used to transfer samples back and forth from your sampler. The program also utilises the Falcon DSP and built-in sound system for faster processing and instant audio auditioning.

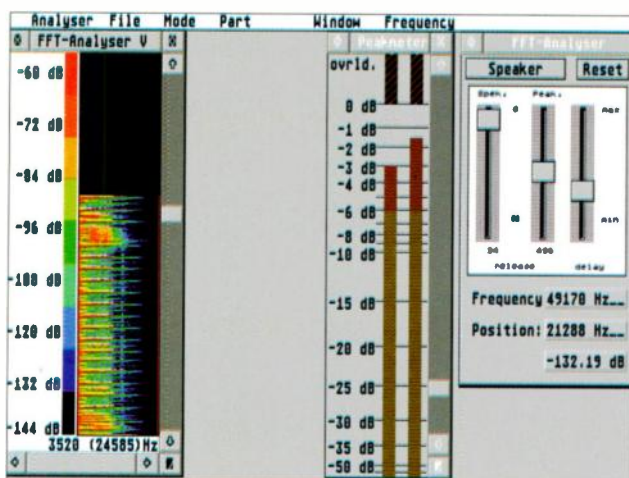
Among its features are a powerful automatic loop editor, ideal for creating drum loops, a digital noise gate, and a normalise function. There is also a clever drum splitting option designed to take a sample of a drum groove and break it down into its separate components. Samples can be transferred via MIDI on SCSI-less machines, and the program also serves as a sound file converter, able to convert PC WAV files to Cubase AIF, among others. Finally, Zero-X will do sample rate conversion on samples.

AUDIO TRACKER

This is an 8-track direct-to-disk recorder for the Falcon. It boasts a built-in mixer and digital effects,



Audio Tracker is a complete, all-in-one, 8-track digital recording studio.



The Analyser can produce a variety of audio spectrum displays, including this sonogram.

and is fully compatible with the S/PDIF and Analog 4/8. Suitable for standard audio applications as well as video post production, it can lock to MIDI Time Code, enabling several Falcons to work together in sync if more than eight tracks are needed.

SoundPool pride themselves on the program's speed and user interaction, where unlike *Cubase Audio*, there's no need to name tracks or wait for wave image generation. The program automates most of these, always ready for a re-take, so that you can carry on with making music. The program includes a wave editor, where up to four tracks can be edited at the same time. *Audio Tracker* can output *Cubase Audio*-compatible AIF files and import audio directly from CDs.

AUDIO MASTER

Audio Master is a stereo hard disk-based mastering system for the Falcon. Based on a range of optional modules, it supports cross-fading, scrubbing and normalising, as well as non-destructive editing. An intelligent peak metering system helps you get the best audio levels.

The dynamics module is a DSP-based compressor/expander/limiter. The noise gate uses a 'look-ahead' system, so that it doesn't miss the beginning of a sound, and the compressor can be freely adjusted on screen using the mouse. One thing it does lack is frequency-dependent compression, but this seems to be beyond the capabilities of the Falcon hardware. It is claimed that the EQ module is free of frequency-related phase shifts, and it supports a variety of filters, including bandpass, notch, and shelving. A spectrum analyser module is also available, which displays a third octave frequency response while recording or playing back, and supports several modes, including Hanning, Hamming, Kaiser, FFT, and linear. It can generate sine waves and white noise for calibrating a monitoring system. When you buy the spectral analyser and dynamics modules, you also get software versions thrown in which will operate as stand-alone programs, independently of the Audio Master system. These software versions (called *Analyser* and *Dynamite* respectively) incorporate a few extra features. If you don't need all the extra features you can opt for a pack of three slightly cut-down modules, which come without the stand-

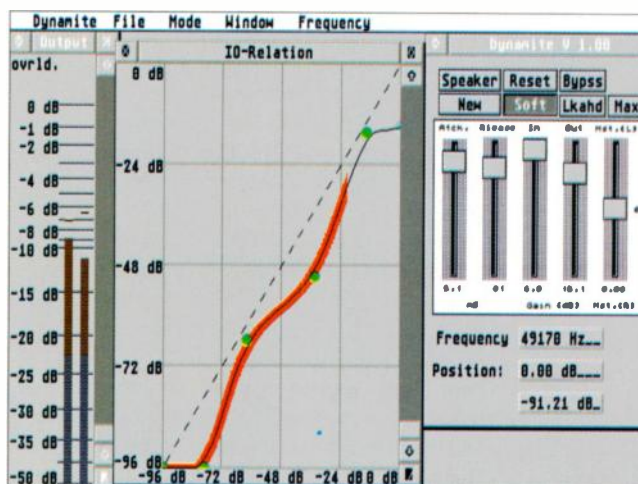
alone software, and retail collectively under the name of Audio Master Limited.

DATADAT

DataDAT enables Falcon users with an S/PDIF or FDI interface to use a DAT recorder as a backup device. Unlike a similar program included with Steinberg's FDI, this program can backup any type of data, not just audio files. It will squeeze 1Gb of data onto a 120-minutes tape.

CD RECORDER

The latest addition to the SoundPool range is *CD Recorder* — a program that lets you cut your own CD master using a Falcon. The arrival of affordable CD writers has already made its mark on post-production studios, where it's taking over the use of the U-matic format. *CD Recorder* understands various file formats, including AIF, AVR and WAV, and burns 'Red Book'-compliant CDs that can be played on any domestic CD player. Two versions are to be made available — *CD Recorder Pro* can



Dynamite lets you draw the response of the compressor/limiter and see its effect displayed in real time.

write any CD format in addition to audio CDs, and can therefore be used to backup data for example, whereas *CD Recorder Audio* only supports audio CDs. Both versions support PQ encoding, pre-emphasis and copy-protection, and work with CD recorders by Ricoh, JVC and Phillips.

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THE SOUNDPOOL AUDIO WORKSTATION

SoundPool's Audio Workstation is a Falcon housed in a rack unit. It has all the required hardware modification done to it, and is guaranteed to work reliably as a professional audio system. The cartridge port has been moved to the front for easier access and it is buffered, which means that you can remove it while the system is on. The system is available in several configurations, and can be configured according to



customer needs. The various interfaces, such as the MO4 or Analog 8, can be fitted internally, as well as an IDE or SCSI drive. Prices start at £1750 for a 4Mb system with a 1Gb internal IDE drive, an external keyboard and an S/PDIF interface.

AND THE COST?

S/PDIF Interface	£229
Analog 4.....	£199
Analog 8.....	£349
Sample Rate Converter	£259
MO4.....	£149
Audio Master	£229
Audio Master Dynamic Compressor Module (supplied with <i>Dynamite</i> stand-alone software)	£199
Audio Master Analyser Module (supplied with <i>Analyser</i> stand-alone software)	£199
Audio Master Equaliser Module	£199
Audio Master MIDI Sync Module	£99
Audio Master Limited (pack of the above three modules in slightly cut-down form).....	£199
Zero-X.....	£149
Audio Tracker	£159
DataDAT.....	£39.95
CD Recorder.....	TBA
SoundPool products are available from System Solutions 0181 693 3355. Prices include VAT.	

► table (bottom right) so as to form an 8-bar loop. There is also a synchroniser to make sure that all the 8-bar loops will run from the same start point, no matter when they are cued. Most of the chunks have more control points than this, allowing a lot more live control: in this particular chunk, other faders could control note velocity, filter cutoff, or even transpose or permute the actual notes. In this performance, for example, we have faders generating notes on a modal scale, controlling vector mix on our Wavestations,

activate at the next bar (to give it time to initialise any MIDI devices it uses). When the fader goes to zero, the chunk is deactivated.

AVOIDING INTERFERENCE

Some work is needed to avoid chunks interfering with one another; this will happen if they use the same instrument and MIDI channel, but with a different patch or real-time control. For simple, short live sets, it's often possible to design a set of chunks which are mutually exclusive in their use of instruments, so that (in theory) all of them could be active at once without interference. However, as a piece gets more complicated, more chunks are added to it, and the possibility of interference can rear its head. Also, for longer or more complex pieces, 16 faders cease to be enough for all the control points of the chunks. If either of these problems arises, the solution is to structure the performance into a series of movements. Each movement has a set of chunks with minimal interference whose control points fit onto 16 faders. In addition, a small number of chunks (typically one or two) are active from one movement to the next, to allow a smooth changeover.

In any movement, any chunk is immediately available (within one bar's worth of time), and if there is no interference between them, any combination of chunks can be activated and manipulated at any time, which allows for a very free and organic style of performance. The transition from one movement to another is slightly more tricky; it's important to ensure that only the 'crossover' chunks are active during the changeover.

IN PRACTICE

Figure 3 is a crib-sheet of a recent half-hour, four-movement dance set. Each row of 16 boxes is one movement, with each box representing a fader assignment. The black boxes represent the master faders for the chunks, which activate and deactivate depending on whether the fader is at zero or not. The white boxes are additional control points for the chunks, and are only active if their owning chunk is active. In this example, Movement 1 has eight chunks, each with one control point; the chunk on Fader 16 is used for the crossover into Movement 2. By contrast, Movement 4 has only four chunks, but there are another eight control points amongst them, for altering filter cutoff and resonance, selecting chords, and so on.

Hopefully, it's possible to see how an entire piece is performed. We enter the first movement, and have up to 16 chunks available (fewer if they have complex real-time control), which we can activate in any order; this might be rigidly determined by the choreography, or totally improvised, or somewhere between. At the end of that movement, all the chunks are deactivated except for one or more of the crossover chunks; then a button press on the fader-box switches the system from the Movement 1 chunks to the Movement 2 ones, and we're off again, repeating this process until the end of the piece.

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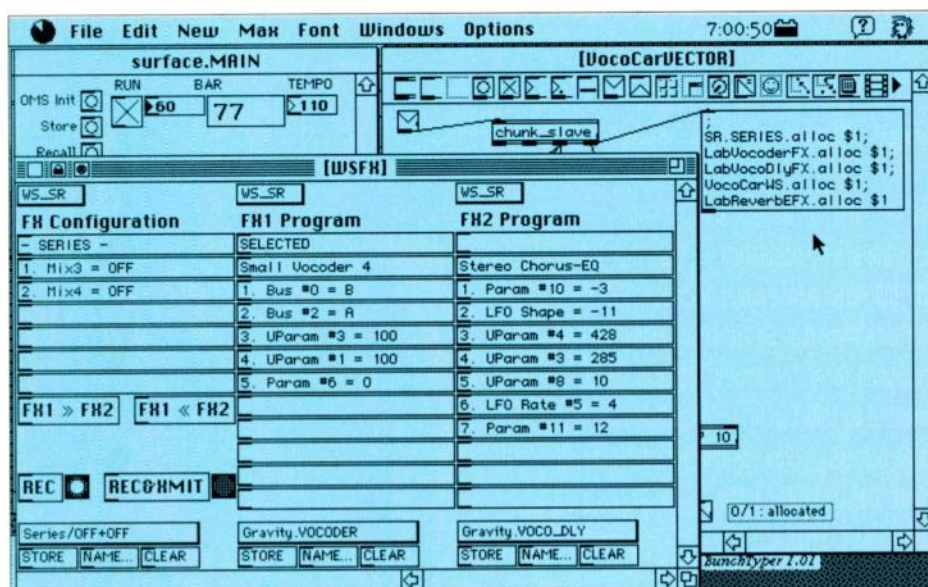


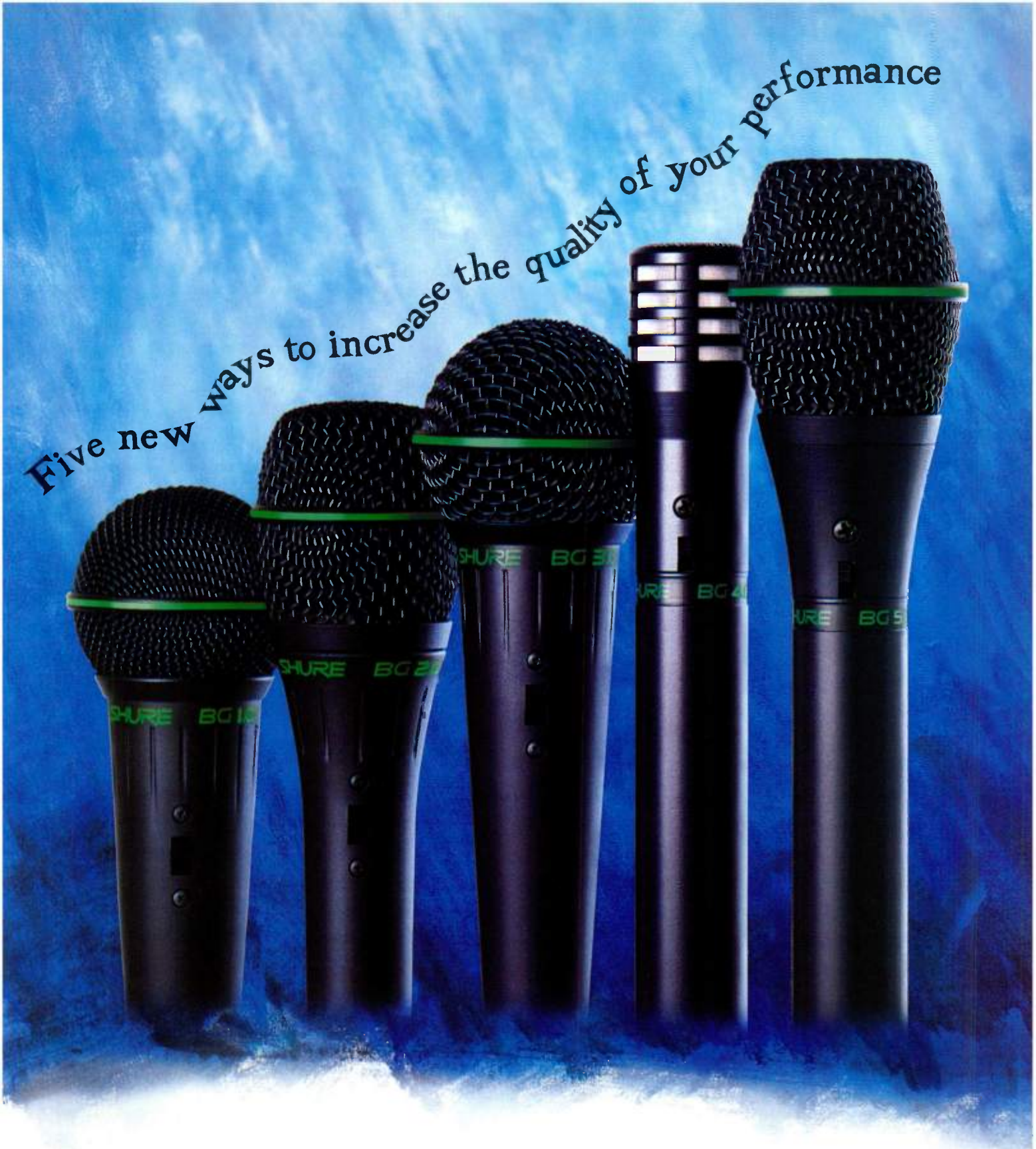
Figure 2: This screenshot shows part of a 'chunk' for the vocoder section in the background, whilst the front window is recalling the effects setup for a Wavestation.

selecting from sets of chords, changing tempos of internal arpeggiators, sending SysEx data to the Wavestations, and so on.

Chunks are also responsible for initialising any MIDI instrument (or channel thereof) that they use. This might be as simple as sending a program change and volume message, or it might involve a complex configuration using SysEx. Figure 2 shows

Figure 3: This is a 'crib-sheet/scribble-strip' for a half-hour dance set. The four movements are the four rows, and the named boxes correspond to the sliders on the Peavey PC1600 fader box.

16	Uivi	Jurassic	16
15		Wings II	Bass+Porta
14		Heinhorn	Resonance
13		Crystal M2	Filter
12		Crystal M1	WTable 2
11		Yolande	WTable 1
10		Lore Bass	Drum SEL
9		Lor Pluck2	Gong Gate
8		Lor Pluck1	Bass Vol
7	MotifWaltz	LorCrystal	Voco Vol
6	MotifPiano	Lore Bell	FlangeVol
5	BuzzBass	Loremarie	Cluster
4	Bulgaria	Kisses	Voco SEL
3	Clare	550 Bass	Vocoder Y
2	Atlas	550 Motif	Vocoder X
1	Wings	Dragon	Magick



Five new ways to increase the quality of your performance



For decades Shure microphones have helped amateur musicians become professionals. During that time, Shure has become the world's leading microphone manufacturer.

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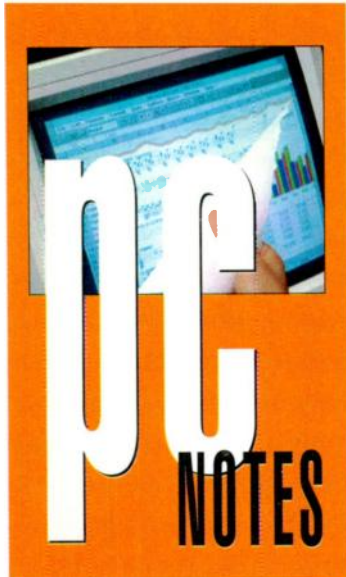
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BRIAN HEYWOOD
browses the World
Wide Web, and takes
a look at the latest
CD-ROM writer from
Yamaha.

In this column exactly three years ago, I talked about the CIX (pronounced 'kicks') on-line conferencing system — a sort of super bulletin board system (BBS). In my opinion, CIX (Compulink Information eXchange) has always been the best value for money out of all the dedicated conferencing systems, but the Internet situation has changed somewhat in the last year with the arrival of the World Wide Web. In case you've just got back from the planet Mars, the Web is simply a presentation format that allows computers connected to the Internet to present information — text, graphics, sound, and even 'live' video — in a user-friendly manner. If you browse through the 'Cyberspace Corner' box of recent PC Notes, you'll get an idea of what the Web is really like.

WIRED FOR SOUND

Obviously you can't see the interactive aspect of the Web, which is rather like a hypertext system with 'hot-links' to other pages or files for download. For instance, you can have a button on a Web page that will automatically download a sound file and then replay it using your PC's soundcard. Eventually you'll be able to play sound, and maybe even video files in real time over the network. As far as I can tell, no-one really knows what the Web can be used for, and until access methods (ie. modem speeds) improve, it won't really realise its full potential as a multimedia display system.

To access the Web you need to have a PC, a modem, and two pieces of software. The first is known as 'socket' software, which essentially

makes your PC a node on the Internet network — I use a piece of shareware from Tasmania called *Trumpet WinSock*. Once you have access to the Internet you need a browser, which will download Web pages from the other computers connected to the network and display them on the screen. To be able to access the Internet, you need to have a network node address — at least while you're connected — which is obtained by subscribing to an Internet service provider.

The nice people at CIX — after biding their time — have now come up with a Internet service which looks like it's going to be one of the best around. Unlike many Internet providers, CIX only charges for the amount of time you are connected, and this works out at just 1p a minute, with a minimum charge of £15 a month. As long as you don't spend more than 25 hours a month 'on-line' (which works out at just under an hour a day), this compares very favourably with other providers. If you have a CIX conferencing account, then the £15 minimum charge applies to both accounts, which makes it even cheaper if you are already using CIX.

By the time you read this, around 80% of the UK should be able to access the new service via a local call, with the coverage in Scotland improving in the new year. There is a one-off set up charge of £10 which also covers the 'Enthusiast's' software package, supplying all the basic networking tools to take advantage of the Internet connection. For an extra £30 you can purchase the Professional pack, which is a better choice if you are a complete Internet novice. To find out more about how to get onto the 'information

PUBLISH OR BE DAMNED

One of the most exciting aspects of the Web is that it allows you to 'publish' your own pages, which can then be read by anyone who has access to the Internet. This gives you the opportunity to present your inner self — or even just your band — to the world at large. With the CIX IP account you get 250Kb of Web space bundled with your account, giving you about 40 Web pages (if made up as a mixture of text and small graphics). If, however, you want to include sound, your storage requirements go up quite considerably with even quite a modest 30-second sound byte taking up over 300Kb of disk space. GET YOUR CIX ON ROUTE66

I've also jumped on the Web bandwagon by starting up my own area on the Web called Route66, which is dedicated to the music world in all its various manifestations. Among other things, I hope to maintain an archive of some of my magazine scribbles, both in this column and

from other publications I write for. If you fancy dropping in for a peek, point your Web browser at: <http://www.compulink.co.uk/~route66>.

Get your CIX on Route66 — check out a new music site on the Web.

Get your **cix** on **Route66....**

Music Industry Web Site

New!	What's new - new pages, links etc.
Bands etc.	Music Makers - musicians, bands, performers
Composers	Composers - Need a tune (or a symphony)?, then look no futher.
Labels	Record Labels - the people who bring you the sound of music.
Producers	Production Companies - and those who produce it.
Publishing	Publishers - music of course.
Magazines	Magazines- and those who write about it.
Support	Support Organisations - PA hire, music/entertainment agencies etc...

Use the **Button Bar** as a short cut to all the main sections of Route66.

About... for a brief description of the purpose of this area.

superhighway' you can call CIX on 0181 296 9666 or email:
sales@cix.compulink.co.uk.

AWE32 NEWS

High Wings Media Services based in Shrewsbury specialise in products for the Creative Labs AWE32 soundcard. On the hardware side, they provide a kit that allows you to access the AWE's S/PDIF output (see October's PC Notes) for £15, as well as a Digital-to-Analogue Converter (DAC) that allows you to realise the full audio quality of the Emu synthesizer chip resident on the card. On the software side, they do a number of CD-ROMs, including the first AWE-specific disc with over 100 sound bank files (.SBK), as well as many utilities, additional samples, and AWE-relevant data — all for (£12.50 inc p&p). The other CD-ROMs contain AWE-specific MIDI files of various chart hits and jazz standards, and cost £21 (inc shipping). To find out more, contact High Wings on 01694 731718.

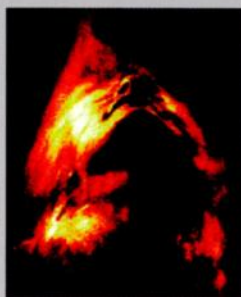
NEW FROM YAMAHA

Yamaha have produced a low-cost successor to their excellent CDR-100 CD-ROM burner, in the shape of the CDR-102. At a recommended retail price of £995, it is less than half the price of the original offering, and is said to be almost completely compatible. The drive can play quad speed, but can only record at double speed, which makes it ideal for

low-volume applications, such as prototyping multimedia CD-ROMs and archiving your hard disk. The drive connects to your PC via a SCSI2 cable, and most software packages that support the older drive will have updates available to support the new one. For more details, call the Yamaha information line on 01908 369269.

SOS

Route66 Button Bar



Barbara Thompson & Paraphernalia

"Shifting Sands" Touring Schedule 95/96

"Paraphernalia" and "Barbara Thompson Quartet" (BTQ) UK dates:

- Barbara Thompson (saxes)
- Jon Hiseman (Drs)
- Peter Lemer (Keys)
- Paul Westwood (Bass)
- Malcolm MacFarlane (Gtr)

Check out Barbara Thompson's tour dates via the World Wide Web.

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DMT-8

Your 'wish list' multitracker

If someone asked you to design your ideal multitracker you'd no doubt have strong ideas of what it should include, what it should look like and how it should perform.

DIGITAL QUALITY

First, we suspect, on your 'wish list' would be ultra high quality recording. Digital recording without compression or compromise.

8 TRACKS

And 8-tracks would be nice. 4 tracks might have been OK for Mr Pepper and the boys but lay a few vocals and a guitar part or two and it leaves little room for much else. No, it would have to have 8 tracks. On the mixing side, you'd no doubt want something that's quiet, flexible, with great EQ and lots of inputs. Oh, and plenty of input options on mixdown.

EASY INTEGRATION

You'd also want a machine which integrates easily into the Midi environment, generating MTC without losing tracks, and transport controllable via a software sequencer.

FOSTEX BRAND

And, no doubt, you'd want a machine which is backed by a company with years of recording and innovation experience.

THE BOTTOM LINE

Finally you'd probably want all this in a great looking box, which is a snap to use and at a price not much above conventional analogue multitrackers. Allow us to introduce your 'wish list' - The new Fostex DMT-8 Digital Multitracker.



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ADDRESS

Fostex



TRUE CD QUALITY RECORDING

Some digital recorders ask you to make do with compression - resulting in 'muddy' recordings.

Professionals don't accept this sort of cost cutting so why should you?

The fact of the matter is that CD-quality recording demands full linear 16-bit resolution digital to analogue conversion at a sample rate of 44.1kHz.

A specification which the Fostex DMT-8 meets with ease.

With its own 32-bit RISC CPU it gives 8 tracks of CD-quality recording and playback, to and from an internal 540 MB Quantum hard drive.



8 INPUTS: 4 INSTRUMENT / MIC, 4 INSTRUMENT

Channels 1-4 have a 'wide-range' trim fader (-10dBV -50dBV) for perfect mic level matching while channels 5-8 are ideal for instrument inputs. The channel strip has two inputs: main and SUB enabling monitoring of recorded tracks during recording which can be used as a line input during mixdown.

CHANNEL EQUALISATION

Two parametric EQ's High Mid (1kHz - 16kHz +15dB) and Low Mid (60Hz - 1kHz +15dB)

FLEXIBLE OPERATION AUXILIARIES

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



INSTANT SEARCH WITH 6 MEMORY LOCATIONS

The DMT-8 has instantaneous search to zero or any cue point. This feature alone speeds up the recording process and offers little interruption to your inspiration and ideas flow.

DIGITAL - DIGITAL MASTERING TO DAT

By connecting a DAT recorder to the optical S/PDIF output you can digitally master your recordings ensuring the highest possible quality.

8 Track

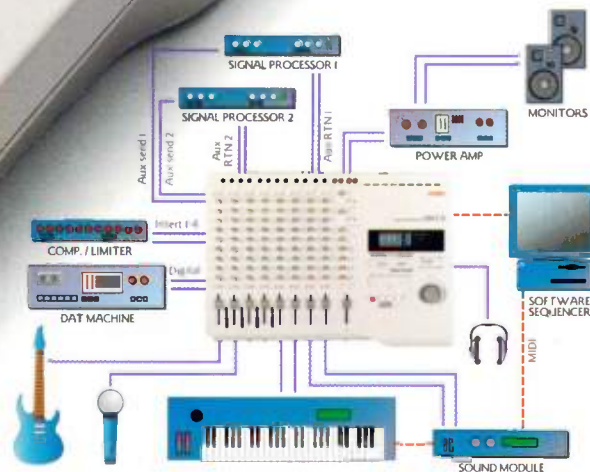
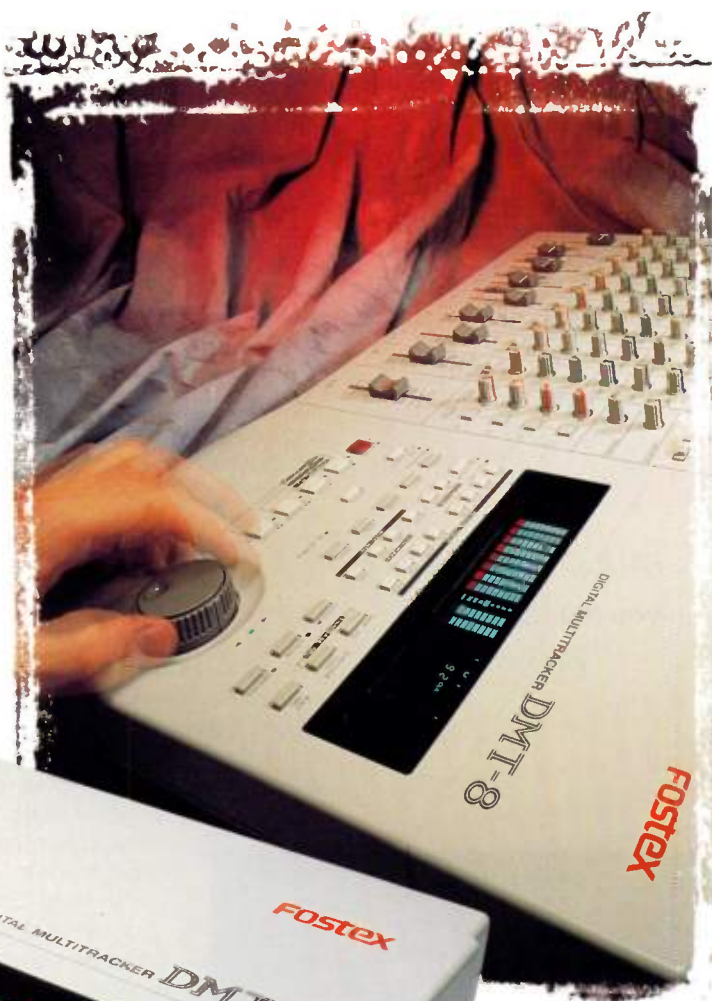
22 INPUTS IN REMIX

Nice touches include 4 track simultaneous recording, non-destructive audio editing, MTC sync, 3 kinds of timebase, 6 memory locations, a handy dual-function jog/shuttle wheel for digital scrub without pitch change, Auto Locate to ABS 0 and ABS End, archiving via DAT, and individual track outputs. Plus you get a flexible in-line mixer with superb EQ and no less than 22 inputs in remix! Yet with all this sophistication it's incredibly easy to use, adding new meaning to that often mis-used phrase "tapeless studio".

NON DESTRUCTIVE EDITING

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.

This simple procedure can be carried out on selected tracks or on all eight at once. And with the handy undo feature, mistakes don't have to be final. Note: When copied, audio is written to a part of the hard disk called the 'clipboard': the contents of which can be reviewed at any time with a simple button push.

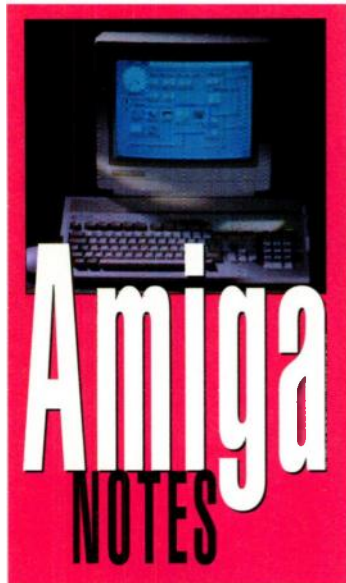


TYPICAL DMT-8 STUDIO SET-UP SYNCHRONIZED TO AN EXTERNAL SOFTWARE SEQUENCER
The DMT8 is ready to slot right into your Midi based set-up giving you CD-quality digital recording of guitars, vocals, etc. to add to your sequenced keyboard parts. And without sacrificing any of the recording tracks Auto punch in/out with rehearsal is available and on mixdown you have easy control of up to 22 inputs on remix catering for all those keyboard and sound module outputs.

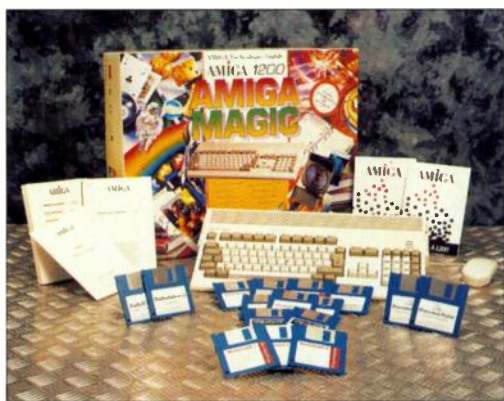
Use a DAT machine to archive disk drive data and to digitally master your recordings.

Digital Recording

Fostex



**PAUL OVERAA gives
you the latest on the
Amiga scene...**



The new A1200 'Amiga Magic' pack is already creating a lot of interest.

With Amiga machines now seemingly safely back into the shops, there are doubtless plenty of existing Amiga users who are, both privately and publicly, breathing huge sighs of relief. It's certainly true that the 'worst case' scenario that could have been brought about by the last eighteen months or so, namely the demise of the Amiga, is not going to happen. With the Amiga Magic software bundle including such things as *Wordsworth* the word-processor, *Digita's Organiser* and *Datastore* programs, the *Turbo Calc* spreadsheet, *Cloanto's Personal Paint*, *Almathera's Photogenics* graphics packages, and, of course, some games, the Amiga Technologies new £399 A1200-based pack is already creating some well-deserved interest.

Those who fork out another £100 for a 170Mb hard disk-based machine will also get the *Scala MM300* multimedia package as well. Everyone in both computer retailing and software/hardware production is obviously hoping for great things to happen, with some even trying to push things along in this respect. Silica (tel: 0181 309 1111), for example, are currently throwing in an additional set of software, including the games *Chaos Engine*, *Syndicate*, *Pinball Fantasies*, and *Nick Faldo Championship Golf*!

Of course, part of the Amiga's future, like it or not, is going to be dictated by the games-playing fraternity, and Sony's new PlayStation is obviously at the forefront of every games-player's mind at the moment. Sony's massive PlayStation advertising campaign is going to get not only adult game players, but kids and their parents into the computer stores over Christmas, and this might actually work to the Amiga's advantage. Once a look at the shelves tells them that the Amiga is back, then all sorts of things could happen. Irrespective of the fact that the Sony PlayStation is good piece of equipment, plenty of parents may well prefer to buy little Johnny an affordable home computer, rather than a pure games machine. Don't knock it — what needs to

happen now more than anything is that Amiga Technologies sell machines. This, and this alone, will safeguard the continued future of the Amiga.

Whilst some of the smaller Amiga sequencers, such as Software Technology's *Sequencer One Plus*, will run perfectly happily on floppy disk-based machines, the Amiga's Workbench-based operating system has really reached the stage where a hard disk is almost essential. This doesn't affect games players much, but I would advise anyone thinking of getting one of the new Amigas, either for MIDI-based music sequencing, or for any other serious applications come to that, to pay the extra £100 and get a hard disk-based machine right from the start. The heavyweight sequencing packages, like Blue Ribbon's *Bars & Pipes Professional* for example, are also a nightmare to use on 'floppy only'-based machines!

OCTAMED TECHNIQUE

A new tutorial guide to using *OctaMED* and *OctaMED Pro* has just been released by Andy Soar. The guide itself, aimed primarily at Amiga users who have a working knowledge of *OctaMED* or *OctaMED Pro*, is relatively short, but well planned, and includes advice on creating reverb, adding echo and chorus effects to your music, using loops and breaks, and even time stretching. An examples disk is also provided, which loads straight into *OctaMED*. The freely-distributable *OctaMEDPlayer* (version 6) program is also included on the disk.

The *OctaMED* Technique guide, incidentally, is not intended to replace the manual, it is simply meant to supplement it by illustrating particular *OctaMED* usage techniques. The emphasis is essentially practical in nature, hence everything that's dealt with in the printed guide has an associated example on disk, which you can both listen to and examine by loading into *OctaMED* itself. The guide also includes material such as tips on digitising, and there are even some brief notes on sampling and copyright (handy for budding songwriters!).

Andy Soar, in case you've not heard the name before, has been around the Amiga music scene for quite a while. Amongst other things, he has composed the music for games like *Bump & Burn*, *Ruffian*, and *Bloodnet* using *OctaMED* and, needless to say, this means that he has a pretty good idea how to get the best from the package.



For sequencing applications using packages like Bars & Pipes, a hard disk-based Amiga is a must!

The UK Price is £5.50, and this includes postage and packing (£6.50 + IRC rest of world). For further details telephone: 01476 65407.

THE MIDI-AREXX CONNECTION

I've had a couple of letters recently from readers asking how they can transmit and receive MIDI information using ARExx (the inter-process scripting/communications language that now comes as an integral part of the Amiga's operating system). The first step is to configure the Amiga's serial device for MIDI, and this means using the serial Preferences editor to select 8 bits+1 stop bit transmission at a Baud rate of 31250, with no handshaking and no parity. Having selected and saved these settings, you'll be ready to start.

AmigaDOS provides two high-level serial device handlers that can be easily used from ARExx — AUX: provides unbuffered serial I/O, and SER: provides a stream-oriented, buffered interface. I tend to use AUX: for transmitting MIDI data and SER: for collecting it (since incoming MIDI information could otherwise be lost). If, incidentally, you want to use the AUX: handler, you must ensure that it is up and running — on new Amigas it's best to drag the AUX: icon from the Storage/DOSDrivers drawer to the WBStartup drawer so that it is always available from the time you boot your machine.

In both cases, these serial handler names are treated just like conventional disk files. To open the AUX: device, for example, we use this sort of script arrangement...

```
if Open(1,'AUX:','WRITE')) then
do
/* here we would do something! */
end
```

To transmit MIDI bytes, it's necessary to use the ARExx Writech() function. For example...

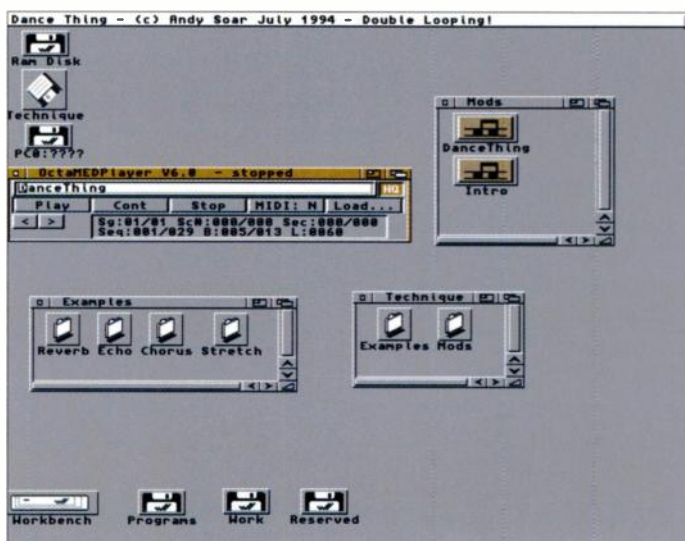
```
call Writech(1,message$)
```

would transmit all the bytes defined in the string called message\$. If, for example, the variable message\$ was defined as the two hex values C0 hex and 00 hex, then the above message would be a program change 1 message on MIDI channel 1. If, in fact, we now put all these ideas together, we'll end up with a short script that does indeed transmit just such a program change message...

```
/* midi_example.rexx */
if (Open(1,'AUX:','WRITE')) then
do
    message$='C0'xll'00'x
    call Writech(1,message$)
    call Close(1)
end
```

Well, that gives you a runnable example and, as far as ARExx's MIDI connections go, there's not that much more to tell. The corresponding ARExx function used for reading incoming MIDI data is called Readch(), and this requires both a file handle and the number of bytes to be read. In this case, since you'd not normally know how much MIDI information was going to appear at the serial port, you'd need to loop-read incoming MIDI data one byte at a time.

ARExx, of course, is an interpreted language, and as such, script execution is relatively slow, so



OctaMED Technique — a new OctaMED tutorial that includes directly-loadable examples.

it's certainly not an ideal language for complex MIDI programs. It is, however, perfectly capable of being used to knock up small diagnostic utilities, etc. Since ARExx is now given away freely to all Amiga users as part of the system software, there's absolutely nothing to loose by experimenting with some of these types of MIDI-oriented ARExx scripts (other than a little of your time). Those of you who take an interest in MIDI SysEx message creation will find that this sort of practice is great for coming to terms with hexadecimal number conversion, and so on!

SOS



When working with ARExx, the Amiga's Workbench Serial Preferences program can be used to configure the serial port for MIDI communications.

NEWS IN BRIEF

• PROTEXT LIVES ON

Despite the demise of Amnor, existing users of the Protext Amiga word-processor will doubtless be pleased to hear that the package will continue to be available through Compo Software Ltd. What's more, Protext will be supported by the program's original authors. For details tel: 01487 773581.

• PING, PING, PING WENT THE FORMAT!

Those interested in Amiga graphics may like to know that a new file format called PNG, and pronounced 'ping', has recently appeared. What's

more, it is likely to take off in a big way, especially amongst net/comms enthusiasts. The format was developed by a coalition of independent graphics developers, after demands by Unisys and CompuServe that users pay royalties on the formally freely usable GIF graphics file format. Needless to say, PNG, which stands for Portable Network Graphics, is royalty-free. PNG has also been publicly endorsed by a number of major software developers and, of course, this support has given even more momentum to the now rapidly-spinning PNG wheel!



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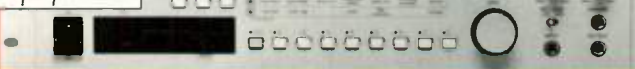
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The core system includes Pro Tools 3.0 software, TDM enabling software and bundled software DSP plug-ins, DAE software, 1 Disk I/O card and 1 DSP farm card. You need to add an audio interface to go length with this. There are two options the 882 I/O audio interface offers high quality A/D and D/A conversion coupled with active balanced XLRs. In addition 4 AES/EBU and 1 S/PDIF digital I/O allow up to 8 channels of digital audio to be simultaneously transferred. The 882 I/O audio interface also has and built in active balanced 1/4" stereo jacks. Digital I/O is supported by a single S/PDIF port.

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Apple Corps Ltd in Knightsbridge was under telephone siege the day I called in on The Beatles' press officer, Derek Taylor. "It's a new strain of Beatlemania," he laughed. "See that phone?" he said, pointing at his twinkling extension display. "It should have stopped ringing in 1970, but I've never been so busy." It is a phenomenon that he has expected and prepared for at a time when a television series, several videos, a book and three double CD sets, collectively known as the *Anthology*, are about to spread a harvest around a world starved of The Beatles for the last 25 years.

THE CONTINUING STORY...

The story behind the *Anthology* began in 1989, when the three surviving Beatles, together with Yoko Ono and their Apple aides, initiated a series

like vaults of Abbey Road Studios, private collections and other sources. To compound the excitement, the collection will feature two *new* Beatles recordings, featuring contemporary vocal and instrumental backing by Paul McCartney, George Harrison and Ringo Starr, added to unfinished demos by the late John Lennon. Eagerly awaited by the world like no other record in history, and guarded with a veil of secrecy that would make MI5 proud, the first of these two tracks, 'Free As A Bird', is expected to be this year's Christmas Number One single — a strange echo of the group's regular seasonal success in days gone by.

By releasing an estimated total of around 150 previously unreleased Beatles tracks, EMI will do much to devalue the hitherto healthy business of Beatles bootlegging, an area that has made large profits for industry rogues. Although tracks which have appeared in bootleg form will resurface in a far superior guise on the *Anthology* releases, there

All Together Now?

After years of rumours and myth, the fruits of The Beatles' reunion for small screen and recording projects can now be experienced by mere mortals. For the past 18 months, MARK CUNNINGHAM has been keeping his ear to the ground, and can now reveal the fascinating details surrounding the Fab Four's 'Second Coming'...

THE STORY OF THE BEATLES' ANTHOLOGY PROJECT

of business meetings where plans for the definitive television history of the band were drawn up. The message was clear: it was to be the story of The Beatles, as told by The Beatles.

One thing was certain: it wasn't as though the story would have no audience. The worldwide adulation for Liverpool's most famous sons has not flagged over the quarter of a century which has passed since their acrimonious break-up. Last year's release of the *Live At The BBC* collection of rare radio broadcast performances (see *SOS* March 1995) saw record buyers queuing overnight on both sides of the Atlantic to be among the first to own copies. A worthy release in itself — but it only served to whet our appetite while we waited for the main event.

To coincide with the imminent six-part screening of the *Anthology* TV documentary, EMI Records is to release *three* double CD sets of ultra-rare Beatles material, gleaned from the Fort Knox-



Photo © Apple Corps Ltd.

are many so rare that they have *never* been heard outside of The Beatles' immediate circle.

I met and discussed the *Anthology* project with veteran Beatles producer George Martin and Geoff Emerick, his engineer since 1966, during the week that EMI took delivery of the completed masters for the first volume of the *Anthology*. This release covers the years 1958 to 1964 — from the days of pre-Beatles band The Quarrymen up to the album *Beatles For Sale*. Released on November 21st, the album contains 60 tracks, forming a veritable treasure trove of 'lost' songs, home-made demos, alternate takes and in-concert performances.

GET BACK

Martin and Emerick's work on the *Anthology* CDs began immediately after the completion of the *Live At The BBC* album. But plans had already been in place for some considerable time. "There had been talk of this between The Beatles and Neil Aspinall at Apple for about five years before

we actually got to work on it," says Martin. "The project was originally called *The Long And Winding Road*, and it certainly has been one, but the actual shape of what it has become was not truly defined. I was asked to produce it, and I presented both Apple and EMI with different ideas of what could be done. That's when we started in earnest, although this has been almost a continuation of what we did with the BBC tapes.

"Over the course of the project, I have listened to everything we ever recorded together. Every take of every song, and every track of every take. So in that respect, I have relived my life all over again! I have also listened to innumerable broadcasts, live performances, bootlegs, television shows and interviews: virtually everything that was ever committed to tape and labelled 'The Beatles'. I've heard about 600 separate items in all, but I would imagine there are still a few things out there that even I don't know about. I didn't start any serious listening until the early part of this

▶ The Beatles in early 1967, in Abbey Road Studio Two, working on *Sgt. Pepper*.



The Beatles' Anthology



"Don't you just love these valve mics?" — A vocal overdub for 'Lady Madonna', February 1968.

Photo © Apple Corps Ltd.

► year, when I got Paul, George and Ringo to come in occasionally and listen with me. Of course, they couldn't sit through all of the sessions, so I would tend to have them come in about once a week."

PLUNDERING THE ARCHIVES

While most of the *Anthology* tracks originate from Abbey Road Studios, others have been located with the assistance of people such as Beatles historian Mark Lewisohn, Stefan Olander and TV companies including Granada. Of the most rare to feature on the first volume of the *Anthology* is the 1958 coupling of the McCartney/Harrison-composed, doo-wop styled 'In Spite Of All The Danger' and a cover of Buddy Holly and The Crickets' 'That'll Be The Day'. These were the first recordings made by Lennon, McCartney, Harrison, drummer Colin Hanton and pianist John 'Duff' Lowe (then known collectively as The Quarrymen) in a back room studio at 53 Kensington, Liverpool.

Martin comments: "That was when they were very young — George was only 15, Paul was 16 and John nearly 18. They all clubbed together to pay for the recording session and the result was a double-sided shellac disc which they each kept hold of for about a month at a time, but one of the two who eventually

left the group forgot to pass it on. Paul later bought the disc back from him. I don't know what he paid for it, but it must have been for considerably more than his share of the studio hire cost! So those two tracks effectively come from Paul's private collection".

FIXING A HOLE

The two songs required a degree of audio cleansing before they made it on to the *Anthology*, thanks to Peter Mew of Abbey Road and the Sonic Solutions audio enhancement technology with which he has become an expert over the past six years. "I'm not an engineer," comments George Martin. "I just tell Peter what I like, and if I *don't* like something I'll throw it back at him, and tell him that the EQ or some audio 'pasting' is wrong, or whatever. I wouldn't dream of standing over his shoulder."

Martin insists that the 1958 recordings are not the worst examples of audio quality he had to work with, and refers to an address he gave at last year's San Francisco AES Convention, where he made an appeal to delegates regarding the renovation of old recordings. "All we can do at the moment is to take out noise and enhance what is there, but we cannot restore what is missing. Now in video, you can improve visual quality, because the computer will work out the nature of the missing information and restore it. Why can't we have that in sound? Why can't we have something that tells us which frequencies are missing and then restores them? So far, nothing can be done, so we have had to deal with the technology we have."

Lennon tries out an acoustic guitar overdub for the Sgt. Pepper album, early 1967.

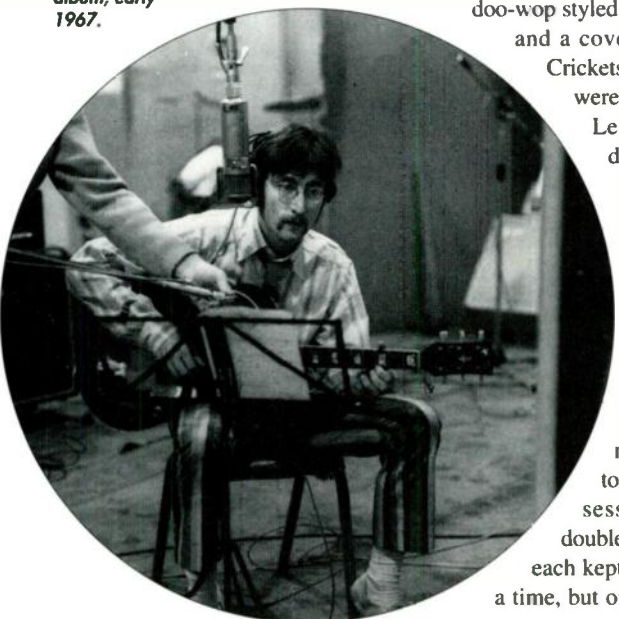


Photo: © Apple Corps Ltd.

ABBEY ROAD

In complete contrast to other discovered gems, the material guarded by Abbey Road Studios was largely in excellent condition because, as Martin says, "they really know how to look after their tapes. Those that they have kept, that is, because they destroyed an awful lot of the early ones. In fact, there are very few tapes left from the early 1962-63 sessions. A lot of the material that has come to light from that period has been in the form of lacquers and acetate discs. Occasionally, some quarter-inch tapes have emerged, but no masters as such. Of course, in the very early days, the masters were only mono on twin track anyway.

"I didn't have any say over the stuff that was destroyed, because that was EMI's decision. In 1962, no one would have given tuppence for the future of The Beatles. I was practically laughed out of court when I presented their first recording to the EMI sales staff, because they thought it was another one of my jokes. So at that time, it was hardly surprising that they decided to make room in their library for what they considered to be more important recordings. But once we got into four-track, they did keep the tapes, and the importance of maintaining a complete archive of their session tapes grew with the group's stature."

ONLY SOME NORTHERN SONGS

A big find, lurking anonymously for years inside an Abbey Road closet, was George Harrison's demo of his unissued song, 'You Know What To Do', recorded in June 1964. Thanks to Martin's wife Judy, examples of The Beatles with drummer Pete Best are also included. Martin: "We only managed to get hold of two tracks from the very first session the boys did with me in June 1962, and I happened to have one of them. My wife

found it and it transpired that no one else had it. That was 'Love Me Do', the other being 'Besame Mucho', both with Pete Best on drums. Some of the other rare recordings include songs which were done at Paul's house in Forthlin Road, Liverpool when he was about 16. The quality is rather grotty, but they are very interesting, historically, because of the presence of Stuart Sutcliffe.

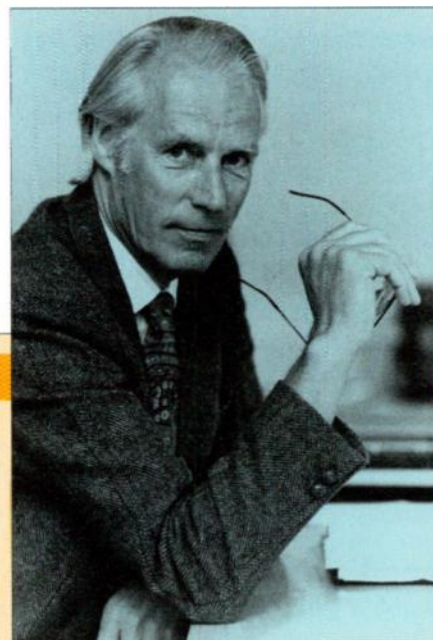
"There are things which I thought had gone forever, such as an early version of 'Please Please Me' which we recorded in September 1962 at the end of the 'How Do You Do It?' session. This was recorded in the last half hour of the session, and it doesn't have the harmonica on it, but it's very interesting, with a totally different drum sound.

"After 30 years or more, you are bound to forget some detail. Occasionally I'd stumble over something and say, 'Gosh, that really was so good.' Then one wonders why we went on to change it! To me, some of the first takes of many of the songs are gems. They have rough ▶



Photo © Apple Corps Ltd

Harrison & McCartney in the control room during the White Album sessions, September 1968.



George Martin at his desk at AIR Studios.

MARTIN & EMERICK — AN AWESOME PARTNERSHIP

16-year-old Geoff Emerick first made himself known to George Martin as his second engineer on Rolf Harris's 'Sun Arise' in 1962. He made his debut in The Beatles' camp as the tape operator-cum-assistant engineer on an Abbey Road Studio One session on 20 February 1963, when George Martin overdubbed various keyboard parts on tracks for the group's debut album, *Please Please Me*. Emerick went on to assist on a number of Beatles sessions over the following 18 months, but his big break came in the spring of 1966, when he was promoted to the role of George Martin's right-hand man at the start of the *Revolver* sessions. Little more than a year later, he was awarded a Grammy for his sterling work on *Sgt Pepper's Lonely Hearts Club Band*.

Martin says: "Geoff and I have known each other for more years than we care to remember. My previous engineer, Norman Smith, wanted to become a producer and work with another group, but he also wanted to continue working with me and The Beatles. I thought he was right to look towards a career as a producer and I would help him out in any way I could, but I told him

it wouldn't work out to also carry on as my engineer. The person who works as my engineer has to give me absolute priority over everything, and I won't accept anything less than 100%. Norman understood and he left the team.

"So I had to look around for his replacement, and I remembered Geoff being very bright, with a good ear for sound, so I chucked him in the deep end. In fact 'Tomorrow Never Knows' was the first Beatles session he worked on as my engineer [on 6 April 1966 — Ed]."

Emerick says: "I was far from being a total novice, because I had already engineered the 'Pretty Flamingo' hit for Manfred Mann, with John Burgess producing. I got called into the office one day and was asked if I wanted the job with George. I was playing mind games with it for a while but eventually went for it. When I joined EMI at 16, there was no way that you would become a recording engineer until you were 40. So the changes that were happening at Abbey Road were quite drastic."

Midge Ure once described working with Martin and Emerick as being in the company of two wise professors. Emerick appreciates the comment. "Yes, I

suppose we can come across like that. Having worked with George for so long, I can normally read his mind. So we tend not to talk to each other much at sessions. To me, George's forte has always been working out vocal harmonies. Many of The Beatles' arrangements were their ideas which he then transferred to paper and helped to modify, but he is a great arranger in his own right and I would have liked to see him do more."

"We've obviously got to know each other pretty much inside out," says Martin. "We have always been a very good team."

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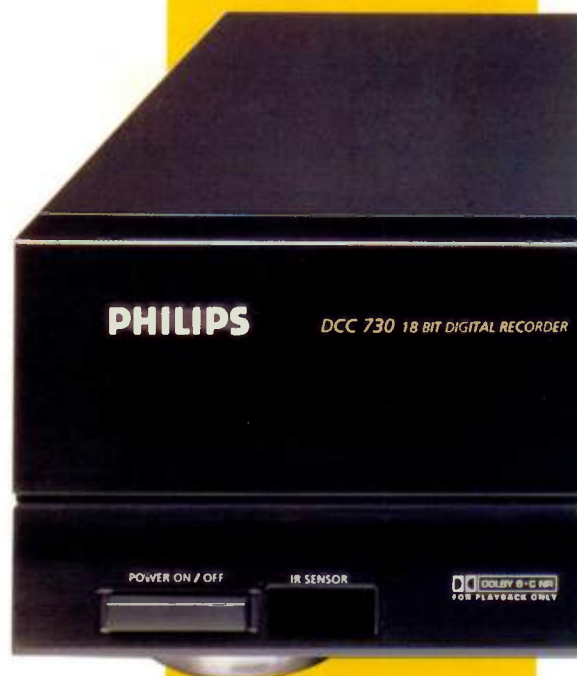
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"Revolver was the first time we put the drums through Fairchild limiters, and that was just one example of the things that the other Abbey Road engineers used to hate, because they had done it a

RETRO DEMANDS

Archived Beatles tapes are never allowed outside the Abbey Road building. As a result, all the listening and subsequent mixing sessions have been held at the studio's Penthouse Suite, using a Studer A80 multitrack for playback. For previous internal playback reasons, EMI's Allan Rouse had made copies of all The Beatles' original multitrack masters on a digital machine to prevent the masters from being handled. But it was when listening to these transfers that alarm bells began to ring in the ears of Martin and Emerick.

"I was listening to Allan's copies one day before we started mixing, and I asked him if he had EQ'd them, because the top end sounds, particularly the cymbals, appeared modern and artificial," says Emerick. "What I was noticing was the quality of the digital transfer and the sound of the digital machine. But we wanted to achieve a result that was as near to the original formula as possible, so we have been using Fairchild 660 limiters and old EMI EQ boxes. In fact, the only truly modern things in the control room are the Meyer HD1 monitors. We have mixed everything down on half-inch on a Studer A80 at 30ips."

The normally beneficial modern technology that is plentiful at Abbey Road posed a dilemma for George Martin: "I told Rupert Perry [head of EMI Records] that if I was going to remix a recording made in the 1960s on four or even eight tracks, there would be no point in processing it in a modern manner, and that I would need a console



Photo © Mark Cunningham

Original Studer tape machine used on Sgt. Pepper sessions, 1967.

from approximately that period. The recordings themselves weren't designed for modern techniques, and we would be presenting something alien if we did that. I was told that we had to use Abbey Road, but the problem with Abbey Road is that there are SSL desks all over the place — and SSL is not the right medium for these old

certain way for so many years — so why change it? But The Beatles were screaming out for change. They didn't want the piano to sound like a piano anymore, or a guitar to sound like a guitar. I just had to screw around with what we had."

New-fangled Abbey Road inventions which were to emerge during the *Revolver* sessions included ADT (Artificial Double Tracking), and its sister, flanging — both then manual techniques brought back to life once more for the *Anthology* by Emerick. "ADT happened as a result of John asking why he had to sing a part twice to double-track it. We realised that if we took the information off the sync head of the multitrack machine as we were mixing, we could advance it before the replay head on to a quarter-inch machine and use varispeed to create a ghost image on top of the original sound. We would often move the distance between the two signals by altering the oscillators, and that was what we called flanging. The name seems to have stuck!"

McCartney's bass sound also took on a new life during 1966 and '67. Emerick says: "We never really got anywhere with DI-ing the bass. On *Sgt. Pepper*, particularly, we would always reserve one track of the four-track tape for Paul's bass overdubs. He used to stay behind some nights with me just for that purpose. We would put his bass amp in the middle of Studio Two, and mike it from about eight feet away with an old valve C12, and sometimes use a second mic even further away and mix the two signals together. You can hear that on some of the *Pepper* tracks, where there is a slightly different quality about the bass."

STRAWBERRY FIELDS REVISITED

One of the gems awaiting fans in the later volumes of the *Anthology* project will be the first take of 'Strawberry Fields Forever'. Quite unlike the released single, this gorgeous version was first heard publicly as part of London Weekend Television's 1992 documentary, *The Making Of Sgt. Pepper*. George Martin recalls the session: "The whole format is different to the finished version, in that it has no introduction, and starts with the verse instead of the chorus hook. But even that wasn't the way I heard it originally. The first time I heard the song was when I listened to John singing and playing it on an acoustic guitar. John was very Dylanish in many ways, but he had that lovely voice, which I think was much better than Dylan's. Just to hear his voice with a simple guitar backing was absolutely delightful, and I wish we had been able to record a version like that — the way I first heard it."

'Strawberry Fields Forever' was notable for one of the earliest, most imaginative uses of the fabled

Mellotron — an instrument which Martin appears to love to hate. "It was a bastard of an instrument really, an early attempt at a synthesizer, although it had more in common with today's sampling devices. The sound we used on 'Strawberry Fields' was supposed to be a real flute, but no flautist would ever play like that! But it was a great sound, and it's impossible to hear it any other way now. Instead of using the Mellotron to reproduce authentic instruments, we took it for what it was, and used it more interestingly."

I asked Geoff Emerick whether, as with 'Strawberry Fields' there are different versions of other tracks from the period, and whether these might be sufficient to form, say, an alternative *Sgt. Pepper* album. He replied: "Unfortunately not. We were overdubbing four-track to four-track, and the only things that would have existed were other takes of the rhythm tracks. We only overdubbed on to the best rhythm track of each song, so there wouldn't be complete alternate versions".

recordings. At a pinch, a Neve desk would be kinder, but even *that's* not right. What I really wanted was an old valve desk, although I knew that it would be causing more trouble than it was worth, because if we found something suitable it would inevitably be unreliable. To our great fortune, however, we discovered that Jeff Jarratt [an ex-Abbey Road engineer who worked with The Beatles and later produced the successful *Classic Rock* album series] had this early 1970s console, which was among the first transistorised models to arrive at Abbey Road. It's jolly good, and there is no question that it does affect the sound. So we took over the Penthouse Suite, which normally has a Capricorn desk, and replaced it

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The Beatles' Anthology



Jeff Jarratt with his EMI console in his home studio (April '95).

Photo: © Mark Cunningham.

► with Jeff's for these mixing sessions."

Jarratt's console is an EMI TG-series TG12345 Mark II 24/8/2 mixer, designed and built by EMI, and issued for use in one of its mobile recording units in January 1970, the month of the Beatles' last recording session. When the console went up for sale in 1987, Jarratt purchased it for installation in his own Hertfordshire home studio. When George Martin's pleas for authenticity reached the ears of Abbey Road's management, they called Jarratt in May to enquire about the availability of the console. Jarratt says: "The engineers at Abbey Road have always taken great care of the console

for me and it was well-known among the staff that I had bought it from the studio in '87."

On 13 May 1995, Geoff Emerick visited Jarratt to inspect the desk and promptly deemed it suitable. On the following Thursday, 18 May, the console was whisked away by Abbey Road staff and installed for a string of mixing sessions which began in earnest on 22 May in the Penthouse Suite. "It may be my console," says Jarratt, "but I've been kept as much in the dark about the project as everyone else. They initially asked to hire it for three months, but I can't see myself having it back just yet."

Finding a suitable console was one obstacle out of the way, but with many tracks requiring effects, George Martin faced yet another hurdle. "In the spirit of the exercise, I couldn't justify using modern effects processors like digital reverb, or even echo plates, which didn't exist in the '60s. The only way we could achieve echo was by using either a chamber or tape delay, or a combination of both. So I told EMI that it was important I worked in exactly the same way on these remixes. Unfortunately, neither of the two echo chambers that we used at Abbey Road were available — one has an enormous amount of electrical plant in it, emitting terrible humming noises. But eventually, they were able to dig out and refurbish the second chamber to make it work for us the way it used to, even to the extent of putting back a lot of the old metalwork like sewage pipes, which were originally glazed, and actually contributed to the chamber's acoustic qualities!"

According to Emerick, even the fact that the pipework received a gloss paint instead of an authentic glazed finish was an important audio factor, and with more recent building work affecting the size of the chamber, the decay time is minutely shorter than it was 30 years ago. "But it still colours the vocals in the same pleasant way," confirms Emerick. "It's not an obvious echo. It's odd, because you can put a bit of it around vocals and you get used to it, thinking that there isn't any echo on there at all.

Photo: © MPL Communications Ltd.



Paul McCartney with Hofner violin bass.

PAUL McCARTNEY'S STUDIO

Built to his discerning specifications in the mid-1980s, Paul McCartney's private studio includes a battery of equipment that reflects the best he has worked with in the UK and America. The slope-sided, triangular-shaped control room (approximately 30 feet at its widest point and 25 feet deep) houses a Neve V-Series console fitted with favoured EQ modules from an older Neve desk, as well as Focusrite EQ and mic amp modules. Outboard equipment includes regular items, such as a Lexicon 224X reverb, but among the more vintage units is a Fairchild valve compressor. Microphones include classic Neumann U47s, which proved invaluable during the 'new' Beatles vocal sessions. At the end of the signal path are two Studer A800 24-track machines and a Mitsubishi 32-track digital recorder. Tracks recorded there are normally mixed down to

DAT and half-inch tape.

Apart from being the recording venue for his albums *Flowers In The Dirt* (1989), *Off The Ground* (1993) and the new Beatles tracks, the studio also recently played host to another amazing Beatle-orientated session. Paul and Linda McCartney, together with their children, Heather, Mary, Stella and James (on guitar), contributed to Yoko Ono's emotional song, 'Hiroshima Sky Is Always Blue', which also featured a performance by John Lennon's 20-year-old son, Sean.

But when you remove the effect, you can really hear the difference”.

The Abbey Road acronym for its own echo technique invention was STEED (Send Tape Echo Echo Delay) which, Emerick explains, has been adopted once more for the *Anthology* sessions. “The process involved us delaying the signal into the chamber via a tape machine; it was effectively delayed as a send. The signal which was to be echoed was sent to the quarter-inch machine, and we would take the signal from the replay head, send it to one speaker in the chamber, with two condenser mics picking up the sound, and then return it to the console. We’ve gone about it in the same way this time, with a JBL speaker in the chamber”.

One would imagine that by effectively returning to the ‘60s for this project, Emerick would have needed to ‘unlearn’ the more modern techniques he has acquired over the past 25 years. But he insists that the basic techniques he developed during the Beatles era have remained the backbone of his considerable skills. “I have fought very shy of being pushed into using a lot of modern devices. Many of today’s machines and processors are based on the sounds we used to achieve mechanically, but they don’t sound the same. We can do things the old way quite easily. We haven’t really progressed that far; if anything it’s the opposite. The original four-track masters are one-inch tape, so every track is a quarter-inch wide and there is no noise. The quality of the bass is outstanding; you can’t create that now. It’s the same with the snare and bass drum sounds, which are so natural it’s uncanny.”

After George Martin’s early autumn break for concert tours of Sweden and Portugal, and Emerick’s two-month stay at Dublin’s Windmill Lane Studios, where he engineered Elvis Costello’s forthcoming album, mixing work on The Beatles’ later material resumed at Abbey Road in mid-October. During the pair’s absence, second engineer Paul Hicks (son of The Hollies’ Tony Hicks) assembled rough mix templates for the remaining CDs. “Paul is a very capable engineer,” comments Emerick. “It’s quite ironic that I am working with him, because I was the second engineer on The Hollies’ EMI audition session! If there is anything that Paul has done which sounds wrong to me, I have the opportunity to remix it, but I have a deadline to complete it before the end of November.”

COME TOGETHER: THE NEW BEATLES SONGS

For many, one of the most interesting parts of the *Anthology* story is the way the first all-new Beatles tracks since 1970 have been put together for the project. The idea developed from an earlier suggestion that the surviving Beatles should record some incidental music to accompany the *Anthology* television documentary. Ringo Starr continues the tale: “Eventually, Yoko came up with a handful of tapes that John had made just before he died, and the suggestion was made that the three of us add our own bits to them and finish them off.”

Suddenly, in early 1994, rumours of a bona-fide

SONIC THERAPY: JEFF LYNNE ON RECORDING TECHNIQUES

A master of vocal recording techniques, Jeff Lynne is celebrated for his unique treatment of acoustic guitars. “I have a certain technique for recording acoustics which is slightly unusual. When you’ve got a bunch of acoustics jangling away together, there might be a tiny difference in tuning and you get a really nice, big, warm sound. Sometimes, I’ll double that straight away, and maybe do both takes in mono, so that there’s one set of guitars on the left and another set on the right. It sounds stereo, because it’s two separate performances.

“I don’t use much compression on acoustics, because when you record a bunch of guitars like that, it results in a lot of harmonic distortion. I keep them as clean as I can until the last minute when I’m mixing — then anything can happen! I tend to use compression on other things, like pianos. I compress the hell out of them, because that’s the sound I like. I get a really big sound when I mic a piano from about 15 feet away, then really compress it hard. I mic the acoustics fairly normally — about a foot away.”

“I like to use real drums as much as possible, especially when everyone knows the songs well. In the worst possible situation, where there is just a click and nothing else to work from, I have occasionally used samples from my own collection of bass drum and snare sounds — but on nearly everything I’ve done there is a real, human drummer.”

These days, Lynne favours a minimalistic approach to recording vocals, and is often satisfied with just one double-tracked voice. This, however, was not always the case. “I went through a long phase where I had to have everything sounding like a choir and double-tracked everything at least four times so it became nice and thick. I very rarely used echo although I often used slapback, but not reverb. If I’m known for anything, I suppose it’s for making dry records. I just prefer to have a close-up vocal with no echo. I have made some wettish-sounding tracks in the past, but certainly over the last six to eight years, the records I have made have sounded pretty natural.”

Beatles reunion were fast becoming reality with Paul McCartney’s private studio reserved as the venue (see separate box on the McCartney studio) and Geoff Emerick booked for the engineering duties. But one major piece of the jigsaw was missing: George Martin. In a recent magazine interview with McCartney, it was inferred that Martin declined the invitation to produce the recordings on the grounds of his diminished



Paul Hicks & Geoff Emerick, Abbey Road Penthouse Suite (October '95).

hearing. While he may agree that his hearing is not what it once was, Martin insisted that he was never asked to be involved.

“But,” he says, “I’m not at all unhappy about it. I mean, The Beatles are very good record producers, and they don’t need me anymore. They wanted to keep this project down to themselves as much as possible. I knew about it, I knew it was happening and there was no rancour about it. In any case, I’m now quite old [Martin is 69], and I don’t

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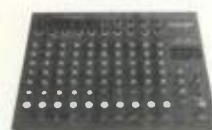
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The Beatles' Anthology

► want to spend the rest of my life in the recording studio. It takes too long to do things now, and there are so many other things I'd rather be doing."

The two Lennon songs to which fresh material has been added are 'Free As A Bird' (written by Lennon in 1976 after being awarded his much battled-for US Green Card), completed by McCartney, Harrison and Starr in February 1994, and 'Real Love', which was conceived during Lennon's 'househusband' years of the late 1970s. The latter was completed by the three Beatles in February 1995. Starr says: "The only trouble was that it was John singing along to a piano, and recorded in mono on a cassette. Firstly, the recording wasn't that wonderful, and it wasn't like you could pull a fader and change each of the voice and piano levels. All we had to work with was what we heard — and it wasn't in time either."

JUST LIKE STARTING OVER

Stepping into George Martin's shoes, and fulfilling a lifetime's ambition, was ex-ELO leader-turned-successful producer Jeff Lynne — a natural choice in many minds. He was invited to produce the new material, having already gained several brownie points with his work on Harrison's 1987 hit album *Cloud Nine*. But surely, working with

Lennon's rough demos to create a high-quality result must have been extraordinarily difficult.

Lynne says: "It was very difficult, and one of the hardest jobs I've ever had to do, because of the nature of the source material; it was very primitive-sounding, to say the least. I spent about a week at my own studio cleaning up both tracks on my computer, with a friend of mine, Marc Mann, who is a great engineer, musician and computer expert.

"We tried out a new noise reduction system, and it really worked. The problem I had with 'Real Love' was that not only was there a 60 cycles mains hum going on, there was also a terrible amount of hiss, because it had been recorded at a low level. I don't know how many generations down this copy was, but it sounded like at least a couple. So I had to get rid of the hiss and the mains hum, and then there were clicks all the way through it. When we saw the graph of it on the computer, there were all these spikes happening at random intervals throughout the whole song. There must have been about 100 of them. We'd spend a day on it, then listen back and *still* find loads more things wrong. But we would magnify them, grab them and wipe them out. It didn't have any effect on John's voice, because we were just dealing with the air surrounding him, in between

CHRIS THOMAS & THE WHITE ALBUM

The later installments of the *Anthology* CD series, due in early 1996, are set to include several alternative takes of songs from the celebrated double album *The Beatles* — otherwise known as *The White Album*. At the time of its November 1968 release, a new name was seen on the credits: Chris Thomas. A graduate of George Martin's AIR production company stable and now one of Britain's most respected rock producers, Thomas was a mere 21 when he 'produced' a handful of sessions for the album while Martin went on holiday.

Thomas recalls: "In March 1968, George gave me a job with AIR on six months' trial, which I got through. I was put on a three-year contract. The first time I was ever allowed in the studio control room on my own was the time I came back from holiday and George had just

gone away on his, leaving a note saying, 'Go down to The Beatles' sessions.' This was in September 1968 — they had already been recording *The White Album* for about three months.

"I automatically assumed that I'd go down there as normal, sit in the corner and not really do anything. But no! Paul walked in and asked me what I was doing there. I thought that there was no way George would have landed me in it, and would have warned them of what was happening. So I said, 'George told me to come down, didn't you know?' Paul just looked me in the eye and said, 'Oh well, if you want to produce us, fine, and if you don't, we'll just tell you to fuck off.' And he walked out! I don't think I said a word for ages after that. I just froze because they all sort of rolled up. Ken

Scott had taken over from Geoff Emerick because he couldn't stand the strained atmosphere and didn't want to continue with it. I sat down next to Ken and they started doing a take of 'Helter Skelter'. I was getting completely blanked by them. I thought, 'Christ, not only am I going to get elbowed and told not to come back after tonight, but that's also going to reflect on my job with George.'

"So I just jumped in at the deep end. They were doing a take, and somebody made a little cock-up. I said, 'Something went wrong there.' They said, 'No it didn't!' But they all came up the stairs to listen and agreed. I just took the bull by the horns and cracked the whip. It sounds extraordinary, but it was only out of total fear that I did it, not anything else. We had started at about 2.30 in the afternoon and finished at 2.30 in the morning, and by the end of the evening, I said to Paul, 'What happens about tomorrow?' He said, 'If you want to come down it's alright.' I thought, 'He didn't say piss off. Wow!' So I came back the next day, and they did a wind-up. They were doing the backing vocals on 'Helter Skelter', those 'aaaahs' that you hear — four tracks of backing vocals. It was John, George and Paul doing a three-part harmony, and then they double-tracked it twice to get twelve voices. On the last time, they flicked one of the mics around, so it only picked up two on one side and one on the other. I said, 'That sounds great, come up and have a listen.' Paul said, 'Hang on a minute, the mic sounds like it's switched off on this side.' I said, 'Well, it sounds alright, because you can't tell the difference between 11 and 12 voices.' It was little things like that that were designed to test me.

A young Chris Thomas (left) learns the importance of studio etiquette during the *White Album* sessions, September 1968.

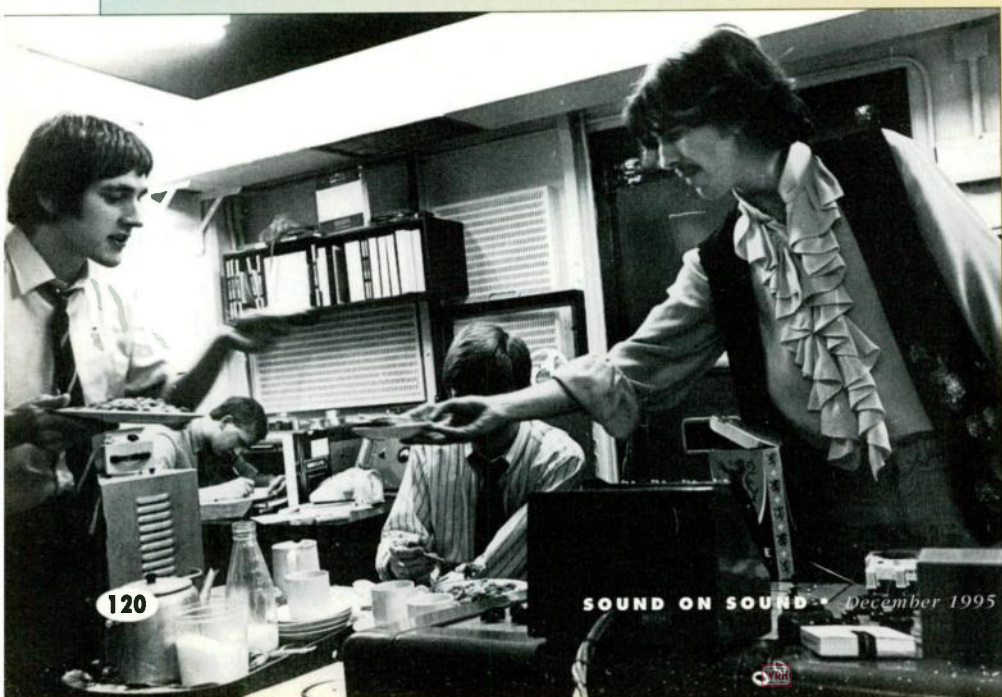


Photo: © Apple Corps Ltd.

phrases. That took about a week to clean up before it was even usable and transferable to a DAT master. Putting fresh music to it was the easy part! 'Free As A Bird', however, wasn't a quarter as noisy as 'Real Love' and only a bit of EQ was needed to cure most problems."

Timing must have been a problem, because Lennon was never one for keeping in time with himself. "Well, nobody is when they're just writing a song. You don't think, 'I'd better use a click while I'm putting down this idea.' You just play and enjoy yourself. So it took a lot of work to get it all in time so that the others could play to it. It's quite a complex process, but for some reason, I kind of know how to do it, through messing around on other stuff for years."

WE CAN WORK IT OUT

When Lynne brought the 'treated' Lennon DATs to McCartney's studio for the overdub sessions, all concerned were adamant that analogue equipment and die-hard techniques should be used wherever possible. With McCartney's studio unsurprisingly well-stocked with a Neve console, generous vintage outboard and Neumann U47s for vocals, the only specialised item of equipment required from the outside world was an Oberheim



Jeff Lynne in Los Angeles, where he cleaned up John Lennon's demos of 'Free As A Bird' and 'Real Love'.

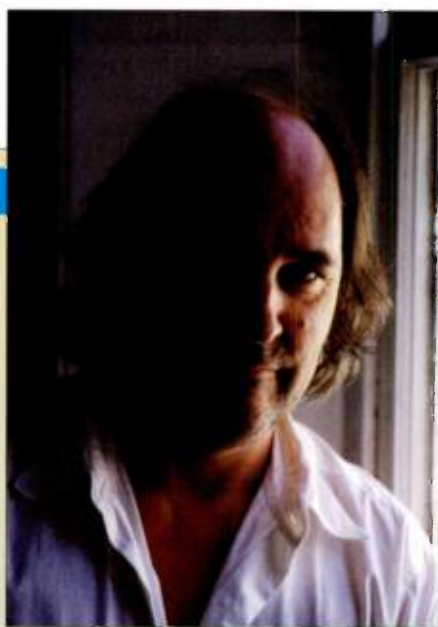
OBX8 analogue synth for what Lynne describes as "a soft, synthesized pad sound, played by Paul." He adds: "What we were trying to do was create a record that was timeless, so we steered away from using state-of-the-art gear. We didn't want to make it fashionable. It's just making the statement that

I was definitely being severely wound up! It was like, 'are we going to let this imposter in?'

"It was great how it ended up, because they were sticking me on everything. They were saying, 'Oh, he's here, he can play that'. I played harpsichord on 'Piggies'. Piano on 'Long Long Long'. Organ on 'Savoy Truffle'. Mellotron on 'Bungalow Bill': the mandolin sounds for the verses and the trombone sound for the choruses. That was something else; I was in Number Two at Abbey Road, playing live with The Beatles. Crazy! And there were other things; while Paul was working on an overdub in Studio Two, John and I would go to another part of Abbey Road to track down some sound effects, which we did for 'Blackbird'.

"It was my idea to use the harpsichord on 'Piggies'. The harpsichord was set up in Number One studio for a classical session. I went in there and I was playing away, thinking how good it sounded. I knew we were going to do 'Piggies', so I went in to see George Harrison and said, 'There's a harpsichord in there, do you fancy using it on your song?' He sat down with me and he started playing me this song called 'Something'. I said, 'That's fantastic — why don't you do that instead?' He just said, 'Do you really like it? I'll give it to Jackie Lomax as a single then!' [George, fortunately, changed his mind later, and 'Something' became a hit for the Beatles. When Frank Sinatra heard it, he described it as the greatest love song of the previous 50 years — Ed.]

"Anyway, we started to push the harpsichord out of Number One and into Number Two, and Ken Scott looked horrified. He said, 'What the hell are you doing?' I hadn't realised what they did in Number One with recordings of classical sonatas. They'd have a session one day, then leave the harpsichord in exactly the same place, tune it up perfectly the next morning, and then continue the recording. So you weren't allowed to move this thing at all. In the end, we moved it back into Number One, as close to where I'd found it as possible, and everyone went in there to record it.



Chris Thomas today.

"I had the wonderful job of wobbling the oscillator for Eric Clapton's guitar on 'While My Guitar Gently Weeps' while it was being mixed. Apparently Eric had insisted that his guitar should sound a bit different to the normal Clapton. That keyboard sound was a flanged organ — very whiny and slightly out of tune. There were loads of things like that. Consequently, I learned such a lot from those sessions in terms of adding detail and also how you could just play with stuff without taking the tracking side too seriously. You'd take it more seriously later and pay attention on the mix.

"It was almost like being a child with The Beatles. That innocent feeling of trying out loads of different things to see what worked — throwing ideas in the air and seeing what happened without sticking to a rigid plan. I certainly learned that you had to abuse your equipment to achieve a certain sound. There were no boxes around then to do it for you."

Jeff Lynne on the new Beatles tracks: "What we were trying to do was create a record that was timeless, so we steered away from using state-of-the-art gear...while it sounds fresh and new, it wouldn't have been out of place on The White Album."



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The Beatles' Anthology



John Lennon doodling on his Mellotron in his home studio in Weybridge, Surrey, summer 1967.

Photo © Photo Source Ltd

► they are all here playing together after all these years. So while it sounds fresh and new, it wouldn't have been out of place on *The White Album*."

What was a surprise, however, was the absence of McCartney's trademark Hofner violin bass. Lynne says: "Paul played his Wal five-string on 'Free As A Bird' and on 'Real Love' he used his double bass (originally owned by Elvis Presley's bassist, Bill Black) — and we tracked it with a Fender Jazz. Paul went DI to the desk, but also used his Mesa Boogie amp and we took a mixture of the two signals. George used a couple of Strats — a modern, Clapton-style one (Lace Sensors) and his psychedelic Strat that's jacked up for the bottleneck stuff on 'Free As A Bird'. They also played six-string acoustics — Paul chose his Gibson jumbo while George used a smaller Martin, and Ringo played his Ludwig kit, so there are genuine Beatles drums on there."

A celebrated motor racing enthusiast, Harrison

chose to use his unusual McLaren guitar amp for the sessions. Geoff Emerick: "It's true! When George took delivery of his McLaren car, the company made him an amplifier that fitted into the luggage compartment. It actually comes out of the car, and it's a great little amp. He used that a lot on the sessions. I think it's a Fender inside, but it's covered in all the McLaren fabric and colours."

The three Beatles began work in February on a third unfinished Lennon demo. Contrary to press speculation, this song was not 'Grow Old With Me' but one which Lynne and Emerick recall being titled either 'Now And Then' or 'Miss You' — a track which Emerick expects the remaining Beatles to complete in the not too distant future. He says: "We did start work on it, but it was obviously unfinished from a writing point of view, so we thought we'd work on 'Real Love' which had a complete set of words. It'll need to be completed as a song before everybody decides

THE END: GEORGE MARTIN ON THE MAKING OF ABBEY ROAD

George Martin's television programme, *The Making Of Sgt Pepper*, and its spin-off book, *Summer Of Love*, are evidence that the world's most famous album remains his proudest moment as a producer. But it is the final album the Beatles made, *Abbey Road*, recorded during the summer of 1969, which he feels is the group's greatest musical achievement. "It's very dear to my heart, because after all the trauma of *Let It Be*, we really got it together," says Martin.

"When we did *Let It Be* I just thought it was the end; and what a sad way it would have been to have gone like that, because from *Sgt Pepper* I thought we were pointing the way to a new style of recording.

We were establishing a trend and I wanted to follow it up, but *Let It Be* was recorded in a quite different way. When I was asked to come back and produce another album, I didn't believe that it would work out. I told Paul that I wasn't sure that I wanted to do it. I said, 'I'll only do it if I'm really allowed to do it the way we used to.' He assured me that everybody was very keen, and I went along with it.

"*Abbey Road* was the development of my own idea to establish something of a classical form in rock 'n' roll music, and I urged John and Paul to think of their songs as subjects in a symphony, using them more than once in different keys, have them in

counterpart with each other, and make up a longer work. One side of *Abbey Road* does reflect that. The other side doesn't — but it was a good compromise, I thought."

The great irony of *Abbey Road* is that although it sounds like four great friends making joyous music, they were very close to breaking up. Martin says: "They really did work well together, and the disharmony of their private and business lives was put aside. I think they all knew that it was to be their last album, so, maybe subconsciously, there was a drive to make it a really good one. My memories of the sessions are all happy ones".

what to do with it, and," he adds with a grin, "it's not hard to imagine who would finish writing it."

FROM THEM TO YOU

Of his time spent with The Beatles, Lynne says: "Being right there in the inner sanctum and hanging out with them for a few weeks was fantastic. Although a long time has passed since they last recorded as one unit, they worked terribly well together, and being in the control room watching and listening to them interact with each other was fascinating. I'd often have cause to think, 'Christ, no wonder they were the best.' But I always thought they were the greatest anyway."

"They're still great musicians and great singers. Paul and George would strike up the backing vocals — and all of a sudden it's The Beatles again! To be there in the middle of all this and have a degree of responsibility over the result was astonishing. It wasn't some kind of fake version, it really was the real thing. They were having fun with each other and reminding each other of the old times. I'd be waiting to record and normally I'd say, 'OK, let's do a take', but I was too busy laughing and smiling at everything they were talking about."

As well as directing from the control room, Lynne also contributed a vocal harmony and a guitar overdub on 'Free As A Bird'. "But," he says, "I wanted to keep my hands off as much as possible. The only things I really did were the funny little bits at the end of the track. I made sure that whatever was done as a big part of the record was them."

For Beatle fan Lynne, it must have felt like everything he had achieved in his entire career had led to this ultimate experience. Was it like The Twilight Zone? "Sometimes! I'd get up in the morning and think, 'God, I'm working with The Beatles today, I can't believe it!'. It was a lovely, magical time. But as well as being the ultimate musical pleasure and thrill, the thought of it was very scary, because it had never been done before, and there were no points of reference. You know, what do you do on a Beatles record when the singer's not there?"

Paul McCartney agrees: "It was quite spooky and emotional at first, listening to John's voice and seeing each other working again in the same room after so long, but it turned out to be wonderful. We decided the best way to handle it was to imagine that John had gone on holiday and asked us to finish off his tracks. For me, even though we worried a little about what it would be like, and it took a lot of organising, the greatest thing was that we worked so well and it was so cool."

Despite previous reservations, George Martin, too, is pleased with the outcome. "What they did with John's tapes is exceptionally clever and very good. It will be well received, because it's a very good song, and well-produced. If The Beatles had been alive as a group today, it's exactly the kind of thing they'd have done. It's not retro, it's not something they would have done in the 1960s. I think it's awfully good, but although they had great fun doing it, it's not the beginning of a new career

WHAT GOES ON: ANTHOLOGY VOLUME I

As this article was being prepared for publication, EMI and Apple Records announced the final track listing for Volume 1 of the *Anthology* project. Some of the tracks (marked <S>) are actually sections of speech cut from old interviews. The album will contain over 60 tracks, including the spoken word items.

COMPACT DISC 1

Free As A Bird
"We Were Four Guys..." <S>
That'll Be The Day
In Spite Of All The Danger
"Sometimes I'd Borrow..." <S>
Hallelujah, I Love Her So
You'll Be Mine
Cayenne
"First Of All..." <S>
My Bonnie
Ain't She Sweet
Cry For A Shadow
"Brian Was A Beautiful Guy..." <S>
"I Secured Them..." <S>
Searchin'
Three Cool Cats
The Sheik Of Araby
Like Dreamers Do
Hello Little Girl
"Well, The Recording Test..." <S>
Besame Mucho
Love Me Do
How Do You Do It
Please Please Me
One After 909 (Sequence)
One After 909 (Complete)
Lend Me Your Comb
I'll Get You
"We Were Performers..." <S>
I Saw Her Standing There

From Me To You
Money (That's What I Want)
You Really Got A Hold On Me
Roll Over Beethoven

COMPACT DISC 2

She Loves You
Till There Was You
Twist And Shout
This Boy
I Want To Hold Your Hand
"Boys, What I was Thinking..." <S>
Moonlight Bay
Can't Buy Me Love
All My Loving
You Can't Do That
And I Love Her
A Hard Day's Night
I Wanna Be Your Man
Long Tall Sally
Boys
Shout
I'll Be Back (Take 2)
I'll Be Back (Take 3)
You Know What To Do
No Reply (Demo)
Mr Moonlight
Leave My Kitten Alone
No Reply
Eight Days A Week (Sequence)
Eight Days A Week (Complete)
Kansas City/Hey Hey Hey

The album will be released on November 21st, 1995, and will be followed, on November 26th, by the first 60-minute part of the 6-hour *Anthology* TV documentary, to be screened on ITV.

for them. I think we've all looked upon it as a good addendum to what we've done with the *Anthology*."

THE LONG AND WINDING ROAD

The next two *Anthology* double CD sets will become available during the first half of 1996. These releases are likely to include priceless rarities such as the first take of 'Strawberry Fields Forever' (see the 'Strawberry Fields Revisited' box elsewhere in this article), a composite orchestra-less version of 'A Day In The Life', spliced together from two early takes, experimental *Revolver* outtakes, alternate versions of songs from the so-called *White Album* (see the box on Chris Thomas), including a beautiful acoustic performance of George Harrison's 'While My Guitar Gently Weeps', and grass roots jamming from the *Let It Be* movie sessions.

The *Anthology* project may not provide the world with everything The Beatles recorded but, as Martin says, "It will be a good, solid chunk of stuff they haven't heard before." I ask him if this project will signify the end of his professional career as The Beatles' producer, and with a wry smile on his face he replies, "Probably. It's amazing that it's lasted this long. I'm very proud of what we've done, and it has stood the test of time incredibly well."

SO5



With hardware almost becoming a 'taboo' word these days, DAVID MELLOR investigates what Digidesign's hardware-free recording software can offer the budget-conscious musician.

If you have a reasonably decent computer, then you have a tool for recording audio, given the right software. If you have an Apple Macintosh, then you will no doubt have noticed that there is a growing market in low-end — if the manufacturers will excuse the expression — software that will record two tracks and replay four tracks on a Digidesign Audiomedia II equipped Mac, or play back eight or more tracks without a dedicated soundcard on a suitable Power Macintosh. Potentially, this is exciting stuff — if you have a Power Macintosh, all the audio capability is there inside your computer right now and all you need is the right software to access it. And check out the price... When compared to the cost of an 8-track recorder such as ADAT, or even a Fostex R8 analogue multitrack, the word 'bargain' springs readily to mind (even if you do have to sacrifice being able to record on more than two tracks at a time or be able to hook up eight separate outputs to a mixer to provide EQ or reverb).

Digidesign are very well known in the field of

cost product very obviously entry-level?

If this is so, then all the product has to do is match the competition feature for feature and Digidesign can look forward to a healthy share of that market, while not hurting their other sales. I say this to put my review of *Session* into its proper perspective. If I have some criticisms to make then it is not to say that *Session* isn't a damn fine product, as I'm sure you will come to realise as you read on. But it doesn't do everything I would want it to do — and I suspect you might feel the same. So let's get down to the nuts and bolts...

HARDWARE REQUIREMENTS

Okay, I know some of you are going to be disappointed that your computer isn't quite up to the demands of *Session* when once it was the fastest Mac on your block, but that's the price of progress. To run *Session* successfully you must have at least a Mac IIci (or better) fitted with a Digidesign Audiomedia II card, a similarly equipped Quadra (I'm sure a Centris would do too, but it

Full Session?

DIGIDESIGN SESSION 2.0 MULTITRACK SOFTWARE

hard disk recording on the Macintosh (and increasingly so on the PC, too). In fact, they have pretty much written the book all by themselves, and what they don't know about hard disk recording probably isn't worth knowing. The professional audio world is smitten with their Pro Tools system which, when fully expanded, can handle as many tracks with as many separate inputs and outputs as would satisfy the wildest dreams of the most demanding recording engineer. Pro Tools offers all the benefits of hard disk recording together with equalisation, reverb, compression, and a multitude of other facilities, provided either with the system or as 'plug-in' extras. Those of us who can't afford Pro Tools might own or aspire to Session 8, which is basically a cut-down Pro Tools for the masses, or *Sound Designer*, which is reputed to be the most widely used stereo hard disk recording software in the world. So you would expect that when the Digidesign gurus get around to meditating on the subject of low cost multitrack hard disk recording software, they ought to be able to come up with something pretty hot. They know all the tricks and they should be able to put them all into a package that will wow the pants off us and trash the opposition. But before your hand dips into your wallet, hang on a moment... What about product differentiation? What if Digidesign are frightened that low cost multitrack software will knock a dent into their sales of Session 8 and even Pro Tools? Might they not consider cutting down on the feature-set, making their new low

isn't mentioned in the manual) or a Power Macintosh. What's more, you will need a bare minimum of 16 megabytes of RAM! I remember thinking that I was never going to be short of memory again when I first installed 16Mb in my computer, but now I'm sure that this time next year we'll need 32Mb just to do a bit of word processing.

You may be wondering how it is possible to get by without a soundcard on a Power Macintosh, since an Audiomedia II card still represents a pretty hefty wedge of cash to buy. The answer is that the new RISC processors used in all Power Macintoshes are so fast that they can handle the vast quantity of data that used to demand a special soundcard, and more besides. Most Power Macintoshes have built-in 16-bit sound circuitry which, in conjunction with Apple's Sound Manager software, can do everything that a separate soundcard can (with the exception of offering S/PDIF digital input and output).

This brings us to the question of analogue audio connections. Would you be happy putting your analogue audio into the harsh electrical environment inside a computer? It is usually thought that audio equipment should be very carefully designed with a suitable power supply, sensible circuit layout, and that potential sources of interference (such as screen displays) should be treated with very great care. All I can say is that I have listened to one model of Macintosh and have found its audio quality acceptable, if not as good as an Audiomedia card, but that

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- Requires 16Mb of RAM.
- The windows don't tile neatly, even on a large screen.
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- Slightly sluggish in response to mouse commands.

SUMMARY

Very capable and adequately polished for new software (and it is new, even if it does claim to be version 2.0). Some details need improving, but it will perform useful work from day one.

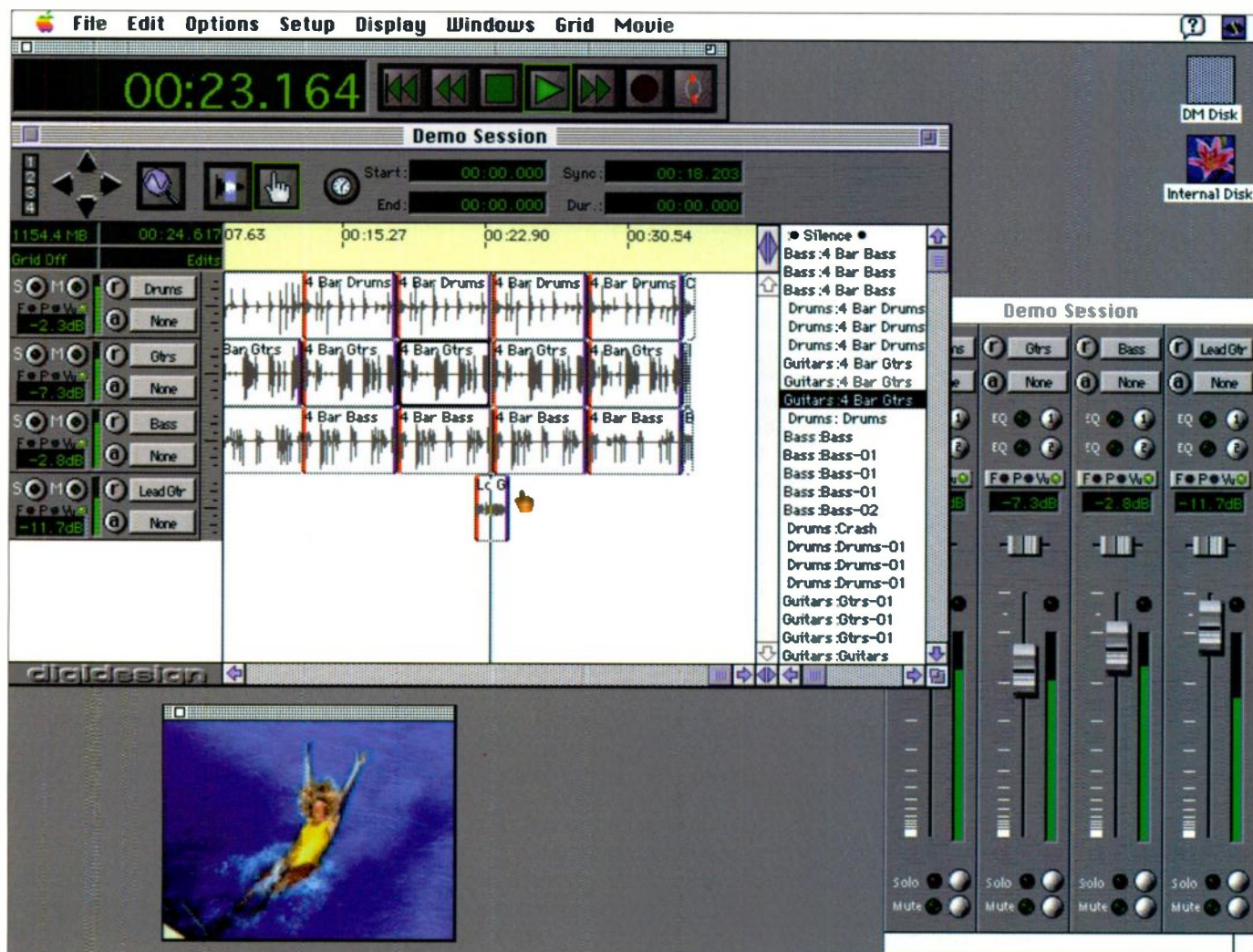


Figure 1.

won't account for all the other models in circulation now, and those which Apple (and others) will undoubtedly introduce in the near future. My advice: if you want a computer for audio, *listen* — like you would with any other sound equipment.

If any hardware manufacturers are reading, please take note that the time is now ripe to develop an S/PDIF digital I/O interface for the Power Macintosh. If it can be external to the computer so that it doesn't take up any expansion slots, and with multiple separate analogue outputs, that would be perfect. You'll sell one to every studio, engineer, and musician with a Power Macintosh and you'll make a mint. Any takers?

One last point on hardware. Running *Session* with a dedicated Audiomedia card, you will get four tracks of audio. With a low-end Power Macintosh you should get eight. With a faster Power Mac computer (eg. 8100), assuming your hard disk is also up to it, 12 or 16 audio tracks are possible with no additional hardware. I tested the software on a Power Macintosh 6100 and it could handle eight tracks just fine.

WHAT CAN IT DO?

You know how many tracks it can record and play back, so what else makes *Session* more than just another multitracker? Quite simply, hard disk recording gives you absolute freedom of editing. On tape, from the first track you lay down, you are

locked into the pattern of verses, choruses and whatever else that goes to make up your song. As soon as you start recording, many of your options are closed off, and if a wonderful new idea comes to you halfway through the session, hard luck. Scrap the idea or scrap the recording, there is no alternative. If the same idea came to you during a hard disk recording session, however, all you would need to do would be to chop up a few segments on the screen, open up a gap, copy a bit, re-record a bit, come up with a few more ideas and... well, you could end up with a totally new song! It's a bit like sequencing, only you are doing it with real audio. You could be using any of the thousands of instruments the world has to offer, rather than just a sequencer and sampler. You can restructure vocals; edit out breaths, clicks and other noises; select from a variety of takes; edit out a bad note — even as short as a semiquaver. With a sharp razor blade and an editing block, you may be able to do a fraction of this at a tenth of the speed on a reel-to-reel tape. On cassette — well, forget it!

As well as being a recorder with infinite editing capabilities, *Session* also incorporates a mixer. Not such a rudimentary mixer as you sometimes find on the screen of a computer. This one has level, pan, mix automation, and 2-band EQ on each channel. This last point is significant. You can even get this on an Audiomedia card that doesn't have as much number-crunching capability as a

"The provision of 2-band EQ on each Session track is a technological marvel."

Digidesign Session 2.0



Figure 2.

- Power Macintosh's processor. The only thing you don't get that you would really wish for is reverb, but you can always record some reverb into the system if you have enough tracks.

When you have enjoyed playing with all of this (if you get it for Christmas, it should take you well into March) you can start on the real fun — recording audio to picture. *Session* can also play a QuickTime movie in a window, to which you can accurately spot sound effects or music, or even a voice-over. Synchronising dialogue might be a bit ambitious at this stage, since QuickTime video playback is still rather jerky, but effectively *Session* is an audio post-production studio on your desktop. Seasoned pros may scoff, but multimedia is a growing market and I don't doubt that people with the foresight and energy will equip themselves with a basic setup, incorporating a Power Macintosh and Digidesign *Session*, and just start doing it.

There is no doubt that Digidesign can make good software, but for the reasons I outlined earlier there is reason to suspect that not every feature you might possibly wish for is actually included in *Session*. And perhaps they have added a couple of red herrings to make the job more difficult? Fortunately, except for one point, the latter is not the case. The only thing that makes the job harder is the on-screen display. I can't deny that *Session* is a very beautiful piece of software to look at — the artist that designed this mimic of a real piece of audio hardware deserves an award — the only problem is that

the windows are the wrong shape to tile neatly on the screen (as you can see from Figure 1). I use a 17" monitor, which is a good compromise between seeing enough information on the screen and being able to project an X-ray picture of my head on the opposite wall. I doubt that many potential *Session* owners have a 20" screen, so they will inevitably end up swapping endlessly from one window to another. Fortunately the transport bar (Figure 2) 'floats', so it is always visible, as does the QuickTime window if you want it to. But there is no satisfactory way to arrange the other windows so that you can get at everything you need instantly all the time, without wasting valuable screen real estate. Recommendation: Digidesign should provide an alternative mixer window where everything is shrunk down to a manageable width, and to hell with the aesthetics.

IN OPERATION

Once the software is installed and the hardware is configured, you are ready to record. Recording is very simple and the only new thing you will need to get used to is that the mixer window's faders are actually two sets of faders, one for input and one for playback, which position themselves automatically according to whether a track is in record mode or not. Once you are familiar with it, this isn't any kind of problem. When you have recorded some audio, then the fun begins.

I think I can better explain the good and not-so-good points by using an example. Suppose you had a backing track already recorded and a singer came in at short notice to do a vocal. She laid down a couple of takes before flying off to another engagement. Both takes were a bit dodgy in places and she had an annoying habit of dragging behind the beat.

Your first step would be to choose the overall better of the two takes and decide which parts of the other you would edit in. If you look again at Figure 1, you'll see that *Session* automatically draws an overview of the waveform to make finding your way around easier. Inevitably, drawing waveforms takes time, so it is possible to have only the ones you are interested in drawn for you, which is a good point. As you replay the recording you will find that you can have the display stand still or you can have it scroll continuously, which is probably more useful. There is also a page scroll mode, as is commonly found in sequencers. Cutting out a short portion of audio isn't too difficult. Simply play up to the bit that you want, stop playback and judge from the waveform where the likely start and end points are. With the selector tool (the icon to the left of the grabber



The Mix Window.

SYNC POINTS

There's always someone who wants his software to do something slightly crazy (me!). In this case it's getting it to synchronise with a multitrack recorder.

Other software of this type provides continuous resynchronisation either on playback only or on record and play. Continuous resynchronisation on record and play is necessary to be absolutely sure that hard disk and multitrack will always be in step, at the cost of a slight risk to audio quality.

Session offers only trigger sync, which means

that it finds the right starting place and then the two machines go their own sweet ways. In theory, even two digital machines will drift due to slight differences in their clock rates. However, I tested *Session* with my Fostex RD8 ADAT and sync is as near-perfect as makes hardly any difference at all. I can't guarantee that it will be the same for you, I might just have been lucky, so make sure you check out *Session* with your own equipment if accurate synchronisation to multitrack is important to you.

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Digidesign Session 2.0

ARE ALL POWER MACS CREATED EQUAL?

Check this out with your local Mac guru, but it has been brought to my attention that not all Power Macintoshes have 16-bit audio capability. The internal CD-ROM may be 16-bit, but the part of the computer we are interested in may only be 8-bit.

This doesn't sound very promising for would-be *Session* owners so, seeing as the Mac range changes so frequently, my advice is to check that the whole system will work the way you want it to before you part with any cash.

► hand), sweep across the waveform to highlight it, then hit the Macintosh's spacebar to audition your selection. If it's not right, adjust the start and end points using your existing Mac mousing skills.

This is where my earlier point about not providing every useful feature comes in. What you can't do in this software is scrub; there is no way you can slide the mouse back and forth and hear audio playing in proportion to the direction and speed of the mouse. Okay, in some other systems the scrub function works so badly that it is practically useless anyway, but I know for a fact that this particular software/hardware combination could have had an excellent scrub facility, taking into account that it is mouse-driven, but it has been left out for some reason. Seeing as there is no scrub facility available, I would have presumed that there would have been alternative options to play up to the start, play up to the end, and play from the end, all of which are present in *Sound Designer* and which I use all the time. No, I'm afraid, if you have a long selection, the only way to check the end is to audition the whole thing. Yawn...

Still, short segments of audio aren't too much of a problem, and once you have copied or split off a line of the vocal from the rest, you will find that you can name it and see it in the audio regions 'bin' on the right of the track display. A lovely feature is

portion of the region I want to fade and hit Command-F, and have a default fade profile applied. I want it to fade all the way down to zero even if the portion I have highlighted doesn't exactly correspond to the end of the region. I would also like fades to be calculated a little faster, because I know it's possible (*Deck 2.2*). Being able to batch fades rather than calculate them individually would also be useful.

Moving segments around in time is easy with *Session*, as is moving them from one track to another. When moving segments vertically, it is important to have the option to maintain their exact position in time, which is straightforward here. However, I think it is a pity that *Session* will not allow two tracks to be grouped together into a stereo pair, so whatever edits you do to one are automatically done to the other. This shouldn't be too hard to implement, but I don't think it is widely recognised as a priority at this level. One more thing... I would have liked an easy way to butt two segments accurately together without having to zoom in and make very careful adjustments.

One last point on the creation and manipulation of audio regions. I may only have a humble Quadra 650 computer, but I don't think it's unreasonable criticism to say that the interaction between the

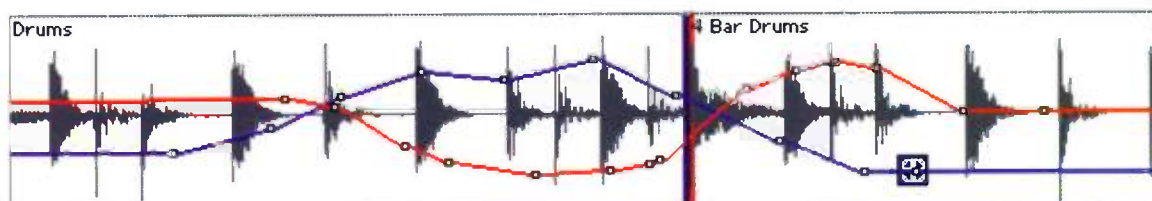


Figure 3.

that each region you create remembers its original start time, so whatever you do to it, you can always get back to where you started — you can also set a user start time, if you wish. Taking this a stage further, each region can have a sync point. Suppose, for instance, you had a sound which you wanted to repeat in time with an existing rhythm. If the sound has an obvious impulse at the start, then you can sync it with no problem. But if there is an 'up beat' before the main impulse, you will be fiddling around trying to match every occurrence to the rhythm. Not with *Session* though — you just match it using the sync point. You can set a grid in time values or in bars and beats, which means that you can quantise audio almost like a sequencer quantises MIDI notes.

Going back to our hypothetical 'problem' vocal. Undoubtedly, you will find that when you have created a segment it will need adjustment, and this is possible with the grabber tool simply by sliding the end points backwards or forwards. You will inevitably also want to fade segments in and out, since a sharp audio cutoff is often noticeable. I'm afraid this area of the software needs some work, Digidesign. I would like simply to highlight the

mouse and the display is not as smooth as it could be. The way the grabber hand flashes on and off while you are moving a segment is irritating and I've seen better.

MIXING SESSION

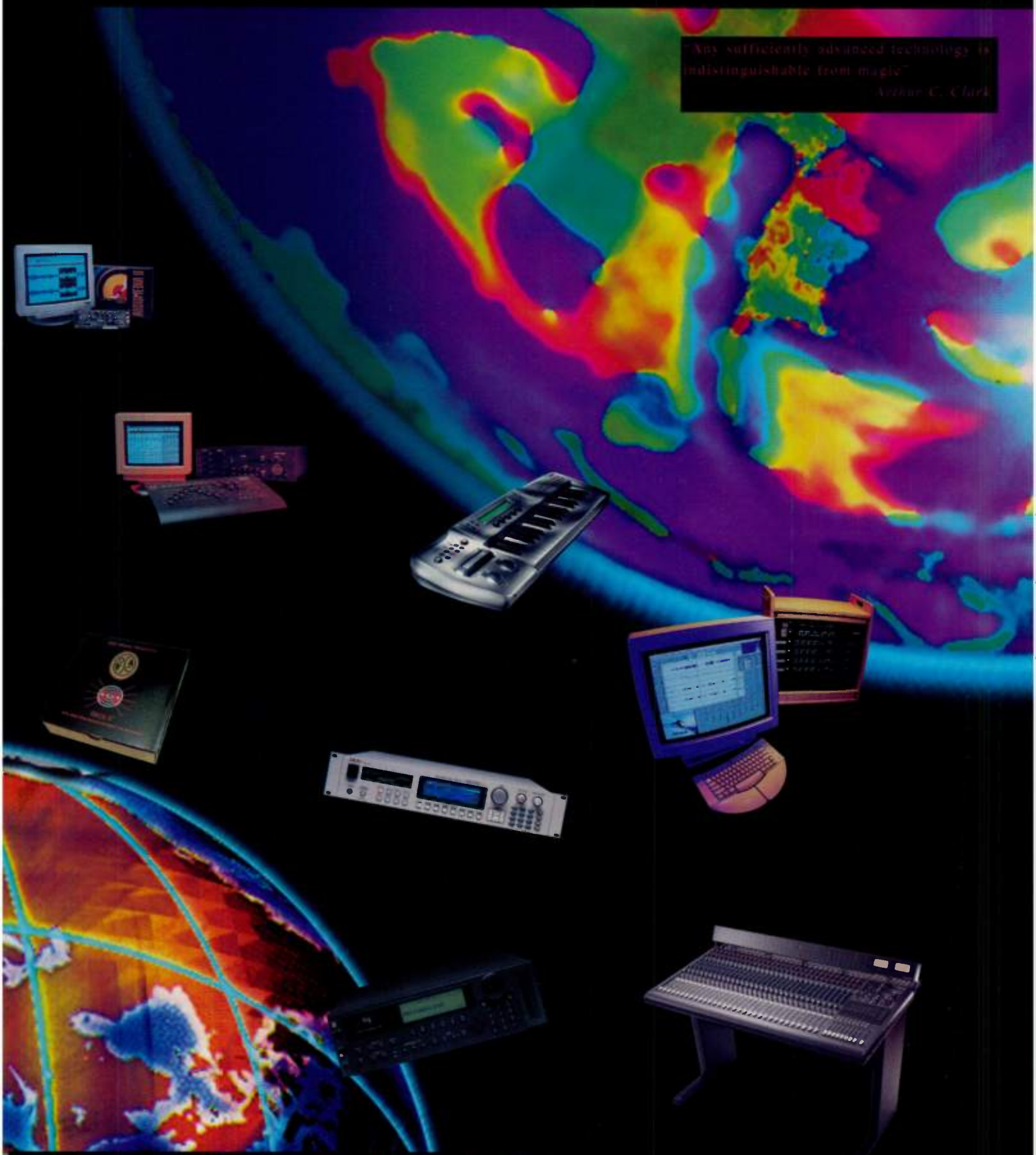
Once the audio is split up and you have rearranged segments to perfection, then the next step, assuming that you didn't need to bounce tracks (which is perfectly possible in the digital domain) is mixing. Of course, the interest here is mainly in the mix automation and Figure 3 shows the relevant display. Automation can be performed by moving the screen faders and pan controls manually (fader grouping is possible — a very important feature) or by drawing an automation 'curve' directly onto the screen. Either way it works perfectly well, although I did notice a bit of audible jerkiness if I tried to move the mouse too quickly. Automation data can be edited and copied from one track to another, so matching up a stereo pair isn't a problem. However, I'm not sure that this is the utmost Digidesign (and others) can manage. What happens if you need to move the audio in time? Sadly, the automation does not follow and you will have to take some

"I tested
Session with my
Fostex RDB
ADAT and sync
is as near-perfect
as makes hardly
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at all."

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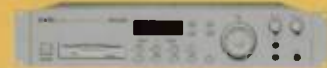
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Long-time Akai sampler user PAUL WARD tries to stop his credit card from leaping out of his pocket as he gets to grips with the tempting additions to Akai's mid-range sampler.

The X-Files

AKAI S3000XL SAMPLER

Those of us who jumped aboard the Akai sampler bandwagon with the S1000/S1100 found ourselves blessed with a darned fine sampler. The lack of any real depth of 'synthesis' features was not a great concern at the time, since everyone was more concerned with improving the fidelity of raw samples rather than the capacity to process them beyond all recognition. Akai stole a jump on the market with products that delivered just such fidelity at the right price.

Nowadays, with high quality sampling taken almost for granted, manufacturers have turned to the provision of more synthesis features to give their machines an edge. With Akai's S3000 series of samplers came resonant filters and modulation options that brought significant synthesis capabilities into the Akai sampling world, but by this time other companies, such as Kurzweil, Emu and Ensoniq, were also making similar headway. Where next? How about the capability to take up to 8Mb of Flash RAM, a new 'Multi' mode to make multitimbral configurations a much easier proposition, the ability to expand up to 32Mb



with standard 72-pin SIMMs (rather than custom Akai boards) and an optional multi-channel/multi-effects processor board? Enter the S3000XL.

FIRST IMPRESSIONS

On removing the S3000XL from its packaging I had a moment of doubt as to whether Akai had sent me the correct machine! The S3000XL owes much more to the physical appearance of the S2800 than its namesake, the S3000. Indeed, the front panel of the S3000XL is near identical to the S2800, with the exception of some of the legending! To the far left are the (shrouded) power switch and the standard quarter-inch headphone socket. The display contrast control also doubles up as a push-button to switch the display backlight on and off in order to extend the life span of the LCD. Just below the 3.5-inch high-density floppy disk drive are the eight 'Mode' buttons. These take the S3000XL through its basic operating modes, such as playing single programs, defining multitimbral setups, or accessing disk functions. The centre of the S3000XL's front panel is dominated by the backlit 40-character x 8-line LCD. Just below this display are the eight 'soft' function keys that access various pages and functions depending on the options available on the currently selected page. Unfortunately, in

keeping with Akai's previous track record, the function keys still do not line up under the function names displayed on the screen. This is often frustrating, and also slows down operation. It really is about time Akai managed to crack this one.

Cursor navigation is managed by four direction keys, and parameter values are altered either by the data input knob or the numeric keypad (which also doubles up for alpha-numeric naming duties). To the right of the keypad are the 'Mark' and 'Jump' keys for fast page access, the 'Name' key for naming of objects such as programs, samples and effects, and the 'Enter' key, which also allows the triggering of programs or samples from the front panel when editing or confidence checking.

The rear panel hosts eight separate polyphonic audio outputs, in addition to the master left/right. The audio inputs are of the balanced quarter-inch jack type, which represent a reasonable compromise alternative to the provision of a separate pair of XLR connectors — although an adaptor will be necessary for the direct connection of a standard balanced microphone cable. A pair of digital in/out phono connectors are provided, though I feel slightly uncomfortable about being deprived of the option of using optical connectors. A SCSI socket opens the S3000XL to the world of external storage devices such as hard disks, magneto-optical drives, CD-ROM or a similarly equipped computer. Finally, there's the expected MIDI In, Out and Thru.

The S3000XL is compatible with library material for the S900, S950, S1000, S1100, S2000 and S3000 sampler series, although effects files from these earlier machines cannot be handled, due to fundamental differences in their make-up. My S1100 was unable to read the S3000's disks (Akai are making a software update available), but I had no trouble dumping programs and samples over MIDI in S3000 format, complete with sample name and loop points. After one or two minor tweaks, everything behaved well, although the lack of filter resonance and some of the other more sophisticated synthesis techniques often left the results sounding bland in comparison.

SAMPLES & EDITING

Sampling is a reasonably straightforward exercise, following familiar Akai principles, although the ability to save all the recording parameters is very welcome. Recording can be set to start automatically as the input level crosses a user-defined threshold, or on receipt of a MIDI note message. In either case, an override feature allows for initiation by pressing a function key. Mono or stereo recording is possible from either the analogue or digital inputs.

The manual informs us that, when making samples from the digital input, the S3000XL "has difficulty recording at 48kHz (ie. from a DAT machine)" and suggests that to do so is "inadvisable"! The machine itself will attempt the task, but shows a warning message when it detects a 48kHz carrier signal. I feel I can't let Akai get away with this one so easily. I believe that the ability to sample at any of the 'standard' digital rates should now be taken for granted in a sampler of this league

AKAI S3000XL £1799

PROS

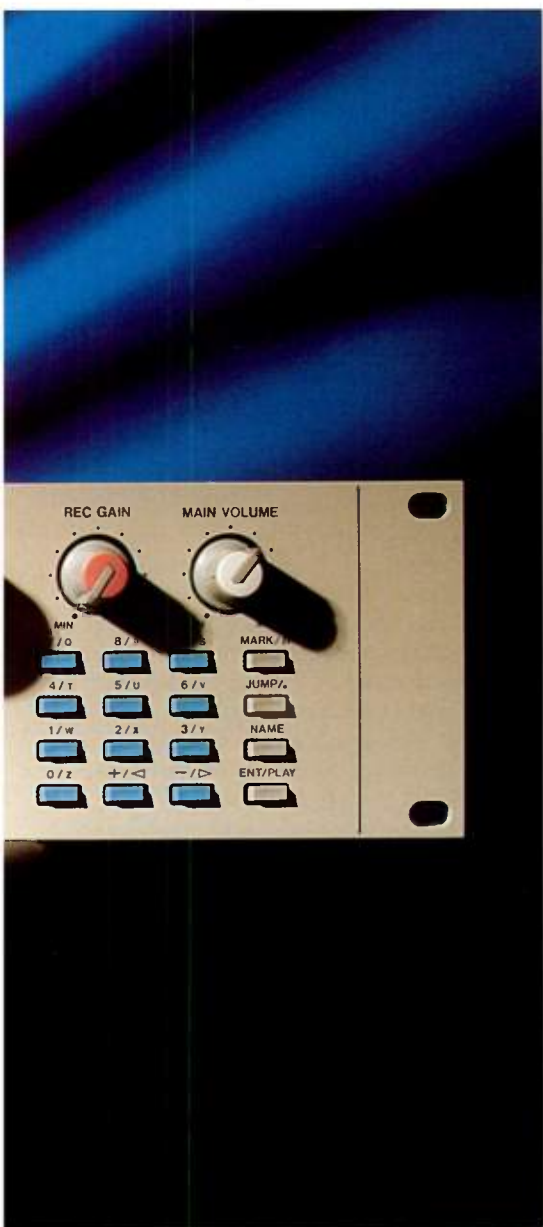
- Familiar, tried and trusted user interface.
- High-quality sampling and playback.
- Takes standard SIMMs for cheaper RAM upgrades.
- Excellent new Multi mode.
- Optional EB16 effects board.
- SMF playback.

CONS

- Simple tasks can still take an awful lot of button pushing.
- No onboard effects with standard machine.
- Will only accept other manufacturers' samples when read from CD-ROM.
- The perpetuation of Akai's proprietary disk format.

SUMMARY

A valuable studio tool with a much friendlier method of multitimbral use than seen previously in an Akai sampler. But this machine really begins to earn its keep once the optional EB16 effects board is in place — budget for one if you can.



AKAI S3000XL SAMPLER

► and pedigree. Some of my own DAT archives contain recordings made at the 48kHz 'consumer' sample rate and I would be unhappy to consider them out of bounds for digital transfer. Hmm...

Samples may be trimmed and looped, with the machine doing its best to help you in the latter case by providing a zero crossing point search

be similarly boosted along with the signal material, but at least you can be sure that you are making the most of your sampler's bit resolution.

STRETCHING A POINT

Off-line DSP functions which can be inflicted upon a sample are timestretching, re-sampling and equalisation. Timestretching is ingeniously simple to perform, although some understanding of the underlying principles will help in deciding the optimum settings. The manual is particularly helpful in this respect, offering useful tips and examples in a clear and concise manner. While we're on the subject I ought to point out that the manual as a whole is extremely good, including plenty of screen shots, tips, suggestions and real-world examples to get you up and running quickly.

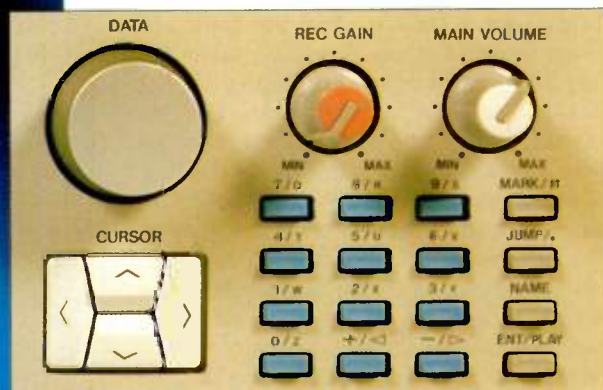
Re-sampling is equally painless. I have often found myself using this process to avoid compromising sample quality at the time the recordings are made — I always sample at 44.1kHz and then try different rate conversions later to reach a sensible compromise between audio bandwidth and disk space requirements. The S3000XL will automatically make the necessary transposition to keep the newly-created sample at the correct pitch.

Off-line equalisation takes the form of a single EQ type that can be set up to perform low/high shelving or wide/narrow band-pass with a generous 24dB of cut or boost. It's a pity that both low and high shelving EQ can't be performed simultaneously in one pass, but a sample can be reprocessed as many times as necessary.

FILTER TIPS

The S3000XL's digital filter is a resonant 12dB per octave low-pass affair. Whilst not equalling the warmth and complexity of an analogue filter, the range of tone and colouration is pleasant, and I'd describe its character as 'sweet' rather than 'aggressive'. Modulation is possible from a variety of sources, including envelopes, velocity, LFO1/2 and a user-defined MIDI controller number.

The review model came endowed with the optional IB304F filter, which appears in the operating pages as 'filter 2'. The use of this additional filter costs two notes of polyphony, which seems a little stingy, but increases the range of tonal variation tremendously. Besides a second 12dB per octave resonant low-pass filter (which can be used in series with the standard filter to achieve a Moog-ish 24dB per octave cut-off slope), filter 2 can also provide high-pass, band-pass and EQ filter types. Selecting the 'EQ filter' turns filter 2 into a 1-band equaliser with sweepable frequency and variable (positive or negative) resonance. A further 'tone' page also becomes available with the second filter option installed, featuring frequency, slope and attenuation parameters. Finally, a third envelope generator is provided that, although it is primarily linked as a control source for filter 2, may be used as a modulation source across any of the S3000XL's standard functions.



function and the ability to create crossfade loops when all else fails. I've often found Akai's method of defining loops to be a singularly painful experience, due to their 'position/length' concept (ie. the user defines a point from which the sample is to loop back and then sets the length of the loop), and nothing much has changed here. I'd much rather set a pair of independent start and end loop points, with the option to move the whole loop forwards or backwards if required (the Ensoniq EPS, for example, works in just this way). It can be infuriating to be hunting for the ideal end loop point only to find that you cannot shift the pointer because the loop length is set too long to accommodate the movement. No doubt other users will disagree with me. Pairs of samples may also be spliced and mixed — with or without cross-fading.

A couple of S3000XL sample editing features I found highly desirable (having often wished they had been implemented on my ageing S1100) are sectional editing and volume normalising. Sectional editing permits a portion of an existing sample to be extracted and copied to a new sample location and name (the original sample is left intact), cut (sample is 'zeroised' over the selected range) or 'chopped' from an existing sample and given a new sample name (selected range is removed from the sample and the range start and end points are butted together). Examples of obvious candidates for sectional editing include individual drum beats you'd like to extract from a rhythm loop, and coughs/other unwanted noises which need removing from a section of vocals.

Volume normalising is an extremely useful feature since a sample will usually be recorded at less than maximum level to prevent the onset of digital distortion. The S3000XL will examine the sample to find the highest volume peak and turn the whole sample level up until the peaks are at the maximum level possible before clipping. The cost here is that the underlying noise floor will

"...after the briefest experience of Akai's new Multi mode I will find it extremely difficult to go back to the old method of working!"

SAMPLES IN A FLASH

The use of 'Flash ROM' is an enticing prospect, allowing 8Mb of samples to be retained when the power is switched off. This effectively makes the S3000XL into a very flexible S+S synthesizer with customisable waveform memory. Similarly, the supplied MESA Macintosh editing software that comes bundled with the S3000XL is to be applauded, although not having a Macintosh I was unable to test its efficacy — come on Akai, there are an awful lot of us out here who run PCs and Ataris!

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AKAI S3000XL SAMPLER

► Keygroups are where samples are mapped across the keyboard, set to respond to velocity switching or cross-fading, and given real-time processing features such as filtering and envelopes. Keygroups can be

possible to have dry hi-hats, flanged cymbals, a kick with a touch of room ambience, toms with gallons of room ambience and a snare playing in the Albert Hall! Such flexibility is often difficult to achieve with several instruments, let alone one!



A LA MODES

'Single' mode is what anyone with experience of Akai samplers would consider to be normal 'program' mode. The useful Mix page has been retained in the S3000XL, to ensure compatibility with older library material. Programs may be re-numbered in a variety of ways, although Multi mode makes this a far less critical operation than it once was.

assigned to mute groups to prevent more than one sample playing at a time. As well as the most obvious example of forcing a closed hi-hat to mute an open hi-hat, this feature can also be used to produce more realistic snare or tom rolls.

In addition to all the other 'per-keygroup' features, I was most pleased to see the option to send any keygroup to any of the four effects processors (or none of them) with its own send level. This will save a lot of time and trouble. In a typical drum kit program, for example, it would be

Multi mode is what every Akai sampler user has been waiting for! (Well, many of them, I'd dare to suggest.) The business of setting up an Akai sampler for use in a multitimbral environment has always seemed a bit scrappy. Programs had to be re-numbered to allow them to share a common program number, and their MIDI channels then had to be set accordingly. This was often laborious work when compiling banks of sounds from numerous disks. Akai have obviously recognised the need to provide a more flexible arrangement,

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and have come up with a very neat and sensible operating mode to provide an answer. It must be pointed out that should users want to keep working in the good 'old-fashioned' way, the S3000XL is quite happy to go along — this should ensure compatibility when loading in volumes created on the older machines. However, after the briefest experience of Akai's new Multi mode I will find it extremely difficult to go back to the old method of working!

It may have taken Akai a while to bring us a friendly multitimbral environment, but the result here is very good. Operation is simplicity itself. There are 16 available slots in a Multi mode configuration, each of which can be assigned a MIDI channel and any program, regardless of program number. The same MIDI channel can be assigned to multiple programs, or multiple MIDI channels can be assigned to a single program. Each slot has its own assignable key range, volume, panning, transposition, detuning and priority level for note 'stealing'. Additionally, with the EB16 effects option installed, each slot can access any of the four effects processors, with a programmable send level. All of these settings in a Multi configuration override those set for any program. But — joy of joys — any overrides defined for a keygroup are retained. This means that specific

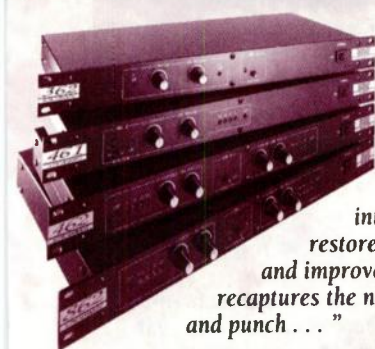
RAISING THE STANDARD: MIDI FILE PLAYBACK

SMF playback is a wonderful feature for a gigging musician. Simply record your backing tracks on a computer-based MIDI sequencer, save them as a Standard MIDI File and then load them into the S3000XL for playback on stage. The S3000XL will play both internal sounds and pass on the necessary data from the MIDI out port to control external synths and devices. Astute readers will realise that this is also an ideal way to store and transmit System Exclusive data.

The Akai's disk drive will read standard MS-DOS formatted disks for the purpose of loading SMF files. What a pity that Akai did not take the opportunity to also allow the S3000XL to read/write programs and samples to/from MS-DOS disks too — maybe even to load and convert .WAV files. Speaking as one who regularly hunts down sampled material over the Internet, the legacy of a proprietary PC-incompatible disk format is now harder to accept than ever.

keygroups requiring different effects (or none at all) can still be accommodated within the Multi configuration without having to create a new program for them. It could be argued that this is not always desirable (maybe the option should be switchable?), but I think that the benefits far outweigh the disadvantages. The only suggestion I would make is that the number of Multi slots be increased. If you tend to keep your drum sounds in individual programs you'll find yourself running out of slots alarmingly quickly!

Global mode, as well as hiding all those typical housekeeping functions such as tuning, basic MIDI channel and DAT backup facilities, also plays host



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AKAI S3000XL SAMPLER

► to the 3000XL's SMF (Standard MIDI File) playback feature and direct-to-disk recording pages.

HARD TIMES

First introduced in an operating system upgrade to the S1100, hard disk recording is similarly implemented on the S3000XL. Use of this feature drops available polyphony to 26 notes, as opposed to the usual 32, but that seems a reasonable

FX2 effects chain and have access to the same 50 preset reverbs as used in RV3 and RV4. The effects can be routed to appear at any pair of outputs. This is a global setting for all effects — so you can't have RV3 appearing at outputs 3 and 4 and FX1 at 5 and 6, which I found a little disappointing.

So much for the quantity — what of the quality? Pretty good, generally. I would like the distortion to be a little less 'fizzy' for my Hammond organ



compromise. Only one 'take' may be played back at any point, so crossfades are unfortunately not possible, but normal sampler functions are unaffected — even during recording.

Recording a take is similar in many ways to recording a normal sample, with the process initiated manually, from input threshold, a MIDI note message or a MIDI Song Start command. The recording source may be analogue or digital. Once safely recorded, takes may be edited, copied and named. On playback, takes can be processed by the optional effects units (if fitted) and assigned to appear at any individual output. Advanced take parameters include panning level and fade in/out times. A 'Song' list allows takes to be compiled for sequential playback or MIDI triggering, with the ability to repeat steps, insert new steps or delete unwanted ones. Songs may be named and saved to disk, much as any other RAM object, and takes backed up to DAT to free up valuable hard disk space for further recording.

MULTI STORY

The S3000XL I was given for review came with the optional EB16 multi-effects processor installed. This option is very impressive — indeed, I'd go as far as to say that anyone buying an S3000XL ought to consider the EB16 as near essential!

The structure of the effects implementation takes the form of four parallel stereo effects busses, two of which are capable of up to six simultaneous effects, with the other two each dedicated to a single stereo reverb. To take the simplest first, the two stereo reverbs, RV3 and RV4, can access up to 50 reverb presets. These presets are fully user-definable, utilising the basic reverb types of hall, room, gated or reverse. Typical parameters include reverb time, pre-delay and high/low-frequency damping. FX1 and FX2 are the multi-effects processors, where a series of ring modulation, distortion, equalisation, modulation effects, delay and reverb are utilised. Fifty user-definable FX presets are available. The RV1 and RV2 reverb processors sit immediately after the delay effect on the FX1 and

simulations, and some of the longer reverbs arguably lack the depth and richness of an outboard device. The shorter, ambient reverbs are superb and the rotary speaker simulator is subjectively amongst the best I've heard, onboard or outboard.

CONCLUSION

I love sampling — it's fun. I love synthesis — that's fun too. What greater pleasure can be enjoyed by mortals than sampling and synthesis in a single well-integrated package? (Well, OK, maybe there are one or two others...)

The more I worked with the S3000XL, the harder I fought to keep my cheque book under control. In its most basic, unexpanded form I doubt that I would have become quite as excited about this machine, though the new Multi mode is still impressive enough to warrant a thumbs-up on its own. But with the EB16 effects board installed, the S3000XL becomes a very powerful production tool indeed. In the past I have managed to produce several CDs with no more than two outboard effects processors. Faced with a sampler capable of accessing two stereo multi-effects processors (including reverb) and two stereo reverb devices before the sounds even appear at the audio outputs, the number of compromises involved in using a multitimbral machine suddenly dwindle dramatically.

If the S3000 series was not sufficient to make you trade in your S1000/S1100, the XL series may now just change your mind — it's certainly changed mine!

Dear Editor, when Akai come to collect the S3000XL I won't be in. Love, Paul...

SOS

FURTHER INFORMATION

E Akai S3000XL £1799 (basic machine); EB16 effects processor £399; IB304 Filter £78A. Prices inc VAT.

A Akai UK, Haslemere Heathrow Estate, The Parkway, Hounslow, Middlesex TW4 6NQ.

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No keyboards, no computers, no sequencers, no drum machines, no samplers, no guitars, no basses, nor any other popular music-making device was used to make the music on the Aquabats *Magiko* CD. Natural ambiances, improvised acoustic instruments, found sounds, voices and a simple philosophy (nothing is written down) is what the band is all about. What started as a one-off evening in January 1993, messing around with thumb pianos, roto-toms and flute, ended as a one-off evening in December 1993 launching our CD at a large party in Oxford. 'Earth Music' was born.

Tim Turan (35 — drums, voice, sound engineer), Frei Zinger (43 — flute, voice) and Sue Smith (45 — voice) make up the trio (everyone plays percussion). Each member has had over 20 years' experience of playing 'rehearsed band' music, including reggae, jazz, rock and pop. But even when

When I invited Frei Zinger and Sue Smith up to my attic studio on January 11th 1993, the only intention was to make a noise and record it, and the only plan was to be there at 8pm. Sue arrived carrying a suitcase, inside which was what seemed like the entire known universe of hand percussion, plus a few other objects as yet unidentified by science. Frei Zinger held a flute in one hand and a bag in the other. Inside the bag were about 15 guitar effect pedals. I contributed roto-toms and a collection of bells and kitchenware to the pool, and my children woke up next morning to find most of their noise-making toys missing...

RECORDING

Though the instruments were unconventional, the setup for recording them was straightforward: two Audio Technica AT4033, two Calrec 1050C, two AKG C1000 and two Tandy PZM microphones were used. As they're all either back-electret or condenser

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Strange Brew

Aquabats are an unconventional trio dedicated to the creation and recording of unconventional improvised music — using unconventional and often improvised instruments — which they call Earth Music. TIM TURAN tells the story.

bands improvise, they are still confined to the same format, timbres, loops and — most important — mentalities. Aquabats provides the perfect vehicle for realising our musical dreams, and the omission of normal 'band' instruments removes any pressure to compose and arrange in the traditional way.

Improvisation and natural ambiances — the Aquabats in action.

mics, they're well-suited to acoustic (and quiet) instruments, and using them in pairs gave us four different stereo options. The mics were patched to an Aries 16:8:16 mixer, and then to a very old Tascam 38 multitrack with no alignment, no noise reduction, and no brakes, running with varispeed down 12% at 15ips (for around 40 minutes of recording time), and recording to Ampex 456 tape. A Symetrix SX202 mic amp took care of the pure flute, bypassing the desk altogether. Frei Zinger also used a bug mic on the flute. I printed the signals to tape extremely hot, so that the gain on the tape returns to the desk could be reduced — and consequently the tape hiss. An Alesis 3630 compressor prevented the hot signals from melting down entirely, and the ever-wonderful Drawmer DS201 gate provided a useful degree of separation during duet or trio improvisations. All this was in one room, with up to eight live mics, and loudspeaker monitoring, dicing with feedback.

All the performances on the album are improvisations, and each track was started by who ever had the first idea. The first session produced the track 'Magiko': Sue and I played a duet on thumb pianos on tracks 1 and 2 of the Tascam, and another rather sick-sounding thumb piano was added on track 3. Frei Zinger added a flute motif, miked with one of the Calrecs, on track 4. He then improvised to his improvisation, using the bug mic into an MTR Gain Brain, which brought the mic up to line level, then to the effects pedals and straight to track 5, effects and all. A huge 18-inch roto-tom with a hydraulic head (two drum skins sandwiching a layer of oil) and tuned to long-distance elephant pitch (deeeep) was recorded to track 6. This drum was miked with an AKG C1000 two inches from the edge and about 2-5mm from the surface of the skin. The proximity effect lifted



Photo: J. Duggan

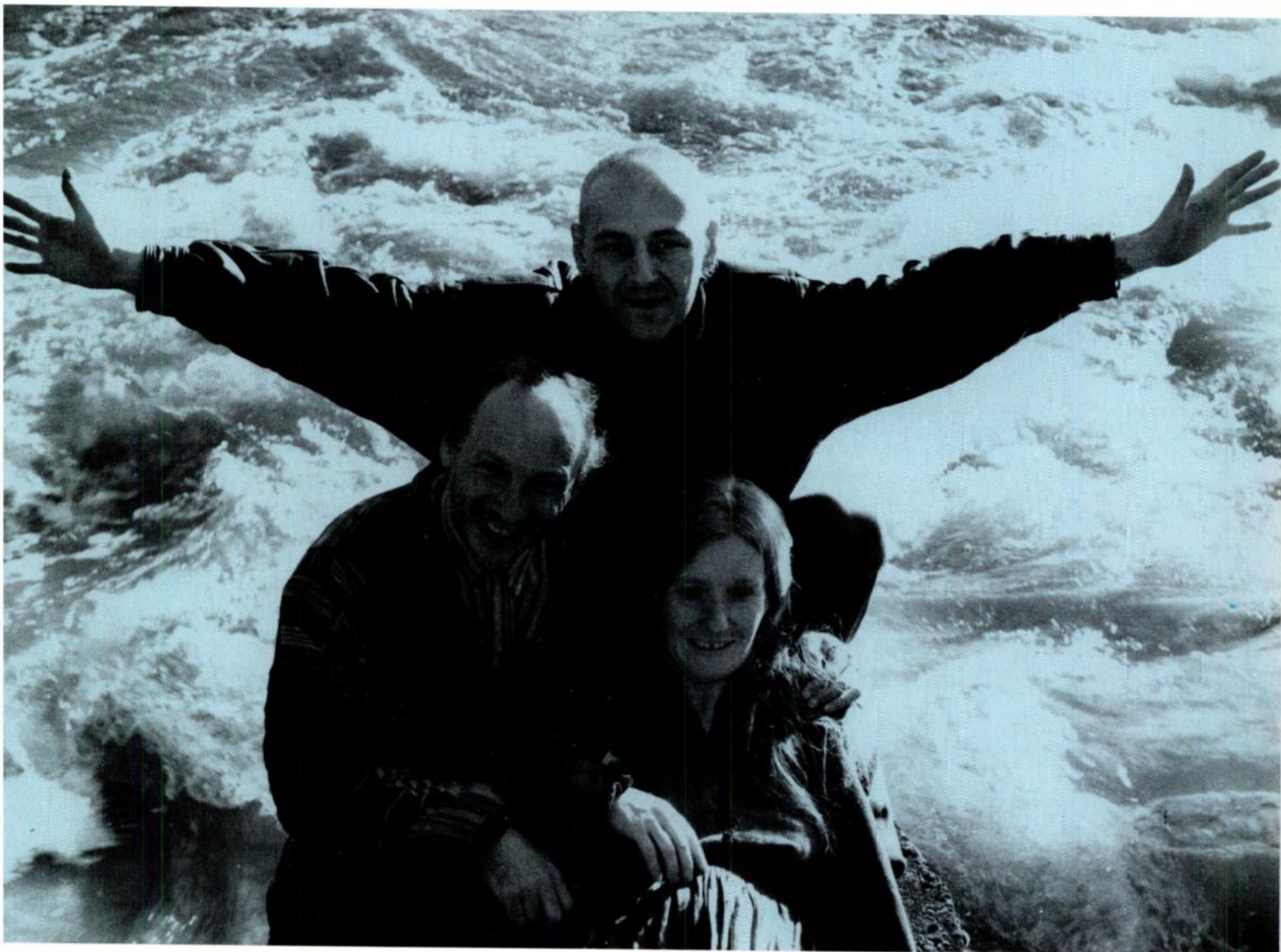


Photo: J Weston.

the bass end significantly, and a little EQ boost at 40Hz and cut at 160Hz made it rumble without overload. I had only to lightly flick the drum with one finger to produce an enormous sound. Two separate trio improvisations of various small percussion and voice sounds were recorded to tracks 7 and 8 respectively, using the Calrec mics.

Once all eight tracks were used it seemed logical to call a halt. No track bouncing had been planned, and there was more than enough material to create a mix. Enter the Alesis Midiverb II and the Yamaha SPX90 II and SPX1000. Only reverbs were used on this track, preset 5 from the Alesis on the thumb pianos, and the SPX90 II handling the percussion and natural flute, with a plate reverb set to three seconds delay (high cut at 8kHz, plus 5dB cut at 120dB to reduce the effects of wind rumble from an enthusiastic flute performance — works better than a Rennie). The SPX1000 was the 'feature' reverb — a 30-second Hall reverb setting, no filters or EQ, maximum density and diffusion, and no pre-delay. The voices and big drum were fed different amounts, and the stereo return was panned equally left and right. The telephone at the end of the track was a spontaneous event, captured with the vocals (Hello Mick Moorhouse!); the high-frequency component the phone adds to the reverb tail gave it a beautiful suspended quality.

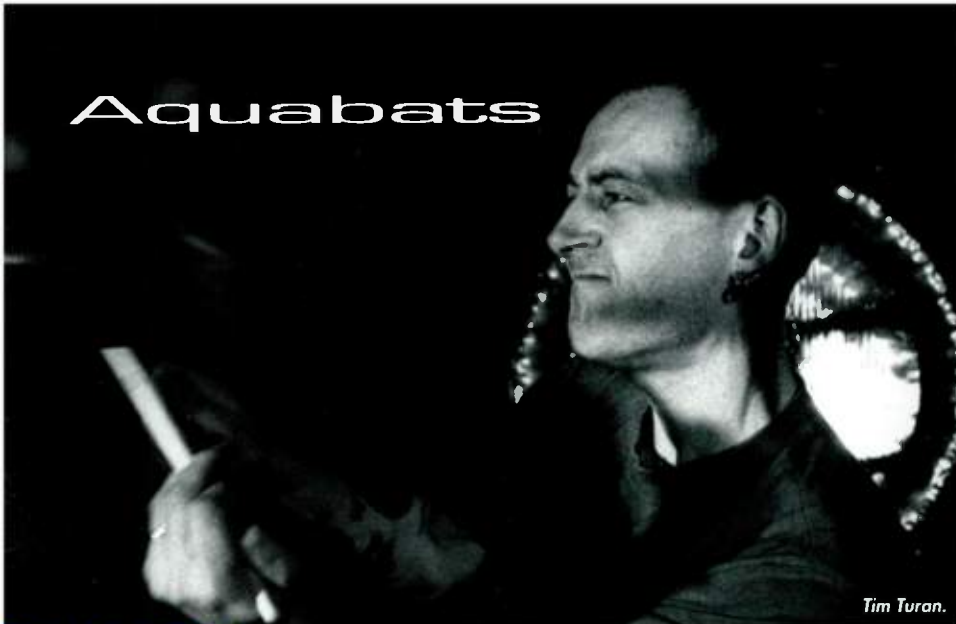
During the mix it became obvious that the things we perceived as mistakes on individual performances were in fact crucial elements which had a profound effect when heard in the context of a mix — and anyway, earth music should be as random and naturally spontaneous as the earth itself. The whole lot was mixed to a Sony DTC1000ES and by midnight we had an 'audio thing', three minutes and six seconds of sonic stupidity, conceived, performed, recorded and mixed in four hours. This process was repeated once a week for 14 weeks to derive 14 tracks.

AUDIO PHOTOGRAPHY

All the original sounds on the album were captured using microphones (ie. no line inputs except the effects, which weren't original sounds). We were recording, storing and manipulating a real-time image. Photography is a good analogy — like a lens, the mic frames and focuses the image, wide-angle and telephoto lenses could be compared to cardoid and hypercardoid mics, the tape recorder is your camera body, and the tape is the film. A dictaphone would be an instamatic! The mixing process could be compared to developing the image.

A Sony Pro Walkman cassette recorder with an ECM 929LT stereo mic was used to record all our natural ambiances. For an outlay of around £350,

Aquabats



Tim Turan.

Photo: J Weston

► this setup gives you instant high-quality audio 'snapshots' on a tried and trusted medium that doesn't seem to mind sea water, rain, heat, cold, lightning, sand, children or, more recently, airport X-ray baggage inspectors who couldn't handle what they were seeing on their screens as my holdall went through the machine (to them it was obviously a huge bomb, cunningly disguised as — a huge bomb).

The fourth recording session produced 'Thundermental'. I began recording thunderstorms 20 years ago, and on the night of August 30th 1992 I set up the Sony as usual to record an approaching storm. Thirty minutes later, a bolt of lightning at a distance of 30 metres took out my neighbour's garage. With the torrential rain as well, it was awesome — it had to go on the CD, and where better than at the beginning: The Big Bang.

So natural ambiences became part of the equation. The river Isis in Oxford city centre features on the track 'Flowtal'. The fabulous swirly phasing effect is a result of the 929 mic hanging by its own lead 1m above the water. Twirling around, the stereo mic received reflections from the stone walls of the bridge, including the direct sound from the river, and the mic movement caused phase cancellations and wild panning all over the place — no effects were used at all. You can also hear 'mud bubbles' ►

TAKING THE WOOKIEE: GOING UNDERGROUND WITH AQUABATS

In January 1994 we realised one of our dreams to record inside Wookey Hole, Somerset, a system of huge underground caves five minutes from Cheddar Gorge. Earth music, performed inside the earth — irresistible! We had the whole place to ourselves for four hours, and a guide with a nuclear torch kept us from getting lost. Despite the fact that the temperature inside the caves remains constant (9°C) throughout the year, so that it actually felt warmer inside than outside, it's not a friendly environment for video cameras, digital recording equipment, or PA systems. Limestone caves have superb powers of percolation, and since it was raining very heavily outside, this resulted in very heavy rain inside. It was also extremely muddy. Still, the Aquabats' spirit of adventure and the fact that it just sounds so damn good in there made it a very memorable session. And nothing blew up!

The session was recorded with the two AT4033

mics. Symetrix and Sony DTC77 DAT setup. The reverb inside the cave is haunting and dark, and lasts forever, and the effect on the flute, voice and drums is spectacular. We played two improvised mini symphonies and spent the rest of the time making single-shot samples of various instruments to DAT. We also had a scary time submerging two AKG C1000 mics into one of the drip pools. All you need is a couple of condoms! They are very strong and can accommodate a C1000 quite comfortably. Use tank tape (plumber's gaffa) to seal the end around the cable, and in you go! We spent the last five minutes hitting a 13-inch gong and plunging it into the pool, thereby choking the sound in a dramatic way and entertaining the crew at the same time. I should note here that this is a highly dangerous exercise and should not be attempted by anyone who might blame me in the event of a catastrophe.

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Aquabats

*"The fabulous
swirly phasing
effect is a result
of the 929 mic
hanging above
the water."*

► — try this recipe: submerge a china teapot in a bowl of water, put your finger over the spout, and a steady stream of bubbles comes out of the steam hole. Adjust the timbre by altering the water depth, then drop the pitch by two octaves using a pitch shifter, or in our case the Revox PR99 MkIII.

The natural sounds are transferred from cassette to the Revox quarter-inch for editing, before recording to the Tascam 38.

Lorries and a train were cut from a recording of birdsong, and most of the low end was removed with bass cut at 800Hz to remove the general city hum. The milkman was deleted from the thunderstorm with a razor blade, and a slight EQ cut at 3kHz cured the 'frying onions' effect produced by incessant rain on concrete. The low end was boosted by 4dB at 30 and 40Hz to try and achieve that cinematic rumble from the thunder. A 700Hz dip softened the sound of rocks being dragged by an aggressive November Atlantic on 'Aquabats', and a VC10 on its way to Brize Norton was cut from the river Isis in 'Flowtal'. The ambiances were mixed quite loud, because they were never intended to be an audio backdrop, but rather an integral part of the composition.

THE MIXING PROCESS

Mixing was made more complex by the nature of the instrumentation. This was not rock 'n' roll by any stretch of the imagination, and normal mixing practices simply did not apply. The range of frequencies in popular music is roughly 20Hz-20kHz, and a competent engineer will know where to put everything — after all, the instruments are nearly always the same. The frequency range on a track like 'Bonsai Greeting' or 'Wokonwater' is mostly 1-5kHz — ouch! Taming the harshness was a matter of placement rather than EQ or effects. Where sounds were placed in the stereo image was the most important factor, because once there was panoramic balance, the effects took care of themselves.

One effect that did not take care of itself was the



Frei Zinger.

Photo: J Weston.

DIY 3D process which features at the end of 'Zen Vox'. I've not yet heard any 3D system that convinced me that anything "went round my head", or anywhere else, for that matter. But I do love the effect of phase manipulation. The SPX1000 Flange B program allows you to adjust the phase of the modulation delay in 22.5 degree steps. One channel of the flange, 157.5 degrees out of phase, was sent to an Alesis MEQ230 graphic with the sliders set alternately to maximum cut and maximum gain (comb filtering). The other channel went to a DI box to utilise its phase button, and both channels then proceeded to the mixing desk. The sound being treated was a flute, recorded in mono with tons of distortion and feedback flange. On the desk at mixdown were five faders for the 3D flute, the mono track plus effects, the return from the graphic (panned left), the DI box (panned right), and the SPX90II set to a pre-programmed slow equal left and right autopan. A completely hit and miss, trial and error session of pushing phase buttons and adjusting the flanger's mod delay in 1mS increments produced some startling results. We found that the EQ determined how 3D (or NO D) the image became; one slider notch either way and the sound would collapse or expand out of all proportion. It was all experimental and I only had an hour to mix the whole track. What you hear on the CD is the abrupt end of the main theme, leaving the flute swirling around in its own effects. The 3D L&R channels are very slowly faded up, while the flute fades out, and the aux sends on the flute are pre-fade so that the signal still reaches the effects

SONIC TRICKS

An Aquabats' speciality is the vocal drone, and these appear throughout the album, in various forms. They were created using a DIY Infinite Reverb which utilises the SPX1000 patch called 'Echo Room'. This patch invites you to build your own space, giving you control of height, width and depth up to 100m, which can then be multiplied by up to 10 times, the maximum being 1000m cubed. There's nothing to stop you having a room 1000m x 5m x 10cm — except, possibly, good taste! Set the reverb time to 480 seconds and multiply that by 10 — 80 minutes! This is obviously not infinite, but when sent in small amounts via an aux send to a digital delay with a long delay time and a hold button, it becomes as infinite as your electricity supply allows. The secret to smooth drones (holding a low voice note), is to start droning (say "AHM") into the mic

and then slowly raise the level on the aux send to the reverb. This results in a sound with no percussive edges, which get caught up in the delay and create an obvious loop. Turn down the aux send as soon as you've finished droning, then repeat the process with a different note. Add as many notes as you like to build a huge chord. Then raise the reverb faders on the desk to hear the result. The drones that appear on the CD were recorded to one channel of the Tascam 38 and then treated with reverb in the mix to give it some stereo spread.

I mentioned earlier that the Tascam 38 was running at low speed (-12% at 15ips). We also recorded many sounds with varispeed at +12%, to slow them down during normal-speed playback. Although this practice is nothing new, some instruments can be totally

transformed. On the track 'Chakatu', a conga drum turns into a giant earthenware pot, and the flute plus a little delay becomes a distant ship's foghorn. Since recording the album, I have acquired two Digitech RDS delay units (four and eight seconds delay). All the delay parameters are adjusted with knobs, which means that you can change more than one at a time — unlike most digital delays with parameter buttons and scrolling menus. Because we improvise our material on stage in the same way we do in the studio, the 'knob' delays have become an important performance tool, used to widen, chorus, flange, double, loop, phase and occasionally even delay any sound we choose to throw at them, on the fly! Frei and Sue use the footpedal equivalent, the Digitech PDS8000 — six of them!

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MAGIKO

Magiko was reviewed by SOS Demo Doctor John Harris in the March 1995 issue. John liked the album enough to award it Top Tape, complimenting the band on "interesting playing, mixing and use of effects" and a "fine job" by Tim Turan. You can get hold of a copy of *Magiko* by writing to Aquabats, 6 Peel Place, Oxford, OX1 4UT.



► even though the fader is down. The send to the auto-panner is now slowly brought up and the image starts to swing. Finally, the speed of the pan is gradually increased to 'insanity' before cutting off, leaving a wake of reverb. There are many documented ways to alter perspective using phase, and our version just happened to work. Have a go yourself and see what you come up with by experimenting — or go and buy a Roland SDE330!

MASTERING

By the end of the 14th session we had approximately 74 minutes of mixed material on DAT. Let's make a CD!

Mastering was done in two stages. First, the mixes had to be arranged in the right order, with three crossfades to execute. Second, the resulting master DAT would get further EQ and hard disk computer treatment, before final transfer to PCM 1630 for PQ coding and glass mastering. The first stage utilised three DAT machines, necessary

for creating the crossfades. A Sony DTC77ES and Aiwa HDX1 played the tracks to be faded into the desk, and the result was captured on a Sony DTC1000ES DAT at 44.1kHz via the analogue inputs. We could only afford one day in the digital mastering suite at SRT, so the crossfades were done in our attic studio, spending hours getting them right.

Stage two meant a journey to St Ives, Cambridgeshire [*famous as the home town of a certain leading European hi-tech magazine!* — Ed] to use the mastering room at SRT. We spent a day with Nick Watson on a SADiE hard disk system, equalising each track with a very powerful Sony DSP1000 digital EQ. The individual nature of the timbres of each track made accurate EQ essential for an even-sounding CD. I took a pair of Sennheiser reference headphones to check the final version before the final transfer. To me, excellent headphones

are the equivalent of DI'ing into your brain. They are the microscopes that let you see the sound close up, before any room acoustics inflict themselves upon it.

One of the wonderful things about computer editing is the level of precision available. A tiny but audible click from a footpedal was removed in 'Thundermental'. A cartoon pencil under mouse control re-draws the offending waveform at single-sample resolution — try doing that on a Revox. Two stick clicks on 'Elberoto' were removed using fast, equal power crossfades. The analogue transfer grunge between the tracks was replaced with digital silence, and the starts and fades were 'tucked in' seamlessly. I edit 'books on tape', performing around 7500 quarter-inch edits a month, and seeing this sort of control in action for the first time was mind blowing.

After mastering to 1630 U-matic, the final job was to place the markers at the transitions of the crossfaded tracks for CD track numbering and PQ coding, which gives you the final track times and total length for the finished product. We took a CD-R home to the attic studio, sat back, listened, and knew we couldn't have done it any better — it sounded superb. Now we had to decide what it should look like and what we should say in the CD booklet. My sister happens to be an MA(hons) graduate from the Royal Academy, so she was sent a tape and given these simple instructions. "Use canvas and oils, then turn on the tape and paint what the music tells you. When the tape stops, turn it over and continue or stop. Do not paint in silence."

Paul Medley photographed the resulting painting, Steve Martin put all our text and artwork together on the Macintosh, and we sent the whole bundle off to SRT to finish the job. Eventually we received 1000 CDs and 500 cassettes. The entire project had cost us £3400, most of it on the artwork and post-production, and since its release we've sold over 2500 copies, without any distribution or mail order service. Every attempt to find a distributor has been greeted with the same old negative "sorry, can't find a pigeon-hole for you" approach. It seems there isn't a space for us in the great universe of music, so we exist in a parallel one!

SOS

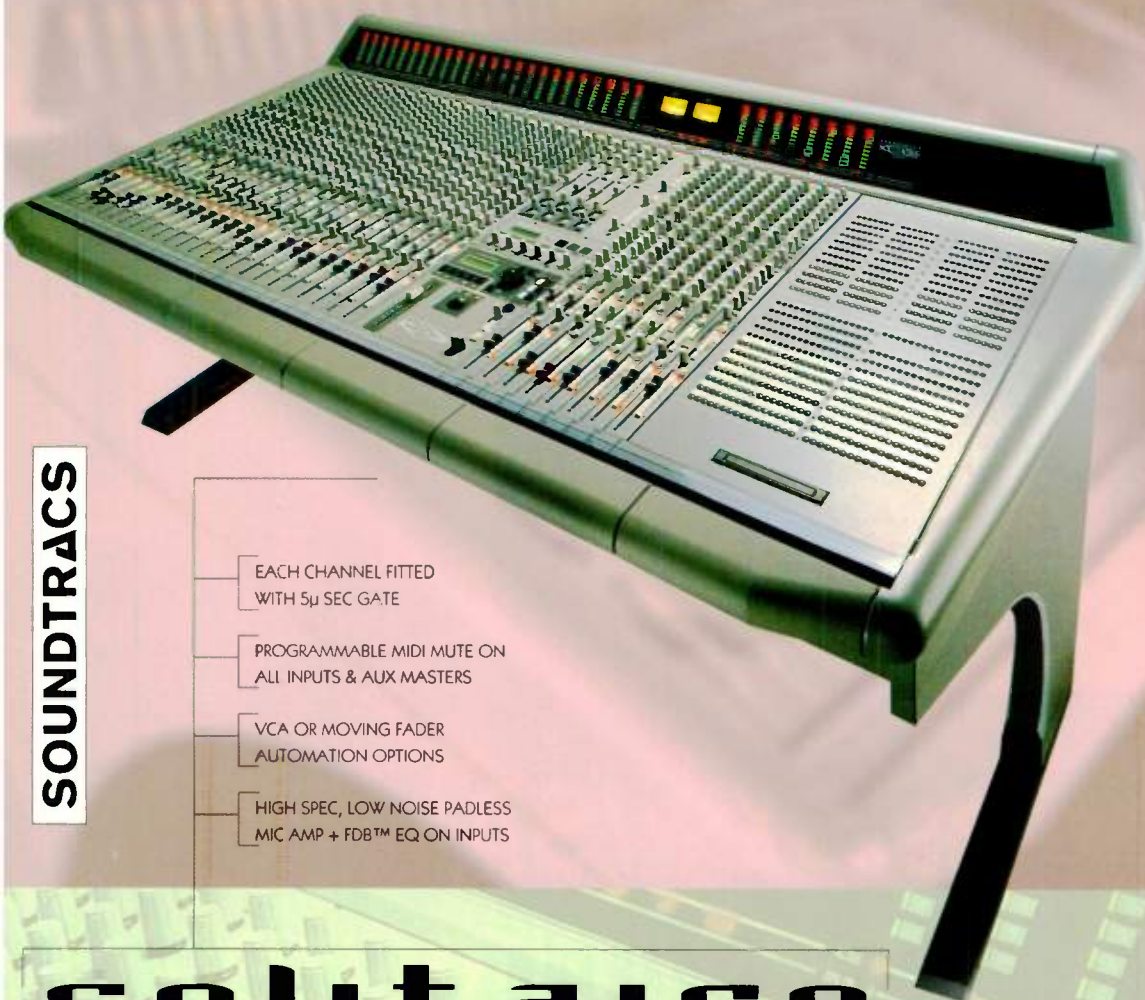
A SOFT APPROACH TO THE FUTURE

Our trip to Wookey Hole has inspired us to perform an Earth Symphony, consisting of four movements. (corresponding to the four elements — Fire, Water, Air and Earth.) We will improvise different atmospheres and digitally splice and crossfade the sections together. Since we started gigging, we've built up an impressive array of new toys, instruments and sounds. I can't say anything about the material because we won't know ourselves until it's recorded. All I can tell you is that there will be some unfathomable sounds and textures, some of them created using a version of a new 'morphing' idea I'm currently working on. The second half of the new album will again be a seamless journey, this time through the best moments from the live tape archive. Every show, all our busking, and special appearances have been recorded, and consequently there's over 60 hrs of material on tape and CD-R. It's going to be a tough

decision to select just 35 minutes from that lot.

This time the project is being put together on a newly-acquired Apple Macintosh with Digidesign Session 8 (8-track) and *Sound Designer* software. I'd already decided to buy a computer, and having used the Alesis and Tascam digital 8-track machines on previous projects, considered them both. However, it worked out that the cost of the Digidesign system for the Mac was the same as buying either of these machines. The ability to execute long crossfades, draw waveforms, and undertake absolute pinpoint editing allows Aquabats to realise the more unfeasible ideas that usually get binned, due to the analogue 'technical threshold' being reached. It also sounds good, which in my opinion is the single most important factor, and the reason why my Fostex E2 quarter-inch tape recorder is still used for production mastering.

If I have any niggles with the software, one is not having a scrub tool to 'rock 'n' roll' over an intended edit point in the Session 8 program. This is infuriating on a recording and editing system of this sophistication, and a basic editing requirement. In *Sound Designer II* the metering is inadequate, and the 5-band graphic EQ is actually a 5-band parametric — it just looks like a graphic. This results in a huge difference in control power (upwards fortunately). I'm sure, also, that more than one level of 'undo' could be written into the program, and it would be great to be able to change the gain of individual channels. The ability to import files would also help — maybe these facilities could be addressed in a future software upgrade? Still, aside from these few gripes, which were discovered during the first session, I think it's an excellent audio manipulation tool, and I couldn't bear to be without it.



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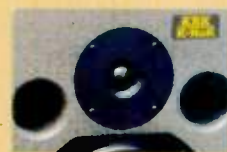
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8-Track

MAKING THE MOST OF 8-TRACK

In these days of practically unlimited MIDI sequencer tracks, just eight tape tracks can seem frustratingly few.

DAVID MELLOR passes on a few tricks to help 8-track users expand their recording horizons — including how to get 20 tracks from 8...

Mind

or electric instrument, or voice. There is a real difference, I feel, between a recording studio, where the main activity is capturing sound with a microphone, or the electrical signals from the audio output of a keyboard or sampler, and a MIDI studio, which in technical terms is more of a data-processing operation until the final mix. For a recording studio, the number of tracks on the tape is a very important feature of the studio, since the more tracks it has, the more flexible it can be. The MIDI studio, on the other hand, can generate a considerable number of independent musical lines without ever going to tape until the final mix. Multitrack tape is an optional extra in this case.

Whether you have a recording or a MIDI studio, there are several different types of work you may do. You may simply want to gain experience in recording with a view to going into it professionally, and from this point of view, 8-track is ideal, because you have to work harder to achieve a successful recording. You may want to be a songwriter and do song demos in your studio. Although publishers always want to be 'wowed' by the quality of the demo, despite what they sometimes say, if you get a really good singer and make a simple but supportive arrangement for the song, there's no reason why you shouldn't be able to sell your song from a demo originally recorded on 8-track. The simplicity of 8-track may even allow you to put more of your energy into the song, which will give you a far better chance of success than simply *having* the 'best' equipment. You may be an aspiring musician or band after a recording contract; making a really good recording, from a musical rather than technical point of view, is extraordinarily difficult — even if you play well live, and an 8-track studio will allow you to get all the recording practice you need. You can hire a pro studio to do it properly when you're ready.

It's a fact of life that home recordists and project studio owners will always want more tape tracks — but just because you have a limited number of tracks available, this doesn't mean that you can't compete with the big boys who have 24-track. The limitations of 8-track, a common recording format, are obvious — it takes more than eight instruments to make a modern recording. But you can get around this with a little thought and planning. Having 24 tracks is a brute force answer to the problem, but 8-track users can solve it with intelligence.

WHAT'S WRONG WITH 8-TRACK?

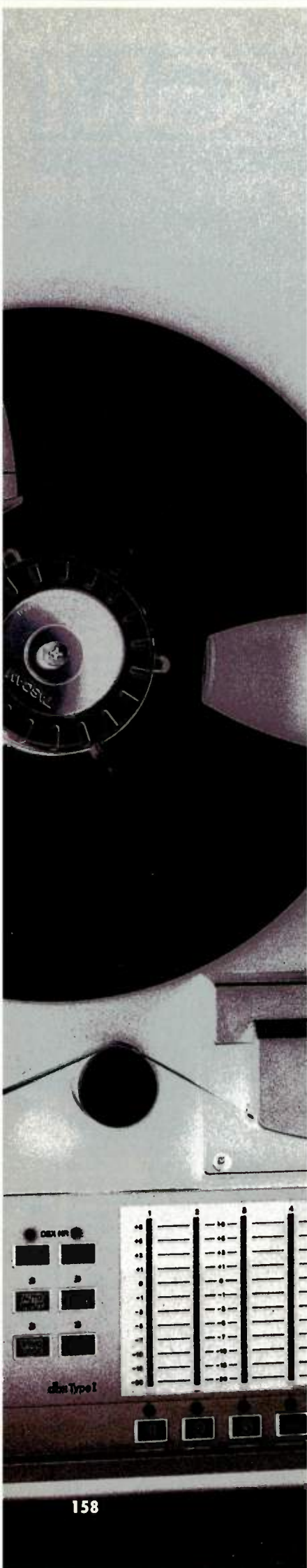
These days, 8-track recorders come in three varieties: analogue, digital and hard disk. I'm going to forget 8-track hard disk for now, because it's very much a minority activity, although I don't think I'll be saying the same thing this time next year. Your analogue 8-track will almost certainly be a Fostex or a Tascam, so I'll aim my comments at this type of machine. The sound quality of these recorders can be very good; I used to have a Tascam 38, and although the amount of noise it generated (it didn't have built-in noise reduction) used to irritate me, by the time I had finished mixing, carefully fading tracks in and out as necessary, I was usually more than pleased with the result. In fact, I have just made a CD including some of the tracks I made years ago with this machine and they sound better than more recent ones I did with a Fostex E16.

WHAT DO YOU DO IN YOUR STUDIO?

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STRETCH YOUR TRACKS TO THE MAX

Not all music demands a large number of tracks. A conventional band line-up may include drums, bass, a couple of guitars, keyboards, and a vocal. If you record drums and keyboards in stereo this adds up to eight — so no problem! Let's call it 'straight eight'





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RULES

1. Only one entry per person is permitted and this must be stamped by a Technics Pro Link dealer.
2. Employees of Sound On Sound Ltd, Panasonic UK Ltd, and their immediate families, are ineligible for entry.
3. No cash alternative is available in lieu of the stated prize.
4. The competition organisers reserve the right to change the specification of the prize.
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.

All you have to do to get your hands on this exciting new synthesizer is to correctly answer the questions below and dream up an appropriate tie-breaker. Then pop into your nearest Technics Pro Link dealer (there's a list on the following page) and have your official entry form stamped. Then post your completed entry to arrive no later than **January 31st 1996.**

QUESTIONS

1. What is the name given to the synthesis method employed by the WSA1?
.....
2. What is the name of the internal sound stored in Group 2 of the ROM1 memory?
.....
3. How many Drivers in total are available on the WSA1?
.....
4. What is the name of Technics' Japanese parent company?
.....

Name
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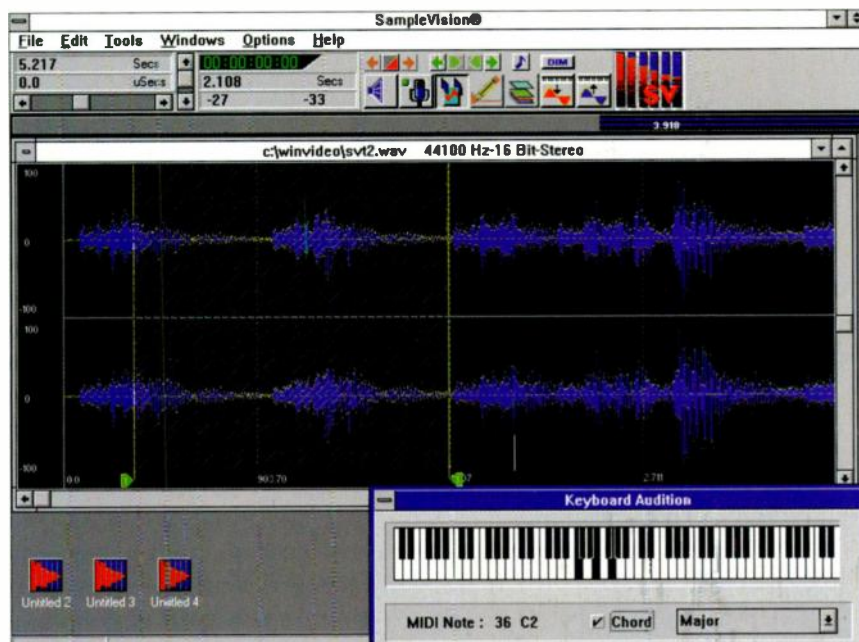
TIE-BREAKER

If you won the SX-WSA1, what would be the first song you'd play on it? Please use no more than 30 words in your answer.

.....
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SampleVision main screen.

SampleVision you can record new samples, import them from existing disk files, or download them from a sampler and then edit them in your PC. Once they've been edited, they can then be uploaded back into the sampler. You can also use the program as a hard-disk stereo digital audio editor, though don't expect any astonishing speed here. The program supports all sampler manufacturers — Akai, Roland, Ensoniq, and so on (see 'Samplers Supported' box).

SampleVision doesn't load a copy of its data into memory when you open a sound file — editing is done directly on the data stored on the hard disk, and it's (rightly) recommended that you make a backup copy before you start your editing session. The program can do this for you automatically if you check the Make Backup option in the File Open

Turtle Beach SampleVision

SAMPLE EDITING SOFTWARE FOR WINDOWS

PANICOS GEORGHIADES
and **GABRIEL JACOBS**
check out the long-awaited
upgrade of this popular
and professional
PC sample editor.

Turtle Beach's *SampleVision* was one of the very first sample editing programs for the PC, and it became something of a standard due to the absence of competition. Unfortunately, it hasn't seen any kind of update for a long time — until now.

Because of the large market created by the success of Windows, multimedia and cheap sound cards, Turtle Beach developed another program called *Wave for Windows*, an inexpensive sound editor which it later bundled with its sound cards. *Wave for Windows* is a comprehensive program which offers many editing features and probably the largest number of digital effects available in any PC digital audio editing program. However, it has two drawbacks — it can be slow, and it sometimes crashes during certain operations on large files. For about two years now, most Turtle Beach sound cards have included sampling facilities (as well as digital audio), so *Wave for Windows* was enhanced to include support for these — support such as downloading samples to sound cards and setting up loop points.

This new release of *SampleVision* is a marriage of the old *SampleVision* program and *Wave for Windows*. It includes all the features of *Wave for Windows* version 2, but is more stable. What's more, since the program is destined for handling samples (which eventually are loaded into a sampler's RAM) rather than disk-based digital audio files (which are much larger in size), processing speed can be considered relatively fast.

WHAT IT DOES

SampleVision isn't a front end for the sampling facilities found in specific samplers. With

dialogue box. If you're editing a huge file, you can turn this feature off and perform operations on the original file; if you do this, you can still use the Undo feature (which also is switchable).

You can record, import or open a WAVE file, and as the program supports drag and drop, you can drop a dragged WAVE file into the currently selected sound file window and it will be opened. If you drop a WAVE file onto the *SampleVision* icon when in the Program Manager, the program will start with that file loaded into window number 1.

RECORDING AND PLAYBACK

SampleVision's recording functions are accessed by clicking on the microphone icon located in the toolbar. A dialogue box appears, where you can set up various necessary options. Tape transport-style controls are used, and you can start recording or playback at the beginning, or at the time shown on the time counter. In addition, there are buttons that allow you to instantly jump to the end of the recording, the beginning, or the beginning of a selected area.

You can record at non-standard sampling rates, if your sound card supports them, and there are level meters which provide an animated display of the audio input, showing the instantaneous and peak input levels for each channel. (NB: Windows standard sampling rates are 11, 22 and 44kHz at 8 or 16 bits. *SampleVision* keeps a record of any errors occurring during the recording process — for example, if your hard disk can't keep up with the recording and it needs to be defragmented.

For both recording and playback, the program is extremely easy and intuitive in use, and has several little features that make life easier for you, ►

**TURTLE BEACH
SAMPLEVISION £199**

PROS

- Up to four samples open simultaneously.
- Easier editing on a PC screen.
- Waveform drawing facility.
- Lots of digital effects.

CONS

- Some functions are slow.
- The sonic quality of some of the effects (reverb for example) could be better.

SUMMARY

Surprisingly, with all this sampling going on, there's not much competition at the moment from any other company. If you do create and edit your own samples, *SampleVision* makes the job a great deal easier. Editing on a PC is faster and far more convenient than with a sampler, plus you get the advantage of storing samples on the PC hard disk.

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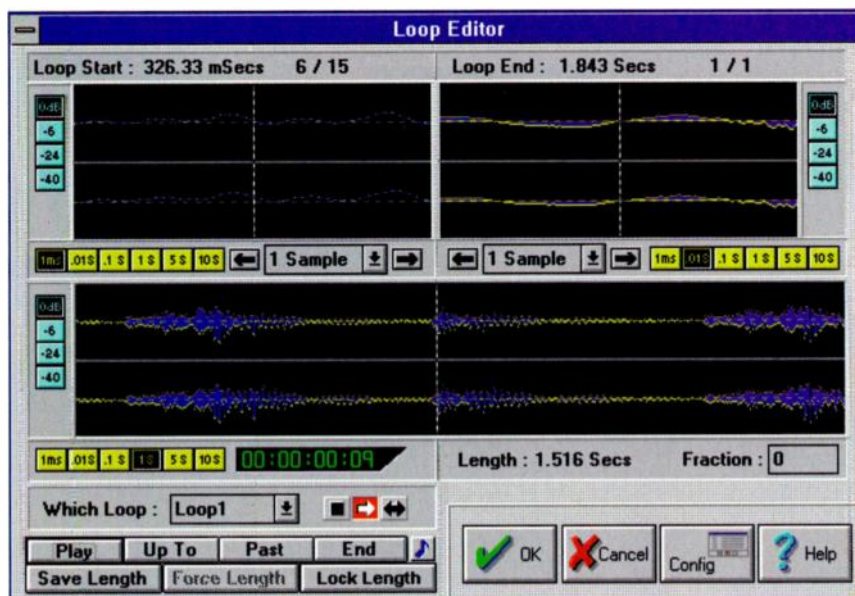
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Turtle Beach *SampleVision*



SampleVision's loop editor.

- ▶ such as a Dim button which allows you to quickly lower the output volume without having to switch to your sound card's mixer facility.

EDITING

Where this program really earns its money, however, is in the wealth of editing features it provides. For a start, it can handle (edit) four samples (files) at any one time — in other words, you can have up to four edit windows open simultaneously.

Editing tools range from simple cutting and pasting of sections of sound, either within a single sound file or across files, through performing transformations on the sound, such as adding digital effects like reverb, chorus and delay, or changing pitch, amplitude, or duration, to drawing sound waveforms freehand using the mouse and the program's pencil tool.

The Edit menu provides the cut and paste operations, with options to insert, paste over, fill and mix. You can also mute, delete or trim a selected region, and you can mix a part, or all the contents, of up to three sound files. Then there's the Tools menu, with a four-band parametric equalizer (18 presets, whose setting you can edit, as well

as adding an unlimited number of your own); a three-dimensional Fast Fourier Transform (FFT) analysis graph; fade in/out (with different curve options); crossfading; gain adjustment; muting; time reversal; amplitude inversion; time compression and expansion; pitch change; sample rate and channel conversion. There's also a selection of digital effects, such as flanging/chorus (24 presets), echo (26 presets), reverb (29 presets), and distortion (nine presets). All the parameters in these effects are editable, and you can save your own settings as new presets. The majority of the effects are genuinely usable, and some are even very imaginative. However, it's not all great — there

are no stereo delays (only mono) and some of the reverb algorithms make the signal rather dirty.

The looping facilities are rather good — you can view beginning and end points simultaneously, and view down to single-sample resolution. The program will search for zero points and good loop points.

When you're editing sections of sound, *SampleVision* can use the Windows Clipboard or its own clipboard, and you can switch between the two. This means, of course, that you can use two clipboards at the same time. But you can't copy data to or from another Windows sound editor program, even if you choose to use the Windows Clipboard. You can, however, copy data between *SampleVision's* four sound file edit windows which display both channels of the recording, though unfortunately (as with most budget Windows sound editors) you can't edit each channel individually.

CONCLUSION

On the whole, *SampleVision* is an excellent product that does the job it's intended to do. It has its faults, and some aspects of the program need to be improved, but you won't find many alternatives, and there are definite advantages to editing sound in the PC environment rather than in a sampler.

What are the advantages? To begin with, there are programs nowadays that will grab sound digitally off an audio CD through a PC CD-ROM

SAMPLERS SUPPORTED

(via MIDI Sample Dump)

Akai MPC60, MPC60 II, S2800, S3000, S3200, CD3000, SO1; Cheetah SX-16; Emu E11, Emax, Emax II, SP1200; Eventide H3000; Forat F16; Korg T1, T2, T3; Oberheim DPX1; Peavey DPM3/DPM3SE, DPM V3; Roland S750, S770; Sequential Prophet 3000; Yamaha TG500, SY85, SY99, TX16W, RM50.

(NOTE: MIDI Sample Dump uses MIDI communications and is slow at approximately 3Kb/second — it takes five minutes to transfer six seconds of CD-quality digital audio.)

Akai S1000/S1100; Ensoniq EPS, EPS16, ASR10 via MIDI and SCSI; Akai S900/S950.

SMDI devices (Kurzweil K2000 series, Peavey SP). Turtle Beach Maui, Tropez, Monterey and Rio.

drive, thus giving you the cleanest possible samples. Storing and cataloguing sounds is also cheaper and easier with a PC hard disk, so even if you exclude *SampleVision's* editing features (which are close to excellent), simply having a program for downloading and uploading sounds from a PC to a sampler via SCSI is worth it.

SOS

FURTHER INFORMATION

£ £199 inc VAT.

A EtCetera Distribution, Unit 17 Hardman's Business Centre, Rawtenstall, Rossendale, Lancs, BB4 6HH.

T 01706 228039.

F 01706 222989.

SYSTEM REQUIREMENTS

PC 386+, 4Mb of free RAM, Windows, compatible sound card with MIDI interface and/or Adaptec ASPI SCSI interface, with EZ-SCSI software for SCSI transfer to supported samplers.

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SOUNDCRAFT Absolute II	£ 200.00
NOVATION Bass Station	£ 125.00

ENSONIQ SQR	£ 250.00	TASCAM TSR-8 1/2" 8T	£ 940.00
DIGIDESIGN Audiomedia II	£ 640.00	TASCAM ATR60-8 8T	£ 750.00
DRAWMER E101	£ 295.00	TASCAM 38 1/2" 8T	£ 725.00
DRAWMER Multitracker	£ 100.00	OTARI MX5050 1/2" 8T	£ 795.00
ROLAND Dimension D	£ 300.00	SONY DTC1000ES DAT	£ 440.00
EVENTIDE H949 Harmoniser	£ 300.00	AKAI MG614 P'studio	£ 625.00
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Mixing Console c/w Bantam		SOUNDCRAFT SPIRIT Studio16	£1126.00
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8-Track

MAKING THE MOST OF 8-TRACK

Mind

In these days of practically unlimited MIDI sequencer tracks, just eight tape tracks can seem frustratingly few. DAVID MELLOR passes on a few tricks to help 8-track users expand their recording horizons — including how to get 20 tracks from 8...

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recording. But when one of the guitarists suddenly says, "Oh, I do a backing vocal on this track", you're in trouble because you don't have a spare track. Real drums don't sound very good in mono (although drum machines and sampled drums can), so your first option will be to record the keyboard on one track. Although most keyboards have stereo outputs these days, they don't sound bad in mono, and often you'll find you get a better mix because now you have to think a little more about where in the stereo image the keyboard should go, rather than just panning the outputs hard left and right. Now you really have filled all eight tracks, so if there has to be an overdubbed guitar solo on another song, you're going to have to bounce.

The best way to approach 8-track recording is to plan it carefully from the start so that all of your bounces are taken into consideration from the earliest stages. Recording doesn't always work out like this, but it's better to modify a plan than to muddle your way along all the way through. When you know in advance that you don't have enough tracks, one option is to:

- Record six basic tracks, probably without lead vocal or important solos.
- Mix them onto two tracks of the multitrack tape.
- Erase the others and record six more tracks.

This has three disadvantages. The first is that on an analogue recorder you will lose some quality, but if you have to do it, you have to do it. Many great recordings from the '60s and early '70s were done like this and technically they still stand up today. A little bit of tape hiss sometimes gives excitement to a track, and I occasionally find myself wanting to add it to my digital recordings. A more significant disadvantage is that you now have an additional mixing stage, and you have to

lose very much in the DAT transfer. By the way, on analogue 8-track, you shouldn't use either of the edge tracks for your stereo pre-mix, since they are more prone to dropouts than tracks 2 to 7.

CLEVER COMBINATIONS

I find that, by using techniques I shall explain shortly, I don't need to go through the pre-mix process described above and that I can get all the tracks I need by careful bouncing as I go along. When you're short of tracks and you know you're going to have to bounce, the key is to listen for combinations of instruments that you can mix easily together, and know before the recording is finished that they are going to be OK. You can usually mix backing vocals, for instance. Where a song calls for two or three backing vocals, if you record them at an early stage when there are tracks to spare, you can mix them to one track safe in the knowledge that no-one is likely to want to come back and say, "Can you lift the middle harmony a bit?". Once in a blue moon perhaps, but no more often than that. Sometimes you'll find that there are two or three different instruments that form a natural group, and you can bounce them onto one track without feeling that you might have later regrets. What doesn't work is bouncing dissimilar instruments that have different roles in the arrangement. Trying to bounce lead guitar, rhythm guitar and bass onto one track will not work in 90% of cases — you'll nearly always want to change the balance later. Bouncing bass and drums onto two tracks in stereo isn't ideal, but it stands a good chance of working, because together they form the rhythm section of the band. When doing this type of

20 TRACKS FROM 8

Suppose you have a band, with two backing singers (one male and one female), and two multi-talented friends, one of whom can play a selection of brass instruments and the other who can play strings. (This is just to make a point, by the way!) By careful planning, you can record each instrument and vocal separately and end up with the equivalent of 20 tracks on your 8-track recorder (see diagram). Because each group of instruments should be easy to mix within itself, there is no reason why the final stereo mix should be anything less than perfect.

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
1	Bass guitar	Backing vox female 1		Trumpet		Violin		Guitar solo
2	Guitar	Backing vox female 2		Trombone		Viola		Keyboard solo
3	Drums L	Backing vox male 1		Alto sax		Cello		Lead vocal
4	Drums R	Backing vox male 2		Tenor sax			Strings	Strings
5		Backing track L	Backing track L	Backing track L	Backing track L	Backing track L	Backing track L	Backing track L
6		Backing track R	Backing track R	Backing track R	Backing track R	Backing track R	Backing track R	Backing track R
7	Keyboard L				Horn section	Horn section	Horn section	Horn section
8	Keyboard R		Backing vox	Backing vox	Backing vox	Backing vox	Backing vox	Backing vox
	6 Tracks		10 Tracks		14 Tracks		17 Tracks	20 Tracks

give this 'pre-mix' as much attention as if you were making the final mix. The third disadvantage is, of course, that once you've erased the six original tracks, you've burnt your bridges and there's no going back!

- As an extension of this technique, you could:
- Record eight basic tracks.
 - Mix to DAT.
 - Re-record this mix onto a fresh section of the 8-track tape.

You can now always go back to the original tracks if you really need to, but it's more a case of giving you the *feeling* of security rather than anything else. Of course, you now have yet another generation of recording, but you won't

bouncing, as well as considering the balance of the track, you have to consider the final stereo image. My imaginary band has two guitars, but you can't bounce them together because a) they will probably clash and not be individually distinguishable, and b) you will need to balance the stereo image evenly between left and right, and panning one guitar half left and one half right will help you to do this.

EXTRA TRACKS

Everyone yearns for extra tracks, and if you own either an Alesis or Tascam modular digital multitrack, you'll probably be saving up for another one to run in sync. But for the price you

The diagram above illustrates a technique of track bouncing to get 20 tracks from 8. The red lines represent track bounces, black text shows original tracks, and red text shows bounced tracks.

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MAKING THE MOST OF 8-TRACK

ANALOGUE LIMITATIONS

Whichever analogue 8-track you have, as long as it's in good condition, you can make a recording of professional standard — within certain limitations. The limitations are that noise will be a problem (major or minor, depending on whether you have noise reduction and of what type), and that narrow-gauge analogue recorders seem to have a way of making the sound 'smaller' in an undefinable, but most noticeable way. This really becomes a problem when you copy a recording, and since getting the most out of 8-track is going to involve 'bouncing' tracks, you could be in for an 'Incredible Shrinking Sound' experience! Digital 8-track, on the other hand, doesn't have a noise problem for all practical purposes, if you use it properly. And the sound stays just as 'big' even if you copy it several times. So where the analogue user has to be very sparing with bouncing, the digital 8-track owner can bounce as much as he or she likes, within reason.

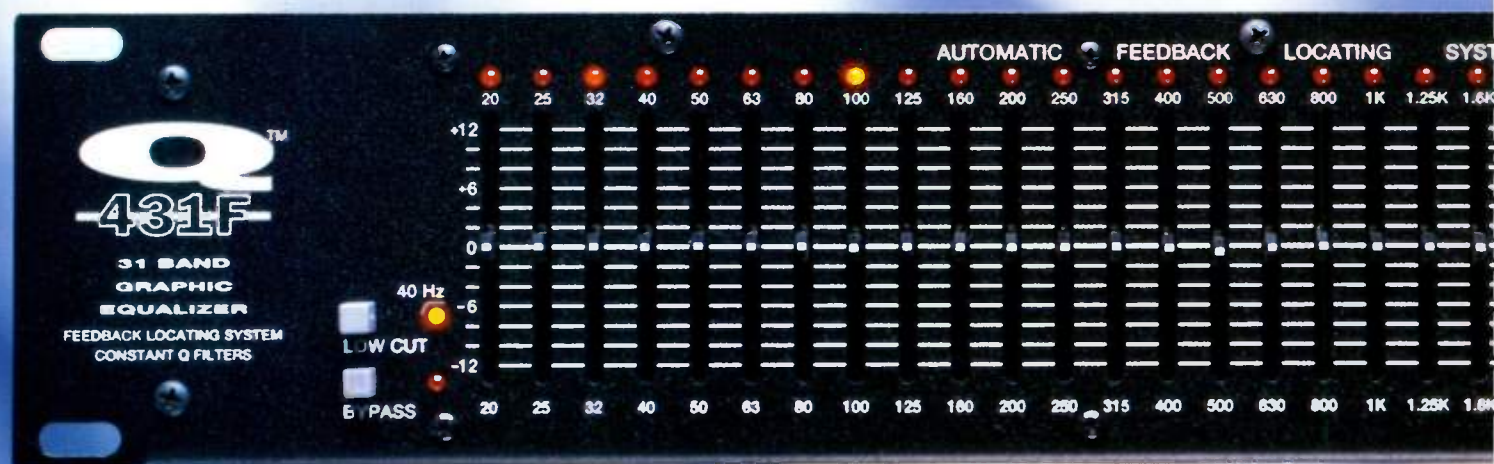
► pay for an extra machine, you might consider the added functionality and versatility you can get from a hard disk recording system. I use an Apple Macintosh with a Digidesign Audiomedia II card and *Sound Designer* and *Deck* software. With this combination I can get stereo and 4-track recording, and synchronise it with my ADAT 8-track. There are other systems that can do this, and in the near future I can see the entry price of hard disk tumbling, since the PowerMac has arrived with enhanced data processing capability as standard.

Sound Designer has been around some time and is fairly common, so it's worthwhile describing how it can record stereo audio synchronised to timecode. It can't record two tracks individually, so it is best to transfer two previously-recorded tracks from tape. Digidesign suggest that with the Audiomedia II card, sound quality might be compromised if the timecode source isn't as stable as timecode from a digital multitrack would be, but in practice I didn't find any serious drawbacks when synchronising to a Fostex E16. Of course, with an analogue 8-track you'll lose a

track for timecode, so the hard disk system only gives you one extra track, but that 12.5% extra capacity may just make all the difference. If you use a digital multitrack, you have the option of adding an extra card to your machine (or a BRC to an ADAT) to record timecode as part of the data on the tape, so you still get the full eight audio tracks. The Fostex RD8 has this capability as standard. If I want four more tracks, I can use *Deck*, which doesn't synchronise so well on record, but can accept synchronised *Sound Designer* files, which will then play back perfectly in sync with the tape. One advantage of using something like *Deck* is that I can easily correct any timing inaccuracies in parts of a track on the screen of the computer.

If the ultimate in extra tracks is to get a second digital multitrack and work on 16-track, you can always hire one, but this will cost you extra money once you go one over the eight. If you can put off hiring the extra multitrack until the mixing stage, you'll obviously save money. I did a CD's worth of recording where, once I had filled eight tracks, I did a rough mix to mono into *Sound Designer*, and then copied this back to a fresh tape at the same timecode location, so that I could record up to seven extra tracks. My intention initially was to hire an extra Fostex RD8 or ADAT with BRC just for mixing, since I would have two tapes with

BE ILLUMINATED



- When feedback occurs the Automatic Feedback Locating System™ automatically lights an LED over the correct slider. The LED will stay lit for a few seconds if a feedback stops before an adjustment is made. If the feedback frequency is between two sliders, the Automatic Feedback Locating System will light the two appropriate LEDs, with variations in LED intensity to indicate if the feedback frequency is closer to one slider or the other. And if a different feedback occurs while

identical timecode. I might even have been able to synchronise them with standard ADAT sync, but I thought that might be pushing my luck a little. As it happened I didn't need to go this far and I was able to transfer the extra material from the additional tape into my computer. I didn't have total confidence that sync would be perfect and I did expect to have to make adjustments, but I need not have worried — sync was perfect.

The idea of using an 8-track recorder to supplement a MIDI system is now nothing new, but I think it's worth mentioning some ideas that can be applied in such a situation. The problem with working with a MIDI sequencer is that sounds are very easily 'lost' — what was progressing well one day seems to have totally changed the next. Tape is permanent until you erase it accidentally, as long as you don't go near any powerful magnets or play with it in the bath. The other advantage of tape is that it is very portable. There is a big difference between taking a tape you've been working on into a professional studio, and taking your entire MIDI system! I've mentioned how a hard disk recorder can allow you to record 16 tracks on two tapes with only one recorder, at which point you hire a second one for mixing. You can do this with a sequencer just as easily, more easily perhaps, and then take both tapes to a pro studio for mixing.

SELL 16 AND BUY 8?

Would it be a good idea to sell your analogue 16-track and buy a digital 8-track? Would a sensible person do this? I did it, and I'm quite content with my decision. I sold a 16-track tape recorder which was still in very good condition, but wasn't quite satisfying me in terms of sound quality. I thought long and hard and decided that I could manage on 8-track, and that I would be able to achieve reasonably good results, especially considering that I'm not keen on over-complex musical arrangements. What I didn't expect was that the results would totally surpass what I had been doing before! The solidity of digital sound, in comparison with narrow-gauge 16-track, and the fact that you can bounce as much as you like without significant degradation, has amazed me and the people I work with. Of course I would like an extra eight tracks, but rather than buy an additional digital multitrack I'm quite happy to continue working on 8-track until the 8-track hard disk market settles down a bit and I can choose a suitable model, with ADAT interface of course, at my leisure. The moral of this story is that 8-track is a viable way of working, particularly digital 8-track, and you need not sit and pine for a 16-track recorder to enable you to achieve the heights of your ambitions. You can do it now, on 8-track. Why wait?

SOS

THE Q 431F EQUALIZER WITH AUTOMATIC FEEDBACK LOCATING SYSTEM



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an LED is lit, the Automatic Feedback Locating System instantly lights the other LED. • The Constant Q filters control slider frequency-band width so slider adjustments won't affect adjacent slider frequencies. Constant Q filters also improve headroom at high cut/boost levels. Compare to other EQs using inferior gyrator circuitry which doesn't limit band width.

The Holy Trinity?

KORG TRINITY MUSIC WORKSTATION

Korg shook the hi-tech recording world in 1988 with the introduction of the M1 workstation.

With their new Trinity range, Korg are attempting to update the workstation concept for the 1990s. In the first instalment of this two-part review, GORDON REID assesses how they have fared.

KORG TRINITY £2395

PROS

- The power.
- The flexibility.
- The sounds.
- The keyboard.
- The style.

CONS

- The 32-voice polyphony.
- The four outputs.
- The price.

SUMMARY

This is an extremely powerful and flexible workstation. Other manufacturers had better get designing now.

The last time I took a synthesizer out of its box and felt a genuine tingle as I did so was back in 1987 when I bought my Roland D50 — simply because I knew that *this* was the synth that was going to propel me to rock superstardom. Years later, that dream is a fading memory of youth, but the feeling is back again — the feeling that what I am unpacking is not just a new instrument, but a new *class* of instrument. Mind you, I shouldn't get too carried away. I first played the prototype more than two months ago, and I've had a pre-production unit at home for a few days now. But this is the real thing. It's heavy, it's freezing cold, it's silver, and it feels (to quote *2010*) like something wonderful's going to happen. It's the first production Trinity in the UK. And, for the moment at least, it's mine.

BASIC OPERATION

Of the Trinity range (for more on the different versions, see the 'Introducing the Trinity' box elsewhere in this article), it's the standard model which is under review this month. The first thing you notice when you play it is the excellent 61-note velocity- and channel aftertouch-sensitive keyboard. This represents a vast improvement over the spongy lump found on the front of Korg's 'X' series instruments — although curiously, while the Trinity's sound generation system understands polyphonic aftertouch, the keyboard isn't capable of producing it.

A modulation joystick lies at the heart of the performance controls, together with a pressure-sensitive ribbon controller that offers two modes of operation: MIDI controller 0 (left extreme) to 127 (right extreme); or two independent controllers to the left and right of the centre point. This is equivalent to the ribbon controller on the Korg Prophecy's log. There are also two assignable buttons.

The operational heart of the beast is a touch-screen that looks capable of receiving satellite as well as MTV. Far from being cosmetic, the screen is the only means of accessing some of the Trinity's

functions. However, it also imparts the major benefits of a remarkably simple user-interface with no cursor keys (hooray!) no Shift keys (yippee!) and no multi-function buttons other than Record/Write and Start/Stop. It takes a few hours to get the hang of things, but once your finger develops an intimate relationship with the screen, everything starts to go swimmingly.

Three groups of dedicated buttons lie alongside the screen. These are the programming controls (Combi, Prog, Seq, Edit, Global, Disk, Compare, Bank, Pages 1 to 8), the numeric keypad (0 to 9, +, -, Enter) and the sequencer controls (Pause, Rewind, Forward, Reset, and the aforementioned Rec/Write and Start/Stop). The only other controls are a data wheel (24 increments per rotation), increment and decrement buttons, and the value up/down slider. Simple, huh?

Editing is carried out within a number of 'pages', each of which may have a number of sub-pages that you select by touching small Hypercard-esque tabs. So, for example, whereas Program Edit Page 1 has two screens, Page 2 offers three or five screens, the number being determined by whether the selected Program uses a single, or dual, oscillator(s). When you've decided which parameter you want to change, you touch its name or the associated value. You can then use the data slider, the spinwheel or the up/down buttons to carry out the edit. Alternatively, you can leave your finger lightly resting upon the parameter, and after a second or two, a large on-screen fader or knob will appear, and you can move this up and down, or sweep it around as appropriate.

PROGRAMMING ARCHITECTURE

Those of you acquainted with the M1 or 01/W will have no difficulty finding your way around the Trinity. If anything, the manuals are more impenetrable than the instrument itself, and a few hours' experimentation leaves you with the distinct impression that (i) you've got to grips with the thing, and (ii) that there are so many creative possibilities that it'll take years to *fully* get to grips with the thing — the two views are not inconsistent. The ACCESS programming system echoes straightforward subtractive analogue to a degree that DX owners would have killed for 10 years ago. Even the 01/W's wave-shaping has been discarded. On the other hand, there's so much of it that the number of sonically meaningful permutations is truly staggering.

The basic building block, as with almost all workstations, is the PCM multisample. The Trinity has 374 of these (see box) covering the full range from rock guitar, bass and drums, to classical instruments and percussion, ethnic instruments and percussion, and the inevitable sound effects. A Program can have one or two oscillators, each of which can make use of two multisamples placed in locations referred to as 'high' and 'low'. But don't get carried away... you can only access two PCMs simultaneously. The names refer to the samples that lie above and below a MIDI velocity split. Nevertheless, each pair of PCMs has its own velocity range and split point, so dual-oscillator sounds offer some intriguing layering possibilities.

Each oscillator has an associated resonant (but not self-oscillating) multi-mode filter, with a



dedicated five-stage ADBSR envelope. But each filter is, in fact, two independent filters that can be used singly, placed in series, or combined in parallel. Each of the four can be a 12dB/octave low-pass or high-pass filter, or a 6dB/octave band-pass or band-reject filter, so analogue-style resonant 24dB/octave filters are but a finger-poke away. The filters will distort if

overdriven, although whether this is a good or bad thing is purely a matter of taste.

There are independent LFOs for the oscillators, filters, and amplifiers, and each offers 19 waveforms: four triangles, four sawtooths, two rectangles, two sine waves, 'Guitar', and six 'Random' waves. 'Guitar' is a skew waveform which Korg have

Korg Trinity

INTRODUCING THE TRINITY

For those of you who might have missed last month's preview, the Trinity range updates the workstation concept for the '90s, and consists of four models: the 61-key standard Trinity, the 61-key Trinity Plus (which includes the so-called Solo board — essentially the guts of Korg's physical modelling monosynth, the Prophecy), the 76-key Trinity Pro (which also includes the Solo board) and last but certainly not least, the 88-key Trinity ProX, which includes the Solo board and a 4-track digital recorder with built-in 345Mb hard disk. SCSI and S/PDIF connections are standard on the ProX.

The Trinity range is expandable by means of add-on options. The Solo board is available separately, as is the digital recorder, and an ADAT I/O board is also planned. In this way, you could in theory buy a basic Trinity and take it up to ProX spec (discounting the number of keys) when you have the means to do so.

- ▶ derived from analysis of guitarists' vibrato and, quite correctly, this acts only in the direction of increased pitch. The first three 'random' LFOs are sample & hold, random level, and random time interval, while the last three are smoothed (and therefore more 'analogue') versions of the first three.

Attaching the LFOs to specific modules — filter, oscillator, and so on — is fairly meaningless, because you can direct each one to any destination desired. In fact, when it comes down to it, as on the Prophecy, just about everything can be routed just about everywhere, and everything can be modulated by just about anything.

Once you've created your sound, you can assign it to a user-definable category — strings, brass, pianos, nose-flutes or whatever — and then, when you're in desperate need of a nose-flute, you can select the appropriate category, and the Trinity will only offer you nose-flutes. Neat.

A Program can also be derived from a drum kit, and there's space for 12 of these within the Global controls. Each kit is fully programmable, and you can select your sounds from a total of 258 drum and percussion PCMs, many of which have been sampled with ambience. Once placed in a kit, each drum has its own panning and send, and you can assign whether an individual drum passes through the filters or not. And, paralleling the conventional Programs' oscillators, each key in a drum kit offers a velocity switch function.

EFFECTS

The Trinity's effects structure is totally innovative, although I'm sure that it won't be long before other manufacturers imitate it. There are 100 'Insert' effects, each of which is defined as 'size' 1, 2 or 4, and you can assign any of these to a Program provided that the total 'size' does not exceed four. However, it's not the number or even the quality of the effects that's radical: it's the manner in which

they attach themselves to the Programs — even when those Programs are accessed within Combi or sequencer mode (for more on this, see the 'Korg Viewpoint' box elsewhere in this article).

There are also 14 'Master' effects: a modulation section with six effects, and a delay section offering eight delays and reverbs. These are fed by each Program, Combi or Sequence's Send 1 and Send 2 respectively (although the modulation group can also feed the delay group) and the main stereo outputs are then fed by Return 1 and Return 2. These Returns (plus the direct left and right outputs from the unaffected Program) then pass through the master EQ, a simple 2-band treble and bass equaliser. Simultaneously, the panned outputs from the modulation section and delay section feed the Trinity's #3 and #4 outputs.

Despite the tremendous power of the effects sections, and their seeming complexity, controlling them is a doddle. Block diagrams display the routings, and include each effect's name, size, status, pan, width, and the values of the sends and returns. The system is much simpler to use than a rack full of effects units and patchbays, and Korg should be commended for an excellent piece of user-interface design.

COMBINATIONS

Combi mode is essentially the same as that found on previous Korg workstations. You can combine up to eight Programs, with independent polyphony, delays, MIDI filters, and effects sends for each. Each Program may also have its own pitch and scale, with independent key ranges and slopes, and velocity ranges and slopes (slopes are fade-up and fade-down areas that allow you to crossfade rather than butt-edit velocity maps and key ranges — superb!).

You can map the Programs within a Combi onto eight insert effects busses, and the total permitted 'size' of the Insert effects is doubled to eight.

THE KORG VIEWPOINT: PAUL WALKER

Paul Walker's name will be new to many SOS readers. A music graduate who gained his qualifications alongside Paul Simon and Herbie Hancock at Berkeley, he taught music and composition for three years before joining Korg, since when he has demonstrated, written styles for, and programmed sounds for every major Korg keyboard and workstation from the O1/W onwards. I asked him what he feels the Trinity's strongest attributes are. His first word surprised me...

"Separation. That's what makes the Trinity so special. That's not to say that the new PCMs aren't important. They are — so much so that the guy who voiced the M1 wouldn't allow any previous PCMs into the new ROM. But take the 'X' series... it's good, very good, but no matter how good the sounds are, it's always going to be limited by its two effects. All workstations suffer from this — you programme a cracking good sound, but when you stick it in the multimbral mode it sounds nothing like the original. With the Trinity, it does. That's what I mean... the sounds remain separate, even in Combi mode.

"Look at it this way... the concepts developed for the

M1 have been evolving for eight years. They started life as AI synthesis, then evolved into AI², but the basic principles always remained the same. The Trinity represents a revolution, not evolution. It's as radical today as the M1 was back in 1988."

But the M1 had six outputs. Why have you limited your newest flagship to just four outputs? After all, that imposes a significant limitation upon people who may want to use classic or additional effects units.

"You've got to appreciate that, as a workstation, the Trinity is designed to be an 'all-in-one' instrument — a complete music studio in a single unit. I'll even go so far as to say that any other view is missing the point. You've got to differentiate between sound sources and a workstation. Another bit of gear may have eight outputs, but it won't give you an end result... it's just a sound source. The Trinity is so much more. Don't forget, either, that most dedicated multi-effects processors can still only deliver two separate effects. But with over 100 effects, the Trinity is downright frightening. And that's before you even see the editing facilities. I'll say it again: with this much control and separation, why do

you need external devices? The effects are simply that strong."

I have to say, I remain unconvinced. And what about the limitation to 32-note polyphony?

"The Trinity is *truly* 32-note polyphonic. It's not limited by patches that need four partials to make them sound right. It's not one of those instruments that's advertised as 64-note polyphonic and then becomes just 16-note polyphonic if you're after half-decent sounds. I've seen our Canadian demonstrator present his demo saying, 'Listen to the ambience on that snare drum — isn't it brilliant?' and everybody in the audience nods in agreement. Then he says, 'oops, sorry. I forgot to put the effects on...'. With sounds like that, 32 notes is enough. And if your piano part (or whatever) needs 16 or more notes, it's likely that it's a solo — certainly a feature — so you don't want to be putting 97 million lead guitars and strings on top."

Hmm... So how would you sum up the Trinity?

"It's sexual. Would you stay up till 5.30 or 6.00 in the morning with a member of the opposite sex? I guarantee that that's what you'll do with the Trinity."



The performance controls: Joystick, ribbon controller and assignable buttons.

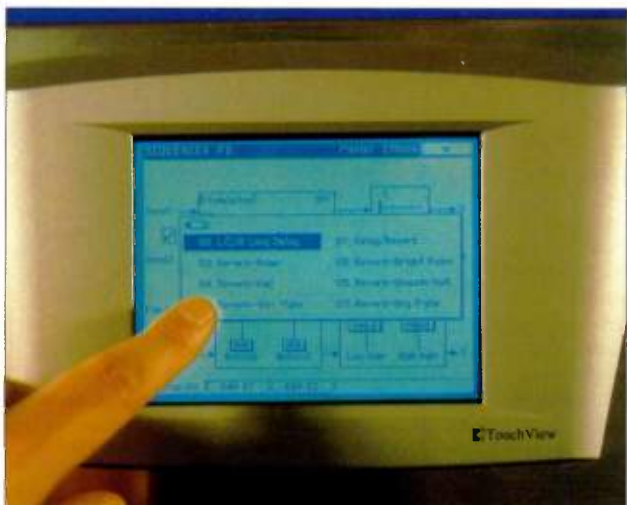
Consequently, each Program in an 8-part Combi can have its own size 1 effect. Alternatively, the busses allow any of the Programs to access any of the others' effects, provided that the magic size of 8 isn't exceeded. Sounds complex? It isn't when you have the signal path laid out on the screen. Finally, and as in Program mode, all Combis may make use of the master effects and master EQs.

SEQUENCER


The 16-part, 60,000-event sequencer has a resolution of 192 ppqn, and combines many of the best features of track-based (tape-style) and pattern-based sequencers. You can assign a pan, volume, and mute status to each of the parts, and the Mix sub-pages take care of reserved polyphony and the effects sends. Other pages handle track parameters such as MIDI channel, MIDI filters, temperament, pitch, key-zoning and velocity-zoning. Sequencing itself can take place in both the track edit and pattern edit modes, either by overwriting or by overdubbing existing material. Auto and manual punch-in and looping are all provided.

Track editing facilities include: single track and multitrack real-time recording; step-time recording; event editing; erasing, copying and bouncing tracks; inserting, moving, deleting and erasing measures; creating and deleting control data; quantisation; note shifting; and velocity shifting. All the functions are easily accessed, and you don't need to be a nuclear physicist to find your way around. The display is, as you would expect from a screen of this size, clear and intuitive, and could almost be from one of the major Mac or PC software packages.

Pattern Edit allows you to get a pattern from a track, manipulate it, and then copy it to a track as many times as required. You can define up to 100 patterns within each song, but that's the only



Altering the effects from the sequencer: just a finger-poke away!



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Korg Trinity

WHINGE AND MOAN CORNER

Almost every part of this review is uniformly complimentary. But unfortunately, alongside a couple of annoyances (such as the substantial delay between selecting and being able



to play a Program) the Trinity has a couple of potentially serious limitations.

The first is the number of outputs... just four. This could prove to be a significant embarrassment, especially in the studio, where the Trinity's 16-part capabilities should be particularly useful. The other is the somewhat conservative 32-voice polyphony. In an age when 64 voices can set you back less than £500, this will look positively mean to many prospective purchasers.

The back panel — and those four outputs.

► limitation —and there's no limit on the size of pattern you can create, provided you don't exceed the total memory capacity.

The sequencer also offers its own version of the Combi's effects grouping page, the only difference being that you can assign all 16 parts to the busses, rather than just the eight parts defined within a Combi. Since a sequencer setup will respond to external MIDI data, it can act as a 'super-Combi', ideal for studio use. Finally, surprise surprise, it also offers access to the master effects.

Before moving on, one point deserves special mention: fast forward and rewind play the sequence back in accelerated fashion, thus making it easy to locate a position within the huge compositions that a 60,000-event sequencer permits. Very neat!

SOUNDS

Whilst I do have a couple of gripes (see the appropriately-titled 'Whinge And Moan Corner' box elsewhere), there's no denying that the Trinity produces a glorious noise. And, while it's usual

for reviewers to list a handful of favourite sounds, let me break with tradition and tell you instead about some of the demonstration tracks programmed by Korg — after all, they contain the same sounds, and in a far more interesting way than listening to them in isolation.

The first demo is an enormous 471Kb opus comprising six tracks and offering no fewer than 18 minutes of densely sequenced music. It starts

with 'Tune in Again' — a kickin' opening number from those renowned American rock superstars... oops, no — it's just the Trinity, actually. This is truly self-indulgent heavy rock, down to every guitar lick, organ solo and Rhodes break. It's Kansas in a box (the band, not the state).

'The Sorcerer' starts in film-score land, serving up delicate pads and moody percussion, before heading off into analogue synth-orchestra territory with bass pedals, Oberheim-esque stabs, pounding rhythms, monosynth and lead guitars all standing out. 'Network Sports' is everything the name implies, ideal for Satellite TV, and mercifully short. Then it's on to 'Suite for Claude', which makes the most of the Trinity's acoustic piano patch, before becoming so twee that my parents would probably like it. 'The Biggest Band' also lives up to its name, with vibes, jazz guitar, brass ensemble, sax solos, and even a brief drum solo. The shocking thing is just how realistic much of it sounds. Then it's on to the finale, 'Ready for Radio'. Whether you like prime-time American AOR or not, you'll appreciate the picked and pedal steel guitars, and the superb lead breaks. You'll even live with the inevitable Hammond organ and sax solos, just to get to the EP200 break that would have Supertramp's Roger Hodgson turning in his grave, if he weren't still alive.

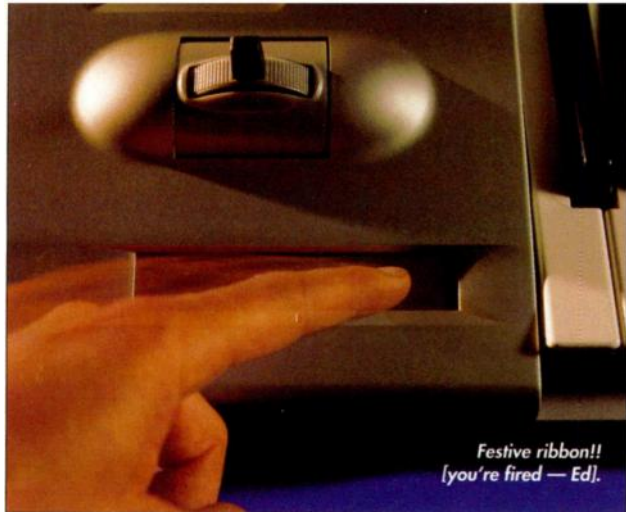
The second demo starts with the 'Overture' — all military snares, orchestral cymbals, massed strings, brass, woodwind, solo violin and oboe. Next along, 'Scratching Funk' nods in Andy Summers' direction, before taking off with complex rhythm arrangements, Emerson-esque Hammond, and the Earth, Wind & Fire brass stabs so loved by Phil Collins. 'Country' offers solo fiddle, bar-room piano, banjo, pedal steel guitar, and finger-pickin' good yee-hah guitar... then it's back to the West

MULTISAMPLE FAMILIES

The following list is derived from the 26-page (!) Voice Name list supplied with the Trinity. This includes full details of the Combinations, Programs, and Drum kits, plus the multisamples and single drum samples. To keep things manageable, I've combined the PCMs into families. But I make no guarantees that the total still adds up to 374...

- 2 Pianos
- 1 Electric Grand Piano
- 20 Electric Pianos
- 1 Clavinet
- 3 Harpsichords
- 13 Electric Organs
- 7 Pipe Organs
- 2 Kalimbas
- 2 Music Boxes
- 2 Marimbas
- 2 Xylophones
- 2 Vibraphones
- 2 Celestas
- 2 Glockenspiels
- 2 Tubular Bells
- 2 Slit Drums
- 2 Balaphones [Que? — Ed]
- 2 Guntans
- 2 Bottle Pops
- 2 FM Plucks
- 2 Steel Drums
- 3 Gamelans
- 2 Finger Cymbals
- 2 Tibetan Bells
- 1 FM Bell
- 2 Thai Bells
- 2 Pot Covers
- 1 FM Solar
- 1 FM Chiff
- 2 Glass Bells
- 3 Ensemble Bells
- 3 Flutes
- 1 Piccolo
- 1 Shakuhachi
- 2 Bottles
- 1 Recorder
- 1 Ocarina
- 2 Clarinets
- 1 Oboe
- 3 Horns
- 1 Bassoon
- 9 Saxophones
- 2 Sax Ensembles
- 1 Tuba
- 4 Trombones
- 5 Trumpets
- 3 Brass Ensembles
- 1 Brass Pad
- 2 Musettes
- 1 Bandoneon
- 1 Accordion
- 1 Harmonica
- 1 Bagpipe
- 7 Voices
- 3 String Ensembles
- 1 Violin
- 1 Viola
- 1 Cello & Contrabass
- 2 String Quartets
- 1 Pizzicato
- 1 Kokyu
- 5 Acoustic guitars
- 19 Electric Guitars
- 1 Pedal Steel Guitar
- 1 Amplifier Noise
- 3 Acoustic Bases
- 20 Electric Bases
- 1 Sitar
- 1 Sitar & Tambura
- 2 Santurs
- 3 Mandolins
- 2 Bazoukis
- 2 Banjos
- 1 Shamisen
- 1 Koto
- 5 Harps
- 2 Ukuleles
- 12 Synth Bases
- 48 Sampled Synth Waves
- 3 Noise Spectra
- 30 DWGS Waveforms
- 14 Effects
- 3 Orchestral Hits
- 37 Percussion instruments

The New Year will also see the introduction of the flash ROM expansion option. Capable of loading Akai samples, but already stuffed to the gills with another 8Mb of Korg PCMs and two further banks of Programs, this will also utilise 2:1 data compression for a total memory equivalent to 64Mb of linear samples. The number of PCMs will, of course, be dependent upon the length of the sounds downloaded.



Coast for 'Funky' with its delightful picked guitar and inevitable 'funky bass meets jazz Hammond' break before the fade out. Listening to the quality of these sounds and tracks, you've got to wonder whether the Musicians Union is going to raise its Luddite head again and try to ban the Trinity as it did the Mellotron and the Fairlight 1.

CONCLUSIONS

The Trinity has a lot going for it. The sounds are bright and snappy, with rapid attacks that rival anything else on the market, and the 48kHz sampling rate ensures that there's no lack of high frequencies. The resonant filters, although audibly not analogue, offer a range of timbres possibly unique to the Trinity. The effects structure is superb, and the touch-screen and programming system are a joy to use. And as the for range and quality of the Programs, and the depth and flexibility of the Combis... I'll go on record saying that this is going to be the keyboard of choice for many top professionals (as well as almost anybody else who cares about sounds and is able to afford a £2,395 instrument).

The Trinity is also the first workstation to make full use of the latest developments in DSP and micro-computer technology. Flash ROMs, multitrack digital I/O ports, and re-loadable flash ROM operating systems are all new to the keyboard world, and we should again commend Korg for breaking so much new ground with one product. Indeed, in the sense of modifying the instrument rather than the sounds it generates, the Trinity is possibly the world's first truly re-programmable synthesizer.

But on the other hand, there are the worrying output and polyphony limitations, and ACCESS Programs based upon geometric waveforms such as a square wave don't have the bite of the Prophecy's MOSS programs.

Ultimately, you have to remember that the Trinity is just another PCM workstation, albeit in my opinion the best there's ever been. It has its good and bad points, and it's expensive. Maybe the best summary is something one of Korg's own employees recently confided to me: "The Trinity may be just meat and potatoes — but it's gourmet meat and potatoes!"

Next month, we'll take a look at the Solo (ie. Prophecy) motherboard included in the Trinity Plus, Pro and ProX models, along with a closer look at some of the Trinity's Programs, Combis, and effects. We'll also address the issues of limited outputs and polyphony, and gaze into Korg's crystal ball for the latest news regarding hard disk editor options. *À bientôt...*

SOS

FURTHER INFORMATION

E Trinity (standard model) £2395; Trinity Plus £2795; Trinity Pro £3195; Trinity ProX £4795; Alesis I/O board ETBA; Solo (Prophecy) board ETBA; Sample Flash ROM expansion option ETBA; Hard disk recorder option ETBA. Prices include VAT.

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MIDI + AUDIO

The latest big thing in computer-based sequencing is the integration of real-world audio and MIDI data within the same program. MIKE COLLINS puts the four leading Macintosh contenders head to head to see how they compare across a range of facilities.

There was a time, not so long ago, when it was often necessary to explain to confused newcomers to music technology that, though they could usefully compare a sequencer program to a multitrack tape recorder, it was not possible to record audio with a computer-based sequencer. Now, of course, the situation is rather more complex: you can, given the right package and external hardware, use your sequencer for audio recording, treating audio just like MIDI data, and this remarkable facility has fired the imaginations of studio musicians at all levels.

US software house Opcode were the first to offer audio tracks, in conjunction with Digidesign audio cards on the Apple Mac platform, with their ground-breaking *Studio Vision* software. The major competitors have followed suit, and now most of the available programs can also work with the A/V capabilities of most Macs, without Digidesign hardware. *Studio Vision*, Mark of the Unicorn's *Digital Performer*, and Emagic's *Logic Audio* also work with the Yamaha CBX series hard disk systems, which are available as stand-alone units controlled by the Mac software.

The first MIDI + Audio sequencer available for Pro Tools III and TDM systems was *Digital Performer* 1.6, the only choice for Pro Tools III/TDM users until the other packages actually became available with the necessary support in the last quarter of 1995. The *Performer* MIDI sequencer reigned supreme on the Macintosh until *Studio Vision* came along and made inroads with professionals working on film music and records. *Logic* and Steinberg's *Cubase* came to the Mac much more recently,

FOUR TOP MAC PROGRAMS COMPARED

- EMAGIC LOGIC AUDIO
- MOTU DIGITAL PERFORMER
- OPCODE STUDIO VISION
- STEINBERG CUBASE AUDIO

but are now seriously rivalling their more established Mac-based competitors. *Vision* is now very similar to *Performer* in the way it works, while the German packages, *Cubase* and *Logic*, are very similar to each other in concept, yet different in several ways from their American counterparts. In the USA, Japan and Australia, *Vision* vies with *Performer* for the No. 1 spot, while here in Europe, *Cubase* is probably the most widely-used sequencer, taking into account Atari and PC versions, while *Logic* is probably the most popular sequencer on the Mac.

As far as the audio versions of these sequencers are concerned, your choice probably depends mostly on which sequencer interface you prefer, as the digital audio features are broadly similar across the various packages, though more significant differences are starting to appear: waveform editing facilities have appeared within some of the programs, as have timestretching and pitchshifting, Audio-to-MIDI, MIDI-to-Audio, much better tempo control features, sync to QuickTime video, and so forth.

All current audio versions now include TDM support. TDM allows you to route your audio both within the system, and in and out of the system via your hardware interface(s), and offers up to 48 tracks of digital audio. An important feature is the ability to use software plug-ins for TDM, and a number of these have already appeared from Digidesign, Waves, Steinberg and others. These plug-ins are the software equivalent of studio outboard gear and include delays, harmonisers, compressors, equalisers, and so on.

One of the main points of comparison for me, when looking at the four main audio sequencers, has to be the look and feel of the user interface. Other comparable features include the audio editing windows, the mixing features, the automation features, whether or not you can automate plug-ins, what DSP features are included, and the tempo control features. I'll be addressing all these points for each package.

WHICH MAC?

For a start, you definitely need a large-screen Mac for using any of these programs, or, better still, two screens. As far as RAM is concerned, I'd recommend not less than 24Mb, and 48Mb would be better, especially if you're using several TDM plug-ins, though you could get by with 16Mb on a Quadra 650 if you're not doing anything too fancy. PowerMacs are more demanding as far as RAM is concerned, but when native versions of the current software is released, the extra speed increase is sure to be worth it.

The next consideration is PCI, a new standard buss system used by the latest PowerMacs, the 8500 and the 9500, in place of the NuBus system used in prior models. All the Digidesign cards use NuBus, but it is possible to buy a Digidesign-compatible NuBus expansion chassis from a company called Second Wave, which connects to these new models using a PCI card (if you want to use a NuBus digital video system, however, you should be aware that Radius *VideoVision Studio* does not work in the NuBus-to-PCI expansion chassis). Digidesign have announced that they will be producing PCI versions of their hardware from around the first quarter of 1996 and that there will be a crossgrade path for Pro Tools III users for one year following the launch of the PCI versions.

This change to PCI slots poses a problem if you are intending to buy a new Mac system or upgrade an existing one today. From many points of view you will want to choose the latest technology (PCI) but if you already have NuBus cards, or plan to buy a NuBus-based Pro Tools III system, these will not work in PCI slots. The best solution is probably to buy a Second Wave chassis, although this will add something like £1000 to your budget!

AUDIO HARDWARE

Yet another decision to make is which hardware to use for your audio. If you need 16 tracks or more, there's no choice — you need

Pro Tools III with its two NuBus cards. You may well need additional DSP Farms if you want to run more than a couple of TDM plug-ins, and you may want to integrate a Lexicon NuVerb and a SampleCell II card into your system via TDM. If you want to use PostView for random access working to video, you'll also need a digital video card. For the highest quality here, you will also need a SCSI accelerator card and an array drive system specially for the digital video. You might easily need seven or more NuBus cards with such a system, so you would have to use either a Digidesign 12-slot or a Second Wave 4- or 8-slot NuBus expansion chassis.

The original Pro Tools 4-channel system is still available, and you can always add a DSP Farm with TDM to this. For existing users who are happy with just four tracks of audio, this makes a lot of sense. Below this, you might use Sound Tools II or AudioMedia II, but you cannot use TDM with these, which means you can't run TDM plug-ins.

For some users, the Yamaha CBX-D3/5 digital audio systems provide a cost-effective option, and if you're working to a tight budget, the Apple Sound Manager will give you 16-bit audio capabilities running on any PowerMac, PowerBook 500, Quadra 840 or 660 AV models. What you'll miss using the Sound Manager is the professional audio interface with its multiple high-quality analogue audio input and output connectors, and (more importantly for some) the ability to bring in your audio digitally, process it, then send it out digitally to a DAT recorder or whatever. I'm waiting for some on the ball manufacturer to bring out a more professional audio interface with high-quality analogue and digital inputs and outputs for the PowerMac, which could surely be designed quite cheaply to interface to the DAV (digital audio and video) socket on these models.

CHOICES

So which package should you go for? I am starting to appreciate each program for what it does best, and your choice will, to some extent, depend on your project.

Digital Performer is the least expensive at around £600, followed by *Logic Audio* at £650. *Cubase Audio* and *Studio Vision* both cost around £800, but if you add in the *Logic Audio* extensions for TDM and A/V this brings the cost of *Logic* up to about £875. However, *Logic Audio* only needs the AV extension if you want to run the Digidesign hardware at the same time as using the computer's own sound system to add more tracks. If you just want to use one or the other, you only need the basic software.

The MIDI-to-Audio, Audio-to-MIDI, and Fit Tempo options are examples of the major new features on offer in this round of upgrades, and are most neatly implemented in *Studio*

Vision. However, the things you can do now in *Logic Audio* with its Digital Factory, and which you will be able to do in *Cubase Audio* 2.5 with its Edit in Time Domain features, are also extremely innovative. If PowerMac native code is a priority for you, *Logic Audio* is probably the best bet at the moment.

For many users, the most attractive and effective user interface will be high on their list of priorities, and in this department *Digital Performer* scores extremely high, closely

than on the lower end A/V stuff. You get sync problems on slower models like the PowerMac 7100s, and even when you use 'strip silence' in some of the rival programs, stuff drifts out of sync the further you go along your music. Most of our market is high-end, so A/V is a lower priority for us."

• LOOK AND FEEL:

Every screen and dialogue box in *Digital Performer* uses colour in a unique way to create an extremely pleasing 3D look. After



Digital Performer main screen with plug-in list on left.

followed by *Studio Vision*. *Logic Audio* wins plenty of points for its innovative screensets, which really help you to manage your screens, and make it much more feasible to work on smaller screens if you simply can't get your hands on the large monitors you ideally need to use with these programs. *Cubase* is in a process of transition, but still has a long way to go before it can outline the others in the graphics department. For some, the inclusion of waveform editing and comprehensive scoring capabilities will make *Logic Audio* or *Cubase Audio* the more attractive choices. All of the packages except *Digital Performer* now include advanced DSP functions, but if you can afford to wait for these, MOTU are working on their next major upgrade, which will certainly include many similar features.

MOTU DIGITAL PERFORMER V1.6

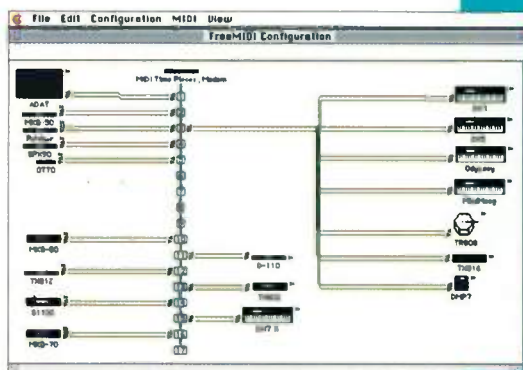
• HARDWARE COMPATIBILITY

Digital Performer works with Pro Tools III/TDM, DAE, and Yamaha CBX-series digital audio systems — but not with the Apple Sound Manager A/V. Daniel Rose of MOTU explained: "We decided to focus on the high-end with Pro Tools III compatibility, rather

hours of staring at the screen you really come to appreciate this! In my opinion, the program's editing features are also particularly easy to learn and use. For instance, new options in 'Split Notes' let you quickly take a combined drum track and split each drum to its own track. You can split individual pitches or set a key range and split performances into multiple tracks, which is great for real working situations.

• OMS COMPATIBILITY:

Digital Performer uses MOTU's own FreeMIDI system which is, broadly speaking, a similar



FreeMIDI configuration in Digital Performer.

MIDI + AUDIO

► concept to Opcode's OMS, with which there is a basic level of compatibility. FreeMIDI gives you powerful control over your MIDI rig with its auto-configuration and device management, and lets you synchronise timing with other FreeMIDI applications such as *Mosaic*, *FreeStyle* and *Unisyn*.

• NOTATION/SCORING:

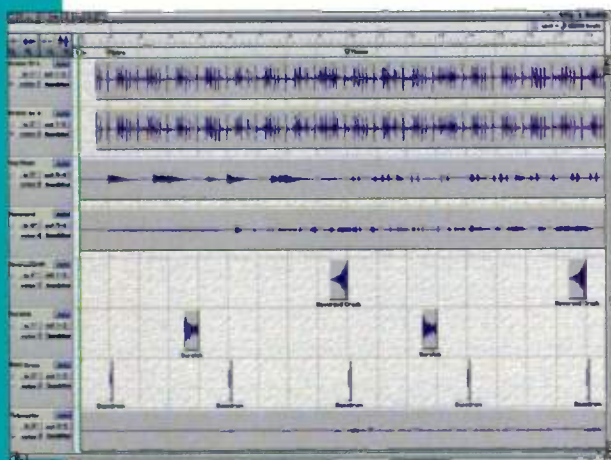
The notation facilities are OK, and work well enough as a guide for editing MIDI data. Data can also be displayed as a score, which can be printed out, but *Digital Performer's* scoring is simply no match for what you get in *Cubase* or *Logic*, let alone a dedicated scoring program.

• MANUALS:

These are first rate, and are currently supplied in soft-bound books rather than in ring-binders as they used to be. The excellent 'Getting Started' manual provides a highly-illustrated and very readable overview, with useful tutorials. Just about every feature is described in detail in the 750-page Reference Manual, and the Digital Audio features are described separately in the Guide to Digital Audio.

• AUDIO EDITING:

In the multitrack audio editing window, you can select any combination of audio tracks to view and edit simultaneously — from a single track to your entire arrangement. Volume, pan and loop information can be superimposed on top of the audio waveforms, and you can scrub through your digital audio to find exact cues.



Audio Editor in Digital Performer.

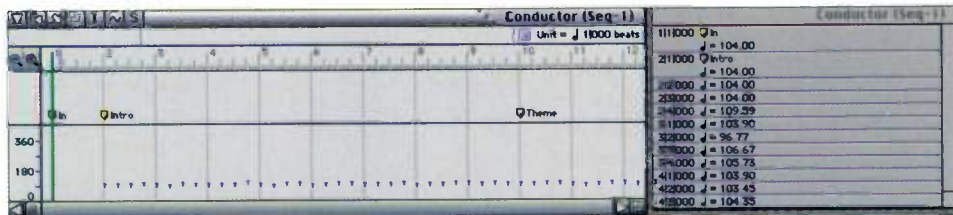
However, you cannot set Q-points as in *Cubase* and *Logic Audio*, and there is no Waveform editing window, so you have to use *Sound Designer II* for detailed edits.

• MIXING AND AUTOMATION:

The new Mixing Board window is well-designed and lets you show or hide any combination of MIDI and digital audio tracks. You can even create automation groups with

any fader as the master, and it's possible to operate the faders remotely with any MIDI controller. MIDI real-time output processing effects, such as compression/limiting and transposition, are also now available from pop-up menus in each MIDI mixer channel.

Up to 48 tracks of audio are available with Pro Tools III (up to 64 inputs/outputs), and there is complete TDM compatibility, so you can insert TDM plug-ins via the effects inserts in the Mixing Board window. You can



Digital Performer Conductor tempo control.

automate mixdowns with virtual faders and knobs to control volume and pan (but not mutes), and effortlessly create fader automation groups with any fader as the master. Each track has its own solo, mute and automation enable/disable buttons, and you can also take snapshots of the Mixing Board settings to save scenes.

• PLUG-INS:

You can insert up to five plug-ins into each channel, although you won't really be able to use more than a couple unless you invest in additional DSP farms — you'll need at least one extra to get anything but the most basic mixing facility set up if you intend to make use of plug-ins.

It is not possible to create master stereo output faders, although you can use mono, mono-to-stereo, or stereo TDM plug-ins. The TDM plug-ins are shown as one list with mono-to-mono and mono-to-stereo, rather than conveniently split into two groups as in *Logic Audio*. By default, audio tracks are mono and are panned across the output pair assigned to the track in the Tracks window. If you choose either a mono-to-stereo or a stereo effect, the track's output becomes stereo. Another missing feature is aux sends, which would

allow you to send from any group of channels to one plug-in effect — allowing you to make more efficient use of your available DSP power.

As far as plug-in compatibility is concerned, Crystal River Engineering's ProTron was the only plug-in which failed — and, unfortunately for MOTU, only with *Digital Performer*. Plug-ins and effects cannot be automated in DP 1.6, although automation is planned for future

versions. The program does provide access to the built-in EQ facilities of AudioMedia II and non-TDM Pro Tools systems.

• DSP FUNCTIONS:

Digital Performer 1.6 does not feature any digital signal processing as yet, although pitch shifting and timestretching are planned for the next version.

• AUDIO-TO-MIDI/MIDI-TO-AUDIO:

Neither of these features is included in the current version.

• TEMPO CONTROL:

You can scale the time or tempo of your MIDI sequences using simple to operate region commands. You can also use the Change Tempo command to create ritards and accelerandos, or to randomise tempo.

Using the Record Beats command, you can tap out a series of MIDI notes in time with the digital audio, and then produce a tempo map from this information, which will match the tempo variations in the audio — as long as you tap accurately enough.

• MIDI MACHINE CONTROL:

MIDI Machine control is available for ADAT, DA88, RD8, Akai DR4D or other MMC-compatible recorders. This lets you operate transports, record-enable tracks, and even set auto punch-in and pre-roll times. It is fast and effortless in use, and worked perfectly with my ADAT via the Steinberg ACI.

• QUICKTIME:

You can open and view synchronised QuickTime movies directly, for complete random-access control over MIDI, audio and video. You can even Scrub or Frame advance/reverse videos to find specific hits. This lets you quickly place sound effects and timed musical hits without worrying about numbers or hardware synchronisers.

• POWERMAC NATIVE:

Not available yet.

FURTHER INFORMATION

£ *Digital Performer* 1.6 £599; registered Performer users (any version) can upgrade to DP 1.6 for £249; registered DP users (version 1.4) can upgrade to DP 1.6 for £136. Prices include VAT.

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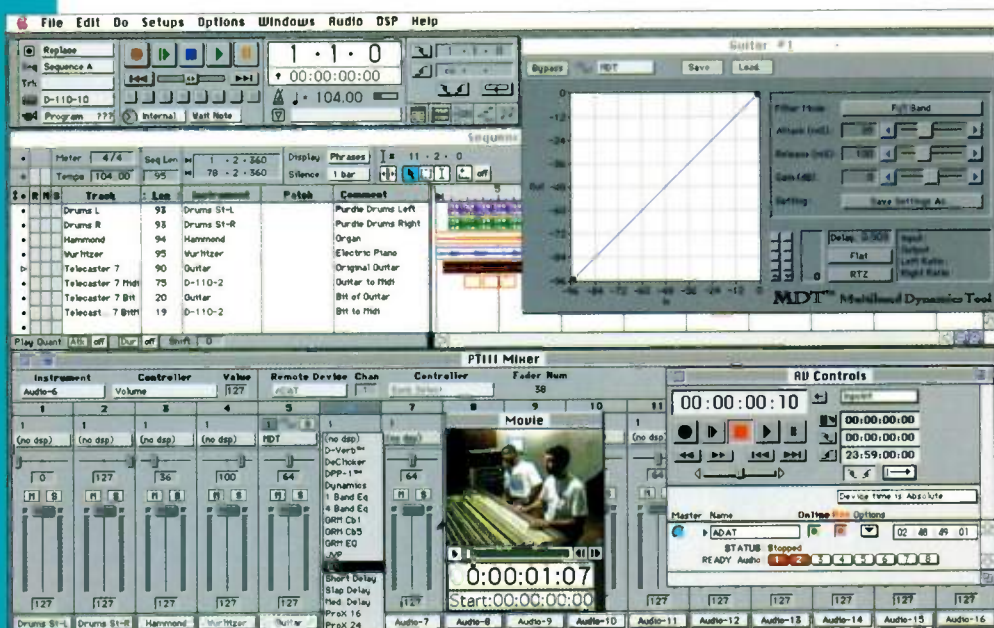
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MIDI + AUDIO



Studio Vision main screen.

OPCODE STUDIO VISION PRO V3.0

• HARDWARE COMPATIBILITY:

Like *Logic Audio*, *Studio Vision Pro* is compatible with the entire Digidesign range of digital audio cards, plus the Yamaha CBX-D3/D5, and the Apple Sound Manager — so it'll give you 16-bit audio capabilities running on any PowerMac, PowerBook 500, Quadra 840 or 660 AV models. This range of functionality is included in the standard software, unlike with *Logic Audio*, where you pay extra for different modules to 'talk' to different hardware. *Studio Vision* can also play both 44.1 and 22.05kHz audio via Sound Manager — unlike *Cubase Audio*, which is restricted to 44.1kHz. You get at least eight tracks of audio using the Sound Manager on a PowerMac 8100, and you need System 7.5 for best results.

• LOOK AND FEEL:

Studio Vision makes good use of colour and attractive graphic design, but this has not yet been implemented in all the windows and dialogue boxes. The Markers implementation is still not quite as neat as in *Performer* for me, although the graphic editing windows seem better designed and more responsive at times.

• OMS COMPATIBILITY:

Studio Vision integrates extremely well with Opcode's *Galaxy Editor/Librarians* and OMS

2.0 — which allows you to choose the synth patches currently in your synth rig from within *Studio Vision*, as well as the synth you want to use. This is much better than having to type in the MIDI channel and interface port, and a program change number for the patch, as you had to do previously.

• NOTATION/SCORING:

The notation editing works very well, and is very easy to read, although the printing features are not as advanced as those in the rival programs.

• MANUALS:

These are almost as good as *Performer's* and, again, are supplied in soft-bound books rather than the ring-binders originally used. Getting Started with Vision provides an excellent step-by-step tutorial, but is not as comprehensive as *Performer's*. The 350 pages in the MIDI Reference Manual are well written and laid out, but not as detailed as *Performer's*, while

the Audio Reference Manual is somewhat more detailed — perhaps because *Studio Vision* currently has more audio features than *Digital Performer*.

• AUDIO EDITING:

The graphic audio edit window allows you to view a waveform in more detail than you can in the Arrange window, but does not provide anywhere near as much detail as the Waveform edit windows in *Cubase* and *Logic Audio*. Nevertheless, this is fine for most of the straightforward cut and paste edits which you will do regularly. However, you cannot set Q-points as in *Cubase* and *Logic Audio*, and you have to use *Sound Designer II* for detailed edits.

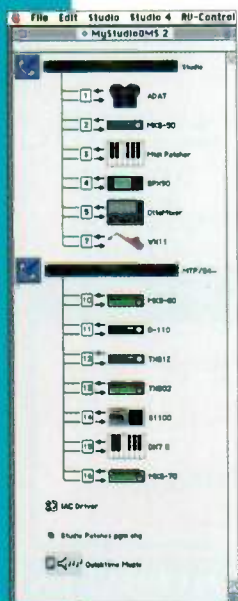
Studio Vision does not make it as easy as with *Digital Performer* or *Cubase Audio* to view all your audio waveforms in one window for ease of editing. You can do this, but you

have to copy or cut and paste all the audio tracks into one merged track. This is less convenient than in *Digital Performer*, where all the audio tracks are immediately visible for editing from within any single audio track, or in *Cubase Audio* where you can open an audio editor window with all the audio tracks on display.

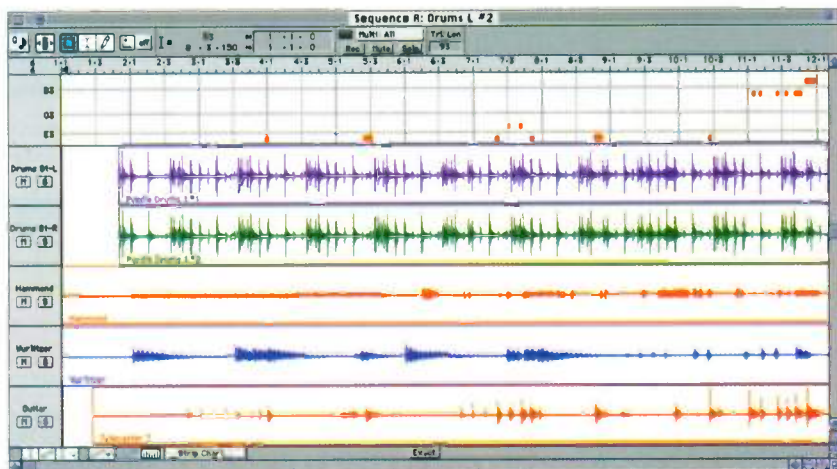
• MIXING AND AUTOMATION:

One of the neatest new features is the flexible Mixing Consoles with recordable automation for both MIDI and audio tracks. You can display these in wide or narrow formats to suit your available screen area. Both console styles feature automatic volume and pan setup, and either one can be brought up in a snap by using the 'Make From Selected Tracks' command.

The mixing consoles feature faders for volume, and pan, including EQ control for Digidesign DAE (even without TDM). Any



Studio Vision OMS setup.



Studio Vision audio editor.

fader is easily assignable to any MIDI controller, and there are mute and solo buttons as well as LED-style level indicators — showing volume for audio, velocity for MIDI — plus all the control features that were available in earlier faders including remote control and assigning of any fader to any controller. You can record fader and pan movements as MIDI controller data, and to create snapshots of your mixing board you can simply copy all the fader data to the clipboard and paste this into a MIDI track. Unfortunately, you cannot record mutes.

• PLUG-INS:

You can use up to four TDM inserts per track; TDM plug-ins are shown in pop-up menus. Only the mono in/mono out plug-ins show up in the pop-up menu lists, unlike with the other sequencers, where mono in/stereo out plug-ins are also shown. As with *Digital Performer*, you don't get any aux sends, or master faders for the Pro Tools III/TDM mix outputs. You cannot automate plug-ins in *Studio Vision*.

• DSP FUNCTIONS:

There are various new non-real-time Opcode DSP functions you can apply to any audio file

and Expansion musically (bars and beats or SMPTE time), and you can set the Pitch Shift simply by changing from, say, D to, say, F#.

So if you have a drum loop you wish to have running for four bars at 127 bpm, simply set the sequence tempo to 127, select the audio, choose Time Scale from the DSP menu, type in '4' as the number of bars, and save a new file to run at this tempo — magic! You might also want to transpose your MIDI sequence up and make the audio match. It's always been easy to change the MIDI data, but now you can have the same control over your digital audio.

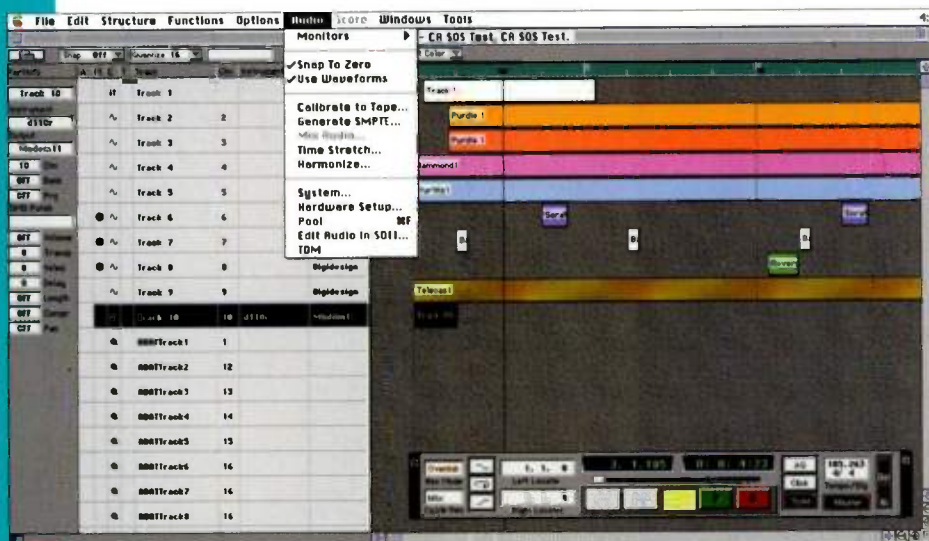
You also get most of the DSP functions provided in *Sound Designer II*, including Normalise, Reverse, Invert Phase, Sample Rate Convert, EQ, Dynamics, and Fade In/Out.

• AUDIO-TO-MIDI/MIDI-TO-AUDIO:

The new Audio-to-MIDI function turns a monophonic digital audio recording of a single musical voice into MIDI pitch and volume data, along with accurate pitchbend and modulation (for velocity and brightness) information. Even better, you can use the MIDI-to-Audio feature to apply these edits to the original audio file! This feature is not found on any other

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MIDI + AUDIO



Cubase Audio main screen.

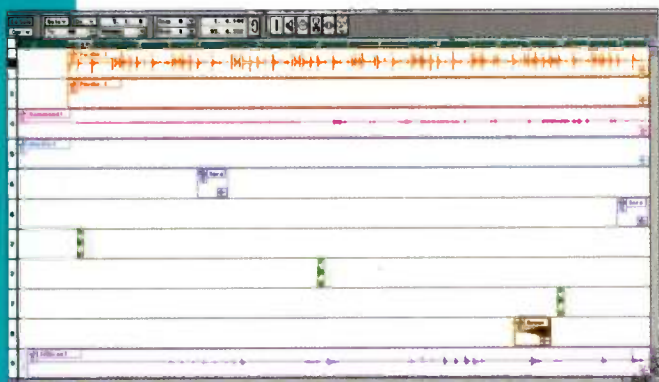
CUBASE AUDIO V3.0

• HARDWARE COMPATIBILITY:

Originally, Cubase's audio features required you to use one of the range of Digidesign NuBus-based systems (Sound Tools or Pro Tools). Now you can choose to work with an A/V or PowerMac, as these models can handle 44.1 kHz, 16-bit audio pretty well via Apple's Sound Manager software. This Sound Manager support has been implemented using native PowerPC code, and allows you to play back up to 16 tracks of digital audio on the PowerMacs. You can only play 44.1kHz audio via the Sound Manager, and there is no support for the Yamaha CBX-series hardware.

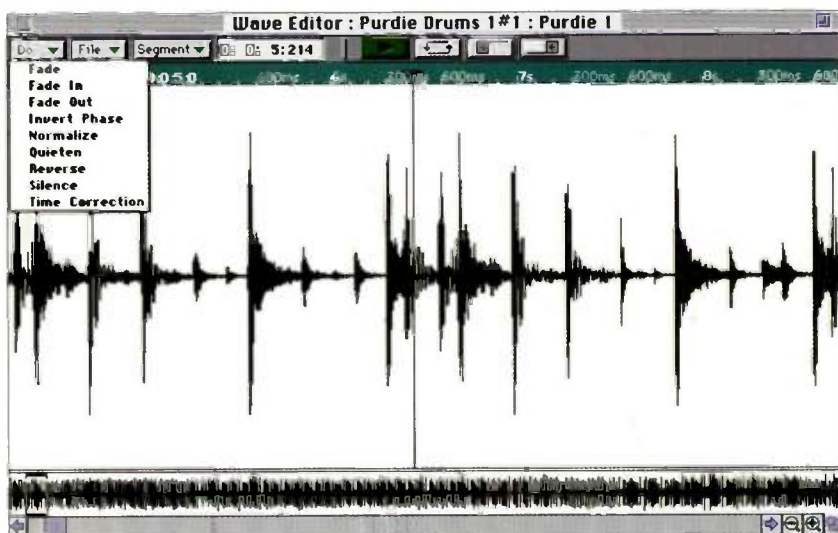
• LOOK AND FEEL:

For this review, I had a beta release of the forthcoming version 3.0, which should be available by the end of the year. Colour is featured as part of the user interface for the first time — and to very good effect. You can now assign colours to the parts in the edit windows, and even to the different velocities displayed in the graphic edit window. Different coloured backgrounds are also now available.



Audio Editor in Cubase Audio.

However, there are plenty of windows and features which remain from the very first versions of Cubase — featuring the graphics



Cubase Audio Waveform Editor.

originally designed for the Atari, though Steinberg seem to be changing this gradually.

• OMS COMPATIBILITY:

The OMS 2.0 support allows you to use Opcode's *Galaxy* synth editor/librarian software with Cubase just as you would with *Studio Vision*. This is a good way to go, in my opinion, as I believe *Galaxy* is the best software in this category, and it's been around so long that many people have their libraries in *Galaxy* format.

• NOTATION/SCORING:

Cubase Score has the best music scoring features available

within any MIDI sequencer package, and Score users will be interested to know that all Score functionality is included in Cubase Audio 3.0. So, for instance, you can export files in EPS or *Illustrator 88* formats, for editing in a DTP program, and you get grace notes, polyphony, cue notes, cross-staff beaming, guitar notation, drum notation, automatic layout features and much more. For guitarists, it's easy to turn a score immediately into tablature, and you can even play your music in and watch the notes appear as such!

• MANUALS:

Steinberg supply a soft-bound Getting Started with Cubase manual which is similar to and almost as good as *Digital Performer's*. The main Cubase manual is supplied in a ring-binder, and is very similar to *Logic's* manuals, but with the audio section as an addendum. There's room for improvement here.

• AUDIO EDITING:

You can edit your audio on three different levels within Cubase Audio. Just as with MIDI data, audio is represented as Parts in the

Arrangement page, and the same tools edit both MIDI data and audio. For more detailed editing, double-click on the part to enter the Audio Editor. On an 'Any' track you can view and control audio material for all 16 channels in one window, and here all editing is non-destructive. Audio is represented as a waveform and for each audio part handles are provided to allow 'masking' and 'unmasking' of audio. You can also set up Q-points, extremely useful when placing audio to particular beats or SMPTE locations. Volume can be edited and is represented in an envelope form, which is easy to change. From the Audio Editor you can click on the audio display to open a Waveform Editor which lets you zoom in to a very high level for detailed, destructive editing, as in *Sound Designer II*.

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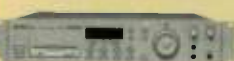
40 input channels, 8 buss output,
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Akai S3000XL	£282	18x112	£2298
Emu ESI 32	£120	18x60	£1200
Emu E64	£309	18x130	£2649
Fatar 900	£99	10x40	£579
Fatar 90	£90	6x60	£450
Fostex 380S	£99	10x70	£799
Fostex XR7	£99	10x40	£499
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Korg 05RW	£99	10x40	£499
Korg X5DR	£99	12x50	£699
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Korg X5D	£99	10x80	£899
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Korg Prophecy	£99	10x90	£999
Mackie 1604	£199	10x70	£899
Notation Rack	£49	10x35	£399
Roland XP50	£199	18x72	£1495
Roland XP10	£99	10x60	£599
Roland RJ500	£195	18x100	£1995
Roland A30	£49	10x35	£399
Roland MGS64	£99	10x50	£599
Roland MDC-1	£50	10x44.90	£499
Roland MVS-1	£50	10x44.90	£499

	Deposit	Payments	Total
Roland M-DC-1	£50	10x44.9	£499
Tascam 488 Mk11	£299	10x100	£1299
Yamaha W5	£167	18x74	£1499
Yamaha W7	£120	18x60	£1200
Yamaha SY85	£99	18x50	£999
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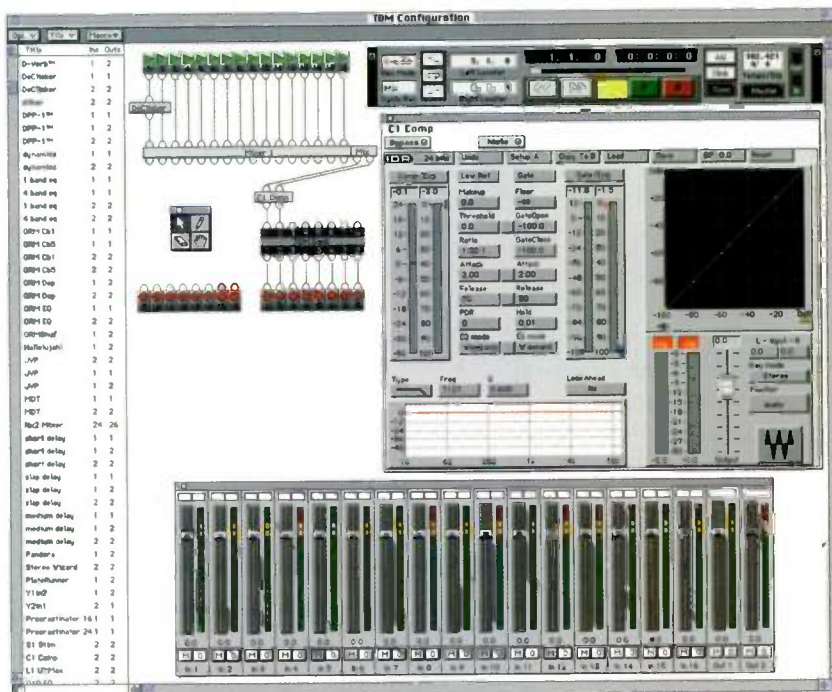
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Cubase Audio TDM page.

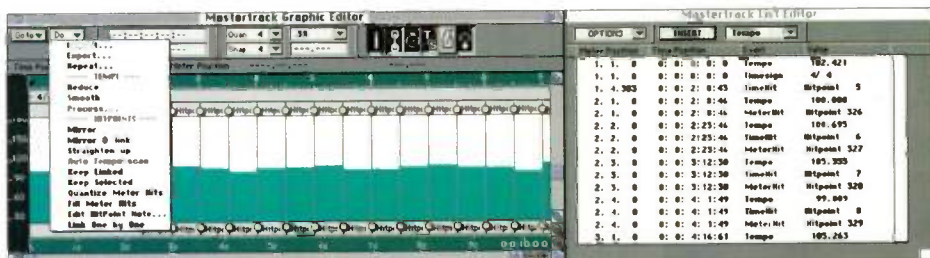
► • MIXING AND AUTOMATION:

You can create your own mixer maps to get total recall mixing, but this is rather fiddly. Mixer map templates are supplied, which offer mixing for Digidesign audio cards as well as control of external MIDI devices, but these are just not as well-implemented as the mixing consoles available in the other programs. This seemed to be the weakest part of *Cubase Audio* compared to the competition.

• PLUG-INS:

Cubase Audio's TDM page is a radical departure from the implementation of TDM support in the other packages. In all the other programs, you're provided with a mixing console which is quite similar to the one in the Pro Tools III software, with inserts on each mixer channel which you use to set up your plug-ins. In *Cubase Audio* there's a separate TDM page with a graphical 'patchbay', with inputs and outputs from your interface to *Cubase Audio's* mixer. You use the pen tool to

draw in your routings, and drag your plug-ins from a list on screen, which includes all types of plug-ins, including mono-to-mono, mono-to-stereo, and stereo-to-stereo. With your connections made, you can open up a mixing console with 16 faders for the channels, plus two for the stereo outputs. Automating plug-ins



Cubase Audio MasterTrack Editor.

is possible — if you're comfortable setting up custom mixer maps — but I didn't have too much luck with this using the beta software. Overall, this system in *Cubase Audio* is nowhere near as neatly implemented as with the other

programs, and the TDM page really should be much better integrated with the functions of the mixer maps.

Interestingly, Steinberg have recently launched several plug-ins themselves, including their Virtual FX Rack (a collection of five effects including autopanning, chorus and reverb), and the De-Clicker. These work very well, look great, and are quite reasonably priced.

• DSP FUNCTIONS:

As with *Studio Vision* and *Logic Audio*, *Cubase* provides several of the DSP functions present in *Sound Designer II*, including Normalise, Reverse, Invert Phase, Sample Rate Convert, EQ, Dynamics, and Fade In/Out. You access these from the Waveform Editor's 'Do' menu, and basic time and pitch correction audio editing plug-ins are also now included here. For more advanced time compression and pitch shifting, there is an option to sub-launch Steinberg's *Time Bandit* software.

• AUDIO-TO-MIDI/MIDI-TO-AUDIO:

These features are not included in *Cubase Audio*.

• TEMPO CONTROL:

Cubase, like all the other sequencers, will let you tap out a MIDI track in time with your audio using 'Human Sync', and construct a tempo map from this. However, this is quite fiddly, and not always totally successful. If you want to speed up or slow down an audio track which runs at constant tempo to match your sequence tempo, you could always

transfer to *Time Bandit* and timestretch this to fit. The problem here is that often the audio is varying in tempo.

Cubase Audio 3.0 now provides a new 'Edit in Time Domain' feature in the MasterTrack Editor, which allows you to analyse your audio to create a series of hit points which correspond to the main beats in a drumtrack, for instance. After matching up the analysed hit points with the bars and beats in the MasterTrack Editor, you can then calculate a Tempo map automatically, and this works far better than using the original Human Sync feature. If, on the other hand, you prefer to match up your digital audio to an existing Tempo Map, this can be done with the new built-in timestretch facility, which automatically calculates the degree of stretching required throughout the file. ►

DISK MATTERS

An important part of any MIDI + Audio system is the hard disks. I'm using the latest Micropolis A/V models, which are compatible with all the Digidesign systems, but not every drive available works with every Digidesign system, so check carefully before parting with your money. Similarly, don't assume that your existing drives will necessarily work with any new system like Pro Tools III.

Backup systems are essential with digital audio. I back up to a normal audio DAT using Digidesign's DATa utility, which also stores the computer data on the tape.

I also use removable optical disks. Another option is to use a computer DAT backup drive, or, for professionals, the more expensive Exabyte drive is a good choice. Grey Matter Response offer their Mezzo software, which lets you download and upload digital audio to and from removable media like DAT or Exabyte in the background while you continue your editing work in the foreground. Removable hard disk and CD-R drives can also be attractive, especially as prices are coming down rapidly.



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MIDI + AUDIO

► MasterTrack Editor also lets you use the hitpoints to match time positions to meter positions, so you can make a musical cue fit exactly to picture. You can also create ritardandi and accelerandi, or change the tempi to fit a particular cue, and the Auto Tempo Scan feature lets you find the best tempo match to a series of hitpoints.

Another useful feature for working to picture is the ability to 'time-lock' tracks. Once a track is locked you can change the tempo of the sequencer and the locked events will stay at the same positions time-wise. Using this feature, you can create multiple tempi within the same sequence, so cue one plays at one tempo, and while this is fading out, you can insert a tempo change where the next cue begins without affecting the tempo of the first cue. These features give *Cubase Audio* probably the best control over tempo available within any of these programs.

• MIDI MACHINE CONTROL:

ADAT users will probably be interested in a neat little device which came with the demo system: the Steinberg ADAT computer interface (ACI) lets you hook up the ADAT's digital sync inputs and outputs to it, and you connect a pair of MIDI In and Out cables from the ACI to your MIDI interface, to carry MIDI Machine Control (MMC) messages to and from the ACI. This way you can control the transport functions of an ADAT using *Cubase Audio*'s transport controls — a great convenience. The ACI also worked perfectly with all the other sequencers.

• QUICKTIME:

There is a standard QuickTime display window with *Cubase*, and you can synchronise your audio and MIDI to this, as with *Digital Performer* and *Logic Audio*.

• POWERMAC NATIVE:

A PowerMac version of *Cubase Audio* is not available as yet.

FURTHER INFORMATION

£ *Cubase Audio* £799; *Time Bandit* £329; ADAT Computer Interface £349; VFX Rack £249; DeClicker £799. Prices inc VAT. *Time Bandit* will be bundled free with *Cubase Audio* as a limited special offer for around three months after the release.

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

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EMAGIC LOGIC AUDIO V2.5

• HARDWARE COMPATIBILITY:

Logic Audio is supplied as a basic version for a lower price than the other packages, and you pay extra for extensions to work with your hardware. If you buy *Logic Audio* off the shelf, you can either use the DAE, which supports all the Digidesign hardware except Pro Tools III or TDM, or just the AV capabilities of your Mac. You can't work with AVV and DAE simultaneously with this version. Now Emagic offer TDM, CBX, and AVV extensions,

the latter of which allows the use of both DAE and AVV at the same time. To use TDM and AVV at the same time you need both TDM and AVV extensions. And if you buy the CBX extension you can run tracks from all three at once! The idea is that someone who doesn't have Pro Tools III shouldn't pay for something they can't use.

• LOOK AND FEEL:

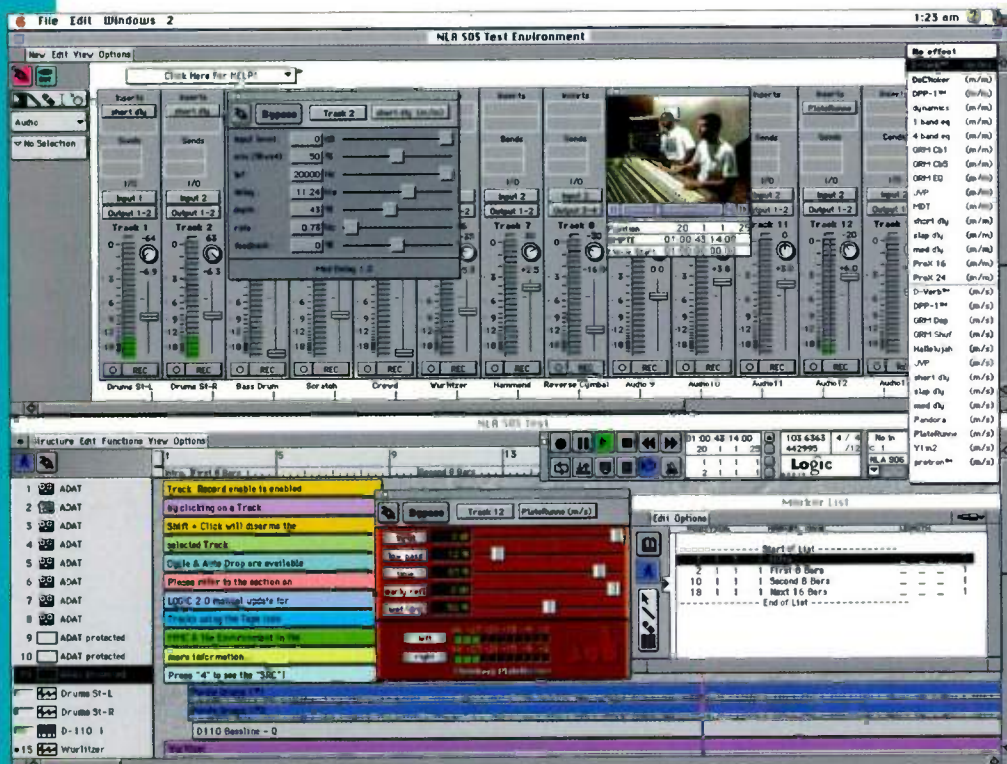
The general 'look' of the screens is OK in *Logic* and, I feel, rather better than in *Cubase*. However, you have to 'dig' pretty deep to access quite a number of the features you might want to use quite frequently, and the sub-menus and Environment page features can take some time to explore thoroughly. On the other hand, everything 'feels' very responsive, just about everything works in real time (saving files, editing data, and so forth) and the screens redraw very quickly — which really adds a lot of pluses for *Logic*. The program also allows you to name your instrument patches in the Environment page, so you can call up any patch by instrument and patch name.

Logic's screensets have to be one of the neatest user interface enhancements around. You can store and recall up to 90 different configurations of your windows onscreen, and you can recall any screenset by hitting the numerical keys, so that one set of windows closes while the new set opens 'automatically' — and very quickly too. This is a real time-saver compared with the other programs, where you have to laboriously open and arrange your different sets of windows for different purposes 'manually' every time.

• OMS COMPATIBILITY:

Logic is OMS compatible, but this doesn't extend to allowing you to use *Galaxy* for your synthesizer and patch names within *Logic* as yet — although it should do with OMS 2.0. However, *Logic* can handle basic patch and instrument names already, in addition to remembering which bank change commands are required by the different instruments.

Like Opcode and MOTU, Emagic have their own *Sound Surfer* and *Sound Diver* synth editor/librarian software. Both communicate with *Logic* via Emagic's own AutoLink function, which allows you to suck all the sounds out of your synth, create a multi-instrument within *Logic*, then paste the appropriate names into the multi-instrument so that you're always using the right sounds. *Diver* also allows you to edit your synth sounds while *Logic* is playing in the background.



Logic Audio main screen with plug-ins on right.

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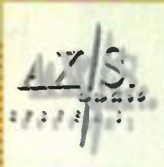
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MIDI + AUDIO

► • NOTATION/SCORING:

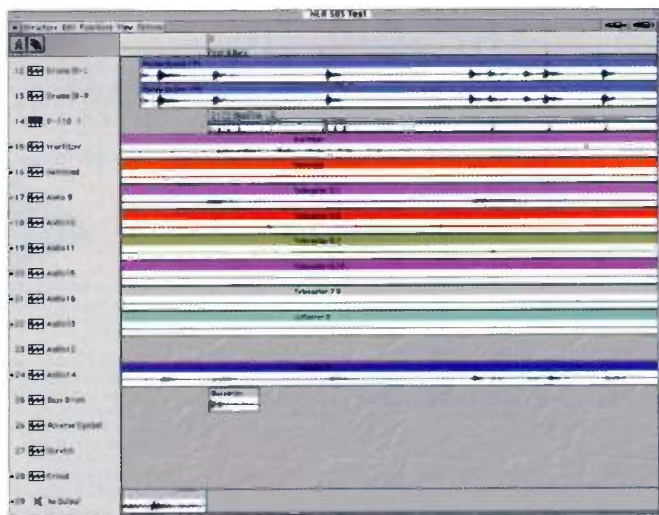
Logic's notation is similar to *Cubase's*, but not quite as full-featured. Nevertheless, if scoring is important to you, *Logic Audio* is a better choice than *Studio Vision* or *Digital Performer*.

• MANUALS:

One manual comes with the *Logic* sequencer and one with *Logic Audio*, both of which fit into a single binder. These are an incredible improvement on previous versions, which were far from satisfactory. Even so, there's still room for improvement.

• AUDIO EDITING:

When using a graphic editor for an audio track in *Logic*, only one track at a time can be viewed — unlike with the other programs, which can display all the audio tracks simultaneously. This is not as disastrous an omission as it sounds, though, because zooming in sufficiently in the Arrange window reveals about the same amount of detail as provided by the other program's audio edit windows. As with *Cubase Audio*, you can double-click on any audio in the Audio edit window to open up a Waveform edit window which offers features similar to *Sound Designer II*. One very useful feature is looping of sections of audio.



Logic Audio Arrange window with audio displayed.

• MIXING AND AUTOMATION:

For mixing, an Environment page with 16 channels is provided for control of Pro Tools III audio tracks, and there are four master faders to control the four pairs of stereo outputs from the Pro Tools III hardware. You can insert stereo TDM plug-ins across these outputs — each channel features two inserts for TDM plug-ins, plus two aux sends. You can, of course, create additional audio mixing channels to handle the aux returns. Although you can solo and mute tracks in the Arrange window, I really missed dedicated Solo and Mute buttons on these mixing channel strips. However, this is a small point compared with

the fact that none of the other software features aux sends — although you can work round this, albeit rather clumsily, in *Cubase Audio* by creating a second mixer in the TDM page. On the whole, *Logic Audio's* mixer is attractively designed, works well, and currently offers more functionality than any of its competitors.

• PLUG-INS:

Up to two plug-ins per channel are allowed, and the pop-up menu of TDM plug-ins is conveniently split into mono-to-mono and mono-to-stereo groups. Mix automation, including plug-in automation,

is a breeze. Running GRM Tools, for instance, within *Logic Audio*, you simply put one of the MIDI tracks into record, move the faders on the GRM Tools plug-in, and *Logic* will record the GRM Tools' fader movements as controller data. This lets you do MIDI-controlled filter sweeps, and so on.

• DSP FUNCTIONS:

As with *Cubase Audio*, *Logic Audio* allows you to use the all the basic *Sound Designer II*-style DSP functions from within the Waveform edit window. You also get several impressive functions within the 'Digital Factory'. These are all non-real-time processes which create new files; unlike with TDM plug-ins, you

OMS: THE OPEN MIDI SYSTEM

The Open MIDI System was developed by Opcode to make MIDI connections and routing simpler for musicians using the Macintosh. OMS acts as a central MIDI driver to communicate with MIDI hardware via a standard serial port connection, and provides professional quality timing services (developed by Steinberg and Opcode) for synchronising events.

Using the OMS Setup application, you specify which MIDI devices are attached to your MIDI interface, which MIDI channels they can receive on, whether they can send or receive synchronisation data, which socket (or port) each MIDI device is connected to (in the case of a multi-port interface), and so on. OMS also allows you to route MIDI and sync data between two or more OMS-compatible applications running at the same time on your Mac.

Having completed the procedure described above, next time you ran an OMS-compatible MIDI sequencer, you would be able to make a list of all the devices in your MIDI setup available for use within your sequencer. Then, for instance, instead of having to choose, say, MIDI output port 3 on your interface and MIDI channel 1 for your DX7 on a particular sequencer track, you simply specify that a particular sequencer track will play your DX7! This is much better than having to try to remember

which device is on which port and channel, as you have to do with non-OMS-compatible sequencers. Another great feature of OMS is the ability to use a patch editor/librarian such as Opcode's popular *Galaxy*, to 'interrogate' your MIDI devices and have them send all their patch data via MIDI to your Mac. Once in the computer, you can save your patches onto disk, so you might have a file for your DX7 patches, another for your Proteus, and so on. This is very convenient, as you may want to change the sounds in your instrument's user-memory locations tomorrow, and come back to your current project another day.

OMS allows fully-compatible software, such as Opcode's *Vision* sequencer, to 'Subscribe' to a *Galaxy* file so that the list of patch names for a device will be made available for use within the sequencer software, just as OMS Setup data is made available to the sequencer. Now, instead of entering a MIDI Program Change number, you can select the patches in your instrument by name.

Third-party manufacturers like Steinberg, Digidesign, Passport Designs, Roland, Lexicon, Mackie, and Emagic are adopting OMS in increasing numbers — although there is a similar system available from Mark Of The Unicorn, called the FreeMIDI System. This only works with MOTU products, and no other third-party

manufacturers that I am aware of have implemented FreeMIDI as yet.

Yet another MIDI system with some similarities is Apple's own MIDI Manager software, which allows routing of MIDI data between MIDI Manager-compatible applications and to external devices. This software is not as efficient or as full-featured as the Opcode or MOTU systems, and is not normally recommended for professional work.

There have been some (very sensible) suggestions that Apple, Opcode, MOTU, and all the third-party MIDI software manufacturers should agree on one system to be adopted by all, to provide proper compatibility between all Macintosh MIDI software, perhaps with Apple providing the base level of this with a re-written MIDI Manager, and others providing the higher levels of functionality.

In line with this suggestion, Opcode recently announced that they have agreed to incorporate support for OMS into QuickTime, so that together, OMS and QuickTime will allow you to route QuickTime MIDI tracks to external MIDI devices. Full OMS compatibility is expected to be incorporated into QuickTime by the end of 1995. Steinberg and Emagic have also both added support for OMS, so this leaves MOTU standing outside with their FreeMIDI System.

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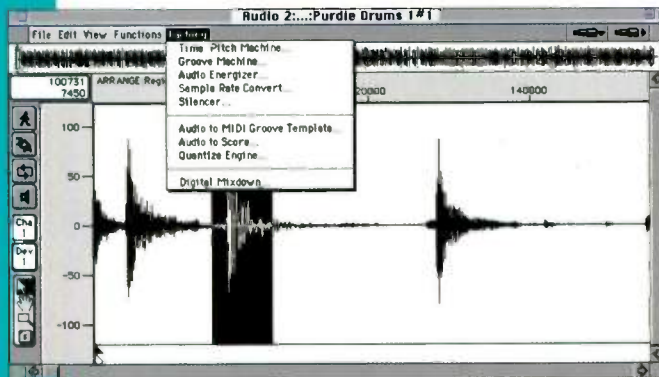
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- **A Poke In The Ear With A Sharp Stick**

CD-ROM Alternative Sound Libraries, vols I-IV

Look out for major DECK II upgrade to v2.5 next month!

MIDI + AUDIO



Logic Audio waveform editing.

- ▶ cannot hear the results until you've created the new files, though you can process data while still playing a sequence.

Functions include the Time Machine for time compression/expansion and pitch shifting, and the Groove machine and Quantize Engine for rhythm. The Groove machine allows you to apply swing feels to existing audio, and the Quantize engine allows you to apply any available quantise value to your audio. Though these start to sound odd if you go too far, they are extremely effective and have a far greater useful range than you might expect.

Two newly-added, and unique, features are the Audio Energizer and the Silencer. The Audio Energizer increases the perceived volume of the audio through the use of peak limiting while altering the sound as little as possible (something like the effect of driving an analogue tape machine into saturation, leading to some compression and distortion of the sound

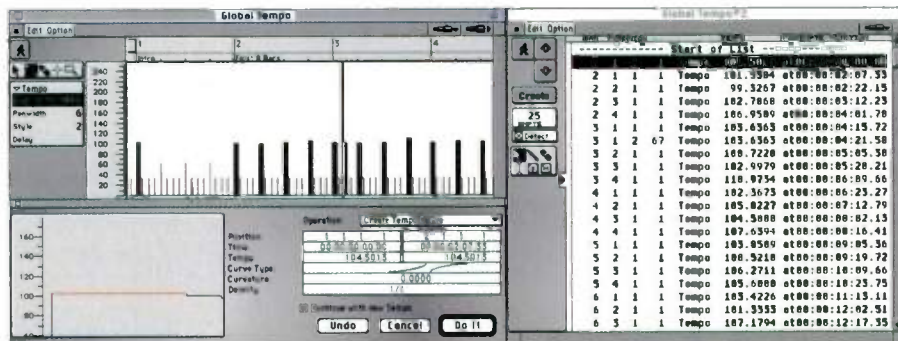
template. You can then apply this to any MIDI data using the Quantize feature, effectively extracting the 'feel' from the audio.

Audio-to-Score lets you turn monophonic

which can be subjectively pleasing).

The Silencer offers Spike Reduction, which helps eliminate clicks and pops, and Noise Reduction, a noise filter which cleans up mostly high-frequency noise components in the audio.

• **AUDIO-TO-MIDI/MIDI-TO-AUDIO:** Audio-to-MIDI Groove lets you analyse audio and use it to make a MIDI groove



Logic Audio tempo control.

audio into MIDI sequences, which you can use to double the audio using MIDI instruments, or print out as a musical score.

• **TEMPO CONTROL:**

The Tempo control options in *Logic* have been thoroughly updated, and now include

Randomize, Scale Tempo, Create Tempo Curve, Stretch Existing Tempo Curve, Create Constant Tempo, and Thin Out Existing Tempo Changes. You get both list and graphic edit windows for the tempo, so it is easy to draw in accelerandi or ritardandi, and a Reclock feature is also available — with or without the use of a guide sequence.

• **MIDI MACHINE CONTROL:**

MMC is supported, and all the transport controls send out the standard MMC commands. With MMC selected in Preferences, the transport bar no longer functions as a transport bar; instead, it automatically turns on Auto-Sync In, and the sync light comes on. Pressing Play on the transport sends out the MMC command to the connected multitrack, which goes into Play and sends out timecode. *Logic* picks up the timecode and starts. This all

works well with an ADAT and Steinberg ACI. You can use multiple ADATs, although you really need a BRC for this, and many functions of the BRC can be controlled using an Environment template supplied for this purpose.

• **QUICKTIME:**

QuickTime video files can be opened within *Logic Audio*, and MIDI and audio can be synchronised to video to give random access to all three while producing music to picture.

• **POWERMAC NATIVE:**

PowerPC-native *Logic* was due for release on October 1st, with a minimal crossgrade charge. Native *Logic Audio* should be out before the end of the year. The code has been totally re-written to be significantly faster, unlike some of the competitors, which are PowerPC-compatible without being 100% native.

SOS

A PERSONAL WISH LIST

It would be great if all the programs under examination here featured 9-pin control of professional VCRs, to facilitate more efficient working to picture — as featured by Digidesign's *PostView* for Pro Tools III. With *PostView* you can not only work with digital video in a QuickTime window, you can also optionally synchronise to a professional Sony U-Matic (or whatever), and control the transport of the U-Matic directly from the Pro Tools transport controls. This works very similarly to MMC, with either Pro Tools or the VCR as Master sync source. Composers working to picture usually like to show their clients a first-rate video picture coming off the VCR, rather than the lower-quality digitised video coming off hard disk, while they can appreciate the benefits of random access to the video when working on the details of a music cue.

I'd also like to be able to cut and paste sections of video on video tracks alongside my MIDI and audio tracks, and then save the results as a QuickTime movie containing multiple tracks of audio (and/or MIDI) and compressed for playback either from hard disk or CD-ROM. This would really be the 'killer app' for multimedia, but is obviously irrelevant to anyone concerned only with audio!

Another major wish is for some extension to the MIDI

file format to allow MIDI files to transfer information about the digital audio tracks between sequencers. I set up my demo project for this review in *Logic Audio* at first. Then I transferred to *Digital Performer*. I saved the MIDI data as a MIDI file to open in *Digital Performer*, but I had to import and place my audio files all over again into the *Digital Performer* project. In *Digital Performer*, I set up several Markers for the different sections, and then transferred to *Cubase Audio* via MIDI file again. Neither *Cubase* or *Logic* can read the Marker information which you create in *Performer* or *Vision* (or any other MIDI software), so I had to laboriously create new markers in these. Finally I transferred into *Studio Vision*, and again had to re-import the audio and place it correctly, although, thankfully, I was able to take the Marker information from the *Performer* MIDI file this time. The MIDI + Audio programmers should seriously consider adding OMF (Open Media Framework) file compatibility to their software — maybe using a file translator, as Digidesign and OSC do. The benefit of OMF is that it allows you to transfer digital audio/video files between systems from different manufacturers, although I'm not sure whether OMF takes account of MIDI at present.

FURTHER INFORMATION

£ *Logic MIDI Sequencer* £399; *Audio Module* £299; *Package* £649; *TDM Extension* £149; *CBX Extension* £75; *A/V Extension* £75. Prices inc VAT.

A Sound Technology, Letchworth Point, Letchworth, Herts SG6 1ND.

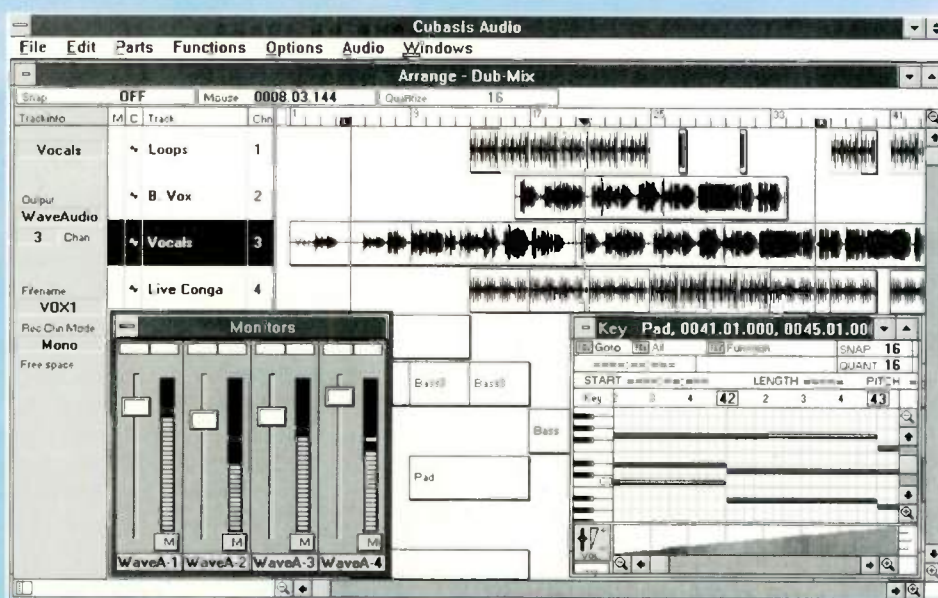
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You can also bounce, mix, cut, glue, paste both audio & MIDI tracks.



Unlike an ordinary tape deck this program records in a digital format – so no loss of quality. Plug in a mic, guitar, to your soundcard and hit the record button – up to 4 stereo tracks of audio. Alongside these, with a MIDI keyboard you can record a further 64 tracks!

So what do you need? Well apart from the program itself, a PC running Windows, an MME soundcard. The only limit is your imagination.

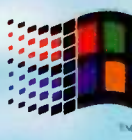
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Take 10 synths...

A JOURNEY
THROUGH
SYNTHESIZER
HISTORY

As far as I know, I was the first person to compile synth reviews with the aim of putting this category of musical instrument into some kind of historical perspective and, coincidentally, the *Keyfax* series of books for which I began the task of compilation is also celebrating its tenth anniversary, like *SOS*. Now, of course, everyone is at it, and a quick flip through recent editions of *SOS* and other UK publications reveals that 'old synths' are now being re-reviewed almost as regularly as new ones.

When *SOS* publisher Ian Gilby asked me to trawl my fading memory for a likely list of candidates for this feature, my first thought was that I would be mad to stick my neck out like this and offer what will invariably be regarded as my personal Top 10. I want to

Sound On Sound's first decade has been graced by synths that were revolutionary, synths that were fascinating, synths that were seminal, and synths that were simply loved.

JULIAN COLBECK takes a personal look at 10 of the best from synthesizer history.

emphasise that it is *not* — these are simply 10 instruments from my Top 100 — or possibly from my Top 50 — and no more.

So I have decided to avoid burdening you with another potted review of the Prophet 5, or of the Minimoog, or of the Juno 60, and certainly of the TB303. My selection was based upon a number of criteria, amongst them: whether I had new thoughts or information on an instrument that could be conveyed in my

allotted word count; whether an instrument has some particular relevance to the UK; and whether or not an instrument has by now been retro-reviewed to death.

Like all good authors, I will conclude this introduction with a good plug for the forthcoming Omnibus Edition of *Keyfax* from which much of the new information in this feature has been taken. That's where you will find my Hot 100!

ARP 2600

MONOPHONIC ANALOGUE SYNTHESIZER

Made by: ARP (USA) from 1971 to 1981

Designed by: Alan R Pearlman

Original price: £1350

Current price: £1200-1500

Sound generation: analogue, subtractive synthesis

The only ARP instrument I ever owned was an Odyssey. It was the first synth I ever bought, and it took myself and both the salesman in Boosey & Hawkes in London a good half an hour to get a squeak out of it. ARP were a perverse company. Nothing ever came — or went — easy.

ARP produced the 2600 as a more readily available alternative to their first big hit, the large and complex modular ARP 2500. With the 2600, Pearlman had his beady eye on the education market, hence the handy completeness of its built-in amplification system and the informative schematics on the front panel. The 2600 was designed to be understood and used. And it was and is.

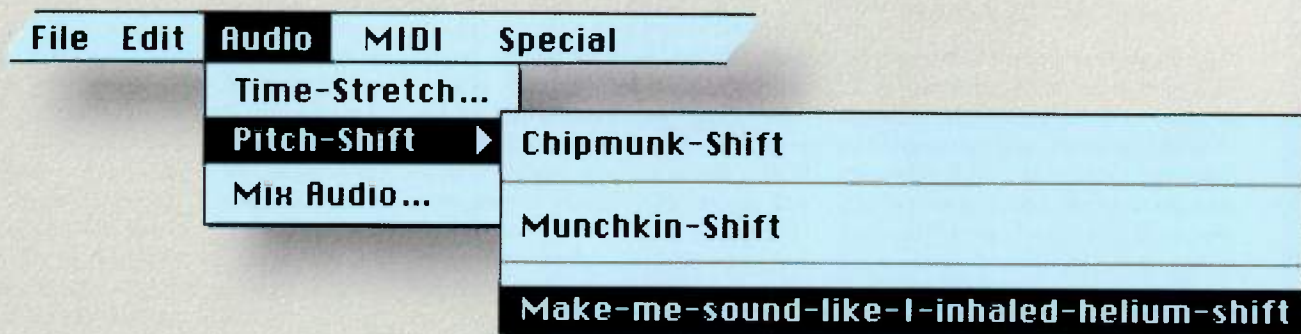
"With the 2600 you never have to listen to the same sound twice if you don't want

to," said Joe Zawinul in an ARP promo leaflet of the day. Some would argue that you cannot get the same sound twice even if you do want to, and that this is part of the 2600's charm and attraction.

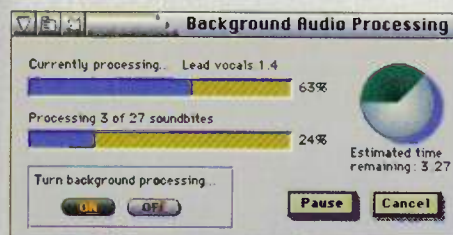
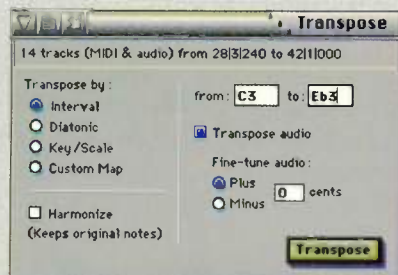
The ARP 2600 has spawned an industry of debate, conjecture, folklore, and rivalry. Is a 'Blue Meanie' (one of the garish, garage-assembled earliest models), better than a 'Grey Meanie?' Does yours have the old 'Moog' style filters, or the later filters hastily designed by ARP in response to an impending



OBJECTS IN MENU MAY BE LESS USEFUL THAN THEY APPEAR

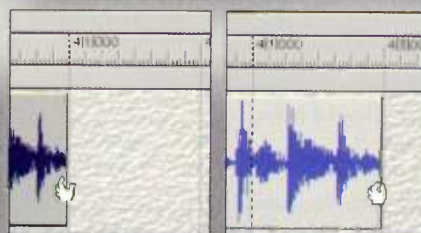
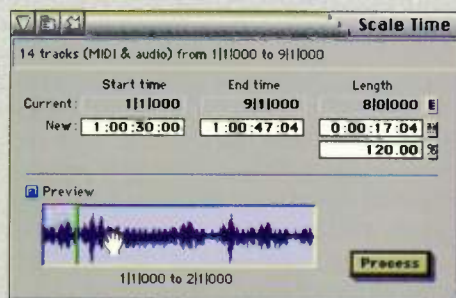


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Digital Performer provides background audio processing so that you can get on with your work while the computer processes your effect.

In Digital Performer, you can transpose audio and MIDI data at the same time so that you don't have to waste time doing it twice. After all, that's what MIDI sequencing software with integrated digital audio is for.



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music track

10 Great Synths

► law suit from Moog? Or indeed versions of these filters that were amended and improved after ARP went out of business?

With a 2600 you're not just buying a piece of musical equipment but also a source of endless speculation.

ANATOMY OF AN ARP

The nuts and bolts of the instrument are packaged in an oblong case whose lid detaches to reveal a telephone exchange of sliders, switches, and patchbays. This is a 3-oscillator analogue design with separate keyboard, complete with effects processing and amplification. There are three voltage-controlled oscillators, a 4-pole low-pass resonant VCF, VCA, two envelope generators, ring modulator, sample & hold circuit, white or pink noise generator, a mic preamp input, unique(ly) confusing voltage processor controls, and a spring reverb, most of which can be manually cross-patched (each of these modules has an input and an output, making it an excellent instrument on which to learn what each part of a subtractive synthesis instrument actually does) for an unending array of analogue sounds.

It's quite possible to stand in front of this hands-on machine and manoeuvre sliders until you hear something wonderful (especially if, as The Underworld's Rick Smith pointed out on the Museum Of Synthesizer Technology video, you start feeding it with outside inputs, like short wave radio signals). Sample and hold effects (the classic bleep and blarp provider) can even be clocked externally.

Though MIDI was not even a nightmare during the 2600's production, interfacing this instrument with the modern world is not generally a problem. Any MIDI-to-CV boxes should provide MIDI access.

DESIGN EVOLUTION

The 2600 changed quite a lot during its long production run, externally from the original distinctive blue panel and metal casing, to more subdued grey-faced and black models, to the final models blessed with rather cheap looking orange markings. According to ex-ARP personnel, the later models were considerably better made, their modified internal designs at least allowing them to be repaired, an option that the epoxy-entombed circuits of the early models singularly fail to offer. But then there's that trade-off with 'originality,' 'rarity,' and 'sound.'

One of the most important ARP-implemented changes came in 1975, when a modification from fellow synth designer (then mere peripherals designer) Tom Oberheim was adopted on production models. The modification not only provides a form of duophony (one oscillator serving the low note, another the high), but also provides a delayed vibrato feature, and a choice of single/multiple triggering. In 1978, American engineer Tim Smith discovered a fault in the 2600's filter which can cause the instrument to sound, well, dull. Smith, presently half of ARP experts Weyer/Smith Labs in Billings, Montana, is quite happy to share the secret of his discovery with anyone who asks, and the result is a frequency response of better than 22kHz.

Weyer/Smith offer a vast range of 2600 improvements and upgrades, including a 'fix' for the dreaded 2600 'thump', which occurs if you try to set fast attack and release times on the envelope generator.

ARPING ON... AND ON... AND ON

In its day, the 2600 was a valued tool in the hands of most top players, from Joe Zawinul (top lines from such tracks as 'Scarlett Woman' and 'Black Market') to Tony Banks, Edgar Winter, whose monstrous synth sounds on *Frankenstein* are generally credited to the 2600, to Stevie Wonder, who was built a modified version utilising braille. Today's users include the likes of Rick Smith, and Vince Clarke, who reckons this is the best synth for making stupid, funny noises with.

A few years ago, as prices were climbing up to the £2000 mark, the ARP 2600 was in danger of becoming the darling of the synth bore: sought after, bought, rabbitied on about, but never actually played. Such a criminal waste seems to have been averted with the recent price slackening. This is a magnificent instrument to play. Long may people afford to and be allowed to do so.

FURTHER INFORMATION

A Weyer/Smith Labs, 3461 Canyon Drive, Billings, MT 59102, USA.
T +1 406 652 1564.

An ARP 2600 can be seen and played at the Museum Of Synthesizer Technology; see SOS feature in October 1994 issue.

CASIO CZ101

POLYPHONIC DIGITAL SYNTHESIZER

Made by: Casio Electronics (Japan) from 1985-1988
Designed by: Mark Fukuda & A. Iba
Original price: £395
Current price: £100
Sound generation: digital, PD synthesis

When Casio produced the CZ101, it was as unlikely as Dixons producing custom design vinyl turntables. Less surprising than if they moved into the vegetable business, sure, but a definite shock. Casio's business was consumer electronics with a musical slant. For such a company to build a synthesizer, never mind a damn good one, was both intriguing and thrilling.

Why did Casio do it?

Yamaha's DX7 had set the synth market on fire a couple of years earlier and Casio, whose every product is specifically and solely aimed at the mass market, must have figured the age of the mass market musical instrument was upon us. And for a year or two Casio were right; both Yamaha DX7

and Casio CZ101/1000 sold by the thousand. But these were bright flashes in a very small pan. Never mind the heat, Casio couldn't stand the size of the kitchen and within a matter of four years called in the pro synth raiding party and resumed hostilities with home keyboards.

The CZ101 entered the world as a bargain basement digital synth initially sold, as often as not, by a bemused Casio sales force, ►



EVERYBODY'S RAVING ABOUT IT!

Nord lead is the first digital synthesizer to use "Virtual Analog Synthesis". Clavia has analysed analog synthesizer design in detail and implemented the research in a digital model. Nord lead employs mathematical simulations of the electronic signal generated by analog oscillators, instead of using waveform tables.

This makes it possible, for example, to sweep the pitch smoothly over a very wide range and allowing for true pulse width modulation.

4 voices expandable to 12, 4 part multi-timbral • Velocity programming: each function controlled by a knob, can also be controlled by the modulation wheel for continuously fading between two values • 4 octave velocity sensitive keyboard with octave shift buttons (5 oct). Modulation wheel, the "Pitch stick", featuring no dead zone at zero crossing, pedal input for sustain or expression pedal. • 2 digit display, 26 knobs and 19 buttons for program editing • 2 oscillators generating triangle, sawtooth or pulse with adjustable width waveforms. Oscillator 2 can also generate noise with a colour control. Oscillator 2 can be hard "sync'd" to oscillator 1. Linear deep frequency modulation of OSC 1 from OSC 2 • 12 db "2 pole" lowpass, 24 db "4 pole" lowpass, bandpass or highpass. Cut off, resonance, envelope amount, envelope amount controlled by velocity, keyboard tracking and ADSR envelope • ADSR envelope, gain control • LFO 1 generating triangle, saw or random routed to osc 1 & 2, filter or pulse-width. LFO 2 produce a triangle waveform, routed to osc 1 and 2 or amplifier. It also controls the rate for the arpeggiator. Arpeggiator: Range: 1-4 octave. Modes: up, down-up/down. Modulation envelope (attack, decay) for osc 2 pitch or FM amount. • Play mode: Poly, legato, mono, unison mono, unison poly. Manual mode: 4 program slots for layering possibilities. Portamento/auto portamento • Stereo output. Modes: Stereo, mono and multitimbral (AC & BD) mode. Headphone out. Stereo 18 bit DAC • 99 programs (40 programmable). With the 8 voice expansion card, the Nord lead can hold an additional 297 (99 by 3) user-programmes on a PCMCIA 64 kilobyte battery backed RAM card • All control knobs and switches for program editing sends and receives Control Change messages. System exclusive bulk dumps, 1 program or all programs. Midi clock synchronising LFO 1 and LFO 2/arpeggiator. Triggering of the filter envelope and velocity control from separate programmable MIDI channel and note numbers • £1495 inc VAT (keyboard version)
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KEY
Audio Systems

YOUR NEIGHBOURS WON'T LIKE IT!

10 Great Synths

► through the same channels as its home keyboards. But its origins were far loftier. The CZ101 had been hewn out of Casio's much vaunted Cosmo Synth concept, whereby all manner of instruments and devices were being extracted from a sort of space-age wonder synth supposedly designed for synth king Tomita for his *In Praise Of The Earth* extravaganza (a classic piece of mid-'80s money-burning which had The Synthetic One dangling out of helicopters, conducting an electronic orchestra that was floating about on New York's Hudson River).

STAGE HAND

If the CZ101 was snapped up by burgeoning computer musicians, it was by no means sentenced to being stuck in the house all day. With strap holders at either end the lightweight CZ101 makes a perfect sling-on keyboard for on-stage use. Casio demonstrator Hans 'Herr' Dryer and his mind boggling solo-guitar-fading-into-feedback patch was a hit at all the European trade shows at the time. Hans' patch never made it as a factory preset but I still remember it well.

Viewed now, as then, the CZ101 looks a most unlikely candidate for success. It's small — tiny, almost — with reduced-size keys, and has little in the way of pro synth aura. But it sounds great: raucous, piercing, and with plenty of scope for idle noodler and serious programmer alike to create new textures.

GOING THROUGH A PHASE

The CZ101 is based on Phase Distortion, a proprietary brand of digital synthesis involving messing around with a waveform's phase angle (representing its basic shape) and applying multi-stage envelope generators to all three of the fundamentals of sound: pitch, tone, and duration. PD — as it became known —

rivalled, and to an extent has similarities with, Yamaha's FM synthesis. It's very different in one respect, though, in that on the CZ101 it is entirely possible just to fiddle about and get some very workable, musical results. Much of this is thanks to the healthy number of dedicated control buttons, and a small but informative display screen.

The three main sections are DCO, for the oscillators; DCW — 'W' for Wave — whose functions are tone-bending and filtering; and DCA for the amplifiers. Each of these sections can be shaped by its own 8-stage envelope generator.

On the DCO panel there are a number of basic waveforms to choose from: sawtooth (best for brass or string sounds); square (for woodwind or organs); pulse (for thinner, more nasal, reedier tones); Double sine (a slightly beefier version of pulse); Saw-pulse (a real rasper). Any two of these can be combined, and in addition there are three resonance waves which are, as you might expect, facsimiles of those classic Moog burbling filter patches, full of harmonics and whistlings.

Having made a waveform selection you can re-shape it using the rate and level-based envelope generator, an operation that may seem tedious in print and in prospect, but which in practice is beautifully offered and pretty painless to carry out. Indeed, the CZ101 is a very thoughtful little instrument. There's an edit/compare feature, you can initialise settings, there's key follow, portamento, noise, ring modulation, and (quite a killer punch at the time), the instrument can be used multitimbrally, with four monophonic voices. In 1985, MIDI itself

was new enough and multitimbrality was a rare and little-understood notion. The growth of computer-based sequencers gave an added boost to CZ101 sales, as this was (and possibly still is) one of the most cost-effective multitimbral sound sources on the market.

The CZ101's quoted 8-voice polyphony is not entirely fair, since almost all patches use the Line 1 + Line 2 routing (ie. an oscillator signal path of DCO, DCW, DCA) for thicker, more complex and interesting doubled sounds (and less polyphony). And if this is not enough, a feature called Tone Mix renders the instrument full-fat monophonic. And although in-depth, precision programming is a feat generally beyond most people, there's still a forest of literature, videos, organisations, software, and sound cartridges around for users to get help at any level they choose.

CHEAP AND CHEERFUL

CZ101s are notoriously reliable. Yes — reliable. Casio's service department rarely sees any, and when they do it is often simply a question of pressing the underside reset button, marked P, while the instrument is switched on, in order to reload the factory presets. The CZ101 can be powered from batteries and if you let these go flat the memories will fade.

So many CZ101s were made, and the price was so low to begin with, that this instrument remains a bargain buy, unlikely ever to filter up into the crazy price ranges of some 'retro' instruments. Still capable of turning in some great sounds, though, this is an instrument no idle collector should be without.

EMS VCS3

MONOPHONIC ANALOGUE SYNTHESIZER

Made by: EMS (UK) from 1968-1994
Designed by: David Cockerell
Original price: £330
Current (new) price: £1500
Current second hand price: £500-1000
Sound generation: analogue, subtractive

All synthesizers have an element of 'toys for the boys' about them, and the VCS3 is the quintessential gadget for spotty Herberts who were no good at sport and liked to spend their free time in the science lab playing around with bits of wire and Bunsen burners. The VCS3 looks like a nice piece of laboratory equipment, with its large control knobs and pin-matrix patchbay encased in

a real wood frame. Its *penchant* for spacey, whoop-whoop-blip-swoosh type noises that are totally unusable in any musical setting — aside from rhythm or sound effects, at which it is totally brilliant — reinforces that image still further.

SEMINAL SOUNDS

Over its long and frequently illustrious life, the VCS3 found favour with most of early synthesis' shakers and movers: Eno during early Roxy Music days, Pete Townsend, who had the VCS3 trigger the organ sound on The Who's seminal 'sequencer synthesizer' track 'Won't Get Fooled Again', Todd Rundgren, and Jean-Michel Jarre, who still



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► has a phalanx of them in his armoury. Shunting forward a few decades, Julian Cope continues as a valued customer, and the Aphex Twin is a reported loyal fan.

Designed here in the UK, the VCS3 was instantly popular amongst the European *avant garde* for a number of reasons. It was affordable; it could supply an endless and unrepeatable selection of high quality, interesting electronic bleeps and blurps; and though not exactly portable, due to the L-shaped design which makes it awkward to pick up or to box, it was comparatively small.

NOISE MACHINE

With its independent three-oscillator design (independent not only in range (frequency), and level, but also in waveforms and applications — VCO3 can be used as a sub audio LFO), plus white and 'variable coloured' noise generator, self-oscillating low-pass filter, ring modulator, envelope shaper, and even a dual spring-line reverb unit, the VCS3's basic range of tools exudes quality in scope and performance. Except, it has to be said, in terms of oscillator stability. If all you want to produce are 'interesting' noises, then drifting oscillators can be part of the sound, but for an accurate pitch performance this problem makes a VCS3 a high-risk animal.

Though the oscillator and filter panels should seem familiar to anyone with a degree of subtractive synthesis experience, the envelope shaper panel, featuring a pair of

attack controls, decay/off, plus 'trapezoid' and 'signal' level controls, will probably fox most — including me. With its variety of triggering modes, and decay time setttable from the patchboard, this simply has to be viewed as an area for experimentation by modern, ADSR-inclined users.

Much of the pleasure in playing a VCS3 lies in the small flat part of the panel's patchboard pin matrix, which allows you to connect up each of the instrument's 'modules.' It's a bit like playing solitaire, and, for most, with equally unpredictable results. But it is the VCS3's ability to be cross-patched in an almost limitless number of permutations and routings that accounts for its enduring mystery and appeal.

It'll probably come as something of a shock to discover a reverb unit, which offers delays of 25 milliseconds up to 2-second reverbs, again voltage controllable via the patchboard, and stereo outputs which effectively let you set up and deliver two separate but simultaneous sounds. In the days before MIDI, the only way to expand your sonic horizons beyond the wire-covered lump of metal you actually purchased was to drive (or be driven by) other audio sources. External signal inputs let you process signals from a mic or a guitar, and the control outputs let you trigger external sounds using the envelope shaper or third oscillator LFO.

The VCS3 was one of the first instruments to offer joystick control, governing independent parameters on its X and Y axes.

Joystick or not, unless your live performances do not entirely depend upon defined Western musical pitches, the VCS3 cannot be recommended for live use. Tuning is inherently hairy, and the prospect of a hard-working musician under stage lights sweating profusely into the patchboard as he leans over the controls is frightening. Frankly, the VCS3 is most at home at home, and to this end there's even a small internal speaker system.

The VCS3 was also made available in 'briefcase' form, as the Synthi A. The KS Sequencer keyboard can be fitted into the lid of a Synthi A (thus making it into what EMS sold as the Synthi-AKS). This 2.5 octave touch keyboard (no movable keys) even throws a 256-note sequencer into the pot. The many illustrious Synthi AKS users include Alan Parsons and Pink Floyd.

Currently EMS is assembling what it says will be one final batch of Synthi A machines — nothing to do with demand; there are simply no more ABS casings left after this batch. Similarly, the VCS3 is officially deleted, but only because EMS cannot find a local woodworker capable of producing the French-polished afromosia hardwood case for a sensible price.

FURTHER INFORMATION

A EMS, Trenchard Vein Barn, Ladoek, Truro, Cornwall TR2 4NW.

T 01726 883265.

F 01726 883283.

KORG M1

POLYPHONIC SYNTHESIZER

Made by: Korg (Japan) from 1988-1994

Designed by: Mr Ikeuchi

Original price: £1099

Current price: £650

Sound generation: digital, AI synthesis

Korg's M1 has been the big success story of modern times. If this statement of fact surprises you in any way, you must either be brand new to the field — in which case, welcome! — or else you are leafing through the wrong magazine — in which case, please put this down immediately and pick up your copy of the *Angling Times*.

Korg had been trawling particularly bereft waters in the mid 1980s, and when the codenamed '731' was previewed at the 1988 Winter NAMM show in California, I think

no-one, not even Korg, would have predicted that what we were all looking at would become the world's best-selling synth ever.

Central to this sample+synthesis instrument (or AI synthesis, as Korg calls it) is 4Mb worth of PCM-sampled and

synthesized waveforms. From here, sounds can be shaped using quite conventional analogue-style editing parameters, the result being stored as the standard M1 currency of a Program. Up to eight Programs can be stored in a Combination, which are used





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► either for stacked or zoned sounds, or as a way of storing complete multitimbral combinations with each Program on its own MIDI channel. Throw in a decent pair of DSP chips for good on-board effects, and a sequencer, and there you have the M1.

Why has the M1 sold so well? "Sounds" is the most obvious answer. The M1's ROM waveforms, and stunning array of factory programs (not to mention endless third-party ones), sounded far better than anyone else's at the time and continued to do so for a number of years. Its factory programs, replete with acoustic guitars that really sounded like acoustic guitars, haunting oboes, and fierce, chunky pianos (the piano on LondonBeat's 'I've Been Thinking About You', and a zillion other dance soundalikes), melting strings, and sonorous basses, took the world by storm in 1988. In the cold, critical, physical modelling light of today, there's a certain four-squariness to M1 sounds. A lack of sophistication, perhaps. Yet their directness and sometimes quirky character can be extremely useful. Chances are an M1 will get you out of trouble. Even now.

INSIDE THE M1

An M1 Program can use one or two 'oscillators' as its starting point, each choosing its own multisound, from full multi-sampled pianos to samples of bells and pan flutes, plus snippets of sound like the famous 'Koto Trem' or 'Lore' (a sample of a jack-in-the-box being wound up, donated by Steve Winwood's keyboard technician), to synth waveforms hoovered out of that earlier Korg notable, the DW8000. The range and quality of these fundamental building blocks give the M1 its character and Korg its success, and much of the credit for this must be given to the Korg voicing team in Japan and the USA,

who assembled the list of PCM/DWGS multisounds and who also went on to programme the factory presets.

You can alter basic pitch, the relative volume of two oscillators (where applicable), you can go to work on a four-stage pitch envelope generator, low-pass filter comprising cutoff point, EG, velocity sensitivity, and keyboard tracking (but no resonance), a similarly-endowed set of amplifier controls, modulation controls affecting pitch or tone, aftertouch and pitch/mod wheel. Surprising facts are that the filters have no resonance parameter, there's only low-pass filtering, there's no interaction between oscillators (ie. no-cross modulation or sync), and only limited LFO options. In fact, Korg laboured long and hard over the filter, as on the original design the filter had no EG intensity. Fortunately, along with the fix came not just the intensity parameter but also the interesting positive or negative intensity option.

YOUR FLEXIBLE FRIEND

There's still plenty to do and plenty of tricks in the M1. You could try using the pitch envelope to give a single-oscillator sound an added bit of front end 'interest' (ie. a fast slide up at the beginning of each note). Not only can you create some catchy sounds like this, you can do it without having to resort to a double-oscillator sound, which halves the polyphony. Another good trick is enveloping out the body of a full-sample multisound to use as a brand new 'front end' in a double-oscillator Program. The tip of the koto multisound is a good example. Organ patches that use the rotary speaker effect can be dramatically improved by connecting a footpedal to Effect Control 1 (on the Global page) so allowing you to control the slow/fast 'Leslie' effect in real time. Similarly, you can adjust many of the

M1's basic controls — filter cutoff, release, effects level, and so on — in real time by selecting one of these parameters on screen (eight of them are displayed on the main Program screen, and can be accessed simply by pushing the little round function button underneath), and wagging either the edit slider or a connected footpedal.

Effects are found at the end of the regular edit pages in Program mode, and range from reverbs to delays, to overdrives, to chorus, to rotary speaker, to EQ, and are clean, powerful, and fully editable. The only nightmarish aspect of the M1 is the routing of these effects, because effects and overall output routing are inextricably linked. Choices abound, whether it be series or parallel for the effects, or a separate output for each program. There's even a couple of erroneous Program edit pages that don't do anything, just to make things really confusing.

Only die-hards use the M1 sequencer, 'limited' to eight tracks but offering quantising and editing plus one or two interesting options such as the ability to programme and store patterns — bite-sized chunks of sequence — in a separate slice of sequence memory that you can insert into your sequence wherever and whenever.

A fact tiresome to both Korg and the rest of the industry is that an M1 could still outsell most other synthesizers, even here at the end of 1995. Production did in fact cease in 1994, the final batch gobbled up ferociously in days. A remarkable instrument.

FURTHER INFORMATION

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

KORG WAVESTATION

POLYPHONIC SYNTHESIZER

Made by: Korg (Japan) from 1990-1994

Designed by: Ray Keller, John Bowen, Scott Peterson

Original price: £1499 (Wavestation EX keyboard)

Current prices: £600-1000

Sound generation: advanced vector synthesis

Tenacity is a key requirement of a synth design and a synth designer. With few

exceptions, the process from idea to product is a long and complex one, though few have been longer or more drawn-out than the story of the Korg Wavestation.

The Wavestation can trace its roots back to the mid 1980s, when Sequential (Circuits) as they then were, released a highly innovative synth called the Prophet VS. A hybrid digital/analogue instrument, the VS's oscillators did not produce static waveforms but rather waves that moved, evolved, and

changed from one shape into another. Sequential fell into disarray not long after the VS and the company was purchased by Yamaha in 1987. After a year of not doing a great deal (though Yamaha's SY22 was to nod quite distinctly in this direction) the Sequential team was binned by Yamaha, and Korg, scarcely believing its luck, offered them all jobs the very next day.

A brief guide to Wavestation history might be helpful at this point. First came the

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10 Great Synths

MOOG PRODIGY

► ANALOGUE MONOPHONIC SYNTHESIZER

Made by: Moog Electronics (USA) from 1980-1984

Designed by: Rich Walborn, Tony Marchese

Original price: £295

Current price: £225

Sound generation: subtractive, analogue synthesis.

You've heard of the Bootleg Beatles, and Bootleg gin? Welcome to the Bootleg Moog. This was what Moog personnel called the Prodigy, a design concocted on the quiet by Messrs Walborn and Marchese and sprung on the marketing team's desk



weeks before the annual industry spotlight, the Winter NAMM show.

If the Prodigy came as a shock to Moog, it descended like a giant can of insecticide on the British-made Wasp synth, which had been the big buzz all year in the UK. Cheap, cheerful, but without a moving keyboard, the Wasp opened up synthesis to a level of musicians who never dreamt they'd be able to own a synthesizer. Cheap, cheerful, with a moving keyboard, and a prestigious name tag, the Prodigy instantly snaffled all remaining 'beginning user' sales in the UK. Interestingly, in a market thus

softened up by the Wasp, the Prodigy was a good deal more popular in Europe than it was in the USA.

THE \$500 MOOG

Walborn and Marchese wanted to see if they could build a '\$500 Moog.' And they did. Clean-lined, the Prodigy is stripped of all extraneous features, offering two oscillators with a switchable choice of sawtooth, triangle, or pulse (Osc 1: narrow, Osc 2: square) waveforms that can be pitched within a two-octave range. Osc 1 calibrates this 32' to 8' and Osc 2 16' to 4.' An interval knob can split the voices up to a fifth apart, and a sync switch smartly lashes them back together again for those searing, forced tones that remain *de rigueur* in the Jan Hammer school of lead synth playing. A small mixing panel offers independent control over the level of each oscillator, plus a master volume.

At the time Moog made much of its 'heated chip' technology — not a culinary term, but a method by which Moog had hoped to cure the perennial problem of drifting (out of tune) oscillators. Maybe, but the Prodigy made a negligible improvement in this regard, and prospective purchasers would be wise to leave an instrument on for a while to see how well it performs.

The 24dB/oct low-pass filtering features standard cutoff frequency, and 'emphasis' (Moog's terminology for what everyone else calls 'resonance') controls, and a slightly limiting ADS envelope generator. The filter can track the keyboard fully, half on, or not, and is good for self-oscillating whistly ghostly noises. Modulation is limited, with

a square and sine wave-only LFO capable of modulating either or both VCO or VCF. It's all admirably straight to the point.

Yet, remarkably, the basic sound of a Moog synthesizer is retained — not classically so, and not particularly flexibly so, but with portamento and a pair of mod and pitch wheels, you can crank out some nice squelchy bass lines and more. The oscillator hard sync sounds work particularly well.

IMPROVING YOUR PRODIGY

There is an upgrade available for the Prodigy. It's called the Interface Kit, and is now handled by the newly-formed Moog Music Technology. The upgrade adds a greater degree of (like, some) interfaceability than the original design's lone audio output allowed at the time, and comprises Moog S-Trig and CV connections. You can contact Moog Music Technology Inc at 210 W. Ave, Depew, NY, USA 14043. Tel: 716 684 1090. Fax: 716 684 1091.

The Prodigy is encased in wood, and its basic construction was of good quality, which means that units stand a chance of survival. Some of the panel hardware was of less sturdy stuff, so some knobs and switches might have been — or might need to be — replaced. No matter: current street prices would suggest that the Prodigy is still something of a bargain for those looking for a piece of history at a price they can live with today.

The Prodigy is not the best Moog ever made, but it was particularly successful in the UK, which is why I have chosen to look at this instrument here, rather than conducting yet another retrospective examination of the Minimoog.

OBERHEIM

POLYPHONIC ANALOGUE SYNTHESIZER

Made by: Oberheim (USA) from 1983-1985

Designed by: Tom Oberheim

Original price: £4418

Current price: £800

Sound generation: analogue, subtractive synthesis

The OB8 was the last of a great series of Oberheim 'OB' synths that spanned the OBX, OBXa, and OBSX, classic instruments which have graced numerous classic recordings, from Prince's '1999' to Van Halen's 'Jump'.

In retrospect, Tom Oberheim felt the OB8 was "too perfect," lacking the grit of the earlier models, but most users are pleased to discover a relatively stable Oberheim synth. Unless you want to dice with death (and a large overdraft for an Oberheim 4- or 8-voice), the OB8 is clearly the model to go for.

HIDDEN DEPTHS

The OB8 has two VCOs per voice, each with sawtooth, pulse, and triangle

OBS

waveforms. Oscillators can be tuned separately and then shackled together in hard sync for searing, hollow lead-line sounds. The OB8 departs somewhat from the earlier OB design in its filter section, now offering a choice of 2-pole or the more drastic 4-pole filter slopes. An ADSR envelope generator is reserved for the filter. The filter is certainly precise, which probably

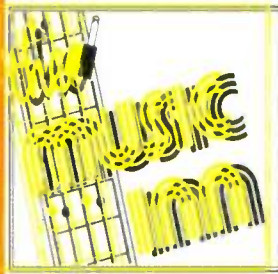
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- accounts for Tom Oberheim's slight misgivings on the instrument in retrospect.

LFO modulation can be in triangle, square, positive or negative ramp, or



sample and hold waveshapes, and used to modulate VCO frequency, or pulse width, the VCF cutoff frequency, or the VCA. Deeper into the programming pages, you'll find additional LFO functions for altering the LFO sweep into half steps, and 'un-syncing' the LFO for out-of-phase effects.

The LFO can also effectively track the keyboard, and thus speed up as you play higher and higher. Portamento options of smooth or quantised travel, and even polyphonic portamento, are also found here. Oberheim obviously felt (correctly) that such

in-depth features would frighten off the prospective programmer, and so hid these advanced features in a 'Page 2' mode which simply activates a second set of programming parameters under the control of the regular panel knobs and switches, once you double-press the 'Page 2'/chord button. The Page 2 concept caught on to such an extent that it rebounded somewhat on Oberheim, who subsequently had to offer a new front-panel screen which signposted these secondary, hidden functions.

The OB8 came out on the cusp of MIDI, which was offered as a retrofit or as standard for software revision B onwards. MIDI was obviously a bit of a rush job, since even the official MIDI version can only communicate on channels 1-9, with just program, program dump, and lever information (in addition to note information, of course) capable of being transmitted. A ray of sunshine here is that in split mode two sounds will be sent out on separate channels.

Patches come in either single or doubled/layered mode, with 120 of the former and 24 of the latter capable of being stored internally. A cassette interface was the original method of external patch storage, though the MIDI specification does

provide for patch data to be dumped and loaded too.

LA STORY

The OB8 represents a good blend of the player's and the programmer's instrument. The flipper-type pitch and mod wheel isn't to everyone's liking, true, but the keyboard is firm and the sounds feel playable. And there's a highly groovy arpeggiator that can be clocked externally (via arpeggiator clock input jack) if need be. Producer Steve Levine was a confirmed OB8 user in the mid 1980s, reckoning the instrument to exemplify the archetypal 'LA' sound — glossy, expansive, and expensive. More recently, Italian super remix team The Rappino Brothers use OB8 as a mainstay purveyor of analogue pads and gate-effected rhythm synth parts.

The OB8 was the hub of Oberheim's 'System', comprising OB8 keyboard, DMX drum machine, and DSX sequencer — quite the setup to have for a brief period until MIDI arrived and blew the need for such restrictive practices to smithereens. You don't buy Oberheim synths for precision accuracy and reliability, but the OB8 was by far the most stable and easiest to service of the OB range.

OSC OSCAR

MONOPHONIC ANALOGUE/DIGITAL SYNTHESIZER

Made by: Oxford Synthesizer Company (UK) from 1983-1986.

Designed by: Chris Huggett.

Original price: £699

Current price: £600+

Sound generation: analogue/digital, subtractive synthesis.

In order to sell, any product has to be at the right price in the right place at the right time. The British synthesizer industry is particularly adept at getting at least two of these wrong, but with the OSCar it might have actually got the lot!

The OSCar poked its rubbery nose into our lives in 1983 — just before MIDI came along, with a hefty old price tag, and only on sale in one (London) music store. Short of advertising it as radioactive, it's hard to see how OSC could have made things much worse.

And yet... roll of drums. And yet... hoist that flag. And yet... puff that chest out, the British OSCar became (and remains today) a highly-prized item. A monosynth with unprecedented power and range. A digital synth with an

analogue spirit (and, OK filters). A radical design in all departments.

BEST OF BOTH WORLDS

Physically, lumps of rubber serve both as section dividers and end pieces, giving the OSCar an endearingly industrial look. Operationally, the big thing about the OSCar is that you can tweak and store. In other words, it's modern enough to offer memories, but 'old' enough to know the value of dedicated panel hardware (even if the identically shaped and coloured knobs

are so long that they obscure their job description, unless you are a giraffe). You can also produce custom waveshapes; you can set up, and link up, and externally clock, sequences; you have an arpeggiator; you have fat, Moog-type filtering. And yet such attributes are offered in digital form. Only the filters are analogue.

Oscillators 1 and 2 can both be switched to triangle, sawtooth, square, variable pulse, or pulse width modulated waveforms, and can be set to a basic pitch range in one of five octaves — together or apart. The pair may be fine-tuned a semitone up or down — together or apart. ►



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10 Great Synths

- Osc 2's detune knob can also be used to set up a perfect interval between itself and Osc 1, and then the master fine-tune knob can be used as a transposer.

In effect, there are two 12dB/octave filters, which can be used in isolation or combined to produce more powerful 24dB/octave filtering. Filtering mode can be band-pass, low-pass, or high-pass, with control over cutoff frequency and resonance. A parameter called 'separation' governs the filter cutoff frequencies, and in band-pass mode gives you two separate resonances. In addition to the filter envelope generator (featuring standard ADSR parameters), which can be either normal or inverted, some excellent repeat effects, courtesy of the filter envelope triggering, are available. For instance, you could clock the filter envelope using the OSCar's internal clock, with speed governed by the tempo control (the same goes for the VCA envelope or, indeed, both at the same time). If blitzkrieg power is what you want, the filter can be overdriven — an additional function of the master volume control knob.

The LFO offers three basic waveforms — triangle, sawtooth, and square — and its six-position control knob also houses three routing options for 'env', which utilises the filter envelope instead of an LFO waveform, 'kbd' for a variety of filter tracking effects, and 'R' which produces a random sample and hold pattern controllable by the LFO's rate control. You can produce delayed vibrato effects by using the intro control, and the LFO can be used to modulate either pitch or tone. The VCA has its own ADSR envelope

generator, and both single or multiple triggering is possible, and programmable.

Adventurous types can construct custom waveforms by combining harmonics, additive synthesis-style, building upon a fundamental pitch in a wide range of combined levels. You can assemble complex, atonal waveforms, using the slightly cumbersome method of using the actual keys on the keyboard as selectors. Such self-created waveforms can be stored for use in later patch programming.

Although the OSCar was launched just before MIDI, the omission was swiftly rectified, and subsequent MIDI models went on to allow all of its 36 patch locations to be user programmed. A MIDI OSCar is fully 16-channel, allowing patch change, wheels, sequencer, and arpeggiator info to be transmitted. A little-known fact is that when linked to a regular polyphonic sound source the OSCar can trigger a MIDI-connected instrument polyphonically although the OSCar itself remains duophonic. Most OSCars sold were MIDI ones, and only 50 or so MIDI kits were installed, which means that there must be around 250 non-MIDI models somewhere. So they will stay, it seems, as the design of the instrument will not allow a MIDI kit to be installed as it can be on a regular analogue synth. As with any such idiosyncratic design, spares are going to be a problem. The OSCar uses a lithium battery to preserve programs, and if you disconnect the board in order to fit a replacement (which you cannot avoid doing and will have to do every few years) your programs will disappear into the ether. The

moral here is to save programs either to cassette, or dump data over MIDI to a data recorder beforehand.

As mentioned above, the OSCar has both a sequencer and an arpeggiator. Sequencer information is stored event by event, using notes and rests. Practice perfects a left hand/right hand technique of note and timing input that can almost be real time, and seasoned users generally swear by the variety of inspirational rhythms and effects you seem to be able to extract from the instrument. There are 22 sequence locations, and you can also chain sequences (with specific patch changes). Since the OSCar is technically a duophonic synth, it's quite possible to accompany yourself 'live' over the top of a sequence. Editing is concise more than all-encompassing, and the total storage capacity is 1500 events.

ENGLISH CLASSIC

The OSCar was used by a number of influential keyboard players, including Billy Currie, who featured the instrument on 'Love's Great Adventure', a track on *The Collection*, Ultravox's Greatest Hits album (the angular, harmonic-laden linking sequence-type part is copybook OSCar). Jean-Michel Jarre used it extensively on 'Industrial Revolutions', and Stevie Wonder used it on his *Skeletons* album. Apparently Stevie has 120Mb of OSCar samples tucked away in his Synclavier library. In the 1990s ambient and techno world, it's more a question of who doesn't use an OSCar — names include 808 State and Orbital.

ROLAND D50

POLYPHONIC DIGITAL SYNTHESIZER

Made by: Roland (Japan) from 1987-1989.

Designed by: Jimi Omoto

Original price: £1445

Current price: £550

Sound generation: digital, LA Synthesis

I don't recall my first impression of the D50, at a press demo in London, being an especially brilliant one. Against the backdrop of a contorted explanation of LA Synthesis, the new Roland synth sounded bright, and certainly breezy, but only the scale of the event — ultra plush — gave any clue to the power Roland obviously felt was lurking behind this new technology. The D50 went on to become the first big-selling instrument to use what would, amongst us pundits, become known as sample + synthesis design —

essentially a subtractive, analogue-style processing of sampled waves stored in a bank of waveform ROM.

By the time the D50 hit the streets it had been re-programmed by American programming wizard Eric Persing, and its range of multi-textured presets, such as the whirring 'Digital Native Dance',

'Chiffer', 'Gritttar', or 'Fantasia' became an instant hit with the public, reviewers, everyone. I bought one immediately.

At the time I was doing an album with Alan Parsons, and I remember being incensed when the record I had just plastered D50 all over was delayed. Even then I knew that within six months everyone would have those textures and sounds.






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10 Great Synths

► D50 DECONSTRUCTED

The smallest unit of sound on a D50 is a Partial, a sound snippet which can be one of two things: a short PCM sample — chink, chiff, blip, or bleep — or a full synthesized waveform. Partial can be combined in one of seven structures — PCM+PCM, PCM+Synth waveform, and so on. Thus combined, a sound then calls itself a Tone. Finally, you can combine two Tones in either split or layered formation. The result of all this jiggery pokery is that most D50 presets are indeed dual voices which utilise four Partial. A quick bit of maths will then reveal the instrument's tally of 32 available Partial to produce, in fact, no more than 8-voice polyphony at the end of the day. Even in 1987 this was a little on the stingy side. Fortunately, classic D50 sounds tend to be harmonically rich and complex and so lend themselves to being used for specific, generally polyphony-light parts rather than for the sweeping gesture.

Thereafter, D50 programming sticks closely to traditional subtractive analogue synthesis lines. Sound modifiers include a TVF Time Variant Filter (which can only be used for the synthesized waveforms, and which you think of as a glorified VCF with cutoff frequency, resonance, and keyboard follow, along with a plethora of parameters governing modulation amounts). The 'time' part of the name alludes to the filter's dedicated multi-stage, time and level-type envelope generator. Equally specific envelope generators can be used for the TVA (amplifier), and these, along with many LFO modulation controls, can be used by all the Partial. Each Tone can also make use of its own programmable chorus and EQ settings. Reverb is applied globally to the complete final patch, from 32 preset types, including halls, chapels, gates, slapback echoes, and so on. The quoted 24-bit reverb exudes quality even if reverb tends to be the first thing to be ditched in a recording situation — at which point the D50's 8-bit samples tend to be exposed in all their grainy glory.

The attack-portion PCM samples comprise

47 one-shot, percussive samples, 27 looped samples, and 24 re-worked loops of other samples, amongst which you will find chuffy flute attacks, flailing drums, piano front ends, guitar chinks, and more. The synth waveform side of the instrument is designed to play the part of a sound's 'body', something that can also change over time using the extensive envelope generators. Though you may not ascend the full heights of detailed programming, you can achieve a quite substantial level of customisation simply by altering the balance between two Tones, using the joystick.

Aside from using keyboard dynamics to control volume, tone, and modulation, there is aftertouch — helpfully, slider controlled — portamento, and a neat feature called chase play which delays the start of one sound within a dual or split pair of Tones. Though the D50 keyboard is capable of great bouts of player-initiated expression, it is also one of the most notoriously unreliable actual keyboards Roland ever made. The problem is generally one of notes either failing to trigger at all, or jumping straight to full 127 MIDI volume. Most often this is down to dirty key contacts, which, if you feel reasonably brave, you can clean yourself by taking out each key in turn until you get to the offending note and gently rubbing said contact with isopropyl alcohol. A tip: after you have done this, even more gently rub the contact with a piece of paper. No, not sand paper you clot. Just paper. For some reason, a contact that is too clean, works (or rather doesn't) similarly to if it were too dirty, and the paper rubbing action then dulls down the contact to perfection.

The MIDI side of the D50 is well defined and easily controlled, though notoriously a bit sluggish in response. Splits or combinations can be sent out on different channels, and mono mode is available (good for guitarists) but multitimbrality is limited to two channels. Painstaking programming, including mapping two halves of a split Tone to separate areas of the keyboard, can

squeeze a little extra zoning out of a standard instrument but if you want actual multitimbrality you'd better buy yourself the Musitronics MEX Multimode Expansion board, which not only multitimbralises the D50 but also doubles the internal sound storage capacity. The polyphony remains as it was, though.

Many ROM and RAM cards have been made over the years (there are some good newish ones from Metra Sound), none of which are cheap. A more cost-effective method is to store sounds on disk via SysEx. Not clear in the manual is the fact that you must press and keep holding down the data transfer button until you press Enter, when loading or dumping sounds.

A STING IN THE TALE

The D50 might always be associated with chiffs and puffs and/or bell-like sounds, but in truth it is capable of much more. It can produce a quite excellent organ (programmer Chris Macleod programmed a blinder for Rick Wakeman on his [and my] ABWH stint, which resulted in the Hammond taking an early bath), while lush analogue strings, pads of innumerable hues, and moody electric pianos should be within the reach of even modest tinkerers. Not so good are acoustic sounds, notably not acoustic piano.

Hands up who hasn't used a D50? Right. But just for the record it is all over Prince's *Lovesexy*, Genesis were extensive users, and so was Sting around *Dream Of The Blue Turtles*, and on and on and on. It's a little too early for the D50 revival, and I'm ashamed to admit that I've sold mine. But I took care to hang onto my extensive library of D50 sound cards and SysEx disks. We'll meet again, that's for sure.

FURTHER INFORMATION

- A** Roland UK Ltd, Atlantic Close,
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YAMAHA DX7

Made by: Yamaha (Japan) from 1983 to 1987
Designed by: John Chowning (FM), Phil Nishimoto,
Hans Yamada, Karl Hirano
Original price: £1549
Current price: £500
Sound generation: FM digital synthesis.

Hands up who hasn't played a DX7? Hands up who hasn't owned a DX7? Quite apart

DIGITAL POLYPHONIC SYNTHESIZER

from the musical importance of this instrument, the DX7 opened manufacturers' eyes to the possibility that synthesizers could sell. From DX7 onwards, the synthesizer industry grew up.

The DX7's gestation can be traced back

to the late 1960s when Stanford University's electronic music composition teacher John Chowning began experimenting with vibratos. Chowning discovered that he could produce musically complex, harmonically interesting results by modulating (using

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10 Great Synths

► high-speed vibratos) one sine wave with the output from another, and thus by 1967 the seeds of modern Frequency Modulation (FM) synthesis were sown.

Over the next few years, Chowning rationalised his work to the point where it had sales value for a musical instrument company. In a story reminiscent of Brian Epstein calling round record companies for



The Beatles in the early '60s, Stanford was turned down by all the major American keyboard manufacturers, turning to Yamaha more or less as a last resort. Keen from the off, it still took Yamaha almost 10 years from when they took out a 10-year license on FM to actually produce an instrument utilising this technology (the preset and hugely expensive GS1). But in 1983 all hell was let loose. The DX7 broke every rule in the book — sounds, playability, price. Yamaha simply couldn't make enough of them.

OPERATOR ASSISTANCE

The DX7 is a 16-voice polyphonic digital synthesizer, offering 32 internal memories plus a ROM/RAM cartridge slot. The keyboard is not weighted, but it responds to velocity and aftertouch. Further expression can be extracted from a Breath Controller (Yamaha's own invention), a mouthpiece/pacifier affair by which you can more convincingly simulate the breath-to-tone response of a wind instrument.

Chowning's FM theories manifest themselves on the DX7 as a series of 'operators' (which can be thought of as oscillators), that the instrument offers to the user in a number of different configurations or 'algorithms.' The operators are all sine waves, and can either be a carrier wave or a modulator wave, depending upon their position or relationship with each other in a particular algorithm. The DX7 can use six operators per voice.

The DX7 panel has plenty of dedicated controls, though switches are of the squishy 'membrane' type and the display screen is minuscule. Along the top of the panel runs a collection of algorithm diagrams, so you can see at a glance the type of sound you're likely to produce using each of these (effectively) oscillator configurations. An envelope generator, and a keyboard level scaling graphic are perched on the end.

DX7 programming is commonly, though not a little unfairly, perceived as impenetrable. Perhaps it was unwise of Yamaha to splash about words like operator and algorithm when oscillator or voice or shape might have been less intimidating. In any given program the novice programmer can simply switch operators on or off and begin to learn what role

each performs within a sound, but things do get rather more involved when you consider that each operator can also specify a particular pitch, volume, envelope, and such, and so is almost a complete mini-synth in its own right. In a flat, operator-plus-operator algorithm, the system can work as simply as drawbars on an organ, but once operators begin to interact, results become vastly more complex and unpredictable — which is why the system sounds so good, of course. Nonetheless, manoeuvres such as changing an envelope setting at the top of a stack of interacting operators can exert all manner of unexpected influences on operators further down, and it is this level of programming intensity that has thrown up the theory that the three essential ingredients of FM programming are trial, error, and luck.

It's not so much individual parameters that befuddle so much as the general level of interaction. Indeed Yamaha does retain many analogue-style features and terminologies. The LFO, for instance, offers triangle, saw-up/down, square, sine, and random waves, and can be set in terms of speed, delay, routing (pitch or volume), and amount. Although the envelope generators, which Yamaha bravely but wisely entombed in silicon rather than taking the 'flexible' software route, have their rate and level system emblazoned on the control panel, such multi-stage envelopes are notoriously complex to set, especially without any help via movable graphics on the display screen (the tangible benefit of hardware envelopes by the way, is speed). If I may precis a section of Howard Massey's excellent book *The Complete DX7*, one rule of thumb is to remember that envelope generator control over a carrier will affect volume over time and envelope generator control over a modulator will similarly affect tone. There is also a separate four-stage pitch envelope generator.

Many parameters that are sewn into the fabric of a program on more modern instruments are global parameters on the

DX7. These include pitch-bend range, mod wheel assignments, aftertouch response, glissando, poly/mono assign, and so on. These are all called Function parameters, and are accessed using the same buttons as the presets, or voice programming parameters. Said buttons thus have three separate purposes.

The DX7's superb presets — which must take a good deal of credit for sales — were programmed by two consultant programmers: Dave Bristow in the UK and Gary Leuenberger in the USA. Bristow and Leuenberger extracted every ounce of musicianship from the DX7, from the classic Fender Rhodes electric piano facsimile that has since entered synth folklore as 'DX piano' by all subsequent copyists, to the sonorous collection of fretted and fretless basses, to hand percussion, to bells, to marimbas, to ripping brass, to sound effects.

LUNCHTIME LEGEND

There can hardly have been a player in the 1980s who did not use the DX7 or one of its multifarious spin-offs. There also grew up a whole industry of DX7 add-ons and support products, including Grey Matter's E! expansion kit, which bolsters the patch tally to 320 while improving the MIDI spec to include local on/off, full 16-channel access, and wide-ranging MIDI filtering, and also adds some simple tone controls and the possibility of patch layering. A similarly user-installable mod, DX Super Max from Group Centre, beefs up the program count to 256, offers patch layering and function programming, but also adds the delights of a superb arpeggiator. Many of these features were later to be found on the DX7II, a bold attempt to rectify the occasional DX7 foible, especially concerning MIDI (the DX7 came out in the same year as MIDI and so is understandably a bit limited — only being able to send out on MIDI channel 1 and not having a local off setting are the two biggest problems).

DX7s have not yet become collectable like Minimoogs or Odysseys, though that day will surely come in spite of the 160,000 or so units that were sold. Synth folklore has it that Dr John Chowning received no money for his work. Not true, if my conversation over lunch with him a few weeks ago is accurate. He may not have made the \$20m+ that Stanford has over the years but he appears well satisfied with his deal. To its credit, Stanford University spent a good deal of the FM proceeds on a new and beautiful building for CCRMA, the Centre for Computer Research and Musical Acoustics (known as 'carma'), which Dr Chowning has spent his life developing and as the director of which he retired in the Spring of 1995.

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10 Years of Hi-Tech

MARTIN RUSS
takes a look at the
changing face of
technology during
the first decade
of SOS.

I didn't quite make it as a contributor into the first issue of *Sound On Sound*, but I was there in Issue 7 of Volume 1 and have been contributing fairly regularly ever since. So what's happened over the last 10 years? Here are some fascinating snippets of trivia from *SOS*, together with some scene-setting facts to put everything into perspective.

Trivia Question 1. Which issue of SOS had Phil Collins and Midge Ure on the front cover?

PAGES PER ISSUE

As you may have noticed, the page count of *SOS* has gradually increased over the years, although something really major must have happened in 1991, because the size almost doubled. And this current issue is the biggest so far (304 pages) — any resemblance to a telephone directory has nothing to do with the advertisers index that also lists their telephone numbers! To try and put the *SOS* cover price into context, here are some measures of what things are really worth after 10 years of inflation. Graph 1 highlights the price of a secondhand DX7, Graph 2 the value of a 1985 pound over the last 10 years, while Graph 3 shows inflation over the past decade.

As might be expected, the secondhand price of a Yamaha DX7 has fallen over the years, although the usual trend with old synthesizers is that they don't fade away, they become 'vintage' and suddenly collectable once more. It has already happened with analogue machines as 'retro' has become popular, and countless old monosynths have been hastily resurrected from dusty attics and corners of studios to be sold on to eager users raised only on digital synths, and who have never known the joys of tuning drift and interfacing conversion boxes between linear and exponential control voltages. Judging by the recent upturn in DX7 secondhand prices, the same might be about to happen with FM. There again, prices can fluctuate quite a bit, especially down at the lower price range.

To put the inflation graph into perspective, you need to remember that in 1980, inflation peaked at just over 13% per year, and from 1972 to 1982, inflation was always higher than 6% per year. The trend over the last five years has been downwards, with the current inflation rate somewhere between two and three percent

(depending upon whose statistics you believe!). The total inflation over the decade is a mere 44%, which doesn't seem enough to me — prices feel like they have gone up far more than that!

The pound today is only worth about three-quarters of what it was in 1985. Assuming total inflation over the last 10 years to be 44%, the buying power of your pound has almost halved. That 25p Mars bar was probably only about 12p when *SOS* first appeared.

Trivia Question 2. Which Computer Notes column regularly featured a man in a cap?

BUZZ OF THE YEAR

What was making the news in each of the last 10 years? What were people talking about, and what did they want to buy? Table 1 (see page 210) lists some of the product highlights of each year.

The passage of time is unkind and technology suffers rather badly in such a listing. I'm not sure that a Yamaha CX5 MSX computer would have much street-cred these days, although in 1985 it was giving the BBC B and Commodore 64 serious competition. Conversely, some familiar names may surprise you with their longevity: are *Studio Vision* and the *Wavestation* really five years old? *Trivia Question 3. Whose picture regularly featured an unusual guitar chording technique?*

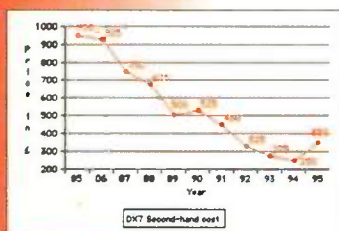
PRICE DROPS

One aspect of technology that is certain is the rapid price drop. Yamaha's GS1 FM synthesizer prototype cost £12,000 in 1982, and the DX7 a year later cost just over 10% of that! Over a decade, the changes in technology and price can be enormous, and they are often so large that no meaningful comparisons can be made. For example, hard disks. If I choose a midrange current size, 540 Megabytes, and look back a couple of years, today's 'under £200' price would have cost over £1,000 a mere three years ago, and I couldn't even find a price for that size disk four years ago!

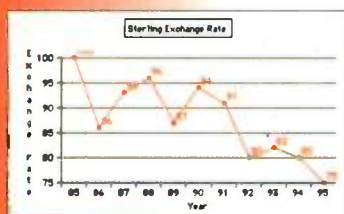
520Mb HARD DISK PRICE

1992	£1018
1993	£625
1994	£349
1995	£179

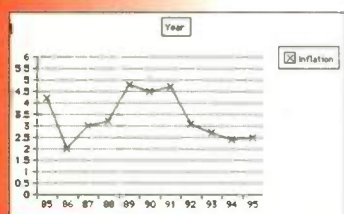
So how about something a little more stable? Memory (RAM) seemed like a good idea, so I investigated prices for 1Mb SIMM memory



Graph 1: Secondhand DX7 prices 1985 to 1995.



Graph 2: Falling value of the Pound between 1985 and 1995.



Graph 3: Inflation rates 1985 to 1995.

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D-ZONE do a great range of very low cost DJ-oriented rhythm loop CDs, featuring long rhythm tracks and accompanying samples. Some of the new D-Zone titles will also feature PC data (including hot games & shareware). Ten D-Zone titles are now available from Time+Space - ONLY £12.95 each. "If you're unfamiliar with the format, these CDs contain DJ loops lasting up to two minutes each, rhythmically edited on a CD. The main advantage of the format is that the loops are assigned to individual tracks, so cueing becomes easier (for DJs), and so does tracking through the samples in search of the perfect beat. The very nature of rhythm is that it repeats itself; by listening to extended grooves you can determine their usefulness on the dancefloor. This is a thing that is absent from conventional sample collections, where you're given a single pass of each loop and a brief opportunity to make up your mind. Here you can listen to a rhythm as it should be heard, over time. Play along with it if you wish, or maybe use it as a guide for a track you're working on. With relatively few loops included in the collection (as compared to a standard sample CD), it's more important than ever that the right beats are selected. Clearly, this is what has made D-Zone's 'popsim' series so successful. Make no mistake, these guys know what they're doing, and a little of that cannot help but rub off on you when using this as a source for house, trance and rap grooves" (from The Mix magazine, June 1993).

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Yamaha QX7 sequencer
UMI 2B sequencer

1986

Ensoniq ESQ1 workstation
Steinberg Pro24 sequencer
Ensoniq Mirage sampler

1987

Roland D50 S&S synthesizer
System Exclusive Iconix ST sequencer
C-Lab Creator sequencer

1988

Akai S1000 16-bit sampler
Steinberg Pro24 V3
Korg M1 workstation

1989

Emu Proteus multitimbral module
Hollis Trackman ST sequencer
Steinberg Cubase

1990

Waldorf Microwave
Opcode Studio Vision sequencer
Korg Wavestation

1991

Yamaha SY99
C-Lab Notator 3.1
Digidesign Pro Tools

1992

Yamaha TG500
Steinberg Cubase Audio
Kurzweil K2000

1993

Korg X3
Digidesign Session 8
Emu Morpheus

1994

Emu ESI32 sampler
Emagic Notator Logic
OSC Deck 2.2

1995

Korg Prophecy
MOTU Digital Performer 1.6
Emagic Logic for Windows

TRIVIA ANSWERS

- Volume 1, Issue 1: November 1985. The promotional 'dummy' issue flier featured Phil Collins on its cover, whilst Ultravox's Midge Ure appeared on the real first issue cover.
- Amiga Notes used to feature a line drawing of a man in a cap, from November 1992 to May 1993.
- Dave Lockwood's *Night of the Demo* tape review page in 1992 had a picture of him barring a chord, but from the front of the guitar!
- The February 1987 front cover showed Frank Zappa in front of a large Emu modular synthesizer (in glorious black and white!).

► modules, the sort of thing that plugs into the motherboard of most PCs and Macs. Much the same thing happened. Only a few years ago, 1Mb SIMMs were just arriving, and smaller 256Kb SIMMs were popular — nowadays a 256Kb SIMM is almost worthless. The conclusion seems to be that computers change so much in just five years that any meaningful comparisons are not possible. It also means that you can expect to throw away your computer at least once every 10 years — three times in my case (BBC B, Atari ST, and my Mac IIsi is looking rather tired...). Does Vince Clarke still use his BBC B/UMI system, I wonder?

One thing that has changed considerably in the lifetime of *SOS* is the complexity of the microprocessors at the heart of most hi-tech equipment. Some programmable analogue synthesizers have used 4-bit microcontrollers, but the majority of polysynths and computers back in 1985 employed 8-bit chips like the 6502, Z80 and 6800, with a maximum of 64 Kbytes of RAM memory, and clocked at a speed of 2 or 4MHz. By around 1990, this had changed to 16-bit chips like the 68000, typically with 1Mb of RAM, and a clock speed in the 'teens' of MHz. Currently, some devices use 32-bit RISC processors with 8Mb or more of RAM, and clock speeds in the 40-50MHz range — and several computers have Pentium or PowerPC processors with clock rates over 100MHz.

Samplers have changed over the last 10 years too. In 1985, you might be using an Apple II computer with a plug-in card offering 8-bit samples and a sampling rate of about 8kHz (nowadays politely referred to as 'telephone quality'). 12-bit systems with sampling rates in the 20kHz region were quickly replaced by 16-bit sampling at 44.1kHz: the so-called 'CD quality' specification which has become almost standard. Hence, sampling at 48kHz, or with 18 or 20 bits, is always referred to as 'better than CD quality'!

OUTSIDE AND INSIDE

Front panels have changed. By the late 80s, 7-segment LED displays were being augmented by 2-line LCDs or green discharge displays, which enabled the naming of sounds — you no longer needed to remember that bank 3, number 11 was the clicky lead line sound; instead you could call it anything you liked: provided you could fit it into the eight or 10 characters. Names like 'E.Piano 1a' became as familiar as all the other hi-tech jargon. LCDs even began to appear, some of which were actually back-lit — quite an advance in their time! These days graphic displays are becoming more common and the very latest are touch-sensitive, making them even more the focus of attention of the front panel.

In 1985 you could look at the front panel of a piece of equipment and figure out what it did, and gain some idea of the functions of the controls, because everything would be labelled. In 1995, the typical LCD display, soft-keys, and dials give almost no idea of what goes on inside at first glance. Front panels may look neater and tidier, but the more sophisticated they become, the more it seems you

need the owner's manual to put them into context.

Inside musical equipment, a quiet revolution has taken place. Hand assembled circuit boards with crimped connector cables have been replaced by robotic automated assembly and insulation displacement connections. Chip sizes have shrunk as the pitch of their pins has dropped from 0.1 inches down to 0.02 inches, with a corresponding increase in the number of pins: 40 pins in 1985 and several hundred pins in 1995. Some chips have even abandoned pins altogether and provide lots of small circles on one side which are soldered directly to the board. In fact, pins which poke through circuit boards and are soldered into place have largely been replaced with 'surface mount' technology, where the chips are held onto the board by the solder, allowing two sets of circuitry: one on each side of the circuit board.

So has all this soaring technological progress made any difference to music making? Curiously, as the power of computers and synthesizers increase, the complexity increases with them. So, although music making is now more sophisticated, the level of skill required has remained about the same — although the types of skill required may have changed considerably. The 'it will do' point has moved as the quality of recording has improved: you can't depend on that bad edit being hidden in the mix or surface noise any longer, or hope that the hum and noise on the output of the analogue synth will not be noticed. *Trivia Question 4. When did an Emu modular synthesizer appear on the cover of SOS?*

WHAT NEXT?

MIDI has come, and nearly gone, if you believe some of the rather over-eager reports of its demise. Analogue has faded, trundled along in the doldrums, and then bounced back with a vengeance. Rap has changed from an obscure musical chant into mainstream pop, and almost all of the rock 'dinosaurs' of the 70s have vanished, with only a couple of notable exceptions who carry on regardless.

So what does technology offer the *SOS* reader in the future? Obvious answers like 'the Internet' or 'cheaper hard disks' aren't really much help. I reckon that the bulky TV monitor will vanish in the next decade, opening the way for computers to leave their fixed positions and become far more mobile. Computers will probably be used less as pure computers, and much more as tools to carry out a range of tasks. It may well be that your instruments become easier to use because of new technology embedded inside them. Hi-tech music will continue to move downwards in the market — if you think computers with soundcards are cheap now, then just wait a few years. This does mean that the one thing that will still differentiate the pseudo-intelligent, computer-assisted flute from a musician is creativity and originality. The flute may well turn a complete novice into a James Galway sound-alike, but it will take a little bit more time before it can compose a tune that can stir you emotionally. About 2015 should do it, by which time *SOS* will be heading for its 30th birthday. See you there!

SOS

10 years

Compiled by Noel Lundgren

SOS Index to Articles

Nov 1985-Dec 1995

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1. **SOUND WORKSHOPS**
2. **COMPUTER HARD/SOFTWARE**
3. **INTERVIEWS/PROFILES**
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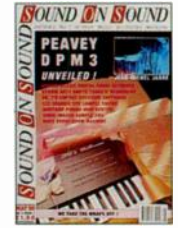
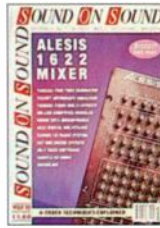
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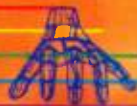
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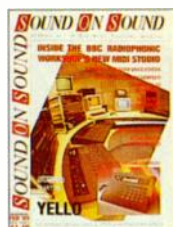
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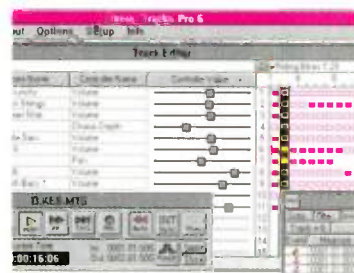
Future Music June 1995 saw a PC sequencer head-to-head with the contenders being Steinberg Cubasis, Twelve Tone's

BEST BUY status was awarded to Mastertracks, which scored 89%, compared with Cakewalk's 80% and Cubasis' 83%.

"Mastertracks has the lot, with full SMPTE/MTC support"

"The piano roll of Mastertracks is the most impressive and easiest to work with"

"So far as documentation is concerned, Pro-6 excels"



"The new price, under £150, makes it the best value 'feature for your money' sequencer going"

Software	: Mastertracks Pro 6
Author	: Passport Designs
Computer	: PC Windows or Mac
R.R.P.	: £149.95 inc VAT

Notation, Sequencing and Audio Seamlessly Integrated

Musicator has been designed from the very start to allow you to edit MIDI and audio on notation and piano roll windows side-by-side. You can rearrange an entire screen of windows with one command, and each window adjusts itself so that it makes sense at the new size.



NEW LOW PRICE

Sequencing features include fully automated mixing of GM/GS parameters like reverb, pan, and cut-off frequency. SMPTE support, drag-n-drop arrange window, controller drawing, and dedicated drum grid with individual pan, reverb, volume and tuning for each drum sound.

Notation features include multiple voices per staff, flexible splitting of grand-staff any type of tuplets, page preview, and autopart extraction.

Anon destructive region-based hard-disk recording, and cross-fading function. Now available - new version with up to 16 separate audio tracks !!!

Software	: Musicator 2.1
Author	: Musicator
Computer	: PC Windows
R.R.P.	: £199.95 inc VAT

VOYETRA MIDI PC INTERFACES

Reliable, Compatible, Affordable !

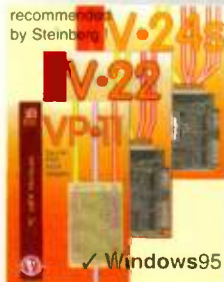
Voyetra have a track-record of manufacturing and quality assurance which is second to none.

All of Voyetra's MIDI interfaces come with universal Windows drivers.

Despite their high pedigree, Voyetra's interfaces are highly affordable.

The V22 does the job of two normal MIDI cards, but at much less than twice the cost

The VP11 is the only buffered notebook interface with auto-printer thru switching.

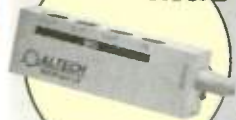


The V24s is the SMPTE card of first choice for PC studios, with free-wheeling and stall detection.

V22	2 in, 2 out	£99
V44	4 in, 4 out	£199
V24S	2 in, 4 out SMPTE	£249
VP11	1 in, 1 out parallel port	£115

PRICE BUSTER MIDI INTERFACES

Mac £49.95



MIDIFace LX : 3 MIDI Outs, Cable included Why not use two?

MPC401-II : Industry Standard MIDI card with WaveBlaster™ socket - perfect for Yamaha DB50



PC £64.95

✓ Windows95



MP128S - £299 (128 ch. SMPTE)

MP128N - £175 (64 ch. 1 input)

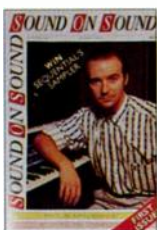
MP128X - £175 (128 ch. expander)

KEY MP128 range

TEL. 0181 202 1199 FAX. 0181 202 7076

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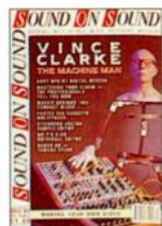
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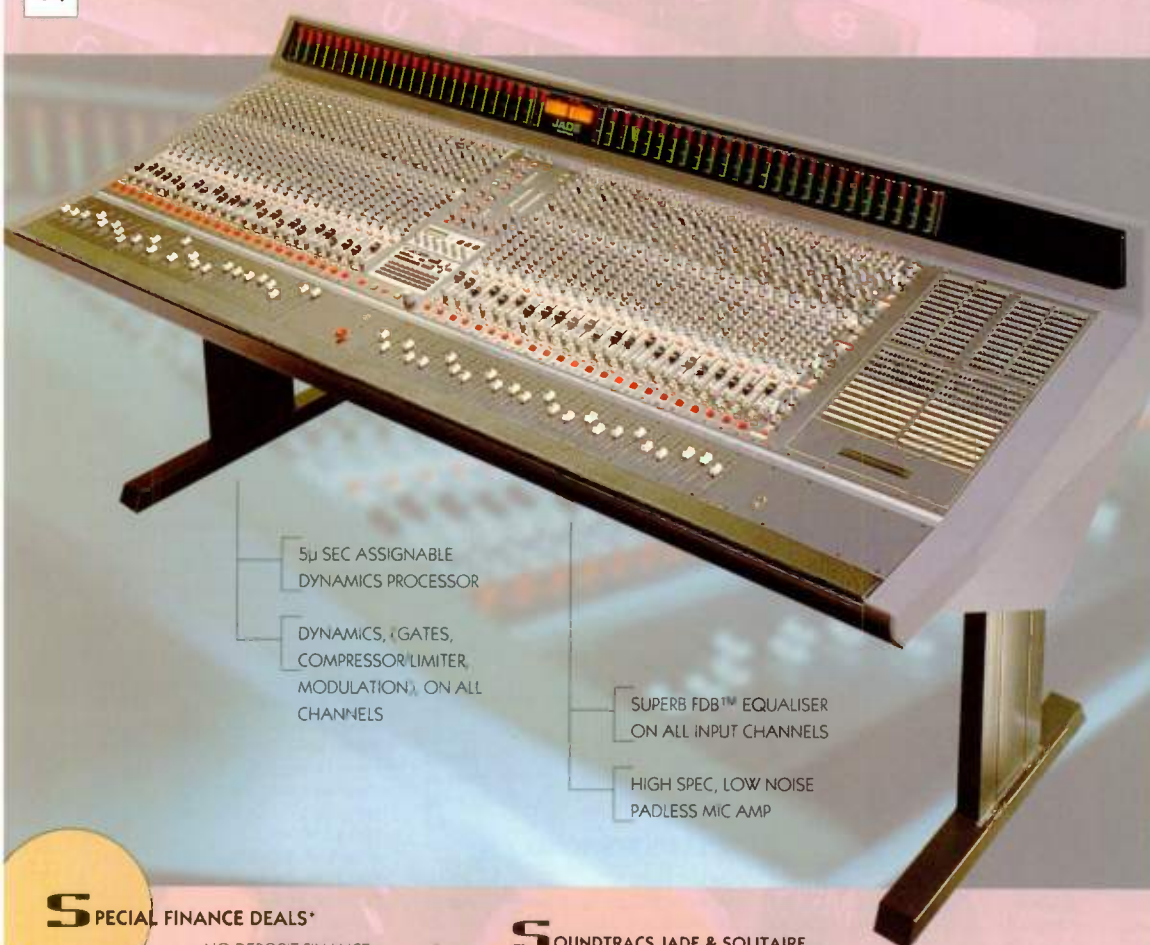
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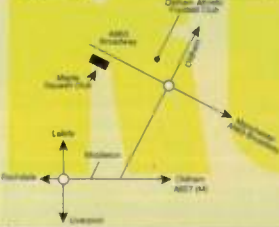
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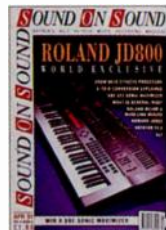
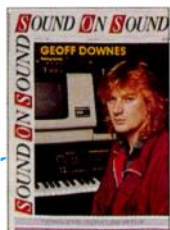
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the **P**_{in}**C.** **MUSIC**

The last decade has seen a revolution in the use of personal computers in all aspects of society. The impact of any kind of computing on people's daily life a decade ago was almost invariably behind the scenes and at work; the home was a blissful haven from the chattering of dot-matrix printers, the chugging of floppy disk drives and the whine of VDUs. Today the personal computer has insinuated itself into all aspects of our daily lives, to the point where Microsoft can cheerfully spend millions of dollars hyping up an operating system upgrade to the general public. And, of course, these technological developments have also changed the way we make music.

Today's big three personal computers for music, the PC, Apple Mac and the Atari ST, don't get a mention in either the editorial or the adverts of the first ever issue of SOS. This is not to say that SOS ignored the use of computers in music, since a BBC Model B sequencing package — the UMI-2B — received a major review. This undoubtedly reflected the relative expense of the American computer systems at the time.

When SOS first hit the news stands in late 1985, the IBM PC had been around for four years, while the PC-AT and the Apple Mac had been available for about a year. The Atari ST was the new kid on the block, and was meant to steal

the Macintosh's growing market by being cheaper and faster. In terms of music support, the PC was actually doing quite well, at least in North America. In fact, one of the first professional sequencers available on any platform — *Sequencer Plus* from Octave Plateau (who later merged with Voyetra) — was developed on, and for, the PC.

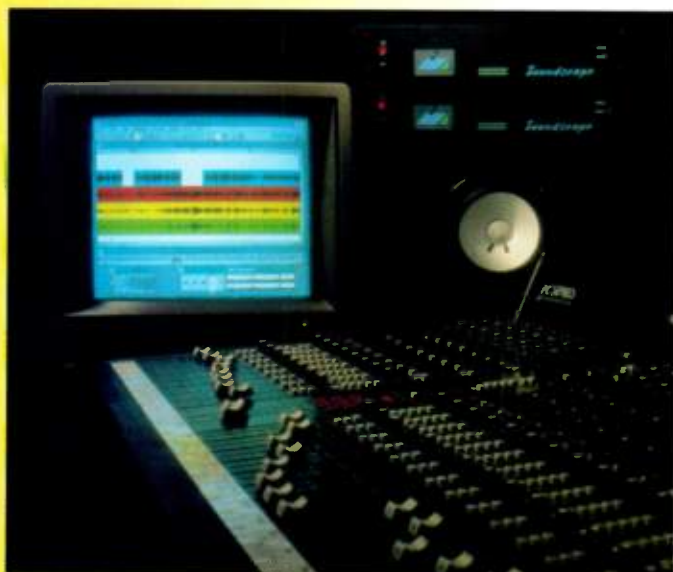
The way we use computers today in the business of making music mirrors how the 'state of the art' has developed. Computer technology now allows us to approach our music making in a variety of ways that were only available to professional studios a mere decade ago. The development of the IBM PC and its clones as arguably the most popular personal computing platform has driven this change to a great extent. By reducing prices and making the technology do more, the PC has given the competing platforms something to strive for, and generally 'improved the breed' of all personal computers. But computers are complicated beasts, and the PC — possibly due to its very adaptability — is especially so.

Putting together a music system using a PC means making decisions that ST or Mac users wouldn't need to make until they needed a far more advanced system. The glittering prize is that the PC musician has far greater range of possible music system configurations. The 'wooden spoon' is that he/she can get lost amongst the poor documentation, misleading sales pitches and disingenuous specifications — lies, damn lies, and statistics. There's nothing inherently difficult about the process — it's just a matter of getting the right information.

The PC is designed to have an 'open' architecture, which means that there's a lot of competition in the marketplace, and you're not tied to a particular vendor. These factors make the PC a very flexible and relatively cheap computer to use for music applications, since fairly small companies can address specialised niche markets — such as MIDI interface cards, hard disk recording, and so on. The downside of the PC's flexibility is that you need to have more of an idea what's going on under the bonnet to choose the PC most suitable for your needs.

PC HISTORY

The PC is actually a family of computers, which started in 1981 with the introduction of the original IBM PC. This machine was based around an Intel 8088 microprocessor running at 4.77MHz and was designed to compete with the business



The development of professional digital audio systems by companies like *Soundscape* ensure that PCs are at home in the 'pro' as well as the bedroom studio.

computers of the time, namely 8-bit CP/M computers with 64Kbytes of RAM running at 4MHz. Much to IBM's chagrin, the design was hijacked by other computer manufacturers, who produced PC 'clones' which were not only cheaper, but usually better than the IBM original.

Since then, Intel have produced a series of processors derived from the original 8086 chip, but progressively faster and using larger data word sizes. In 1984 IBM introduced the PC-AT (PC-Advanced Technology), which is the basis of the Industry Standard Architecture (or ISA) used by most of today's PCs. The current head of the Intel family is the Pentium, a 32-bit processor running at 60 or 66MHz. Incidentally, the only reason it's not called a 80586 is that Intel are not able to register a number as a trademark.

THANKS FOR THE MEMORY

One of the most confusing aspects of the PC is the number of different ways of looking at the RAM — again, historical reasons are responsible for the confusion. The original PC had a fairly conventional design for its memory map: its program memory started from zero, with the operating system placed at the top of the available RAM. Since part of the operating system was stored in ROM, which was placed at the top of the memory map (just below the 1Mb mark), this left 640Kb of usable RAM. Time and technology moved on, but the massive popularity of the PC and the requirement that old DOS software should still be able to run has meant that this basic memory map is still used. In the days before Windows, two competing systems — expanded and extended memory — were developed to allow DOS programs to use the memory above the 1Mb mark. In Windows you shouldn't need to worry about the type of memory being used, since Windows provides memory management for its applications. So the three types of memory are:

- Conventional memory.
- Upper memory blocks (UMBs).

- Extended and/or expanded memory.

The conventional memory is the 640Kb of RAM that can be used directly by DOS programs, the upper memory blocks are chunks of free RAM located between the top of DOS memory and the 1Mb point, and expanded and extended memory is located above the 1Mb point and is used by DOS programs. (DOS 6 provides a nifty utility called *MEMMAKER* that will automatically optimise your



PC's configuration for the RAM you have installed.) It's worth noting that a PC's memory figure includes the 640K and the UMBs, so that a 4Mb PC will only have around 3Mb of extended memory.

Using a PC to create a score is one of its most obvious musical uses, a kind of musical word processor.

MUSICAL USES OF THE PC

The PC has three major areas of use in the musical arena: notation, MIDI sequencing, and digital recording. While software can address more than one of these areas, the requirements for each are somewhat different.

• NOTATION

In some ways, the production of musical scores is the most obvious use of the PC in music. Most

PC JARGON BUSTER

• SX & DX

There are a number of terms which refer to the PC's processor, the most common being SX/DX. When Intel introduced the 32-bit 80386, they produced a variant called the 80386 SX which only used a 16-bit data path. This simply meant that 32-bit values needed two memory reads by the processor, thus making the PC run slower than one using a full 386. The full version is usually referred to as a DX, but I don't think this is an 'official' Intel designation. Confusingly, when it comes to the 80486 processor, the SX and DX suffixes mean something entirely different: a DX processor has a built-in maths co-processor, while the SX has none.

• 486 CLOCK DOUBLING AND OVERDRIVE

You might also come across clock doubling (DX2) or tripling (DX4), and Overdrive sockets with 486 PCs. Clock doubling (and tripling) means that the Processor runs at twice (or three times) the speed of its associated 'external' circuitry, theoretically giving you improved performance without needing very fast memory. So a 66MHz DX2 PC is a machine running at 33MHz with a processor playing in double time, and a 100MHz DX4 is playing triple time. In my opinion, speeding up the processor clock is a bit of a con, since you don't get full advantage of the higher clock speed — under most

conditions you should get better performance out of a 50MHz DX than a 66MHz DX2 PC.

The inclusion of an Overdrive socket on a 486-based PC means that you should be able to upgrade to a cut-down Pentium processor — the P24T. There are two versions currently available, with processor clock speeds of 63MHz and 83MHz respectively. The upgrade won't give you a fully-featured Pentium system, but Overdrive does give you the option of improving the performance of a 486DX PC without replacing the motherboard. Be aware that to take full advantage of the Pentium local bus architecture your PC needs to be PCI bus-compliant, and you may find that you'll get better performance on older 486s by getting a 486DX4 instead.

• ISA AND PCI BUSSES

An important part of the PC's motherboard is the expansion buss, a set of connectors that allow you to plug in additional controller cards, interfaces, etc. The original PC had 8-bit slots, while the PC-AT increased this to 16-bit, maintaining compatibility with the original 8-bit cards. This PC-AT buss design is now more commonly referred to as the ISA buss. The ISA buss usually transfers data at around 5Mb per second, and can act as a bottleneck in the performance of the PC. To get around this, some PCs are fitted with the VESA local

buss (VL-buss), which allows graphics adapters and network cards to take full advantage of the PC's speed.

Another contender in the PC buss stakes is the PCI buss from Intel, which not only cures the speed problem but will give compatibility with the Apple PowerPC. Support for music cards is more or less limited to ISA, though Roland do a PCI-based soundcard designed for notebook PCs.

Most desktop PCs have between three and eight standard ISA slots, and it's important to check how many of these are taken up with basic service cards; a PC with five slots looks less attractive if three of them are taken up by the disk controller, VGA and serial/printer port.

• MASS STORAGE

Perhaps the most important component of the PC after the motherboard is the hard disk sub-system. Most PCs are supplied with AT-buss or IDE drives, which allow you to install up to two drives. The IDE drive provides very cost-effective mass storage. Most of the smaller desktop PCs have the disk controller built onto the motherboard, but tower and larger desktops tend to have a separate IDE card. An alternative to IDE is SCSI for your main hard disk, especially attractive if you want to buy a SCSI CD-ROM drive. SCSI drives are traditionally more expensive than their IDE equivalents but the price differential is becoming less significant as SCSI becomes more popular.

The PC in Music

- scoring programs also add MIDI auditioning and import/export functions so that you can audition what's on the page and transfer the music to and from the real world. However, requirements of a listenable performance and a good-looking page are entirely different, so beware of applications that purport to offer both. There are some good combined notation and sequencing packages around, but they tend to be pretty expensive.



External MIDI modules like the Yamaha MU50 that can connect directly into the PC's serial port can give the best of both worlds.

Since all decent notation packages on the PC run under Windows, you need at least a 486 PC, the faster the better. This is because the scoring application needs to format and display a lot of graphics, and a faster machine will reduce the amount of time spent waiting for the screen to update. If you plan to use the scores in other DTP packages, you need to check that you can produce the finished score as a Postscript file, since this is the only reliable way to transfer the images.

• SEQUENCING AND MIDI INTERFACES

If you want to make music rather than produce a musical score, one of the simplest ways to produce high quality sound with the PC is to use it to control a MIDI synthesizer. This method of making music is attractive for a number of reasons, the major one being that there is a wealth of different sound generation technologies available at quite a reasonable price. It also makes sense to use a dedicated sound synthesizer, as the amount of work the computer needs to do to produce reasonable sound quality prevents it from doing anything much else. Of course, the

synthesizer doesn't have to be external to the PC — a growing number of PC expansion card-based synthesizers is becoming available.

The processing requirements of a MIDI-only system are really quite modest in terms of the amount of data involved, and for a DOS-based system, a 286 or fairly modest 386 is really all you need. However, under Windows, the operating system can slow things down somewhat, so you should really consider at least a 486SX/33 to get reasonable performance. One of the major advantages of using a Windows sequencer is the range of sophisticated MIDI cards that can be handled. Some modern synthesizer modules can even be directly interfaced to the PC via the serial port.

• DIGITAL RECORDING

The most exciting recent application for the PC is directly recording digital audio onto the PC's hard disk. There are two basic routes for this:

- Use the facilities built directly into Windows as part of the MPC (Multimedia PC) standard;
- Use dedicated add-on audio hardware.

The second option will give superior facilities and performance, but at greater cost. The only advantage of going the MPC route is that you can incrementally 'scale-up' your system as your requirements increase, and prices come down.

SOUNDCARD ANATOMY

A Windows MPC soundcard comprises three basic elements:

- A sampler section for recording/playback of sound;
- A computer-controlled mixer, for combining audio from various sources;
- An internal music synthesizer.

Most soundcards also have a joystick port, the capability of adding a MIDI port and quite often a CD-ROM interface.

Traditionally, the synth section found on most of the 'standard' (or games-derived) soundcards

MUSIC HARDWARE EXPLAINED

There are any number of soundcards available for the PC that conform to the MPC audio standard. However, there's a lot of confusion about, so I thought I'd try to give a concise definition of what the various bits do, and what software you can use to get a sound out of your PC. Without further ado, here's my pocket guide to how you can make music on your PC (depending on what's loaded into the back...)

Hardware: OPL3 FM-based synth.

Software: MIDI sequencer.

Production Tips: There's not a lot you can do with this except make semi-musical noises. Ideal if you want your music to sound as though it's been created on a Stylophone.

Hardware: ROM-based wavetable synth.

Software: MIDI sequencer.

Production Tips: Useful for producing orchestrations or demos using 'standard' instruments.

Hardware: RAM-based wavetable synth.

Software: MIDI sequencer, sample editor.

Production Tips: This type of card can be used for creating personalised sounds. You can also sample short segments of music and use the sequencer to loop the sample, for breakbeats, etc.

Hardware: 8-bit digital audio replay.

Software: MOD file editor and player.

Production Tips: An MOD file uses short samples to produce the sound, transposing them on-the-fly to give the tune. Some of these are very impressive but the editing interface is usually pretty primitive — more suited to a train spotter than a musician.

Hardware: 16-bit digital audio replay.

Software: Hard disk recording.

Production Tips: Use your hard disk as a sound storage medium, effectively turning your PC into a tape recorder. The number of tracks will depend on the power of your PC/soundcard combination (some cards have independent processing power) and the software, unless you use specialist HD recording hardware. With a

Pentium you could expect to get up to eight tracks. To record multiple tracks successfully, your soundcard needs to be able to record and play back simultaneously, though some software allows you to use two soundcards.

Hardware: External MIDI instruments

Software: MIDI sequencer, synth voice editors, sample editors.

Production Tips: Use your PC to control a MIDI studio. As well as making music, you can use the system to design synth and sampler sounds, downloading the sounds to the external modules via MIDI or SCSI.

Hardware: Dedicated hard disk recorder

Software: Proprietary software supplied with hardware.

Production Tips: Use your PC as a high-spec digital multitrack recorder. The use of additional hardware gets around any PC data throughput limitations. The facilities offered are limited only by the hardware chosen, and your budget. These systems invariably require that you buy dedicated disk storage for your audio data.

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Getting to Grips with CUBASE

PART 4: CONFIGURING CUBASE • MIDI PROCESSING & FILTERING • MISCELLANEOUS FEATURES

Approaching re-entry into the atmosphere, SIMON MILLWARD concludes his tour of the Cubase universe with a look at some of the flagship sequencing package's lesser-known functions.

In this, the final part of this series, we continue to look at Cubase's lesser-known features. Some of these are not concerned with the direct editing and manipulation of data, but rather the configuration and handling of the Cubase system itself.

SYSTEM PREPARATION

To start with, there are three menu items concerned with configuring Cubase; Preferences, MIDI Setup and MIDI Filters. Some readers may be thinking that these features should have been dealt with at the very beginning of this series, but you can't effectively design custom system settings if you don't first understand the system's contents and features. The Definition files which come with Cubase contain default settings, but users will almost certainly wish to enter their own custom settings at some stage.

• PREFERENCES

Selecting 'Preferences' in the File menu opens up a dialogue box (see Figure 1 below) where the user may select, amongst other fairly minor options, a crosshair form for the cursor (a cross of vertical and horizontal lines which shows the precise mouse position on the grid), the choice of editor selected when the user double-clicks on a part (Key, List or Score), and an Autosave function, which automatically saves the current song as 'Backup.All' at the time interval shown in the 'Minutes' box.

You may find other options are available (as this depends on the version of Cubase you are using), but the function of each option is fairly self-explanatory. The crosshair cursor is particularly useful for the precise positioning of parts in the Arrange window, while the Autosave function can be indispensable for absent-minded users.

• MIDI SETUP

MIDI Setup is found in the Options menu (see Figure 2, right). From here, you can set up various global parameters which govern the manner in which Cubase handles MIDI. MIDI Thru is among the most important, and would, in most cases, be set to 'Active' so that incoming MIDI data is echoed to the MIDI Thru. You can also switch the Thru off for one sole MIDI Channel.

But why do we need to have the MIDI Thru activated in the first place? The answer is simply that to communicate with the MIDI units in your system, the data from your master keyboard must travel *through* Cubase. When the MIDI Thru is deactivated, the data stops inside Cubase, but turning on the Thru function allows the user to play any unit in the system simply by changing the MIDI channel of the currently selected track in the Arrange window. To avoid notes sounding twice and other complications when playing your master keyboard with Cubase, it is advisable to switch your keyboard to Local Off mode. This cuts the feed to the synthesis part of your master keyboard

(assuming, of course, that it has one) so that it will only play back the data received from Cubase at the MIDI In.

MIDI Setup also allows the user to remap any one controller to any other. For example, a pan controller (controller 10) could be under the command of your synth's mod wheel (controller 1) by mapping modulation to pan in the Controller section of the MIDI setup window.

'Running Status' is a MIDI data compression standard in the MIDI protocol which is sent out from Cubase by default. Sometimes this causes problems with older synths, so this part of the window gives the user the opportunity to de-activate it for any of the Output ports.

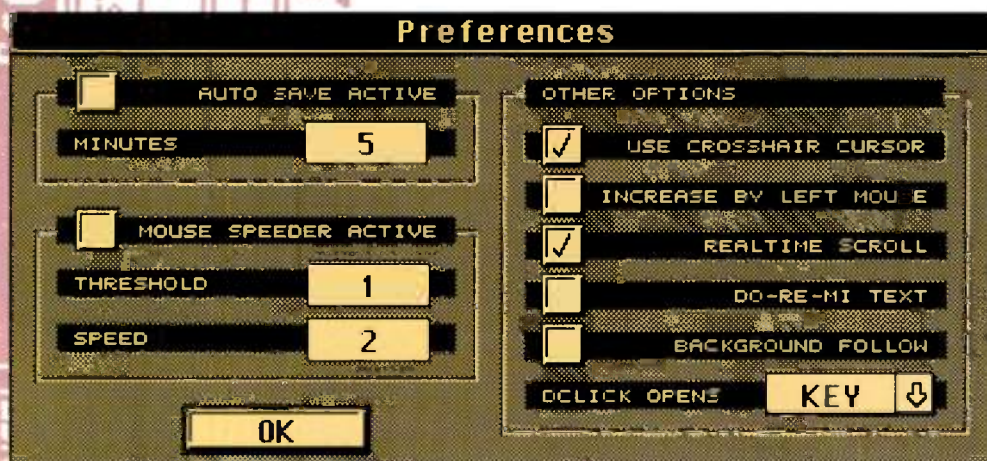


Figure 1: The Preferences box.

The 'Global Parameters' section contains a number of miscellaneous features which affect the handling of various details of the software. 'Mute Parts in Group' toggles on and off the ability to mute the parts in a group from the Mute columns of the tracks included in the group. 'Note Off' toggles between sending real note off messages (ticked) and note off messages as note on, but with zero velocity (unticked). 'Reset on Track Change' sends out a reset of pitch bend, modulation and channel pressure when changing tracks, while 'Reset on Part End' sends out a reset of pitch bend, modulation, sustain pedal and channel pressure when each part comes to an end, and 'Reset on Stop' sends out a reset of pitch bend, modulation and channel pressure for all tracks plus 'All Notes Off' and 'Reset All Controllers' messages when *Cubase* is stopped. The reset options avoid such potential problems as hanging notes and pitch bends.

Finally, 'Length Correction' attempts to ensure that there is always at least a short amount of time (measured in ticks) between a note off and note on message at the same pitch and on the same MIDI channel in order to avoid lost notes. 'Play Parameter Delay' allows the user to anticipate or delay the time (in ticks) at which the play parameters of the Inspector (see Part 3, last month) are sent out. Most often, this will be set to a negative value in order to allow the target synth time to react to such things as bank or program changes. Note that MIDI Setup comes preset to sensible settings in the Definition files supplied with *Cubase*.

• MIDI FILTER

MIDI Filter, also found in the Options menu (see Figure 3 below), is used to filter out unwanted MIDI data. The dialogue box allows the main types of MIDI data to be filtered from the Record and Thru paths of *Cubase*, and facilitates the filtering of one or more MIDI channels and up to four different types of continuous controllers for data arriving at the MIDI input. Figure 4's flow



Figure 3: Cubase's MIDI Filter box.



Figure 2: The MIDI setup box

chart should clarify matters.

Filtering data during recording is particularly useful when your master keyboard (or other master instrument) is, for example, outputting unwanted aftertouch data — especially if the target

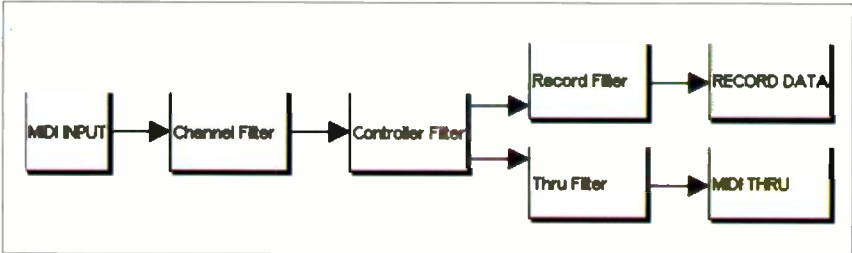


Figure 4: Flow diagram showing the internal structure of Cubase's MIDI Filter.

rackmount synth you are playing doesn't even respond to this kind of data. System Exclusive (or SysEx) data may be equally unwanted. In fact, most users leave the filter set up to remove SysEx and aftertouch (the default filter setting, as it happens), and only allow this kind of data into the system when it is specifically desired. Equally, you could filter SysEx and aftertouch from the Thru section. Furthermore, if, say, changing the program number

on your master synth causes undesirable program changes in one or more of the modules in your system, then temporarily filtering the program change in the Thru section will quickly solve the problem.

Whereas the Record and Thru filters provide for the blanket removal of all controller data from the MIDI messages, the Controller filter may be set to remove only certain types of continuous controllers. This could be useful if you wished to discard all volume data but keep all the pan information from the incoming MIDI messages. The Channel filter might be useful if you were transferring an arrangement from your synth's internal sequencer into *Cubase* but only required (for example) the drums, recorded on MIDI channel 10. All other channels could be filtered, and the drums alone would be transferred.

WARNING!

The features described in this series are those found on the latest Atari Score version of *Cubase*, but most of what is mentioned is also available on the latest PC and Mac versions. However, please note that there will be superficial variations in the examples given in this series for users of the PC and Mac versions.

GETTING TO GRIPS WITH CUBASE

INPUT TRANSFORMATION

MIDI Setup and MIDI Filter provide some features for the real-time transformation of data as it arrives at the input of *Cubase*. 'Input Transformation', also found in the Options menu, takes things one stage further, by providing a more comprehensive range of possibilities.

The Input Transformer window (Figure 5 below) closely resembles the Logical Edit window in Easy mode, but it is designed to be used in real time [*Logical Edit is outside the scope of this series, but for more information, check out Simon's 3-part series on the subject that ran in SOS from March to May this year — Ed*]. The Input Transformation window either transforms or filters

'Value 1' column to 'Equal' and '1' in the Filter section. Also, set the processing section to 'Fix' and '7' in the 'Value 1' column and, of course, the mode to 'Transform' in the Functions box. The result would be to transform any modulation messages (control change 1) into volume messages (control change 7).

So, the logic of this window may be expressed as a kind of 'If, Then' statement, as found in computer languages. Take a look in the pop-up menus of the various columns, and it becomes clear that some very sophisticated filtering and transformation actions are possible. In addition, the window offers the possibility of using four transformation setups in its memory at the same time with buttons 1 to 4 (see the bottom left-hand corner of Figure 5). These can be activated to run in tandem if required, by ticking the buttons of as many of the four transformation setups as you wish to use together. Note that the data travels through each activated filter/transformation setup in its numbered order, so messages filtered out of setup number 1 do not reach setup number 2, and so on.

The contents of the 'Input Transformer' are saved with the song you are working on. The Definition files that come with *Cubase* already contain four presets which are useful for understanding the possibilities, but users may also like to consider the following:

(1) Try setting a filter to restrict the input to the note range of a chosen instrument. For the playing range of a trumpet, for example, try setting the 'Event Type' column to 'Equal' and 'Note' and the 'Value 1' column to 'Outside' and '52 [E2] to 87 [D#5]'. Set the mode to 'Filter' in the Functions box. The result would be the filtering of any notes outside the chosen range. This kind of filter is excellent for keeping within the natural note range of an instrument if a sense of realism is what your arrangement needs. It would also curb the dubious desires of the crazed soloist who insists on playing outside his natural range so that his trumpet becomes a strangled piccolo.

(2) Try setting up a transformation which changes pitch bend into pan data. Set the filter 'Event Type' column to 'Equal' and 'Pitch Bend', the Processing section 'Event Type' column to 'Fix' and 'Control Change', and the 'Value 1' column to 'Fix' and '10' (pan controller). The result transforms any pitch bend applied into pan data. This setup is excellent for the real-time application of pan data using the synth's pitch wheel.

Of course, many more configurations are possible, and using two or more setups simultaneously, the user can design extremely complex filters and data transformations. Remember also that any efforts made here will serve you well if ever you decide to venture into Logical Edit.

MATTERS MODULAR

The contents of the Modules menu will vary according to the version of *Cubase* and computer

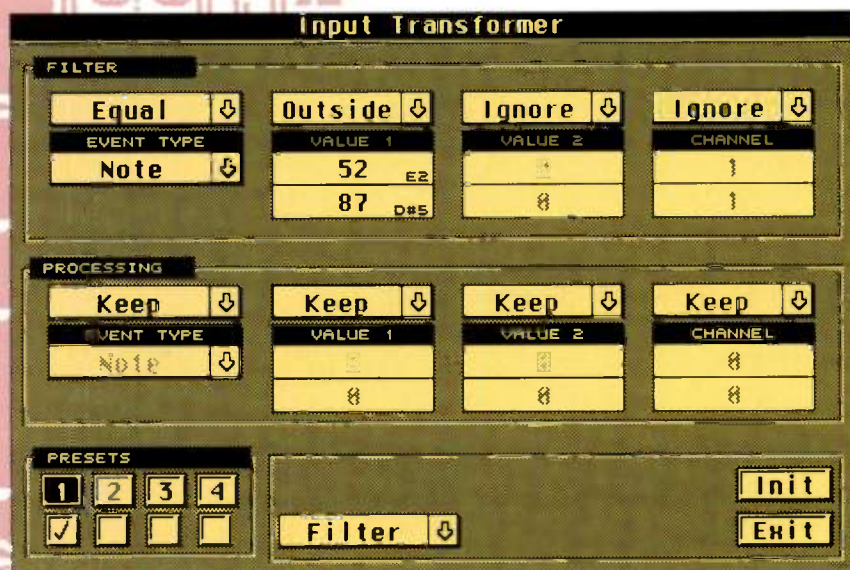


Figure 5: The Input Transformer window.

incoming data according to the settings of the 'Filter' and 'Processing' sections in the upper portion of the window. 'Transform' or 'Filter' mode are found in the Functions box in the lower part of the window. 'Filter' ignores the 'Processing' part of the window, while 'Transform' takes all settings into account.

A statement in plain English describing a simple filtering action in the window might run as follows: 'If some of the data being received is equal to aftertouch, then filter it'. Translated into the window, this would just require adjustment of the 'Event Type' column to read 'Equal' and 'Aftertouch', with all other columns being set to 'Ignore' (just as the 'Value 2' and 'Channel' columns are in Figure 5). 'Filter' should be chosen in the Functions box, so that the processing section is not active. The result is the stripping of all aftertouch messages from the incoming data.

Similarly, a transformation setting might be described as follows: 'If some of the data being received is control change 1, then fix this data as control change 7 instead'. In this case, set the 'Event Type' to 'Equal' and 'Control Change' and the

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GETTING TO GRIPS WITH CUBASE

► platform you are using. As explained in the first part of the series, modules are self-contained segments of the system which can be 'hooked on' when required and 'jettisoned' when not in use, in order to conserve RAM.

The 'MIDI Processor' is just such a module, and comes with most versions of the program. Like all modules, it must first be available and 'active' in the Modules menu in order to use it. Opening this menu reveals a dialogue box with four columns indicating the module 'Name', its 'Size', its 'Active' status and its 'Preload' status. Modules will already be present if they have been put in the CUBAE.DAT folder, since these are automatically added to the

modules may be added to the list using the 'Add' button, which brings up the customary File dialogue. Conversely, modules may be deleted from the list using the 'Remove' button. However, a module does not actually reside in memory until it has been 'activated'. This is achieved by selecting the desired module and clicking in its 'Active' column. A tick will appear, and the module will be loaded into memory from disk. The user may set modules to automatically load into memory each time the program is started, by clicking in the 'Autoload' column. This actually writes to the module file itself, so, for the success of this operation, the diskette must not be write-protected.

Sadly, lack of space precludes a detailed look at all the available modules, but let's consider one of the most useful in detail: the MIDI Processor module.

THE MIDI PROCESSOR

Selecting 'MIDI Processor' from the Modules menu opens the MIDI Processor window (see Figure 6, left). You can use this to manipulate MIDI data and produce delay, chorus and pitch-shift effects. The window has an On/Off Status button, Input and Output selectors and six sliders. Switching the status to 'On' will, of course, activate the current effect, but the results may not be immediately apparent if the Input and Output have not been sensibly adjusted for your own system. Set the Input to that of your master keyboard (or other device), and the Output to the MIDI channel and Output port of a synth or rackmount unit in your system. Simply play your chosen sound and try experimenting with the 'Repeat' and 'Echo' sliders to produce echo and delay effects. The sliders may be directly dragged or moved coarsely by clicking above or below the slider control. The current value of each slider is displayed in the handle itself.

'Repeat' sets the required number of echoes from each incoming note event, while 'Echo' sets the delay time between each repeat, with one unit of the slider representing eight ticks, 'Quantise' moves the repeats to the nearest set value with one unit, once again representing eight ticks, 'Echo Dec' adds or subtracts a set number (eight ticks per unit) for each subsequent repeat to produce accelerated or decelerated echo effects, 'Vel Dec' adds or subtracts a set velocity value for each subsequent repeat to produce echoes of increasing or decreasing volume, and 'Note Dec' adds or subtracts from the note value of each subsequent repeat to produce arpeggio-like effects.

In order to guide the user in the settings of the Echo and Quantise sliders note symbols have been provided. The line of each note value should be lined up to the middle point of the slider handle. As a further guide to the Echo and Quantise slider values and their corresponding note values, consider Figure 7 (left).

That's a start in understanding the functioning of the MIDI Processor, but how do we process a recorded track? This requires a little knowledge of

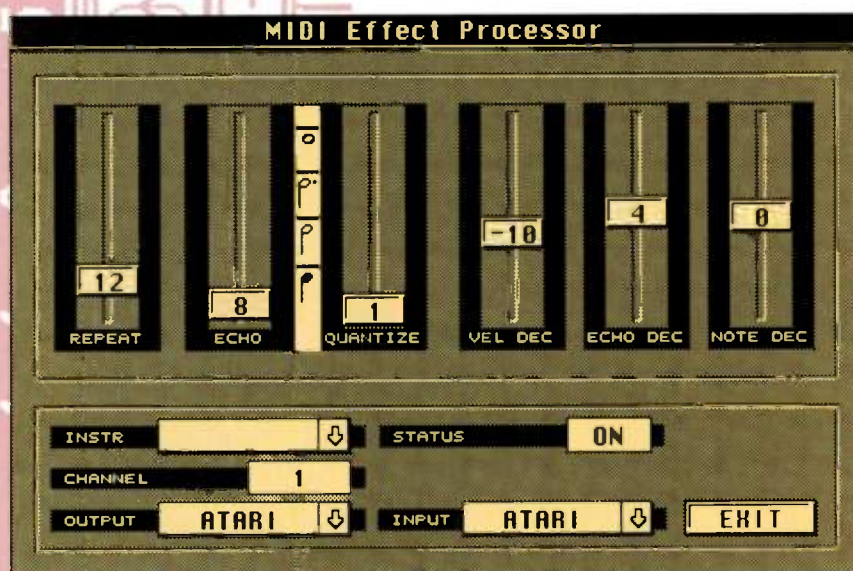


Figure 6: The MIDI Processor window.

list when Cubase is started. A typical Atari modules list might include any combination of the General MIDI menu module, File Selector module, Arpeggiator module, Sysex Editor, Score Edit, MIDI Processor, Interactive Phrase Synthesizer (IPS) or MIDI Mixer modules. It's worth noting that the latest PC version (2.0) of Cubase Score features a very different modules list as standard, including Cuetrax and other goodies. Also, Score Edit and the IPS are not classed as modules at all, but are found instead in other parts of the program.

Whatever your version or platform, further

FIGURE 7: EFFECTS SLIDER VALUES AND TICK/NOTE VALUE EQUIVALENTS

MIDI PROCESSOR UNIT	NO. OF TICKS	NOTE VALUE
48	384	1/4 note
24	192	1/8 note
16	128	1/8 triplet
12	96	1/16 note
8	64	1/16 triplet
6	48	1/32 note
4	32	1/32 triplet
3	24	1/64 note

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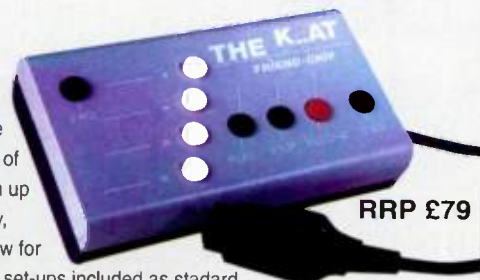
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GETTING TO GRIPS WITH CUBASE

► the possibilities of MROS (MIDI Real-time Operating System). Many Steinberg products run under MROS, which provides synchronisation and connection possibilities between different programs running on the same computer. But it also offers the possibility of sending data to different parts of the same system. If you go to the Arrange window and set the Output column of the track you wish to process to 'MROS' and then go back to the MIDI Processor and set its Input to 'MROS', the processor will then receive and process the MIDI data of the chosen track. You may also need to reset the MIDI Processor Output to send the processed data to the appropriate

but remember that it can also produce effects difficult to achieve on conventional units. However, since the processing relies upon adding to existing MIDI note data, it could, in certain circumstances, produce undesirable hold-ups in the data flow of the rest of the music. It all depends on the density of the other events in your arrangement. Nevertheless, it is well worth spending some time exploring the possibilities. Try the settings shown in Figure 8 (see left) as starting points for your own experiments.

The MIDI Processor is just one of the modules available but the MIDI Mixer Module, the IPS, and, of course, Score Edit are also high on the list of worth getting to know. These are whole worlds unto themselves and require some dedication to master.

FIGURE 8: SUGGESTED MIDI PROCESSOR SETTINGS

REPEAT	ECHO	QUANTISE	VEL DEC	ECHO DEC	NOTE DEC
2	4	5	-10		0
3	8	1	-30	-2	0
4	48	1	-30	-12	0
12	8	1	-10	4	0
3	12	1	6	0	5
4	12	1	0	0	12

unit. It's all rather like an internal patching system.

We could now take things one stage further and consider what needs to be set in order to actually record the output of the MIDI Processor. In this case, set the Output to 'MROS' and then go into the MIDI Setup dialogue box, as described at the beginning of this article, and set the 'Record From' box to MROS. You are now effectively patching the output of the MIDI Processor to the Record Input of Cubase, and all data output from the MIDI Processor may be recorded on an appropriate track. Remember that once you have set the MIDI Processor status to 'On' you can leave the window and work freely in other areas of the program; the MIDI Processor will still be functioning.

The MIDI Processor may be handy for those users not possessing vast numbers of effects units,

CONCLUSION

That brings to an end the fourth and final part of our journey through the Cubase universe. I realise that not all aspects of the program have been covered, but the object of this guide was simply to provide inexperienced users with the essential tools of the trade. It is up to each individual user how creatively these tools are actually used and it must be appreciated that the tools themselves do not actually create the music — however complex it is, Cubase does not provide any substitute for musical talent. It does, however, facilitate the creation of great music when in the hands of the right programmer and when a half-decent musician or composer is providing the musical input.

I hope readers have found this guide useful in their quest for a more complete understanding of Cubase and will be encouraged to go on to explore the more esoteric aspects of the program, such as Score Edit, Logical Edit and the MIDI Mixer Module. As final words of advice, keep reminding yourself that the aim of the exercise is to create music. Let your ears be the final judge, take plenty of breaks from being glued in front of that computer screen, and, most of all, enjoy it!

SOS

OTHER USEFUL FEATURES

• THE NOTE PAD

The 'Note Pad' is found in the Edit menu (or opened using [Control] and 'B'), and is one of those Cubase features whose use is not immediately apparent. But how many times have you loaded up versions of the same song which are subtly different but you can't remember why, and you can't remember which one you finally intended to use? Simply entering some text into the Note Pad could save you a lot of time, and leave you absolutely sure that you are about to use the definitive arrangement. The Note Pad is essentially Cubase's own mini word processor, and as well as to enter guide text, as above, could be used to note (for example) special settings or patches used in a song, the dates and times when the song was worked on, the Track listing for the multitrack tape tracks, if you are using one, or the administrative details of the song, such

as the names of the composer/writer or the record/publishing company. The contents of the Note Pad are specific to and saved with each separate arrangement.

• PART APPEARANCE

Another miscellaneous function of Cubase is 'Part Appearance' found in the Options menu. This is a facility to manage the appearance of parts in the Arrange window. The selection of this item brings up the choice of 'Show Frames', 'Show Names' or 'Show Events'. The first shows the parts in the Arrange window as empty boxes, the second shows the names of the parts and the third shows the events contained in the parts as vertical lines. Not only can you show the events, you can also filter the event types by ticking those you wish to see. This is excellent for searching for specific events in a complicated arrangement. It is also useful for seeking

out melodies and other elements, and is invaluable in giving a detailed overview of the arrangement.

• WINDOWS MENU

The Windows menu is another easily-overlooked Cubase facility. It can, however, prove very handy for those users needing to look at data in several windows at the same time. This concept will already be very familiar to PC users of Microsoft Windows, but the Cubase multi-window capacity is available on all platforms. The ability to 'tile' several Editors onto the same screen can be invaluable when editing data in fine detail. In addition, the Windows menu allows the user to 'Hide' or 'Show' the transport bar. This maximises the screen space for use of the Arrange window or Editors, and Cubase may still be controlled from the numeric keypad of the computer, where the transport bar functions are replicated, as explained in Part 1 of this series.

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VINTAGE

With so much interest in vintage synths, it's easy to overlook the fact that many classic sounds owed just as much to the tape delays being used at the time as to the instruments themselves. PAUL WHITE shows you how to fake the effect.



FAKING TAPE LOOP ECHO

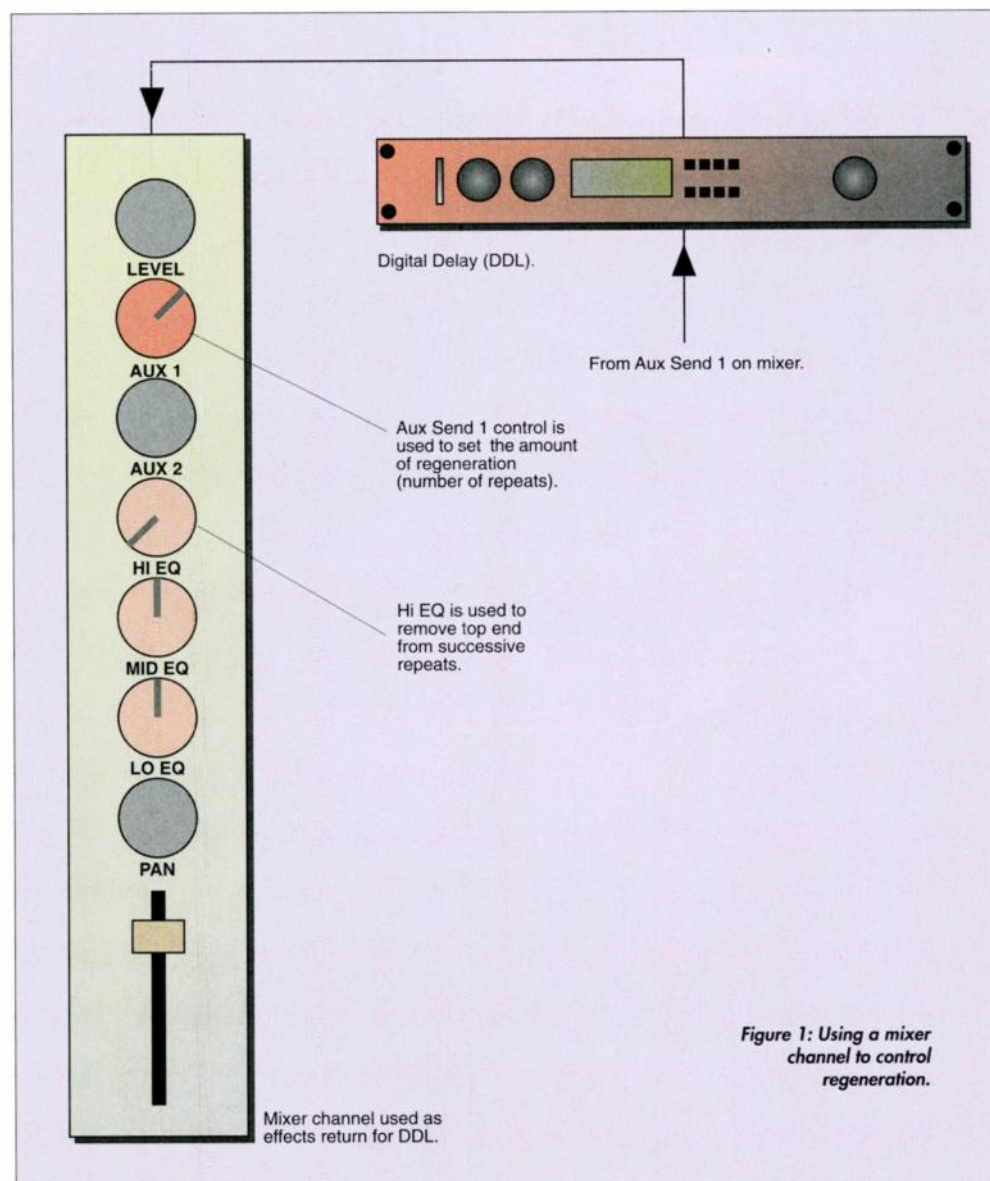
For little more than a couple of hundred pounds, you can buy a modern digital effects unit capable of producing dozens of different effects, often several at a time, and under the full control of MIDI. But it hasn't always been this way. With current musical trends owing as much to the past as to the present, there's naturally a great interest in recreating the sounds heard on record 10, 20 or even 30 years ago, which is why old guitars, guitar amps, analogue drum machines, analogue synths and so on now command very high prices. Certain effects units have also become very rare and expensive, and even if you can get your hands on a tape loop echo unit, for example, they tend to be very unreliable. There's no denying, however, that these effects do sound different to their digital counterparts, but if you know why they sound different, you can go a long way towards replicating the effect using modern multi-effects and a little ingenuity.

GETTING IT TAPED

Pretty much everyone is familiar with the Shadows guitar sound, and apparently it's still one that a lot of players try to emulate. Undoubtedly much of the sound comes from Hank's fingers, but that famous echo effect is fatter, warmer and richer than you get from a basic digital delay. Similarly, when used on a synth or string machine, tape delay adds a new dimension to the sound that's often missing from the more clinical-sounding, digital units.

A tape loop echo unit uses a continuous band of tape which moves first past an erase head to clean off the recording from the previous pass, then past a record head to record new material, then past two or three playback heads to play back the new recording. The delay is purely down to a combination of tape speed and the spacing between the heads and, just as on a digital delay, you could feed some of the output back into the input to create regenerating echoes.

The first step in simulating the original effect is to set up two or three delay taps to produce a mono delay where the three taps are not equally spaced. The actual delay time of the original echo units was set using a motor speed control, but start off by setting your delay times at around 100ms, 145ms and 190ms. If you have a delay that only



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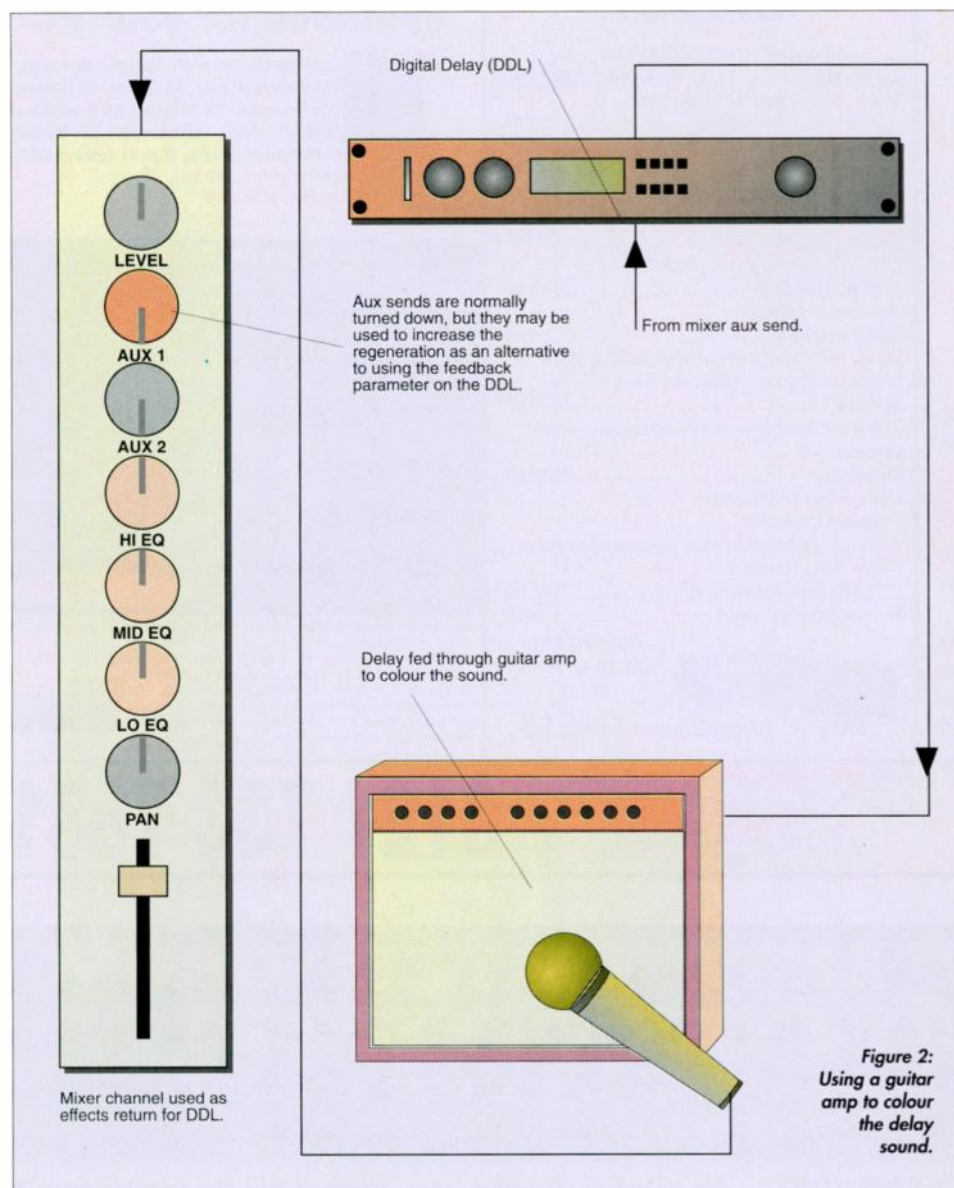
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FAKING TAPE LOOP ECHO



LOW FIDELITY

That sorts out the delay effect. By turning up the feedback, you can set the number of repeats before the sound dies away, but at this point, you still won't have the warm sound of the original tape delay. The reason is partly due to the rather poor audio bandwidth of the old echo boxes — if you could get 5kHz out of them, you were doing well, especially after the same tape loop had been on for a few days. This poor bandwidth created a warm, comfortable (though often rather noisy) sound, and every time a repeat was fed back to the input, it lost more top end and became more indistinct, which produced a rather nice, natural decay characteristic.

The other source of warmth was the extraordinarily high amount of wow and flutter, due to the crude transport systems used — this resulted in a very subtle chorus effect being added to the sound. Both these effects can be emulated, but how you do it depends on the facilities at your disposal. Some digital effects units let you set a low-pass filter to use with delay effects, and in this case, simply experiment with values between 2 and 5kHz until you get the warmth you need. However, if there is no filter facility, feed the effect return into a spare mixer channel and use the high EQ control to roll off the top end. To maintain authenticity, you should resist the temptation to use the effect in stereo.

An even better option for adding warmth is to set zero feedback on the effect unit itself, but use the appropriate aux control on the effect return channel to feed some of the EQ'd delay back to

- allows you to set two different delay times, try using the 100ms and 190ms times, and if you have only a single delay time setting, try something in between the two extremes. If you find the echo effect is too long for the type of music, shorten the delay times proportionally. The reason for selecting unequal delay times is so that when you turn up the feedback, the repeats don't fall exactly on top of the previous repeats. In other words, the complexity of the echo builds up with time, almost like a very coarse reverb.

the effect send. For example, if your delay unit is fed from the Aux 1 output, turn up the Aux 1 send on the effect return channel until you get the right number of repeats. Of course, if you go too far, the whole thing will run away in a rush of feedback, just like the old tape units did. Figure 1 (see page 244) shows how this effect is set up.

UTTERLY FLUTTERY

To recreate the necessary wow and flutter, use the LFO modulation to cause the pitch of the delayed sound to waver very slightly. An LFO speed of between 3 and 5Hz should do the trick, but don't use too much depth or you'll end up with an obvious chorus effect.

What I've described may seem a lot of trouble to go to just to set up an echo effect, but it's this kind of attention to detail that can make all the difference between an adequate sound and a sound that's pure magic. The end always justifies the means when it comes to recording, and experimenting is half the fun.

CARRY ON AMPING

For those of you who like to experiment with microphones, you can get a delightfully authentic echo effect by feeding the delay output (treated according to the suggestions in this article) not back into the mixer, but into a guitar practice amp. Mike up the amp using your warmest dynamic mic and feed the miked signal back into the mix. You can even add a bit of spring reverb to the delays using the amp's internal spring system if it has one. Figure 2 shows how this works.

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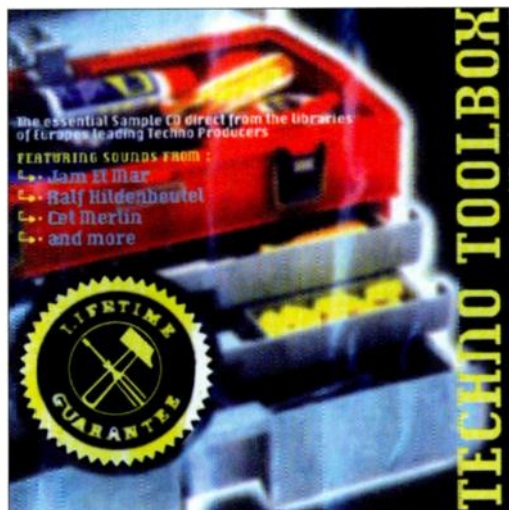
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Techno Toolbox gathers together a selection of samples direct from some of Europe's top techno producers, namely; Jam El Mar, Ralf Hildenbeutel, Cet Merlin, Ingmar Hänsch and others, and is actually a rather aptly-titled product considering its contents — it provides you with almost everything you might need to produce your own full-sounding techno track. The individual producers have donated a selection of their favourite drum, bass and effects sounds, and collectively, these go towards making one of the freshest-sounding dance CDs I've heard for quite a while.

As you might expect, heavy attention is paid to the bass drum samples, which have all the right amounts of thump and boom — so much so, in fact, that when I used them in a full track I found I hardly had to EQ or process any of them. The hardcore hi-hats cut through beautifully, as do the claps and cymbals. Many of the samples are very reminiscent of machines like the ubiquitous Roland TR909, but the care and precision of their respective programmers really shines through, giving *Techno Toolbox* the edge on many sample CDs. Most of the drums are single samples, but a couple of the producers have seen fit to provide a handful of loops, which are also extremely effective.

The wide range of bass samples come from a number of different sound sources. The Minimoo, Roland SH101 and MKS80 are employed to great effect, as are more recent synths such as the Clavia Nord Lead, Roland

JV1080 and Control Synthesis Deep Bass Nine. These are presented in a number of different ways, sometimes as multisamples across several keyboard ranges, sometimes as single hits, and occasionally as grooves and sequences.

Pad sounds, bleeps and effects form the third main category of sounds on this disc, and for my money, they represent some incredibly imaginative sound designing. Despite fitting perfectly within the context of the techno and dance scene, a vast majority of these sounds would work well in almost any ambient, new age or even conventional music track. The pads appear spacious and yet pack a real punch. The collection of random

effects such as analogue bleeps and filter sweeps are also very effective, and certainly won't limit this CD's use to dancefloor applications. The recording quality is superb throughout, and in most cases the samples are effected sensibly, with chorus, delay or whatever serves to enhance the overall sound. The disc times out at just over 56 minutes, which would be fine were it not for the good number of samples which are needlessly repeated — sometimes as many as four times! Quality not quantity is the order of the day, but nevertheless, prospective buyers should be aware that this isn't one of the longest sample CDs currently on the market.

Conclusion: Each of the seven different producers have brought their own distinctive production styles to this CD, making the format a little erratic in terms of what goes where, but this, along with the lack of any decent vocal samples, is only a minor complaint. *Techno Toolbox* is perfect fodder for any dance or techno producer looking for an established set of classic sounds mixed with an experimental and contemporary edge. Within its field, *Techno Toolbox* is a great source of inspiration.
Paul Farrer

£ £59.95 inc VAT.

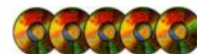
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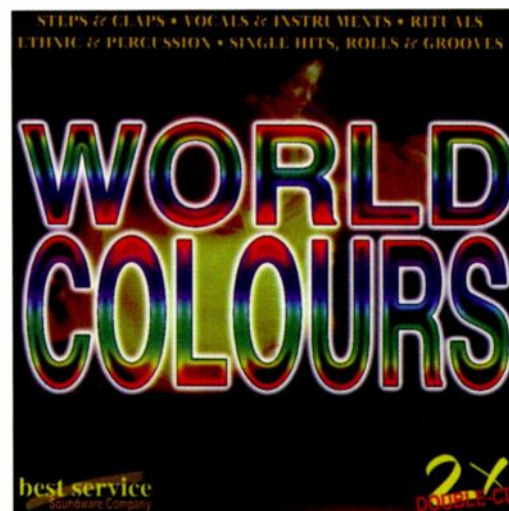
E timespace@channel.co.uk

WORLD COLOURS (DOUBLE AUDIO CD)



World Colours is a double audio CD release from Best Service, and has cast its net far and wide across the globe to come up with a large selection of percussion, instrumental and vocal samples, edited and ready to sample. European music is one area which is often overlooked on some sample CDs, but not so with *World Colours*. Indeed, the first CD is given over entirely to exploring music from Spain, Romania, Croatia, France and almost everywhere else in Europe apart from the UK (*isn't it about time sample CD producers stopped ignoring the joys of morris dancers and bagpipes?* — Ed).

The Flamenco guitar is given a lot of coverage in the form of grooves, chords and solo passages, and the sounds are richly recorded and full of authenticity. There's plenty of variety and tons of atmosphere, with accompanying claps, steps, whoops and shouts. In short, more olé than you can shake a stick at. The Spanish guitars give way to a useful selection of jazz guitar and violin licks



which, although not strictly ethnic, are a welcome inclusion just the same.

The fun continues into the Romanian gypsy section, which is full to the brim with accordions, clarinets, violins, zimbals and drums. The samples appear mostly as long musical phrases chopped up into smaller three- or four-second sections. The recording quality overall varies from super-clean, dry studio recordings to music recorded on stage at the European gypsy music festival in 1994. In a

Get a Sample-CD Legend for Christmas

All-time greats from: A.M.G. • BEST SERVICE • BIG FISH • EAST-WEST • E-LAB • ILO ENTS. • SAMPLEHEADS • SOUNDS GOOD • SPECTRASONICS • TIME+SPACE • VOICE CRYSTAL • WC MUSIC RESEARCH • ETC...

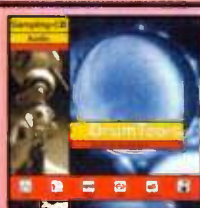
▼ Ethnic/World



HEART OF ASIA
This product got a 5 star review in every magazine in UK, US & Germany. One of the most comprehensive collections of Asian instruments & phrases. Digitally recorded in the field, this remarkable 2-disc set includes over 1 gigabyte of exotic Chinese, Malay, Nepalese, Tibetan, Javanese, Hindi, Sanskrit, Mandarin, Thai & Indian samples, including instruments, phrases, opera divas, chants, speech, gamelan orchestra, morike. Perfect for your next film score, album or remix project.

Audio CD: £29.95, CD-ROM: £29.95 + £2.95

▼ Percussion



DRUM TOOLS
LIVE Rock & Pop loops. Very flexible. Inspiration Grooves & Individual Hits to allow flow and natural feel. 4/4 Straight, 4/4 Shuffled, 6/8, Blues, Brush and a Big Section of Inspiration Grooves. Full Loops (BD, SO & Hat/ Ride), Fills, Separate Hat & Ride Loops, Perc Loops & Flams. Produced by the Rokette team.

Audio CD: £29.95, Audio CD-ROM: £149.00

▼ Instruments



STEVE STEVENS GUITAR SAMPLE COLLECTION
Renowned for his guitar work with Billy Idol, Steve delivers here all his famous trademark sounds, plus awesome FX. The majority of sounds on the CD are multi-sampled and have been thoroughly tested for playability on a keyboard. "Raw textures that are pumped and raw. Even the acoustic samples have attitude. The effects are killer" (Keyboard, USA). "A beautifully recorded and very complete package" (The Mix, UK).

Audio CD: £29.95, CD-ROM: £149.00

▼ Vocals / Dance



CLASSICAL CHOIRS
From Czechoslovakia comes an incredibly haunting and inspiring set of vocal sounds.

Awesome vocal power. Truly an absolute masterpiece.
★★★★★ Five Stars
(Sound on Sound magazine).
Audio CD: £29.95, CD-ROM: £149.00



HEART OF AFRICA
Vol.1 is a 2-CD set of phrases & instruments from all over African continent. Following the success of Heart of Asia, this sequel was a smash hit even before it was released...

Heart of Africa Vol.2 has all new tribal phrases, vocals, performances & SFX from a huge tribal competition in Kenya. This material is very primitive & really enhances the volume 1 samples.

Audio CD: £29.95, CD-ROM: £149.00



PERCUSSION AND DRUMS
Natural drum samples, recorded in the best studios in Los Angeles. The most famous drum sampling CDs. From top USA producer/engraver CLEARMOUNTAIN. "Top of the heap - 10 out of 10 for quality AND for selection" (Keyboard Magazine, USA).

475 perc+drum samples from the Master. Exotic variety. Ultra-Hi-Q audio.
All audio CD: £29.95 each, CD-ROM: £149.00



BASS LEGENDS
Earth-shaking bass grooves & samples from 3 of the world's greatest bassists: Marcus Miller, John Patitucci & Abe Laboriel. All grooves are given in every key & in multiple tempos. CD-ROM versions also include an extravagant variety of multisamples of instruments from the players' private collections.

Audio CD: £29.95, CD-ROM: £149.00



HALLELUJAH
WORLD CHOIRS & VOICES from many countries and cultures. Produced by Peter Siedlaczek/ B. Jovic/ K. Handler. Dance & Pop Choirs • Gregorian/Monk Choirs • Gospel Choir • Background choirs • Classic soloists • Ragamuffin • Choir of Nuns • Vocal hooks • Total Fascination! ★★★★★ 5-stars (Sound on Sound Magazine, UK).

Audio CD: £29.95, CD-ROM: £149.00



SUPREME BEATS
The most comprehensive library of percussion grooves & instruments ever developed, featuring percussionists from all over the world. This highly acclaimed library is now available on 2 CD-ROMs: 1: AFRICAN/ CONTEMPORARY &

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PETER ERSKINE LIVING DRUMS
One of the world's most famous drummers at your fingertips! Thousands of carefully recorded drum performances,

played by Peter from his collection of world class drum sets. Immaculately recorded and beautifully organised. Great for jazz, and in fact all styles.
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FUNK GUITAR
by VLAD NASLAS
The Definitive Sample CD for Classic Dance Guitar Rhythms and FX. ★★★★★ 5 stars (Sound on Sound magazine).

• Styles from cool & slick to hot & boistered • ALL ORIGINAL • 1700 SAMPLES • Raw & authentic • Quite simply ESSENTIAL for anyone in a funk groove.
Audio CD: £29.95, CD-ROM: £149.00



VOCAL BYTES
Vol.1 has OVER 1000 VOCAL GEMS. PRODUCED BY HIT U.S. REMIXER E.M.O. & MIDMARK PRODUCTIONS in the USA. FOR HOUSE, TRANCE, RAP, AND DANCE • ALL ORIGINAL • ULTRA CLEAN TO SUPER NASTY.

features 12 more singers: soulful, funky, crazy. Vocoder samples from the oldskool unit, the Roland RVC-300. New Talk Box samples from the Hell talk box. Well over 1,000 original samples. No royalties to pay!
Audio CD: £29.95



NEW WORLD ORDER
January 1: Fantastic Collection of Ethnic & Percussion loops. Tribal Rhythms, Ritual, Drumbe, Talking Drums, Calypso, Reggae, Haitian Voodoo, Afro-Cuban, Latin Funk, Tabla Loops, Indian Ensemble, Rhythms from Japan, Ireland,

Texas & New Orleans. January 2: Extensive performances on a multitude of acoustic instruments from all over the World. Loads of seldom heard Folk/Historical instruments, plus vocals. Loops, Riffs, Slides, Chords, Scales etc. All sounds are original recordings.
Audio CD: £29.95 each, CD-ROM: £149.00 each



ARMANDO BORG
featuring Armando Borg
A professional library of percussion rhythms on CD. Key features are Incredible musical versatility, fantastic variety, masterful playing,

over 500 percussion loops with accompanying MIDI files on floppy disk (created by analysing Armando's playing), with bpm's from 50 to 170.
Audio CD: £29.95, CD-ROM: £149.00



PHONON HORNS
★★★★★ 5 stars (Sound on Sound magazine).
The world's best and classiest horn sample library featuring the dynamic sounds of the UK's most in-demand

horn section, John Thirkell & Gary Barnacle (whose album credits read like a who's who of megastars). Packed with riffs, hits, swells and all the other horn elements you'll need to add real brass impact to your tracks.
Audio CD: £29.95



OVERDUB SENSATION
House & Acid Jazz library 1200 sounds from the private library of DJ and producer "MOUSE T" (remixer for such

artists as Shabba Ranks and Inner Circle). Several versions of each loop, etc. An extremely flexible tool for remix work.
Audio CD: £29.95



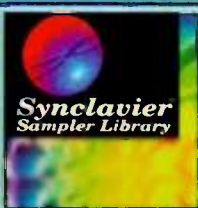
ETHNIC 2
Another exotic set of samples, by the Paradise Organisation who roamed Africa, India and the far east for 2 years in pursuit of material for these two discs. All samples are recorded "in the field", and it's a dynamite collection. An

enormous collection of ethnic vocals, rhythms and instrument riffs. Well suited to dance music production.
Audio CD: £29.95, CD-ROM: £149.00



GOTA'S GROOVES
Drum & Percussion grooves, chops & riffs. Gota's work with the likes of Soul II Soul, Bomb The Bass, & Simply Red is already part of pop folklore. His

ability to make machines groove is legendary. This CD is very different, and a guaranteed source of inspiration. Quality, originality and creativity of the first order.
Audio CD: £29.95



SYNCLAVIER SAMPLER LIBRARY
Highly covered collection previously only available to Synclavier owners. A series of 5 CD-ROMs:
Vol.1: Strings (£169); Vol.2: Essential Percussion (£129); Vol.3: World & Orchestral Percussion (£129); Vol.4: Keys & Guitars (£169); Vol.5: Brass & Winds (£169). We rate these discs very highly. Impeccable reviews in the press. Definitely recommended.

Audio CD: £29.95



NORMAN COOK'S KICK, RHYTHM, BASS
A massive collection of loops from 84 bpm to obscenely fast, plus Vocals, FX, Bass, Percussion, Guitar, Reggae, Flute, Sax, Brass, Synth etc.

Those in the know will tell you that this collection REALLY kicks.
"Another AMG masterpiece" (Mixmag, UK).
Audio CD: £29.95



VINDALOO
By Hoggie & The Turbinator at Nu-Groove Productions. The definitive Bhangra Sample CD. A spicy concoction of Indian percussion loops, single shot hits and authentic Bhangra

instrumentation/FX. Mostly in stereo. Loops grouped in "kits" of similar sounds and tempos. Never before have so many Bhangra ingredients been so accessible. "Feed the feel!" ★★★★★ (Sound on Sound).
Audio CD: £29.95



NILE CONTINUUM
Here is everything that's been learnt about drumming in the last 30 years - raw playing, impeccable recordings, skilful tuning and above all, the value of the groove (Music Technology Magazine).

Audio CD: £29.95, CD-ROM: £149.00



FUNK BASS
From the producer/performer of "Funk Guitar" comes a unique product. This is a 2-CD package of incredibly funky bass riffs & loops

covering all styles, PLUS you get multisamples and FX. Highly rated by the press.
Audio 2-CD set: £29.95 (CD-ROM coming soon: £149.00)



ALPHA DANCE
NO HYPE Just great ORIGINAL & FRESH dance production material. On these 2 CDs you'll find both the audio material & over 200Mb of Akai CD-ROM Data - ready-looped & mapped. A complete spectrum of sounds including vocals. Our regular customers rate this highly for true usability.

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Invest in the World's Best Sounds on CD & CD-ROM

A SMALL SELECTION FROM THE WORLD'S ELITE - THE SAMPLE CDs THAT STOOD THE TEST OF TIME

Dance



X-STATIC 1 - REMIXOLOGY
The XXXX-Largest CD ever?? 4000 samples from the now deleted X-STATIC GOLDMINE 1 and XL-1. If you don't own these two classics then this new CD is essential! All of the 600+ loops are now tempo-mapped for ease of use. Choose any of 4 formats at the same price!!! - Audio CD, or Akai \$1000/ Roland/PC 'WAV' CD-ROMs. At £59.95 it's got to be the best value dance CD-ROM ever.

Audio CD: £39.95, CD-ROMs only £59.95



FUNKY ELEMENTS
Both a 1/2 CD volumes now combined into one CD-ROM (Over 500MB/1800 samples!) - all pre-programmed into killer patches ready to play. Fat with feel, this disc is guaranteed to

serve up that of funk sound. **★★★★★** (Sound on Sound).
AKAI, Roland or Computer CD-ROMs: £149.95 (or buy the 2 volumes separately as audio CD: £99.95 each)



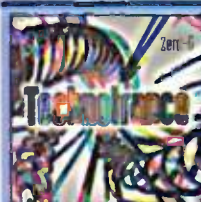
Black & Black
By Steve McIntosh & Joe Charles. One of the biggest & best set of kickin' R+B samples. All loops, Vocals, Brass lines, & Drum hits specially recorded. Features: Reggae, Ragga, Swing, Jazz house, Euro house, Mad house, S'n Jamz, Rap, Guitar licks, Bass lines, Garage, Disco. **★★★★★** (Sound on Sound). Each volume is available as Audio CD: £39.95 each, or as Akai CD-ROM: £149 each.



Zero-G Datafiles
World's best-selling dance sampling CDs. Featuring over 3250 samples spread across 3 CDs. Tremendous variety. **★★★★★** (Sound on Sound).
Available as 'WAV' format CD-ROM for PC computers (£19.95 each) or as Akai \$1000/ Roland/PC 'WAV' CD-ROMs (£39.95 each). Audio CD: £19.95 each. Excellent value for money. Recommended by magazine reviewers worldwide.



DANCE / INDUSTRIAL 2
A 2-CD set of Loops plus all the component percussion elements used to make them, plus their programming on an accompanying MIDI-file floppy disk. A very professional approach from East West (USA). **★★★★★** (SoS). 154 loops and 1500 samples on 2 CDs. Comes with MIDIfiles on floppy (state Mac or Atari). Audio CD: £39.95, CD-ROM: £149



Zero-G TechnoTrance
All the classic techno synth & FX samples you need, each presented with a short demo to show their effectiveness. One of the world's very best techno sample CDs, having achieved top-rated reviews in USA, Germany & UK. Audio CD: £39.95, PC 'WAV' CD-ROM: £39.95. Also available as Akai \$1000, Roland or SampleCell CD-ROMs for only £39.95.

Dance



XX-LARGE THE HILLER
Over 100 minutes of different samples on L & R tracks. 750 synths, chords, organs, voices, pads. Techno/Trance hooks.
250 Bases, 750 Druml原因 (80% in stereo, tuned and grouped into BPMs from 130-200 BPM), Analog Drum Machines (adjusted to every possible variation). **Really good value** **★★★★★** 5 (stars) (Sound on Sound).

Audio CD: £39.95, CD-ROM: £149.95



L.A. RIOT 3 IN EFFECT 2
2-CD Set: 1000's of Hip Hop & R&B samples. Mad hard construction kits
• Bomb-ass breaks
• Basso + Loops
• Horns + Scratches
• Crazy FX & Sweeeties
• Crazy guitars + Vocals
• Synths + Piano + Rare groove elements. Every

5 construction kits are same BPM & key for mixing & matching. Fresh, well-organised and a true goldmine for the serious producer. "Sheer authenticity & attitude... An all-American urban soundscape of immense realism... A hard act to follow... Quite simply a classic." **★★★★★** (Sound on Sound, UK). **★★★★★** (Sound on Sound, UK). Audio CD: £39.95, CD-ROM: £149.95



Loop Soup!
This 2-CD package contains ALL the rhythm loops from all the great AMG dance CDs - (from Norman Cook, Megabass Remix, Pascal Gabriel, Coldcut, and from both of the AMG 'Now!' CDs). A monster collection by some of the UK's best dance producers. Audio 2-CD set: £39.95



FUNKY 2500 LOOPS
Produced by the New Power Generation (who do all the drums & programming for Prince). "Seriously HOT! 5 stars for content, value and sound quality" (Keyboard, USA). This super-funky disc will prove to be the inspiration for many hits. All grooves played live - but not just with traditional drums - you won't believe the sounds used, and you get all the separate component samples as well. Audio CD: £39.95, CD-ROM: £149



SLY DUNBAR
Reggae Drumsplash The World's No.1 Reggae drummer & Producer (half of Middy Twins Sly and Robbie). There's nothing else like this on the market! • Reggae • Dub • Dancehall
Bhangra. Comes with MIDI-files on floppy disk for the loops. READ THE FANTASTIC REVIEWS - undisputedly the NUMBER ONE sample CD on the market for reggae production. Audio CD plus MIDI-file floppy disk (please state Mac or Atari): £39.95



The Rhythm of Life
IMMACULATE PERFORMANCES and FLAWLESS PRODUCTION!
49 tracks of creative percussion grooves plus single hits in many exotic styles.
"A connoisseur's product." (Sound on Sound). Audio CD: £39.95, Roland 700-series CD-ROM: £149.95

Classical



REALISM! An orchestral sample library that even top conductors are proud to own. Two years in the making. FIVE CD-ROMs exploring every subtle nuance. Very expensive, but the best. See catalog for full details, or call to discuss. We highly recommend a full demo at our private CD-ROM auditioning suite. Many film composers have bought this library and been delighted. A mini version is also available on a single CD-ROM.



Peter Siedlaczek's **Orchestra**
One of our most popular products. An entire orchestra at your fingertips, mostly playing tutti. The string sections are perfect for those lush string pads & lines and eleven other categories are provided. Aural dimension & realism at an affordable price.

Audio CD: £39.95, CD-ROM: £149.95



Peter Siedlaczek's **Orchestral Colours**
Siedlaczek's name means pure class. Rich & evocative orchestral samples to bring colour & inspiration to your music. • Hits & Finales • Moods & Timbres • Orchestral layers, chords, arpeggios, tremolos & Glissandos • Runs & Sequences. A film composers dream. **Quality is irreplaceable. You've never been able to access such usable orchestral realism so cheaply before.** **★★★★★** 5 (stars) (Sound on Sound). Audio CD: £39.95, CD-ROM: £149



From Roland's own CD-ROM series: **String Sections Vol.1** (500-600 Mb, £399.00 each):
• Orchestra Vols. 1&2 (Strings & brass)
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Computer Series (£139.00 each): • Jazz Vol.1 • Dance Vol.1.



CLASSICAL WILD TAKES
In the same vein as "Orchestral Colours" but perhaps more FX orientated, this is another superb collection of orchestral stings, phrases and
orchestral effects samples for use in film, broadcast and any music requiring that big, expensive and professional orchestral sound. From a different German developer, but, like "Orchestral Colours" this CD is also superbly recorded and presented. Audio CD-ROM: £149.95



The Piano
FINALLY, a virtual grand piano has been made that actually sounds and responds like the real thing. Recorded with patented 3D technology, these 8, 16, and 32 megabyte banks will bring your favourite concert grand into your studio.
CD-ROM formatted for either Akai \$1000/5000, Emulator EX2, Roland Series, Kurzweil PC300, or SampleCell. £249.95

Synth & FX



Ambient
Volume 2
By IAN BODDY. This collection achieved a **★★★★★** five-star review in both Sound on Sound (UK) & Keyboard (USA). Comes very highly recommended. A wealth of synth FX, atmospheres, instruments & textures from one of the UK's leading synthesists. Audio CD: £39.95 each, PC WAV CD-ROM: £39.95 each, Akai CD-ROM (both wav. or one CD-ROM/ROMs) only £149.95



Vince Clarke
Lucky Bastard
"One hell of a useful CD. 9 out of 10" (Future Music). A huge set of sequences specially created by Vince Clarke using his massive collection of classic analogue synths. Fast creative sampling. Audio CD: £39.95



Analogue Dreams
There are over 3000 Analogue synthesized samples on this 2-CD package. The list of rare synths & analog drum machines used looks like a museum inventory: Dreams, squelches, or mind-blowing effects, there's a synth sound here to fit the bill. Get the CD-ROM version and you'll have everything sampled, looped and laid out into superb performance patches. Audio 2-CD set: £39.95, CD-ROM version: £149.95



DISTORTED REALITY
NEW! MS-DOS but already in the hall of fame. Cutting Edge Textures, FX and Loops, exploring an experimental world of extraordinary colours. From 3-dimensional Harmonic
Sound Morphing, to trance-inducing ambiences, enormous modular drones & astonishing timbral contortions. An essential resource for the producer, composer or sound designer in search of unique sound. You simply have to hear these sounds to believe them, and we can't praise this product highly enough. Audio CD: £39.95, CD-ROM: £149



Analogue!
Unique sounds, layers, textures, FX, from the worlds classic vintage synths. Ambient, techno, film, rock, whatever - these 2 discs will inspire you with fresh sounds of
immense power or subtlety. Raved about by dance producers for their usability and versatility for everything from Ambient/Trance to the hardest of Hardcore Techno. Audio CD: £39.95 each, PC WAV CD-ROM: £39.95 each (Akai CD-ROM coming next £149.95 includes both volumes)



Analogue!
By Martin Phillips - the producer of Roachford, Erasure, London Beat, The Beloved and Jesus Jones. Analogue synth sounds, analogue drums and effects. A particularly fine and tried-&-tested set of synthesized samples. These sounds really WORK in the mix, as you would expect from one of UK's top producers. Audio CD: £39.95

New Releases

JUNGLE WARRIOR

Hardcore dancefloor pump for speed freaks. Massive collection of ultra-fast grooves, construction kits & samples - a lethal production weapon in the right hands. If you need jungle this is unmissable. Features: • Special jungle loops (ready transformed, 4 - 38 bars, 155-184 bpm) • Massive drum intense pads & chords • rolls & mega fills • Perc loops and hits • Bass Notes • Manic FX • Nasty Vocals.

Audio CD £14.95

New Releases

ZERO-G

The ultimate beats collection for serious Hip Hop, Swing and R&B production. Grooves with attitude and attitude to lift your music into a new dimension. Each loop has its own swing factor, enabling you to easily quantise your track to the same groove. CD-ROM version coming very soon.

Audio CD £14.95

TECHNO TOOLBOX

Features the sample libraries of Germany's most respected techno producers including Eye, Harthouse, Rail, Schunbeitel, Jam El Mar (Jam & Spoon, Dance 2 France), Cat Martin (Spacelord, Energised), and more. Clocked key sounds of many of the world's top techno producers: custom drum, synth, bass, key samples. "Within the first 5 minutes of this CD I had samples." (Frontpage Mag, Germany).

Audio CD £14.95

ELECTRO SHOCK PART 2

The sequel to a very successful techno dance library, this 2-disc set looks set to do equally well. **CD1:** 70 minutes audio plus MAC (AIF) & PC (WAV) ROM data. **CD2:** 68 minutes audio plus AKAH ROM data. Huge collection of fresh analog-digital stuff for serious technomaniacs. Includes rare vintage synths & construction kits.

2 Disc Audio £19.95

EURO TECH

Specialising in Euro-dance Europop. This style of music has dominated the charts all over Europe over the last few years & seems set to continue to. A very commercially attractive set of sounds, and all original. The loops are fast (182 of them are over 140bpm).

A nice balance of experimental & straight. All bombs given. A hot techno resource.

Audio CD £14.95

On JazzTip

Top Hop in Full Swing! Jumping grooves, ticks and loops, played in understated keys and tempos to be used interactively: Bass, Guitar, Keys, Horns, Drums and Perc. Jazz pads, riffs and chords. Perfect for all settings: Rap, Soul, Trapping, Acid Jazz and Funky flavors. For any music project that needs a strong swing or that Jazz Thing. Produced and played by musicians who love and respect music.

Audio CD £14.95

MINI-TECH

Drums & sound sampling for industrial intelligent Techno. Goth Techno or anything in need of an experimental edge. Uniquely twisted, obscure and savage. Hi-Fi, Drum, Bass, synth, FX, Vocals, Feedback & Noise-loops. Grinding Guitar Riffs & Feedback. Synth FX, Drums, Basses, etc. Groupy & Coozy Sound FX, Music FX & Voices. Over 1000 Samples. A unique collection.

Audio CD £14.95

MINI-TECH #2

M&B Jungle/Trip Hop - whatever the trendmakers call it - it all comes down to the Right Flavor of the Grooves. Many future styles will probably rely on breaks like this. Tons of Grooves. Hits & Loops to give you a unique feel for the grooves. Produced by PHAT FARE aka Fabian Thorsen (Haze Cherry & Haze Beats). Tempos maps provided (plus MIDI files on CD-ROM version).

Audio CD £14.95, CD-ROM (incl audio CD) £19.95

CRUNCHY NUT DRUM LOOPS

Crunchy Nut Loops - A collection of Phatting Grooves from Drummer Jim Carmichael (Freak Power, K-Creative etc.), played with vibe in mind, these loops are encrusted with funky substance.

and fortified with extra compression to start your day in the positive way.

Audio CD £14.95

X-STATIC & GLOWING

Call out & Dub Grooves, Trancey Phase Loops, Synthetic Vibes, Floating Nervous. Transformed Ethnic Chants, Hypnotic Space Echoes, Zipping Tonars & Dreaming Ambient & Jungle Weather. 1500 Ambient House Loops & Chill out Samples. (Loops made to fit with LOGMAPS - tempo maps to make loops easily interact with each other).

Audio CD £14.95, CD-ROM (incl audio CD) £19.95

WEST COAST FUNK

7-CD set from USA featuring L.A.'s top funk session players, and produced by a top US rap engineer. Over 1000 Drum, Bass, Guitar, Horn, Keyboard and Vocal flavour.

loops & samples with a deeply funk.

Audio 7-CD Set £19.95

PHAT PHUNKY

Another dynamite set from East-West: Over 2000 samples on 2 CDs: 185 grooves, each with its component samples given separately (drums & instruments) together with the sequence data for each loop on a separate AIF-file floppy disc (PLEASE STATE ATARI/IBM or MAC version when ordering).

This arrangement gives you complete flexibility to customize all loops to any tempo or content you like.

2-CD Audio Set £19.95

90 DRUMMERS

The most extensive drum sound collection for any genre production: 4500 well-engineered samples, 90 complete and different drum machines as well as ultra rare analogue rhythm lines with several speed variations. Also 1500 latest dance drumsounds (80s, 90s, Hats, Percs, Animate drums and Perc). 400 live drum part. All Drum machines and hats & boppers, ready to use.

Audio CD £14.95

XX-LARGE EXTREME 1750 BRAND NEW DRUM LOOPS

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SAMPLE SHOP

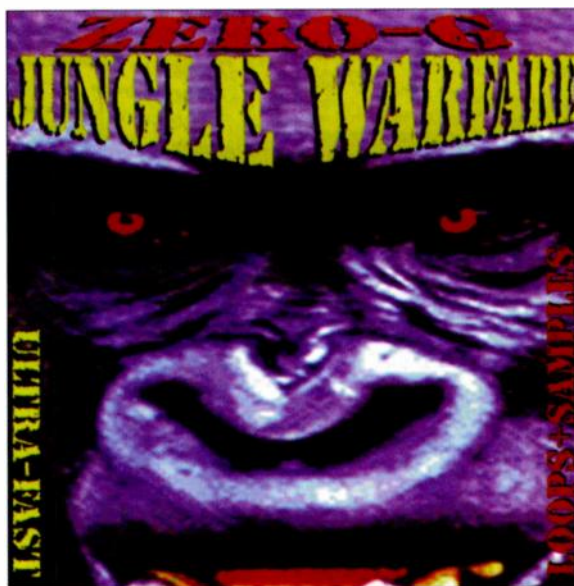
► couple of cases, this 'live' sound gives some of the samples annoying amounts of background noise, such as claps and crowd ambience. This is particularly noticeable on some of the otherwise wonderful gipsy violin recordings, which in many cases, are so full of other audible instruments on the stage that they could hardly be called solo recordings at all. Not that this presents a huge problem, because what they lack in sonic clarity, these samples more than make up for in vibrant realism — but you might have trouble looping them!

Many (but sadly not all) of the instruments featured in this section come with an useful set of multisamples for you to build your own keyboard patches (trumpet, clarinet, accordion, and so on). The vocal samples are fresh and unusual, and although not the main feature of these CDs, there is more than enough to give a real ethnic flavour to any track.

CD Two is mainly dedicated to African sounds, and in particular drum samples. Mandinka ensembles, Djembes, Bata, Tama and Junjunba drums are all explored and beautifully recorded. There is fantastic depth to most of the samples, and plenty of scope both for editing the loops provided or constructing your own patterns using the single samples that appear at the end of each section. There is an unusual collection of flute and vocal samples, as well as African five-stringed guitars (plucked and strummed), shouts and tribal-type atmospheres.

Asia is represented towards the end of the CD by a sort of mixed bag of odd drum, vocal and instrument samples, including a set of sitar licks. Finally, no ethnic CD would be complete without at least one digeridoo track, and the few samples provided here are as good as any I've yet heard.

Conclusion: Split more or less into two halves (Gipsy and African) *World Colours* covers a huge number of ethnic and world music styles. The layout, although not listing



any bpm's, is fairly logical and easy to follow. My only real gripe about this release would be the inconsistency of the recording quality, which varies considerably. That said, this CD is overflowing with variety, authenticity and pure ethnic atmosphere. *Paul Farrer*

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JUNGLE WARFARE (AUDIO CD)



Warfare opens with 44 programmed and produced loops of minimally variable tempo (155-164 bpm) and hugely variable duration (longest 38, shortest 4 bars, with constant variation and fills).

Because jungle beats tend to be extremely busy, usually more than one hit of each voice needs to be alternately employed (eg. two rimshots, several snares) if feel is to be engendered by the programming. Judicious detuning and pitchbending can also help disguise static samples. Fortunately, the programmers of this CD, Joseph Stock and Mark George, are in tune with the musical style, and understand this. There are plenty of pregnant pauses and 32/48/64th programmed dynamic rolls too, both jungle hallmarks. Many of the longer patterns deserve to be cut into a multitude of smaller fragments, mapped over the keyboard, and then user-sequenced.

On to the straight loops. Here we find around 400 4-bar (1 or 2 bars repeated) loops,

in the raw, and ready for your digital scalpel to transform them into something out of the ordinary. Many of these are old favourites speeded up and re-equalised to compensate for the pitch-shift upwards. Others are half-tempo, and among the drum loops I found some interesting percussion overlays. If you thought a tempo range of 155-164 was boring, wait 'til you hear these. Obviously, Joe and Mark are samplists after my own heart, having settled for a 160bpm standard throughout — though I must admit, I go for 120 bpm (having said that, I'm forever applying higher and higher tuning offsets in compositions, so maybe I'll get up to 160 eventually...).

The percussion section features a set of viable single hits including cymbals, tambourines, latin and electro tones, and other miscellanea. No basic drums though, which I found strange! I liked the church bell and steel drum, but wasn't so keen on the bright digital reverb. Just as well it's mixed low.

The digital pads and notes are well-chosen, and generally much more attention-grabbing than your music shop brigade. The basses, meanwhile, tend towards the sub variety, while the special effects, although consisting of the usual spaghetti space-cowboy stuff, is actually a pretty good selection, including trains and seagulls. The vocal section is short and easily missable, although I did hear some snatches from 'Buffalo Gals' on my way past it.

Conclusion: For some time, I've been wondering how long it would take the sample CD market to catch up with jungle. I felt that the first product to adequately service this expanding sector was sure to clean up. Despite the claims made when it was released, *Jungle Warfare* isn't the first jungle sampling CD (for example, check out the review of *Jungle Joose* in *SOS* August '95), but it is the first full-price, extensively-produced and -researched one. Also, *Warfare* is considerably more up-to-date than its inexpensive competitor. Mono (except for the 'Digital Pads' section) and with excellent fidelity throughout (source limitations excepting), the loops exhibit balance and punch, with a fair bit of variation in feel and sound, if not tempo. There's no really serious competition yet, so it's got to be a rating of five — though I wish it had come out six months ago... *Wilf Smarties*

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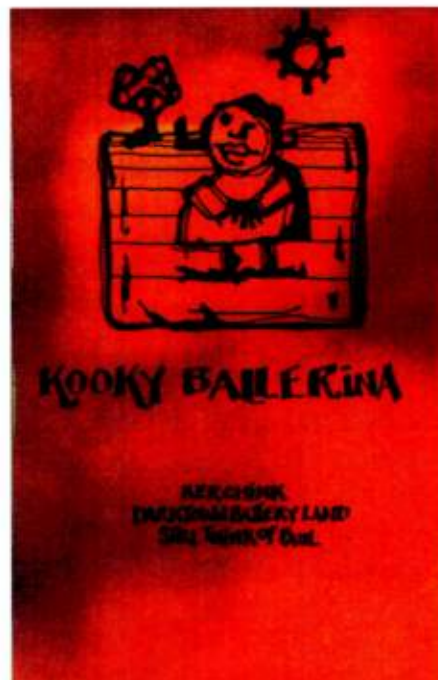
KOOKY BALLERINA

Recording Venue: Home.

Recording Equipment: Foxtex R8 multitracker and MTC1 controller, Atari 1040 STE computer running Cubase, Soundcraft Spirit 16:8:2 mixer, Quadraverb GT plus effects, Alesis 3630 compressor, Aphex big bottom aural exciter, ART Multiverb LT effects, Akai S950 sampler, AKG C1000 mic, Denon DAT DTR 80, Yamaha NS10 monitors.

Kicking off with some sweeping and lush chords, piano and vocal soon join in the first song's introduction. The lead vocal is dry and up front, and is joined by some backing vocals which follow a beat behind — a nice touch, I thought. On the second verse the voice shifts up an octave, is placed back in the mix, and treated with chorus or harmoniser — rather like Peter Gabriel on the song 'Red Rain'. This shows some imagination in the production of an otherwise simple song, which comes to a close with vibes and cello.

The second composition, 'Darktown Battery Land', features vocal, synth, and a



top tape

sparse piano which is treated with a short room reverberation. The choice of reverb compliments the piano well, and its very natural, sombre, and organic sound is due to the high frequencies having been filtered out above about 2kHz. This gives the vocal presence a lot of space in what is another

sparse track.

'Still Think Of Paul' is the final track, and this

carries on the excellent songwriting and simple style. More harmony vocals and a major key give this song a lift, although it is still tinged with melancholy. I thoroughly enjoyed Kooky Ballerina's demo, which had a great feeling of space making it sound fresh and unpretentious. □

Readers submitting demo tapes should note that SOS regards the inclusion of photos or artwork with demos as permission for the magazine to reproduce this material free of charge, as illustration, with any review of the accompanying tape.

THE JAMES TWINS

Recording Venue: Home.

Recording Equipment: Atari STE computer running Cubase, Tascam 644 MIDISTUDIO, Alesis Quadraverb GT effects, Beyerdynamic M300 mic, Sony 77ES DAT.

Playing covers on the pub/club/hotel circuit for years can be a soul destroying experience, but it has certainly given The James Twins a good insight into the music that most people like. While their songs are middle-of-the-road, they are still well put together, and the harmonies of husband and wife team Richard and Jayne are really strong and very, very tight. I could easily imagine the song 'When The Feeling Returns' as a film theme soundtrack and hit single.

Richard handles the lead vocals, and has a

fine voice for this kind of material — full-bodied and just a bit husky. The Beyerdynamic microphone certainly comes through with a professional sound, which is helped by a really excellent choice of warm reverb, never distracting attention from the vocal itself.

The backings for most songs tend to feature a warm pad mix of muted brass and strings, with an electro acoustic synth guitar patch picked against it. This gives enough edge to the overall sound without competing with the vocal frequency range, but some variety from track to track would have been nice. The sound separation is good — all the component parts of the track can be heard, and sit together well.

I would have liked to have heard some echo occasionally, and extra instruments on the

"DIFFERENT TRACK"



THE JAMES TWINS

choruses would have added dynamic lift. A played, rather than programmed guitar would also have been good, but with a cassette multitracker, you've got to keep the tracks free for those glorious harmony vocals! □

THE ESSENCE

Recording Venue: Home.

Recording Equipment: Soundcraft 762 2-inch tape machine, Cubase software, Soundcraft 2400 mixer, Alesis Quadraverb plus effects, MIDIverb II and 3630 compressor/limiter, Yamaha SPX90 II multi-effects and 27 band graphic EQ, Drawmer LX20 compressor, MTR gates.

In common with a lot of groove projects, Cubase is used for the drums, loops, synth bass, and guide keys. With the benefit of a 2-inch tape machine, this was then recorded to tape where real bass, vocal, guitars, and main keyboards were added. The result is a classy sound, with excellent vocals from Linda John-Pierre, who also has the ability to track up some nice backing vocals.

On the first track, the sound is warm and big. Undoubtedly this is the result of recording onto 2-inch tape, and in these days of cheaper digital recording, warmth is going to be one of the first things that will be sadly missed. An acoustic guitar solo, courtesy of guest musician Ray Lee, compliments the production sound with some nice runs. The heavy reverb fits the glassy sound of the guitar perfectly, and another nice effect was the introduction of slapback

echo on the snare during this solo.

This echo was set to fall on the first eighth note after the snare beat, and the snare itself was a different sample with a harder sound. The change of tone picked up the dynamic, as well as lending extra clarity to the delayed repeat.

Musically, the second track lacks imagination, with too much of a Cola ad-style chorus. Even so, it is well produced with Linda in fine voice again, particularly on the a Capella section. Track three picks up the classy theme again with an excellent drum loop and a great toppy snare sound, yet the vocal sounds, dare I say it, over compressed. The telltale signs are the sibilance, the slight pumping in volume level, and the occasional dips at the start of loud notes where the threshold has been set a little too low, and the attack too fast. I did, however, think the thinned-out backing vocals were great on this last song, as they cut through the mix.

In general, this is a well-produced tape with a fat, radio-friendly sound. The songs, although not breaking any new ground, are good quality, but it is the voice that will sell them. □

SPACEMAN

Recording Venue: Home.

Recording Equipment: Apple Mac computer running Performer, Casio FZ1 keyboard, Emu Proteus 1 sound module, Roland D110 keyboard.

Thayer 'Spaceman' DeMay from Boston USA is currently seeking a record deal, and is trying to put together a stage show for his music. Big ideas perhaps, but he's certainly got the music and mixes to go with them. In some ways, this music is a bit like what Jean Michel Jarre might be doing if he was in his teens now — aggression and attitude mixed with the occasional bit of classical, and heavy sampling from famous TV shows with a space theme. Battlestar Galactica, Buck Rogers, and the Martian Chronicles are all in there, and yes, I know we've heard this sort of thing before, but not quite in this way. Perhaps it's because Thayer is from the USA that his tracks ooze the bombast of America's rock scene, or perhaps I'm just applying a cultural stereotype.

The mixes are solid, with the sort of bass end that most demos seem a little scared of. These square up the aggressive mids and don't make the



whole thing top-heavy. I really liked the fast classical-style arpeggios — particularly the use of strings over a techno backing. This works well, because it lends continuity to the classically-orientated stolen theme music sections. □

FORCE OF HABIT

Recording Venue: Home

Recording Equipment: Atari Mega 4 computer running Cubase, DAC 100Mb hard drive, DAC 44Mb removable hard drive, Mackie 1604, Tascam MM1 mixer, Roland S750 sampler, Tascam DA30 DAT machine, Sony DTC 55 ES DAT machine, AKG C1000 mic, Roland SRV 330 reverb unit, Alesis Quadraverb effects, 3630 compressor and MEQ 230 equaliser, BBE Sonic Maximiser, Tannoy monitors.

It is hard to believe that there are so many good female vocalists, but here comes another one by the name of Rachel Harris. Rachel has been Gospel-trained, and has a powerful voice that seems to suit the Transatlantic dance music that brothers Phil and Dave Massey write.

Ad lib vocals are echoed on the introduction to the first song, and the echo is treated to a large dose of modulation. This pulls the repeats around in the stereo rather nicely, and is used tastefully at a lower level as the mix progresses.

The vocal performance is strong, and ably supported by backing vocals on the chorus which Rachel must have tracked up herself. Finally, a familiar production trick is used on the last line to trap the vocal in an infinite reverb for the fade.

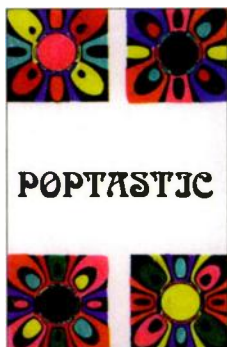
Manipulation of effects is not the only thing that the brothers Massey are good at, as the second song shows. The drum groove and bass are pretty hot on this number, although I would love to hear what a really good bass player could do with the funky bass line! Some nice low brass sounds are also employed as fills, but I found that they tended to crowd the mix. This, coupled with the choice of reverb on the lead vocal, make this track sound a little low, yet once the backing vocals enter to carry the chorus, the balance is fine.

The third song is in the form of a ballad which Rachel handles with some passion, particularly on the chorus. This track sounds American to me in its production style, and there are obvious comparisons with Whitney Houston. A very natural-sounding piano sits over some fat synth strings which pan around the stereo, and the big sound suits both the song and the voice. I was also impressed with the chimes sample, which was very clear. Generally, I'd say that Force Of Habit have produced a very fine demo. □



As an incentive to send in your best demos, 3M are kindly providing prizes for the best tape submitted each month. The lucky winner has a choice of: 20 Scotch XSII-S high-bias C60 cassettes, 10 3M DAT 90 digital cassettes, five reels of 3M 996 quarter-inch tape, three reels of 3M 996 half-inch tape or two reels of 3M 996 one-inch tape. Designed to accept very high recording levels without distortion, 3M 996 tape is packed on precision NAB reels and comes in tough, attractive library cases.

► **Poptastic:** Despite using pretty unsophisticated recording equipment with no



proper mixer, the sound quality on this demo is very good. It is well recorded, with plenty of warmth, and enough presence to avoid the abrasive upper mids that many 'dance' demos contain. The compositions are imaginative in both

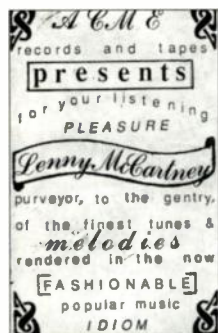
theme and content, and although some are quite long, such the opening 'Noah's Rocket', they never lose interest or wander too far from the theme. 'Where is Gary Lineker?' is a very cynical composition aimed deliberately at the TV market, where it has already had considerable success.

The Bushmen: Paul and Jim Bartlett are 'The Bushmen'. They record live onto stereo cassette due to their limited recording set-up, but even so, the quality is very good. A fair amount of sequencer-triggered sounds are used, and it's nice to hear these blended with a Fender Precision and electric six string. This combination seems to give the pieces a greater sense of

rhythm (especially on the atmospheric 'Storm'), and 'Critical' features some good programming in the form of a well-mixed kick drum and bass synth. Creating a mood is something this duo do very well, and the only way I can think of improving the production is by using some more live instruments. For example, even though the percussion is well programmed, some real drums would have been excellent.

Lenny McCartney: Using sound bites from films like 'Lenny', 'Spinal Tap' and 'Taxi Driver' (all illustrating, rather than dominating the

mixes), this tape turns out to be good fun. A lightweight voice bathed in reverb floats over a skanking rhythm, which is occasionally



punctuated with samples and well-known themes. Popular culture in musical collage form is nothing new to these pages, but Lenny pulls it off with some humour. The mixes are a bit crunchy and thin in places, with emphasis given to

the upper mid at the expense of the vocals. The best balance is on the final song, but I felt that the lead vocals could even be higher here. **Jon Turner:** A bit of American-style country rock from Jon, whose ambition is to make it on the country music scene in Nashville. It must be a strong urge, because the BBC have even done a program on him, although I don't know whether it has been screened yet. The first song on Jon's tape is a bit of a rock n' roller with programmed drums, bass, and piano, but real guitar and vocals.

The boogie piano needs to be louder in the mix, especially in the holes between the vocal lines where I can hear some fills in the background. The cymbals tend to dominate the drum mix, so I would have turned their velocity value down on the Atari if possible. Elsewhere there is some nice slide guitar playing, and suitably mellow singing from Jon, which could be improved with a touch of reverb from the Midiverb III. Otherwise, a well-balanced demo.

Traxler: A strange name and a strange sound from such a young-looking band. The music has all the qualities of lounge lizard country — remember 'Blue Hotel' — all thin guitar with tons of reverb and sultry vocals. Tracks one and three were recorded at a pro studio in London, but I wasn't very impressed — especially as they left a gaping hole in the lower



mids between the bass end and the glassy guitar. It's strange, because the keyboard that could fill the hole is on tape, but is either played in the wrong register, or the lower frequencies

have been EQ'd out. The home demo has a better guitar tone and much fuller sound by far, and although it is noisier with a few mistakes in the mix, it makes a better demo.

Mindshaft: This demo starts with a rhythmic mix of sampled gunfire and computer code, and this harsh theme is then taken up in the vocal, which is distorted and telephonic. The main problem with this demo is that everything is vying for the same frequency. The overdriven



guitar has been heavily EQ'd with all the bass taken out of it, and as there is no actual bass frequency in the bass synth to speak of, it makes the whole mix sound like it is coming out of a tweeter with no driver. I know that industrial music needs an abrasive edge for energy, but it also

needs the bottom end for power, so I'd go for a remix on this one — it would certainly be worth it, because the songs are strong and performed with suitable intensity and vigour.

Soundstation: Using the popular Korg M1 (among other things), this band have recorded a groovy set of dance demos. Although none of the material is really original, some nice touches are used, such as the gateo reverb on the arpeggiated square wave synth. The snare is busy, and while that's only to be expected, I found the sound a little hard for this material. Something lighter and lower in the mix, such as a piccolo, standard 808 or 909 Roland sample, or even a drum machine snare tuned up would work better. The heavier snare is more appropriate on the second track, which also has some ace wah wah

guitar — distinctly '70s. Smooth vocals glide effortlessly over a polished backing with just the occasional hint of sibilance, resulting in levels which are a bit too high on the cassette, yet over all, this band produce a punchy sound.

Rule 13: Another industrial tape in the bag this month. This time ambient vocals are thrust to the background, while comb filtered phase is applied to the foreground drum mix. The tracks would also be kind of trancey if it weren't for the rasping distorted guitar. I can't help thinking that this music would be very effective if a dry up-front vocal popped in and out occasionally — worth it for the shock value anyway! Rule 13 say that they are trying to create non-categorising sounds, and to be honest, their industrial sounds are very good — but they are obviously industrial. I was impressed with the crossover from track one to two where the drum loop of the new came in over the industrial noise of the old, and the warm bass line is an added bonus where the other sounds are over EQ'd in the upper mids. I thought the best mix was 'Spoiled'. □

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piano cards and Prophet sounds. Studio use only. Dent on upper octave keys. Worlds perfectly, full of my own sound. £700. Also Slick 12.8 mixer, vgc, £500. ☐ Can 0113 282 2239 (Leeds)

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KORG X2 £900, Roland JV880, £370, both boxed, manuals, 120 light rack with castors, £190. ☐ 01908 811713 (Milton Keynes)

KORG X3 synth workstation, home use only, £803. Will deliver. ☐ Jan 01647 432400 mobile (S85) 70108 online

KURZWEIL K1000SA 76-note keyboard, weighted with aftertouch, piano sound plus various other sounds, strings, chorus, flutes, synth sounds etc. Manual, board, one owner only, very good condition, only £800. Chetah MCV1A MIDI keyboard, 7 octaves, good condition, £140. ☐ 0113 263 7503 (Leeds)

KURZWEIL K2000 £1,295, Korg OR/V + 1000 sounds, £295, EMI 68182, £795, Roland £525 + monitor-library, £295, Roland Juno 60, £250, Roland U110, £150, Korg DS8, £195. ☐ 01977 557580

KURZWEIL K2000 keyboard, version 3 software, SCSI interface, 16Mb RAM, 500Mb internal hard disk drive, sound kit fitted, boxed, vgc, £2,299. ☐ Robin 0171 794 4843 (London)

KURZWEIL K2000 v2.07, keyboard, manuals, boxed, as new, £1,600. ☐ Anton 0171 359 9508 (Newcastle)

KURZWEIL K2000R v2.07 with sample and orchestra ROMs optional installed, £2,200, v3 software, £95, Contemporary ROM, £300, 8Mb RAM, £150. All perfect. ☐ 0191 261 2683 (Leeds)

KURZWEIL K2500RS 88-only, 192 oscillators, 2Mb RAM, Sampling £2,950, Unsampling £2,500. Absolutely blow-away analogue and super quiet K2000 keyboard, £1,550. Also various sizes of ROM full hard disks. Wanted: Zuno 90010 and Alca PCQs. ☐ 0113 246 9254

KURZWEIL K2500RS Two K2000s in a box, 2Mb RAM + sampling, boxed, new, £2,950, K2000v2 keyboard O RAM perfect, £1,500, K2000 Hard disks full. ☐ CD/ROM. ☐ 0113 246 9254 (Newcastle)

KURZWEIL MICRO piano sound expander, the best sounds available, £300. ☐ 0113 243 3005 day, 0113 268 5082 (eves Leeds)

MINIMOOG with MIDI retrofit, vgc, £1,000. Also Roland SH101, £200. ☐ Jamie 01293 512485 (West Sussex)

MOOG ROUGE bass synth, perfect condition, £190, Korg Wavestation, as new, £680, Alexis SR18 drum machine, £150, Evolution EV1, £90, Spirit Folo 12.2 mixing desk, £270, Chetah MD18 drum machine. ☐ Stephen 0515 281 8324

NOVATION BASSTATION £250, ART FXR effects unit £110, Kawai SX1 multiA module, £110, 2U rack shelf, £15, 2x8 MIDI tray box, £20. ☐ Kevin 01242 290489 (Glos.)

NOVATION BASSTATION for sale, superb condition, excellent analogue bass sounds, as new condition, £275. ☐ Lee 01425 672613 (New Forest)

OVERHEIM MATRIX 6R AT condition, including Atan editor/librarian, offers. ☐ Chris 01883 625750 (Surrey)

OVERHEIM MATRIX 1000 polyphonic analogue MIDI synthesizer module, 1000 sounds, £280, Alexis 3630 compressor/mixer, £140, both excellent condition. ☐ 01933 678608 (can post if not local)

OVERHEIM MATRIX 1000 Boxed, with manual, swap for Roland RBM with cards or Novation Basstation rack or Yamaha RM50. ☐ 0181 964 3249

PEAVEY DPM SE3 PLUS upgraded to DPM 4 Extra disks, £750, Roland R8 plus 3 ROM and 1 RAM cards, £285. ☐ Scizzle 01524 388344 (Lancs.)

PROFESSIONAL KEYBOARD stand, 'Kwik Lok' systems, height adjustable, extremely strong, £60.00, Steinberg Synthsworks Prof. editor/librarian for Korg M1, original, with manual, dongle and 4080 sounds on Atan disks. ☐ 0171 720 3702

QUASAR QUASIMIDI with TRE board, hardly used, immaculate condition, still under guarantee, £900. ☐ Andy 01536 520363

RHODES MK60 fully-weighted keyboard, excellent MIDI control, excellent sounds, including full aluminium lightcase and stand, £500. ☐ Mike 01248 681689

RHODES VK1000 drawbar organ, Hammond-style sounds plus synth and electric piano sounds. Ideal master controller keyboard, £650. ☐ 0115 961 8661 (Northampton)

ROLAND A80 master keyboard with lightcase, vgc, little used, £700. ☐ 01705 382795 (Portsmouth)

ROLAND ALPHA JUNO II £250, Alexis MM78 sequencer, £100, Yamaha RX21 drum machine, £50. ☐ Steve 01276 674115 (Surrey)

ROLAND CM32P sound module including additional cards, £140. ☐ 0161 881 8781

ROLAND D5 multitrack keyboard plus 32-track sequencer with disk drive, home use only, all manuals etc, stand, leads, PSU, £400.00. ☐ Dave 01283 740099

ROLAND D5 multitrack synthesizer, as new, £350.00. ☐ John 0121 421 1911 (West Midlands)

ROLAND D10 Keyboard, vgc, stand, boxed, manuals, £290, Spirit Folo S1 rack, 18.2 mixer, vgc, boxed, manuals, £350. ☐ Paul 01227 361089 (city Kent)

ROLAND D20 workstation, 8-track sequencer, 2 manuals, just had overhaul by Roland, with Yamaha EM110 piano module for perfect piano sounds, both for £500, bargain. ☐ 01684 850815 (Tewkesbury)

ROLAND D20 workstation, 32-voice polyphonic, 9-part multitrack, on-board sequencer, effects

and drum machine, manuals, home use only, £380.00. ☐ Bob 01959 570692 (Bognor Regis)

ROLAND D50 with manual and cards. Good home needed for this amazing synth, only £600. ☐ Andy 01222 883331 (Cardiff)

ROLAND D50 classic synthesizer in mint condition, with four extra sound cards, £400. ☐ Tim 01623 846882 or 01623 845868

ROLAND D50 absolutely mint condition, boxed with manuals, £650. ☐ Steve 01275 462649 (Bristol)

ROLAND D50 including four ROM cards, immaculate condition, £450, PG1000 programmer, pristine, £200. ☐ Dave 01734 790122 (Middxington Area)

ROLAND D110 synth, excellent condition, boxed, manuals, Atan ST, 1Mb, hi-res monitor, MIDI software, £190.00. ☐ 01224 861319 (Aberdeen)

ROLAND D110 sound module, excellent condition, £250. ☐ 01623 871220

ROLAND D110 £150, Oberheim Matrix 1000, £200, Alexis Midiverb, £100, Yamaha Professional series studio amp PC2002M, never used, £200, Boss Graphic pedal System BC96 with pedals, £100, old MMR digital reverb, £100, 2 Ursa Major MSP 126 Multi-track stereo processor, £100 each, Alva F770 cassette deck, needs service, £50. Linn drum with MIDI conversion, £150, Boss RK100 2-channel reverb, £100, Neumann U87 mic, still in the box and as new, £500, Ashby SC63 parametric equalizer, £100, Kless Tech DN750 digi reverb, £150, Aphex Type 85 aural exciter, £200, rack trolley stand, £50, A-ramp keyboard stand, £35. All the equipment is in excellent condition and from professional writer's private studio - never gigged and hardly used. ☐ Graham 01223 893920, Fax 01223 890471

ROLAND EP3 MIDI digital piano. Great strings, organ and other sounds, bargain at £200.00. ☐ Lee 01222 470699 (Cardiff)

ROLAND F8B PIANO 88-note, fully-weighted, hammer action mechanism, beautiful piano sounds, plus strings etc. Comes with fitted amplifier/speakers. Only £1,000. Boss Roland DS330 sound module, General MIDI, vgc, £220. ☐ 0113 263 7503

ROLAND J8800 synth, condition as new, with manuals and box, £1,080, Roland Juno 6, £130, Yamaha RX17, £60. ☐ 01206 305298

ROLAND JV80 Excellent condition, for quick sale, £650 only. ☐ Matt 01628 471047 home 01494 510044 (work)

ROLAND HP2500S stereo digital piano, full size weighted action keyboard, mahogany case, built-in speakers, and effects, 3 pedals. MIDI, excellent condition, £500. ☐ 01423 712494

ROLAND JUNO 6 polyphonic analogue synth, full MIDI retrofit by Groove Electronics, beautiful sound, built-in chorus, immaculate, manuals, £295. ☐ 01329 663018

ROLAND JUNO 6 with MIDI In, Out, Thru retrofit, analogue polyphonic synth, vgc, £280. ☐ Adam 01434 451024 (West Sussex)

ROLAND JUNO 106 Mint condition, £390.00. King QW 8600, mint with manual, £350.00. ☐ Mark 01446 747926 (R. Cardiff)

ROLAND JUPITER 4 Juno 6, 60, JX3P + PG, RS09, SALL, SM9, SH34, Trident A41, M510, 700 MINI, Poly k1m, DSS1 + cable, K1, K1M, K1R, DSS + extras, DX7, TX7, TX216 + many more. ☐ Gordon 01670 523363

ROLAND JUPITER 6 keyboard, classic analogue synth, loads of sliders and twiddlers, £650, Roland TR707 drum machine, has Roland sync built in runs a 309 after it, £70. ☐ Thomas 01865 60584 (Oxford)

ROLAND JV1080 64-note synthesizer module, less than two months old, £950.00. ☐ 0114 273 8880 (Sheffield)

ROLAND JVB Mint condition, £650, Mackie 1604, home use only, £675. ☐ 0161 342 9014

ROLAND JV1080 as new, £950.00, 4Mb STE + monitor + Cubase v3.0, £350, SH101, £100, Kenton Pro 120, DX7+lightcase + 2 ROMs, £375. ☐ 01753 524505

ROLAND JX1 performance synth, 28-voice poly, four sliders for real-time effects, resonant filter, MIDI, vgc, manual + PSU, £200 or £1250 with roadcase, also Casio CT601, £85. ☐ 01509 267926

ROLAND JX8P + PG800 Programmer, £450, Korg Wavestation A/D, £750, Novation Basstation, £300, Yamaha V50, £450, Axa 5900 including ASK90 Audio/MIDI trigger interface, £500. ☐ 0121 523 3993 (Birmingham)

ROLAND JX8P vgc, £385, Roland TR707, vgc, boxed, manuals, £110, Emuigig EPS sample editing software, £50 by Genies mint, manual, £85. ☐ Chris 01421 507144 (Wodsworth), 01228 880618 (Work)

ROLAND MC202 similar to 101, 303 etc choice of two, both as new with manuals, price £175 each or £300 the pair. ☐ 01723 865200 (Scarborough)

ROLAND MK500 Super IX module, excellent condition, home use only, £595.00, Yamaha QX5 8-track sequencer, £75. ☐ 01422 370577 after 7pm (Hull)

ROLAND MK580 mesa analogue module, no words necessary, £900, Oscar, immaculate, original manual, MIDI with last available update, £700. ☐ 0181 907 6182

ROLAND RD250 weighted digital piano with lightcase, £400, Alca AX73 analogue keyboard, £350 (flightcased), Roland U20 (flightcased), £450. ☐ Brad 01633 873118 day, 01633 865758 (eves)

ROLAND RD300 digital piano, flightcased, £590, Alca S01 2Mb, boxed, £550, S01 240-disc library, £100, Tascam 644 MIDIStudio, boxed, £500, DX7 with ROMs/RAM, £380. ☐ 0181 995 1977

ROLAND RD205S digital piano, MIDI, weighted keys, good condition plus stand, £400. ☐ Richard 01530 834335 (eves)

ROLAND SH101 superb bleepy acid and bass machine, interfaces easily to Kenton Pro1/2/4

MIDI CVs, boxes, excellent condition, with PSU, manual and service notes, £200. ☐ 01334 695239

ROLAND SH101 monophonic synthesizer, £150. ☐ 0171 744 5386 (London)

ROLAND SH101 Mod. organ, very rare, £35, W30 manual, £12, Alca RB6 boxes, £280 (genuine board, not crashed), Wanted, Cheap U220M/3R, Prodigy, premo videns, £10. ☐ Russ 01432 830629

ROLAND U110 module with things card. Good condition, £200 or swap studio effects or other module. ☐ Mark 01921 311310 (Leamington Spa)

ROLAND U20 synth, mint condition, manual, £440, Yamaha TX812 module, £130 no others. ☐ 01934 820266

ROLAND U20 keyboard, 128 superb sampled sounds, built-in multi-effects, board with soft case, £650.00, or exchange for Atan Stacey 440 laptop computer. ☐ 01384 410853

ROLAND U20 £300, Linn 7601 1000 accents quarter-inch sources, £200, Replay 16, £85, Wanted or swap for Korg G4 and Yamaha TX7 Contact, Richard Rowley, 14 Kensington Square, Downhill Estate, Sunderland, Tyne & Wear SR5 4AN

ROLAND U20 with percussion and orchestral wind sound cards and 3U rack case, church use only, £350. ☐ 01727 812255

ROLAND W30 sampling workstation with 16-track sequencer, various sample disks, stand, original manuals and case, mint condition, mainly home use, £850.00. ☐ Richard 0181 856 1693 (after 7pm), 0171 698 5608 (work) (London)

ROLAND W30 sampling workstation, 61-key, 16-track sequencer, 16 separate Q16s, many disks, manuals, excellent condition, £850.00. ☐ John 01322 321672 or 0181 304 9507

ROLAND W30 workstation, sampler, keyboard, sequencer all in one unit, excellent condition, £700, Oberheim Matrix 1000 polyphonic analogue MIDI synth module, 1000 excellent analogue sounds, £280. ☐ 01933 678606

ROLAND W30 with sound library, manual, £700, Wanted: sound card for R8, dance card. ☐ Jon 01735 62253

ROLAND W30 sampler keyboard, vgc, home use only, over a hundred disks, £825. ☐ 0114 248 5998 (Sheffield)

SEQUENTIAL CIRCUITS Pro-one analogue synth, wicked acid, ambient and techno sounds, excellent condition, £350. Also Roland MSQ700 sequencer synth In/Out, MIDI In/Out DC-B, £100. ☐ Steve 0161 303 9585

SEQUENTIAL PROPHET VS analogue rack, excellent condition with latest software version and original manual, £1,450, Roland MK570 rack excellent condition with digital, £650, Roland SH09, excellent condition, original manual, £190. ☐ 01825 724093

SIEL CRUISE analogue synth, needs minor repair, not many available, £100. ☐ Jez 01543 490774

THE RAREST analogue beauty yet! M Vicon synthesizer one sound totally unprogrammable simple 10-step sequencer, incomplete, some bits missing, totally useless, £350.00. ☐ Ian 01799 573352 (ex batteries)

XRI XR400 MIDI male patchbay/merger, 3 In, 1 Out, £95. ☐ Alan 01379 676670 (Derford)

YAMAHA CS50 Classic '70's synth, portamento, 49-key touch sensitive, ring modulator, frontgate, amazing sound, £401. Must collect Glasgow area. ☐ Jamie 0141 942 6693 (after 5pm)

YAMAHA CS60 analogue synthesizer, monster sounds, like CS80, excellent condition, some techno sounds, stand and case, £325. ☐ 01902 20381 (Wolverhampton)

YAMAHA DX7IId with E board, sequencer, accompaniment and four sound banks, £425, PG Music pianist, guitar, jazz guitarist for Alan, £15 each. ☐ Fred 01633 266647 after 6

YAMAHA DX21 keyboard, excellent condition, boxed, with manuals, £160.00. ☐ Nigel Stephenson 01803 732341 (Devon)

YAMAHA MT8X £800, Korg X3, £800, Yamaha REV 100, £150, two months old, boxed, guaranteed, all manuals and disks. All are in mint condition. ☐ Marty 01483 69231 8225

YAMAHA MU50 GM tone generator - 737 voices, 22 drum programmes, latest model, as new, boxed, 128 presets, £350. ☐ 0191 586360 (Co. Durham)

YAMAHA PFF100 £1,200, Korg M3R, 2 cards, £350, TOA MX601 PA amp, £350, Oberheim Navigator, £100, Yamaha CEP50 effects, £200. Everything as new, near offers. ☐ 01456 265502 (Bristol)

YAMAHA PSR400 MIDI keyboard, mint condition, 61 touch sensitive keys, 100 voices, 101 styles, multitrack, 28-note polyphony, £195. ☐ 01202 441335

YAMAHA PSR6700 76-note keyboard, 200 programmable AWM voices with 8-track sequencer and disk drive, vgc, £600.00 or part exchange Jupiter 6. ☐ Pete 01524 382873

YAMAHA SY22 vector synth, vgc, boxed with manuals, £325, also Yamaha QX21 sequencer, boxed with manuals, £20. ☐ Ed 01609 778690 after 5pm (N. Yorks)

YAMAHA SY22 keyboard, £250, with manual etc, Roland PR100 disk sequencer, £100, Lighting alternatives, RDXM, set of 10 in rack, price, £95. ☐ Martin 015242 41619

YAMAHA SY77 monster synth, excellent condition, carry case and all manuals, as new, approx 1500 sounds plus sounds in keyboard, also pro production pedal, best synth I've ever had, regrettably had to be forced sale, £750.00. ☐ Baz 01923 67977 (after 8pm) (Herts)

YAMAHA SY77 Over 3,000 sounds, stand, breath controller, good condition, £600. ☐ 01201 311332 (Bournemouth)

YAMAHA SY77 many soundbanks, cards, stand, as new, £700. ☐ Tony 01661 834209 (Newcastle)

YAMAHA SY77 £700, Roland U220 + 3 cards, £325, Peavey MAC60 amp 200 x 200W, £300, H8H amp 150 x 150W, £270, DOD Active 2 way + over, £160. All as new condition. ☐ Lewis 01782 512236 after 6pm

YAMAHA SY77 workstation plus hard case and additional discs, £700. ☐ John 0181 771 8045

YAMAHA SY85 workstation, all new, boxed, all manuals and cards, £725.00. ☐ Brian 01902 787007

YAMAHA SY85 6 months warranty and large sound library, boxed and in immaculate condition, never gigged, SY77 sounds, huge library. ☐ Ian 01207 509866

YAMAHA SY85 synth, sounds, manuals, as new, never gigged, £700. ☐ Andy 01795 252724 or Fax 01705 252723 (Portsmouth)

YAMAHA TG33 32-voice, 16-part polyphonic MIDI sound module with effects, excellent condition, home use only, boxed with brackets, £320.00. ☐ 01745 461203 (Leeds)

YAMAHA TG500 64-note polyphony, 384 voices, £400, TG100 28-note polyphony and computer MIDI interface, £150, Both boxed and with Atan editor. ☐ 01925 735490

YAMAHA TX216 module, the power of two DX7's, 175 powerful, very rare, Roland MK330 JX3P module, also excellent and sought after, £350 each, both for £650. ☐ 01493 603614 (Norfolk)

YAMAHA VL7 Virtual acoustic synth, the most expressive synth ever made, incredibly realistic sounds, still under guarantee, absolute bargain at £1,300. ☐ Tony 01473 685573 (Suffolk)

RECORDING

ADAT £1,750, Mackie 1604, £550. Both immaculate. ☐ 01453 731933

AKAI-BASED 12-track studio for sale, MG140 recorder, Promix 24 8.2 mixer, AKG mics, looms, leads, Alexis monitor system, loads of accessories including Fostex, Tascam, Denon, etc and loads of Akai tapes for 12-tracks. Offers around £3,000. ☐ Rob 0171 637 4463 (London)

AKAI MG614 4-track, 6-channel, pro-quality, better than a Fostex or a Yamaha, £400. ☐ Andy 01604 870425 (Northampton)

AKAI SAMPLER 1000 playback-only version, this machine is in absolutely immaculate condition as it has had very little use, offers over £800. ☐ Bob 0171 477 8275 day 01487 814227 (eves)

ALEXIS ADAT Boxed, mint condition, £1,900, Steinberg ACl synth with sequencer as masters, £400, Roland SRV2000 professional reverb, £260. ☐ Dave 0181 902 9784 (NW London)

ALEXIS ADAT v4 with SRC and 7 Ampex tapes, excellent condition, £2,000. ☐ 0115 926 2116 (Northampton) after 6pm

ALEXIS ADAT 8-track digital recorder, home use only, perfect condition, low hours. Offers. ☐ Robin 0181 694 9470 (London)

ALEXIS DATA DISK recorder. Plays and stores MIDI information. No time spent waiting to load. Reads direct. £200. Also ART Sage II multi-effects processor, £200. ☐ John 01752 702133 (Smythway)

ALEXIS MICROVERB III Vgc, manuals, PSU, £129 (incl. postage), Zoom 9000F, mint, boxed, all manuals and accessories, £190 (incl. postage). ☐ Dave 0191 372 2621 (Durham) (eves)

ALEXIS MONITOR ONE speakers, as new condition, £195, no offers, Roland T27 drum machine, £125. ☐ 01902 20381

ALEXIS QUADRAVERB with manuals and power supply, £160 plus postage. ☐ Rob after 6pm 0151 638 0286 (Mersley-side)

ALEXIS QUADRAVERB GT Bought end of July 1995, absolutely as new, powered with all manuals, £250. ☐ Andy 01924 362348, leave message if answering machine (Wakefield Area)

ALEXIS RA100 amp, £185, Ensoniq KMX8 MIDI patch bay, £90, Alca ME100 MIDI delay, £80, Klark Teknik DN70 digital delay line, £90, Rockman sustainer compigate, £90. ☐ 01344 891110

ALEXIS 3630 compressor, Synapse 44Mb hard drive with four cartridges, ☐ Paul 01302 538304 (Doncaster)

ALEXIS 3630 stereo compressor/mixer with gate, £150, Boss RV1000 reversible delay unit, £85, JL Cooper PPS100 SMPTE/MIDI synthesizer, £140. All excellent condition. ☐ 01933 678608 (Northants)

ARCAM DELTA 290 75W studio amp, £350, brilliant build/finish, System 831 monitors, £250, Roland PC200 Mk2, £130 with PSU, Apple laser printer 300, £400. ☐ 0191 261 2683

AUDIO TECHNICA AT825 XY stereo mic, phantom or battery powered, used twice, includes case, XLR leads, wind shield, £175. ☐ Andy 01245 465885 (Cheshford), or 0850 668195

CALREC CM654 capacitor mics, Cardoid, vocal/jazz/purpose, two at £75 each, vgc. ☐ John 01603 810213 (eves Northants)

DECTECH 16:2 mixing desk, 2-band EQ, 2 auxiliary send/returns, Headphone monitoring, smooth sliders and knobs, quiet and reliable, excellent condition, home use only, £275. ☐ Jon 01952 280064

DIGIDESIGN AUDIOEMEDIA IC board, c/w sound design kit, £350. ☐ 01582 761446

DIGITECH DSP256XL £250, Digitech DSP16, £180, Peavey Line mix 8-track mixer, £560. All boxed as new, SKB rack boxes 8U,

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ROLAND

PC 200-11 Keyboard

Compact touch sensitive master keyboard offering full control over pitch bend and mod, data slider assignable to reverb, panning or any controller, sustain pedal input, transpose over 2 octave range, send patch 5 bank change messages. Check out our unique package prices with these modules:

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DB50 + MPC401 + PC200 - £349

TG300 + PC200 - £449

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TG300 + PC200 - £449

STUDIO HARDWARE

IDEAL ENTRY-LEVEL MIDI CONTROLLER KEYBOARD

Compact touch sensitive master keyboard offering full control over pitch bend and mod, data slider assignable to reverb, panning or any controller, sustain pedal input, transpose over 2 octave range, send patch 5 bank change messages. Check out our unique package prices with these modules:

Goldstar card + PC200 - £185

Macintosh + PC200 - £259

DB50 + MPC401 + PC200 - £349

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SIBELIUS

Acorn

SIBELIUS-7

Top-end Notation

EXCLUSIVE LONDON SHOWROOM

Why do so many music academics use a program which doesn't work on the PC or Mac? Because for professional notation typesetting, 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 powered by the ARM4 Processor, and with optional 486bit board for running Microsoft Windows II required. CALL RICHARD FINCHER ARRANGE A FULL COMPARATIVE DEMONSTRATION

FOR ONLY

£499

PLUS VAT

GOLDSTAR

GSC-X21 PC Sound card

STUDIO QUALITY - HALF PRICE

The GSC-X21 is on a par with today's professional synthesizers and the most realistic sound cards costing 4 times as much. Built-in MPU401 MIDI interface (cable included), 250 x 16 bit stereo sound - 16 part multi-instrument / 32 note polyphonic + General MIDI. We have secured a limited quantity at a ridiculous price.

RRP £199

£65.00

NEW BOXED

BAND-IN-A-BOX

Intelligent Arranger version 6

FOR PC OR MAC (Atari 5.0)

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

#1 SELLER

£89.95

NEW BOXED

VOYETRA

PC MIDI interfaces

RELIABLE, COMPATIBLE, AFFORDABLE

Recommended by Sternberg. 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 freehanging and reconditioning etc). The VP11 is the most reliable laptop interface around - with auto-prioritise switching - no switching cables, no constant re-arranging of windows etc.

V22 £99 NEW BOXED

V44 £199 NEW BOXED

VP11 £115 NEW BOXED

V24S £249 NEW BOXED

ACCESSORIES / SECOND HAND & EX

Sternberg Cubase POA OpCode Studio 4 EPOA Cubase Lite £399 2.8.2.2 new £399 Cubase Score £399 128 Mb opt. £429 Cubase Audio £399 220 Mb Opt. £429 Sibelius Mix £399 SCSI DAT backup £399 Mac Synman £399 270 Mb SyQuest £399 Vision 2.0 £399 1 Gb H. Disk £399 Vision PC £149 2 Gb H. Disk £399 Emagic Notator Logic £399 1 Gb H. Disk £399 new copy at £399 4 Mag SAMMS £399 Emagic Notator £399 8 Mag SAMMS £399 Emagic Notator £399 8 Mag SAMMS £399

Yamaha Sound Edge

£179

Superb quality 75w per channel power amp from top studio amp manufacturer omniophonics. Balanced inputs, emergency cut-out and bridgeable to mono, 100 watt mode. These are flying! RRP £399.

£349

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£349

NEW BOXED

YAMAHA CBXT3

Module / interface / software

EXCLUSIVE LONDON SHOWROOM

This great starter kit includes Yamaha CBX-T3 sound module. This General MIDI sound module is basically a TG100 (Original R.R.P. £399), except with separate LED lights for each MIDI channel. It is 28 note poly, 16 part multi-instrument, has 10 drum kits, and on-board reverb 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 Sternberg'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. Also includes Sternberg Music Box MIDI file player and editor, and song disk (20 well-known songs). If you don't use a computer, give the software to a friend and use with your MIDI synth keyboard or Master Keyboard. 1st come 1st served!

EXCLUSIVE MEGADEAL

RRP £399

£139

FREE SOFTWARE

STUDIO VISION A/V

£149

Superb MIDI / audio recorder for Mac

TURNKEY SCOOP PURCHASE

Top selling Integrated Sequencing / Hard-disk recording software for A/V decks and AudioMedia cards. RRP £399. Upgrade to Studio Vision Pro 3.0 for only £159.

PERFORMA 630

Macintosh Sequencing Package

including fast computer

TURNKEY PACKAGE DEAL

Apple Macintosh Performa 630 (66MHz 68040, 8 mag RAM, 250 meg Hard Drive, 3x speed CD ROM drive, 14" colour monitor and keyboard), Claris Works business software, 1 in 3 out MIDI interface, your choice of Cubase, Logic or Vision.

RRP £3197

£1399

INC VAT

MIDIQUEST

Universal Editor / Librarian

FOR PC, MAC, ATARI, AMIGA

Now supports 200 MIDI devices, including E-mu Morphous, UltraProbes, Vintage Keys Plus, Proteus FX, Roland JV-1080 series, XP50, TD7, OSRW, Waldorf Microwave, Yamaha MU50 & MU80.

#1 SELLER

£235

NEW BOXED

KEY MP128S

PC parallel SMPTE interface

128 SEPARATE MIDI CHANNELS

Far cheaper than the nearest competitor, the new Key MP128S has been exhaustively tested with Cubase and other leading packages running in Enhanced Mode. 2 in, 8 out SMPTE.

BEST VALUE

£299

NEW BOXED

PRICES INCLUDE 17.5% VAT

Uk mainland carriage £9.99

Please allow 10 banking days for cheque clearance

* 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

* Interest Free credit (typical APR 0%) is available on selected items subject to status. See Soundhouse is a licensed credit broker under the 1974 consumer credit act. Written details are available on request

PA SYSTEMS

SPiRiT

Powerstation PA mixer

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 Limson Alarm! Check out these amazing package deals.

Powerstation + 2 x JBL MR825 £1749

Powerstation + 2 x Peavey Hery2 £1080

Powerstation + 2 x JBL M330 £1080

Powerstation + 2 x Bose 802 £2280

Add 4 SM58e + stands, spare stands and cables for £880!

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The UK 4 track Centre

Our famous 4 track pack includes everything you need to start making music. Stereo 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, midown 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.

NEW Fostex XRT + 4 track pack £499

NEW Fostex 3805 + 4 track pack £399

NEW Yamaha MT8X + 4 track pack £1140

NEW Yamaha MT4X + 4 track pack £499

TASCAM

424 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 mastering system.

RRP £899

£399

NEW BOXED

FOSTEX

280 Multi-tracker

INC 4 TRACK PACK

8 channel mixer, high speed Dolby C transport.

optional MTC1 computer synchroniser / MIDI machine-control. flexible 3 band mid-sweep EQ, etc etc

RRP £850

£499

NEW BOXED

PORTA 03

only £199

INC 4 TRACK PACK

Effects

FX-1

16 bit stereo input, large display, 95 db dynamic range, MIDI control. Excellent sound quality, shimmering reverb, fully editable, 8 effects all once. Reverb, chorus, phasing, flange, delay, distortion, pitch-shift, 2octaves, compressor, noise suppressor.

RRP £299

£199

NEW BOXED

VISCOUNT

EFX1 Studio Multi-effects

HALF HARMONIC EFFECTS

Same processor as EFX1. 49 presets made from 7 banks of 7 sounds: reverb, delay, chorus/flange, phasing, pitch-shift, multi, guitar1, guitar2. Main parameter editable. Footswitch control, 85 db dynamic range.

RRP £199

£119

NEW BOXED

VISCOUNT

EFX2 Studio Multi-effects

HALF HARMONIC EFFECTS

Same processor as EFX1. 49 presets made from 7 banks of 7 sounds: reverb, delay, chorus/flange, phasing, pitch-shift, multi, guitar1, guitar2. Main parameter editable. Footswitch control, 85 db dynamic range.

RRP £199

£119

NEW BOXED

VISCOUNT

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HALF HARMONIC EFFECTS

Same processor as EFX1. 49 presets made from 7 banks of 7 sounds: reverb, delay, chorus/flange, phasing, pitch-shift, multi, guitar1, guitar2. Main parameter editable. Footswitch control, 85 db dynamic range.

RRP £199

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RRP £199

£119

NEW BOXED

FOSTEX

XRS Personal Studio

INC 4 TRACK PACK

Surround new double speed Fostex machine with individual EQ, up to 3 aux sends and 2 stereo returns, 2 tracks & 4 aux sends. Separate outputs and SPDIF optical output.

RRP £420

£335

NEW BOXED

FOSTEX

DMT-5 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 SPDIF optical output.

RRP £1499

£339

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 mastering system.

RRP £399

£339

NEW BOXED

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/reverb.

RRP £389

£299

NEW BOXED

LEXICON PCM70

Industry Standard Top Flight reverb

LAST EVER UNITS

Relied on

PHILIPS REES 2M merge unit, £35, Philip Rees v3 MIDI Tru, £20, Yamaha D1500 delay line, £145, Patchbay, 3 x Fostex, £110, £0161 881 8781.

PPM METERS earnest turner, CBT-type with balanced driver PCB1, .88C type and adjustment dials, £50 each, 4 available, £ Alan 01379 676670 (Norfolk).

QUESTED Q212 monitors, ATC crossover, 8000W of Yamaha amps, all as new, £4,000 ono, pic or swap for 3245-channel deck, DAT recorder, etc. £ Howard 01306 889313 (Surrey).

REVOX B77 Mk2 1986 model, superb condition, boxed with manual, comes complete with approx 100 tapes for just £775, £01703 432579.

ROLAND D110 £220, ART Multiverb Alpha, £200, BBE 322 sonic maximiser, £100, Alice Mix Pro, £120, Contact Eugene Roman, 2, Trevelian Civic, London, SE4 1QJ.

ROLAND M480 rackmount mixer, mint cond., 48 inputs, 4 effects, 2 aux, £600, Roland D50, £450, Korg Wavestation, £600, Kawai KIF, £150, £01268 282109 (Basingstoke).

SAMSON MPL2242 mixer, £550, Korg X5 keyboard, £450, Novation Bassstation £250, Roland TR505 £100, £ Vies 01491 826081 (Oxon).

SANSUI MX12 mixing desk, 12 x 6 2, hardly used, £300, £ Karl 01782 746591.

SANSUI MX12 12 x 6 2 mixer (recording or live use), £300, Alexis Musicator Stereo compressor, £80, C-Lab Creator/Notator 3.1 instruction manual, £20, Encore bass guitar, £80, £01493 676650.

SECK 18.8.2 Mike mixing desk with power supply, manual and boxed, £600 ono, £ Martin 0181 446 7192 (London).

SIMMONS SPM8.2 programmable mixer, 64 programs with autolane between patches, MIDI, 3-band EQ with parametric mid, mic gain on all channels, 2 effect send/returns, perfect, boxed, manual, £225, £01329 663048.

SONY DTC690 DAT recorder, low hours, manual, remote, £390, £0115 941 1185 (Notth).

SONY MINIDISK recorder as new, £350, AKG D12 bassdrum microphone, £75, Yamaha QY10, £95, £ Scott 0116 260004 (Lancster).

SONY TCD D7 Walkman DAT, £300 ono, Sony DTC690 DAT, £390 ono, or £650 for both, Atari ST 1Mb hi-res monitor, various MIDI software, £180 for quick sale, £01224 861319 (Aberdeen).

SONY TCD3 DAT PLAYER Portable model with new rechargeable battery, charger, cable and adaptor PSU. Excellent condition, Japanese spec model, £299, £ Robin 0171 794 3843 (London).

SONY TCD7 portable DAT recorder, 2 and 1 half hours unit, cost £500 accept £380, Sony ECM999 pro microphone, single point stereo, cost £400, accept £280 or £600 both, £01777 711386.

SOUNDCRAFT SPIRIT FOLIO Si 18.2, vgc, £380 ono, £01295 252792.

SOUNDCRAFT SPIRIT FOLIO 10.2 mixer with 3-band mid sweep, phantom power, vgc, £200, Korg A4 mult. floor pedal guitar effects, 30 memories, 30 presets, high quality, 21 on bargain, £175, £01939 733039.

SOUNDCRAFT SPIRIT STUDIO 16 8.2, £1,100, Alexis Quadriver C7, £240, Alexis 3630 compressor, £180, Alexis RA100 amplifier, £200, Alexis SR16 drum machine, £180, all in immaculate condition, £ Mike 01626 831637, or 01752 562002.

SOUNDCRAFT SPIRIT STUDIO 32 8.2 72 inputs, 79-track rack power pack, 4 months old, home use only, A1 condition, cost nearly £1,000, will sell for £2,000+ ono, £ Mark 0374 854736, or 01304 369532.

SPIRIT PROTRACKER Brand new, complete, unused, boxed with manual and power cord. Excellent for 8-track recording and many other applications. Forced to sell for financial reasons. Worth £750, will sell for £600, £ Andy 0181 506 1050 (Luton), 0181 524 0224 (Luton), (London).

SPL SX2 psycho acoustic enhancer (lateralizer), 2-chan, balanced, ind. VP, O/P levels, £395, £ Alan 01379 676670 (Norfolk).

SOUNDCRAFT 200 8.4.2 mixer, vgc, £375, £01702 521570 (Exeter).

SOUNDRACS PC16 mixer 16 channels, 16 groups, 32 inputs on mixdown, MIDI muting, Great sound £1,000 ono, £ Bernie 01277 373634 (Essex).

SOUNDRACS TOPAZ 32 8.32 with meter bridge, brand new, boxed, full warranty, £2,800 for quick sale. Studiomaster 16 8.16 Mixdown Gold with MIDI muting, £1,250, immaculate, £ Adrian Billy 0191 264 5434/581 1909, 0378 305423.

SOUNDRACS TOPAZ 32-channel mixing desk, including meter bridge, immaculate condition, only 3 months old, £2,800, £ Gerry 01209 212569 (Luton).

STUDIOMASTER MIXDOWN 16 8.16 2 desk, mint, little used, £750, CZ3000, £185, EPS sampler, £450, Simmons SDX1000 drum kit, £175, Chetani Pads-to-MIDI converter, £50, Alexis ADAT, little used, only £1,850, £01690 710231.

STUDIOMASTER PROLINE Gold 16 8.16 2 mixing desk, 8-buss, MIDI muting, EQ, 3-band EQ, priv sound, bargain £799, £ John 01438 310139.

STUDIOMASTER SERIES II 16 16.2 with MIDI muter, £950, professional ten saxophone (Couch), vgc, £450, £ Ashley 01252 374417 (Surrey).

STUDIOMASTER SERIES V 16 8.2, £900, super, Tascam 38 full-inch, little used this 8-track, £850, full looms and bays for the above, £200, £01273 441818 (Brighton).

SYMETRIX 601 digital voice processor, £1,500, Oktava MK219 microphone, £200, Oktava MK012 set microphone, £250, analogue monosynth, £100, Roland Juno 106, £350, analogue synth drum pad, £100, £ Dave 01256 701470.

TAHITI SOUNDCRAFT with GM daughter board, cost over £400, accept £220 ono. SAW hard disk recording package, £250 ono. Both with manual, £ Richard 01488 689496.

TANNOY CPA 15-inch monitors, suitable for studio or small quality PA. Very powerful, 400W each, with wheeled flightcase, £600, £0115 941 1185 (Notth).

TANTEK EFFECTS rack digital sampler, flanger, EQ (amp/lin), input module, limiter, enhancer, others invited, £0121 559 4300 (West Midlands).

TASCAM A38 8-track with Tascam M8 8.42 disk designed for A38, both vgc, boxed + manuals, £1,050 ono, Korg DDM110 super drums, vgc, boxed, £55, £01274 814790 (Brighton).

TASCAM 34 reel-to-reel, full size, takes both 10-inch and 7-inch spools with wiring loom, very good condition, boxed with manuals, £400 ono, £0181 696 0531 (London).

TASCAM 488 8-track portastudio, well looked after, excellent condition, £850, Peavey Ultraverb 16-bit multi-effects, £150, £01509 2674556 (Loughborough).

TASCAM 644 MIDI studio, boxed, as new, £595 into Zoom 9030 effects processor, good condition, £295, £ Dave 01482 565163 (Leam).

TASCAM 644 4-track MIDI studio, excellent condition, £370, ACES mixing desk 10 8.2, £150, £ Simon 01332 774679 (Derby).

TASCAM 688 MIDI studio, 8-track, brand new and immaculate, £1,500 ono, £ Peter 01483 427916 (Surrey).

TASCAM MIXER M216 16 8.4.2 made for 8-track home studio or live use, £550, Squire Strat one Humbucker, two single coil Japan, £150, £ Ian 01702 616961 (Southend).

TASCAM M216 £650 ono, Bais SE70 Pro, £400 ono, Gem 53 Turbo including many sample disks, £800 ono. Will split and negotiate price or pic for Yamaha Promix 01, £01494 663616.

TASCAM M216 mixer, 16 8.4.2, excellent features, great for 8-track recording or live use, £500, 486 DX266, 4Mb RAM, 214Mb HD, software for everything, £01702 616961.

TASCAM MSR16 DBX model, low mileage, great condition, includes stand, wiring looms and 10 456 Ampex tapes, £3,295 ono, £ Lee 0191 416 2385.

TASCAM MSR24 1-inch 24-track recorder, boxed, as new, immaculate, with tapes £2,900 ono, £ Andy 0121 605 6082 (Birmingham).

TASCAM MSR24 1-inch 24-track recorder, boxed, as new, with tapes, £3,300 ono, £ Patrick 0171 582 6959 (London).

TASCAM MSR24 1-inch 24-track, perfect, £2,300 ono, £0121 605 6082.

TASCAM TS8 8-track wireremote, mint, £1,200, XRI x300 synchroniser, £150, Yamaha GC202UB compressor, £150, Alexis MEQ30 graphic, £120. All perfect condition, boxed, manuals, Offers? £ Michael 0161 798 0581.

TASCAM 22.4 4-track reel-to-reel, good condition, tapes and manual, £200, £ Robert 01572 770038 after 6pm.

TASCAM 38 8-track reel-to-reel, £400, or with JL Cooper PPS2 MIDI synth box, £500, £ Jon 01647 432400, mobile 0585 701908 anytime.

TASCAM 688 MIDI studio, superb condition, also includes RC88 remote control, £1,300, £ Colin 0181 778 3321.

TASCAM PORTA 07 boxed with manual, great condition, £240 for quick sale, £01299 400058 (Worce).

YAMAHA DMP11 Digital mixer, full MIDI control, two banks of multi-effects, total recall of mixes, excellent quality and condition, only £1,000 ono, £ Jamie 01253 878614.

YAMAHA MT3X 4-track recorder, £275, Multitrack LT effects processor, 190 pre-programmed effects, £95. Both excellent condition, £ Richard 01793 611017 (Swindon).

YAMAHA NS10M studio monitors, £200, £01623 871200.

YAMAHA PROMIX 01 mixer, 6 months private use, excellent EQ, dynamic automation, boxed with manuals, UK model. As new, £1,450. Upgrading, £ Darren 0181 959 4659 (London).

YAMAHA SYNTH MODULE TX802, rack mounted, good condition, offers over £250 accepted, £ Bob 0171 477 5275 days, 01487 814227 eves.

ZOOM 9002 Plus 9002F foot pedal board, mint, boxed, manuals, all accessories, 16-bit, 6 simultaneous FX, quiet, easily editable, superb, £185 ono, £ Dave 0191 372 2621 eves (Durham).

ZOOM 9120 multi-effects unit, excellent condition, £185, £ Amanda 01239 615361 after 6pm.

SAMPLERS

AKAI ME3ST drum trigger unit, £150, £0161 881 8781.

AKAI S01 sampler, expanded to 2Mb, with 100 disks, manual, immaculate condition, £525 ono, £01270 628089 (Cheshire).

AKAI S01 sampler plus 2 sampling CDs, £420, ES132 sampler with SCSI and 720Mb Quantum hard drive, £1,300, studio monitors, pair, £350, £ Richard 01530 834335 eves.

AKAI S01 sampler, perfect condition, £490,

Mackie 1202 mixer, excellent condition £275 ono, £ Andy 01253 890048 after 6pm.

AKAI S01 sampler, good condition with full expansion add sample disks, £550, £ Tim 01202 514750 (Bournemouth).

AKAI S01, rackmounted, TOA KD2 amp + stand, Ensoniq S01, ESX1, RAM, Alexis HR16 drums, Alexis double stand + mic boom, Shure BG20 mic cables, Cost £2,400 accept £1,200, £01203 385821.

AKAI S900 plus loads of disks, £550 ono, Akai X88 drum module, 16-bit sound! plus 2 soundcards, £125 ono, Atari 10405TFM plus various disks, £125 ono, Star LC10 B/W printer, £55 ono, £01584 811653 (Nr Worcester).

AKAI S950 sampler 2 1/4" Mb studio use only, large library, easy to use, £825 ono, £01202 749244, or 0378 431316 (South Coast).

AKAI S950 fully expanded 20 25Mb, mint condition, board, manual, £880, offers? £ Michael 0161 798 0581.

AKAI S950 full upgrade, manual, box and some disks, £800, Roland D50, all manuals, £450, or swap for 106, £0181 677 9268.

AKAI S950 CD player, CDs, disks, manual, £795, Phonic 16.2 disk, £375, Fostex 350 8.2, meter bridge, £250, Yamaha DX11, £250, Yamaha RX211, manual, £45, £ Daniel 01634 364507.

AKAI S950 15Mb memory, boxed, as new, £700, no offers, £ Adam 01993 850755 (Oxfordshire).

AKAI S950 sampler, unexpanded, boxed, with manual, excellent condition, £725 ono, £ Phil 0589 732289, may deliver.

AKAI S1000 5Mb, £1,395, £ Simon 0171 624 2720 (London).

AKAI S1000 keyboard version, 10Mb, SCSI, £1,995 ono, Tascam TS8 8-track recorder, £1,550, Seck 18.8.2 MkII, £775, Ensoniq EPS16+

rackmounter, £850. All boxed with manuals, £01674 627213.

AKAI S1100 2Mb, £1,700, \$1000, £1,400, \$1000PB, £750, \$11000EX, £750, 2Mb boards, £75, 8Mb, £300, SCSI, £50, Digital, £130, S01, £500, Roland V300, £750, £0850 781696.

AKAI S2800 boxed, all three Zero 6 datafile CDs, immaculate condition, £ Matt 01709 382022 after 6pm.

AKAI S3000, SCSI, 10Mb of RAM, boxed with manual, mint condition, home use only, £2,000, £0181 444 1225.

AKAI S3000 mint, £1,600, SCSI board, £70, 8Mb board, £295, Akai ME80P 8 in, 10. Out MIDI patchbay, £200, TOA 3-way digital delay, chorus, mega, £150, £ Ian 01383 729624.

AKAI S3000 sampler, 16Mb memory and SCSI, also includes 4v SKB flight case, all hardly used, in mint condition, £2,250 ono, £01223 912818.

AKAI S3000 x 2, £1,695 each, 8Mb boards x 3, £295 each, SCSI cards x 2, £70 each. All excellent condition, £ John 0131 447 3111 or 0839 763880.

AKAI S3200 sampler. All you could ever need in a sampler, excellent condition, as new, £2,850 ono, also S950, unexpandable hence £880, as new, £0181 759 8540.

AKAI S3200 with 10Mb and internal 340Mb hard drive, mint condition with manuals and latest SCSI library included, £2,500 ono, £ Andy 01371 477 1445 after 7pm.

CASIO F21 Samplers with 20 disks and original box, £450, Quick sale, no offers, £ Steve anytime 0181 543 2398, or 0956 834678 (London).

CASIO F210M sampler, 2Mb memory, 65-disc library, 8 Outputs, great synthesis, £630, £ Matt 0161 832 7991 (Manchester).

CASIO F210M 16-bit, 2Mb digital sampling synthesis module, 8 Outputs, resonant filters, small library, £630 ono, Wanted urgently Boli DR660 drum machine, £ Jez 0115 975 1493 after 6pm.

DIGIDESIGN SAMPLE CELL II 16Mb RAM, Atari-compatible, 4 x CD-ROMs, 2 months trial, £900, £010 353 1 6273589 (Dublin).

8MB S1000 Kk Akai keyboard sampler with 40Mb internal drive, SCSI, and loads of floppies with sounds, latest operating system reads S3000 disks, £1,590, £ Ricki 0181 888 6896.

EMAX II Turbo, 8Mb, 40Mb hard drive, loads of processing features, £1,600 or lowest offer, £01580 763084 (Kent).

EMU EMAX SE Real-time filters, 16-track sequencer, 10 outputs, disks inc SE, spent £366 on it, manual, programmers package, Avalon game editor for Atari, £600, £ Jason 0181 904 4782.

EMU E64 Standard memory etc. brand new in box, sounds lovely, I want to try, unhappy bank manager forces sale, £2,000, £ James 0171 351 5639 (London).

EMU E64 boxed as new, 2Mb memory, £1,990, £ Chris 01929 551706.

EMU ES132 sampler, 2Mb, excellent condition, £900, £ Jamie 0171 252 9537 (Brockley, London).

EMU ES132 8Mb RAM and SCSI, latest operating system, manufacturer's guarantee, £1,200, £01452 371525 (Glos).

EMU ES132 SAMPLER with SCSI modification and version 2.01 software, £1,000 ono. Also separate version 2.01 software for ES132, £20, £01202 832420.

ENSONIQ ASR10 with all add-on cards, £1,500 ono, £01623 642089 (Notth).

ENSONIQ EPS sampler. Four times memory expander cartridge, £600, £ Craig 0115 920 0090.

ENSONIQ EPS 16s rackmount sampling workstation, new disk drive, many sound disks included, £850, PC200 MIDI keyboard

controller, £125, £01509 267456 (Loughborough).

ENSONIQ EPS 16+ rackmount sampler, manuals and disks, £850, Emu Proteus 1, £285, home use only, £ Simon 01483 730807 eves (Surrey).

ENSONIQ MIRAGE rackmount, manuals, disks, recent service, £240, Roland TR606, boxed, £100, Roland MC202, boxed, £220. Offers considered, £ Andy 01225 334088 after 6pm.

KORG D551 sampler, velocity + pressure keyboard, digital FX units x 2, stereo out, waveform draw etc., etc. plus disks, £550 ono, or poss swap for something interesting?

Roland TR626 drum machine, inbuilt tape sync, for sequencer, £125 ono, £01584 811653 (Nr Worcester).

PEAVEY SP/SX2 stereo sampler, 2Mb memory expandable to 32Mb, 2 SCSI connectors, 2 stereo 4 in/mon outputs, full synth capabilities, private use only, £650, £01202 398537 (Bournemouth).

ROLAND D170 sampling workstation, boxed as new, with manual, hardly used, £800, £01993 779036 (Oxon).

ROLAND SAMPLER type S330, samples at 30KHz, download to disc, 8-channel output, two-octave pitch expand, complete with monitor, mouse and manual, £445, £0181 904 8577 (Wimply).

ROLAND S760 perfect condition, £975 ono, £ Patrick 0171 582 6959.

ROLAND S760 sampler expanded 10Mb CD-ROM disc, as new, £1,080, JX3P, £185, £ Anderson 0181 533 2738.

ROLAND W30 (sampler, keyboard and sequencer in one unit, excellent condition, £700, Alexis 3630 compressor/limiter with gate, excellent condition, £140, £01933 676628.

ROLAND W30 sampler, 16-track sequencer, resonant filters and LFO's, large library of Roland lampied disks, £750 ono, £0161 763 3994.

YAMAHA TX16W stereo sampler, 10 separate outputs 4.5Mb RAM, Typhoon operating system, £600, £01773 602601.

COMPUTERS/SOFTWARE

486SX25 4Mb of RAM, 214Mb hard disk, SVGA colour monitor, Windows 95 installed. Soundblaster 16 sound/MIDI card. Comes with all the serious business/music software you could need. Less than 6 months old. Boxed as new, £625, £ or Fax Ian 01702 616961 (Essex).

AMIGA 500 2Mb hard disk, 2.5Mb RAM, colour stereo monitor, multi-x MIDI interface plus games, swap for Roland M51 or £285, £0181 556 3634.

AMIGA A500 video graphics setup, 4Mb memory, 20Mb HD, Rendall Genlock colour digitiser, external floppy, modulator, lots of graphics software, all boxed, £450, or swap for Wavestation SE, £ Chris 01553 617487.

APPLE MACINTOSH Quadra/Centris 660AV 8/500 CD-ROM, hard disk recording with Deck 2.1 + Cubase 2.5, Encore E2, Vision, Mastertraks Pro + WPDTP graphic software etc, mint condition, £800, with colour monitor £1,050, £0171 813 0401.

APPLE MACINTOSH IIGX 5Mb RAM, 105Mb hard disk with 12" Apple mono monitor, £450, 3 Nubus expansion slots, perfect studio computer, £01423 712484.

APPLE MAC IICK 4Mb RAM, 2 x 500Mb SCSI II drives, Digidesign Sound Tools system hard disk recording and editing, will split, other software, offers, £01332 776244.

APPLE MIDI interface 1 in, 3 Out, £20, £01344 774886 (Berkshire).

ATARI FALCON 4Mb, ATX D-to-D hard disk recording software, 540Mb hard drive, £650 ono, £ Simon 01332 774279 (Derby).

ATARI 500Mb hard drive, SCSI interface + translator, cables and Accs. Can also be used with Akai samplers, £225 ono, £ Lee 0131 284 0363.

ATARI 1040ST mono monitor, music software, £215 ono, £0161 881 8781.

ATARI 1040ST upgraded 520, external disk drive, colour monitor, software, £350 ono, £ Mike 01244 372487.

ATARI 1040ST with SM144 Xtrix large monitor, complete with mouse and lots of software including sequencer, mint condition, £250, £ Nae 0181 571 1490.

ATARI 1040STE Good condition, comes with hi-res mono monitor, £175. For another £15 get an Amstrad DMP2000 printer, £01259 211580.

ATARI 1040STE with hi-res monitor, second floppy disk drive, mouse, keyboard, sequencing software, £01246 208659.

ATARI 1040STE Colour monitor SC1435, 4Mb RAM, 45Mb hard drive. Breathru Plus version 2, as new, boxed, cables plus games, outgrown purchase by grandparents, offers, £01202 521598.

ATARI 1040STE with mouse, £130, Breakthru II sequencer with video training manual, £30, Ridley 16 sampler for Atari plus many disks, £60, £ Chris 01922 743603.

ATARI 1040STF computer with non-AMDI software, £100, Alexis MMT8 8-track sequencer + Yamaha MDPL, £175, £ Steve 0121 802 8011.

ATARI 1040STE and SM125 hi-res mono monitor, very good condition, £220 ono. Wanted: MIDISCAN software for IBM and portable sound plus, £01630 647396 (Midlands).

ATARI 1040STFM Hi-res monitor, Cubase, £250, Unitar Time

manuals, excellent condition, £125 ➤ Dave 01734 790122 (Wokingham Area).

ALESIS MM18 sequencer, boxed, manual, £160, or swap for decent dynamic mic (SM58 etc), or programmer for JX3P ➤ 01668 216340 (Northampton).

ALESIS MM18 sequencer, excellent condition with manual, all reasonable offers, around £100 considered ➤ David 01475 723847 after 6pm.

ALESIS MM18 boxed, excellent condition, £175, Roland CSQ100 analogue sequencer, £175 ➤ 01703 397361.

CUSTOM BUILT analogue sequencer, 3 rows, 16-step, great for first time analogue sequencer user, £200 ono ➤ Chris 0116 2366 057 (Leicester).

GEM S3 Turbo with many 51000 sample disks, £800 ono, Tascam M216, £650 ono, Boss SE70 pro, £400 ono. Will negotiate price or partswap Yamaha Pro Mix 01 ➤ 01484 663613.

ROLAND MC50 £350, Yamaha MTX 4-track, high speed DBX, £250, both boxed with manuals ➤ Kyt 01803 831069.

ROLAND MC50 sequencer, excellent condition with manuals and box, £300 ➤ Matt 01455 220645.

ROLAND MC202 immaculate condition, includes owners manual but no PSU hence £175 ➤ 01274 620004 (Bradford).

ROLAND MC500 8-track sequencer with manuals, £400 ono ➤ 01923 819630 (days), 01483 764160 (weekends/evenings) (Herts).

ROLAND MT200 SMF sequencer, GS sound module, better than MT120, excellent condition, with manuals, £520, two Roland MA12 powered monitors, £50 each, pair £80, Korg G3 FX processor, £80 ➤ 0121 427 5754.

YAMAHA QY10 excellent machine, use as a compressor or a sequencer, small but powerful, £100 ➤ Andy 01604 870425 (Northampton).

YAMAHA QY20 £200, Roland MC500, £250, Roland TR505, £90, All immaculate, boxed, with manuals, home use only ➤ 01252 547494 (Hants).

YAMAHA QY20 Walkstation with power lead and connectors, as new, reluctant sale, £300 ono. Will deliver or provide secure carriage ➤ 0191 385 4185 evs.

DRUM MACHINES

ALESIS SR16 drum machine, 23 16-bit stereo samples, Velocity sensitive, mint condition, boxed with manuals, £145 ➤ Mark 0151 606 9763 after 7pm.

ALESIS SR16 Vcc, fully boxed with manuals, hardly used, £120 ➤ Andy 01604 870425 (Northampton).

ALESIS SR16 boxed, mint condition, dance, techno, hip-hop, rock, all in this powerful machine, £150 ➤ Marc 01762 348502 after 6pm.

BOSS DR550 drum machine, boxed, manual, PSU, £80 ➤ Guy 0121 553 2424 days, 01527 570 252 nights, Fax 0121 553 5463 (West Midlands).

BOSS DR550 Mark II, 16-bit MIDI drum machine, 96 sounds including full TR808 and TR909 kits etc, mint, boxed, manuals, PSU, £125 ➤ Dave 0191 372 2621 (Durham) evs.

BOSS DR660 boxed with Durban evs.

BOSS DR660 boxed with Durban evs, under guarantee till March, 255 quality 16-bit sounds including 808 & 909 kits, 2 individual outputs, built-in reverb and chorus, £230 ➤ Pan 01524 65436.

CASIO RZ1 sampling drum machine with manual, £150 ono ➤ Lee 01222 470699 (Cardiff).

CASIO RZ1 digital sampling rhythm computer, built-in mixer, perfect condition, boxed, manual, data tape, £150, Boss DR110 Dr. Rhythm analogue drum machine, classic sounds, soft case, £50 ➤ 01289 863048.

ROLAND CR78 Home use only, immaculate condition, £200 ➤ 01274 620004 (Bradford).

ROLAND RB drum machine, good condition with ethnic percussion and sound effects card, with manual, £275 ➤ 0191 271 1456.

ROLAND RB with electronic (808) card, mint condition, boxed, manual, get it while it's hot! £300 ➤ Mickie 0161 798 0581.

ROLAND RB Electronic 909 sound data ROM card, £25, Casio FZ1, £575, Kawa RV4, four stereo effect units in one unit, immac, cond, £370 ➤ Kris 0151 523 8110.

ROLAND TR70 drum machine, 808, 909, 606, CR78 samples, memory card, boxed as new, £350, Korg M1 analogue sound card, Yamaha Gold, £25 ➤ 0116 269 6568 (Leicester).

ROLAND TR606 drum machine, excellent condition, home use only, carry case and manual etc, £100 ➤ 01392 433533 day or evs.

ROLAND TR808 drum machine, £400 ono, Roland MC202 synth/sequencer, £200 ono, Korg M30 MIDI/voice synth, Box, £50 ono ➤ 01621 851326 (Maldon, Essex).

SDX1000 Simmons drum kit with pads-to-MIDI converter, mint, £250, will split, also Studiomatic 16 8 bit mid/down, mint, £750, Casio CZ3000, £185 ➤ 01690 210231.

SEQUENTIAL CIRCUITS drum tracks, classic and idiosyncratic drum machine, separate outputs, tunable sounds, £120 ono ➤ Brian 0181 880 8020 (Surrey).

SIMMONS SDS800 kit, pads and stands, £150, Simmons SDS9 Brain, £100, H&H MA100 amplifier, £100, H&H multi-echo tape echo unit, £85 ➤ 01844 291546.

SWAP MY SR16 or Roland BL1 with 256 RAM card for an Akai ASQ10, or just the SR16 for a Roland RS, Korg S3 or WHY ➤ Daniel 01888 583347.

THEXON QUASIMIDI sound module for

ispec check, QuasiMIDI ad, £650 ➤ Jason 01727 332792 anytime.

TWO SLEEK black Simmons drum/trigger pads, for triggering and drumming other drummy and triggery things, Roland SH101 sequencers, drum machines etc, Gorg, chemo, offers under £60 ➤ Ben/Julia 0113 2 899542.

YAMAHA QY10 for sale, £120 inc delivery ➤ Matt 00351 16280436.

YAMAHA RX5 plus three ROMs, excellent, £195 ➤ 01273 441818 (Brighton).

YAMAHA RX5 drum machine, immaculate condition, boxed with manual, and three ROM cartridges, fully tunable and editable sounds with MAD effects and FAT bass sounds, £325 ➤ Niz 0181 571 1490.

YAMAHA RY30 with box and manuals, £220, Roland PR100 sequencer with disks and hard case, £95, Yamaha PSR90 keyboard, £150, cost £600, Pro Audio Graphics, £70 ➤ Martin 015242 41619.

PERSONNEL

CREATIVE COLLABORATOR for intelligent Techno projects, reliable and easy going, must be local and have own equipment. Write to Paul c/o 26 Hatfield Road, London, SE14 5UJ.

FEMALE VOCALIST available for band work, no rock or indie thanks ➤ Indigo 0181 470 9047.

IF YOU ARE A FAN of the Human League, we would like to hear from you. Please phone ➤ 0151 608 0815 after 6pm and ask for Katie.

JOURNALIST seeks information on electronic music with a spiritual dimension. If you make/produce religious or spiritual dance music/techno/trance/dub etc I'd love to chat to you ➤ Robin 0171 794 3843. Please leave your name and number, I'll contact you.

LABEL REQUIRES up-tempo vocal RNB/ballad garage tracks, also powerful soulful vocalists. MAF for RNB garage projects. Demos to Time Universal, 14 Jermolud Ave., Wembley, Middx, HA9 6EH ➤ 0181 902 9794 (NW London).

PRODUCTION TEAM REQUIRE dynamic female singer for garage/house/dance tracks ➤ Vincent 0181 293 1563 (London Area).

STUDIO DRUMMER Programmer available, experienced reading, professional, great feel musical, clicks no problem, fully conversant with all things MIDI, Akai, Roland, Atari, transport, passport, US visa ➤ Jonathan 0181 055 4974.

VOCALIST REQUIRED for uplifting commercial dance tunes. 100% enthusiasm expected, also must be locally based ➤ Andy 01253 890048 after 6pm.

WANTED FREELANCE DIDIDESIGN Session 8 programmer to work in digital editing suite ➤ 0171 377 9834.

YOUNG FEMALE VOCALIST required. House music style for latest release and possible future projects. Send photos and demo tape to PumpUp, 10 Martin Close, Waltham Abbey, EN9 3NG.

MISCELLANEOUS

AKAI S01 6 months old, only £400, Roland D110 sound module, no manual, £150, Atari STE and mono monitor, £200, Creator, £70, Phonic 8 2 mixer, £100 ➤ 0181 202 9192.

ALESIS QUADRAVERB II boxed, perfect, £500, Korg Wavestation SR, £650, Yamaha TG300, £300, ORXW editor (Atari) original, £25. Swap Wavestation and TG300 for JV1080 etc ➤ Greg 01482 632443.

ALLEN & HEATH Hi Res, £900, Seck 12 8 2 disc, £500, Cheetham M6 analogue synth, £225, Roland SH09, £150, Novation Bastation, £275, Also Wanted 101, 202, and 303 ➤ Leeds 0112 822239.

ANATECH POCKET PEDAL Turns any volume pedal etc to MIDI continuous controller, great for multi-effects ➤ 020 01534 485089 or fax 01534 482337 (Dorset).

AWARD SESSION MASTER Mxi guitar simulator pre-amp and Sansamp GT2 simulator pre-amp, both £250 ➤ 0181 501 4938, or 0171 826 3264.

CABLESBO COLT 45k impedance combo, twin channel, 2 inputs per channel, individually switchable reverb, £115 ➤ Richard 01793 611017 (Swindon).

CASIO VZ8M analogue/digital sound, £150, Caribou Marlin, 150W PA 2x12 H&B cab, good condition, serviced, £350 ➤ 01327 79972 (Northants).

DIGITAL DELAY pedal, Boss DM42, good condition, boxed, £40 ➤ 01482 587432 (Hull).

4MB (X2) 30-pin Simms (suit Kurzweil or similar), £170 pair, 16Mb dimm FXR new power Macs, £380, Apple laser printer 300, boxed as new, £375 ➤ 0191 261 2683 (days).

FOSTEX XZ8B 4-track recorder, £250, Drawmer LZ20, brand new, £120, Behringer Ultralex II, still in box, £150, Aless D3 keyboard, £80, ART Multiverb LT, £80, Buss DR 50K M11, £90 ➤ 0049 5051 2181 (Germany).

GALLIEN KRUGER Series 2, £500, 150W solid-state amplifier for use with loudspeaker, stereo FX, EQ, gain, compressor, excellent working order, cost £1,000 new, sell for £435 one inc. postage ➤ Jamie 01327 860526.

GROOVE M2CV dual channel MIDI-to-CV converter with all options inc. sync 24 and arpeggiator output, £175, Akai NE30PH fully programmable 4 or 8 Out MIDI patchbay with merge, £11. Both perfect, boxed, manuals ➤ 01329 443048.

HÖHNER ELECTRA PIANO T Clavier, vgc,

£200 ➤ Matt 0131 228 9689 evs.

HÖHNER ELECTRIC GUITAR Pro-series, £200, Also Höhner B-bass guitar, £200, Both excellent condition ➤ Andy 01604 870425 (Northampton).

HOME STUDIO BEING SOLD Many accessories available, audio cables from 50p, MIDI cables from £1, patch leads, 50p power supplies, £5, footswitches, £7.50, keyboard stands, guitar straps, plugs, trailing gang socket boards, £5, tape demagnetiser £5, magazine back issues ➤ 01329 663048.

IBANEZ SABRE Black six and twelve string acoustic double neck guitar, very rare, classic sound, mint condition, Ibanez locking train, £995 once, was £2,500 ➤ 01803 690048.

KAWAI K5 Synthesizer, on Atari disk, 360 x, £30 ➤ Paul 01484 602193 (Sheffield).

KIT WITH ZILDJIAN 5" bag, ring, MIDI converter, totally versatile, £500, 28MB synth module, £150 ➤ 01327 79972 (Northants).

KORG FL61 Harmonizer pedal, £40, pristine, boxed, manual, Quik Lok, 2-tier keyboard stand, £59, Barnes & Mullins 3-frame stand, 2-tier, boxed, £30, Both vgc, Roland UZ20 sample playing sound module, 30-note poly, 7-part multitimbral, drum sounds and digital effects built in, perfect, boxed, manuals, £350 ➤ 01329 663048.

KORG G4 Leslie speaker simulator, new, boxed, unused due to purchase of VK1000 organ, £250 ono ➤ 01350 727370 (Leamington).

KORG 01 combination and program data, £9.99 per disk, specially is new age and cosmic textures ➤ Ken 01268 541449 (Exeter).

KORG 01/W PCM card set for piano/keyboard, £75, ART Multiverb LT rack'd FX, £90, Atari 1040ST, £90, 2 x ROM cards for JDr80, £25 each ➤ 01478 483018 after 6pm.

MANUALS FOR POLYMOOD synthesizer (compiling of the owners manual, Intel, and the service manual (very rare). All originals. Not photocopied copies, £80 for the lot. No offers. Will not sell ➤ 01705 828587 (Hants).

MANUALS FOR SALE Boss C100 and DR660, Ensoniq VFX, FXPSD and EPS, £5 each, £20 the lot ➤ Paddy 0132 563184 (Leeds).

MIDI STUDIO Atari, monitor, Cubase, Yamaha SY35, Novation Bastation, Akai S950, LA Audio compressor, Quadriverb, Mackie 1604. All boxed with manuals, £2,590 each ➤ 01702 544870 Ray (Southend).

MOBILE STUDIO for sale, mini art. fully insulated trailer, non HGV Bedford tractor unit fully wired ready for your equipment. Offers over £3000 ➤ John 01767 627633 anytime.

MPC SYNC TRACK syncs pre-MIDI. Roland gear to tape. If you don't need MIDI, then you need this, only £20 ➤ 01354 695239.

OVERHEIM CYCLONE MIDI arpeggiator unit, powerful full MIDI syn-cable analogue type arpeggiation, as used by 808 state with manual, £145, Alesis MM18 sequencer, £100 ➤ Paul 0181 282 6954.

OWNERS MANUALS for sale, including Moimodg, Pro One, Odyssey, MS1 0/20, MONOPOLY, Juno 60/160, Jupiter 6/F, TR808/909, SH101, MC202, OBR, SH2, CS15 plus others. Prices £3-£10 inc. p&pn ➤ 01274 620004 (Bradford).

PLEASE HELP PG1000 programmer for D50 desperately needed ➤ Den 01484 643160 (Huddersfield).

ROLAND CM64 sound module, £125, Boss DR550 drum machine, £100, C-Lab Novatalk Explorer sequencer software for Atari, £75, All boxed with manuals ➤ 01494 672561.

ROLAND CPM120 8-channel stereo power mixer, £200, HM TPAS250 power amps x 2, £60 each, Yamaha MC52 MIDI controller, £100, aural exciter type C, £110 ➤ 01904 653518.

ROLAND GR1 and GR2 guitar synths, £850, RH12 2 stereo mixer, £300, Akai S950, expanded, £900, Roland D110, £250, Aless D3 mixer, £65 ➤ Graham 0973 905057 (Birmingham).

ROLAND PG800 programmer for use with MK570, JX10 or JX8P. As new, £250 ➤ 01224 323007 (Aberdeen).

ROLAND SH101 Immac condition, £250, Kenton Pro 2 converter, £150, Philip Rees MIDI to Sync converter, both as new, 2 x Techniques SL1210 x £600 ➤ 01495 718199.

ROLAND SH2000 analogue synth, good condition, £200, Roland GR707 guitar synth and GR300 synth unit, £500 as new ➤ Andy Davis 01222 494528.

ROM CARTRIDGES for Yamaha DX7 Mk1 ROM 1, ROM 2 and 1 Ram, £10 each, Yamaha BC1 breath controller for Yamaha keyboards, £15, Kurzweil K2000 programme disk Acoustica, £15 ➤ 0121 706 5652.

SEMI-PRO FLIGHTCASE Originally for Ensoniq VFX but will hold most 5-octave keyboards, excellent condition, fully functional, internal dimensions 362 x 108 x 1040mm, cost £114, accept £80 ono ➤ Paddy 0113 2541284 (Leeds).

SEXY WARM sounds from two SWR Goliath 1 Bbs, 400 Watts, 4x10" fully featured and mint, cost £2,000 new, £950 for both, full sound set ➤ Daryl 01539 724208.

SOUNDTECH PA Cati 2 x 200W, EV 15" num and twin tweeters, B-ampable, great sound and projection, £600, buyer collects, stereo active crossover amps etc available ➤ 01872 770599 (Truro).

STEPP DGX digital guitar synthesizer/controller (like a Synthaxe) with Stepp Go cases, footswitches, manual and jacks, amazing instrument, just serviced and in excellent condition, £675 ➤ 01736 67531.

STUDIO RACK Approx 7' 6" tall, rocking for the entire height, four mono-line inputs, cable

ties, smoked glass door, access from all four sides, on castors, £230 ➤ John 0171 703 0719 (London).

STUDIO SPARES ACOUSTITILES 24 in number. Each 50cm x 50cm. Two different thicknesses. Good condition, £75 ono ➤ Brian 0181 600 8020.

TANNOY 12" Monitor Gold: Sixties classics in custom corner cabinets, Bi-amp 1-inch 8-track recorder, Korg MS20 mono synth, 19-inch rack unit 4 foot high. Offers ➤ Martin 01223 880436 (Cambridge).

THE DREAM by White, new age/ambient music, 7 tracks remastered from DCC, £7. Worth a listen. Please contact Duncan by writing to 53 Lottwell Road, Kings Heath, Birmingham, B14 6HH.

TWO 400W 18-inch emmerence-loaded speakers for sale, ideal for bass guitarists, etc. Reggae. Would cost approx £4,000-£5,000 new, custom made, heavily reinforced, ideal for loud stage applications. Selling for £1,500 each ➤ Leon 0951 186729 (London).

TWO OU PROFESSIONAL equipment racks, floor standing, slurring, 5' high, solid pine, very smart, from major studio, £140 each ➤ Simon 0151 526 2178.

ULTIMATE SUPPORT APEX optimum keyboard stand, 2-tier, £65 ono, Also Selmar Bundy toner saxophone, £450 only ➤ Matt 0131 220 2390.

VISCOUSE FFX guitar multi-effects unit with some excellent sounds, simple to use and great value at £100 ➤ Andy 01604 870425 (Northampton).

YAMAHA EMX2300 powered mixer, 12 channels with 15 on-board effects, dual graphic and 500 Watt STE amp plus Peavey H sps 35 1400 Watt full range speakers, £1,800 ono ➤ Mat 0171 838 4241, or 0181 330 5334.

YAMAHA MDF2 MIDI data file, ideal performance sequencing hardware, £210, Peavey KB1000 combo, £160, Akai ME100 MIDI delay unit, £30, Octave Filter II analogue synth, £190 ➤ Rob 01964 117490 (Hull).

YAMAHA MDF2 MIDI data file, stores bulk data, can record and playback sequence data in real-time, worth £330+ new, sell for £210. Sell under warranty ➤ 0161 446 2927.

YAMAHA SY77 monitor synth, excellent condition, carry case and all manuals, as new, approx 1500 sounds plus sounds in keyboard, also pro sustain pedal, best synth I've ever had, regretably lost debt fence sale, £750 ono ➤ Bar 01923 679773 after 6pm (Herts).

YAMAHA WX11 Wind MIDI controller & BT7 MIDI power pack, 14-key, Bonham, fingering, 5-octave range, breath and lip pressure control, unused, still in original packing, £300 ➤ 0191 386 8418 (Leeds).

ZOOM 4040 effects unit, boxed as new, £290 ➤ Chris 01929 551706.

WANTED

AKAI LINN MPC60 MII or MII II wanted urgently, ➤ Matthew 01252 726878.

AKAI MPC 60 MK II wanted, cash waiting ➤ 0181 883 4328, or 0800 482 822.

AKAI S1000 wanted for cash. Don't advertise it, call Pete on ➤ 0956 695422 (London).

AKAI XE8 sound cards required ➤ 01226 742162.

ALESIS MICROVERB £400th, PA system up to £300, street music/DJ facilities all songs performed by Gladys Knight ➤ 01737 557792 (Surrey).

ALESIS QUADRAVERB Will pay £150 (maybe more if boxed with manual and in A1 condition) ➤ 01274 814790 (Bridford).

ATARI FALCON 4Mb + HD, plus colour monitor, £400, FX Falcon digital interface, £120, F&B Falcon Analogue 8, £175, Roland S12 JV808 exp board keyboards of 60% + 70% £150 ➤ Dave 0187 902 9784 (NW London).

ATARI HI-RES mono monitor, ➤ 01684 883688 after 6pm. Mobile 0402 181543.

BAND IN A BOX v6 for PC wanted, also Canwalk Pro for windows, ➤ 01902 663191.

BOB CLEARMOUNTAIN sample CDs & R8 power drums card, cash waiting ➤ Mark 01273 553833 (Brighton).

BSS DPR502 not quite wanted, cash waiting ➤ 0181 883 4329, or 0800 482 822.

CASIO CZ101 users manual, copy or original, willing to pay ➤ Darren 01328 856055.

CASIO FZ1 SAMPLER 2Mb memory with manuals, in complete working order ➤ 01684 567607.

CHEETAH MK7 mother keyboard, or any mother keyboard with at least 3 MIDI zones, possibly with mechanical damage. WHY? ➤ Jim 01527 579735 (Worce).

CHASE BIT 99 Kawai 240, Akai AX60, Cheetham MS800, MS5, Korg DVP1 ➤ Gordon 01670 523363.

CHRIS HUGGETT Help me! Please phone. I need an Oscar MIDI re-fit. Or can anyone help? Wanted Roland MPU101 interface, TR808 and sub, £100, B-nick MID recorder ➤ Ben/Julia 0113 2 819582.

DEAD OR DAMAGED Seck mixing desks (1202, 1882, 24 2 etc), preferably not working, all I need is the case/work ➤ Paddy 01132 563184 (Leeds).

DIGIDESIGN AUDIOMEDIA II card for Macintosh. Will swap for my fully-expanded Akai S950 sampler, including many unique accordion samples. Card must be current model with full unshaded programme disks. Will also throw in Elba EKK4 analogue synth module with three sound cartridges ➤ 00353 902 36309 or write to: Basil Hendricks, Llanegwre, Rosemount, County Westmeath, Eire.

DIGIDESIGN PRO TOOLS II 8, 12, or 16-

channel system with system accelerator card, sample/cd, DINR, TDM etc wanted, cash waiting ➤ 0181 883 4329, or 0800 482 822.

DIGIDESIGN SESSION 8 interface plus core system for Macintosh, also Cubase Audio, cash waiting ➤ 01684 588268.

EVENTIDE PHASER Qrumpreser, 910 harmoniser etc, working or not as long as cheap, also Dimension D, JD800 PCM cards and sounds ➤ 0181 692 8129.

FOSTEX OR TASCAM 16-track tape machine, must be in perfect working order with good heads, will expect to see working with desk ➤ 01270 663405.

KENTON PRO 2 with Wimp option or Pro 4, can buy or swap for Monosynth ➤ Steven 01726 66715.

KORG 01/W XSC45 dance card (PCM) set. Any other PCM cards. Please call with details. Also wanted Korg 01A/W/D video manual ➤ 01142 2557541 (Sheffield).

KORG S3 drum machine and sequential pro-mono synth, must be vgc, including manuals, offer around £250 and £275 ➤ Paul 01539 729725 evs.

KORG XS or XSD, and Yamaha SPX 900 or SPK 990 wanted, cash waiting ➤ 0171 720 3702.

KURZWEL K2000R Tur desk, lire, Audio Design, Gold Foil ➤ 0161 881 8781.

KURZWEL K2000R wanted cash waiting ➤ 0131 821 4329, or 0800 482 822.

MKS20 MK57, Oberheim 4 voice, Jupiter 6, cash waiting, can collect most areas ➤ 0181 840 6487/0181 578 4959.

MT32 EDITOR Librarian software for Macintosh ➤ 0115 932 4166.

PEAVEY SP sample owners, help me with sounds, advice, swap. Have you CD-ROM drives/CSI to sell, or hard disk for sale? ➤ Graham 0181 518 1348.

ROLAND PG800 programmer for Roland JX8P synthesiser, also Casio CZ101 ➤ Dean 0114 2786531 (Sheffield).

ROLAND TB303 wanted willing to pay £400, also MC202 willing to pay £195 or swap for SH101 ➤ 01226 208570.

ROLAND 303, 909, 101 wanted! I will pay a most generous price ➤ Steve 01246 410799 evs.

ROLAND TR606 drum machine. Instant Spunduliks! Send me your TR606 in good condition and I will post you a cheque for £65 ➤ Paul 01230 252 0537.

ROLAND W30 sampler workstation wanted. Will pay £650. Cash waiting ➤ Dave 01555 773420 (Scotland).

SEL CRUISE POLYSYNTH wanted, £125 ➤ Den 01484 643160 (Huddersfield).

WANTED AUDIO TECHNICA RMX64 4-track, any condition ➤ 01767 627633 anytime.

WANTED: MUSICIAN from Germany pay for TR801, £550, TR808, £600, TR808, £250 ➤ Konrad 0049 5152 61676 (UK call back, or fax 01049 5152 8179).

WANTED ONE-INCH 4-track tape machine, any condition ➤ 0374 449777 anytime.

WANTED DBX Project 1 series 266 compressor. Cash waiting ➤ Paul 01302 538304 (Doncaster).

WANTED ENSONIQ DP/4or DP/2 Also wanted, any useful software for the PC ➤ Paul 01302 538304 (Doncaster).

WANTED AKAI Ensoniq, Emu, Emax II etc sampler. Must have large memory and be in excellent condition. Fair price paid ➤ Carl 0161 343 7603.

WANTED Yamaha DX7 Cartridges, especially Skyscrap ROM chips 4 and 5 ➤ Duncan 0121 442 2681.

WANTED PG800 programmer for Roland JX10 ➤ Mark 01446 747926.

WANTED: FLIGHTCASES for JV800 and Oscar synthesizers ➤ Roland 01243 830697 (West Sussex).

WANTED: SERVICE AND OWNERS MANUALS for Cheetham MK7VA keyboard. Photographs accepted ➤ Muktam 01843 587732 (Kent).

WANTED: YAMAHA MC52 MIDI control station, well cared ➤ 0234 387650 (Bristol).

WANTED: BAND IN A BOX and Turbosynth for Atari. Cash waiting ➤ 01327 352571.

WANTED: Any cheap synths which are MIDI. Novation Bastation, Keyboard, will pay £200, also a very cheap Roland F300, A41 ➤ Oliver 01656 738636.

WANTED: EQUIPMENT ie Akai sampler, Roland, TR, TB, Korg keyboard, DAT recorder, FX mixer, cash waiting for sensible GVO items, no silly prices please, no dealers ➤ 01276 31010.

WANTED: ROLAND TB303 will pay £350, must be perfect ➤ 01206 792123, or 0402 151159.

WANTED: ROLAND TR909, TB303, SH101, MC202, JD800, Akai Sampler, Moon keyboard, sequencer, FX mixer, DAT, Korg M1, wave etc. All equipment considered fair, obviouslyly priced ➤ 01276 31010.

WINDSYNTH with or without tone module ➤ Graham 0181 555 6181.

YAMAHA CS40M owner requires PSU circuit board or circuit diagram as it was missing when bought. Contact: Mike, 14 Berrough Place, Church Street, Whitby, YO22 4BJ.

YAMAHA SY77 WAVEFORM cards desperately sought by SY77 wave card breaking fellow. I need to frequency modulate beyond my current Harmonix. Cash ➤ 0181 304 8595.

YAMAHA SY85 Will pay £500, also Roland PK5 will pay £700 ➤ 01277 2114224.

SOUND ON SOUND Buyer's



Synth • Workstation • Module Guide

Keyboard Synths

Manufacturer:	Alesis	Clavia	Emu	Ensoniq	Ensoniq	Ensoniq	Ensoniq	Ensoniq
Synth:	Quadrasynt Piano+	NordLead	MPS Plus	KS32	KT76	KT88	SQ1+	SQ2
Price:	£1299	£1495	£1399	£1599	£1999	£2149	£899	£1099
SOS Review:	Nov 95	May 95	Dec 92	None	Nov 94	None	Jul 91	None
Synthesis:	S&S	Virtual Analogue	S&S	S&S	S&S	S&S	S&S	S&S
Kbd Length:	76	49	61	76	76	88	61	76
Aftertouch:	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Velocity:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Polyphony:	64	4-12	32	32	64	64	32	32
Multitimbrality:	16	4	16	16	16	16	16	16
Effects:	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Patches:	640	99	400	180	308	308	180	180
Audio Outs:	4	2	4	2	2	2	2	2
PSU type:	Int	Int	Ext	Int	Int	Int	Int	Int
Display:	Large Custom LCD	2-digit LED	2x16 LCD	2x16 LCD	2x16 LCD	2x16 LCD	2x16 LCD	2x16 LCD
Computer I/f:	No	No	No	No	No	No	No	No
Card slot:	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
General MIDI:	Yes	No	No	No	Yes	Yes	No	No
Distributor:	Sound Technology	Key Audio	Emu Systems UK	Sound Technology	Sound Technology	Sound Technology	Sound Technology	Sound Technology

Manufacturer:	Kawai	Kawai	Korg	Korg	Korg	Novation	Peavey	Peavey	Quasimidi
Synth:	K11	KC20	Oasys	Prophecy	X5	BassStation	DPM2	DPMSi	Raven
Price:	£1049	669	£T8C	£999	£799	£349	£999	£1399	£TBA
SOS Review:	Oct 93	None	Preview Mar 95	Oct 95	Jan 95	July 94	Apr 92	None	None
Synthesis:	S&S	S&S	DSP/Various	DSP/Various	S&S	Analogue	S&S	S&S	S&S
Kbd Length:	61	61	76	37	61	25	61	76	61
Aftertouch:	Yes	No	Yes	Yes	No	No	No	Yes	Yes
Velocity:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Polyphony:	32	28	Max 112	1	32	1	16	32	64
Multitimbrality:	32	16	32	1	1	16	16	16	16
Effects:	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Patches:	405	167	Variable	128	236	7	300	400	1044
Audio Outs:	2	2	10	2	2	1	2	4	2
PSU type:	Ext	Ext	Int	Int	Ext	Ext	Int	Int	Int
Display:	2x16 LCD	2x16 LCD	Touch-sensitive LCD	2x40 LCD	2x16 LCD	None	2x40 LCD	2x40 LCD	2x20 LCD
Computer I/f:	Yes	Yes	No	No	Mac/PC	No	No	No	No
Card slot:	No	No	No	Yes	No	No	Yes	Yes	No
General MIDI:	Yes	Yes	No	No	Yes	No	No	No	No
Distributor:	Kawai UK	Kawai UK	Korg UK	Korg UK	Korg UK	Novation	Peavey UK	Peavey UK	Key Audio

Manufacturer:	Roland	Roland	Roland	Roland	Waldorf	Yamaha	Yamaha	Yamaha
Synth:	JV35	JV50	JV90	XP10	Wave	SY35	VL1	VL7
Price:	£999	£1285	£1399	£599	£6286	£599	£3499	£2349
SOS Review:	Mar 94	Mar 94	Mar 94	None	Jul 94	Sep 92	Jul 94	Mar 95
Synthesis:	S&S	S&S	S&S	S&S	Wavetable	S&S/FM	Phys. Modelling	Phys. Modelling
Kbd Length:	61	61	76	61	61	61	49	49
Aftertouch:	No	No	Yes	No	Yes	Yes	Yes	Yes
Velocity:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Polyphony:	28	28	28	28	16-48	16	2	1
Multitimbrality:	16	16	8	16	8	8	1	1
Effects:	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Patches:	500	500	320	605	256	128	128	64
Audio Outs:	2	2	2	2	6	2	2	2
PSU type:	Ext	Ext	Int	Ext	Int	Ext	Int	Int
Display:	2x16 LCD	2x16 LCD	2x40 LCD	2x16 LCD	480x64 dot LCD	2x16 LCD/2-digit LED	240x64-dot LCD	240x64-dot LCD
Computer I/f:	No	No	No	Yes	No	No	No	No
Card slot:	No	No	Yes	No	No (drive)	Yes	No (drive)	No (drive)
General MIDI:	Yes	Yes	No	Yes	No	No	No	No
Distributor:	Roland UK	Roland UK	Roland UK	Roland UK	Turnkey	Yamaha Kemble	Yamaha Kemble	Yamaha Kemble

TABLE GUIDE

- Where a synth has a sequencer but no disk drive, it is classified under Keyboard Synths.
- 'Patches' refers to the total number of single sound presets and user memories, including drum kits, counted at one patch per kit. Most synths also have Performances (combinations of single patches) and user memories specifically for saving user Performances. These have not been counted.
- Computer Interface: instruments that have this feature invariably have a switchable serial-type interface which is compatible with both PC and Apple Mac computers.
- Display: most displays are described in terms of lines and characters, so if a display is described as 2x16 it has two lines of 16 characters each.
- Synthesis: most current instruments use variants of the sample & synthesis method, though manufacturers all have their own names for their own variant of the system.
- Although some of the instruments featured have auto-arrange capabilities, we have taken the inclusion of speakers on an instrument as our cut-off point and have not listed them. This type of instrument may be featured in a future buyer's guide.

Keyboard Synths

Alesis Quadrasynth Piano+: Powerful, competent and clean sounding synth which benefits from high-quality mega piano waveforms. Has direct digital interface for recording to ADAT and a Flash RAM option for samples.

Clavia NordLead: One of the new breed of cutting-edge DSP instruments which emulate analogue technology very convincingly. A lead-type instrument for the serious player.

Emu MPS Plus: Realistic, quality orchestral and contemporary sounds in a friendly keyboard with sophisticated master controller facilities.

Ensoniq KS32: A high-quality, sequencer-equipped all-rounder with luxurious, weighted action 76-note keyboard and sounds that won't disappoint.

Ensoniq KT76: Another solid performer from Ensoniq (with sequencer), though it's difficult to see much that distinguishes it from the KS32 other than its 64-note polyphony and double waveform ROM.

Ensoniq KT88: 88-note version of the KT76.

Ensoniq SQ1 Plus: The cheapest way to get the distinctive American synth sound offered by Ensoniq, with sequencer and reasonable price tag to boot. Good choice as a first synth.

Ensoniq SQ2: Remarkably similar in basic spec to the KS32 (including sequencer) and thus probably a bargain at the (cheaper) price!

Kawai K11: Worthy follow-up to the cult K1, with nice sounds, comprehensive editability and a street price often attractively lower than retail. One of the few keyboards with a Mac/PC interface.

Kawai KC20: Basic GM keyboard that combines an attractive price with a built-in computer interface.

Korg Oasys: Super-flexible physical modelling megasynth capable of additive synthesis, FM, analogue, stereo sample playback, vector synthesis wave sequencing, and more! Price not yet available but likely to be in the £3000-5000 range.

Korg Prophecy: Much more affordable incarnation of similar technology to Oasys, but your £999 buys just one note at a time. Acclaimed nevertheless as an absolute winner soundwise.

Korg X5: Appealing entry-level synth with Mac/PC computer interface. Also available

in X5D version, identical except for 64-note polyphony and retail price of £899.

Novation BassStation: Cute analogue bass machine with MIDI; aimed at rave/dance merchants looking for that TB303 Bassline sound with a keyboard.

Peavey DPM2: Solid and expandable synth with a trademark American sound and optional sequencer.

Peavey DPMSi: Similar to above, but with more of everything and sequencer as standard.

Quasimidi Raven: Unseen as yet, but expect highly-contemporary sounds, such as those offered by the Quasar and Technox, in a keyboard-equipped package.

Roland JV35: Mid-priced expandable synth offers Roland's GM sound set in a keyboard which can host a useful voice and waveform expansion board. Also available in EX version with board installed and double polyphony at £1149.

Roland JV50: Identical to JV35, except for a built-in Standard MIDI File player with basic sequence recording facilities. Also available in EX version as above at £1399.

Roland JV90: Expandable synth with 76-note keyboard and room for Roland's excellent expansion boards, which include Vintage Synth, Orchestral and Dance. Change your synth without changing your synth!

Roland XP10: An unusual, and as yet unheard, instrument: the GM sound source at its heart is complemented by 256 user patch locations, a sophisticated, MIDI-clockable arpeggiator and a sub-£600 price tag.

Waldorf Wave: Impressive, expensive, highly individual wavetable synth. Wonderful programmer's machine with a genuinely unique sound, and available in several wacky colours.

Yamaha SY35: Probably the cheapest editable keyboard synth around, yet with enough depth to hold the interest. The neat vector controller makes for fun and immediate sound shaping.

Yamaha VL1: World's first commercial physical modelling (Virtual Acoustic) instrument offers (duophonic) sonic realism and vast programming potential. A pro musician's instrument (with a matching price tag) which rewards time spent learning to use it.

Yamaha VL7: A monophonic VL1 at a more accessible price point.

Comments

Contacts

AUDIO AWARENESS,

10 High Road, Chadwell Heath,
Romford, Essex RM6 6PR.

Tel: 0181 598 8081.

Fax: 0181 598 8984.

EMU SYSTEMS UK,

Suite 6, Adam Ferguson House,
Eskmills Park, Musselborough,
East Lothian EH21 7PQ.

Tel: 0131 653 6556.

Fax: 0131 665 0473.

F.A.M.E,

PO Box 387, 1A Buckingham
Road, London N22 6SF.

Tel: 0181 889 0616.

Fax: 0181 889 0616.

CASIO ELECTRONICS,

Unit 6, 1000 North Circular
Road, London NW2 7JD.

Tel: 0181 450 9131.

Fax: 0181 452 6323.

GENERAL MUSIC UK,

Unit D, Chelford Court,

Robjohns Road,

Chelmsford CM1 3AG.

Tel: 01245 344001.

Fax: 01245 344002.

KAWAI UK,

Tel: 0836 740283

or 01759 380356.

KEY AUDIO SYSTEMS,

Unit D, Chelford Court,
Robjohns Road,
Chelmsford CM1 3AG.

Tel: 01245 344001.

Fax: 01245 344002.

KORG UK,

9 Newmarket Court, Kingston,
Milton Keynes MK10 0AU.

Tel: 01908 857100.

Fax: 01908 857199.

MCMXCIX,

9 Hatton Street,

London NW8 8PR.

Tel: 0171 723 7221.

Fax: 0171 262 8215.

MUSIC CONTROL,

Chapel Mews, Crewe Road,

Alsager, Staffs ST7 2HA.

Tel: 01270 883779.

NOVATION,

The Ice House,
Dean Street, Marlowe,
Bucks SL7 3AB.

Tel: 01628 481992.

Fax: 01628 481835.

PEAVEY ELECTRONICS (UK),

Hatton House,
Hunters Road, Weldon
Industrial Estate, Corby,
Northants NN17 1JE

Tel: 01536 205520.

Fax: 01536 69029.

ROLAND UK,

Atlantic Close, Swansea
Enterprise Park, Swansea,
West Glamorgan SA7 9FJ.

Tel: 01792 702701.

Fax: 01792 799644.

SOUND TECHNOLOGY,

Letchworth Point, Letchworth,
Herts SG6 1ND.

Tel: 01462 480000.

Fax: 01462 480800.

TECHNICS MUSIC INSTRUMENTS,

Willoughby Road,
Bracknell, Berks RG12 8FP.

Tel: 01344 853177.

Fax: 01344 853709.

TURNKEY,

114-116 Charing Cross Road,
London WC2H 0DT.

Tel: 0171 379 0093.

Fax: 0171 497 0690.

WASHBURN UK,

Amor Way, Letchworth,
Herts SG6 1UG.

Tel: 01462 482466.

Fax: 01462 482997.

YAMAHA KEMBLE (UK),

Sherbourne Drive, Tilbrook,
Milton Keynes MK7 8BL.

Tel: Product info line

01908 369269.

Fax: 01908 368872.

Workstations

Manufacturer	Ensoniq	Ensoniq	GEM	GEM	Korg	Korg	Korg	Korg
Synth:	TS10	TS12	S2 Turbo	S3 Turbo	i1	i2	i3	01WFD
Price:	£1999	£2199	£1499	£1799	£3999	£2199	£1899	£1599
SOS Review:	Jul 93	Feb 94	Aug 92	None	None	None	Nov 93	Oct 91
Synthesis:	S&S	S&S	S&S	S&S	S&S	S&S	S&S	S&S
Kbd Length:	61	76	61	76	88	76	61	61
Aftertouch:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Velocity:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Polyphony:	32	32	32	32	32	32	32	32
Multitimbrality:	16	16	16	16	16	16	16	16
Effects:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patches:	437	437	500	500	256	256	256	200
Audio Outs:	4	4	6	6	2	2	2	4
PSU Type:	Int	Int	Int	Int	Int	Int	Int	Int
Display:	Large fluorescent	Large fluorescent	240x64 dot LCD	240x64 dot LCD	240x64 dot LCD	240x64 dot LCD	240x64 dot LCD	240x64 dot LCD
Card slot:	No	No	No	No	Yes	Yes	Yes	Yes
General MIDI:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Can be (GM disk)
Sample RAM:	Yes	Yes	Yes	Yes	No	No	No	No
Seq. Tracks:	24	24	16	16	16	16	16	16
Note capacity:	30,000	30,000	max 250,000	max 250,000	40,000	40,000	40,000	48,000
Distributor:	Sound Technology	Sound Technology	General Music (UK)	General Music (UK)	Korg UK	Korg UK	Korg UK	Korg UK

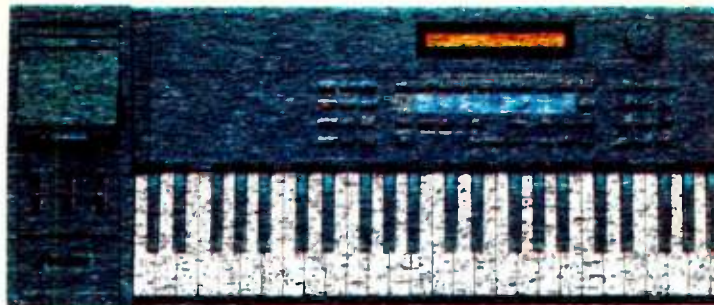
Manufacturer	Korg	Korg	Korg	Korg	Korg	Korg	Kurzweil	Peavey	Peavey
Synth:	Trinity	Trinity+	Trinity Pro	Trinity ProX	X2	X3	K2000	DPM4	DPM488
Price:	£2400 (TBC)	£2975 (TBC)	£TBC	£TBC	£1499	£1299	£2250.50	£1999	£2499
SOS Review:	Dec 95	Not yet	Not yet	Not yet	None	None	Mar 92	None	None
Synthesis:	S&S	S&S/Phys. Mod	S&S/Phys. Mod	S&S/Phys. Mod	S&S	S&S	S&S	S&S	S&S
Kbd Length:	61	61	76	88	76	61	61	61	88
Aftertouch:	Yes	Yes	Yes	Yes	Y	Y	Yes	Yes	Yes
Velocity:	Yes	Yes	Yes	Yes	Y	Y	Yes	Yes	Yes
Polyphony:	32	32	32	32	32	32	24	32	32
Multitimbrality:	16	16	16	16	16	16	16	16	16
Effects:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patches:	256	320	320	320	336	336	400	100	100
Audio Outs:	4	4	4	4	2	2	6	2	2
PSU Type:	Int	Int	Int	Int	Int	Int	Int	Int	Int
Display:	Touch-sensitive LCD	Touch-sensitive LCD	Touch-sensitive LCD	Touch-sensitive LCD	Custom LCD	Custom LCD	240x64 dot LCD	2x40 LCD	2x40 LCD
Card slot:	No	No	No	No	Yes	Yes	No	Yes	No
General MIDI:	No	No	No	No	Yes	Yes	Can be (GM disk)	No	No
Sample RAM:	Option	Option	Option	Option	No	No	Option	Yes	Yes
Seq. Tracks:	16	16	16	16	16	16	Max 32	9	9
Note capacity:	60,000	60,000	60,000	60,000	32,000	32,000	Variable	20,000	20,000
Distributor:	Korg UK	Korg UK	Korg UK	Korg UK	Korg UK	Korg UK	Washburn UK	Peavey UK	Peavey UK

Manufacturer	Roland	Roland	Solton	Technics	Yamaha	Yamaha	Yamaha	Yamaha
Synth:	G800	XP50	MS50	SX-WSA1	QS300	SY85	W5	W7
Price:	£1999	£1499	£1799	£2936	£1199	£1125	£1649	£1399
SOS Review:	Not yet	Jun 95	Module vers May 95	Dec 95	Jan 96	Oct 92	Jan 95	Jan 95
Synthesis:	S&S	S&S	S&S	Acoustic Modelling	S&S	S&S	S&S	S&S
Kbd Length:	76	61	61	61	61	61	76	61
Aftertouch:	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Velocity:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Polyphony:	64	64	28	64	32	30	32	32
Multitimbrality:	32	16	16	32	16	16	16	16
Effects:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patches:	714	650	396	532	954	256	396	396
Audio Outs:	2	2	4	4	2	4	2	2
PSU Type:	Int	Int	Int	Int	Int	Int	Int	Int
Display:	240x64 dot LCD	2x40 LCD	2x40 LCD	320x240 dot LCD	240x64 dot LCD	2x40 LCD	240x64 dot LCD	240x64 dot LCD
Card slot:	No	No	No	No	No	Yes	No	No
General MIDI:	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Sample RAM:	No	No	Yes	No	No	Yes	No	No
Seq. Tracks:	N/A	16	9	16	16	9	16	16
Note capacity:	N/A	20,000	Not specified	40,000	86,000	20,000	100,000	100,000
Distributor:	Roland UK	Roland UK	Audio Awareness	Technics	Yamaha-Kemble	Yamaha-Kemble	Yamaha-Kemble	Yamaha-Kemble

SOUND ON SOUND Buyer's

Synth • Workstation • Module

Guide



Workstations

Ensoniq TS10: Rolls-Royce Ensoniq workstation with sophisticated sequencing.

Ensoniq TS12: Goes one better than the TS10 with a 76-note weighted-action keyboard.

GEM S2 Turbo: GEM devotees rave about the flexible and open-ended nature of this instrument. Well-specified, popular and made in Europe!

GEM S3 Turbo: 76-note version of S2 Turbo.

Korg i1: Flagship interactive workstation with luxurious 88-note keyboard and wooden cabinet, built-in styles and the usual Korg high-quality sound source. Not one for dragging around to pub gigs!

Korg i2: Similar to the above in a rather more modest synth-style casing, with 76-note synth-action keyboard.

Korg i3: As above, but with 61-note keyboard.

Korg 01/WFD: Perennially popular workstation had unusually good spec when released in '91 and as a result still holds its own in today's marketplace.

Korg Trinity: Base model of new range which has just about everything you could think of as an option, including sample RAM, hard disk recording and a physical modelling synthesis board. Promises to be awesome. Upgradable to full ProX status (excluding keyboard).

Korg Trinity Plus: As above, but with physical modelling board built in.

Korg Trinity Pro: Adds 76-note keyboard and physical modelling board to the basic Trinity concept.

Korg Trinity ProX: Top of the range, with 88-note keyboard and most of the Trinity options as standard, including hard disk recording, digital ins and outs, physical modelling board and 365Mb hard drive. One for the pros.

Korg X2: Sophisticated and capable new-generation workstation.

Korg X3: As above, with 61-note keyboard.

Kurzweil K2000: Dizzily upgradable, classy-sounding workstation way ahead of its time on release and still very desirable. Has a rabid US and (smaller) UK following.

Peavey DPM4: Sample-RAM equipped machine with good spec.

Peavey DPM488: As above, with 88-note weighted keyboard.

Roland G800: Brand new workstation with good spec and built-in styles if that's your thing! 32-voice polyphony and a large keyboard may make this a crossover instrument.

Roland XP50: More or less a JV1080 with a keyboard, sequencer and disk drive. You wouldn't go far wrong with this good all-rounder.

Solton MS50: Essentially a keyboard version of the MS40 module.

Technics SX-WSA1: Surprise launch of the year: a maximum 64-voice polyphonic, 32-part multitimbral physical modelling synth workstation, from a company more well-known for sophisticated home keyboards and hi-fi equipment.

Yamaha QS300: Keyboard version of Yamaha's sophisticated QY300 sound source/styles/sequencing module.

Yamaha SY85: Still selling well after three years on the market, this versatile machine has sample RAM expandable to 3.5Mb, and stores an unusually high number of user patches.

Yamaha W5: Latest generation, with high-capacity sequencer, a GM sound section and useful 'insertion' effects.

Yamaha W7: As above, with 61-note keyboard.

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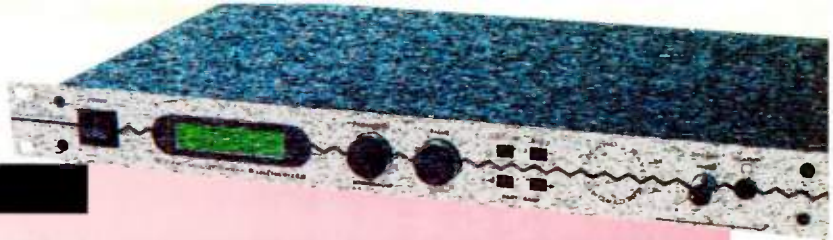
Modules

Manufacturer	Alesis	Boss	Casio	Clavia	Control Synthesis	Doepfer	Emu	Emu	Emu	Emu
Synth:	S4+	DS330E	GZ50M	NordLead	Deep Bass 9	MS404	Classic Keys	Proteus2	Proteus 2XR	Proteus FX
Price:	£899	£459	£199	£1295	£449	£345	£647	£810	£975	£610
SOS Review:	Kbd vers. Nov 94	Sep 92	None	Kbd vers. May 95	Dec 94	None	Dec 94	Nov 90	None	May 94
Format:	1U rack	Module	Module	4U rack	1U rack	1U rack	1U rack	1U rack	1U rack	1U rack
Synthesis:	S&S	S&S	S&S	Virtual Analogue	Analogue	Analogue	S&S	S&S	S&S	S&S
Polyphony:	64	28	32	4-12	1	1	32	32	32	32
Multitimbrality:	16	16	16	4	1	1	16	16	16	16
Effects:	Yes	Yes	Yes	No	No	No	Yes	No	No	Yes
Patches:	640	164	136	99	No presets	None	512	192	384	512
Audio Outs:	4	2	2	2	1	1	2	6	6	2
Sample RAM:	Optional	No	No	No	No	No	No	No	No	No
PSU Type:	Ext	Ext	Ext	Int	Int	Ext	Ext	Int	Int	Ext
Display:	Custom LCD	Custom LCD	None	2-digit LED	None	None	2x16 LCD	2x16 LCD	2x16 LCD	2x16 LCD
Computer I/f:	No	No	No	No	No	No	No	No	No	No
Card slot:	Yes	No	Yes	No	No	No	No	No	No	No
General MIDI:	No	Yes	Yes	No	No	No	No	No	No	No
Distributor:	Sound Technology	Roland UK	Casio UK	Key Audio	Music Control	F.A.M.E.	Emu Systems UK	Emu Systems UK	Emu Systems UK	Emu Systems UK

Manufacturer	Emu	Emu	Emu	Emu	GEM	Kawai	Kawai	Kawai	Kawai	Kawai
Synth:	UltraProteus	Vintage Keys+	Morpheus	Sound Engine	S2R	AC20	DRP10	GMega	GMega XC3	GMouse
Price:	£1499	£1055	£1199	£565	£1399	TBC	TBC	689	384	TBC
SOS Review:	Aug 94	Apr 93	Dec 93	None	Mar 94	None	None	None	None	None
Format:	1U rack	1U rack	1U rack	Half-rack	3U rack	Module	Module	Half-rack	Half-rack	Module
Synthesis:	S&S/morphing	S&S	S&S/Morph	S&S	S&S	S&S	S&S	S&S	S&S	S&S
Polyphony:	32	32	32	32	32	32	32	32	28	28
Multitimbrality:	16	16	16	16	16	16	16	32	16	16
Effects:	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Patches:	384	512	256	128	500	132	132	405	167	167
Audio Outs:	6	6	6	2	6	2	2	2	2	2
Sample RAM:	No	No	No	No	Yes	No	No	No	No	No
PSU Type:	Int	Int	Int	Ext	Int	Ext	Ext	Ext	Ext	Ext
Display:	2x16 LCD	2x16 LCD	2x16LCD	None	240x64 dot LCD	4x16 LCD	4x16 LCD	2X16 LCD	None	None
Computer I/f:	No	No	No	Yes	No	No	No	Mac	Yes	Yes
Card slot:	Yes	No	Yes	No	No	No (drive)	No (drive)	No	No	No
General MIDI:	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distributor:	Emu Systems UK	Emu Systems UK	Emu Systems UK	Emu Systems UK	General Music (UK)	Kawai UK	Kawai UK	Kawai UK	Kawai UK	Kawai UK

Manufacturer	Korg	Korg	Korg	Kurzweil	Kurzweil	Marion Systems	Marion Systems	Novation
Synth:	05R/W	Wavestation SR	X5DR	K2000R	K2500R	MSR2	ProSynth	BassStation
Price:	£499	£999	£675	£2250.50	£2999	£1349	£699	£399
SOS Review:	Oct 93	Apr 93	May 95	Kbd vers. Mar 92	Preview Sep 95	Dec 94	None	Jul 95
Format:	Half-rack	1U rack	Half-rack	3U rack	3U rack	1U rack	1U rack	1U rack
Synthesis:	S&S	Vector/Wave	S&S	S&S	S&S	Analogue	Analogue	Analogue
Polyphony:	32	32	64	24	48	16	8	1
Multitimbrality:	16	16	16	16	16	16	8	1
Effects:	Yes	Yes	Yes	Yes	Yes	No	No	No
Patches:	340	550	436	200	200	800	400	100
Audio Outs:	2	4	2	8	10	2	2	1
Sample RAM:	No	No	No	Option	Option	No	No	No
PSU Type:	Ext	Int	Ext	Int	Int	Ext	Ext	Ext
Display:	2x16 LCD	2x16 LCD	2x16 LCD	240x64 dot LCD	240x64 dot LCD	2x20 LCD	2x20 LCD	2-digit LED
Computer I/f:	Yes	No	Yes	No	No	No	No	No
Card slot:	Yes	Yes	No	No	No	No	No	No
General MIDI:	Yes	No	Yes	Can be (GM disk)	Can be (GM disk)	No	No	No
Distributor:	Korg UK	Korg UK	Korg UK	Washburn UK	Washburn UK	Turnkey	Turnkey	Novation

Manufacturer	Oberheim	Oberheim	Peavey	Peavey	Peavey	Peavey	Peavey	Quasimidi	Quasimidi
Synth:	Matrix 1000	OBMX	DPM V2	DPMV3	Spectrum Bass	Spectrum Organ	Spectrum Synth	Quasar	Technox
Price:	£499	£1799	£675	£839	£279	£349	£349	£995	£749
SOS Review:	Sep 88/Jun 94	Sep 94	None	None	May 93	None	None	Aug 94	Feb 95
Format:	1U rack	6U rack	1U rack	1U rack	1U rack	1U rack	1U rack	2U rack	1U rack
Synthesis:	Analogue	Analogue	S&S	S&S	S&S	S&S	S&S	S&S	S&S
Polyphony:	6	2	16	16	8	32	12	24	21
Multitimbrality:	1	6	16	16	4	4	4	16	16
Effects:	No	No	Yes	Yes	No	Yes	No	Yes	Yes
Patches:	1000	256	300	200	200	128	256	1000	512
Audio Outs:	1	Variable	2	6	2	2	Two	6	2
Sample RAM:	No	No	No	Yes	No	No	No	Optional	No
PSU Type:	Int	Int	Int	Int	Ext	Ext	Ext	Int	Int
Display:	3 digit LED	2x40 LCD	2x20 LCD	2x20LCD	None	3 digit LED	3 digit LED	2x40 LCD	2x16 LCD
Computer I/f:	No	No	No	No	No	No	No	No	No
Card slot:	No	No	Yes	Yes	No	No	No	No	No
General MIDI:	No	No	No	No	No	No	No	Yes	No
Distributor:	MCMXCIX	MCMXCIX	Peavey UK	Peavey UK	Peavey UK	Peavey UK	Peavey UK	Key Audio	Key Audio



Modules

Alesis S4+: High-powered module version of Quadrasynth loses the keyboard version's added piano waveform.

Boss DS330E: Cute keyboard-top GM module sounds good and is cost effective. A non-GM single mode allows editing of presets which then unfortunately can't be used in GM mode.

Casio GZ50M: Ultra cheap and compact GM module which is basic but still offers 32-note polyphony and effects.

Clavia NordLead: Identical to keyboard version, but without keyboard, mod wheel and Clavia's pitch stick.

Control Deep Bass Nine: Modern clone of the classic (monophonic) Roland TB303 Bassline. Perfect for analogue bass lines, bleeps and bleeps.

Doepfer MS404: German-made analogue rack synth which casts its sonic net rather wider than the bass-directed competition.

Emu Classic Keys: Classy module packed with the sounds of analogue synths and keyboards of the '60s, '70s and '80s. Less flexible than Vintage Keys — but much cheaper.

Emu Proteus 2: Orchestral version of the popular Proteus series, acclaimed for its sonic realism — and fully editable.

Emu Proteus 2XR: Identical to Proteus 2, but with double the presets.

Emu Proteus FX: Cheapest way to get the Proteus sound, with the addition of effects. Presets offer a mixture of orchestral and contemporary pop sounds.

Emu UltraProteus: Top of the range Proteus with 16Mb of sounds picked from the other Proteus modules, plus Morpheus Z-Plane morphing filters.

Emu Vintage Keys+: Sounds based on samples of vintage Hammond organs, Prophet, Moog, Oberheim and ARP synths, etc, plus FM keyboards and vintage drum machines. Has 32 "analogue-sounding" digital filters.

Emu Morpheus: A serious synthesis machine offering innovative 14-pole morphing filters that allow morphing of one sound into another.

Emu Sound Engine: Emu's answer to the desktop-music GM modules from other manufacturers. Well specified, good sounds, bundled Mac editing and sequencing software.

GEM S2R: Keyboardless version of S2 Turbo.

Kawai AC20: GM sound module with built-in MIDI file player and a collection of auto-accompaniment styles.

Kawai DRP10: An AC20 without the auto-accompaniment and with a reasonable basic sequencer.

Kawai GMega: Solid General MIDI module with the distinction of two non-GM preset banks, one of which will save your own edits.

Kawai GMega XC3: Computer-optimised version of GMega loses the GMega's display and much of its non-GM flexibility.

Kawai GMouse: Very simple compact pocket GM module with built-in computer interface.

Korg 05R/W: Pretty similar in spec to the X5DR, but with less polyphony and

2MB less waveform ROM.

Korg Wavestation SR: Unique-sounding synth, whose wave-sequencing method can result in complex sounds with lots of movement. Module even retains the joystick vector controller from the older keyboard version.

Korg X5DR: Takes the appealing X5 format, loses the keyboard and adds an extra 2MB of waveform ROM and 64-voice polyphony. One of the better-sounding GM modules around.

Kurzweil K2000R: Rackmount version of the K2000.

Kurzweil 2500R: Kurzweil's new flagship, a professional machine with improved polyphony, upgraded CPU, new sounds, and options including digital multitrack interface and sampling while playing.

Marion MSR2: Tom Oberheim-designed 'mainframe' synth that comes fitted with an analogue synth module and is intended to host other modules too, including a wavetable synth, a sample playback module and even multi-effects — though these add-ons have yet to materialise.

Marion ProSynth: Cheaper analogue module based on MSR2 technology; the designer reckons it sounds better than the legendary Oberheim Matrix 12.

Novation BassStation: Rackmount version of BassStation keyboard, with useful additions of 60 user memories (plus 40 factory presets), built-in MIDI-CV converter and external input to filter and envelope sections.

Oberheim Matrix 1000: Long-lived analogue module with loads of quality sounds, but limited multitimbrality and polyphony when compared to the newest sound modules.

Oberheim OBMX: Worthy contender for ultimate MIDI-controlled analogue synth.

Peavey DPMV2: Mid-priced synth module low on novelty value but with a respectable specification.

Peavey DPMV3: Similar to V2 above, but with double the oscillator power and conforming to Peavey's open-ended software-based voice generation system.

Peavey Spectrum Bass: The only dedicated multitimbral bass sound module on the market, good for traditional style stringed basses, but also with a few synth basses.

Peavey Spectrum Organ: Brand new dedicated organ module with lots of MIDI control of sounds plus a rotary speaker speed footswitch.

Peavey Spectrum Synth: As-yet unheard module full of sampled analogue synth waveforms, together with the necessary resonant filters, hard sync and pulse width modulation facilities to make them behave like the real thing. If it delivers on its promised spec, this could be a winner at the price.

QuasiMIDI Quasar: Good sounding, up-to-the-minute synth with loads of presets, an arpeggiator, and the capability to reproduce analogue, PCM, FM and additive synthesis. Front panel sound tweaks can be recorded over MIDI.

QuasiMIDI Technox: Extremely lively synth module aimed squarely at the rave and dance market. Listen to that demo!

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SOUND ON SOUND Buyer's

Synth • Workstation • Module

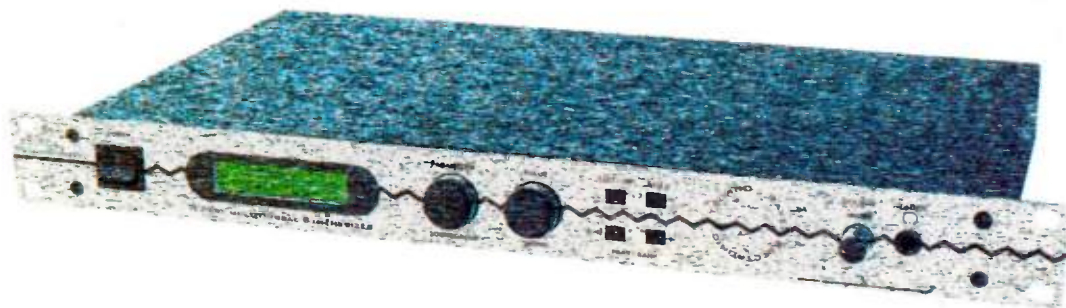
Guide

Modules (continued)

Manufacturer	Roland	Roland	Roland	Roland	Roland	Roland	Roland	Roland	Roland	Roland
Synth:	JV880	JV1080	MG564	MSE1	MOC1	MVS1	MDC1	MT120	MT200	RA30
Price:	£840	£1195	£599	£499	£499	£499	£499	£799	£1195	£549
SOS Review:	Mar 93	Dec 94	Oct 94	Oct 94	Oct 94	Oct 94	Oct 94	None	None	None
Format:	1U rack	2U rack	1U rack	1U rack	1U rack	1U rack	1U rack	Module	Module	Module
Synthesis:	S&S	S&S	S&S	S&S	S&S	S&S	S&S	S&S	S&S	S&S
Polyphony:	28	64	64	28	28	28	28	28	28	24
Multitimbrality:	8	16	32	8	8	8	8	16	16	16
Effects:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patches:	192	650	936	172	228	263	271	235	354	235
Audio Outs:	4	6	4	4	4	4	4	2	2	2
Sample RAM:	No	No	No	No	No	No	No	No	No	No
PSU Type:	Int	Int	Int	Int	Int	Int	Int	Ext	Ext	Ext
Display:	2x20 LCD	2x40 LCD	3-digit LED	3-digit LED	3-digit LED	3-digit LED	3-digit LED	2x16 LCD	2x16 LCD	3-digit LED
Computer I/f:	No	No	No	No	No	No	No	No	No	No
Card slot:	Yes	Yes	No	No	No	No	No	No	No	No
General MIDI:	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes
Distributor:	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK

Manufacturer	Roland	Roland	Roland	Roland	Roland	Roland	Roland	Solton	Solton	Studio Electronics
Synth:	RA95	SC7	SC33	SC50	SC55 ST	SC88	SD35	MS20	MS40	SE1
Price:	£869	£290	£470	£595	£365	£869	£785	£1199	£1499	£1526
SOS Review:	None	None	None	May 94	None	Sep 94	None	None	May 95	Jan 94
Format:	Module	Module	Half-rack	Half-rack	Module	Half-rack	Module	2U rack	Module	3U rack
Synthesis:	S&S	S&S	S&S	S&S	S&S	S&S	S&S	S&S	S&S	Analogue
Polyphony:	28	28	28	28	28	64	28	28	28	1
Multitimbrality:	16	16	16	16	16	32	16	16	16	1
Effects:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Patches:	249	134	175	235	364	934	256	396	396	99
Audio Outs:	2	2	2	2	2	2	2	4	4	1
Sample RAM:	No	No	No	No	No	No	No	Yes	Yes	No
PSU Type:	Ext	Ext	Ext	Ext	Ext	Int	Ext	Int	Int	Int
Display:	3-digit LED	None	Custom LCD	Custom LCD	None	Custom LCD	3-digit LED	2x40 LCD	2x40 LCD	4X20 LCD
Computer I/f:	No	Yes	No	Yes	Yes	Yes	No	No	No	No
Card slot:	No (drive)	No	No	No	No	No	No	No (drive)	No (drive)	No
General MIDI:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Distributor:	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Roland UK	Audio Awareness	Audio Awareness	MCMXCIX

Manufacturer	Technics	Waldorf	Wersi	Yamaha	Yamaha	Yamaha	Yamaha	Yamaha
Synth:	SX-WSA1R	Microwave	Pegasus	MU5	MU50	MU80	TG500	VL1M
Price:	£2199	£1099	TBC	£239	£429	£739	£799	£2349
SOS Review:	WSA1 Dec 95	Dec 89/Aug 95	None	Jun 95	Sep 95	Apr 95	Nov 92	VL1 Jul 94
Format:	3U rack	2U rack	3U rack	Pocket module	Half-rack	Half-rack	1U rack	3U rack
Synthesis:	Acoustic Modelling	Wavetable	S&S	S&S	S&S	S&S	S&S	Phys. Modelling
Polyphony:	64	8	54	28	32	64	64	2
Multitimbrality:	32	8	16	16	16	32	16	None
Effects:	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Patches:	532	64	512	136	759	750	384	128
Audio Outs:	4	6	2	1 stereo	2	2	6	2
Sample RAM:	No	No	No	No	No	No	Optional	No
PSU Type:	Int	Int	Int	Ext/battery	Ext	Ext	Int	Int
Display:	320x240 dot LCD	2x16 LCD	Large LCD	Custom LCD	Cust. LCD	Cust. LCD	2x24 LCD	240x64 dot LCD
Computer I/f:	No	No	No	Yes	Yes	Yes	No	No
Card slot:	No	Yes	No (drive)	No	No	No	Yes	No (drive)
General MIDI:	Yes	No	Yes	Yes	Yes	Yes	No	No
Distributor:	Technics	Turnkey	Audio Awareness	Yamaha-Kemble	Yamaha-Kemble	Yamaha-Kemble	Yamaha-Kemble	Yamaha-Kemble



Modules

Roland JV880: This respected module scores high on sound and programmability but loses a few points on multitimbrality. Used by SOS writer Nick Magnus for his series on creating analogue sounds with digital synths (Jan-Apr 94). Hosts Roland's synth expander boards.

Roland JV1080: Ups the stakes for the JV series on the spec front, offering 64-note polyphony and the ability to hold up to four expansion boards; a very solid performer.

Roland MGS64: Flagship of Roland's new Sound Expansion series, utilising Super Sound Canvas-type presets, lots of polyphony and multitimbrality — and editing facilities, unlike the rest of the series.

Roland MSE1: Sound Expansion module dedicated to orchestral strings (plus three synth basses!) and featuring Roland's RSS 3D processing.

Roland MOC1: Orchestral sound module provides everything for the budding arranger in an affordable box. 8-part multitimbrality might make creating convincing orchestras a bit demanding, however!

Roland MVS1: Vintage synth module from the company that originally brought you many of the featured vintage synths!

Roland MDC1: Dance sound module co-developed with a well-known sample CD producer.

Roland MT120: Keyboard-top module offers decent GM sound source with built-in MIDI file player, designed to be used with Roland's ism instructional software.

Roland MT200: As above, but with more sounds and better editing facilities.

Roland RA30: Auto-accompaniment/arranger machines with comprehensive GM sound source and SMF playback.

Roland RA95: More sophisticated version of the above.

Roland SC7: Cheapest Sound Canvas available lacks front-panel controls and display but makes a good companion for a computer, courtesy of its built-in interface.

Roland SC33: Mid-priced Sound Canvas lacks the sparkle of the all-singing, all-dancing SC88 but is nevertheless well-specified for the price.

Roland SC50: Another Sound Canvas variant, this time with built-in computer interface.

Roland SC55ST: New release, similar to above, but without front panel controls and so best suited to use with a computer.

Roland SC88: Definitely candidate for best GM sound module so far, though high price tag reflects this quality. Great collection of sounds and plenty of room for your own edits.

Roland SD35: Another GM sound source/MIDI file player variation!

Solton MS40: Auto-accompaniment/arranger module with decent GM sound source and SMF playback.

Solton MS20: Cheaper rackmount version of MS40 above.

Studio Electronics SE1: Minimoog clone in a rack, with circuitry copied faithfully from genuine article — except its tuning is 100% stable! Probably for the rich or enthusiast only.

Technics SX-WSA1R: Offering all the sonic power of the keyboard version, the SX-WSA1R loses only the sequencer. It does, however, retain the SMF playback facility.

Waldorf Microwave: This cult instrument offers real wavetable synthesis, and is unashamedly non-GM and non-imitative.

Wersi Pegasus: Module version of a sophisticated (speaker-equipped) home keyboard with some nice features, including touch-sensitive LCD screen, lots of polyphony, sequencing and disk drive.

Yamaha TG500: Module version of popular SY85 workstation. Lots of polyphony and, unusually for a module, a sample RAM option.

Yamaha MU5: Tiny, video-cassette sized GM module with built-in baby keyboard, OK sounds and good multitimbrality/polyphony for the price. You'll need some external effects with this one, as the sounds benefit greatly from a bit of reverb and there's none built in.

Yamaha MU50: Competitively-priced GM module with good effects, loads of presets, comprehensive MIDI control, and an audio input which allows playing along with the synth on another instrument.

Yamaha MU80: High-spec synth with comprehensive effects and an input which allows external sounds to be processed by the MU80's effects sections.

Yamaha VL1M: Rackmount version of VL1 keyboard.

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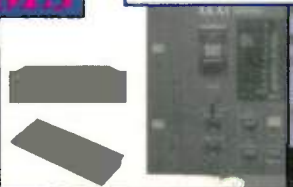
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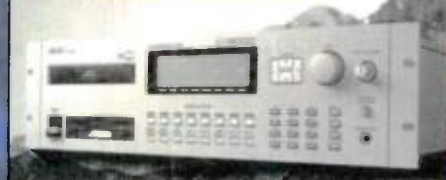


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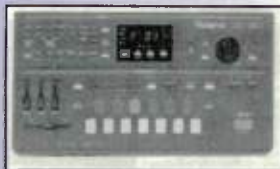
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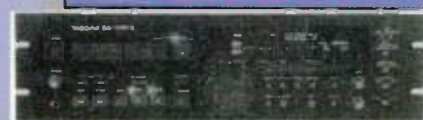


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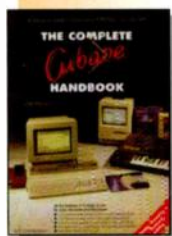
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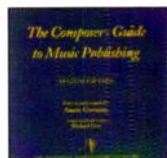
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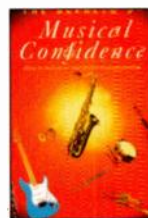
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Information on DAT service and repair for engineers and technicians, including: step by step instructions for regular maintenance and repair; detailed techniques for maintaining and adjusting tape transport and head alignment; complete how-to instructions of replacing the record/play head drum; plus specific service notes, by make and model.

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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.

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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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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.

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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.

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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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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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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

Ideal starter book for sampling novices.

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RECORDING

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!*

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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.

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SECOND EDITION

by Ken C. Pohlmann, Prominent American audio-engineer and writer on digital audio

'Here is an interesting, timely, well-written book in which everything you ever wanted to know about the compact disc and more is explained.'

Computer Music Journal.

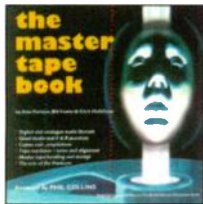
'compelling and fascinating reading, written by an expert with the knack of making complex explanations understandable.' *Image Technology.*

This is a new edition, in paperback, of Ken Pohlmann's classic survey of the compact disc world, *The Compact Disc: A Handbook of Theory and Use*, and celebrates the tenth birthday of possibly the most successful consumer electronics product ever introduced. The text of this new edition has been thoroughly overhauled to update the user on the latest technological advances and gives insights into new formats and applications. It remains a comprehensive and authoritative handbook by an acknowledged expert on digital audio and related topics.

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Alan Parsons, Bill Foster & Chris Hollebone
The definitive guide to the creation and management of audio master tapes. With 'Master Tapes' literally flying around the

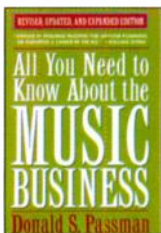
world being copied, cloned or re-cut for seemingly endless variations of compilation albums, it is terrifying to think that there is no standard set of procedures for labelling and maintaining master tapes. Until now, that is.

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MUSIC BUSINESS

ALL YOU NEED TO KNOW ABOUT THE MUSIC BUSINESS

NEW



by Donald S. Passman
This book is a must: the author manages a portfolio of high profile clients and teaches music business law at the University of Southern California, and has produced a clear overview of the music business. He starts at the beginning of your

career, with advice on choosing a manager, lawyer and agent, and moves through getting a record deal, songwriting and music publishing and finishes with details of copyright, mechanical royalties, songwriter deals, films and more. An exhaustive and entertaining read. 415 Pages.

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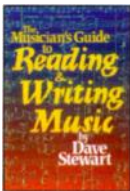
HOW TO PITCH AND PROMOTE YOUR SONGS

by Fred Koller

The title is self-explanatory: if you've got the songs, and you want someone to hear, publish and/or record them, then this book could save you a lot of grief. There's a lot of sensible information about the music biz in general, plus a few (American-biased) words about setting up as your own publishing business.

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Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

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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Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

THE WHITE BOOK INTERNATIONAL PRODUCTION DIRECTORY 1995



This is the latest edition of the essential source of contacts for artists, performers, venues, services and facilities associated with music, concerts, shows, festivals, film, TV, video, conferences, exhibitions and corporate hospitality - there's even a comprehensive international section.

The layout is logical and an index makes finding an easy task - altogether an indispensable 864 pages. The new edition once again comes with a complementary copy of *The Little White Book*, which distils the contents of the larger volume to a pocket-sized list of names and phone numbers.

CODE B259 £43.00
Postage: UK £4.75, Europe £8.50, R.O.W. £16.95

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

NETWORKING IN THE MUSIC BUSINESS



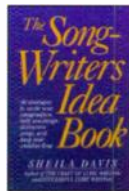
by Dan Kimpel

Think of this book as a popular psychology course for musicians. If you feel you could benefit from developing a positive attitude to getting ahead in your area of the music business, then *Networking* is for you. There's nothing like it for good, sensible advice: it's often not enough to have talent. To be successful, you'll need to persevere, have good 'people skills', and exercise good networking skills. Success depends on what you know, who you know, and perhaps most importantly, who knows you. An essential book, and a snip at £11.95. Hardback.

CODE B251 £11.95
Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

SONGWRITERS IDEA BOOK

by Sheila Davis



If you want a textbook, this is it: 250 pages of serious, intelligent insights into songwriting. Loads of good advice and a friendly tone make this a useful read to anyone, whether beginner or seasoned pro. The focus is firmly on lyrics rather than music, and the prominent references to poetry terminology shouldn't really be a surprise. Use Davis' 40 strategies and you could soon be 'designing distinctive songs'.

CODE B250 £9.95
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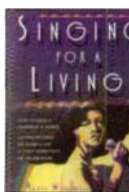
SHOWCASE/KEMPS INTERNATIONAL MUSIC BOOK 1995



The music industry equivalent of *Yellow Pages*. Nearly 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 new USA section.

CODE B192 £30.00
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

SINGING FOR A LIVING



by Marta Woodhull

The title says it all. If you're already a singer, this book gives you everything you need to know in order to exploit your talent further: looking after your voice and voice exercises, business advice and marketing and audience

interaction are all covered in this straightforward book.

CODE B252 £12.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

BEGINNING SONGWRITER'S ANSWER BOOK

by Paul Zolla

If you're just starting out as a songwriter to haven't progressed very far, perhaps you have questions about the art and business of songwriting that you can't find answers for. Chances are, they're covered in this book. Over 200 of the questions songwriters most often ask are answered in this book. There are 11 chapters, covering subjects such as lyrics, theory, song structure, collaboration, demos, publishing and the music business. Some answers - such as 'What makes a professional-sounding demo?' are actually mini-articles - and an index allows you to target subjects without wading through the text. A friendly, informative read.

CODE B253 £10.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

SONGWRITER'S WORKSHOP



Edited by Harvey Rachlin

If you want to work systematically at improving your songwriting skills, then try this book: it's divided into four individual 'lessons', each of which is backed up by audio material on cassette. This allows you to listen in the car or walk around with

your personal stereo and still absorb useful information. The four sections are: On Songwriting by Janis Ian (yes, the Janis Ian); Making Demos by John Barilla; Understanding MIDI by James Becher; and The Art of Pitching Songs by Teri Muench (ex-A&R director with RCA and publisher). Also included is an intro, a quick and breezy glossary and an index. Includes two cassettes.

CODE B260 £15.95
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

MUSIC BUSINESS AGREEMENTS

NEW



by Richard Bagshot

Written by a practising music business solicitor, 'Music Business Agreements' can be seen as a legal textbook for the UK music industry. Don't let the formal tone put you off: this book is a mine of information with reference to real-life problems and

examples, and a helpful question and answer appendix. Expensive, but invaluable. 522 Pages.

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Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

THE ARC MUSICIANS' DIRECTORY



The new Musicians' Directory from Arc Publishing aims to provide all things to all musicians: whatever your style of music, the comprehensive listings offer you the contacts you need, whether it's labels, studios, venues, music shops or management -

and that just scratches the surface of the dozens of topics covered by the book. Apart from being a directory proper, the Handbook also includes a selection of useful articles, including subjects such as how to be a session player (by SOS's very own Paul White), music publishing, releasing your own record, copyright protection, accounting, legal advice and more. The Musicians' Directory offers over 380 information-packed pages for little more the price of a new CD.

CODE B219 £14.99
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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.

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Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

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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Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

TG33 QUICK OPERATIONS

by Bobby Maestas

Instant access to Yamaha's neat little Vector Synthesis sound module. Loads of examples, well illustrated. 115 pages.

CODE B264 £8.95
Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

SONGWRITER'S YAMAHA RY30

by Dan Walker with Gregg Perry

A two-part work, the first part covering all operational aspects of the RY30 drum machine and the second uses the audio tape and musical examples to show what the RY30 is capable of, using the preset patterns to create a variety of classic tracks. 290 pages, two cassettes.

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Postage: UK £2.50, Europe £5.95, R.O.W. £9.95

YAMAHA SY55 GUIDE

by Bobby Maestas

A good helpful look at this arguably overlooked instrument; technicalities are explained in context of music throughout. 155 pages.

CODE B268 £9.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

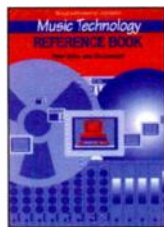
Remember: stocks are strictly limited, so order now to avoid disappointment. POSTAGE EXTRA.

SOS Book Shop

MIDI INFORMATION

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.

CODE B305 £12.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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.

CODE B273 £8.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

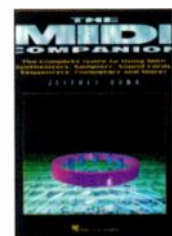
A BEGINNERS GUIDE TO MIDI

by R A Penfold

The title says it all: all aspects of MIDI are explained, and many common beginner's problems are discussed.

CODE B287 £4.95
Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

THE MIDI COMPANION



By Jeffrey Rona
A breezy run through MIDI that would suit the absolute beginner, this book is well-illustrated, clearly expressed and explains the technical bits in as close to non-technical language as the subject matter allows.

CODE B234 £9.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

MIDI: A COMPREHENSIVE INTRODUCTION

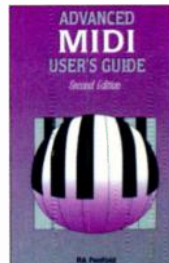
by Joseph Rothstein, Product Review Editor, Computer Music Journal
Series Editor: John Strawn

MIDI - Musical Instrument Digital Interface - is the data communications system which enables music equipment, computers and software from many different manufacturers to exchange information. Since its introduction in 1983 the impact of MIDI on the design and operation of synthesizers has been dramatic, yet to date, information about it has been scattered, but this book fills that gap, providing a practical guide for readers seeking a thorough discussion of the basic principles of MIDI.

Computer Music and Digital Audio Series
238 Pages, numerous figures 1992
0-19-816293-6 Hardback.

CODE B215 £25.00
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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.

CODE B152 £10.95
Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

MIDI SYSTEMS AND CONTROL



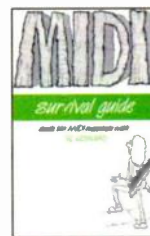
By Francis Rumsey.

This revised edition has been expanded in an number of topic areas, to provide even more comprehensive coverage of every area of MIDI. Contents include: an introduction to principles and terminology; MIDI timecode; librarians and editors; different

approaches to sequencer software design; practical systems design.

CODE B007AM £19.95
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

MIDI SURVIVAL GUIDE



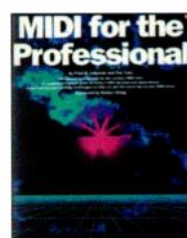
by Vic Lennard

Whether you're a beginner or a seasoned pro, the 'MIDI Survival Guide' shows you the way. No maths, no MIDI theory - just practical advice on starting up, setting up and ending up with a working MIDI system. Contains over 40 cabling diagrams, and how to: connect synths, sound

modules, sequencers, drum machines and multitracks; how to budget and buy secondhand; using switch, thru and merger boxes; transfer songs between different sequencers, get the best out of general MIDI, and understand MIDI implementation charts.

CODE B196 £6.95
Postage: UK £1.50, Europe £3.95, R.O.W. £5.50

MIDI 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

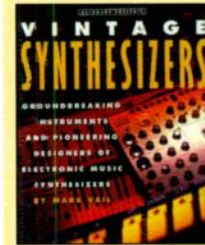
299 page book couldn't be better.
CODE B227 £11.95
Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

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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Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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.

CODE B096 ONLY £5.99
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

KEYFAX 5



by Julian Colbeck

The latest instalment in the intrepid Keyfax series offers potted specifications and concise mini-overviews of digital pianos, home keyboards, General MIDI modules, stage organs and computer sound cards. Look out for company backgrounders, contact details and cross-references to earlier Keyfaxes.

CODE B231 £12.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

THE MUSEUM OF SYNTHESIZER TECHNOLOGY



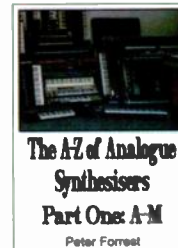
by Martin J Neucomb

If you liked our feature on the opening of the Museum of Synthesizer Technology in October, but haven't got the time or the cash to visit in person, then the next best thing has to be the museum's guide book. This 118 book is printed on glossy paper and

contains full-colour pictures of a large selection of exhibits from the museum, together with some descriptive text and company backgrounders. The text reads a little like a fanzine, but the hardcore synth fanatic will want this book for the pictures. In these pages you will glimpse instruments that you are unlikely ever to experience in the flesh: an exceedingly large Roland System 100 modular set-up, an EMS Synthi 100, an ARP 2500, a large Emu modular and what must be the comprehensive collection of Moog equipment anywhere. The Museum of Synthesizer Technology book is yours for £24.95, plus postage.

CODE B291 £16.95
Postage: UK £2.50, Europe £6.95, R.O.W. £9.50

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.

CODE B294 £14.00
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

DRUM MACHINES

DRUM PROGRAMMING — A Complete Guide to Program and Think Like a Drummer



By Ray F Badness

Coming from a publisher that has a good range of real drum texts, we'd expect this book to be a little different. And it is: it gives plenty of insights into how real drummers approach their job, and there are plenty of example patterns to help translate these

ideas to a drum machine.

CODE B235 £6.95
Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

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.

CODE B110 £16.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

RHYTHMICAL GROOVES & PATTERNS

By Siegfried Hoffman

Looks at how drummers compose rhythm patterns to add emotion, swing or groove. Contains examples for you to programme into your drum machine or sequencer.

CODE B115 £11.50
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

260 DRUM MACHINE PATTERNS

By Rene-Pierre Bardet

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Takes concepts behind Music In Sequence and applies them to all-time favourite classical music scores. Authors show how to make fresh, exciting interpretations of classic scores. Info on reverb and effects, interpreting scores, editing synth voices. Highly creative—an ideal workbook for the music classroom. Covers Medieval, Renaissance dance music, Bach's Toccata in D minor; Vivaldi, Purcell, Handel; opera excerpts from Rossini, Verdi, Borodin; Mozart, Schubert, Tchaikovsky, music from Carmina Burana; Debussy, Satie, Steve Reich's Piano Phase and more. Highly recommended.

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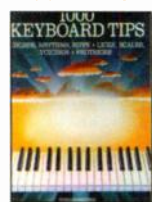
MUSIC IN SEQUENCE

by William Lloyd & Paul Terry

Still one of our best-selling books. Easy to follow, practical guide to making real use of your sequencer, written by people who really understand music and how to create it using today's technology. This brilliant, unique book carries the SOS seal of approval.

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1000 KEYBOARD TIPS



by J Dreksler & Q Harle

The hi-tech musician's guide to the basics of music, scales, chords and harmonies. 256 pages covering chord relationships, improvisation, suggested drum machine patterns, plus comprehensive chord table. Too good to miss!

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SOLID GROOVES

By Dieter Peterit & 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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Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

COMPLETE KEYBOARD CHORDS



by Warren Nunes & Steve Doherty

A handy guide to all the keyboard chords you wish you could play - from simple to complex! Includes exercises designed to help their use. Explains chord symbols and music notation.

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COMPUTERS & MUSIC

MULTIMEDIA ON THE PC



By Ian R Sinclair

If you want to know what multimedia is and what it can offer you, then this is the book for you. Much of the information is general enough for everybody, but as the title suggests, the book is aimed at PC users. The

book explains the installation and use of a CD ROM drive and a sound card and covers all key concepts behind multimedia. As an added incentive, if you buy this book, you can send away for a free copy of *Picturbook*, a multimedia authoring package.

CODE B272 £11.95
Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

COMPUTERS AND MUSICAL STYLE

by David Cope, Professor of Music, University of California, Santa Cruz
Series Editor: John Strawn

Professor Cope provides a step-by-step description of the way in which he analyses and replicates musical style by computer. He demonstrates his results in the style of composers such as Bach, Mozart, and Prokofiev with compositions which sound entirely new and yet somehow familiar. Musicologists, theorists, and composers will find this work to be both ground breaking in its quality and thoroughness, and composers may also find a method to assist them with their own compositional processes.

Computer Music and Digital Audio Series
262 Pages, music examples 1992
0-19-816274-X Hardback.

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Postage: UK £3.95, Europe £7.50, R.O.W. £14.50

MULTIMEDIA ON YOUR PC

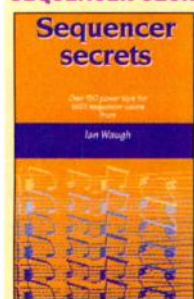


by Francis Botto

A practical guide to multimedia specifically on the PC. Botto's book is once aimed at users, educators and developers, and comprehensively discusses the hardware required to take advantage of multimedia in a PC environment as well as the hardware and software necessary in a multimedia authoring situation. The book is provided with comprehensive appendices covering a glossary and comprehensive product and manufacturer lists.

CODE B296 £10.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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

COMPUTERS AND MUSIC

By R A Penfold

2nd edition. Covers hardware and software applications. Excellent glossary of jargon, and now bang up to date.

CODE B098 £8.95
Postage: UK £1.50, Europe £4.95, R.O.W. £7.50

MULTIMEDIA, CD ROM & COMPACT DISK - a guide for users and developers (2nd Edition)



by Francis Botto

Practical guide to CD ROM and interactive multimedia aimed at both users and developers. Virtually all platforms and technologies are covered in this book - CD-I, CD ROM, CDTV, Macs, PC clones etc - and a comprehensive range of appendices including

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.

CODE B295 £14.95
Postage: UK £1.95, Europe £5.50, R.O.W. £8.50

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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CONCERT SOUND AND LIGHTING SYSTEMS

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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Postage: UK £1.95, Europe £4.95, R.O.W. £7.50

THE FOCAL GUIDE TO SAFETY IN LIVE PERFORMANCE

Edited by George Thompson

This book provides an authoritative look at safety matters for workers in the live entertainment industry. It is edited by the Standards Officer of PLASA (Professional Lighting and Sound Association), and provides good solid information in an easily digestible, well-illustrated form. Topics covered include audience and crowd control, fire safety precautions and engineering, electrical safety, laser safety, sound levels and noise control and much more.

CODE B271 £19.95
Postage: UK £2.50, Europe £5.50, R.O.W. £8.50

LOUDSPEAKERS FOR MUSICIANS

CODE B284 £3.95
Postage: UK £1.50, Europe £3.95, R.O.W. £4.50

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-impedance matching, 100V systems, transmission lines and how to install inductive hearing aid loops. At the heart of the book is the Line-Source Ceiling Array, a system that is claimed to improve clarity, even coverage and reduce feedback. Full step-by-step construction and installation details are given.

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
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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

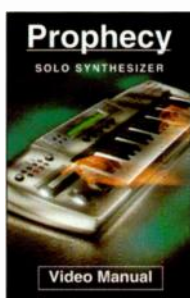
by R A Penfold

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

KORG PROPHECY VIDEO MANUAL

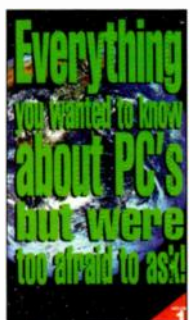


Prophecy
SOLO SYNTHESIZER
Written by Phil MacDonald
Korg's new Prophecy Synthesizer now has its own video manual!
The video covers all the major features over 6 sections, with lots of examples of the amazing effects that are available using the 'log' and 'mod' wheels.

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

EVERYTHING YOU WANTED TO KNOW ABOUT PCs BUT WERE 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

ROLAND TDE-7K DRUM SYSTEM

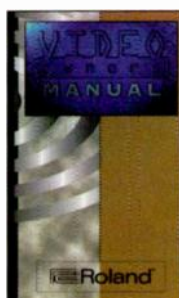


TDE-7K
COMPACT DRUM SYSTEM
video manual
Roland's TDE-7K Compact Drum System comprises the TD-7 Percussion Sound Module, MDY-7 Cymbal Pad Holder, FD-7 Hi-Hat Control Pedal, MDS-7 Drum System Stand, PD-7 Drum Pads & KD-7 Kick trigger.

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 multi-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

ROLAND MS-1 VIDEO MANUAL



MANUAL
This video manual has been produced by Roland Corporation U.S. 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

BOSS DR-5 DRUM MACHINE

Presented by Nick Cooper (Roland UK Product Specialist) this video covers all the functions of the DR-5 in a clear and concise manner. Produced in association with Roland UK & USA. By using the information gathered from Roland 'helplines', particular attention has been paid to the areas that many users find most difficult in. This makes it of interest to beginners and experienced users alike. Nick imparts the information with ease and a professional manner, making it enjoyable and entertaining.

CODE V043 £19.99
Running time: 57 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

KORG AX30G TONEWORKS VIDEO MANUAL



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 unit 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.

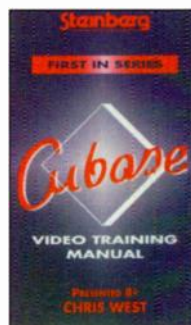
CODE V031 £34.99
Running time: 88 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

THE ART OF SEQUENCING

Composer Don Muro presents six lessons that demonstrate how to create a multitrack sequence, how to correct wrong notes, how to correct rhythmic errors, how to correct dynamics, how to change synth programs, and how to change tempos. The tape is not dedicated to any one sequencing package - the information is valid no matter which sequencer you use.

CODE V030 £30.95
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: 1 hour 30 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £3.95, 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: 87 minutes
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

ORDER NOW! 01480 461244

YAMAHA PSR6000 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.

ORDER 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 indispensable 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

ROLAND JV-1080 VIDEO MANUAL



NEW
Roland's amazing JV-1080 synthesizer module is covered in detail in this informative video. Presented by Tim Walter 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

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

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 Overview, 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, Extract 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

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 Untitor 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 30 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

PERFORMER 5.0 BASICS **NEW**

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

ROLAND JV-90 SYNTH **NEW**



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

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

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

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 instrument 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 **£15.95**

Running time: 50 minutes Format: VHS (PAL)
Postage: UK £1.75, Europe £4.95, R.O.W. £6.95

CUBASE 2.6 FOR WINDOWS BASICS **NEW**



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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 instrument's features and operating procedures, helping you to greatly expand your dexterity and creativity across the whole range of this world-beating instrument.

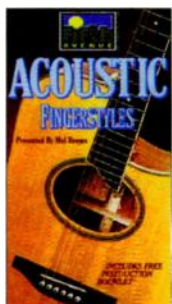
Comes with a FREE exclusive custom library of fabulous new M1 sounds on Atari format floppy disk (100 Programs, 100 Combinations) created by ABWH/Yes programmer Chris Macleod.

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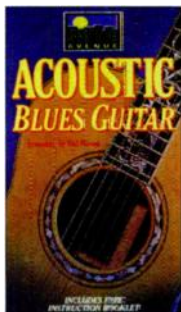
ACOUSTIC FINGERSTYLES NEW



Presented by Mel Reeves
In this video there are 5 major instrumental studies to work through including country, classical and blues. Each style is broken down into small sections allowing you to learn more quickly and efficiently. Each piece is demanding, but great fun to play. The final section looks at styles and techniques used by players such as R.E.M., The Eagles, Sheryl Crow and Paul Simon, and provides an insight into creating new and interesting fingerstyles of your own.

CODE V059 £12.99
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ACOUSTIC BLUES GUITAR NEW



Presented by Mel Reeves
Whether you can already play fingerstyle guitar, or are simply familiar with basic chords, this programme will show you all of the necessary techniques to play great blues guitar. All of the technical aspects are explained in the clearest possible way before getting down to the real business of

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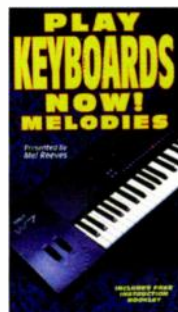


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An up-to-date video/booklet that gets to the heart of modern keyboard playing with no need to read music! All you need to be able to create pop, rock and even jazz chord accompaniments using major, minor, seventh, sus 4th and added 9th chords. Learn arpeggios, random arpeggios, chord

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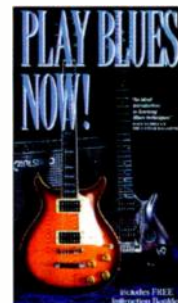


Presented by Mel Reeves
This programme will not only teach you note reading, rhythm, rests, ties and how to move up and down the keyboard with ease, but will also teach you 6 complete melodies familiar to lovers of rock, pop and classical music. In addition, there is a further look at improvising,

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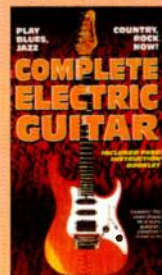
A guide to hard rock/heavy metal techniques for guitarists of all levels. The programme covers RHYTHM, SOLOING, and TECHNIQUE. All of the techniques, solos, etc are clearly demonstrated

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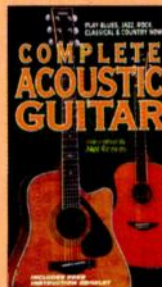


Presented by Mel Reeves
Learn how to create solos and rhythm parts in any style! The programme covers ROCK 'n' ROLL, BLUES, JAZZ, COUNTRY, ROCK and FUSION and much more. Plus the clearest possible guide to chord

and scale construction, tonal centres and working out parts for yourself. Includes free construction booklet.

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COMPLETE ACOUSTIC GUITAR NEW



Presented by Mel Reeves
Whether you only know a few chords, or are already proficient, this easy-to-follow programme will show you all of the main guitar styles, as performed on the acoustic guitar. As well as learning tips and 'tricks of the

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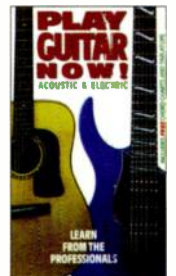
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This is the ideal volume one guide to the use of home recording equipment. From the set up of basic 4-track cassette machines to sub-mixing Mel Reeves uses straight-forward language to talk to fellow musicians about the methods used to get the sounds in their heads onto tape.

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LEVEL ONE



This well presented video explains how to set up and operate a simple cassette-based multitrack home studio. It clarifies all the basic terminology and demonstrates the recording of a song from beginning to end, covering how to record

guitars, keyboards, vocals and drum machines; which microphones to choose; how to patch in effects units and use them well; what makes a good arrangement; what makes a good mix; plus what to master on to and why. Full of professional tips and clear examples, this superb video offers the musician with no recording experience a fast route to successful operation of a simple home studio.

CODE V005 £24.95
Running time: 1 hour 10 minutes
Format: VHS(PAL) HiFi Stereo
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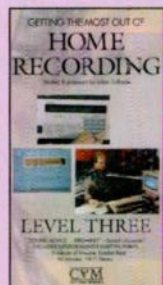


This is, in our opinion, the best ever guide to the equipment and skills needed to produce high quality results from a home studio.

Full of clear examples and graphic information, the video majors on effects and how to use them well. It also covers the do's and don'ts of track bouncing; microphones and mic techniques for different applications; getting the most out of multi effects units; plus an analysis of guitar effects with top session guitarist Milton MacDonald and an enlightening interview with ace producer Alan Parsons. Writer/presenter Julian Colbeck packs the programme with professional tips, allowing musicians of all kinds to get the most out of their home studio.

CODE V006 £24.95
Running time: 1 hour 45 minutes
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LEVEL THREE



This video is packed with information and professional tips on advanced MIDI applications in the home studio, including interfacing with sequencers, which sync code is best for which application and why. Hit producer Martyn Phillips (Erasure,

London Beat) discusses modern recording techniques, and top programmer Paul Wiffen examines the opportunities and benefits offered by hard disk recording. It offers practical advice on sampling - how to save time and tracks; plus professional tips on advanced arranging and mixing techniques, including spectrum mixing.

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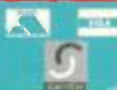
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A30, A80, CR78, CR8000, D10, D110, D20, D50, D550, D70, DEP3, DEP5, GP16, JD800, JP4, JP6, JP8, JP8 Midi, JSQ60, Juno 1, Juno 106, Juno 2, Juno 6, Juno 60, JX1, JX10, JX3P, JX8P, M240, MC202, MC300, MC4, MC4 B, MC50, MC500, MC500 II, MKS10, MKS100, MKS20, MKS30, MKS50, MKS70, MKS80, MPG80, MSQ700, MT32, MV30, Octapad, Octapad II, P330, PG1000, PG200, PG300, PG800, PRO E, R5, R8, R8M, RD1000, RD250S, RD300, RD300S, RE201, RE301, RE501, RS09, S10, S220, S330, S50, S550, S750, SBX80, SDE1000, SDE2000, SDE3000, SH09, SH1000, SH101, SH2, SH2000, SH3A, SH5, SH7, SRV2000, SVC350, System 100, System 100M, TB303, TR505, TR606, TR626, TR707, TR727, TR808, TR808 Midi, TR909, U110, U20, U220, VK9, W30

Seck

12:8:2, 18:8:2

Sequential

Drumtrax, Multitrak, Pro1, Prophet 2000, Prophet 5, Prophet 600, Prophet VS, Sequencer, Sixtrak

Sony

DTC1000ES

Steinberg

SMP24, Timelock

T. C. Electronic

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Tascam

244, 38, 488, 644, 688, MM1, MSR16, MSR24, Porta 05, TSR8

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XRI

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Yamaha

CP70, CP80, CS01, CS10, CS15, CS20 M, CS30, CS40 M, CS5, CS50, CS60, CS70 M, CS80, D1500, DMP7, DX100, DX11, DX21, DX27, DX7, DX7 II, DX7 IIFD, DX7 S, GC2020, KX1, KX5, KX88, MDF1, MEP4, MJC8, MT2X, MT3X, NS10M, QX1, QX21, QX3, QX5, QX5 FD, QY10, R1000, Rev 7, REX50, RX11, RX120, RX15, RX17, RX21, RX21L, RX5, RX7, RX8, RY30, SPX 1000, SPX 90, SPX 90 II, SPX 900, SY22, SY35, SY55, SY77, SY99, TG33, TG500, TG55, TG77, TX16W, TX7, TX802, TX816, TX81Z, V50.

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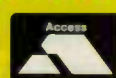
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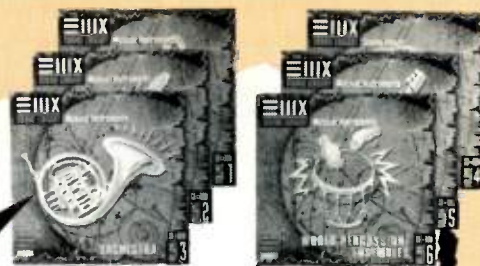
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One of the largest areas of growth in the software industry most recently has been the update. When you bought a program in the past, you'd use it for a while, get one or two free bug-fixes, and then a few years later a brand new version, positively

complicated to explain here), undergoing a complete overhaul of the user interface, whereas a spreadsheet and presentation program from the same publisher underwent a similar transmogrification, but the changes were for the worst — neat, useful little features disappeared to be replaced by subtly different, less accessible ones.

sounding OFF

Regular SOS contributor MARTIN RUSS returns to the back page with some rabid thoughts on software updates.

bursting with additional features and facilities, might be released — and at an affordable price for existing loyal owners. Perhaps I'm getting cynical, but this isn't quite how things appear to be now...

Major new versions of software seem to be released every year. Some manufacturers have even started calling their software by the year number: *SuperBase 95*, *Windows 95*, and so on. Just in case you thought that this was a one-off publicity stunt, Microsoft have apparently already mentioned the imminent release of *Windows 96*. In fact, numbering systems have generally got out of control: Apple's System 7 was rapidly followed by 7.1, which had enough differences to make you wonder why 7 was ever released at all, and more extras and add-ons followed with System 7.5. *Windows 3.0* was replaced

Conversely, some software manufacturers implement a reasonably sensible numbering system, but use big number changes for minor additions. *Clarisworks 2.1* changed to version 3.0 in 1995, but as a long-time user I was hard pressed to find the differences that warranted the launch of this version — there's a word count facility and some automated helpers that always seem to crash, but very little else is new. Of course, version 4.0 of *Clarisworks* is due out soon: about a year after version 3.0. *Clarisworks* is an excellent program, and I have no gripes with its performance, it's just that upgrading it so often for such minor changes makes me wonder what happened to the free 2.2 upgrade, which is what version 3.0 feels like it ought to have been.

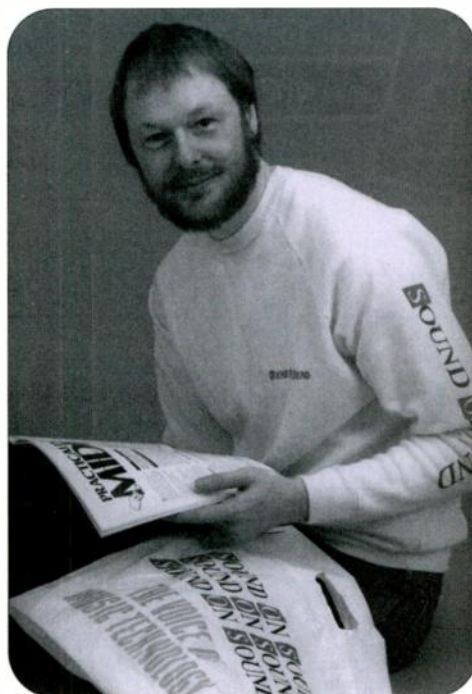
This brings me to the vexed question of upgrade costs. I must be getting old, because I can remember when part of the huge cost of software was justified by including free support and free upgrades. You could ring the manufacturer up to ask them questions (and expect answers), and every so often you would get a disk through the post with the latest version on it. How times have changed! Nowadays you have to pay for support (the more you pay, the shorter the length of time you wait for an answer), and upgrades can cost anything from £40 up to several hundred — I've bought whole programs for £40 in the past!

You might be wondering why people still buy software upgrades if the changes are likely to be minimal, and the cost is out of proportion to the new facilities. The answer lies in that expensive support that you now pay for. If you have trouble with your software but are not running the most up-to-date version, the initial advice is usually to upgrade and see if the problem goes away. Sometimes upgrading one piece of software has a ripple effect on everything else. For example, the Mac's System 6 to System 7 transition rendered some older software a bit unstable, whilst *Windows 95* runs *Office 95* — a completely new piece of software, released just after *Office 4.3*.

Just because I've gone easy on the music software publishers and not mentioned anything specific, doesn't mean that I don't know who is guilty of making the most of upgrades there too!

Finally, a quick mention for some software that is getting it right. Opcode's *Max 3.0* may look as if it has just acquired a new object or two, but it has actually had the timing system completely reworked. It now incorporates a very sophisticated timeline editor, which has so many creative possibilities that it makes my head spin — and considering the cost of the full version, the upgrade is reasonably priced too!

SOS



Martin Russ sporting vintage 1985 SOS regalia.

with 3.1, and again there were huge differences in the performance and facilities of the two products. Just to confuse matters even further, *Windows 3.11* is actually a completely different product, designed to be used by groups of people rather than in isolation. Other examples include a word processor, which changed from version 2.0 to 6.0 (for reasons which are too

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