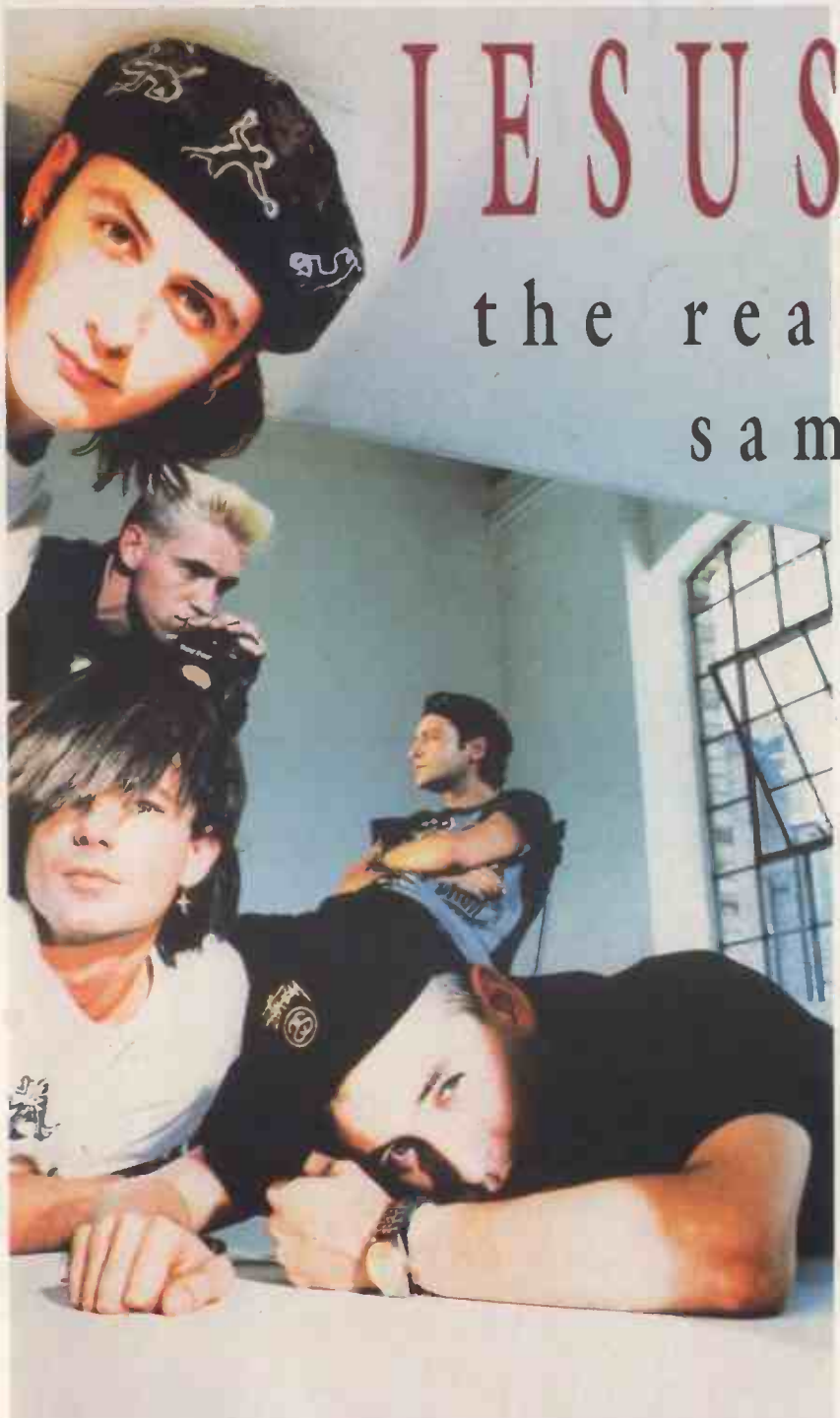
Music Technology

January 1990
£1.50



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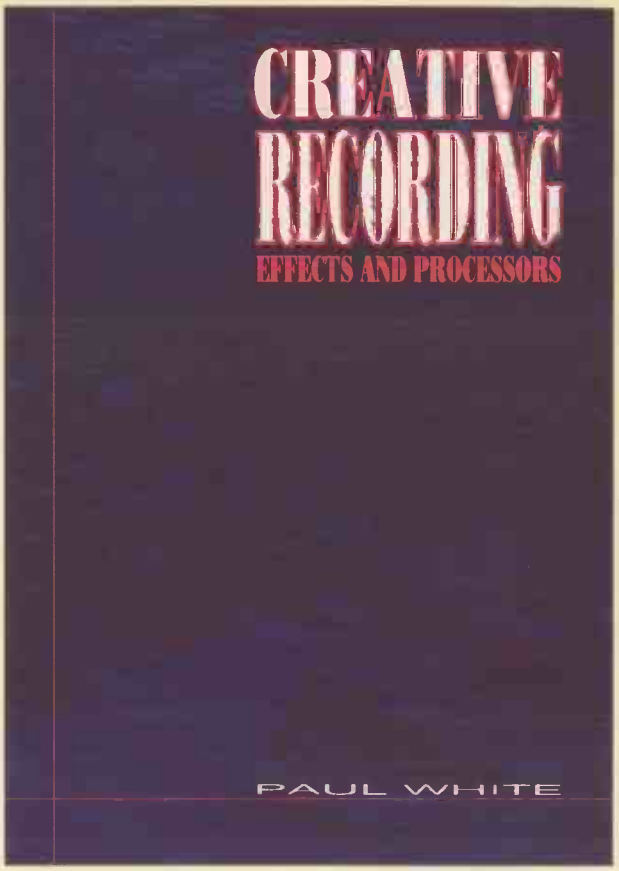

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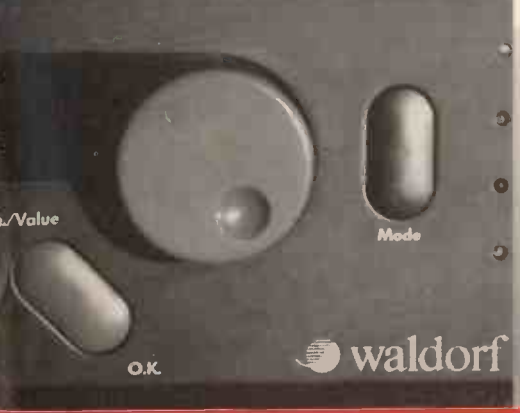

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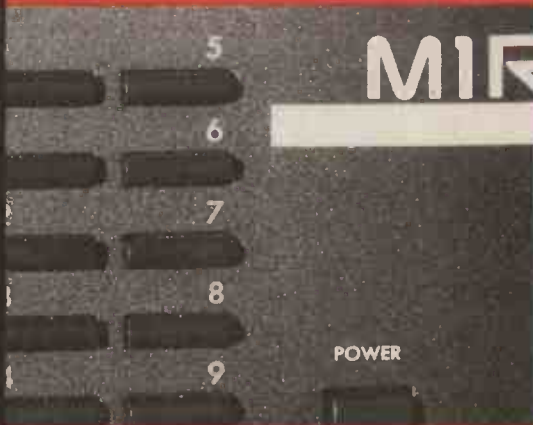

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editorial

MODERN TIMES

THE END OF the '80s; the end of a decade; the end of an era. During the '80s, synthesisers have evolved from being the exclusive province of pro musicians and academics to being an integral part of popular music culture. The '80s have seen the cost of electronic musical instruments fall dramatically; they've seen revolutionary instruments change the face (or the sound, at least) of contemporary music, only to give way to the next technical revolution; they've seen sampling turn music and the copyright laws on their heads; they've seen personal computers dramatically change the way people write and record music; and they've seen machine-made music invade the British pop charts in two totally different forms.

The first year of the decade also saw the birth of a magazine called *Electronics & Music Maker* - a magazine which was to become the first "electronic musicians'" magazine, and quickly establish itself as the leading authority on hi-tech musical and recording equipment, and the music it helps to make. Today that magazine is called *Music Technology*, and it is still the only magazine working hand-in-hand with musicians, producers and engineers to shape the music of the future.

SO WHAT OF the future? This is the first 1990s edition of *MT*, yet its contents aren't wildly different from the last edition of the '80s - what can we hope to be reading about over the next ten years? If I knew, I'd be a rich man, but there are certain trends which give a good indication of part of the shape of things to come.

It's now obvious that we can't expect a technological revolution every other month - the number of revamped and repackaged instuments we've seen recently are proof of that. Instead we'll be watching the steady evolution of technology: an exponential development growth curve.

Computer applications are growing both in sophistication and popularity. From a useful piece of hardware that could be used for a variety of applications, the personal computer has become the heart of many music systems and is handling everything from patch editing to mix automation. While the 1Meg Atari ST is currently the most popular musicians' computer, we're going to see a lot of musicians using more memory and multi-program environments in order to make all this software simultaneously accessible. Looking slightly longer-term, the ST is going to have to give way to a more powerful machine capable of true multitasking - the Acorn Archimedes? As yet, nobody knows. . .

And those home MIDI studios you're presently pioneering are going to be changing drastically: at present most of them are audio studios, but I expect many of you will be working with video before too long. Once you've assembled your audio suite, you'll find most of the elements of a modest A/V suite are already available to you. Almost all serious sequencing software is designed with SMPTE code in mind, and from there it will be a small step to incorporate a TV set, a domestic video recorder and a little more hardware. . .

The next decade is sure to give us quite a ride on the wave of developing technology. It may well seem frightening at times, but it's only really terrifying if you try to get off. ***Tg***

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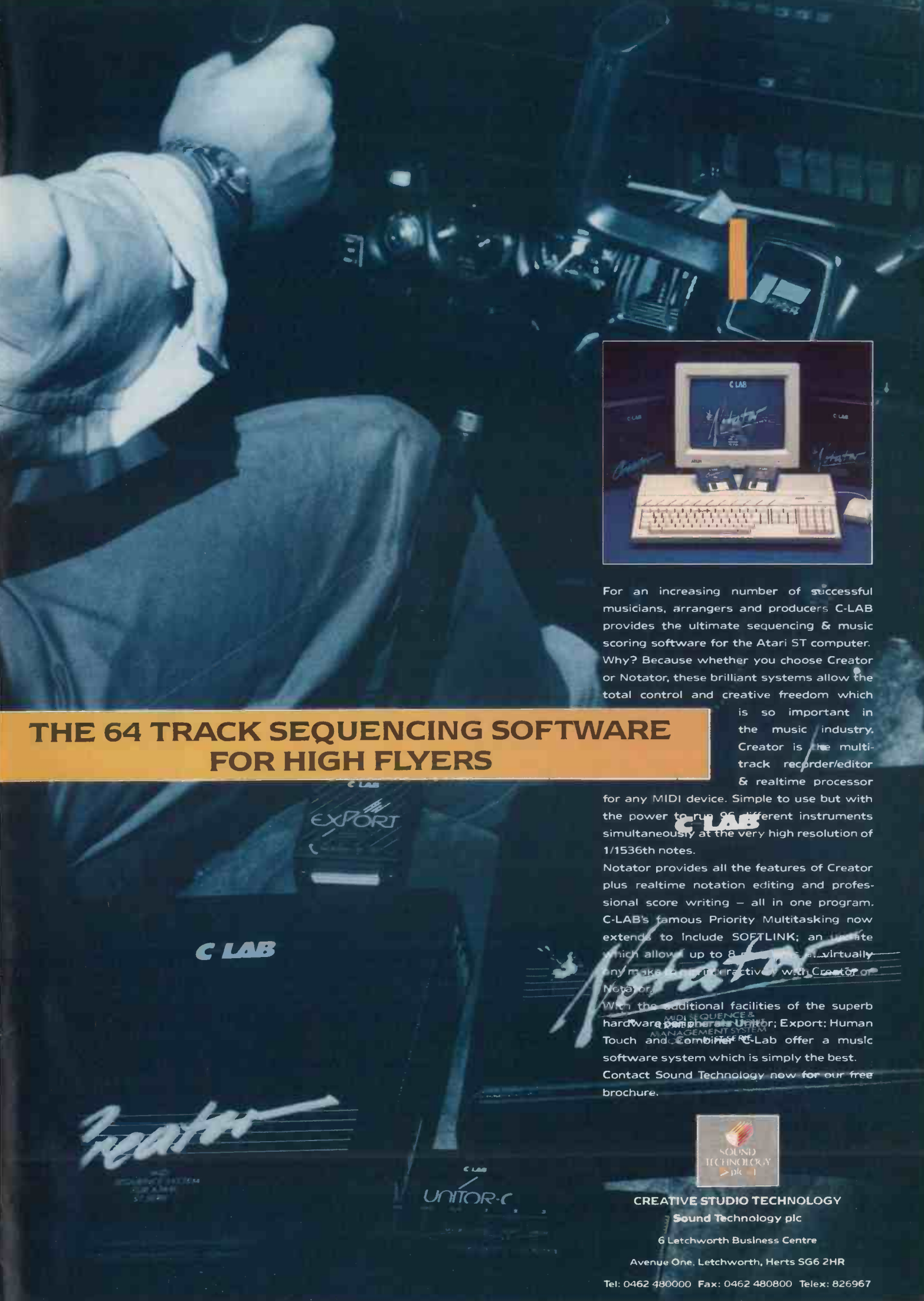

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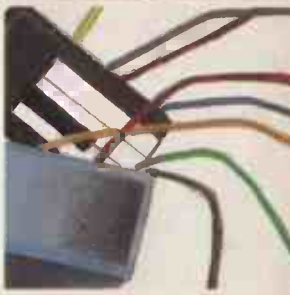
Long awaited and long overdue, the SY77 is Yamaha's real successor to the DX7; it combines advanced FM synthesis, AWM sound modelling, digital filtering and musical usefulness. Innovation with Simon Trask.

ALESIS DATAFILER 58
The latest MIDI data recorder to appear is the Alesis Datafiler SysEx recorder, which allows you to record system exclusive info direct to disk. Filing with Vic Lennard.



VOLUME 4 NUMBER 2 JANUARY 1990

WALDORF MICROWAVE 64

From the ashes of the classic PPG Wave synthesisers rises the Microwave - a synth expander that combines the unique qualities of PPG's wavetables with late '80s technology. Cooking with Simon Trask.

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Stereo imaging has come on a long way from simply panning instruments between two speakers to create the illusion of a band on stage. Ernie Tello looks into state-of-the-art sound processing and what it can do for music.

EQUAL RIGHTS

I bet you didn't know that Digitech (of signal processor fame) are based in Salt Lake City, USA - home, incidentally, of the Mormon religion. I bet you also didn't know that Digitech have introduced three new programmable graphic equalisers, all offering 99 memory locations, standard ISO frequency centres, a security lock-out system (?) and plus or minus 12dB of cut or boost. So what, you might think, it's just another EQ. But in a startling new development, this one's got the dreaded MIDI.

MIDI is steadily coming to be regarded as highly desirable in a piece of studio equipment, and Digitech's equalisers offer independent MIDI access to each channel. The 28-band MEQ28 Mono, one-third octave graphic is recommended for stage, studio and installation purposes, while the MEQ14 stereo, two-thirds octave EQ is suitable for stage and studio use. The top-of-the-range MEQ7, four-channel one and a third octave graphic is recommended for stage work, particularly in conjunction with keyboards.

More info on the above equalisers from UK Distributor John Hornby Skewes, Salem House, Garforth, Leeds LS25 1PX, Tel: (0532) 865381, or Trevor Cash at Trevor Cash International, 1 John Oliver Buildings, Wood Street, Barnet, Herts EN5 4BS. Tel: 01-449 5566. ***Dp***

PCS OF THE ACTION

British Company PC Services have a range of MIDI peripherals at very tasty prices;

First up, if you're lucky enough to have an Apple Mac, the PCS Mac MIDI Interface is available for the modest sum of £69.95. Full programming information is provided with the interface, as well as general information on MIDI. Example programs in Turbo Pascal are given on a disk, and the interface has one In, one Thru and two Outs.

The PCS PC interface costs £89, and is provided with programming and MIDI information, as well as a MIDI controller program that includes the following features: Patch Librarian for Yamaha DX7/DX21/QX21 and Roland MT32; Yamaha DX7/DX21 and Roland MT32 voice editor; real-time play and record. The interface has one MIDI In, one Thru and two Outs.

PCS also offer an Amiga interface that will run Amiga software and which has one MIDI In, one Thru and two Outs.

The PCS MIDI Thru box, selling for £34.95, has one MIDI In socket and six MIDI Out ports, and can be run from a PP3 9V battery (not supplied), or a DC power adapter. If you prefer, a separate mains power adapter is available from PCS at a price of £6.95.

Finally, the PCS MIDI Switch box switches one MIDI connector to any one of four connectors on the other side. The connections are reversible and can be either In to Out or Out to In. This enables MIDI devices to remain connected to a system and be switched in and out without constantly plugging and unplugging cables (and we all know how vexing that can be, don't we boys and girls?). The switch box doesn't require any power supply. MIDI leads can also be had from PCS at a cost of £1.75 for a 1.2 metre lead.

All the above can be obtained from PC Services, 40 Rowden Road, Beckenham, Kent BR3 4NA. Tel: 01-658 7251. Prices include VAT, but please add £1.50 to orders under £25 for post and packing. *Dp*

FACTORY SAMPLES FOR S1000

A couple of months ago we mentioned sampling bods Hamish Hutchison and Jason Creasey on these pages, with news of their "Samples to Spec" service, which they later called The Engine Factory.

Following some success in this venture, The Engine Factory are making an addition to the services they can offer, in the form of a comprehensive 16-bit stereo library for the Akai S1000 sampler. The library will be offered on 45Mb removable hard disk cartridge. This means that sounds are readily accessed in large numbers, and can be changed and re-saved easily to the user's own requirements, unlike sounds on CD-ROM.

Sound banks provided include drums, percussion, strings, brass, woodwind, synths, piano and FX, plus several workstation banks for those with a leaning towards sequencers.

The library is available now and costs £170 excluding VAT, and libraries for the EIII and Emax II formats will be released in the New Year.

More information from Hamish Hutchison of the Engine Factory, at 11 Rectory Green, Beckenham, Kent BR3 4HX. Tel: 01-650 1033. ***Dp***

BELOW THE BASS

The JBL Control 1 monitor has been one of the small studio standard monitors for quite some time. However, the size of the Control 1 has meant, as with all small monitors, that there are limitations on low-frequency reproduction. JBL have taken steps to remedy this situation with their new SB1 Sub-bass unit. The SB1 features JBL's recently-developed "Triple Chamber Band Pass Technology" (pardon?), and incorporates no less than four bass drivers. The unit doesn't require a further crossover or power amplifier and only one is required for a stereo system. The SB1 retails for £179 including VAT.

JBL have also introduced a similar unit, the SB5, for their popular Control 5 monitors, which is priced at £239 inlcuding VAT.

More information from Harman UK, at Mill Street, Slough, Berks SL2 5DD. Tel: (0753) 76911. ***Dp***

LIGHT ENTERTAINMENT

New from the cuddly chaps at MCM is CD-ROM support for the Akai S1000 with the release of *Lightware Volume 1*, the first CD-ROM disc of sounds for the S1000. *Lightware* contains 65 fully-engineered acoustic instrument volumes and over 1500 programs.

The InVision disc contains an extensive assortment of acoustic instruments, including String Bass, Orchestral Hand Bells, Concert Cymbals, Solo Flute, Acoustic Guitar, Harps, Trumpet, Grand Piano, Marimba, Tympani, Saxophone, Violin, Viola, Cello and Male Vocals. It comes with a CD-ROM caddy and a complete sound listing for reference. Note that the Lightware CD-ROM must be used in conjunction with V2.0 software or higher for the S1000. The price of the CD-ROM is £299 including VAT, and further volumes will be released soon.

Also available from MCM is the Diki Devices CD-ROM player, which can be used with the Lightware CD-ROM. It's a full SCSI drive, can be rackmounted and costs £999 including VAT.

For more details, contact MCMXCIX, 9 Hatton Street, London NW8. Tel: 01-724 4104. ***Dp***

IN THE CLUB

The Club Studios, the London Specialist Dance Recording Studio, has started production courses for DJs and rappers who would like to know all about recording and producing.

The courses will explain all the techniques related to dance music and will help them in choosing the right studios for their projects.

One special feature of the monthly courses is that students will be recording their own material as part of the course itself, so they'll come out with a mastered track into the bargain.

Details about the courses from The Club Studios on 01-250 1910. *Dp*

CLASSICS NOUVEAU

Digital Music Archives are a company about to test the water in the unusual area of sequenced classics. Set up by Richard Gonski (conductor of the Electric Symphony Orchestra) and Francis Monkman (of Curved Air and Sky fame), DMA are launching a project called "Classical Masterpieces on Disc'. The idea behind the project is to offer pieces of classical music in the form of disks for your sequencer.

The disks will be available for use with the major software sequencers for the Atari ST, Apple Mac, Amiga and IBM PC. So far, DMA have completed Mozart's Piano Concerto No. 24 in C Minor, K.491; Beethoven's Symphony No. 8 in F Major, Op. 93; and Bach's Concerto for keyboard and strings in D Minor, BWV 1052. Lined up for future release are more works from the above composers, including Bach's Brandenburg Concerto No. 5, Beethoven's Symphony No.3 in E flat major, 'Eroica', and Mozart's Symphony No. 41 in C major, 'Jupiter'.

Richard admits to being enthusiastic about the project without really knowing who he hopes will be interested in it. Possible uses for the Series include education and musicians' rehearsal - how often can you amass a full orchestra to practice your piano playing?

The disks will be packaged in a video-style box and cost £19.95 each. More information from Digital Music Archives at 46b Gascony Avenue, London NW6 4NA. Tel: 01-624 8774. ***Tg***

LE BEAT ROUTE

Deja Vu Recordings are a small but rapidly-expanding independent record company who specialise in dance music.

They cover all types of dance music (and, incidentally, nothing else), and would be pleased to hear demo tapes from anyone who has this type of material. All tapes will receive personal attention and will be acknowledged.

Deja Vu stress that tapes should be as polished as possible, since from their point of view, they are more likely to notice a high-quality recording.

Tapes should be sent to Nasim Khan, Deja Vu Recordings, 38 Ranelagh Road, Southall, Middlesex UB1 1DQ. *Dp*

DSPIFFING

Hot(ish) on the heels of the Digitech DSP128 comes DSP256 - son of 128. Offering 16-bit resolution, 128 programmable memory slots and 128 factory presets, the DSP256 also creates up to four effects simultaneously. The effects include reverse and gated reverb, chorus, flanging, delay, multi-tap delay, parametric EQ and nine-band graphic EQ, all available in 24 different combinations.

The 256 is supplied with a studio remote control unit and provides programme titling, 20Hz-20kHz bandwidth, programmable level controls and continuous MIDI control of all parameters. The new unit retails for £549 including VAT.

More info from UK distributor John Hornby Skewes, at Salem House, Garforth, Leeds LS25 1PX. Tel: (0532) 865381. ***Dp***

'RINGER 'N' 'TEX

With signal processors increasingly becoming an integral part of most musicians' working lives, whether in the studio or at home, it's to be expected that prices will fall as manufacturers compete for your cash - and Ampsound of St Albans are introducing a new competitor, in the form of Behringer of Germany.

Behringer equipment is now available for the first time in the UK, and is distributed solely by Ampsound. All Behringer units carry a 5-year warranty, and are priced very competitively. Prices start around £120 (excluding VAT) for the Behringer Exciter/Preamp. Other units in the range include the Studio Exciter at £199, De-Noiser at £190, Compressor/limiter at £278 and five-band parametric EQ at £309. Brochures carrying detailed information are available from Baz or Mike at Ampsound.

More news from Ampsound is the appointment of an in-house engineer solely for the rapid servicing of Fostex recorders - a handy chap to have around. You'll know this if you've ever had anything go wrong which had to return to the manufacturer, since an authorised service engineer at close proximity can greatly reduce the amount of time you have to be without your kit.

Ampsound offer supply, installation, service and back-up of a wide range of audio and computer equipment, and give expert advice and personal service on installations, cabling/connector requirements, consoles and all studio equipment and accessories.

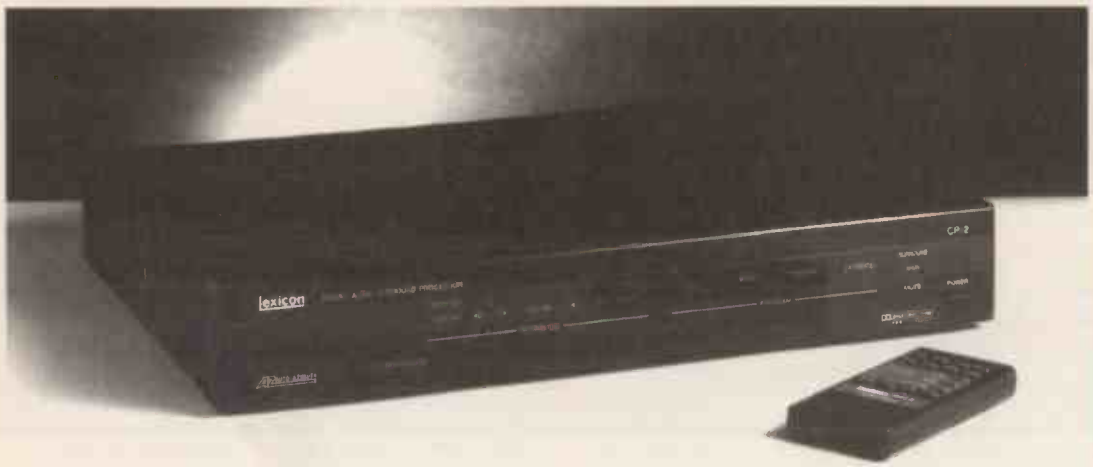
Contact Ampsound at 153a Victoria Street, St Albans, Herts AL1 3TA. Tel: (0727) 50075. ***Dp***

CUBASE A GO GO

If you're a Pro24 owner and you missed the recent Pro24-to-Cubase upgrade offer, don't despair. Evenlode Soundworks are offering a new trade-up deal, the gist of which is: if you take along your Pro24 to any participating Evenlode main agent, they will supply Cubase for £300 including VAT. Since the retail price of Cubase is £500, you don't have to be Carol Vorderman to work out that you'll be getting £200 off the price of Cubase. Please note that to get the trade-up, you will have to surrender your Pro24 key to the dealer.

The scheme is an Evenlode initiative and is not subsidised by Steinberg in Germany, consequently Evenlode aren't quite able to match the earlier offer of a full refund against Pro24. All the same, it's better than a kick in the head, as they say.

More info about the offer is available from Dave "Daddy" Crombie at Evenlode Soundworks, The Studio, Church Street, Stonesfield, Oxford OX7 2PS. Tel: (099 389) 8484. ***Dp***



CINEMA IN THE ROUND

OK, you've got your 36-inch flat-screen TV set, your glossy, slimline, bar-code reading video recorder and your expensive modular hi-fi. You're not really missing much for the entire "home cinematic experience", especially now that Lexicon have introduced the CP2 Dolby Surround Pro-Logic Audio Processor for home cinema use.

By using Dolby-encoded video tapes or Nicam television broadcasts, amplification and two pairs of speakers, the Lexicon CP2 "enables the consumer to create a surround sound environment in the home".

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All this doesn't come particularly cheap, though, at a price of £755 including VAT. A post-Christmas pressie for the man (or woman) who already has everything else?

More info from UK CP2 distributors FWO Bauch Limited, 49 Theobald Street, Boreham Wood, Hertfordshire WD6 4RZ. Tel: 01-953 0091. *Dp*

IT'S HIP TO BE SQUARE

Following the sucess of the last two years, the University of Keele is once again organising the International Computer Music Weekend, to take place at the University on the 27th and 28th of January, 1990. The weekend is being arranged by Tom Williams, and speakers will include Stephen Montague, the UK-based American composer/performer. who will talk and perform his music; Daniel Oppenheim from Standford University on DMIX, a program he is writing for the MacIntosh; the Brazilian composer Rudolfo Caesar, and Tom Williams with his new piece for trombone and tape. The weekend will also have a discussion forum on the Composers' Desktop Project, an EMAS meeting and a Saturday evening concert of electro-acoustic music.

Works performed over the weekend are: Stephen Montague's *Haiku* for piano, tape and electronics; Rudolfo Caesar's new work for tape (world premiere); Rajmil Fischman's *Los Dados Eternos* for oboe and tape (oboe Elen Teles); Tony Myatt's *Moss* for piano and tape (piano George Nicholson); Tim Howle's new work for flute and tape (flute Jos Zwaaneburg) and Tom Williams' *Grasp* for trombone and tape (trombone Barrie Webb).

For further info on the weekend, contact Tom Williams at the Music Department, University of Keele, Staffs ST5 5BG. Tel: (0782) 621111, extension 3855. ***Dp***

CEDAR LEADER

CEDAR Audio, the company behind the digital restoration of old or damaged recordings (see article in MT, November 1989), have won a finalists place in the 1989 British Computer Society Awards.

CEDAR was selected from over 50 other projects, for an award of the type which has previously gone to such developments as the Transputer from INMOS, and the ISTEL telecommunications system. These awards are presented to companies who have, in the opinion of the Society, made significant advances in the areas of technical development, humanitarian achievement and innovative application.

Users of CEDAR now include CBS, for whom ten CDs are in production, Denon Columbia (25 CDs), Polygram (the soundtrack to a recent pop video), The Reader's Digest (a six-disk box set to be released before Christmas), EMI, RTE, Thames Television (making interviews more intelligible for current affairs programmes), and Channel 4.

Other CEDAR research currently underway is concerned with methods to eliminate distortion, and correct for the frequency limitations of early recording systems. A hearing aid to improve the coherence of speech heard through conventional hearing aid devices is also in development.

CEDAR Audio is also under consideration for a 1990 Queen's Award to Industry, because over 50% of its business is for overseas customers.

Now don't say we never tell you what's going on in the world!

More info about CEDAR can be obtained from Gordon Reid, General Manager at Cambridge Sound Restoration, Botolph House, Botolph Lane, Cambridge CB2 3RE. Tel: (0223) 464117. ***Dp***

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communiqué

starwars

The battle continues. After reading the article on the Commodore Amiga by Michael Brooke (MT, November '89), I decided a little stirring was in order.

I should point out to start with that I am an ST user, and so am likely be mildly biased. However, I am not going to start slagging off the Amiga. The main point of Michael's article that I would dispute is that the Amiga represents "higher" technology. This is quite definitely not the case; the bottom line is that both machines use the same processor, and hence any differences are going to be fractional. The Amiga's additional hardware is undoubtedly superior when it comes to graphics and sound (though the ST's monochrome mode is unmatched), however the Amiga's non-standard custom chips are the main reason that there is less software available for it, as specialised hardware breeds non-portable software. (This is why so few games take full advantage of the Amiga's hardware – they are often ported from the ST or some other 68000 box.)

As a computer science student, I consider myself to be in a reasonable position to speculate on the future of computing, both in and outside musical applications. For this reason I do not really worry about the ongoing Amiga/ST battle, as it is trivial in the overall scheme of things. When you consider that a typical third-year computing project is something like a multi-user UNIX box churning out 30 MIPS for under £500, these machines seem almost pathetic. But this doesn't mean that I don't like my ST, I positively enjoy using it – it gets the job done quickly and easily, and this is all that matters for the moment.

The things that should be looked out for are the newer machines like the Archimedes which, with the new ARM 3 processor, will achieve something like 30 to 40 times the power of either an Amiga or an ST (also more than our college's three mainframes put together), for a similar price (eventually). The main problem here is a lack of software, as pointed out by Michael Brooke, but this should be rectified in time.

In musical terms, this power is just waiting to be used. For example real-time resynthesis (read the article on the CEDAR system in the November issue) could open up entirely new avenues of musical innovation (I'm working on this one!) – no more going to make a cup of tea while Soft Synth recalculates... However, anything of this magnitude requires far more power than an Amiga or ST can provide. This is what should come after the ST. The Amiga is only a sideways step.

Marcus Bointon
Lewisham
London
Janet Email: ZDAC810 "UK.AC.KCL.CC.OAC

LETTER OF THE MONTH

beat disciple

Just a word in appreciation of the excellent "On The Beat" series, and the last two articles especially.

Having realised that good beat box programming isn't quite as easy as I'd imagined when I splashed out on a secondhand RX5 back in April, I searched high and low for any kind of book which could offer me some insight into a world which I'd previously been happy to leave to the drummer in any of the band projects I've been involved with. Let me tell you, they don't exist – at least, there's nothing worth parting with money for.

I spent the best part of ten quid on *The Drum Machine Dictionary* by some wally called Sandy Feldstein (which is endorsed by Roland, no less) and found it filled with Charlestons, Bunny Hops and Mexican hat dances. I kid you not. Even those programs with more exotic titles like "Afro-Cuban 6/8" turned out to be absolute crap. I don't know how Roland could put their name to such bilge.

Anyway, thanks again for a great series, it's long overdue. As I am usually quite happy to program in the patterns and leave it at that, I think I probably fall into the category Mr Lord would describe as "lazy", but there have been some real gems in the series which surpass anything I could come up with – so who's complaining? More please.

Eric Dyson
Woodford
London

If it's more you want, Eric, it's more you shall have. Nigel still has some pretty good stuff up his sleeve for the ***On The Beat*** *series, but in addition to the printed page we're hoping to bring you the drum patterns on cassette tapes as well.*

The tapes are designed to complement the series – for those of you with a natural aversion to drum grids or to make it easier for you to identify the patterns you will find most useful. But in addition to this, they will be suitable for sampling should your interests lie in that direction.

Nigel is busy programming drum machines at present so you shouldn't have too long to wait. Watch this space... ***Tg***

flattery

Wot a brilliant mag. Having moved to London from somewhere north of Watford a few months back to further my musical career, I was instantly rewarded with the discovery of a magazine that looks at music with a technical insight and looks at technology with a realistic musical attitude.

Having read through some of Simon Trask's reviews I feel I could confidently buy on the strength of them. The features are brilliantly considered and thoroughly readable, and the music coverage is excellent in its variety and quality (I was astounded when I looked through the Back Issues featured in November's issue – list and cheque enclosed). I've only one criticism: there's not enough of it.

In short, your magazine is the only one of its kind serving the real needs of today's musicians. Keep up the good work. Long may you thrive, and love to all your writers.

Peter Sherman
London

the question why

I write with one major question in mind: why do people create and play music? It strikes me that it is

an accepted fact that all aspiring musicians compose and perform in the hope that they will be "discovered" and earn large amounts of money for their work. Perhaps I am just sore about the subject, but two comments passed by Skum on my own band (Pretentious IV) in your November issue brought the matter to light.

First was the statement "the songs aren't chart toppers". What constitutes chart topping material? I doubt very much if many people write such material deliberately. I am under the impression that most musicians write what they can, and those pieces are open to development when it comes to arranging. If all were to aim for the dizzy heights of the charts, imagine the plethora of songs with the same chord progressions and banal lyrics that would appear (as if there aren't enough as it is). When writing/arranging, it's almost certainly better not to pursue one aim, so that a diversity within your work becomes apparent. Just let things happen.

Second was the statement "Apparently Heidi has an IQ of 152. Makes you wonder why she's involved in such a dodgy project". I myself have an IQ of 154 (and I still play out of time), so I suppose a similar question could have been directed towards me. Well, I enjoy it. Yes, music can be fun. I find it both entertaining to make and listen to. I would love to know if this is a criminal offence. I wouldn't like to think that either I or the rest of the aforementioned band believe we could make a career of it. Does that mean we should give up, or just not send tapes out? Perhaps I should have pointed out our aims in the required biography. The rest of the review was quite sound, although we still can't find the part of 'English Summer' that sounds like Propaganda. Could you enlighten us so that it can be re-written?

As long as music can be created, then long may those who make it out of pure pleasure continue to do so. Any money to be made can come as an added bonus, so let us not believe that all who play, play for riches.

Keith Harrison
Dundee
Tayside

People make music for many, many reasons, so perhaps your question should be why send your music to a magazine for review? And only you can answer that.

Musicians hoping to become next month's pop darlings represent a tiny minority of all those actively involved in making music. But as such, they engage themselves in specific activities: watching the pop charts to anticipate trends, keeping up to date with the latest sounds and gear – and sending out demos of their music to anyone they hope will listen. If they know what constitutes chart-topping material they'll produce it, but it's more likely they'll just be guessing. Why imagine the plethora of identical chord progressions and banal lyrics when you can hear them on Radio 1 every day?

What really puzzles me is why you think a biog should change Skum's appraisal of your music. Do you expect more or fewer compliments if you promise not to try to sell it to a record company? A biog is meant to be informative, not an excuse for the shortcomings of your music.

If you only want praise for your music, play it to your goldfish. If you want to learn from other people's opinions (and this does NOT mean take them at face value), spread your tapes around and be receptive to the response you get.

Think about the value of a column like DemoTakes. Its purpose is to offer criticism of musicians' work in an attempt to help them improve their music and their chances of securing a record or publishing deal – and offer a little entertainment along the way. A magazine cutting can help influence a talent scout, but only if a magazine's standards are recognised as being high enough. It may come as a surprise, but A&R people do watch features like DemoTakes to help guide them to musical talent looking for commercial success.

On the other hand, the column could simply seek to massage the egos of bedroom musicians – and it would be a complete waste of space.

Give up, Keith? No, I don't think so, but you really should decide what you're trying to achieve and how you might best go about it. DemoTakes could help you to improve your songwriting, arranging, performing and recording, but if you can't take a little criticism, keep your head down. With a combined IQ of err, um, two hundred...six carry one...three hundred and err... With your combined intelligence I'd have thought you and Heidi would have sussed that by now. ***Tg***

hippy daze

Re: Simon Trask's review of Sueno Latino (MT, October '89). Are you seriously telling us that no-one on your entire staff realises that 'Sueno Latino' is based on Manuel Gottsching of Ashra's cosmic guitar epic 'E2-E4'? That all Cutmaster D has done is stick on some house percussion, Emulator "loon" samples and vocals? Didn't the fact that the track is credited to "M Gottsching" tip you off?

Get your act together, or at least get someone who knows what he's talking about to review the records...

A Hippy
Dingly Dell
Oxfordshire

If you hadn't jumped in at the deep end, Mr Hippy, someone might have pointed out to you that Manuel Gottsching has more recently established himself as a house producer of some note – one of his successes being 'Sueno Latino'. Perhaps your obsession with yesterday's music has blinded you to what your heroes started and are continuing to find of musical value. ***Tg***

III WISHES

IT'S SO NEW that it won't be reviewed in Music Technology until next month What is it? It's two things: it's the brand new Alesis MIDIverb III and it's the star of this month's Music Technology competition.

Although it arrived just too late to be included for review in this issue of the world's most popular hi-tech music monthly, we – and the ever-helpful staff at Sound Technology – decided that you'd prefer not to wait before being given the opportunity to win a MIDIverb III. The MIDIverb should need little introduction: latest in a line of incredibly successful digital effects processors from Alesis, the "III" is a 16-bit programmable effects processor, offering 100 factory presets and 100 user programmable settings, MIDI parameter control, MIDI mapping and system exclusive program dumping. The MIDIverb III is capable of generating delay, reverb, chorus and flanging; it will also handle up to three effects simultaneously...

Enough of the promotion, and on to the competition. Below you will find a list of artists; each group of artists is linked by a song that they have all recorded. All you have to do is to name the song in each case.

1.
- Lesley Gore
- Bryan Ferry
- Dave Stewart & Barbara Gaskin

2.
- Duane Eddy
- Emerson, Lake & Palmer
- The Art of Noise

3.
- Dionne Warwick
- Aretha Franklin
- Bomb the Bass

YOUR ANSWERS SHOULD be sent on a postcard only please, to **"III Wishes", Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF**, to arrive no later than second post on **Monday, 5th February 1990**. Please make sure you include your name, address and a daytime telephone number on which you can be contacted. Please note that the competition winner will be expected to attend a presentation at the MT offices.

The flood of multiple entries continues, seemingly unabated. Consequently, the papier maché model of Bob Moog is complete, and the chain letters and timeshare people are currently under investigation by the police. Multiple entries to "III Wishes" will, therefore, be donated to the Yu-bin Chee T'in School of Traditional Origami, Osaka. On no account will they be included in the prize draw.

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The Ensoniq EPS-M

If you want all the power of the EPS in a rack-mount module, choose what *Sound on Sound* calls a "serious professional piece of gear"—the EPS-M.

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ILLUSTRATION: CLIVE GOODYER

IF YOU'RE AWARE of the growing concern over the spread of computer viruses, you'll remember that MT first took the subject seriously back in October '88 when we ran a feature outlining what they were and some of the incidents that had already occurred. At the time the incidents of virus attacks were mainly limited to networked business systems, but it was obvious that affordable personal computers were the next target, and that meant musicians running music software were going to be amongst the casualties.

Someone certainly regarded personal computers as a legitimate target: the virus writers. Unfortunately, much of the hi-tech music industry and press still regarded the whole affair as being some sort of glorified computer adventure game. The result is that there are now many viruses in circulation. These affect you - they run on personal computers such as the Atari ST, they come on disks containing music-related software and they destroy your work. If you work at home for your own enjoyment, this may only mean going back and starting again - and all that that entails. If you're a professional musician or programmer it may cost you a lot of money in wasted studio time and missed deadlines. Either way, viruses are a source of considerable heartache. And just because you haven't suffered an inexplicable loss of data or a system crash recently doesn't mean you've avoided picking a virus up; it may be biding its time as you're reading this.

Viruses have spread largely through software available in the public domain (programs that are available free or very cheap) and through bootleg copies of programs - once a program has been "broken" and tampered with, you don't know what might have been added to it. There have also been instances of legitimate programs, "name" programs from legitimate sources, carrying viruses. The message is not one of panic, but that extreme caution should be exercised by us all.

The situation has already arisen, that much is immutable. The question now is what's to be done? One course of action is open to us all: we can start using virus detector programs. There are a number of these around and they all do the same basic job - that of telling you when a disk has a virus on it and destroying the virus. Using a virus killer is a simple matter of loading it into your computer before you load any other program and running each of your disks through the check. In this way you can destroy any viruses you may have and prevent them spreading any further.

There are two problems with virus killers. The first is that a virus killer is only capable of dealing with known viruses or viruses using recognised operating procedures. The older a virus killer is, the less effective it's likely to be. The second problem is that writers of viruses know that these programs exist and have hidden viruses inside some of them - so that when you think you're checking your collection of disks you're actually infecting them all. What's required is a virus killer that's new and reliable.

Here, hopefully, is where Music Technology can help. We have been supplied with a public domain virus killer which we're making available through the magazine. The program has been checked out for safety and, as it's public domain material, it's not copy protected so you are free to copy it for other people to use. The program was written in May '89 by George Woodside of California, USA, so it's able to deal with most, if not all, of the viruses currently in circulation.

In order to cover disk, postage and copying expenses, the program will cost £3.50 - surely not too much to spend to protect your work and give you a little peace of mind. Get them before they get you.

Please send me a copy of Vkiller. I enclose a cheque/postal order for £3.50, made payable to Music Technology (Publications) Ltd.

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Send to: **Vkiller, Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF.** Please allow 28 days for delivery.

A NEW AGE - A NEW CONCEPT

It is now over ten years since TASCAM gave the world – cassette multi-track recording with the introduction of the 144 PORTASTUDIO.

Since that time TASCAM's commitment to the musician has resulted in the development of the outstanding MINISTUDIO and PORTASTUDIO ranges, staying in front of the increasing sophistication of multi-track cassette recording.

Although there have been times when digital sequencers and synthesizers have threatened to completely overshadow multi-track recording, the warmth and vitality of acoustic sound has never lost its appeal.

The current trend in music production shows a demand to combine the best elements of digital and acoustic origination.

This need requires a wholly new approach to Multi-Track Recording.

The new age MTR must be capable of synchronisation and control via MIDI; provide sound quality & editing control versatility that is as close as possible to that of digital equipment and provide a greater number of mixer channels to handle an increased range of analogue and digital sources.

TASCAM have created such a machine – a totally new concept in recording – the MIDISTUDIO.

The unique eight track TASCAM MIDISTUDIO 688 which along with its little brother – the 4 track MIDISTUDIO 644 – gives the recordist access to a level of versatility and control unprecedented in cassette multi-track recording.

The 688 features a 10 channel mixer section which gives access to a total of 20 inputs via a special on-line multi-function Dual Mix System.

The DMS can function as a monitor mixer, auxiliary input channels or as a stereo effect mix/send system.

A powerful MIDI tape synchronizer is built-in enabling modern MIDI-based sequencers to lock to tape from any point within a recording. The totally new TASCAM Scene Display is a comprehensive graphic display of all mute, input and assignment configurations. Up to 99 different scenes can be stored in the internal memory for instant recall via the panel controls or from external MIDI patch change.

Channel muting can also be controlled in real time via MIDI note information. The 644 and 688 MIDISTUDIOS are directly compatible with the TASCAM MTS-1000 MIDIIZER giving the capability of synchronising to other tape and video recorders.

Both MIDISTUDIOS share many of the advanced transport features first introduced on the TASCAM 238, including gapless auto punch in/out, 3 point auto locate and the unique shuttle control.

TEAC as a company has a 35 year long history of innovation in the fields of audio, video and digital recording, not forgetting our expertise in computer disc drive manufacture. This vast store of knowledge puts us in a unique position to respond to the changing requirements of the audio industry.

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TASCAM

the right track

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LXP5

Building on the success of their LXP1 reverb, Lexicon have come up with a multi-fx processor that's set to make the "Lexicon sound" still more affordable. Review by Robert Rich.

WE ALL KNOW how digital reverb has changed the sound of modern music. We can now record CD-quality music at home with the illusion of almost any acoustic space imaginable. That's old news. Now that digital reverb is cheap and commonplace, many of us dream of owning several effects processors. Digital reverb is no longer just a fake room, it's a sound.

As musicians start using more and more digital effects, it makes sense that manufacturers should start producing units that can supply several effects at once. Examples of this trend include the Alesis QuadraVerb, DigiTech's DSP128 and the ART Multiverb. Lexicon have now entered the budget multi-fx fray with their LXP5, an unassuming box with an impressive range of features. The LXP5's effects capabilities include reverb, three-octave pitch shifting, stereo delay, modulation delay, EQ, and an extensive MIDI modulation scheme. Most of these effects can be applied simultaneously, and just about every meaningful parameter is user-accessible.

THE SYSTEM CONCEPT

THE LXP5 LOOKS a lot like the LXP1. When you put them next to each other, they look like a single rack unit. However, the LXP5 is a very different beast, with features that cleverly complement the LXP1. While the LXP1 specialises in ambience (with room, plate, gated and reverse reverbs), the LXP5 seems happiest in the bizarre realm of modulated echoes, pitch shifting, and heavily warped chorus/reverb combinations. The LXP5 cannot create gated and reversed reverbs, nor does it have the resonant Chorus 2 program found in the LXP1. However, it can create several effects at once.

Lexicon have adopted a modular approach with the LXPs. Rather than one expensive box that does everything, they are making several little ones that do different things. (Of course, you can still go out and spend a small fortune on one of their studio-standard machines.) The typical studio uses lots of effects these days, sometimes dedicating one to each channel of a mixdown. Even small home studios can afford to dedicate effects to certain tracks. The people at Lexicon envisage a system of several effects units (preferably theirs, I'm sure) interconnected with MIDI and managed from a single remote control – the MRC MIDI Remote Controller.

To my mind, this system approach makes sense. I use a lot of effects in my own music, and a mixing session can become a nightmare of knob-settings

and patch cords. I dread the thought of re-mixing some of my older pieces, because I simply can't recreate some of the effects. With a few LXPs and other MIDI effects tied together with the MRC or a similar device, I can imagine setting up the effects for an entire mix and recalling these settings with the push of a few buttons. Live performers can also benefit immensely from this approach, controlling several effects with a single unit similar to the old stomp-box programmers used by guitarists.

EXTERNALS

LEXICON WOULD LIKE people to view the LXP5 as a companion to the LXP1. However, while the LXP5 does not replace the LXP1, it does improve upon it in several areas. Lexicon have rearranged and redefined the front panel controls to give you full access to all parameters, without the aid of a computer or the MRC.

While the appearance of the LXP5 is far from flashy, everything about it is useful. Its low-tech appearance may be due in part to a predominance of knobs. (I like knobs – they feel more natural to me than any other user interface.) They may not be very sexy, but they sure make us old analogue junkies happy.

The front panel has six knobs. On the left-hand side are knobs for Input level, Mix, and Output level. The input level is indicated by one green and one red LED – green for normal levels and red for clipping. One minor annoyance is that the level needed to make the green LED flash is not much lower than the level needed to make the red LED flash. The actual dynamic range is much greater than it appears, but it's easy to induce clipping if you adjust levels according to the green light. Oh well...

The three knobs on the right of the LXP5 control the programmable parameters. The centre knob selects which mode or bank will be active. Its 16 positions cover the following choices: four Preset memory banks (Pitch, Delay, Chorus and Multi), eight User memory banks, three Edit banks, and Bypass. Within each of these banks are 16 choices, totalling 128 MIDI-addressable user presets, 64 factory presets, 28 edit parameters and an intricate Patch Edit page. The Select knob to the right of centre selects among the 16 slots for each bank. The Adjust knob furthest to the right performs data entry and editing tasks. While in one of the preset or user banks, the Adjust knob can change up to five different parameters at once. You can define which parameters are affected, and save the knob assignments along with each preset.

A single front panel LED helps you guess what's going on inside the beast. When you call up a program, it flashes green. If you change the program in any way, the LED turns red. If you return the parameters to their original settings, the light will turn green again. When MIDI messages enter the LXP5, the light flickers. When you save a program, it flashes quickly for a moment to let you know it's thinking.

A quick glance at the back panel reveals the usual stuff: Left and Right quarter-inch jack audio inputs and outputs (the inputs sum to mono), a footswitch jack that can be programmed for defeat or memory increment, 9V power adapter jack, and two MIDI sockets. I was happy to find a switch that turns the MIDI Out jack into MIDI Thru.

INTERNALS

I COULD WRITE forever about how to program this creature, but then you'd never get the chance to go out and buy one. So, instead, I'll focus on two more important questions: how does it sound and what can it do that makes it special?

"The Adjust knob can change up to five different parameters at once: you can define which parameters are affected, and save the knob assignments with each preset."

Here's the abbreviated verdict. It sounds great, as you'd expect from Lexicon. On the negative side, the pitch shifter is a bit glitchy and the LFO sounds a bit unstable. On the positive side, the reverb is silky smooth, and combined effects tend to hide the imperfections of the pitch shifter. As for special characteristics, the processing algorithms are very versatile. The pitch shifter allows some truly rich and occasionally bizarre sounds, especially when combined with the other effects. The modulation possibilities are astronomical, especially the MIDI control features.

To give you a better idea of what the LXP5 can do, Figure 1 shows the two algorithms used to create effects. The Pitch/Delay algorithm provides the basis for most of the factory presets. It's capable of generating some very fat chorus/doubling effects and wildly bouncing intricate echoes, along with most of the other-worldly extremities we have come to associate with pitch shifters. ➤

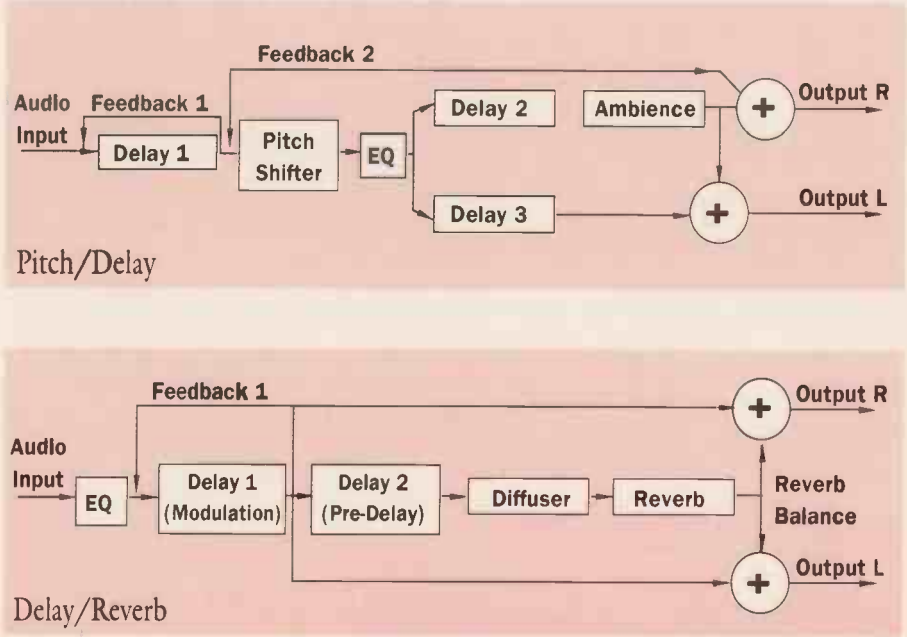

Figure 1. Lexicon LXP5 Algorithms.

➤ Some of the sounds generated by this algorithm can get a bit "crunchy", for two main reasons. First, the reverb generator used here is not quite up to Lexicon's usual fluffy standard. Second, the pitch shifter occasionally hiccups, and jitters around quite a bit. The problems seem to be worse at low frequencies. When I pointed these noises out to Lexicon, they explained that the two Z80 microprocessors inside the LXP5 were taxed to the limits, and occasionally had problems finding the good splice-points needed to generate a clean pitch shift. I asked them why they weren't using faster microprocessors and they said it would raise the price. The fact remains we're talking Lexicon luxury at less than Lexicon cost (previously).

"The pitch shifter allows rich and occasionally bizarre sounds, and the modulation possibilities are astronomical – especially the MIDI control features."

The Delay/Reverb algorithm sounds a lot smoother than Pitch/Delay, but doesn't do quite as much. However, it does create lush, beautiful reverbs. I confess, I love the "Lexicon sound". The Delay/Reverb algorithm has one unique feature – the Modulation Delay, which allows you to add chorusing or warped echoes (up to 1024ms long) to the reverb. Unlike many so-called modulation delays found in other digital processors, this one acts just like a DDL, changing pitch as it gets shorter and longer rather than just chopping or adding segments to its delay time.

MODULATION & MIDI

HIDDEN DEEP INSIDE the LXP5 lie some sophisticated modulation possibilities. It takes a while to learn the system, but it's worth it. Luckily, the LXP5 responds in some very intelligent ways to the outside world. Most of the tricks involve the appropriate use of one button on the front panel labelled Learn. When you press this button, you instruct the LXP5 to pay attention to its environment and change itself in some appropriate way. For example, to save an edited preset you press Learn while dialling up a user bank or sending a MIDI Program Change. The LXP5 will then store the edit in that slot when you release the Learn button. Similarly, to select a MIDI channel for the LXP5, hold down Learn and send any MIDI message. The unit will automatically switch itself to the MIDI channel of the incoming message.

Programming a Dynamic MIDI Patch involves a similar use of the Learn button. Let's say you want to modulate the LXP5's Pitch Interval with the mod wheel of a synth. You enter the Edit mode on the LXP5, select the Pitch Interval parameter, hold down the Learn button and nudge the synth's mod wheel. The LXP5 will automatically assign the mod wheel controller to Pitch Interval. If you want to get clever, you can control several parameters at once with one or more MIDI controllers, though the method is a bit more complex. Suffice it to say that you can control just about anything with anything.

The one big complaint I have about the LXP5 concerns the way it responds to MIDI – when you send it a MIDI program change, it jumps to the proper program, but if you then tweak the front panel Adjust knob, the preset reverts to the one previously selected by the front panel knobs. I want the Adjust knob to control the new preset – not the old one – regardless of what the front panel knobs tell me. To avoid an unpleasant surprise while performing live, I recommend that you use MIDI controllers to modulate parameters, not the Adjust knob.

THE MRC

HOW IMPORTANT IS a good user interface to you? Would you pay extra for an informative display and some sliders? Most companies assume that you'd rather save money and sacrifice such conveniences as knobs and a clear display. The approach has proved very popular, but if you want to program your own sounds, you wind up stuck in a labyrinth of menus with only a pair of increment/decrement buttons to guide you.

Lexicon's alternative approach is the MRC – a generic front-panel unit for the LXP1, LXP5, and PCM70. It's a little box with four sliders, backlit LCD screen, numeric keypad, some extra buttons and four MIDI sockets. Lexicon originally released the MRC along with the LXP1, and while it made a great companion for that device, it seemed a bit incomplete.

Since then the MRC has been improved to make it compatible with the LXP5, and they've made a few welcome improvements. To make room for these, they got rid of one of the functions – the DX/TX Editor for Yamaha FM synths – and with all the software editors available for these synths, this doesn't seem like a huge sacrifice.

I examined a beta version of the new MRC software, and I liked what I saw. Here are some highlights of the improved software (note that these features may have changed slightly by the time you read this):

Extra Memory: The MRC can now handle up to 16 Machines (external MIDI devices) and up to 64 Setups for each of the LXP1, LXP5, and PCM70. Machines of the same type share the same 64 Setups.

Global Setups: You can define up to 20 of these. Selecting a Global Setup will send up to 32 program changes – one per MIDI channel for each of the two MRC MIDI outputs – and assign a Setup for each of the 16 Machines.

Generic MIDI Setups: These have been greatly improved from ten GMIDI Setups, which could do little more than send controller data, they can now send all controller messages, aftertouch, all-notes-off, program changes, and SysEx. With user-defined SysEx strings, the MRC can act as a simple patch ➤

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MIDI features: A MIDI Monitor lets you look at incoming MIDI messages but unfortunately not SysEx. Dynamic MIDI Patches let you route incoming MIDI messages to any of the parameters controlled by the MRC – this turns the MRC into a mapper of sorts. For example, the MRC could assign incoming pitchbend messages to a slider controlling LXP5 pitch shift amount, allowing keyboard controlled pitch shifts. Of course the LXP5 can do this without the assistance of the MRC, but the same trick could work with other devices using the MRC's new SysEx capabilities.

Does all this sound complicated? Well, it is. The MRC has become a sophisticated little remote controller. Using it can get downright confusing at times, just because there's so much depth. The price of power.

The MRC still has its faults. The backlit screen makes a somewhat annoying mechanical whining sound. This high buzz can be distractingly audible in a quiet studio. Another gripe involves the PCM70 Setups, which show arbitrary numeric values 0-255 for each parameter, rather than more meaningful units like "%", seconds or "ms". A good interface should display the correct units.

In almost every other way, the MRC is a great user interface. The unit makes it fun to edit sounds on the LXP1 and LXP5. You quickly find yourself tweaking an effect for that "perfect" sound – which usually takes less time than it takes to scroll through a hundred presets in search for a close approximation. The MRC completes the Lexicon system, allowing several effects devices to share the same front panel, and it's a better front panel than the LXPs could ever afford to offer on their own.

VERDICT

NONE OF MY complaints would keep me from buying an LXP5. Most other budget effects units suffer from problems like those I mention here. The LXP5's many strengths far outweigh its weaknesses. Unlike the LXP1, you can edit all of its parameters from the front panel. It gives you ready access to these parameters, facilitating an impressive degree of control. Dynamic MIDI modulation lets you perform some pretty interesting real-time effects variations. Most importantly, the LXP5 sounds great. Even if you never program it, the 128 factory presets are varied and useful. While certain settings can introduce a bit of grunge, the overall quality is clean and silky smooth.

The LXP5 really shines when sitting in a rack with other effects, especially when controlled by the MRC or some other remote editor. Its MIDI abilities make it a perfect contender for the new breed of automated small studios. It adds a range of sounds that are hard to achieve with most other budget effects processors, and complements the abilities of the LXP1 in particular. Alas, the LXP5 isn't the cheapest budget effects box, but it may be one of the most versatile.

Prices LXP5, *£381.61; MRC Controller, £311.11. Prices do not include VAT.*

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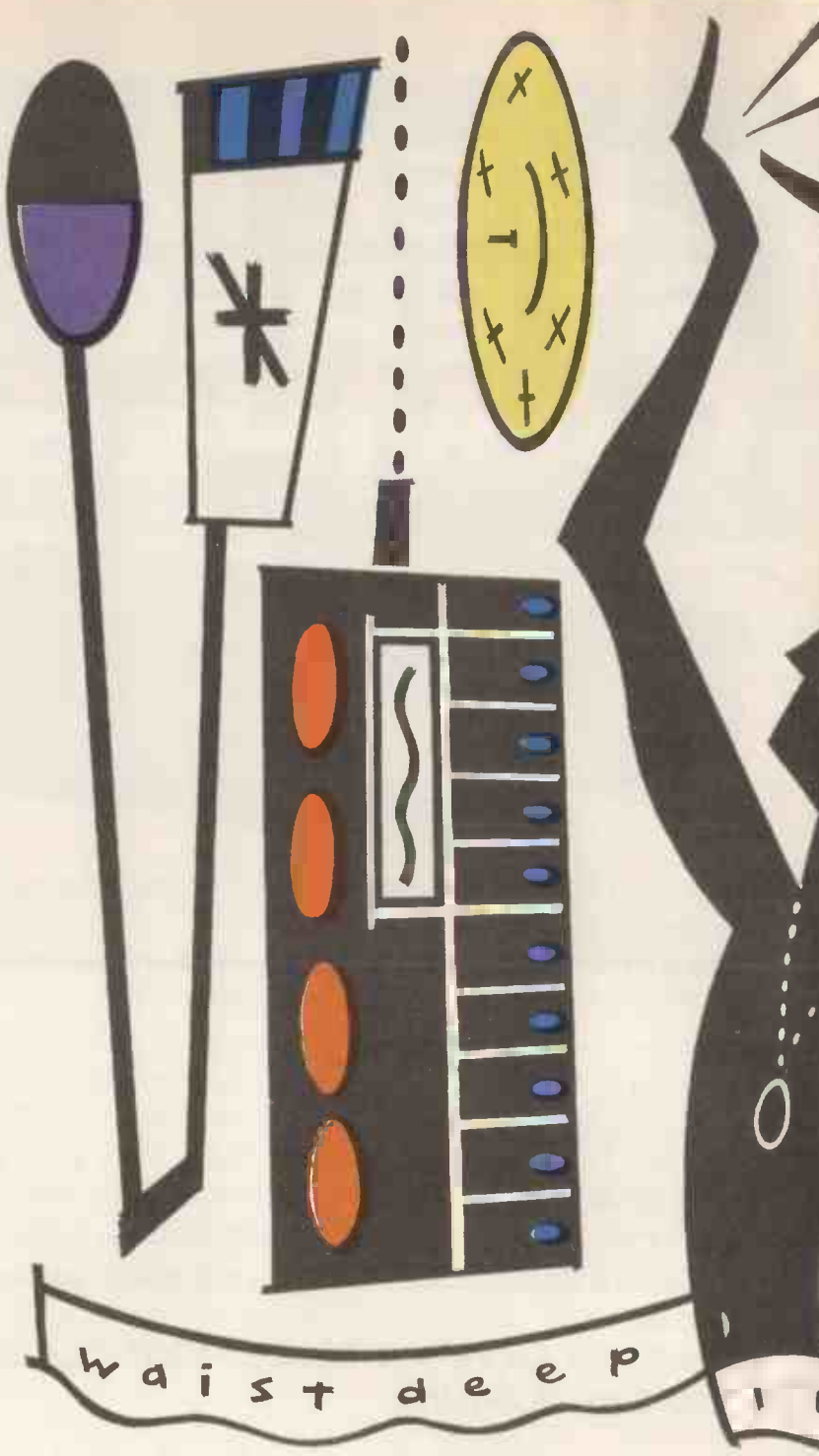


PART 6

MAY THE FUNK BE WITH YOU – IF IT ISN'T, THIS MONTH'S DRUM PROGRAMMING LESSON SHOULD HELP YOU GET INTO THE GROOVE. TEXT BY NIGEL LORD.

OF ALL THE styles of music responsible for drawing people away from the bar and on to the dancefloor, funk has proved itself to be one of the most effective – and certainly one of the most durable. Curiously though, it is also one of the most difficult to define, particularly in terms of its rhythmic structure. There seems to be a number of widely differing opinions of just what constitutes a good funk track.

In preparation for this month's article, for example, I asked a handful of friends to name a couple of their all-time favourite funk records. And, whilst I can't say I was suprised to hear each one name two completely different tracks, it was interesting to learn precisely what they regarded as coming under the funk label. Though there were obvious classics like 'Sex Machine' and 'Keep On Truckin'', these were rubbing shoulders with much more recent tracks like 'When Doves Cry' and 'Word Up'. Often, straightahead black funk numbers such as 'Keep On Steppin'' and 'One Nation Under A Groove' were mentioned in the same breath as the altogether whiter, more industrial tracks like Japan's 'The Art of Parties' and BEF's 'Fascist Groove Thang'. Other examples were culled from the promising (at the time) Brit-funk eruption of the late '70s – bands like Lynx and Light of the World – and of course there were the more commercial one-offs such as Wild Cherry's 'Play That Funky Music' and the quite

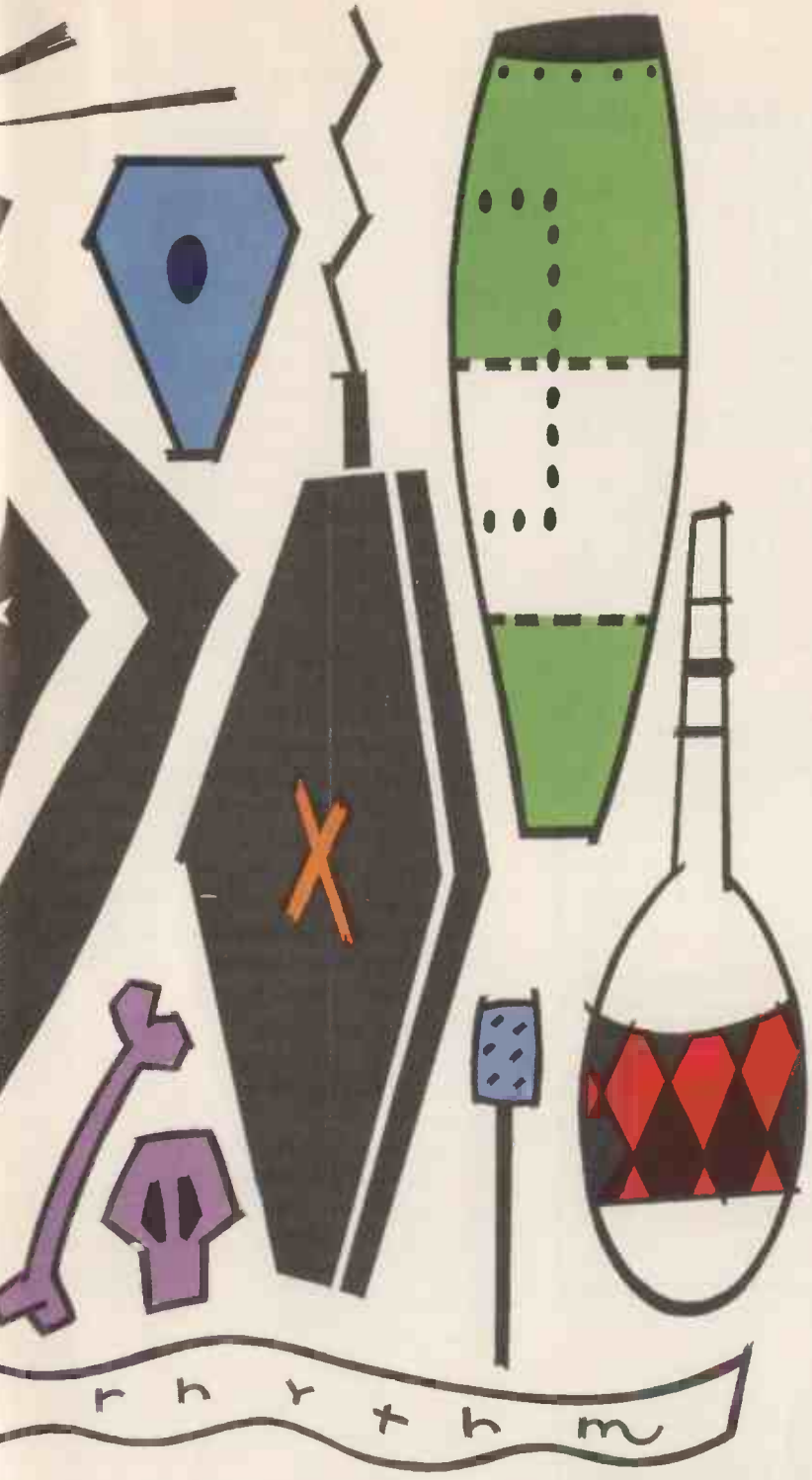


ILLUSTRATION: CLIVE GOODYER

wonderful 'Burlesque' by the long-defunct Family (no pun intended).

Clearly, funk, unlike the more clear-cut styles such as house or hip hop, can be all things to all men and sometimes seems best defined by what it isn't rather than what it is. Certainly, you cannot point to the moving of (say) a snare drum beat to a different position in the bar as being characteristic of funk in the way you can with reggae, for example. Though there are certain rhythmic phrases which crop up repeatedly, these are by no means universal and their inclusion (or otherwise) is no indication of a track falling into the funk category.

In fact, sitting down and listening to as many of the records mentioned as I could find, I was struck by how straightforward most of the drum parts were. In every case, they were played with great feel and (not unexpectedly) rock steady delivery, but from a rhythmic point of view, there wasn't much which could be described as being of real interest. ('The Art of Parties' was the one notable exception.)

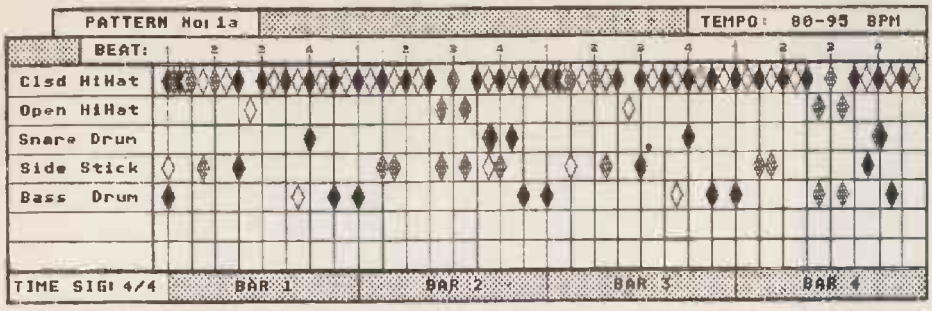
Most, if not all of the tracks gained their funk "stripes" from the interplay between bass and drums which was often quite inspired. However, the approach of the other instrumentalists involved also demanded attention – as it does in any analysis of funk styles. Obviously, we're talking *feel* again here, and though rather difficult to describe, it has a lot to do with what it is that goes to make good (and recognisable) funk music.

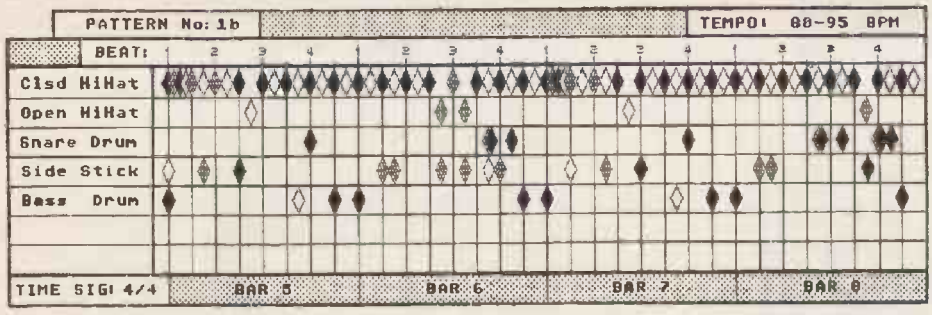
I suppose there is a parallel to be drawn with in many of the classic soul and Motown tracks of the late '60s. Here, despite the drums being kept well down in the mix (when did you first hear a bass drum on a record?), the other musicians seemed to develop a way of *implying* the beat through their playing – a technique which could often extend as far as the vocal. The result, of course, was some of the most enduring music of the last 30 years, which, despite the absence of the kind of monolithic bass/snare one-twos which have become *de rigeur* in recent years, still has wide appeal amongst dance audiences.

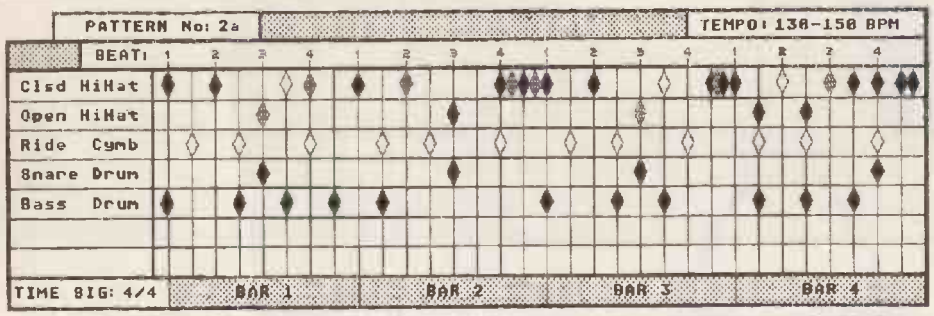
Funk, perhaps as a result of its evolution from those earlier styles, has a similarly intangible rhythmic quality to it. And that is undoubtedly what each of the people I asked heard in the records they named. From our point of view, however, the relative simplicity of most funk drum tracks and the absence of any real unifying features makes it difficult to achieve any kind of distillation of funk music into a convenient half dozen patterns which could be said to typify the genre. It is, however, possible to produce patterns which have an undeniable funk feel to them whilst remaining open-ended enough to allow them to be tailored to fit specific needs.

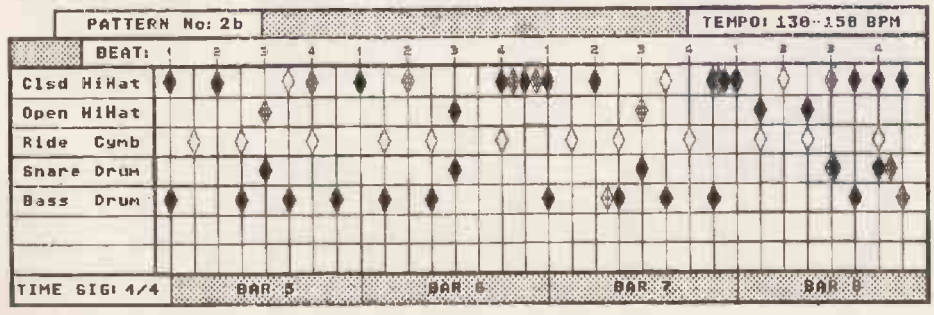
In all cases, a sympathetic bassline is essential if a convincing funk groove is to be achieved, but of course, as with most common time (4/4) patterns, a little re-structuring and a different choice of instruments can steer them off into a completely different direction, should you feel the urge to experiment. Programming the patterns as originally conceived, on the other hand, is quite straightforward, with nothing more esoteric than hand claps and side sticks to worry about. There is a cabasa line in Pattern 4, but this can be replaced by any sort of shaker, or indeed omitted altogether, if no substitute is available.

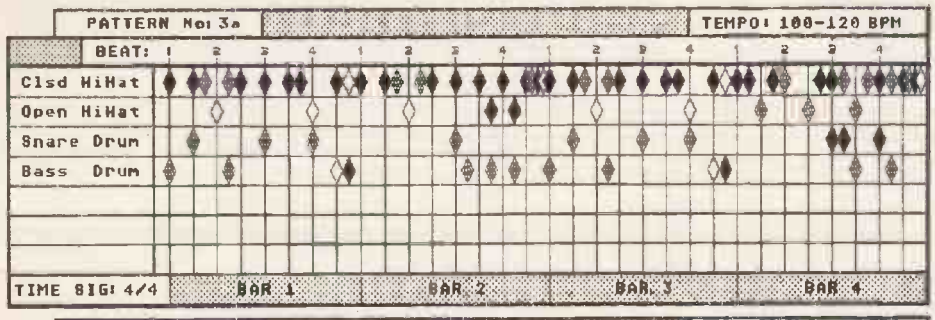
One of the most important facets of any funk track is the creative use of space. This can exist as space within the pattern as a whole, or simply between instruments. In either case, it should be made full use of by whatever bass instrument has been pressed into service alongside the drums. In terms of space between instruments, many classic funk tracks make use of gaps left between bass and snare drum figures to slot in fast, accented hi-hat beats – frequently ➤

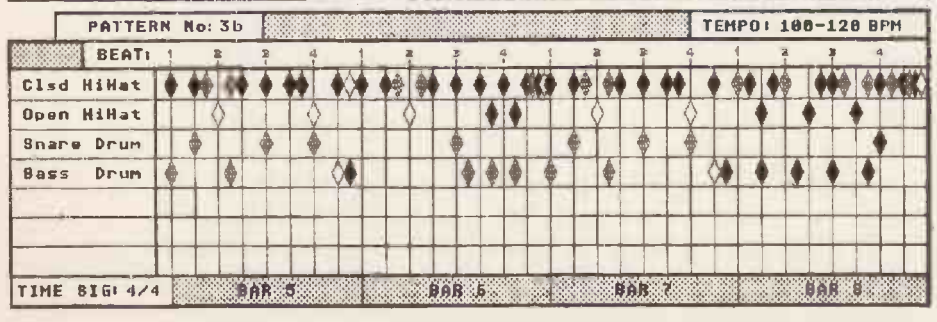












➤ using the open hi-hat – and this has been reflected in a number of the patterns included here.

Dynamics are also of paramount importance, and though (once again) I've restricted programming to low, medium and high accent levels (represented by open, dotted and solid diamonds or rhombs), those with more sophisticated machines would be well advised to extend the dynamic range by programming instruments at levels between these three rather arbitrary values. As regards tempo, though not carved in stone (so to speak), the indicators do act as a fairly accurate guide to the sort of speeds you should be aiming towards, at least at the outset. But once again, use your own discretion.

To get things moving, Pattern 1 is fairly conventional, and is given much greater rhythmic interest by a well chosen hi-hat line, a nicely complementary side stick part and a few snare flams...

As I mentioned last month, the snare flams (in Bars 2, 4, 6 and 8) may be programmed as 64th notes if your machine has no specific flam function available. If, on the other hand, your machine is incapable of resolving down to that kind of level, you'll simply have to try dropping the volume of the other snare beats in the pattern, so that you're left with accented beats in place of flams. It is also worth spending a little time programming the hi-hat part – its dynamics and the opening figure at the start of every other bar are crucial to the feel of the pattern.

Though quite different in structure, much of what I've said about Pattern 1 could equally apply to Pattern 2. It's a much faster rhythm, and relies more heavily on the bass drum to fill the gaps, and employs a ride cymbal part to provide a rhythmic offset to the hi-hat.

The small letter "O" in the bass drum note in Bar 7 is intended to indicate it being optional, but if you decide you like it, you could also try inserting it at the corresponding position in Bar 3.

Pattern 3 is one of those rhythms it's better to run through a couple of times before deciding whether you like it or not. The bass/snare drum construction at the opening of every other bar gives the pattern a rather unconventional feel, but it's one which, with the right accompanying bass part, could provide the basis for a number of successful funk tracks.

Of particular interest is the interplay between the bass drum and the open/closed hi-hat in Bar 8 which provides an almost perfect cadence for funk music, and If nothlng else could be extricated from its current setting and grafted into other patterns where this is possible. Keep an eye on the dynamics in the fast hi-hat figures at the end of each bar, these are essential if it is to sound like the instrument has actually been played with a pair of sticks – which for a ➤

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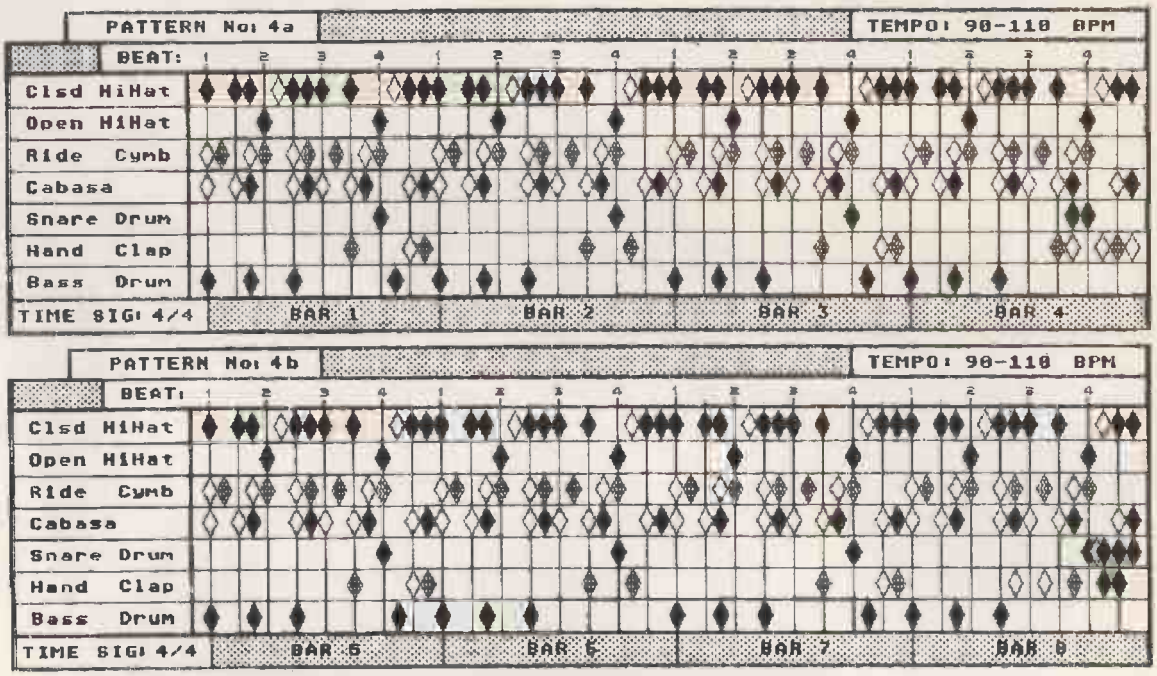
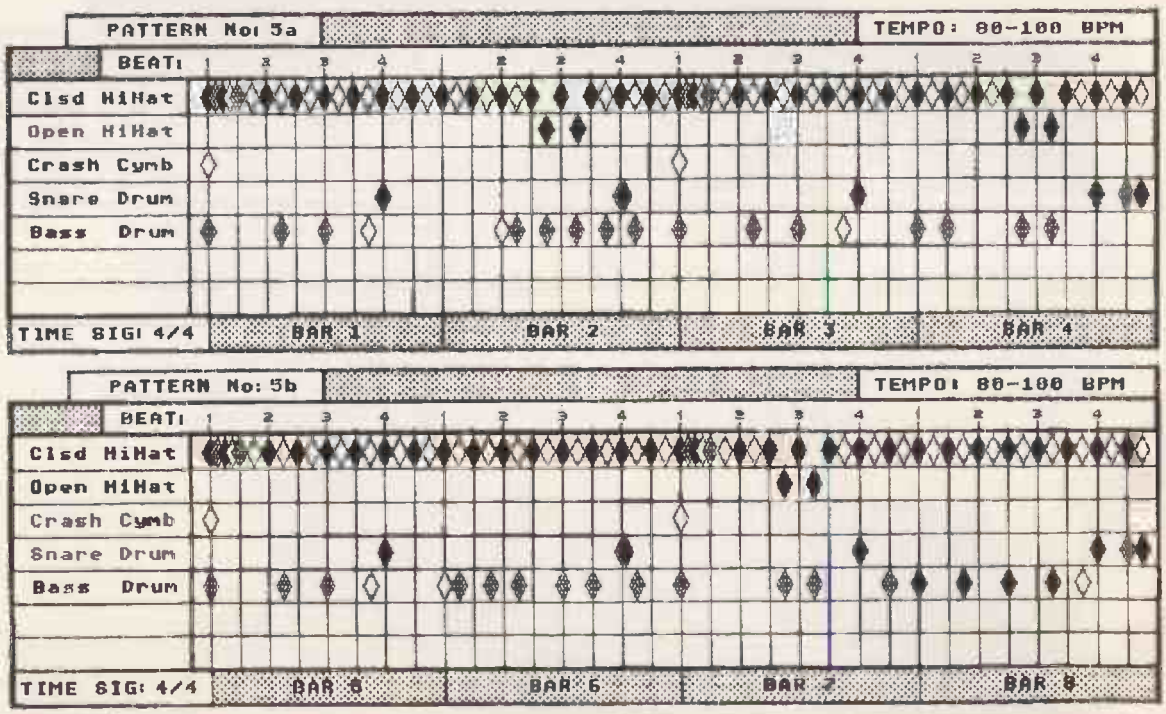
number of reasons is more important with the hi-hat than other instruments.

I suppose Pattern 4 would be best described as Latin funk. With its syncopated cabasa line and quite elaborate open/closed hi-hat and ride cymbal parts, it has an undeniable Latin tinge to it, yet should prove adaptable enough to allow it to be used within a variety of different settings.

Having struggled to overcome my prejudice against handclaps since the days of those appalling segued disco records of the early '80s, I have included a handclaps line here. As you will see, however, it's some way from the role of ersatz snare drum it was cast in during its *Stars On...* period, and in this setting complements the pattern quite nicely. You could, of course, replace it with another instrument if you too have an aversion to the sound – a cowbell or even timbales might prove interesting, particularly in view of the Latin flavour of the pattern.

Finally this month, we have what can only be described as a classic funk rhythm in Pattern 5. I make no excuses for lifting the hi-hat line from Pattern 1: despite the different feel of the two examples, it fits just as well here and fills the somewhat sparse arrangment perfectly – I say sparse but as you can see, the bass drum is given plenty to do and will certainly have a strong influence on the structure of the accompanying bass guitar part (or whatever bass instrument is used). At 80-100bpm it ticks along at quite a moderate pace, yet is still perfectly suited to dance tracks and offers plenty of opportunity for further development. ■





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THE LAND OF THE RISING SUN

Q: what do medieval church music, Stravinsky and a Juno 60 have in common with Salman Rushdie and Billy Corkhill?

A: they're all part of the strange world of a band called Beloved. Interview by David Bradwell.

"QUE SERA SERA, WHATEVER WILL BE WILL be, we're going to Wem-ber-lee. . .". It's 6.45 on Wednesday, 15th November, and 15 minutes ago I was supposed to be meeting Jon Marsh and Steve Waddington of Beloved at a Wembley Wimpy, prior to taking them and their press officer Judy to the England/Italy game.

Unfortunately, life being what it is, I'm still on the North Circular in a rather large traffic jam, and my arrival is less than imminent. This misfortune has given me time, however, to recap on tracks from the band's debut album *Happiness*, and to ponder the changes in their music since they first appeared on the scene.

At the time of their arrival they were much beloved of the likes of John Peel, playing indie guitar pop like so many other bands of the mid-'80s. Now, at the end of 1989, they've just reached the Top 30 for the first time with the deep-house influenced 'The Sun Rising' - a huge club hit and Radio 1 favourite. 'The Sun Rising' is soon to be followed by 'Hello', an infectious mix of rock guitar over a heavy dance beat, supplemented with a list of names as diverse as Salman Rushdie and Billy Corkhill. 'Time After Time' and 'Up, Up and Away' are a ballad and dance track respectively, which manage to show off a further diversity of sounds and influences, without ever straying too far to not be instantly recognisable. Perhaps not since the Pet Shop Boys themselves have a band in this market

managed so successfully to rubber-stamp a style of their own over such a range of uplifting, optimistic pop music.

It's now 7.15 and I've arrived. No time to do the interview though, due to the impending kick-off, so off we trundle towards turnstile B. On the way it transpires that Steve Waddington is much more a cricket man, and would probably rather be next door with Neil Diamond in the Arena than at the Stadium with 70,000 football fans. Jon Marsh, a Crystal Palace supporter at heart, but with a sneaking respect for Liverpool seems much keener about the prospect of watching some of the world's "finest" compete in a nil-nil draw. Unfortunately ill-health has taken its toll, and at half-time singer Marsh retires, sick. An unlucky development this, but nevertheless we soldier on.

It's now 10pm and the interview is finally underway in the marvellous setting of the Wembley Stadium car park. At lunch time on Thursday 17th, Marsh is on the MT hotline adding his views and experiences to those of his partner the night before. What seemed a novel idea for an interview has now become an extremely complex operation, a complete logistical disaster.

Accusations that the band changed to producing dance records just to cash in on the current popularity of the format meet with a cool response. They stopped making indie-guitar records in 1987, and it's taken two and a half years to get one hit.

"I don't think that by any stretch of the imagination we are what I'd call a dance group anyway", Marsh begins. "What we try to do is come up with a marriage of our own influences. I'm probably much more into club culture than Steve is, but at the same time he's steeped in a history of weird music and new age Windham Hill stuff. The best bands hopefully are the sum total of their influences plus, if you're lucky, 25% of something new, because there's nothing new left to really discover - it's all about learning from what other people have done and taking the bits you like, but then adding a little bit of your own personality into it.

"This is the fourth record we've put out in a two-year period, and it's the first one people have actually bought. In fact, in the purest sense 'The Sun Rising' is not a dance track because it doesn't have to be heard in a club to make sense, whereas a lot of records of that genre do."

Most of the instant appeal of 'The Sun Rising' was from a choir boy sample, affectionately known as 'the ooeeooeeooeeoo bit'. It was Waddington's idea, inspired by medieval church music, of all things.

"I write the lyrics and nearly all of the music as well, but it varies", Marsh begins. "'The Sun Rising' is one of the few collaborative tracks, and started as something Steve did at home on a four-track. It was originally just a basic rhythm and sample and then it was just a question of putting in overdubs to make it complete."

"We sample bits from old records, but try not to do the obvious things", adds Waddington. "It's not a case of getting hold of dance records and resampling the same old stuff, we've been looking for more obscure bits. The pitchbend bit in the single was inspired by Kraftwerk, but in fact is the beginning of *The Rite Of Spring* by Stravinsky, which was then messed about with. There's quite a few classical bits - the chords in the chorus of 'The Sun Rising' are sampled from Ravel.

"The ooeeooeeooeeoo bit isn't actually a choir boy at all. When I was getting the basics of the song together it was a sample of a 14th Century hymn, sung by a woman. I'm a big fan of early medieval music, and I had an idea of what the atmosphere was going to be, and so I wanted something that was from that era of church music. I eventually found the bit, but when it came to doing the single, we had to get somebody in to sing it for legal reasons. It's funny how sampling has become engrained subconsciously when you're listening to music. Getting somebody to sing the whole part all the way through, repeating it over and over sounded wrong. We had to get somebody to sing it once, and sample it, because we've become so used to listening to samples that it sounds wrong any other way.

"It was the easiest song on the album to do because it's such a simple idea, and there was very little to do."

THE ACTUAL TRANSITION INTO THE NEW style of music came about through a gradual change in the band's tastes.

"There's no point in doing the same thing for the rest of your life", acknowledges Waddington. "I like what we were doing originally, but I think we'd gone as far as we could with that. It was time to do something new and this is what we were into at the time. We're not going to be doing this for ever.

"Jon was probably the first one to get into dance music. He kept coming into the studio trying to get us to listen to LL Cool J or Mantronix. We were getting into dance music before the house thing took off, but it wasn't until we started getting into the early house records that we realised that was what we wanted to do. When we were trying to get the deal Jon went to New York because there was interest from some labels over there, and some of the people he met introduced him to the music, which he then brought back over here."

As well as American house music, Marsh claims to have been influenced by the likes of Barry White, in respect of the emphasis on melody rather than just a rhythm track.

"There are also people like Mantronik, whose approach to technology was really rather innovative", he adds. "His records nearly always sounded like he was trying to do things that maybe the machines weren't meant to do, but he did it anyway. The end result is far more important than the way you get it. House music is a very anonymous form of music. There are a lot of very ➤

"The best bands are the sum total of their influences plus, if you're lucky, 25% of something new, because there's nothing new left to discover."

"The pitchbend bit in the single was inspired by Kraftwerk, but in fact is the beginning of The Rite Of Spring by Stravinsky."

➤ good people doing it, but there's no one person who stands out. Maybe Frankie Knuckles, but if it's him it's because his approach is based more around melody. Rhythm for its own sake isn't really interesting."

One of the trends Beloved have borrowed from dance music is the perpetual onslaught of different mixes of one song. With two 12" versions, each with four mixes and a CD with another four, 'The Sun Rising' became a huge club hit even before it reached the Top 40. At the moment the band are in the studio preparing around 20 different versions of 'Hello' for release in January. But why so many? Steve Waddington begins:

"We just enjoy putting out different versions of a song. The way we work is to continually change the songs and go back to the beginning to start all over again. There's no such thing as the finished article - you just run out of time and the record company comes down and takes it away from you. There are many different ways of approaching a song, and that's why we do so many mixes."

"It's another excuse for us to get back into the studio", adds Marsh. "It's very much an environment that we like, and short of having new songs to write it's a way of doing it. A song basically consists of a top line and the lyrics and so in a remix situation we're writing new songs by putting a brand new track underneath, but without having to worry about finding the ultimate hooks because they just stay the same."

The tempo of one remix of 'Hello' is 118bpm, 17bpm faster than the original. For this version it wasn't quite as simple as rebuilding the track behind the vocal, because the vocal was at a different tempo. Waddington explains how it was done.

"We took the original vocal and used the S1000 to sample every line and then time-stretch it up to 118bpm. Jon isn't too happy with it because it's lost a certain human quality from the singing, and I'm not sure if it's something we'll attempt again. It's frustrating sometimes when you come to do a remix and it's going really well and you think you could turn it into a whole new song, but as long as the ideas keep coming we'll keep remixing them."

'Hello' is seen as the definitive Beloved track, and will be the first song on side one of *Happiness* when it's released next year.

"It's basically about good and bad things, which is why the list isn't a definitive list of people that I like and secondly that there are people in there that I really don't like at all", explains its writer Marsh, referring to the lyrics. "There isn't a tie-in between the chorus and the verses, that's the lunatic thing. We've thrown everything in - obscure political references which we're very good at, lots of cross-cultural pollenation of stupid rock guitar over a quite heavy dance beat and then just a list of names."

"Jon wrote the lyrics and he had us guessing what it meant for weeks", adds Waddington. "He eventually explained that it's a political thing about certain political parties pretending to be green when they aren't at all really. This song has got a bit of everything that has influenced us in it. It's got TR808 rhythms, the dance element, the guitars. . . A lot of the bass sounds are mixtures of the Juno and Minimoog, with a TX802 thrown in as well.

"We're pleased to announce we now have a MIDI keyboard of our own, which is a Juno 60 which we've had for a long time, but before getting that MIDI'd up we had no MIDI equipment. We've got a TB303 Bassline, and we've hired in all sorts of equipment in various studios. The keyboards we've used most lately are the Juno and a Minimoog, with a bit of Prophet and D50 thrown in. There are a lot of old synths that we would like to get hold of, now we can actually afford to buy equipment. When a new keyboard comes out everybody goes out and gets it and is using those sounds, so it's nice to get hold of something a bit different.

"We have a rough idea of what the technology is capable of, but we don't have the hands-on experience of which buttons to press. When you know how it works and you work it yourself, you can easily fall into traps of using the same sounds and the same ways of working. Not knowing *exactly* how it works makes it much easier to get more out of a machine and a producer than they might have got on their own."

THE HUMAN ELEMENT OF THE MUSIC IS very important to Beloved, as is its overriding sense of optimism. The album is called *Happiness* because that's what it's all about, it's designed to make people happy. Despite the present climate of economic doom and gloom, everything seems to be going well for the band and they're well aware of their own good fortune. They're equally well aware that music made by machines can lose a certain human quality, and they're anxious not to let it happen to them.

"There may be just two of us, but we are a band and it's not all machines", begins Waddington. "There are quite a lot of guitars on it, some of the keyboards are played live and there's live percussion. If you just use machines and you're completely reliant upon them I think you lose your identity. The way a band can keep their identity on a piece of music is through their human input, on top of whatever the computer is doing."

"I think the human element is the most natural aspect of what we do", adds Marsh. "Maybe making it not sound contrived is a problem, because sometimes you do things which to you aren't worth thinking twice about, but other people may misconstrue. All the best music has always had a human element. I like Kraftwerk, but for me, they need those ridiculous vocals over the top. Even though they're trying to sound like a machine they don't, and it's like having somebody there pointing out that this is not to be taken too seriously.

"At one point we were toying with the idea of

sampling my vocal on 'The Sun Rising' and making that very machine-like and then putting a more human feel into the choir-boy part. There's a certain hypnotic quality to samples, the fact that they always sound constant. Previously we've done things where you sample a whole chorus of vocals and spin that in, either to save time or because you're having trouble singing it, but that to me is taking it a bit too far, because then you really are dehumanising the music."

Away from more established forms of music such as records, tapes and compact discs, Beloved songs have also been heard live and in the cinema. One song was used as part of the soundtrack to the film *Sammie and Rosie Get Laid*, and recently the band have had another offer to provide a track for a forthcoming big screen release. Steve Waddington has reservations.

"You have to decide before it's been made whether or not you want to do it and if so what you're going to give them. You don't know what the film's going to end up like, and you're relinquishing total control over the way that you're seen. If we ever had the time, to sit down and make a proper film soundtrack would be great, but in terms of a career you have to take quite a long time out to do that."

Playing live is something the band probably won't be doing again for some time.

"It's not something we've really considered", begins Marsh. "We've played a lot of gigs before, when we were a guitar band, and obviously it would be a radically different idea now, but I'm more interested in being a contemporary studio band. Obviously there may come a point where we may have to play live in order to further our career, but it's not something that I have to prove to myself because I know we've done it in the past.

"The risk a lot of bands run now is in playing live and promoting a single around the world, and before they know what has happened 18 months have gone by, and they're forgotten."

If there's any justice in the world it will be a long time before Beloved are forgotten. It's a pity the same can't be said about the England/Italy game. Waddington has told his press officer that he wants to conduct all of his other interviews in the summer. . .

"Spending a day at a cricket match is one of the greatest things on earth", he explains. "Take along a packed lunch and a few cans of beer, and you just laze about in the sun. You have to go to the sorts of matches where there's nobody there, there's no point in going to a test match. You have to go to a county match where there's only ten people, then you can sit back, and the bar's open all day. That's my idea of heaven." ■

"The way a band can keep their identity on a piece of music is through their human input, on top of whatever the computer is doing."

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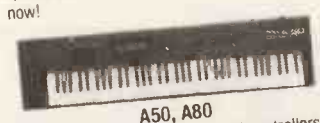

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SY77

The first in a new generation of Yamaha synths arrives just in time to see in the new decade. Will the SY77 set the pace for synth development in the '90s? Review by Simon Trask.

THERE'S NO GETTING away from it. The DX7 is the synth which Yamaha will always be known for first and foremost. In a sense, every subsequent FM synth from them has existed in the DX7's shadow, despite the many improvements which have been made to the original spec along the way.

Both a blessing and a curse for the company, the now venerable DX7 still holds a unique position in the history of the synthesiser. But then it came at a unique time: the transition from analogue to digital synthesis. Through foresight the company were able to place themselves at the vanguard of this transition.

It was some four years before Roland were able to bring out the D50 and regain the ground they'd lost to Yamaha; only a year later, Korg's M1 was the synth to be seen with. It's a tough world out there, and the pace is getting quicker all the time.

The question is: now that everyone's working in the realms of software and digital technology, can anyone get far enough ahead of the game to pull the same stunt that Yamaha did in the early '80s? Can Yamaha themselves get far enough ahead? Because they achieved so much with the DX7, rightly or wrongly people are bound to assess any next-generation synth from the company against that synth's success.

Which brings us to the SY77 and Yamaha's claim that it will set a new direction for synthesiser development through the 1990s. What exactly that means I'm not sure; after all, the DX7 set a new direction for synthesiser development in the 1980s, but that didn't mean anything as obvious as every other manufacturer following them down the path of FM synthesis. Digital synthesis, yes.

What the SY77 does have is the workstation-type paraphernalia which seems to be an essential part of the contemporary synth: 16-track sequencer (16,000 notes), disk drive taking 3.5" DSDD disks, digital multi-fx section, 16-Part multitimbral capability and dedicated drumkit capability.

But the question on everyone's minds is: will the SY77 be the DX7 of the '90s? That could mean will it leapfrog the competition both sonically and technologically, or it could mean will it be the hardest synthesiser in the world to program? Well, let's have a look. . .

I HEAR VOICES

ESSENTIALLY WHAT YAMAHA have done with the SY77 is take advanced forms of their FM synthesis

and AWM sample technologies (AFM and AWM2), made them interactive and added digital filtering to each section. The interactive bit means that you can use an AWM2 sample as a modulation input to any AFM operator (carrier or modulator), and/or use the AFM output as an AWM2 "sample". Yamaha call this Realtime Convolution and Modulation synthesis, but perhaps we can forgive them for that.

Each Voice (Yamahaspeak for program or patch) can consist of up to four Elements, an element being either a complete AFM or a complete AWM2 sound. AFM and AWM2 Elements are paired: 1 and 3, 2 and 4 (AFM and AWM2 respectively in each case). Each AFM Element uses its paired AWM Element as a modulation input, so you can't use more than one AWM2 sound to modulate the operators within an FM algorithm, though you can use the one AWM2 sound on any number of operators, providing they have a spare modulation input. Using an AWM2 Element as a modulation input to an AFM algorithm doesn't remove it from the Voice, though if you want to do this so that it only sounds within the AFM context, you turn its output assignment off (turning the Element itself off removes it as a modulation source).

You can choose one of 11 possible combinations of Elements: 1, 2 and 4 AFM mono, 1 and 2 AFM poly, 1, 2 and 4 AWM poly, 1 AFM+1 AWM, 2 AFM+2 AWM, and Drum Set - with the latter allowing you to select and program a keyboard drumkit configuration drawing on the AWM samples. There are then a number of parameters governing how the Elements are combined: Element volume level, detune amount, transposition, note range, velocity range, panning, output assignment, random pitch fluctuation, portamento (for AFM-only Voices), digital effects selection and programming, single microtuning scale selection with Element on/off, and controller assignments. The SY77 divides its polyphony 16:16 between the AFM and AWM2 sections, so with 1 AFM + 1 AWM you have 16 notes, while if you double the Elements then you still have eight notes.

There's much that will be familiar about the SY77's AFM section to those of you who already know FM through the DX series. The carriers, modulators and algorithms are still present, as are the operator level settings, operator envelopes, LFO, pitch envelope and associated familiar parameters. But programming access, via the LCD screen, is so much easier than it's been in the past.

There's much more to justify the SY77's Advanced FM tag than its ability to use AWM2 sounds as operator modulation sources. For a start, each operator has two modulation inputs. One is taken up when another operator is modulating it, but that still leaves the other free for either a noise waveform input or the AWM2 input; if no operator is acting as a modulator, you can use both noise and AWM2 as modulation inputs. Each input's level is adjustable on a scale of 0-7.

The SY77 also ups the number of feedback loops from one to three and makes them configurable, an advance which allows much greater timbral richness. And not only have Yamaha upped the number of algorithms from 32 to 45, but even more significantly they've revamped the operator configurations, coming up with a good deal more variety, complexity and sophistication in the process - we're not talking original 32 algorithms plus 15 new ones here. Algorithms 1-20 all have a single carrier, concentrating on providing a wide variety of configurations of the modulator operators. Algorithms 21-29 all have operators 1 and 2 as carriers with the remaining modulator carriers all hanging off operator 2, while algorithms 30-33 have operators 1 and 3 as carriers, with operator 2 hanging off operator 1 and the other three operators hanging off operator 3. To ➤

"Yamaha have taken advanced forms of their FM synthesis and AWM sample technologies, made them interactive and added digital filtering to each section."

➤ cut a long story short, the remaining algorithms include such variations as two carriers with two modulators hanging off each, three carriers with three modulators hanging off the third, three carriers with one modulator hanging off the second and two off the third. . . The modulators come in both parallel and serial configurations, in some cases with a feedback loop on one of them.

Algorithm 42 is perhaps the best balanced: three carriers each with their own modulator. You can get some rich, luscious sounds out of this one with relative ease, particularly if you add configurable feedback loops to the modulators. Algorithm 44 has carrier operators 1-5 all being modulated by operator 6, which also has a preconfigured feedback loop with itself, while algorithm 43 has carrier operators 1-4 being modulated by operators 5 and 6, while 5 is also being modulated by 6 and has feedback loops with itself and with 6, and 6 has a feedback loop with itself. Finally, algorithm 45 returns to comparative sanity with the good old six carriers - though even this has more potential than it did on the DX7, what with the configurable feedback loops and the noise and AWM2 modulation inputs. Then there's the opportunity to choose any one of 16 waveforms for each operator. Other new features which justify the AFM tag include four-breakpoint scaling of each operators' output level (allowing more flexible volume and timbre enveloping across the keyboard), six-segment envelope generators with initial delay and settable loop point, and a sub LFO in addition to the main LFO which is used to control pitch modulation only.

The AFM-synthesised sound can be routed through its own pair of digital filters (OHz-22.43kHz cutoff). Either or both of two 12dB/octave filters can be used, with filter two always low-pass and filter one switchable between low-pass and high-pass. In the latter case it can be used in conjunction with filter two to create a band-pass filter, while when both filters are low-pass and set to the same cutoff point they function as a 24dB/octave low-pass filter with the addition of resonance which can push the filter up into self-oscillation. You can select whether each filter will be controlled by filter cutoff envelope or by the main LFO; you can set the amount by which the LFO will modulate cutoff, and the sensitivity of the filter itself to the LFO as well as to velocity. Additionally you can create a four-breakpoint envelope to scale the filter cutoff point of each filter independently across the keyboard.

No filter would be complete without a cutoff envelope for filter sweeps, and the SY77's filters are no exception. You can define a six-stage envelope for each filter, with rate and level settings for each stage as well as a rate scale amount for adjusting the envelope rates across the keyboard. The AWM2 section has an identical pair of digital filters; in fact, a four-Element Voice can make use of up to eight filters at once. Being able to select an AFM Element as an AWM2 "sample" allows you to route its output through a second pair of filters.

The AWM2 (Advanced Wave Memory) section allows you to select one of 112 16-bit linear samples which have been recorded variously at 32 and 48kHz. AWM is the sound-modelling technology that Yamaha have used with great success as the basis of their Clavinova digital pianos, so it's only natural that FM and AWM should meet at some point. Only here the AWM is programmable.

The quality of the samples is very impressive, but then AWM technology models changes in sound based on samples. You can hear the difference on, for instance, Preset 1 A01: Grand Piano, where the decay of the notes is quite natural, suffering from none of the thinning of tone which results from sample looping done when memory is at a premium.

So what sort of source sounds do you get in the AWM section? Well, there are plenty of acoustic instruments: piano, trumpet, muted trumpet, horn, flugel, trombone, flute, clarinet, tenor and alto saxes, violin, pizz, strings. . . In the bass department there are fretless, wood, thumping and popping, and a punchy synthbass. Then you have various tuned percussion (vibes, marimba. . .), several blown bottles (cue breathy sounds), some spiky metallic percussive sounds, struck piano strings, sax breath, a booming Japanese temple drum, delicate koto and shamisen and a selection of waveforms: triangle, sawtooth, pulse and digital inharmonic.

Rounding out the selection are 20 drum and percussion sounds, mostly standard kit with a few Latin sounds thrown in. They're punchy, tight and clean, and when tuned around and used with other percussive samples in the Drum Sets (see below) they're a passable collection.

Overall there's plenty of clarity, detail and vitality in the sounds, and where characteristic attacks need to be caught (on some of the brass sounds, for example) they are for the most part caught well; the tenor and alto saxes were the only samples which struck me as a bit lacklustre.

As well as being able to select an AWM2 sample (internal or card) or AFM input, you can specify normal or fixed pitch together with what the fixed pitch is (this can yield some interesting results when you're using an AWM2 sample to modulate an AFM operator). The sample is routed through a four-stage volume envelope, four-breakpoint output scaling and the aforementioned filter section, and can also be modulated by an LFO and a pitch envelope. Nothing difficult to get to grips with here.

As an alternative to AFM and AWM2 Elements you can program Drum Sets for individual Internal patches. In addition to specifying an overall volume level, you can select any one of the SY77's 112 AWM samples together with volume, semitone transposition (+36/-48), fine-tune amount, static pan value, output group and alternate on/off assignment for each note on the keyboard. Any notes assigned alternate on will interrupt one another, so that only one at a time can play (you could have open and closed hi-hats cutting one another off). Additionally you can program a complete set of effect parameters specifically for the Drum Set, and select a controller to control the overall volume of the Set.

You'll find that in the verdict I've talked at some length about the quality and nature of the AFM ➤

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"The SY77 can produce the full gamut of sampled, synthesised and sampled plus synthesised sounds that we've come to expect from today's synths, but goes beyond with its new AFM section."

➤ sounds, so I won't indulge in any particular description here, or in any list of Voices (which I understand may well have changed on the production models). What I will say here is that the SY77 can produce the full gamut of sampled, synthesised and sampled plus synthesised sounds that we've come to expect from today's synths, but goes beyond the sonic vocabulary of these synths with the sophistication of its new AFM section. Programmers will love the SY77, but it's not an obscure instrument in the way that the DX7 was. In true glasnost spirit, the SY77 welcomes you with open arms.

The SY77's panning capability has to be the most sophisticated going. As an alternative to static pan positions for each AFM and AWM2 Element within a Voice, you can draw on a range of preset and user-programmable dynamic panning effects, allowing you to have up to four such effects going at the same time within a Voice. For each programmable effect you can specify pan source (velocity, note or LFO) and depth together with a six-stage pan envelope and a ten-character name.

Yamaha introduced microtuning on the DX7II, and they're not about to ignore it on the SY77. As well as allowing you to create two tunings of your own (coarse and fine-tune pitches for every note in the MIDI range) Yamaha's new synth provides you with a choice of pure major, pure minor, mean tone and Pythagorean (in each case with any pitch in the octave as root note), Werkmeister, Kirnberger, Valloti, quarter- and eighth-tone and more, much more. You can also specify tuning on/off for each Element.

The last stage in the sound chain is digital effects processing. The SY77's four effects processors are divided into mod1, mod2, reverb1 and reverb2, and can be configured in any one of three ways. In the SY77 scheme of things, Voices are routed to either, both or neither of two Groups, which are effectively inputs to the digital effects section and "hard-wired" to a pair of stereo audio outputs. One way of configuring the processors has a mod/reverb pair in each signal path, with mod before reverb; another has Group1 routed through mod1, then reverb1, then reverb2, while Group 2 is only routed through mod2. Finally, all four effects processors can be put in the Group1 signal path, with mod1 and mod2 in parallel followed by reverb1 and then reverb2; Group2 outputs are not effected. Additional parameters allow you to turn the stereo mix for each path on/off.

Each of the two mod processors can be set to stereo chorus, stereo flanger, symphonic, tremolo or off. The reverb processors have a much larger number of effects to choose from: in addition to hall, room, plate, church, club, stage, bathroom (honestly), tunnel and metal reverbs there are various delay and echo effects, distortion, tone control (rough and ready EQ) and combinations of reverb and delay, reverb and distortion, distortion and delay, tone control and delay. . . Scarcely any of these effects have more than three parameters to their name, and none more than four, so we're not exactly talking flexibility here. No wonder there are so many different effects and effect combinations. Disappointingly, the mod effects are on the weak side, while the reverb and associated effects are usable as far as they go, which isn't as far as you might like.

FRONT AND REAR

YAMAHA HAVE GIVEN the SY77 a 61-note synth-style keyboard which is sensitive to attack velocity and channel aftertouch and has a pleasantly chunky feel to it.

The front panel has been well thought out, with the different functional areas clearly organised and delineated. The centrepiece is a 60 x 240-dot (8 x 40-character) backlit LCD screen with easy-on-the-eyes blue shading and adjustable contrast. Related parameters can be grouped in a single display, graphic editing of envelopes is possible, and edit pages within a Mode and Voices within a Bank can be listed. The SY77 adopts a now familiar method of operation, with eight Function buttons below the LCD assuming different functions (if there are any) according to the LCD page you're on (listed on the bottom row of the screen). In addition there's just about every edit control possible: data slider, infinite rotary wheel, ± buttons and numeric keypad, together with Page left/right and cursor left/right/up/down buttons.

To the left of the LCD are Mode select and sequencer control buttons, while at the right-hand end of the front panel are Voice and Multi select buttons which double as sequencer track selectors and AFM operator select and on/off buttons (complete with helpful pinpoint LEDs indicating on/off status).

Also on the front panel are card slots for Voice/Multi RAM and ROM cards and waveform ROM cards (like Korg's M and T series, the SY77 can access a library of samples on card). The SY77 comes with 128 Preset ROM Voices and capacity for 64 Internal RAM Voices, and can access a further 64 Voices off ROM and RAM cards.

Finally, on the rear panel are MIDI In, Out and Thru sockets, knobs for adjusting LCD contrast and the onboard sequencer's metronome click output level, a dedicated breath controller input, dedicated volume footpedal and sustain footswitch inputs, programmable footpedal and footswitch inputs, headphone output and two pairs of stereo audio outputs plus power on/off button.

MULTI MODE

SIXTEEN-PART MULTITIMBRAL CONFIGURATIONS of Voices can be defined for use with the SY77's onboard 16-track sequencer or for remote sequencing from an external MIDI sequencer, with dynamic allocation of the synth's polyphony across the Parts. As well as selecting a Voice (or off) for each Part, you can specify volume level (1-127), fine-tune amount (+63/-64), semitonal pitch-shift amount (+63/-64 again!), stereo pan position (+/-31 or Voice) and output routing (Off, Group 1, Group2 or Both). It's worth emphasising that for each Part you can either set a fixed pan value or retain the panning assignments programmed for the Elements of that ➤

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"Combined with the accessible front end Yamaha have given AFM, and it's user-friendly combination with AWM2 samples, there's really no reason to be frightened of (A)FM any more."

➤ Part's Voice, which means that you can have a lot of dynamic panning effects going at the same time - or perhaps just use dynamic panning to emphasise a particular Voice within a sequence. Sophisticated stuff.

You can also program effects settings as you would for a Voice, only here they apply to all 16 Parts, with effects routing per Part determined by the output parameter. Finally you can give each Multi memory (remember, there are 16 onboard and 16 on a card) a 20-character name, and initialise and recall individual memories.

SEQUENCER

YAMAHA HAVE COME up with a very workable and practical 16-track sequencer for their new synth. You record a single song at a time, up to 999 bars in length (assuming there's enough memory), using the 16 track buttons mentioned earlier to select the Record track (its LED turns red) and to mute specific tracks (LEDs flash green-yellow). Active recorded tracks are indicated by continously lit green-yellow LEDs. The same colour coding is used by the SY77 when it comes to sequence editing, with the LEDs of track(s) to be edited turning red when you select them.

Tracks 1-15 are continous recording tracks, although you can start and stop recording anywhere within a track, with a two-bar count-in for real-time recording. Recording modes available for these tracks are real-time replace or overdub, step-time and punch in/out (with pre-defined punch points). Track 16 is reserved for playing patterns recorded in the separate Pattern mode; to play patterns back within a Song you have to chain them together in track 16 in Song Edit mode. Once you've constructed a pattern chain you can copy it to any other track, where it becomes continuous data (for instance, a four-bar pattern's worth of data repeated ten times in track 16 becomes 40 bars' worth of data in another track).

You can also copy an individual pattern directly into any of tracks 1-15 and extract into a pattern any portion of one of these tracks (up to the maximum pattern length of 32 bars). As real-time pattern recording is loop-in-overdub, you can use these get/put functions to loop-overdub any portion of a continuous track, or to use the Song Edit functions on patterns; step-time recording and editing of patterns is also possible.

Sequencer tracks use whatever Voice is assigned to the equivalent Part in the currently-selected Multi configuration (if no Voice is assigned to a Part, that track will play over MIDI only), so patterns (whether in track 16 or being recorded or played back in Pattern mode) will use whatever Voice is assigned to Part 16. Alternatively, a Song has its own set of user-programmable MIDI transmit channel assignments for its 16 tracks, and by selecting MIDI channel five for track 16, say, you can get that track to play the Voice assigned to Multi Part five.

Song Setup parameters allow you to disable the recording of velocity, control change, pitchbend, patch change, aftertouch and SysEx data, specify whether the SY77's sequencer will be master or slave to an external sequencer or drum machine, define four accent levels for step-time editing, set a MIDI transmit channel for each track, and decide what clock resolution will be displayed for editing purposes. Additionally you can give a song an eight-character name.

The step-time recording and editing screens both allow you to scroll forwards and backwards to any bar within a track. If you're into odd and constantly-changing time signatures then you'll be glad to know that the SY77 allows you to specify a different time signature for each bar, chosen from the ranges 1/4-8/4, 1/8-16/8 and 1/16-32/16 - surely enough to please anyone.

A horizontal line of dashes in the upper half of each screen displays up to 32 steps of a 1/32nd note each (one 4/4 bar's worth), with vertical dividing lines indicating where the beats fall; bars which are longer than 4/4 are split across two displays. An arrow pointing down at the line can be scrolled across the screen using the front-panel dial and ± buttons, indicating whereabouts in each bar you are. Note duration can be selected either by scrolling through musical notes in an onscreen parameter field, or by selecting a duration more directly by pressing the relevant button in the numeric keypad (as I mentioned earlier, each of these buttons has a graphic note value inscribed above it).

Step-time input operates on the familiar principle of only advancing to the next position when all notes have been released, so that as long as you keep one note held down you can play around with other notes in a chord until you get them right. You can also choose for each "step" whether your notes will be normal, staccato or slurred, and select one of the four accent levels that you programmed elsewhere.

Blue blobs on the dashes and crosses indicate wherever notes are present, while a graphic representation of a keyboard in the lower half of the step-record screen allows you to see what notes you've played when you scroll through a track. Other functions allow you to delete individual steps or whole bars.

Step-time record is continually in overdub mode, so that whenever you play notes they're entered at the current step with the currently-selected duration. Step-time edit functions slightly differently, allowing you to switch between the graphic keyboard to help you see what the notes are at a particular step, and a numerical data display (one MIDI event at a time) for the actual editing. Here you can change event values and insert and delete individual note, patch change, pitchbend, controller, aftertouch and relative tempo (10%-200%) events at any position.

The Song Edit Job page provides access to 16 editing functions, a number of which operate on user-specifiable portions of individual tracks. You can post-quantise notes (with the option of quantising note durations), modify note durations and note velocities, create a crescendo or diminuendo (the SY77 achieves this by scaling note-on velocities), transpose notes (±99 semitones within the overall C-2 to G8 limit), thin out memory-intensive data (aftertouch,

pitchbend and control change), erase specific types of event (aftertouch, pitchbend, control change and SysEx), erase multiple bars, and shift a specific pitch to any other pitch within the MIDI range (particularly useful for rhythm tracks, where it allows you to readily change, say, a conga part to a bongo part). Additionally you can shift a whole track forward or backward in time in clock intervals (96ppqn) up to ±99 clocks, copy, delete and create multiple bars across any configuration of tracks 1-15, mix two tracks together (or, if the destination track is empty, simply make a copy of a track), erase a track and clear a song.

Finally, the SY77's sequencer is able to read off disk sequences which are stored in Yamaha's NSEQ and ESEQ formats, allowing you to load sequences recorded on other Yamaha devices such as the QX5 FD sequencer and V50 FM synth.

UTILITY

UTILITY MODE GOVERNS a number of overall settings grouped under System, MIDI, Card and Disk headings. Under System you can set master tuning, choose fixed velocity (1-127) or one of seven velocity curves, assign functions to the two programmable foot controllers, decide whether you want "Are You Sure?" edit confirmation messages to mediate between you and your actions and enter a 2 x 20-character power-up greetings message.

MIDI Utilities allow you to set keyboard transmit channel, Voice receive channel, local on/off, note on/off mode (all, even or odd), a SysEx device number (Off, 1-16, All), Bulk Protect on/off and patch-change reception mode. You can also initiate SysEx transfer of the SY77's onboard data in a number of different groupings (such as All data, Sequencer data, Voice and Multi data, Single Voices and Single Multis).

Card Utilities allow you to format RAM cards and save and load synth data (Voice, Multi, system, pan and microtuning), while Disk Utilities allow you to format 3.5" DSDD disks, save and load all types of SY77 data, make a backup disk, rename and delete files and get a readout of disk status (total number of files, disk space occupied and free).

VERDICT

WHEN YAMAHA UNVEILED FM synthesis in the first half of the '80s, they effectively issued a challenge to other manufacturers: produce a synthesis system which provides the same degree of sonic detail and clarity. The response to that challenge has been unfolding through the rest of the decade, and as we've reached the close of that decade it seems like a good idea to survey what has been happening to the synthesiser post-DX7. Then we shall see where these developments have left Yamaha and the SY77.

When Roland eventually broke Yamaha's dominance of the synth market, they did it with an instrument which laid the ground rules for other manufacturers to follow. The D50 combined sampled instrument attacks with traditionally-conceived synthesis transplanted to the digital domain, which was a logical move on two counts. Firstly, FM synthesis had imparted a new degree of instrumental realism to synthesis partly through the amount of sonic information it was able to convey in the attack segment of a sound, the segment which plays a large role in defining one instrument from another - even from staccato notes you can tell a trumpet from a guitar from an oboe. You only had to listen to a synthesised strings sound on the D50 without and then with a sampled strings attack to appreciate the added degree of realism which the latter imparted.

Secondly, while many musicians liked what they heard from FM, the unfamiliar ins and outs of its programming structure proved much less attractive to them. By transplanting familiar analogue-derived concepts to the digital realm, Roland achieved a certain continuity with their past analogue synths and at the same gained a stick with which to beat Yamaha.

Subsequently Korg came along with the M1, which extended the sample principle to include not just attack segments but complete instrumental samples - at the same time expanding the range of samples available by allowing further samples to be read off plug-in PCM ROM cards. Now the sample board for Korg's T-series synths represents the latest logical extension of this development, freeing musicians from reliance on sample cards provided by the manufacturer. Much further and synth and sampler will become one (can the day be far off?). At the same time Korg's M and T-series synths stick closely to traditionally-conceived synthesis. Meanwhile, confirming the prevailing trend, 1989 has seen the emergence of Ensoniq's strongest synth yet, the VFX, which also combines samples with traditionally-conceived synthesis (in this case closer to a Matrix 12 than a Jupiter 8).

So where do these developments leave Yamaha and the SY77? In a way the relationship which has developed between samples and synthesis - not to mention the advent of affordable sampling - during the '80s has worked in Yamaha's favour, by removing the onus on synthesis systems to come up with realistic recreations of "real" instruments. FM synthesis probably got closer to achieving that aim than any other system, admittedly with varying degrees of success, but the means of achieving the results were by no means straightforward. How much easier to plug in a sample card - which is exactly what you can now do on the SY77.

What about that other "development" - the retaining of a traditional model of synthesis? Well, seven years on from the DX7, it isn't only analogue-styled synthesis which can claim to be traditional: thanks to Yamaha's persistence with it over the years, FM synthesis has passed the "future shock" stage and created its own tradition. Combined with the accessible front end which Yamaha have given AFM on the SY77 (courtesy of the synth's large LCD screen, sensibly-presented programming structure and clearly thought-out front panel) and its user-friendly combination with AWM2 samples, there's really no reason to be frightened of (A)FM any more. ➤

"Where other synths have integrated samples into a traditional synthesis framework, Yamaha have done this and put it alongside a much-enhanced FM synthesis section."

There are other important points to be made about the SY77. It should be clear that Yamaha have given it all the technological "knick-knackery" expected of the contemporary "workstation"-styled synth, so you need have no fear of losing out there. But, more importantly, where other synths have integrated samples into a traditional synthesis framework, Yamaha have done this with the AWM2 section of the SY77 *and* put it alongside a much-enhanced FM synthesis section - which can in turn use the output of the AWM2 section as a modulation input to its operators. Do you get the impression there's something more going on here than on the SY77's contemporaries? You're right (though Ensoniq's VFX-SD, with its sophisticated analogue-style modulation possibilities and TransWave synthesis section, also has something out of the ordinary to offer in this respect). It's also worth bearing in mind that AWM is more than just sampling, and the SY77's samples have a greater degree of realism and responsiveness to them than straightforward samples.

But ultimately it must be the AFM section on which the SY77 stands or falls. It's easy to be cynical and laugh at the fact that Yamaha are *still* using FM after all these years. But the "A" on the front of the FM is more than wishful thinking. In pure sound terms AFM is capable of producing full, warm, luscious pad-type sounds and fat, warm, punchy analogue-type bass sounds which old-style FM could never produce, introducing a new breadth and richness to FM synthesis. Also included on the sonic menu are metallic sounds which can be warm and rich or cold and harsh, the familiar DX-type bright, tinkly electric pianos but also seductively dark and warm electric pianos, fat and punchy brass sounds, rude and dirty organ sounds, silky smooth strings and all the harsh, ugly, cutting FM sounds you could wish for.

There was also more than one occasion when I thought I was listening to a sample, only to find out that it was an FM sound. In fact, many of the SY77's Preset sounds use the 1 AFM+1 AWM combination, but don't construe this as an attempt on Yamaha's part to hide shortcomings in the AFM section, because AFM can stand proudly by itself. In the light of its new and expanded set of algorithms, 16 operator waveforms, three assignable feedback loops, dual modulation inputs per operator and ability to accept AWM2 sample sounds as modulation sources, *and* the far more user-friendly programming access provided by the SY77, (A)FM deserves to be considered afresh. Bringing the AWM samples into the picture, the SY77 is also good at playing Korg's M1 at its own game (you know, the breathy, swirling, ethereal sounds).

I must say I found the SY77's (digital) filtering, and in particular the resonance, a little disappointing after the Waldorf MicroWave's rich, powerful analogue filtering. It does add an extra dimension to the AFM, however (well, maybe half a dimension), particularly when it comes to filter sweeps. I'd also say that the digital effects aren't the most exciting aspect of the SY77, but they're adequate. The SY77's ability to layer four sounds and still have eight-note polyphony is also a point in its favour, as are the sophisticated panning effects the synth is capable of, while the 16-track sequencer is user-friendly and reasonably powerful but still (of course) no substitute for the computer-based option (surely a cheaper sequencer-less companion would have been a good commercial move on Yamaha's part).

The DX7 comparison looms large in the collective psyche of synth players, which is perhaps why I've heard (and heard reports of) lukewarm initial reactions to the SY77. I must admit my initial reaction was that it sounded good but wasn't about to knock the socks off the competition. It certainly doesn't represent a DX-equivalent quantum leap forward, but it does at least represent a significant step forward. No future shock, but maybe that's a good thing. I grew steadily more impressed with the SY77 as I got to know it, and it's left me with a feeling that I want to go on getting to know it. Sometimes those relationships can last the longest. ■

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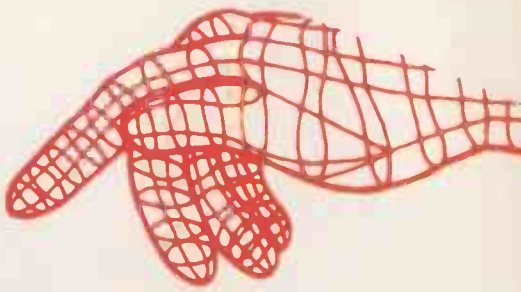

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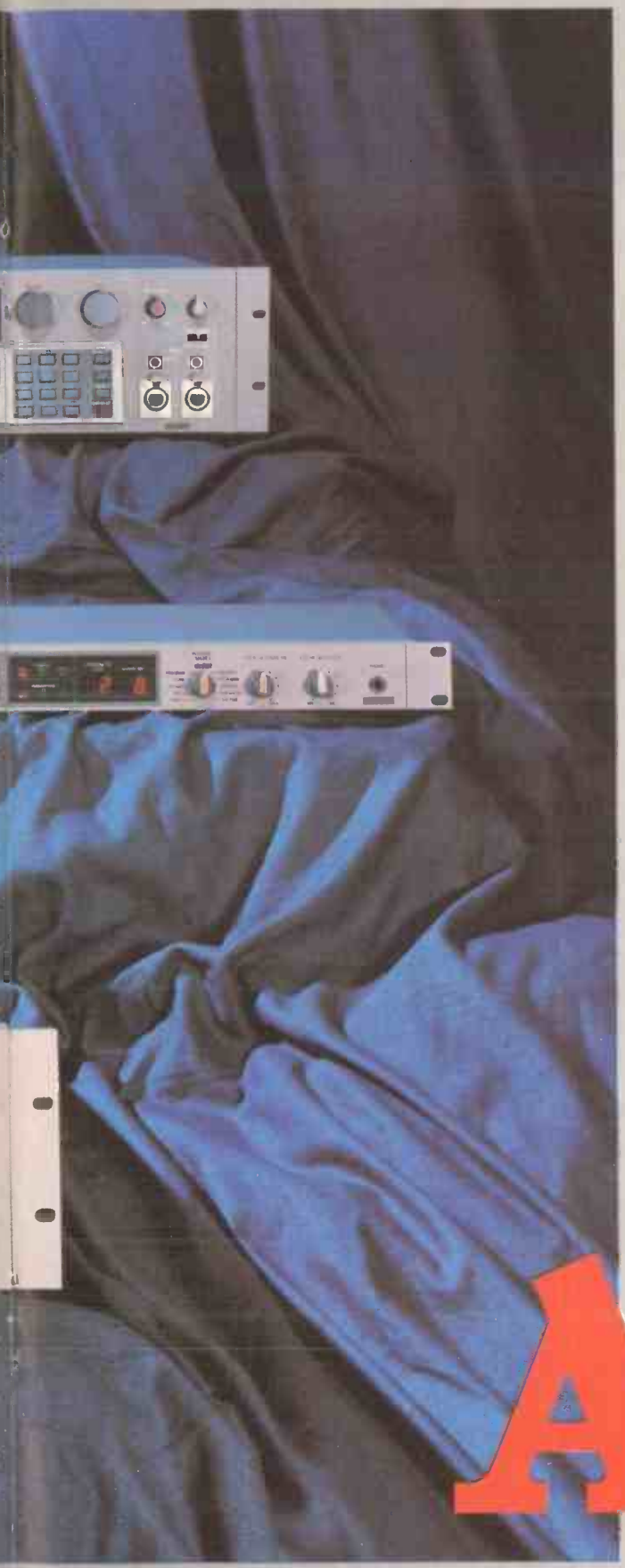

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MERGING MIDI INFORMATION

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ONE CONTINUING AREA OF MIDI CONFUSION IS THAT SURROUNDING THE MIDI MERGE BOX – WHAT DOES IT DO, AND HOW MIGHT IT HELP YOU? TEXT BY VIC LENNARD.

THERE CAN BE few people taking their first tentative steps into the world of MIDI who haven't wondered at some time or other "Why can't I simply splice together two MIDI leads when I want to use two different keyboards to play a single synth?" With a MIDI Out socket on each of the keyboards but only a single MIDI In on the synth, this, on the surface, wouldn't appear to be too unreasonable a request.

But of course, life isn't ever that simple. Consider the example of two tubes each with different coloured balls being pushed through them by means of compressed air. With the tubes separated, the balls will obviously emerge in the same order as they were sent in. If, however, they are joined so that they share a common outlet, the balls will emerge mixed together, making it impossible to determine the order in which they entered, or even which ball came from which tube. The result would be chaos.

The flow of MIDI information follows broadly similar principles. Here, data transmitted down MIDI cables takes the place of the coloured balls rolling through tubes whilst the "push" provided by the compressed air is generated electronically by what is known as a current loop. And just as in our example the tubes must be kept separate if the balls are to emerge in the correct order, so each MIDI line must be kept independent if data is to be interpreted correctly by the receiving device.

THE MESSAGE

THE "PACKAGES" OF MIDI data sent down each cable are referred to as messages. Pressing a key, for example, sends a Note On message, while releasing it transmits one for Note Off. Each message consists of a series of MIDI bytes which, essentially, are made up of strings of numbers. Different types of messages are made up of differing numbers of bytes: Note On and Off, for example, need three bytes each to convey all of the necessary information, while a program change requires only two bytes. Sending the entire set of program parameters for all the sounds in a synth, on the other hand, could involve some 64,000 bytes or more.

To further complicate matters, the bytes for each message are, in effect, mutually dependent and cannot normally be separated. This means that should any of the three bytes which comprise a Note On message (Note On status, MIDI channel, note number and velocity) be lost, the message would be incomplete and would be unintelligible to the receiving device.

Clearly then, MIDI data needs to be handled with some care; though vast amounts of information may be transmitted down each cable, these cannot be simply joined together in an effort to mix information from separate sources. If we want to merge data from two or more MIDI outputs, it has to be through a purpose-made device – the MIDI merge box.

ROLE MODELS

AS WE'VE ALREADY seen, a MIDI merge device has two principal tasks. It has to keep together all the bytes that comprise each message and it has to ensure that the timing for each message is such that they cannot collide. But under what circumstances is it needed? Let's take an example where a sequencer is used to control both a keyboard synth and a drum machine, with the latter providing the MIDI clock timing data necessary to keep it in sync with the sequencer. In addition to the MIDI Out from the sequencer going to the MIDI In of the keyboard, and, via MIDI Thru, to the MIDI In on the drum machine, the MIDI Out from the drum machine must also be connected to the MIDI In of the sequencer. No problem here.

But supposing you want to program some extra notes into the sequencer from the keyboard. How can the MIDI Out from the keyboard send data to the sequencer when its MIDI In port is busy receiving MIDI clock information from the drum machine? We could try connecting the MIDI In on the drum machine to the MIDI Out on the keyboard (rather than MIDI Thru), but then the drums would no longer be played from the sequencer. And unless the drum machine can combine the notes coming in with the clock data it is generating (which some can't), this wouldn't work anyway.

What we actually need to do is to merge the MIDI output from the drum machine carrying the timing data, with the MIDI output from the keyboard carrying the note data. Enter the MIDI merge box...

DATA PROTECTION

THE LAST EXAMPLE illustrates well a situation where life can be made a lot simpler using a MIDI merge device of some description. But what of our first problem where we simply wanted to play a synth from two keyboards? With a MIDI merge box to mix the two MIDI Outs to feed a single MIDI In, it isn't a problem any more. There is, perhaps, the question of overloading the merge box with too much MIDI data, but generally speaking this is unlikely to present any difficulties. Most sequencers are capable of playing all 16 MIDI channels simultaneously, and yet rarely, if ever, do we hear any timing glitches.

Having said that, there are certain types of MIDI messages which require more bytes than others: pressing the keys of a synth using channel aftertouch, for instance, can easily produce an extra 100 bytes of data. And if it's of the polyphonic (or key) variety of aftertouch we're talking about, this can be multiplied by the number of notes being pressed. And our friend the pitchbend wheel is an even worse offender. A moderate speed pitchbend from the centre position to either extreme and back will usually generate around 400 to 800 bytes of data, depending on the resolution of the wheel, and that can take some time to transmit.

But it's the proliferation of software-based synth editors in recent years which has put some of the greatest demands on the MIDI system. Once again a strategically-placed MIDI merge box can make life a lot easier. The problem is one of being able to hear edits as they are taking place. This is fine if we are dealing with a keyboard synth (like the Roland D50), because the keys can be pressed while the synth is being edited. But it can become rather more problematic when the modular version of the synth is used (like the Roland D550).

"THE PROLIFERATION OF SOFTWARE-BASED SYNTH EDITORS HAS PUT SOME OF THE GREATEST DEMANDS ON THE MIDI SYSTEM – A STRATEGICALLY-PLACED MIDI MERGE BOX CAN MAKE LIFE A LOT EASIER."

Let's say that we have a master keyboard and a synth module along with a computer and a piece of editing software. Connect the MIDI Out of the keyboard to the MIDI In on the computer and its MIDI Out to the MIDI In of the synth, and what happens? Answer: not a lot unless the editor has what is usually termed a "Soft(ware) Thru" which combines the incoming note data with the edits being created.

Unfortunately, most editors need to be connected to the synth in a handshaking mode – which means that the MIDI Out of each unit has to be connected to the MIDI In of the other. This is usually to allow you to send existing data from the module to ➤

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HI-TECH EQUIPMENT

➤ the computer – which on some editors is necessary before you can proceed any further. However, it may also be so that if you need to edit certain parameters from the module itself, you can do so in the knowledge that the computer will be kept in step with the process by requesting the data from the module each time any changes are made.

"THE MIDI MERGER IS ABOUT TO TAKE ON A NEW LEASE OF LIFE WITH THE EMERGENCE OF MIDI TIME CODE – THIS IS A SYNC CODE WHICH CAN BE SENT OVER MIDI AND WORKS QUITE HAPPILY ALONGSIDE SMPTE."

But surely the software allows you to "play" the synth from the computer keyboard? Well, yes, but only after a fashion. Some editors provide you with an on-screen keyboard with special methods for producing aftertouch and pitch-bend effects, but in general they tend to be rather limited – ever tried playing a chord using a mouse? The best solution is probably that provided by Steinberg whose editors let you load in a pattern from one of their sequencers, though even this doesn't come close to actually playing a keyboard.

So how can a merge box help? Simple: connect the MIDI Outs from the computer and the master keyboard to the MIDI Ins on the merger, the MIDI Out from the merger to the MIDI In on the module and the module's MIDI Out to the MIDI In on the computer. The module receives the data from the editor and the notes from the keyboard, and we have two-way communication between the computer and module.

EMERGING CHOICES

CONSIDERING IT HAS a microprocessor at its heart, the MIDI merge box is not perhaps as costly as it may at first appear. Prices start from around £75 for the excellent Philip Rees 2M, whilst other fairly inexpensive units (around £100) include Yamaha's YMM2, Groove Electronics' MIDIMerj and the rather ingenious Anatek Pocket Merge which doesn't use a power supply of any sort but is powered by voltages derived from the MIDI system itself.

Other manufacturers have taken to incorporating MIDI merge facilities within MIDI patchbays – Akai's ME30PII, Digital Music Corporation's MX8 and XRI Systems' XR400 being good examples. These start at about £200. Finally, there are the big guns such as the JL Cooper MSB+ which incorporate a large scale MIDI patchbay with mass merging of inputs. Function Junction and Friendchip also have products up and coming in this division.

The MIDI merger is about to take on a new lease of life with the emergence of MIDI Time Code (MTC). This is a sync code which can be sent down the MIDI line, but is far more accurate to work with than MIDI timing clock, and works quite happily alongside SMPTE – which cannot travel with standard MIDI data. Here, the MIDI merger will be necessary to combine MTC with other MIDI data.

And on the subject of future developments that involve merging MIDI data – or perhaps potential developments – there are a number of hardware interfaces belonging to various packages for the Atari ST which include merging facilities, but this is only within the confines of their own software. It would be better if they could be opened up to the rest of the market place.

Finally, if you have a merge box and fancy a little diversion during those long evening sessions when nothing is going right, interesting results occur when controlling a synth from two keyboards on the same MIDI channel. Playing the same note on each keyboard and then releasing one of them sometimes stops one note and sometimes both of them – the results vary from synth to synth, even from those of the same manufacturer. Ah, the joys of MIDI. ■

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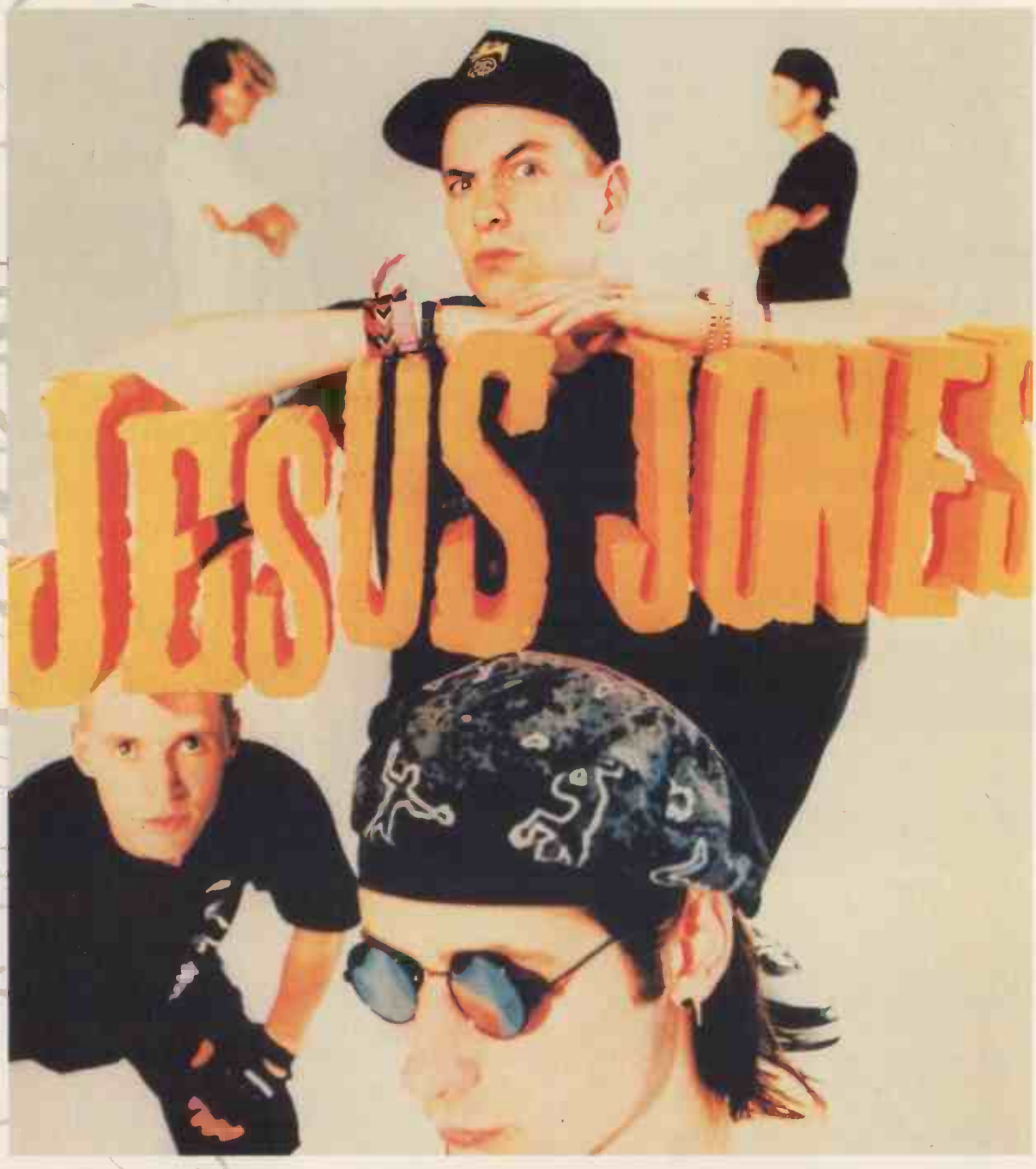


Where screaming guitars and thundering drums meet samples; where the original pop music ethic comes face to face with the technological revolution, you'll find a band called Jesus Jones. Interview by Nigel Lord.

EVER SINCE THE DAY WHEN A BASS-PLAYING GEORDIE schoolteacher called Gordon something-or-other decided to throw in his lot with a couple of chancers by the name of Summers and Copeland and produce the almost perfect synthesis of pop-punk/reggae, we have been confronted with a continuous stream of mix 'n' match hybrids drawing us away from the purer pop styles of previous years. Sadly, not all of this eclecticism can be said to amount to anything more than the sum of its parts; in many cases it lacks that elusive "X" factor, which, irrespective of the strength of the underlying concept, can only be injected by the band itself. All too often the seams remain visible and the music sounds contrived: seldom does it take much effort to uncover the thought processes involved at its creation.

When confronted with the concept of Jesus Jones, I have to say my natural cynicism initially gained the upper hand. . . "Where pop meets hysteria, froths at the mouth and frays at the edges but never breaks into a sweat. Imagine a Cuban heel stamping on a fuzzbox pedal, forever. . ." - not for the first time, the more sensational language of the weekly music press did little to arouse my curiosity about a new band. And with Mike Edwards (Jesus H Jones by any other name) the band's singer/guitarist and spokesman seemingly given *carte blanche* to express opinions on everything from U2 to God (or is that God to U2?) - my suspicions definitely began to get the better of me.

Then Jesus spoke to me. No wait, he sang to me first. I spent a not unpleasant weekend with *Liquidizer*, the band's first album, set to continuous play on my turntable and soon found myself being drawn in by a series of wickedly barbed hooks. Clearly, this particular alloy has considerable strength and durability. It bristles with rough edges, but none (thankfully) come from the careful melding of thrash guitar, cement mixer vocals (set against some altogether inspired harmony lines) and well-developed sampling suss. Brash punk enthusiasm tempered by '60s pop sensibilities and late-'80s techno know-how. How easily it could have failed.

That it didn't can only be ascribed to Edwards himself whose knowledge of pop - both musically and technically - and whose obvious frontmanship have served the band well. In addition to his familiarity with the work of such dead-and-gonners as the Beatles, the Byrds, Jimi Hendrix *et al*, he seems acutely aware of the industry of which he is now a part. It's the kind of awareness that stems from a lifetime spent on the outside looking in, always believing that your 15 minutes would come. Of course, at his age, he can't have had his nose pressed up against the toy shop window for long, but I'm sure it seems that way to him.

None of which would be of serious interest to readers of MT were it not for the fact that rather than simply an addition to each song, the use of samples is quite integral to the band's overall sound. Indeed, as Edwards explained in our conversation, most of the songs began life as a handful of samples to which were added rhythm tracks, melody lines and guitar parts as they progressed. Perhaps that's why the synthesis is so successful. . .

"Very much so, yes", he comments. "But it has to do with the way music is made these days. If it's going to have a contemporary feel it has to start with just the beat and associated samples. And actually, if you took all the guitars off our records you'd be left with extremely good dance music".

The marriage of the two, far from being made in heaven (no pun intended), came about during a summer break in one of the less ostentatious Spanish holiday resorts. Edwards, along with guitarist Jerry de Borg and drummer Gen, having struggled for two years (no less) in bands with no real hope of success, did a few calculations and decided they could put together the pieces in a slightly different way. . .

"Actually, if you took all the guitars off our records you'd be left with extremely good dance music."

"Actually, it was anything but calculated. The only thing we knew we wanted to do was to get a good band together. It was just that at that time my interests lay in hip hop; I'd always listened to classic pop and was also very interested in a lot of the American guitar bands who were around at the time. So we thought about combining all those things. We'd already been writing guitar songs and I'd just got this sampler and thought it might be a good idea if I could start using it with the guitars. It really wasn't calculated at all - it seemed very natural to me."

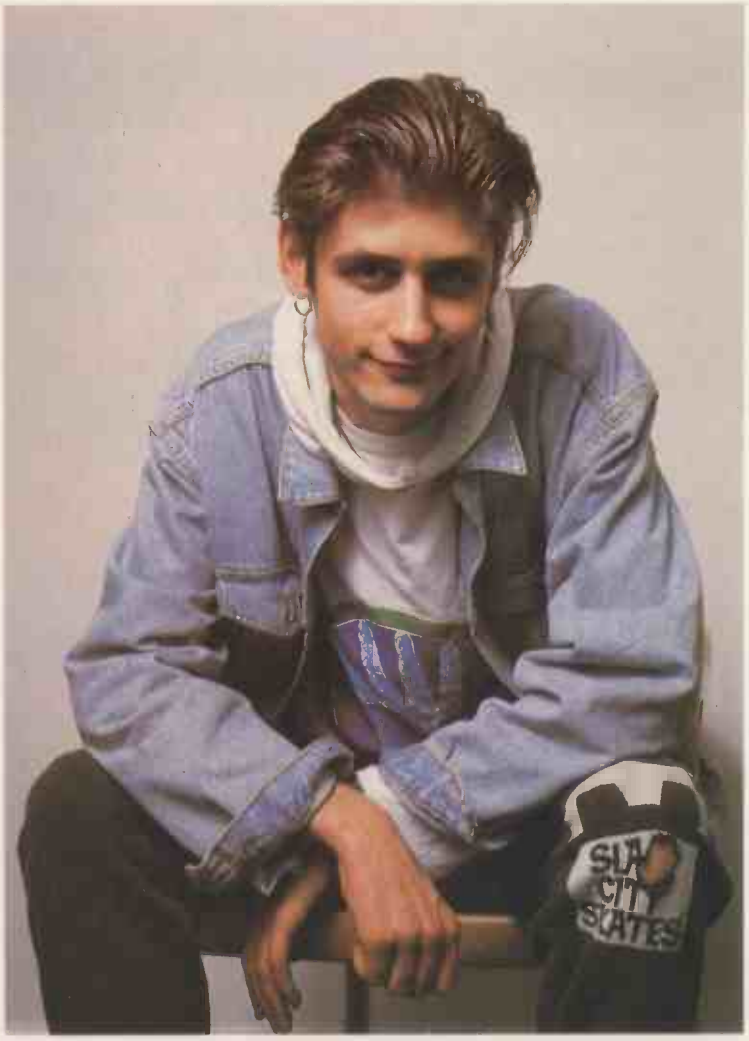
Certainly, it made the right impression on the Great British record-buying public who hoisted the band's first single 'Info-Freako' into the lower reaches of the Top 40. But with two such well-defined elements at large in the music - the guitars and the sampling - is there no temptation to determine which might be more responsible for the success of the band and to diminish the role of the other?

"I can't really see us doing without either - although it has to be said it is easy to sample guitars. In fact, there is always a point when I write a song when I think. . . Right, I'm going to do the guitars now, and sometimes it's quite an effort to fit them into the mix.

"But really, I wouldn't like to do without either. If you look at the present music scene you'll find that people like Happy Mondays and AR Kane and all sorts of bands are mixing house with different kinds of music. I think people are now starting to accept that you can combine things rather than simply saying it's *this* sort of music or *that* sort of music. And I'm very pleased about that; I'm pleased that we share common ground with people like that and in some ways are representative of this new attitude. At the moment we've only just begun to investigate what we can do with sampling. I think that the very ➤

➤ basic idea of mixing more traditional aspects of music with samples can go a lot further - and so can sampling itself, there's so much more room for development."

AT A TIME WHEN SAMPLING IS OFTEN SEEN AS THE sole territory of house and hip hop artists, it's also refreshing to hear this particular branch of technology being dragged into communion with other contemporary styles - especially when the merger has been so successful.



"I don't find it very entertaining to use samples which are extremely obvious - it's a bit of a cheap joke."

Much of that success stems from the band's use of samples as sound sources rather than simply pre-recorded snatches of music or vocals. Jesus Jones may "borrow" from other peoples' records (and the credit listing on the inner sleeve of the album will give you some idea as to the sources), but by the time he's finished with the samples, it would be a brave soul who would point with any certainty to their origin. All in all, a more organic use of sampling technology than we have come to expect. . .

"That's very important. I made a conscious decision about that. I don't find it very entertaining to use samples which are extremely obvious. It's a bit of a cheap joke in a way - you listen to a record and think. . . Oh God yes, here's that sample from such and such a track, and after that it's really not interesting any more. With an instrument that you can do almost anything with, it seems amazing that people still just use it to get little bits of other people's records and leave it at that.

"I'm quite happy to sample from records - anyone who releases a record is fair game as far as I'm concerned - and I'd use absolutely anything. But I tend to go after an interesting sound rather than a specific piece from say a James Brown record from the '70s. If I found a particularly strange bit of vocal at the beginning of a Buddy Holly record, for example, I'd nick that.

"A lot of sounds can be very complementary: like, on 'Bring It On Down' off the album we had a chain saw playing a harmony and the sound of it really seems to fit with the abrasiveness of the song. I tend to use specific sounds for specific things - in the way you'd use guitar arrangments for example. But that's the way things are going in house music now: with bands like 808 State, sampling is getting a great deal more organic, as you put it."

Given this obvious fascination with the manipulation of sound, it is, perhaps, strange that nowhere on the album are there any conventional (or unconventional, for that matter) keyboard sounds. In fact, the synthesiser seems to have no place in Jesus Jones' scheme of things. . .

"No, I don't find those very interesting at all", comes the explanation. "In fact I really dislike most conventional keyboard sounds - that early '80s synth sound has no appeal whatsoever."

In view of the kind of advances made in synth technology over the past couple of years, it seems rather odd to be talking about "conventional keyboard sounds" as if there was little to choose between any of them, but anyway. . .

As an indefatigable live act, how easily does the work JJ do in the studio translate to stage?

"Using the kind of instrumentation we do - the samplers and sequencers - there is practically nothing that we couldn't do live. That's why I'm so glad to be making music in this day and age. I remember reading something about John Lennon saying that his original idea for 'Tomorrow Never Knows' on *Revolver* was to have a thousand monks chanting in the background. And he said 'but obviously I couldn't do that, so instead. . .', whereas ➤

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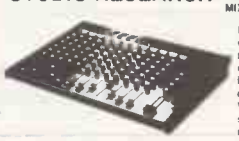

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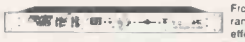

From the best selling range of U.S. made effects and the unit of 1st choice for the high quality natural sounding reverbs associated with American studio processors costing thousands rather than hundreds (algorithms uniquely structured to eliminate the harshness and brittleness of the other budget units)

· 200 programs including 120 REVERBS from Early Reflections, Plates, Studio and Live Vocals, huge Halls (up to 25 second decays) and Rooms, all in a wide range from warm to bright, to Reverse and 20 various Gated/Companded Gated STEREO IMAGING, PAN and SPECIAL EFFECTS · COMBINE multiple effects · 16 bit, full bandwidth processing, 80dB dynamic range (extremely quiet) · Great MIDI spec MIDI PROG numbers assignable to any program, 16 MIDI channels or OMNI, compile your own patches etc Control from kbd, or seq or use footswitch/MFC05 for live program advance/live random selection respectively · 19" rack mounting

This EXCLUSIVE offer represents an unrepeatable opportunity to purchase a beautifully natural sounding commercial quality reverb at a fraction of the cost. We expect to sell out very quickly RRP £345

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AKAI XE8 16 BIT DRUM SAMPLE PLAYER

The Akai S1000 and MPC 60 are by a long way the most common source of drum sounds in professional live recording environments In these situations price is often of little concern We can now offer every writer/player these sounds at around one tenth of the cost

The Akai XE8 · 1 meg of memory of 16 16bit samples · 2 FREE 1 meg Roms (16 sounds each · kits percussion orchestral blasts etc · use two cards simultaneously (two slots) · Store any 16 samples in one of 32 programs · assignable key note 0-127 play melodies, cymbals become gongs etc · tailor sounds to your requirements variable hold and decay times (e.g. gates) reverse variable sweep Bright punchy drum sounds are the foundation of any mix and time and again the average drum machine just doesn't cut it in the studio. The XE-8 gives you customizable 16 bit drum samples to turn up to 32 tracks of your Atari/C Lab/sequencer set up into a super flexible, state of the art drum machine Alternatively use it to expand your drum machine or trigger from drum pads Octapad/velocity sensitive keyboard etc etc

Hurry We have a small quantity Package includes FREE steel 8 unit 19" rack stand and and 2 1meg roms & C-Lab drum pattern disk Great package price with C Lab sequencers RRP £499 NEW BOXED

PACKAGE PRICE **£259** plus VAT Add £6 carriage

CASIO MG510 WITH TREM GUITAR MIDI CONTROLLER

Widely accepted as one of the most playable systems at any price · with superfast tracking and no mis-triggers Guitar alone worth £300+ · Maple neck, Rosewood f board, 22 jumbo frets. Synchronised trem. 1H B.. 2 S C. pickups, coil tap. Torque adjusting machines Great MIDI spec Assign strings to different MIDI channels/synth voices Select 96 synth patches from fret board Adjustable level of pitch shift on string bending (up to 1 octave). Transpose (±1 octave) Individual string sensitivity adjust Onboard quartz tuner for guitar and synth, + much more Hurry We have a limited quantity. Specify red or white RRP £545

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YAMAHA MFC05 MIDI foot controller

Two banks of five foot switches give instant access to any 10 programs/patches · bright LED's for stage use · Control any MIDI effect via std MIDI cable · Chain up any number of effects for multiple program changes · Gtr synth players change synth patches/effects together · Non guitar players: hands free patch changes · Usual Yamaha rugged construction/reliability · great package deals with all effects units. Exclusive, ltd stocks RRP £119

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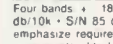
AKAI PROFESSIONAL EX SERIES EFFECTS.



EX85P PARAMETRIC EQ

Four bands + 18 db sweep · Variable Q (bandwidth) · · 10 db/10k · S/N 85 db · Foot-switchable · Tailored E.Q. to emphasize required parts of music and eliminate unwanted components · Ideal for line mixers with auxiliaries but no E.Q. · Use with any mixers/Portastudio · great for guitars etc. R.R.P £139

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This is strictly limited offer. These effects are less than half the price of any comparable units. Hurry. 19" Rack adptor (holds two units) available £16 Inc P&P

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➤ we *could* do that. No problem at all. Modern technology gives you the opportunity to do absolutely anything you want. And though I don't like the idea of reproducing a record perfectly on stage, what is on the album is nevertheless very representative of what we sound like on stage - that's really where our big advantage lies."

"I'd got this sampler and thought it might be good to use it with the guitars - it seemed natural to me."

Of course, given a large enough budget, no-one would question the viability of reproducing on stage everything that occurs on record. But for most bands working within limited resources, that's very much the rub.

"Our record company advance wasn't that great, so we don't have a vast amount of equipment, and I use all the gear at home that we use on stage. As far as sampling's concerned, there's an Akai S900 for the sequencer sounds - that is, all the shorter samples that are rhythmical or have to be triggered repeatedly by the sequencer: percussive sounds and sampled basslines, things like that. Then we have the S950 which is used for all the keyboard triggered parts, which are the most prominent samples on the record. And that's it really, but I'm very happy with what we've got - the samplers in particular have been brilliant. Everything's so easy on them, even the S950. They have some brilliant functions, and it's all, basically, pretty obvious. They seem to work in the same way that people's minds work.

"Having said that, when I first got them, I did get stuck on a couple of the most basic things. For example, at no point does the instruction manual explain that what I'd call a sample was in fact a Key Group. It took me about a week to work that out. And the other thing was about loading a disk; the manual doesn't actually tell you how to load a disk properly. You follow it to the letter and nothing happens. I ended up phoning the shop and having to take it back and they said, 'Actually what you have to do is this. . .' There's one extra step that they've left out of the manual. But that aside, I'd thoroughly recommend the Akais. They've been through the sort of conditions you expect Marshall amps to be put through."

So there have been no problems with equipment reliability?

"Well, on the last tour we had the sequencer go down on two dates because of the incredible humidity, and obviously that affected the sound. But it didn't mean we couldn't go on without it - there had to be a certain amount of on-the-spot improvisation, but that makes it fun. In a way it was almost a pity when the sequencer worked the next night. But I suppose we're the sort of band where it's not going to matter if one part is missing - we'd simply try to do something more in another department to make up for it."

LIKE MOST OF THE BEST POP MUSIC, THIS vaguely anarchic approach is maintained very much as a part of the band's *modus operandi*. Sampling, for example, far from an exercise in precise digital manipulation of sound, has a slight element of the chaotic about it. . .

"I did it all on my music centre at home, which is pretty crappy, so I suppose it's very lo-fi sampling. I don't sample off CD or anything like that - in fact I don't even own a CD. The drums on the first single 'Info-Freako', for example, I recorded off the radio onto tape, copied the tape and then sampled that copy tape - so it was quite a few generations down by the time it reached the album. But the point is there's so much happening on each record, we simply don't need to have perfect samples or anything like that. And anyway, I don't really like the idea of having such high quality sounds. If you think about all the sampling that's done from '70s records where the sound is so crap in the first place it doesn't make sense. I know some people like Front 242 have this approach where everything has to be perfect, but I don't see it at all."

So how do the samples find their way from the music centre onto vinyl?

"Because we've got a sequencer now, I tend to work everything out on that a long time before I record anything. So if there are, say, three ideas I want to use in a song, I'll get three basic sequences together, each a couple of bars long - perhaps starting with a bass drum. . . It depends on what kind of beat I want; these days I tend to use more house beats than anything else, so if I start with a bass drum that will have to have a particular sound - something that works well on its own.

"Then I'll probably try to manufacture some sort of hi-hat sound from somewhere. I tend to build up the drums first of all and then I'll go for a bassline next, and maybe some acid squiggles or something like that just to get the feel of the track. I find that once I've got the basic feel of the track I can start putting some more interesting samples in."

So there's no use of a conventional beatbox?

"No. We used to use a LinnDrum, but now I can do everything on the sequencer. And these days I do like to get very specific drum and percussion sounds because that can really dictate the whole feel of the track."

With such an open-ended way of working - building things up piece by piece - is there not a danger of going too far, of not knowing when to stop, particularly if you're working in isolation?

"Yes, I think there is, and I have done that I'm sure. But I don't tend to work on a track for very long. I try to get things completed quite quickly, so ➤

It's a pity that more retailers don't copy our ideas (instead of just our ads), free courses with packages, faulty goods replaced and money refunded are all part of a service to which customers are entitled. It is a shame that more retailers do not realise this.
By the way, have you noticed how some shops are incapable of giving you a price on the telephone? (Frustrating, huh?) Next time a shop respond with "How much have you been quoted already?" say "Why - are you too thick to think of a price yourself?" They'll soon learn!

NEW STOCK

Whilst we do not pretend to carry EVERY item from EVERY manufacturer, *(as some shops seem to - ever tried putting it to the test?)*, all new equipment is tested in one of our three working studios, and if we like it, our buying power can usally ensure that we have it in stock at all times (even when your local dealer might have run dry!). In addition, if we recommend an item, we will REFUND YOUR MONEY if you do not agree with us.
In fact we are the largest pro audio dealers in Britain for Alesis, Korg, Drawmer, Casio, Fostex, Seck, Yamaha, TOA, Tascam, Studiomaster, Allen & Heath, C-Labs and a good many morel (Last year we sold nearly 600 new 8 & 16 track packages and around 200 s/h machines!!). It's always worth ringing us for a quote on new equipment and if you're still unconvinced, ask yourself why we became the biggest in such a short time (or better still ask the rest!)

If you are bewildered by the vast amount of multitrack recording products currently on offer, Thatched Cottage fax packs should make the job of choosing the right equipment that much easier. There are 5 in the series; P.A. – Portastudios – 8 Track – Financial advice and MIDI. To obtain any of our fax packs just phone or write.

Concert Grand Piano - £173 + VAT

The Korg P3 sampled piano module is widely acclaimed as one of the most realistic, full spec grand piano modules on the market today. With full MIDI spec and switchable octaves. In additon to the Steinway and Bechstein grand pianos, extra sound cards are available (e.g. orchestra, with super brass, strings, flutes, timps etc) making it one of the most versatile sampled (as opposed to P.C.M) sound sources on the market today. It was good value at nearly £500 when it was introduced; because of a once only purchase we are able to offer it at the unbelievable price of only £199 inc VAT. Whatever your MIDI keyboard set-up we reckon that another grand piano will never go amiss. Give us a call!

When it comes to new equipment you may have noticed that we don't say 'phone for the best deal, POA or "lowest price guarantee" (Ha! Ha! if the prices are so great why don't they just print them and amaze us all). Our bulk buying policy can usually guarantee that a telephone call to us will not be wasted and in any case we can throw in those "hidden" extras – cables with multitracks, patchbays with desks. (By the way, next time a dealer "guarantees" the lowest price and then can't deliver, try reporting them to the local Office of Fair Trading - it will teach them not to waste your time!)
To be honest though, if you spend all afternoon on the telephone the chances are you might find someone somewhere who will undercut us by a pound or two. The difference at THATCHED COTTAGE is if your E16 breaks down on a Sunday morning or your Drum Machne blows up on a Bank Holiday Monday you CAN ring us, we'll be here and we WILL do something about it – 365 days a year. Have you ever needed help and advice outside shop hours? If you are serious about your music you will know that it is quality of service that makes the difference and at THATCHED COTTAGE it's only a phone call away!

TASCAM /ALLEN & HEATH 24 track ..... £14,000 + VAT

At last a fully professional 24-track system for £14,000 + VAT. Combining the best selling Allen & Heath Saber in a 24:16:24 format (No patching required) larger frame size and 24-track metering available and brand new Tascam MSR24 1 inch 24-track. Complete with jack patchbay + all plugs and cable.
If you are thinking of trading up, why not give us a call for information or arrange a demonstration.

THATCHED COTTAGE RECORDING SCHOOL

In response to popular demand we now run a one-week recording course, designed specifically for those of you who feel they can make a go of running a professional 8, 16 or 24 Track Studio. The emphasis will be largely on the practical side and topics covered are finance, premises, running a recording session and hints and tips on every aspect of recording. Class sizes are limited to eight at a time and guest speakers will cover relevant areas. The price is just £200 for the week, including accommodation. Interested? Telephone or write and we'll tell you more. We also run "arranging courses", useful for samplers, call for details.

DEAL OF THE DECADE!

Midiverb II..... £173 + VAT

For the last two years the best, highest quality, most versatile budget reverb has been the award-winning Alesis Midiverb II, 99 echo + reverb programmes, full band width plus comprehensive MIDI spec. All this for only £173 + VAT? All you have to do is give us a call!

THATCHED COTTAGE DIGITAL (T.C.D)

In order to cater for the increased demand for advanced multitrack systems we have just opened a new division – Thatched Cottage Digital. Housed in a brand new purpose designed building, it handles 24-track analogue (including the new Tascam MSR24) and all digital and leading edge installations (such as the new Yamaha digital Multitrack).
If you are considering any kind of professional set-up and feel that the legendary T.C.A. service value is of interest, contact Rob or Andy on (0223) 208110 or ring the normal T.C.A. number for full details of what we can offer (including our second-hand and ex-demo list) What have you got to lose?

THE THATCHED COTTAGE CHALLENGE

This suggestion for a wet afternooon takes about 10 minutes, but results are usually worth the effort!
First of all you flick through the pages of this magazine and take phone numbes of every dealer who "guarantees the lowest price" or operates any kind of unique "Best Price" policy. (There are usually around 10!)
Then, pick any item (It helps if you make it difficult – say a Korg P3 or a Midiverb II, although any popular item will do) pick up the phone and start dialing!!
Points are scored as follows;

1. "That's no longer available Sir" ..... 1 point
2. "No – what you really want is a ..... 2 points
3. "Whoever quoted you that, is lying Sir" ..... 5 points
4. "We can't quote on the phone, but if you come in with cash" ... 15 points
5. "Give us a credit card number and we will quote you" ..... 25 points
6. "Who quoted you that price?" (Just name one of the others) .... 30 points

Anyone who can score over seventy-five points and furnish us with the names of the shops and their answers contained in a vaguely humorous letter will get a free microphone.
Microphones will also be awarded to anyone who encounters a good answer, fob off or excuse we haven't thought of! Good Luck!

SOME SECONDHAND AND EX-DEMO BARGAINS

Seck 12-8-2 Mixer, Mint	£750
Seck 18-8-2 Mixer (black)	£899
Drawmer DS201/Dual Gates	£249
32 Way Patchbays (new)	£30
XR1 X300 SMPTE Generator	£199
Aphex Type C Exciter	£199
Tascam MSR16¼" 16 Track	£2999
Tascam ATR 60¼" 2-track (inc. trolley)	£2999
Fostex E8 large reel 8 track	£1499
Casio FZ10M rack sampler (new)	£699
Tascam MX80 8 channel mic/line amp	£199
Korg MIR	£799
Fostex 4030 synchroniser	£899
Fostex 4035 controller (for above)	£375
Fostex E16 (secondhand with new heads/full guarantee)	£2750
Fostex 260 (demo)	£499
Fostex E22 (¼" centre timecode) Demo	£1999
Drawmer LX20 compressor gate	£199
Allen & Heath Saber large frame 24:16:24, as new	£5999
Teac 3340 4-track	£399
RSD Stellamix 12-8-2	£599
Fostex 160 Portastudio (Demo)	£299
Alesis HR16 (Secondhand - Mint)	£250
Soundcraft 1" 16-track with autolocate just serviced by Soundcraft	£2250
Alesis Midiverb 2 (S/H)	£185
Casio VZ10M	£399
Toa D3 Mixer 8-2	£99
Casio DA2 - R-DAT	£550
Fostex M80 Mint	£899
Tascam 38	£999
Yamaha DX7 Mark 1	£399
Atari 1040 and monitor (demo)	£410
Allen & Heath C.M.C. 32 MIDI desk (32 inputs)	£1500
Revox B77	£650
Soundcraft 760 Series III 24-track	£10,000
Tascam 32 2B 2-track	£499

We have a certain number of ex-demo Fostex E16s available all in mint condition with boxes – Give us a call (All prices exclude VAT)

SPECIAL OFFERS (ALL NEW)

NOMAD AXXEMAN - the Ultimate Guitar Processor	CRAZY PRICE £199 + VAT
NOMAD BASSMAN - the Ultimate Bass Processor	CRAZY PRICE £199 + VAT
SECK 18-2 desk (exclusive to us)	£649 + VAT
TANNOY DC100 monitors (per pair)	£150 + VAT
FOSTEX x 460 Rolls Royce of Portastudios inc full 8-track mixing desk RRP £2125 Our Price	£725 + VAT
MEMORY EXPANSION boards for AKAI S1000 (2 meg)	£260 + VAT
All NEW ART Multiverb II (Includes harmonising)	£345 + VAT
FOSTEX 4050 remote/SMPTE/autlocate for E16	£450 + VAT
ART SGE Ultimate guitar processor	£429 + VAT
JL COOPER mixmate (8-track desk automation - fits any desk via insert points)	£399 + VAT
AKAI S950 ¾ meg memory expansion boards	£125 + VAT

We usually have large stocks of used + demonstration machines, call us for our comprehensive list.

THATCHED COTTAGE SERVICE

At our fully equipped in-house service centre we can service all types of equipment (esp. 8-16 tracks) Every reputable dealer should have one on site (don't let anyone tell you any different) Believe it or not, some retailers actually sell complex electronic equipment from their front room or garage (nothing wrong with that of course - we all had to start somewhere - when you are successful though, you outgrow it pretty quickly!) It does though tend to suggest a lack of back up facilities. So if your multitrack needs a service or the heads looking at, give us a call before it's too late.

For those of you who are seriously considering starting a commercial studio we've come up with three packages, each containing everything you will need for your first paying session, from the Multi-track Machine right through to DI Boxes and Cables. The price of the 8 Track System is £4,300 + VAT, the 16 Track is £7,800 + VAT and the 24 Track is £15,750 + VAT. At Thatched Cottage we proved it *could* be done, and we have helped many new studios to open and start making money – our experience could help you. Give me a ring and have a chat – what have you got to lose? Plus: FREE Thatched Cottage Recording School Course to package buyers!!

8-TRACK DEALS

Fostex R8 plus RSD mixdown 16:4:8	£2199 + VAT
Tascam TSR8 plus RSD mixdown 16:4:8	£2599 + VAT
Fostex R8 plus RSD pro-line 16:4:8	£1975 + VAT
Tascam 238 8-track + RSD pro-line 16:4:8	£1675 + VAT
Tascam 238 8-track plus Nomad Reddimix 8:2 mixer	£960 + VAT

Thatched Cottage Audio

Telephone (0223) 207979 Fax (0223) 207952
Thatched Cottage Audio, North Road, Wendy, Near Royston, Herts.

Access VISA TCA

"Kylie Minogue, Jason Donovan and Bros - they matter an incredible amount. There is a great art to pop music."

➤ that what I've just described to you might take about an hour; getting some more interesting samples in may take another hour. And at that point I'll think, 'OK, I've got a good idea here with the basic things, I'll record a 20-second part of it and add the guitars and stuff' - just playing whatever feels right. Then I leave it alone for a couple of days and when I come back to it, I can say well that sample sounds crap, and maybe decide that what it really needs is the sound of a whale or something. . .

"After it's finished and it's been recorded on the Portastudio (an elderly Tascam 144), I give the rest of the band cassettes of each song, and obviously, as they learn their parts they'll add little extra bits here and there and just reinterpret it slightly - which is really why we sound like we do."

There's no question of throwing it open for someone else's opinion before a track is finished? You have complete trust in your own instincts?

'Yes. Having said that, I try to keep my objectivity by having a number of source influences. Like, I'll know I want the house feel from a Technotronics record or something. So I'll put that on and think, 'OK, I've got the right feel, now how's this guitar doing compared to Sonic Youth? Well, yes, it's nearly there. . .' But because I use a number of different sources as influences I find I can keep my objectivity about what we do.

"I suppose this way of working arose from years playing in other bands. Sitting in rehearsal rooms with four or five other people just playing anything because they're bored; and the singer is looking at the ceiling or making funny noises into the microphone. . . it was the hours of wasted time that really annoyed me. Whenever I've been in a situation like that, all I want to do is say right, shut up, this is what we do. Let's make a decision, let's *do* something. It's always been an aspect of my character: I can't stand just sitting around and letting nothing happen - that irritates me extremely. So I suppose I've always led, and when you lead, other people start letting you lead. And of course, the more you do, the more people let you do. I think very few democratic bands exist, actually - despite what they tell you in the press."

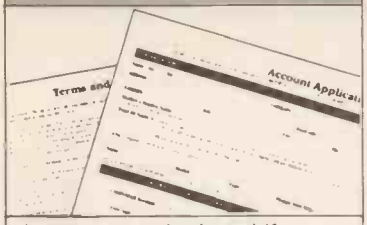
Speaking of the press, it seems we're again entering a phase where it's been decided that pop has purged itself sufficiently and is once again important. Is that how you see it? Does pop matter?

"Very much so, yes. It's extremely important. Kylie Minogue, Jason Donovan and Bros - they matter an incredible amount. . . I think the fun side of it is important. There is a great art to pop music - the actual writing of good singles. But there's an element of trashiness about it too, and we try to reflect that. I think it's to do with refusing to become pompous about it. It's not that I don't take it seriously, but rock music has a definite capacity for pomposity which I loathe.

"I suppose my aim is to actually move music forward by making it commercial. We do want to sell masses of records, but at the same time we want to do it in ways that are interesting or exciting. When I was working on a couple of the songs on the album, I began to think, this is a little bit tame, this is just playing safe. And I just reached a point where I wanted everything to go absolutely mad - sort of exorcising the demons and releasing the frustration of playing it straight until then. If you deliberately stick to the strict discipline of a song, you don't get much opportunity for a release of any emotion. Unless you've written something that's absolutely amazing, there often is no surge, no release. An element of chaos is very enjoyable." ■

BABEL SYSTEMS

0% FINANCE



Some companies just shift boxes – we don't. At BABEL we like to offer you as much help in buying equipment as possible. Apart from advice and personalized demonstrations we can offer you help with finance, from interest free credit to lease rental for companies. We also accept ACCESS, VISA, AMERICAN EXPRESS and DINERS CARD. Why not drop in for a cup of tea and we can talk through your requirements.

*THE ONLY THING MISSING FROM THIS PICTURE OF OUR DEMO SUITE IS **YOU***

Because when you book a demo at BABEL, thats exactly what you get. A one to one hands on trial with no interuptions. To arrange an appointment please call us on 01 749 8222

HIRE PURCHASE

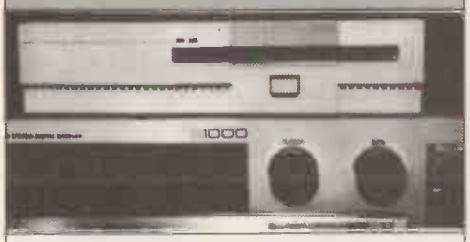
Our hire before you buy policy allows you to check out the item in your own environment for a couple of days. On return of the item you can either pay the hire fee or purchase the item, and we won't charge you for the hire.

AKAI S1000

We have the entire range in stock and on demo.

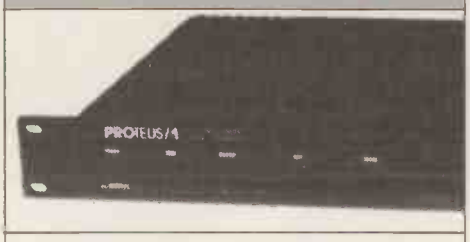
We also have the IB104 digital output for the S1000

HYPERFLEX HF24



- 24 MEGABYTE EXTERNAL DRIVE
- ECONOMICAL 24 MEGABYTE REMOVABLE CARTRIDGES
- SCSI INTERFACE TO USE WITH S1000, EIII, ATARI 1040
- SAVES POUNDS ON FLOPPY DISCS

EMU PROTEUS



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- EIII SAMPLES
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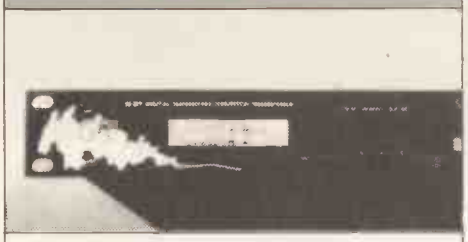
- 16 VOICES, 16 OSCILLATORS, 16 BIT QUANTIZATION
- TWO DIGITAL MUITI EFFECTS PER PATCH
- 10 SONG, 100 PATTERN SEQUENCER
- ALSO IN STOCK, M1, A3 EFFECTS UNIT AND M3R

ART SGE



- STEREO MULTI EFFECTS PROCESSOR
- 16 EFFECTS, 9 AVAILABLE SIMULTANIEOUSLY
- 19" RACK MOUNTABLE
- 99 PRESETS

COMPUTERS

- ATARI 1040STFM AND MEGA SERIES
- APPLE MAC
- COMMODORE AMIGA
- IBM PC

SOFTWARE

- C-LAB CREATOR/NOTATOR AND SMPTE LOCK UNITOR
- STEINBERG CUBASE/PRO 24/SMP24/EDITORS
- MUSIC X, Dr. T, OPCODE, PASSPORT, HYBRID ARTS
- INTELLIGENT MUSIC, MARK OF THE UNICORN, CODA

RECORDING

- FOSTEX X26 FOUR TRACK
- FOSTEX R8 AND E8 EIGHT TRACKS
- FOSTEX E16 SIXTEEN TRACK
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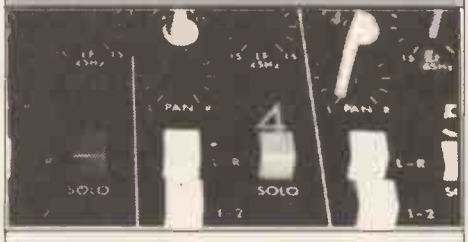

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DATADISK

PHOTOGRAPHY: ADAM JONES

As the flexibility of the MIDI system continues to reveal itself, new pieces of equipment appear to take advantage of it. Alesis' new Datadisk cashes in on SysEx storage. Review by Vic Lennard.

IN THE OLD (analogue) days, the creation of a new sound occupied all of a synthesiser's circuitry. If you like, a synth had just one memory - the front panel control settings. These days, most synths have 64, 128 or more sounds onboard. Once those are full, you can resort to RAM cards, cartridges and the like. But what if you find these costs prohibitive? How do you save your sounds?

Yamaha's MDF1 MIDI Data Filer is one alternative, but this stores data via the infamous quick disk and can't handle some of the larger dumps transmitted by today's synths. Alesis have never been slow in coming forward with a new product to fill a gap and so here is their answer to the problem - the Datadisk.

DESCRIPTION

THE UNIT HAS the same look about it as Alesis' Quadraverb - a 1U-high, charcoal grey, rack mounting unit. The front panel hosts a dozen push buttons, a 3.5" disk drive (using double-sided double density disks) and a two-line, backlit screen with 16 characters per line. The rear panel hosts the requisite MIDI In and Out/Thru ports and the power arrives via a nine volt AC mains adapter.

The Datadisk bears the motto *Direct MIDI to Disk/Universal Data Storage* emblazoned on the front panel, but this is not strictly correct. It is a direct-to-disk system exclusive recorder, and as such will store data from practically any manufacturer's gear. However, it will not recognise MIDI note and controller information - more about this later.

SYSEX & DATADISK

NO HEAVYWEIGHT THEORY here, simply a quick explanation. System exclusive information is so named because each manufacturer has a MIDI identification code and, possibly, individual codes for each piece of equipment. This makes each MIDI unit unique and allows it to extract its parameter values

from a stream of data without accidentally reading something else's. Consequently, the ID code will name the manufacturer while the Model code, if one exists, will pinpoint the precise piece of equipment.

Before any data can be stored, a disk has to be formatted, which takes a little over a minute.

Let's take a typical situation: you want to save a bank of sounds from Roland's popular D50. The synth has to be set to transmit One-Way and needs a MIDI lead connected from its MIDI Out to the MIDI In on Datadisk. Press the Receive button and "Recv One SysEx: Waiting For Data" flashes up on screen. Start the data transmission from the D50 and this changes, first to "Receiving Roland D50" and then to "Stored as Roland D50 File 01". The real power of this machine lies in the fact that it writes the data straight to disk. Other devices store it in a buffer which limits the size of the dump.

I know that this reads a little like a press-this-and-do-that routine, but it does show just how easy Datadisk is to use. It really is difficult to make a mistake. Having received the MIDI data, File 01 can be renamed with up to an eight-letter title. Total space available on each formatted disk is 796kBytes which, for instance, would store 22 banks of D50 sounds. The only other limitation on this is that a maximum of 53 files are allowed.

Sending the data from the Datadisk to a MIDI device is equally straightforward. Send allows you to scroll through all entries on a disk, which are listed alphabetically, and select the required file. Selecting "Yes" then does the business.

You may well be asking why the D50 had to be set to One-Way mode. The alternative is Handshaking which requires a two-way connection. This is to allow the receiving device to send out a request for data and acknowledgements upon receiving it. Datadisk will not generally handle this type of data transfer because most devices give you the choice of the two methods. However, by using Request and the scroll buttons, data dumps from four devices can be requested through a two-way link, namely; JL Cooper Fadermaster and PPS100, Oberheim OB8 and Roland TR707.

THE SETUP

LET'S SAY THAT you have a D50, a Korg M1 and a Yamaha DX7 and you wish to send across a bank of sounds to each of these synths at the start of a session. There are two different ways to achieve this.

The first is to obtain the bank of sounds from each synth (as described above) and to save them as individual files onto a disk. A second press on the Send button brings up "Send All Files?" in the display. This will send across the files one at a time and because of the way in which SysEx works, each synth will get the bank of sounds intended for it.

The second method is to save the data in a different manner. Pressing the Receive button a second time brings up the message "Recv Mult SysEx: Waiting For Data." After the first dump has been received, you have the option of closing the file or appending another dump to it. So, you could save these three banks as a single file and name it according to the session. This is a better option in that disk space is better utilised and there is less hunting around needed for the correct file.

There is a rather interesting alternative to either of the above. Quite often, only a single sound is required for each synth in the context of a song. Pressing the patch change buttons on most synths actually sends out the SysEx data for the particular patch which has been selected. These could then be saved as a Multi file and sent back accordingly. The advantages of this are that the single sound is placed in the synth's edit buffer and so does not affect whatever is currently in memory, and also the total dump takes up a lot less space on disk and is much quicker to send. Datadisk will store the SysEx for a single sound just as happily as for an entire bank.

PROBLEMS

MOST DEVICES ASSIGN a MIDI channel to the outgoing SysEx dump and will not recognise data unless it is on this specific channel. Datadisk does not allow you to re-channel data, and so you'll have to keep a note of which channel a dump was taken from. This can be a real bind, especially with a multitimbral instrument like the Roland D110. The D110 sets the SysEx channel to either one less than the lowest MIDI channel in use or differentiates between units by setting different unit numbers as part of the code at the start of the SysEx dump. It would certainly be useful to be able to see the MIDI channel for a dump even if it couldn't be altered.

Some MIDI devices send a bulk dump in the form of lots of smaller components. For instance, the Oberheim Matrix 1000 sends a bank of 100 sounds as 100 banks of one sound. If there's more than a half-second gap between these dumps, Datadisk will assume that the dump has been completed and close the file. If this is the case, a Data Overflow message appears on screen and the Multi-dump should be used instead.

Another problem arises with synths that require time to digest incoming data before receiving more. For instance, Yamaha's VZ1 is unhappy to receive the four single sounds necessary for a combination layer one after another. A bit of experimenting was needed before I got this to work. And not being able to insert pauses into certain dumps could cause trouble when attempting to send the data back.

The one major failing of Datadisk is that only SysEx can be recognised. You cannot transfer MIDI note and controller data from a sequencer unless the latter can put it into a SysEx package (like the Alesis MMT8 - surprise, surprise). This makes Datadisk totally different from Elka's CR99, which will store all MIDI data directly to disk and so allow you to use it for live work instead of a computer-based sequencer.

OTHER FACILITIES

LET'S TAKE A look at what else Datadisk has to offer. Delete removes files from disk, either individually or *en masse*. Backup lets you save files individually to ➤

"You could save three banks of sounds from different instruments as a single Datadisk file and name it according to the session."

another disk and can also be used to backup an entire disk. In the latter case, you are told how many times the disks will need to be swapped over as only a small portion of a disk can be loaded into memory at any time. The data can also be sent via MIDI to another Datadisk or to an external librarian.

Info shows you how many files are on disk and how much memory has been used, as well as the data size of each file. MIDI lets you set up a channel for patch changing Datadisk so that dumps can be called up in the middle of a song.

IN USE

DATADISK WORKS, AND it works well - every device that I could lay my hands on was tested and there were only a few anomalies. Some devices get the manufacturer's name on screen but not the device name (because Datadisk doesn't have them programmed in), but mistakes like classifying a Yamaha FB01 as a "DX7" dump instead of a "4-Oper" really shouldn't happen. Attempting to save a dump from an old Chase Bit 99 brought up the ID of Twister. This can only be because SysEx IDs are sometimes granted temporarily and then re-assigned to another manufacturer. The same problem occurred with a LinnDrum dump which had JL Cooper's ID. Other inaccuracies include classifying Roland's MT32, D110 and D10/20 all as D10/20 - certain areas of these dumps are not compatible.

Datadisk happily saved Akai S612/700 dumps as well as Roland's S10 which is rather nice as all of these machines otherwise rely on quick disks. However, it won't touch dumps from an Akai S900/950, Roland S50 or Prophet 2000 because they don't conform to the MIDI Sample Dump Standard.

VERDICT

AS A SYSEX filing system, Datadisk performs admirably. The fact that it identifies dumps by ID codes means that by and large it will never be outdated.

However, an RRP of £299 may be too high to attract as many users as the unit deserves. An Atari 520ST and librarian software (such as Hollis's MIDIman or Hybrid Arts Genpatch) is not going to cost you a great deal more and will offer a higher degree of flexibility. It all depends on how much you'd prefer to have the system tucked away in 1U of rack space.

But Datadisk performs its chosen job well - perhaps it's better to be a master of one trade than a jack of all. ■

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demo takes

Occasionally, just occasionally, there emerges from the bottomless demo mail sack a tape that is so good it makes you sick. So, having cleaned up my cassette machine, let me tell you about *Three Songs* from a band called **North by North West**. This four-piece from Leicester, working almost exclusively with sequencers, have produced surely the most organic, natural-sounding tape I've heard in many a long month.

Perhaps this impression is aided by the beautifully-played Yamaha acoustic guitar which is liberally applied to the three tracks by Mark Bickerstaff, or the fact that the rhythm bod, Dave Hallis, is almost certainly a "real drummer"; or perhaps it's the understated sequenced underpinnings and subtle instrumentation masterminded by Russ Fisher, or very likely, the endearing vocal style of Claire Jackett. Perhaps it is simply the fact - take you note, lone bedroom synthists - that four gifted people have pooled their various resources to maximise the talents of each.

At any rate, they barely need criticism from me; the recording quality of the tape - recorded at Leicestershire's White House 16-track - is excellent, and the music itself is an uplifting brand of slightly indie guitar-influenced pop, but with the melodic content that's so often sadly lacking in this type of band. If I were to allow myself one line of criticism, it would be that the reverb treatment on Claire's voice seems to remain exactly the same across all three tracks (correct me if I'm wrong NBNW) regardless of whether it fits the track. But it's a minor point compared with the undoubted strengths of this tape as a whole. Just a minute, I feel another wave of. . .

To continue: the gear used to produce the demo is the kind of stuff that could be found in many a home studio of MT readers; Atari 1040 running Pro24 software, Yamaha FB01, Ensoniq Mirage, Kawai K1m and TR626, all put through a Philip Rees MIDI mixer. No further details of equipment use are given, other than that the very natural-sounding drums were tapped in from a keyboard, but the boys and girl obviously know what they're doing. No need for me to say more - excuse me while I go find a dark corner to trash the tape in. . .

The trouble with good demos is that they make you say sickeningly *nice* things - something which always makes me feel like re-sharpening my tongue. They also spoil you by setting up an unrealistically high standard for the next unlucky sod out of the demo sack. So it's almost with relief that I pick out **Michael L Cooper**'s opus. Yes, thankfully this demo will allow me to exercise my unremitting critical faculties and put on my sarcastic head (Skum: aka Worzel Skummidge).

Michael enclosed about half a rain-forest's worth of letter documenting the four tracks on his tape. Let's start from the top with 'I Ain't Gonna Go To Work No More', a song which according to Michael comes close to mixing rock 'n' roll with dancefloor club music. I fear he has a rude awakening before him, since this song actually comes closer to being as laughably bad as the fabled Jimmy Redge of past DemoTakes fame. Stilted, piecemeal arrangements evidencing a complete failure to appreciate orchestration or rhythm, out-of-time sequencing (something of a feat for one who has in his possession an Atari 1040 with which he sequences his songs), sub-70's Baccara string opening, a total lack of ambience (ever hear of reverb, Michael?), this song really has got the lot.

'Elvis and God', the next song on the tape, almost has an endearing sense of humour in its spoken opening. "In the beginning, there was no-one. God made - Elvis. Then, God said 'Let it be - Mickey... C!'". Michael Cooper - geddit? Now while I'm not averse to the odd bit of blasphemy, it really is a bit much to put yourself up there with Elvis. Especially when you're as apparently talentless as Mickey C. To its credit, this song has half a good bassline, but it's completely drowned in naff sounds and redundant twiddly bits, not to mention badly-played electric guitar. Combine this with a distractingly bad lyric about going to lunch on your own again and hearing voices from God and Elvis telling you there are big plans afoot for your music, and I think you get the general idea of the calibre of this tape.

I'm sorry if Michael's self-esteem is reduced to ribbons by these few words - though somehow I think he's too ebulliently self-confident (or mad) to take any notice of me - but I hope he goes out and either finds someone else to play with, or improves drastically and proves me wrong. One more word of advice; before purchasing a 16-track, as you're threatening to do, learn to use your Fostex 160, Kawai K1, Yamaha RX17 and Atari properly, and prevail upon your friends to tell you the truth about your songs.

Enter **Kevin Pawley** with an environmentally-friendly tape if ever I heard one. This competent 18-year old opens his instrumental tape with the soothing sound of tropical birdsong, melting into lilting pizzicato string arpeggios and breathy pan-pipe melody. Though the opening chord progression puts me in mind of the music to the Brylcreem TV ad I like, it's skilfully developed through several layers of arrangement, never straying from its spacious, majestic feel. Kevin hopes to eventually write for film and TV (join the queue, Kevin) and this track especially ('The Pipes Speak') is very well suited to this purpose. Bearing in mind Kevin's request to direct my criticism to specific areas of his work, his orchestration is very good indeed, with patches well chosen from his available sound-making equipment, namely ESQ1 and MT32; the mood of this first piece is just superb - I was floating down the Amazon, I can tell you - and I think my only criticism was the length of it. As a demo track, it could have been cut by at least half, everyone hasn't got my self-sacrificing patience after all.

The two other tracks on the tape, 'The Motion' and 'Synthony in B Minor' - bit of a naff title - are competent and well arranged, but don't have the magic of the first track. There's some excellent use of the pitchbend wheel on guitar patches, but on occasions the timing resolution of the sequencer on the ESQ doesn't seem up to very demanding arpeggios, like those on 'The Motion', which seem slightly behind throughout. Of course, this is a common problem given the slow attack of strings.

Kevin's made excellent use of his Porta Two multitracker, REX50 effects processor and TR626 rhythm composer. Even taking into account the shortcomings of the ESQ sequencer, what he's done with slightly limited sequencing facilities is pretty impressive (listen up Michael L Cooper). I do suspect him, however, of having done his share of covert absorption of Jeff Wayne's *War of the Worlds* - don't deny it now, you've borrowed the famous chord sequence - and I advise him to take a stiff shot of Jack Daniels and start listening to something a bit less pomp rock-ish.

Right, I've done my bit. Where's me dosh?

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MICROWAVE

PHOTOGRAPHY: ROSE ROUNSEVILLE

With its origins in PPG's classic but expensive Wave synth, the MicroWave brings wavetable synthesis to the masses. But can it roast the competition? Review by Simon Trask.

AS RECENT EVENTS in the eastern bloc have been demonstrating, the tide of change drowns all those who can't ride the waves. Whether you're running a country or running a company, if you don't respond to prevailing trends you'll be left behind. Sometimes that means overthrowing the very system by which you function.

In Eastern Europe we're witnessing the breakdown of a closed-system approach in favour of an open system. On a more humble level, developments in musical technology during the latter half of the decade have followed a similar path, one which has not been kind to the expensive single-manufacturer computer music system. The open-system approach made possible by, among other things, MIDI and the rise of computer-based sequencing has effectively atomised this particular closed system.

A good example of this is the now-defunct German company PPG's Wave system. By the mid-'80s the company had built up a sophisticated computer music system comprising the eight-voice Wave 2.3 synth, Waveterm B computer unit, EVU expander (2.3 in a rack) and PRK/PRK FD master keyboard. Up to eight system components could be linked together in a closed system using PPG's own digital communication bus, with the Waveterm at the heart of the system providing 16-bit sampling, additive synthesis, wavetable synthesis and (non-MIDI) multitrack sequencing.

When E&MM reviewed the Wave 2.3 and Waveterm A in May '84, the combination cost £8595 including VAT. But at that time it offered a degree of sophistication which simply wasn't available on a cheaper scale, and if you could afford the outlay it was worth buying into that sophistication. After all, compared to other computer music systems like the Fairlight and the Synclavier, the PPG Wave system was a bargain.

Unfortunately for the company, with the explosion in relatively cheap yet increasingly sophisticated digital technology in the ensuing years, it was the

Wave system which came to be regarded as expensive, not to mention restricted. Who wants to be locked into one system when the MIDI modular approach offers so much more variety, flexibility and power? To make matters worse, the Wave system acquired a reputation for reliability problems - rather like a rottweiler, you had to treat it with care and even then it might bite you. Bowing to the inevitable, production of the Wave system ceased around '85-'86.

In 1986 the company produced two new units, both of which were, ironically, ahead of their time: the HDU hard-disk recording unit (the first such system to include time compression) and the Realizer (previewed E&MM April '86), a next-generation computer music system which was intended to sell for around £30,000-40,000 and combined highly sophisticated digital sound modelling (recreate a Minimoog in software) and digital effects processing with integral hard-disk recording and a multitrack sequencer which took PPG into the world of MIDI.

Unfortunately, the Realizer was a fantastic dream which never made it into production. What the company might have been better advised to do was move downmarket rather than (or perhaps as well as) indulging in their dreams. Which brings us to Waldorf Electronics and the MicroWave. The company is largely owned by Wolfgang Duren, who was responsible for the business side of PPG, while the MicroWave has been designed by Wolfgang Palm, the man who designed the PPG Wave system, HDU and Realizer. Not surprisingly, then, the MicroWave is fuelled by the same Wavetable-based approach to synthesis which helped to give the PPG Wave synth its highly distinctive and much-loved hybrid digital/analogue sound.

It certainly wasn't any deficiency in sonic quality or flexibility which led to the PPG Wave's demise. Several years later, wavetable-based synthesis has been reintroduced not only by Waldorf but also by Ensoniq on their VFX synth, where it's known as TransWave synthesis. It seems you can't keep a good sound silent!

LAYOUT & OPERATION

THE MICROWAVE COMES in 2U-high 19" RACK-MOUNT format with a charcoal-grey exterior whose sombre effect is quite nicely offset, it has to be said, by the bright red infinite-rotary dial on the front panel. Talk about Rudolf the Red-nosed Reindeer. . .

A 2 x 16-character backlit LCD window handles the display of current parameter(s) and their values, while a red Param/Value button below the window allows you to switch the display cursor between parameter and parameter value, while the aforementioned dial selects a new parameter or changes a parameter value accordingly. Reception of MIDI data on MicroWave channel(s) is indicated by a yellow pinpoint LED to the left of the LCD window, while a card slot below the window takes Access, Visa, American Express. . . No, no, ROM and RAM cards from Waldorf.

Finding your way around the MicroWave's large number of parameters isn't too difficult thanks to the 4 x 4 matrix display of parameter groups which takes up the right-hand half of the front panel. Successive presses of a Mode button cycle you around the matrix rows (with red pinpoint LEDs indicating the currently-selected row), while four buttons below the matrix allow you to select a column. Where two parameter groups are indicated per matrix "node", successive presses of the relevant column button alternates between them.

The MicroWave remembers not only which column you last selected for each row, but also which parameter and whether you selected parameter or value in the LCD window. Helpful features, particularly when you want to focus on editing a couple of parameters from different parameter groups, but the still frequent need to switch between parameter and value in the LCD does become tiresome. Two red dials, one for parameter and one for value, would've been much more fun. Apparently a certain well-known German software company (no prizes for guessing who) are currently working on MicroWave editor/librarian software, which can only be good news.

The MicroWave's polyphony is the same as that on the Wave 2.3 - eight voices. Not overly generous, perhaps, but it's worth bearing in mind that you get two oscillators per voice - many 16-voice synths are only so when you use one oscillator, ending up with eight voices when you use two.

Individual patches are known as Sound-programs, multitimbral organisations of up to eight of those patches as Multi-programs. You can access 64 Sound-programs and 64 Multi-programs in internal battery-backed RAM, and a further 64 of each type off ROM or RAM card.

The expander's rear panel provides MIDI In, Out and Thru sockets, four individual mono audio out jacks and a stereo output jack pair (mono summed output is possible if you use either one of the stereo sockets and set the MicroWave's global Stereowidth parameter to Mono).

WAVETABLES

THE MICROWAVE EMPLOYS what Waldorf call Dynamic Spectral Wavetable Synthesis. At the heart of the expander, stored permanently in onboard ROM, lie 32 Wavetables (the same 30 as were employed in the Wave 2.3 plus a couple of new ones). Battery-backed internal RAM provides capacity for 12 additional Wavetables which can be loaded into the MicroWave via MIDI SysEx data dumps, while a further 12 will be accessible off ROM cards.

Each Wavetable consists of 64 Waves, or digitally-stored waveforms consisting of 128 eight-bit samples and created by additive synthesis. A quick spot of arithmetic will tell you that that's a total of 2048 waveforms, but statistics don't tell the whole story (do they ever?). You can assign the MicroWave's oscillators to play any individual waveform as in traditional synthesis (in fact, Waves 60-63 in each Wavetable are the familiar triangle, square and sawtooth waveforms), but many of the Waves within ➤

"The MicroWave is fuelled by the same Wavetable-based synthesis which gave the PPG Wave synth its highly distinctive and much-loved digital/analogue sound."

➤each Wavetable evince only subtle changes in harmonic content from one to another. This is because the MicroWave isn't limited to playing single waveforms at a time, but can sweep through any number of them within a single Wavetable (even through an entire Wavetable, if you want), and is able to interpolate changes in harmonic spectra from one Wave to another (a feature which comes into its own with the Wave envelope, which we'll come to later). So Dynamic Spectral Wavetable Synthesis is quite an accurate description as well as quite a mouthful.

ARCHITECTURE

I'M NOT SURE WHAT PRINCE CHARLES would make of the MicroWave's internal architecture, but despite uncomfortably modern terms like the aforementioned Dynamic Spectral Wavetable Synthesis it's actually fairly traditional in nature. Two Oscillators per voice draw on two Wave modules to define the sound source (derived, of course, from the Wavetables). The audio output of each modulator and a third output from a noise source are then combined at a Mixer stage, where you can set the level of each source, and the summed output of the Mixer is then routed through a VCA and a 24dB/octave low-pass VCF, after which it is passed through a Pan/Glide module before being routed to the outside world via 12-bit DACS and the stereo outs. In addition there are two digital LFOs and three envelopes (Wave, Filter and Volume) which have both "hardwired" and assignable modulation inputs at the various audio stages just described. In fact, the MicroWave's many and varied modulation possibilities are among the most sophisticated to be found on any synth.

"Despite uncomfortably modern terms like the aforementioned Dynamic Spectral Wavetable Synthesis, the MicroWave is actually fairly traditional in nature."

With patch names like 'Wave Kills You', 'Cut Me, Leave Me' and, above all, 'Leones' Wet Dream', whoever's responsible for the programming on MT's review model deserves a medal for inventiveness. Unfortunately, the same thing can't be said about the sounds themselves, many of which only succeed in showing what the MicroWave is *not* good at. Still, there are those who maintain that providing an impressive set of factory sounds encourages preset-itis at the expense of individual experimentation. But that's another story. . .

I won't dwell on the sounds, as chances are many will have been replaced before the first shipment of MicroWaves hits the shops (which should be around Christmas time). So what can be said about the MicroWave? Leave most of the "realistic" instrumental sounds to the new generation of sample-based synths. The MicroWave's forté is synthesis in the traditional experimental sense, which isn't to say that it has an altogether analogue sound, more digital metallic with a strong analogue edge. And if there's one thing which can safely be said about it it's this: the MicroWave is not a nice synth. Harsh, dirty, aggressive, menacing, spiky, eerie, even soothing: yes. But not nice. Oh, and you need to watch out for your speakers, as it outputs at a very high level.

BEFORE MODULATION

FOR EACH OF the two oscillators you can set octave (±2), semitone (0-12), detune amount (+63 to -64), bend range (0-12 semitones) and pitch mode (normal or fixed - fixed is whatever pitch you've set with the octave, semitone and detune parameters). Wave one allows you to select Wavetable (1-30), startwave (0-60/tri/squ/saw) and startsample (free - random/1-127); Wave two loses the Wavetable parameter because it automatically uses whatever Wavetable you've selected for the first Wave, but you can set independent startwave and startsample values for it.

The Volume section allows you to set independent volume levels for Waves one and two and a separate noise source (0-7 in each case), together with an overall volume level for the Sound-program (0-127). Next comes the Filter section, for which you can set filter cutoff (0-127) and resonance (0-127), while finally the Pan/Glide section provides you with pan position (L64-R64), glide (off/gliss/porta/Mgliss/Mporta), glide rate (0-127), glide mode (time/distance) and temperament (tuning - In+, In-, rn1, rn2, TT1-4).

Most of the above should be self-explanatory, but the sophistication of the Pan/Glide section means it merits some discussion before we move on to the MicroWave's many and varied modulation possibilities. To begin with, both pan and glide are polyphonic, in the sense that they work on individual notes. In the case of glide, if you play one chord and then another, the lowest of the one will glide to the lowest note of the other, the highest to the highest, and so on. Polyphonic panning can be very effective where you're using velocity to modulate panning rate - you can experiment with cross-rhythmic panning, particularly in conjunction with a sequencer, which of course allows you to fine-tune the velocities of different notes. But I'm getting right ahead of myself (or should that be left - having all these notes whizzing around my speakers is confusing me).

So what's the difference between portamento and glissando? Simple. Portamento is a continuous pitch slide from one note to another while glissando is semitone-stepped. When the Microwave is set to Mporta or Mgliss, portamento and glissando can only be activated by MIDI portamento controller commands.

The glide mode parameter offers two approaches to keeping glides in a fixed time relationship (with themselves if nothing else) which apparently uses the glide rate as its basis. With Time selected, all glides take the same time, no matter what the pitch interval is; with Distance selected, all glides move at the same speed, so that while different pitch intervals result in different glide times they're at least in a constant relationship to one another (to quote an example from the manual, a two-octave glide takes eight times as long as a minor-third glide). If you whack up the glide rate to maximum and set maximum sustain and/or release times for the volume and filter envelopes you can get some l-o-o-o-n-g glides which can be great for drones and background atmospheres. ➤

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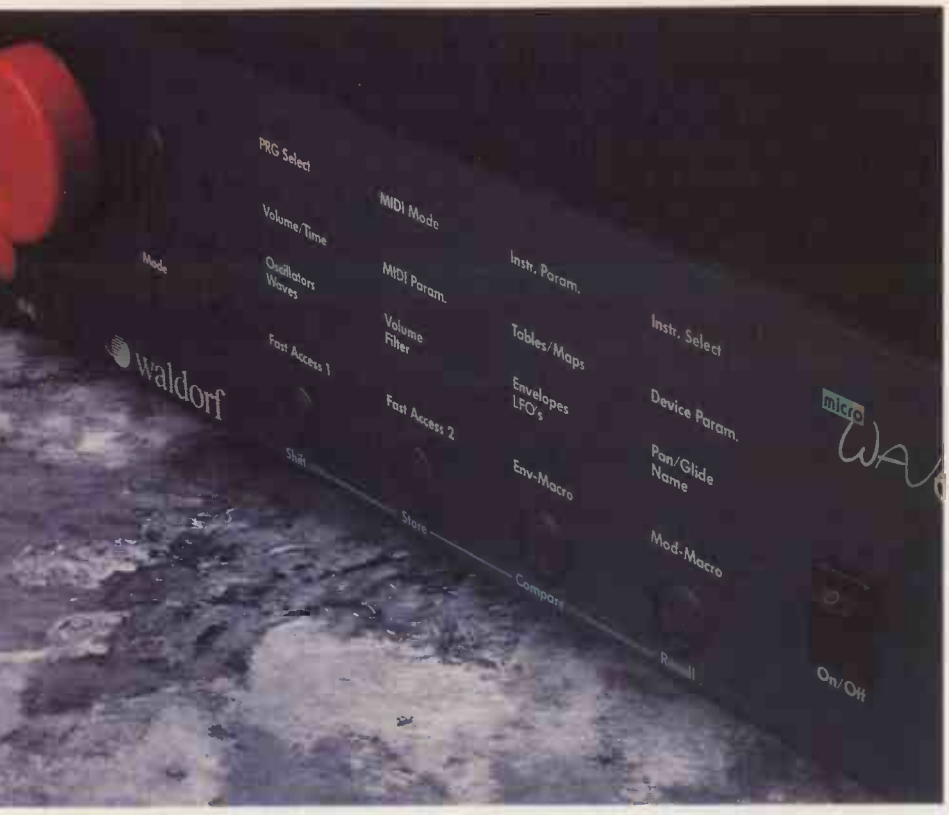

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The two Wave modules and the Volume and Filter modules each have "hardwired" envelope inputs (Wave, Volume and Filter envelopes respectively) whose effect is governed by envelope amount, envelope velocity and MIDI key-track amount settings for each module. The volume and filter envelopes control amplitude amount and filter cutoff point respectively, as you might well expect, but the effect of the wave envelope on the Wave modules is far from conventional, as is the wave envelope itself - more on this later.

The above modules and the two oscillator modules also each have two assignable modulator inputs to which any of the internal or MIDI modifiers listed above can be assigned. Mod2 has source and amount parameters, while Mod1 has source, control and amount parameters; in addition the oscillators each have a Mod2 quantise parameter (off-7) which allows stepped pitch changes to be produced from a continuous modulator input such as an envelope. I was hoping that resonance amount would also be modulatable, and lo and behold, resonance has its own mod source and amount parameters - which also means that you can modulate filter cutoff and resonance at the same time, from the same or different modifiers. If you're of an inventive disposition, things can get really interesting here. Also, as I mentioned earlier, the Pan/Glide module has its own mod source and amount parameters for auto- or dynamically-controlled panning effects.

Modulation values are assigned per module rather than per modifier, so the same modifier can have a different degree of effect on different modulator inputs (the amount range is +63 to -64, so the effect can be either positive- or negative-going). The parameter being controlled in each module is pre-determined: the oscillator's pitch, the wave's wavetable, the filter's cutoff point and the volume's amplitude amount. Mod1 is more sophisticated than Mod2, in that while the source modifier directly controls the relevant module parameter within a limit set by the amount parameter, its actual degree of control is "scaled" by the control modulator. So whereas using Mod2 you could assign MIDI velocity to directly open and close the filter, using Mod1 you could assign the filter envelope as source modifier to control filter cutoff and use velocity as the control modifier to scale the envelope's effect. In this way you can put complex modulations under dynamic MIDI control, scale dynamic MIDI control with a complex modifier, scale a complex modifier with another complex modifier, or scale one MIDI command with another. And of course you also have the option of using Mod2 to bring in a second modulation source. On top of this, most of the onboard modifiers have parameters which can themselves be modulated by any of the onboard (including themselves) or the MIDI modifiers.

Which seems like a good point to look at the onboard modifiers in more detail. LFO1's parameters are as follows: rate (1-127), shape (sin/saw/pulse/random), symmetry (+63 to -64), humanise (off-7), rate modulation source and amount, level modulation source, sync on/off (for synchronising the two LFOs), delay (off/retrigger/1-126), attack (0-127) and decay (off, 1-127). Again, the modulation sources can be any of the onboard and MIDI modifiers listed earlier. LFO2 has a more modest array of parameters: rate, shape, symmetry and humanise. Symmetry alters an LFO saw wave from positive ramp through triangle to negative ramp, while if pulse wave is selected it adjusts the duty cycle from around 5% to around 95%.

Both the volume and filter envelopes are the familiar ADSR type, though the latter adds an initial delay stage. However, as nothing's straightforward on the MicroWave, each stage of each envelope has its own modulation source and amount parameters. Each stage's timing is set on a scale of 0-127, with maximum values generating truly lengthy times: just ➤

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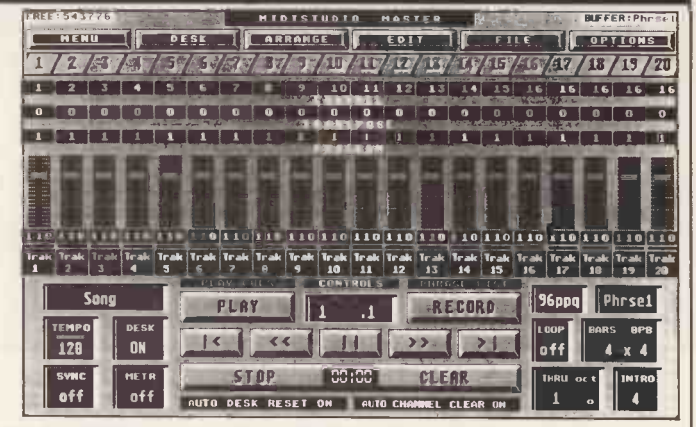

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➤ under nine minutes for the attack stage and just under six minutes each for the decay and release stages; a maximum value for the sustain stage means that it sits at the attack level (ignoring the decay stage) until the key is released. The onset of the filter envelope can be delayed for around 36 seconds. The effect which the envelopes have (including their polarity) is determined at the modulation input stages of the individual modules.

Far less conventional is the Wave envelope, which has eight segments or stages, each of which has its own time and level parameters. What's more, you can specify any one segment as the Key Off point, so that any segments after this point will only come into effect when you release the note. Additionally you can select Loop on or off and a Loop start segment; whether this segment comes before or after the Key Off point determines whether the envelope will loop before or after you release the key.

As with the other envelopes, the Wave envelope isn't confined to the Wave modules but can be used wherever there's a modulation input - the results can be particularly spectacular when it's applied to filter cutoff and resonance. Applying it to a Wavetable is probably its most confusing application, but also one of its most sonically intriguing. It seems that the level parameters of each segment determine in some obscure way which Wave within the Wavetable each segment moves to. Or maybe not - the pre-release manual I had wasn't too clear on this (well, that's my excuse, anyway). I think I can be more confident in saying that the segment times determine how long it takes to get from one Wave to another, with the MicroWave interpolating gradual shifts in harmonic content to take it from one Wave spectrum to another - with particularly effective results when using Looped segments and slow segment times on held notes to create some eerie metallic drone effects.

Now, it may seem churlish to raise a complaint about such a sophisticated modulation source, but all the same I found myself wishing the segments could be looped both before and after key release, instead of either/or. Because you can create rhythmic effects with this envelope, combining sustained notes with staccato notes having a long release stage could have generated some interesting results. I guess some people are never satisfied.

MULTI-PROGRAMS

WHEN YOU SELECT Multi-program mode on the MicroWave, the expander becomes eight virtual Instruments which shares its eight voices between them dynamically. Per Multi-program you can set a global volume level and assign MIDI controllers to Controls W, X, Y and Z (in each instance overriding the, er, global global settings), program a 16-character name and decide on the number of active Instruments. You can also decide whether the MicroWave will respond only to patch changes received on the base MIDI channel (these select Multi-programs), only to patch changes received on the Instrument MIDI channels (these select Sound-programs for each Instrument) or to both.

Parameters per Instrument are as follows: Instrument on/off, MIDI receive channel (1-16), Sound-program (from internal or card memory), Key Limits Low and High (C1-G9 in each case), Velocity Limits Low and High (1-127 in each case), velocity curve (In+, In-, ex+, ex-, xf+, xf- and VT 1-4, ie. four user-programmable velocity response tables), transpose (±24 in semitone steps), detune (+63 to -64 - within a semitone up and down), Temperament (In+, In-, rn1,rn2, TT1-2), volume (0-127), panning (L63-R63), panning mod on/off and output routing (L+R/Outs 1-4). In addition you can turn reception on/off, per Instrument, of each of the following types of MIDI data: patch changes, pitchbend, mod wheel, channel aftertouch, poly aftertouch, volume, pan controller and sustain pedal.

A pretty thorough-going implementation, then - which makes the inevitable limitations of having only eight-note polyphony all the more frustrating. Still, combining two or more MicroWaves for greater polyphony is possible (if a little expensive), as the expander implements MIDI Overflow mode - notes over and above the polyphony of the instrument are passed on via MIDI to the next expander.

QUICK EDIT

IN AN ATTEMPT to provide shortcuts for the programmer, Waldorf have come up with what they call Quick Edit facilities. These divide into two categories: Fast Access and Macros. Fast Access, as its name suggests, makes access to and therefore editing of related parameters much easier by grouping them on a series of LCD pages. For instance, you can edit the preconfigured envelope amounts of the Volume, Filter and both Wave modules from the Env Amount FA page, while the four parameters (ADSR) on the Envelope FA page allow you to edit the Volume, Filter and Wave envelopes at the same time. The changes you make in this way replace the existing parameter values, so making a copy of the original Sound-program first is a good idea.

Macros allow you to call up factory-defined Wave, Filter and Volume envelope shapes as a quick alternative to editing segment and ADSR parameters individually. Handy in some circumstances, maybe, but no real substitute for a nimble-fingered editing technique and thorough knowledge of the parameters - though such Wave envelope shapes as Slap Back, Wah Wah, Repeat Echo and Long Loop make intriguing starting points. If the Macro shapes aren't exactly what you want, you can always go into Fast Access mode and fine-tune them; if you *still* can't get what you want, then it's back to the individual parameters - and the feeling that you might have been better off starting with them. There again, how much fine-tuning you do depends on the complexity of what you want to achieve.

Waldorf have also provided a range of modulation Macros, some using LFO1 and others using LFO2 - allowing you to use two modulation effects at the same time. A variety of vibrato effects are complemented by the likes of Pseudo Leslie, Auto ➤

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"I can safely say that the MicroWave is not a nice synth - harsh, dirty, aggressive, menacing, spiky, eerie, even soothing: yes - but not nice."

➤ Wah Wah, Auto Panning, VelAutoPan and Stereo Echo. To me this is the most successful aspect of the Quick Edit system, but more for its creative possibilities than for any "quick-fix" philosophy.

STORAGE

THE MICROWAVE OFFERS two options for external storage of its onboard data: plug-in RAM cards and MIDI-linked remote storage devices such as your friendly neighbourhood computer running generic librarian software or MicroWave editor/librarian software.

In both cases you can store the entire onboard data, all Sound-programs, all Multi-programs and all Tables and Maps. You can send transfer requests via MIDI from the MicroWave (a handy means of transferring data directly between two MicroWaves), while the manual includes the necessary SysEx code sequences to allow you to create request files in, say, Hybrid Arts' GenPatch.

Finally, you can assign individual MicroWaves a device number, allowing them to be addressed separately for SysEx file transfer from, say, generic librarian software. The device-number range of 0-126 seems a trifle excessive, though!

VERDICT

THE MICROWAVE EXCELS in sonic areas where many of today's digital synths are not so strong, and falls down where they succeed, making it in many ways a perfect foil for those synths. It has a very characteristic sound which could loosely be described as metallic analogue but can range in quality from pure, clean and crystalline to heavy, dirty, industrial - a synth for anyone who thinks that all today's synths are too polite, and because of its wealth of modulation possibilities a synth for anyone who delights in getting creative and experimental with sound.

I hesitate to say it's a programmer's instrument, because the concepts of programmer and musician have become somewhat separated these days; let's just say it's a creative musician's instrument. Eerie, bewitching metallic drones, extremely rude and dirty organ sounds, clanking industrial noises, biting percussive sounds, punchy (but not fat) bass sounds complete with spiky resonance effects if required, buzzsaw metallic drones, piercing lead sounds, complex self-modulating sounds which play with themselves for ever, menacing atmospherics. . . The MicroWave positively encourages you along wilder shores rather than well-worn paths.

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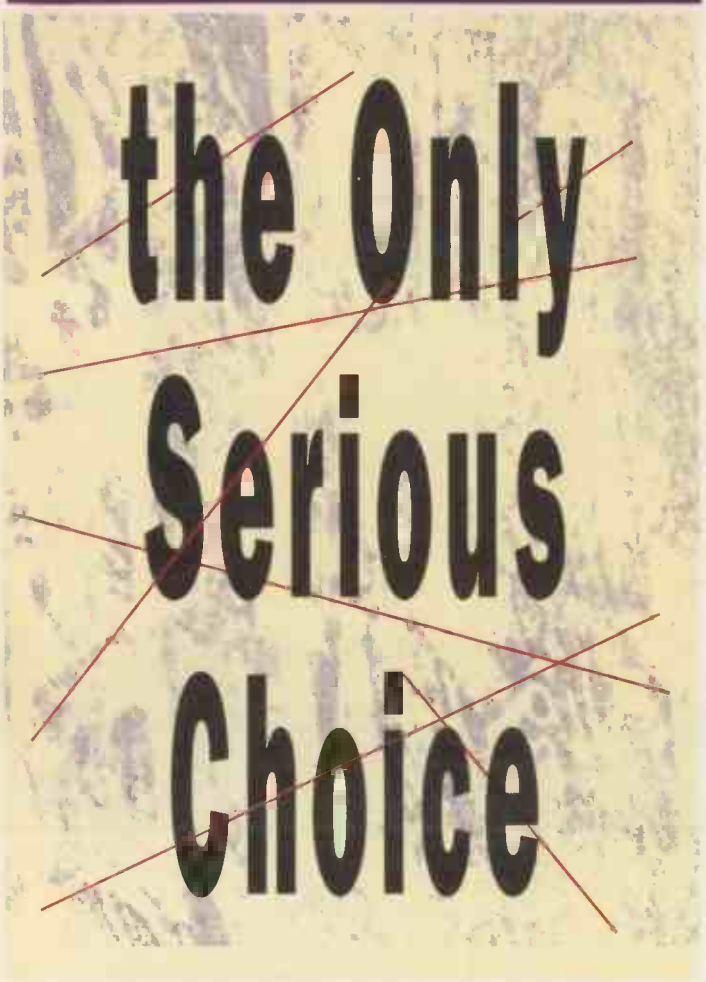

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SPATIAL AWARENESS

ILLUSTRATION: ANDREW KINGHAM

TECHNOLOGY HAS COME OF AGE IN THE REPRODUCTION OF THREE-DIMENSIONAL SOUND IMAGERY – THE IMPACT THAT THIS WILL HAVE ON RECORDED MUSIC COULD LITERALLY BE, AS YET, UNIMAGINABLE. TEXT BY ERNIE TELLO.

YOU MAY NOT be familiar with "spatial sound processing" by name, because it's a new and somewhat hi-tech field that's still very much under development. It is quite likely, however, that you will be hearing more and more about it as time goes on. But whether or not you've heard of SSP or not, you've almost certainly heard some of its effects.

Spatial sound processing is usually included in the general category of "effects" as applied to music and sound, but it's important to understand that this process is quite different from reverb and most other forms of digital sound processing. Effects like reverb and delay allow us to simulate acoustic spaces of different sizes and characteristics. Spatial sound processing allows us to simulate the effect of sound sources moving within such an acoustic space or field. For example, panning is a form of one-dimensional SSP which uses only one sound source.

In most amplified music, the sound source is a pair (or pairs) of speakers. They project or disclose voices and instruments that appear to be coming from some sound environment that is not exactly "here", but "offstage" somewhere. One of the major effects made possible by spatial sound processing is the ability to make a musical performance, whether live or recorded, inhabit the space in which listening occurs in a way that sounds independant of the speakers. This is achieved by understanding the production chain of audio performances in a different way than in conventional audio engineering. With spatial sound processing, the end point of the production chain is considered to be the listener's ears, rather than a pair of loudspeakers.

Understanding how musical sound behaves in space has been a major goal for acoustic engineers involved in designing concert halls with desirable sound characteristics, and electronic devices intended to simulate these

characteristics, for years. Recently, different people have independently come to the conclusion that sideways or lateral reflections cannot be ignored in concert hall design or electronic sound processing. For example, David Gresinger of Lexicon has developed a concert hall simulator that can utilise up to eight speakers. In a system such as this – which is capable of driving separate loudspeakers on the sides – independent reverberation for front, rear, and side speakers is essential. An alternative to the use of side speakers is the use of front speakers that utilise some form of phase cancellation: eliminating the sound from the left speaker heard by the right ear, and vice versa, as headphones do.

One of the first impressive demonstrations of accurate spatial imaging was in John Chowning's composition *Turenas*. This was accomplished using special software running on a large computer. Chowning, incidentally, is the inventor of Yamaha's FM synthesis. Today, much the same thing can be done with microprocessor-based equipment. Some interesting research in spatial sound processing has also been done in Germany. In one recording of a radio play, the voices of the actors appear to float about the listener with no sense that the sound is emanating from speakers.

SPATIAL HEARING

ONE OF THE paradoxes in sonic imaging is the fact that human hearing occurs in stereo, and yet stereo sound reproduction seems to be unable to faithfully recreate what we hear. To understand how spatial sound processing works, we must delve into some of the basic phenomena of psychoacoustics that affect how we determine the location of sound sources.

The main cues that allow us to judge whether a sound source is coming from the right or left are the loudness or intensity, and the arrival time of the sound at each ear. However, if you imagine a vertical plane passing through the centre of your head that is equidistant from your right and left ears, then the location of sounds occurring anywhere on this plane cannot be determined by this method. The loudness and arrival time for such sounds are the same for both ears. The way in which we locate sounds above and below, behind and in front, is largely due to our outer ear, and apparently also to our experience with the way sound is treated by the shape of our heads.

To prove to yourself that the outer ears, or *pinnae*, are the culprits that allow up/down and front/back localisation of sounds, perform this simple experiment. Use your hands to fold over your outer ears, shut your eyes, and have a friend shake a set of keys at different places and try to guess the location. Then try the same thing without holding your ears. You'll be amazed at the difference.

From this experience, it is apparent that stereo symmetry by itself does not allow us to hear the true directional characteristics of three-dimensional audio. Some additional kind of encoding is necessary to capture the information deciphered by the brain from the outer ear so that up/down and front/back distances are detected as well.

Simply adding more channels is not the solution. Quadraphonic sound systems failed commercially because adding more channels merely increases the cost without properly addressing the problems of improving fidelity while preserving the spatial relations of sound sources to one another and to the listener. Besides, directional hearing and clear imaging are possible with stereo headphones – this has been known for some time. I have listened to stereo recordings in which a pair of scissors clipped away around my head with such realism that I was prompted to look down and see if any hair was actually being removed – strange, but true.

Various strategies for capturing and reproducing the directional properties of musical sound have been explored for many years. These include specially-designed microphones, speakers, and dynamic sound processing equipment. In order for us to understand just what is going on with this technology, it is necessary to focus on the production chain that is used for developing final units utilising the latest in musical sound technology.

PRODUCTION CHAIN

TRADITIONALLY, THE PRODUCTION chain for musical sound has been seen as this: Instrument – Microphone – Recorder – Processor – Speakers. Today's production chain is rapidly becoming regarded as being something like this: Source – Microphone – Sampler/Player – Recorder – Processor – Spatialiser – Speakers – Ears. The ability to produce a final result means accepting the challenge of knowing just what to do at each step of the production chain. Needless to say, this is a field that is still too new for any accomplished masters or proven experts to have appeared as yet.

If you were to assemble a studio consisting of all available spatial sound processing equipment, it might consist of the following: binaural or sound field microphones and their control units or decoders, stereo or multichannel samplers, automated mixers, effects processors, spatial processors, audio enhancers, and speakers designed for phase cancellation of inter-aural crosstalk. However, at this point, it is not clear that all of this equipment could be made to function properly as a single system. It could very well turn out that the effects produced by some devices would defeat those produced by others, because they were not designed to be used as an integrated system.

The most common error is to treat spatial sound processing as a special effect or "quick fix" to be tacked on to a problem sound. Make no mistake about it, sonic imaging is not just another effect to throw in your proverbial bag of tricks. Using this technology involves a major commitment that should be considered at the very outset of a project. Ideally, music should be conceived, composed, and orchestrated with spatialisation technology in mind to obtain a purposeful, aesthetically pleasing result. Many technicians and audiophiles look upon spatial sound processing as the only proper means of faithfully reproducing the sound characteristics of the concert hall. Does this sound familiar? It's the very same issue that we've had to deal with for so long in music synthesis.

"ONE OF THE PARADOXES IN SONIC IMAGING IS THE FACT THAT HUMAN HEARING OCCURS IN STEREO, AND YET STEREO REPRODUCTION IS UNABLE TO RECREATE WHAT WE HEAR."

Faithful reproduction is a great testing ground to try out new technology – and it's a valid artistic tool for many purposes. But to leave it at that is like discovering a new planet and then bringing back examples of things readily available on Earth. Although bringing the true sound of a concert hall into your living room or studio is a perfectly legitimate goal, to stop there is to miss out on a tremendous world of creative opportunity. The real future of this technology is the creation of dynamic 3D worlds of musical sound that otherwise could not exist.

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microphones intended to capture the directional properties of sound in a three-dimensional environment. The sound field microphone is a multi-microphone assembly of subcardioid capsules arranged in a pyramidal or tetrahedral array. It is designed to work with a control unit that decodes the signals coming from the array.

Recently, I had a chance to test a low-end stereo microphone set from Sonic Engineering that puts dimensional recording in the hands of the average musician or engineer. The key to these microphones is their size – they are small enough to be placed close to your ears in order to capture the way in which sound is conditioned by your head and outer ears. There is some disagreement as to just why they work, but I was able to obtain some very impressive recordings with them.

Another popular approach is to build microphone assemblies in the shape of the outer ear or even the entire human head. These are generally referred to as "artificial head" recording systems and have been used in the past by such artists as Tangerine Dream's Edgar Froese. Artificial heads usually require a binaural mixing console, and are quite expensive. Typically, the microphones are placed inside the models of the ear canals. This technique works best when played back over headphones that are matched to the microphone assembly. A number of people have shown that, when models of the outer ear are used in the vicinity of the microphone, the vertical position of a sound source can be localised even when reproduced with just two stereo speakers or headphones.

As pointed out above, it may be more economical to use an actual human head outfitted with tiny, specially prepared microphones. The two tiny microphones from Sonic Engineering are fitted with small loops that allow them to be conveniently placed over the stems of your sunglasses and positioned as close to the ear as desired. The best results seem to be achieved when they are not too close to the ear (perhaps individual differences in ear shape become unimportant at a certain distance).

"THE WAY WE LOCATE SOUNDS ABOVE AND BELOW, BEHIND AND IN FRONT, IS LARGELY DUE TO OUR OUTER EAR – AND ALSO, APPARENTLY, BY THE SHAPE OF OUR HEADS

SOUND MATRICES

THE MOST WELL-KNOWN spatial sound processing scheme today is the Dolby Laboratories Surround Sound system that is installed in many major cinemas. There are also home units appearing on the market for decoding the Surround Sound signal as well. In response to this, RCA Records in the States have announced the first CD album mixed in the Surround Sound format. A very simple decoding logic for surround sound is to send the left channel to the left speaker, right to right, right plus left to centre front and left minus right to the rear.

Spatial sound processing is something to be used in conjunction with effects processing – like reverb and delay. Establishing the direction of the sound source is one thing that can be accomplished with spatial sound processing. If this has been achieved, then the next goal is often to create the effect of one or more sound sources moving through a sound field in one, two, or three dimensions. This kind of processing is effective for both live performance and for recordings. There are a number of distinct techniques that can be used for recording that allow spatialised musical sound to be used in stereo, surround and other multi-channel formats.

A sound spatialiser like Spatial Sound's SP1 is capable of handling multiple sound sources in multiple dimensions with a variety of different multi-channel speaker setups. In general, you must choose between more sound sources or more spatial dimensions, as both of these require significant processing power. If you must have control over many sources and dimensions, multiple units can be used to get the most dramatic effects that the human ear and brain can handle. Once you have created moving patterns for two or three sound sources in a three-dimensional sound field, these moving patterns can be rotated about one or more axes. And if that isn't all your tender brain can stand, you might choose to have the entire sound field expand and contract at a speed synchronised with the beat of the music. Try listening for these effects in your everyday environment, and think about how this kind of processing might enhance your own music. The creative possibilities are truly unlimited. ■

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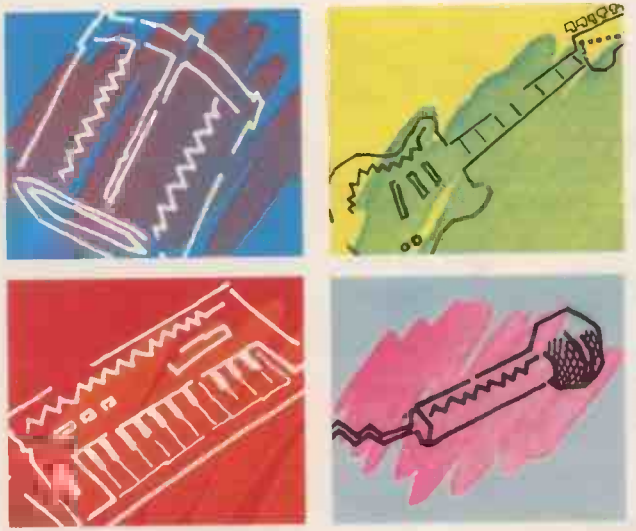

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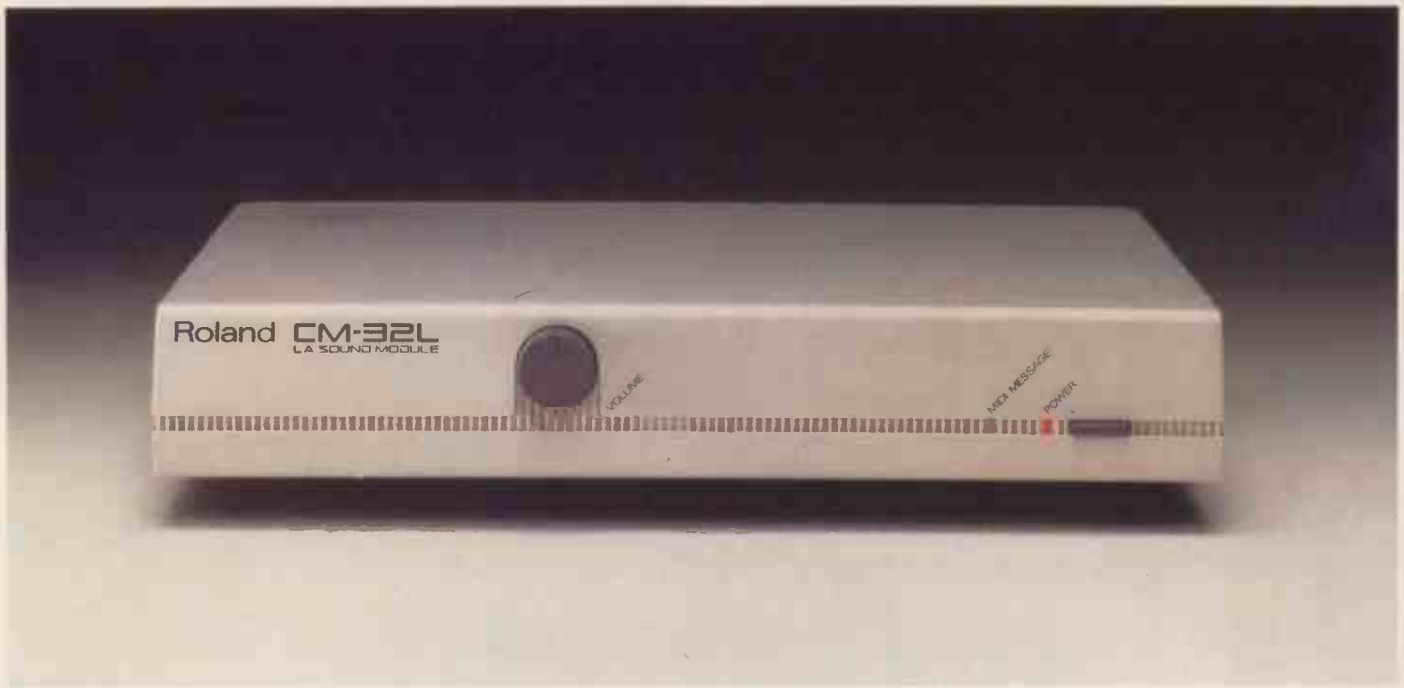
CM32L, CM32P, CM64 & LAPC1



Computer music systems are now in use with everyone from programmers, through musicians to games players. Enter the first music system both designed and styled to suit a computer setup. Review by Ian Waugh.

USING A COMPUTER to help make music is not new (experiments in computer music can be traced back over at least 30 years) but it is only fairly recently that it has become available to the masses – that's you and me (unless you're one of MT's affluent and famous readers in which case please send any left-over Fairlights to the Editorial address). One day, I'm sure, we'll all have present-day "affordable" Fairlight power in a box beside our micros.

Computers have given musicians enormous power and control over their music and the sheer variety and range of music software packages continues to increase. Most popular micros can boast at least one sequencer program and the majority have a good selection of voice editors and librarians, and a miscellaneous collection of composition programs, scorewriters and so on, too.

So perhaps it seems only logical that the combination of computer software and music hardware be integrated even further. At least such is the reasoning behind the development of Roland's CM – Computer Music – modules.

Roland have always been at the forefront of computer music systems, well before their time, you might say (giving credence to their slogan – *We Design The Future)* and readers with long memories may recall the Amdek CMU800, an "expander" even before the term expander had been coined in a musical context. It was designed to be controlled by software running on computers such as PCs and the Apple II. This was way back in 1982, and any impact it may have had was overshadowed by the advent of MIDI just a year later. Roland's commitment to computer-based systems can be further evidenced by their distribution of the Musicom educational computer music system.

The CM series of modules is designed specifically for use by computer users. They have few front panel controls, so operation through software is pretty much essential. In fact the only panel controls are a volume knob and an on/off button. An LED shows when the unit is on and another flashes when MIDI data is being received. In each case power is supplied by an external adapter.

THE CM32L

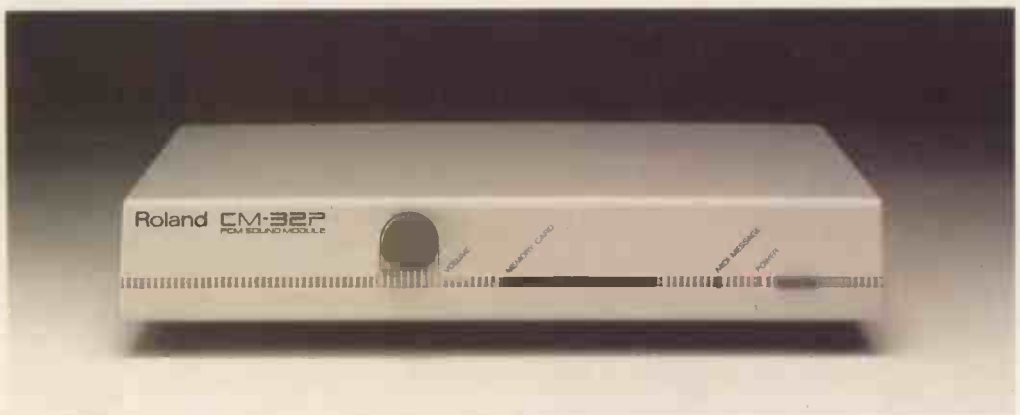
THERE ARE THREE CM modules built around existing tried and proven Roland technology. The CM32L uses Roland's famous LA synthesis and is based on the MT32, but it contains an expanded PCM memory capacity which is two and a half times larger than

that of the MT32.

Music Technology's seminal MT32 review (October '87) will give you full details of the original unit. The CM32L has a maximum polyphony of 32 voices spread over nine parts. The actual polyphony depends upon the number of Partials (blocks of sound) which go to make up a Tone.

Eight Parts are "instrument" parts and the ninth Part is used as a dedicated rhythm section. This includes 33 sound effects such as thunder, waves, dog bark, punch, footsteps, laughing, screaming and so on. These are rather more useful if you're scoring music for pictures of some kind (TV advert, home video...) than if you're trying to write an electronic symphony or a pop song, but they're fun.

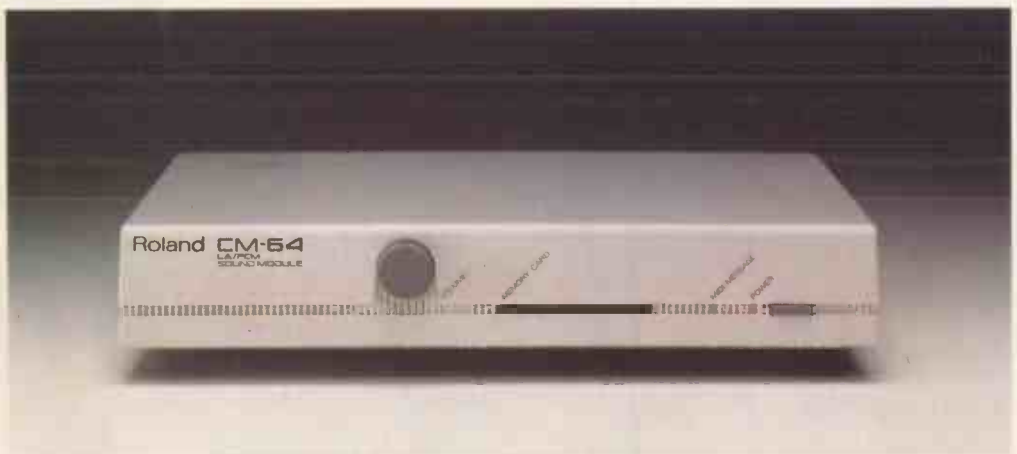
The CM32L has 128 presets and a built-in reverb. Connections to the outside world include MIDI In, Out and Thru, stereo audio output sockets and a headphone socket



CM32P

THE CM32P IS similar to the U110 sample player (for a review of the U110 see MT, January '89). It has a maximum polyphony of 31 voices and a multitimbral capacity of six Parts. The CM32P has 64 preset Tones, built-in reverb and it can access another 64 sounds using plug-in U110 cards.

It has MIDI In and Thru sockets (it doesn't transmit any MIDI data so a MIDI Out is not necessary), a headphone socket and stereo audio outs. It also has sockets to connect it to an MT32 which allows you to expand the system, but if you want to add PCM samples to an MT32 you really want the...



CM64

THE CM64 COMBINES the CM32L and CM32P in one box, giving a total of 14-Part multitimbral capacity plus a separate rhythm part. It has MIDI In, Out and Thru sockets, a headphone socket and stereo audio outs.

The eight LA sounds are played on MIDI channels two to nine with the rhythm section on channel ten as per the MT32. The PCM sampled sounds are on channels 11 to 16.

LAPC1

THE IBM PC and compatibles allow a variety of application cards to be plugged into expansion slots in their innards. These range from specialist graphic cards to MIDI interface and sound cards.

The LAPC1 is effectively a CM32L on such a plug-in card, and contains the same range of LA sounds and extra sound effects. It is fitted with left and right audio output phono sockets and a mini jack headphone socket.

It also has a MIDI interface connector which is used to connect to the optional MCB1 MIDI interface. This features a MIDI In and two MIDI Out sockets plus a Sync socket. There is a Metronome and Tape In and Out sockets, too, to permit external synchronisation.

The MPUIMC is also an optional MIDI interface. It offers the same MIDI functions as the MCB1 but is compatible with the new Micro Channel Architecture bus format used on IBM PS/2 computers. (Sorry, but I can't help having a dig at IBM about their total disregard for upward compatibility here. I'll leave MSDOS till another day.)

To put these interfaces into perspective, the industry-standard PC interface, the Roland MPU401, has an RRP of £219.00.

A big feature of the LAPC1 card, and one which was being heavily promoted at the 1989 British Music ➤

"The CM32L uses Roland's famous LA synthesis and is based on the MT32, but contains an expanded PCM memory capacity which is two and a half times larger than the MT32."

➤ Fair, is the inclusion of music routines for the card in commercial games programs. Given the right music and the judicious use of those extra sound effects, the result can be a total transformation of a game (watch a movie with the sound turned down and you'll see what I mean). However, unless you're an avid games aficionado this is likely to be a happy by-product to your purchase of the card rather than the prime reason for its purchase.

One software development company, Dynaware, has already realised the potential of a combined music/software package. The result is Ballade, a combined sequencer and tone editor for the Roland MT32 and, of course, it is made to measure for the LAPC1. It allows music to be entered on the stave in traditional notation or from a MIDI keyboard. Watch for a full review in these pages soon.

IN OPERATION

THE CM MODULES are very easy to use. You simply connect them to your computer via the MIDI sockets and plug in a set of headphones, connect them to a domestic hi-fi amp and speakers or route them to your 64-input SSL desk. The sounds in any Part can be changed by sending program change messages on the appropriate channel.

Your basic software requirements are a sequencer which allows you easily and quickly to assign tracks to different MIDI channels – most can. You also need to be able to insert program changes into the tracks. This is easily done if you have an external master keyboard but, again, most pro sequencers allow you to insert these and other MIDI events directly into a track in their edit pages.

The units respond to other MIDI messages too, such as pitchbend, control changes, modulation, volume, pan and hold (sustain). These can be entered from an external controller or, again, inserted directly into a track if your sequencer allows.

Patches for modules containing LA sounds can be transmitted and edited via MIDI using voice editors but, like the MT32, these are lost when you switch off. However, as they are intended to be used with a computer-based music system, the data could be stored as system exclusive dumps (many sequencers can handle this) and saved along with the music.

ACCESSORIES

TO ASSIST THE computer musician, Roland have also developed three data entry modules to complement the CM range. All are housed in computer-beige cases and use membrane controls.

The CF10 is a Digital Fader. It has ten channels which transmit MIDI volume and pan messages. The membrane faders allow coarse volume control, and increment/decrement controls permit fine tuning. The MIDI channel assignment, however, is fixed for each channel.

The CN20 is a Music Entry Pad. MIDI information such as note on/off, velocity, bender and program changes can be transmitted from the front panel. Ten types of chord can be transmitted, too. The "keyboard" only covers an octave-and-a-half but a transpose function gives you access to the full range

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of MIDI note numbers from 0 to 127. A built-in physical fader can be assigned to control a variety of MIDI data over any of the 16 channels such as volume, bender, modulation and aftertouch.

The CA30 is an Intelligent Arranger for use with the CM32L and CM64. It is similar to the RA50 Intelligent Arranger and E20 Intelligent Keyboard and can produce very complex auto bass, rhythm and accompaniment patterns (a visit to your local music shop to hear the accompaniments on these instruments is definitely recommended). If it is fed a melody line and chord progression via MIDI it will produce a complex auto accompaniment for it which can, in turn, be fed back through the CA30's MIDI Out for further editing.

VERDICT

THE ROLAND CM modules represent a brave step for Roland. Although they are aimed at a growing area of the music market – the computer musician – they don't intrinsically do anything a traditional expander couldn't do. But they look neat and they do free you from any worries you may have about what button to press on the front panel.

They also save you one or two hundred pounds on the price of the equivalent expander unit – the CM64 in particular offers a saving of £260 against the RRP of an MT32 and a U110. However, given the lack of external buttons and LCDs plus the use of technology which is no longer quite state-of-the-art, perhaps potential buyers may totter between these and their expander counterparts.

But this surely is the way computer music is heading, even if it is only a few steps along the way. Ask any Fairlight owner what they like about their instrument and they will tell you it is the total integration of sound and software. The ability to create and edit both music and sounds and store them together as part of the whole composition is an ideal which both musicians and manufacturers are working towards (for an example of affordable, total sound and music integration check out the Hybrid Music System which runs on the BBC micro).

The CM modules have quite squarely declared their place in the musical scheme of things, and it can only be hoped by those of us wanting a tidy and well-integrated computer music system that their concept is grasped and developed even further by Roland and other manufacturers.

In ten years time we'll look back upon 1990 with its individual and separate music hardware and software units with as much nostalgia and affection as we now look back upon equipment of the pre-MIDI era. And not many of us would ever wish to go back. ■

Prices CM32L, £369.00; CM32P, £445.00; CM64, £789.00; LAPC1, £379.00; MCB1, £79.00; MPUIMC, £210.00; CF10, £129.00; CN20, £129.00; CA30, £315.00. All prices include VAT.

More from Roland (UK) Ltd, West Cross Centre, Brentford, Middlesex TW8 9EZ. Tel: 01-568 1247.

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free ads

MUSIC TECHNOLOGY's free classified section is the biggest of its kind in the business. Every month, we carry more ads for synthesisers, samplers, computers, signal processing gear and assorted other goodies than any other monthly magazine. So when musicians and studio engineers are on the lookout for some extra gear to update their line-up, they turn to these pages *first*.

If you're a private seller, advertising in the back of MUSIC TECHNOLOGY really couldn't be simpler. And if you're searching for a specific piece of equipment or looking for other musicians to fill a gap in your band, we can help out there, too.

Just fill in the form at the end of this section, indicate which sub-section you'd like your ad to appear in, and send it to us by the date specified. We'll do the rest – and it'll cost you no more than the price of a postage stamp.

If you buy and sell musical equipment as part of a business, you'll have to use the regular classified section on the last page. And we regret we can't answer any queries regarding free classifieds published in MUSIC TECHNOLOGY.

KEYBOARDS

AKAI AX73 synth, 6-octave keyboard, full MIDI, £450 ono; Roland U110 sampled sounds, £450. Both new. Tel: (0909) 566695.

AKAI MX73, £325 ono; TX7 module, £195 ono; D110, £450 ono. All vgc. Tel: Bath (0225) 337118.

BARGAINS: DW8000, £400; TX81Z, £200: Seck 12:2, £350; Cobra keyboard, £200. All A1 cond. Tel: (07375) 54880, eves.

CASIO CZ1, £395; Roland MT32, £275; Alesis MMT8, £195. Home use only. Tel: (0554) 775270.

CASIO CZ101, £140; XRI Micon step/real-time sequencer, DX editor, £60; 48K Spectrum, microdrive, £60. Tel: (0733) 268785.

CASIO CZ101, boxed, CZ Android, 500+ voices on ST disk. Steve, Tel: (0652) 52854.

CASIO CZ101, mint cond, inc Atari librarian disk, PSU, manual, £125. Can post. Tel: (0241) 54780.

CASIO CZ1000 synth, Yamaha QX21 sequencer, great multitrack composing package for only £299. Tel: (0353) 721523.

CASIO CZ1000, manuals, PSU, patch books, £150 ono. Mark, Tel: Croydon 01-777 8189.

CASIO CZ1000, mint cond, boxed, £165 ono; Teac 2A 6:4 mixer, vgc, £125 ono. Wanted: PG800. Jaysen, Tel: (0323) 21274.

CASIO CZ5000, boxed, manuals, as new, £350. Dave, Tel: (0536) 722906, eves.

CASIO CZ5000 multitimbral synth, 8-track sequencer, ST sound library and editors, £400 ono. Tel: (0724) 852171.

CASIO CZ5000 synth, 8-track sequencer, MIDI, polyphonic, many sounds, £450. Tel: 01-998 2375.

CASIO HT3000 keyboard synth, full auto accompaniment, MIDI, boxed, as new, £249 ono. Tel: 061-980 6140.

CASIO HT3000, fully programmable, MIDI, PSU, 1 yr old, £200 ono. Tel: Somerset (0458) 33304.

CHASE BIT 1, analogue, polyphonic, updated MIDI, pedal, excellent cond, £195; Yamaha RX15 drum machine, £125. Chris, Tel: Midlands (0827) 57103.

ENSONIQ ESQ1 synth and sequencer, RAM cartridge, hard case, £550 ono. George, Tel: (0935) 77348.

ENSONIQ ESQ1 RAM, sequencer exp, 600 voices, £650 ono; Fostex X15, £150; TR505, £130 ono; FB01, £120 ono. Boxed. Tel: (0489) 895255, eves.

HAMMOND B200 portable organ, immac, home use only, Sharma 400W Leslie, £600. Tel: Liverpool 051-260 6675.

KAWAI K1M, vgc, home use only, £250 ono. Tel: (0525) 370514.

KORG 707, 8-note, multitimbral, velocity, aftertouch, £250 ono. George, Tel: (0935) 77348.

KORG DS8, £450; Korg SQD8, £245; Korg Poly 800, £200; S612 sampler, £250. Tel: (0962) 53243.

KORG DW8000 and editor (Atari ST), £500 ono; TR626, £175 ono. Both vgc. Steve, Tel: 01-301 0777.

KORG DW8000, £500; MS20, £80; Alesis MMT8 sequencer, £160. Tel: Nottingham (0602) 585595.

KORG M1, £1050; Atari 1040ST plus 24 V.3 and disks, £575. Ronnie, Tel: (0382) 552768.

KORG M1, as new, home use only, inc stand, memory, £1195. Tel: (06284) 71141.

KORG M1, Roland D10, Yamaha KX88, Yamaha DX7S, Roland P330. Offers. Andy, Tel: (0582) 607265.

KORG M1, as new, boxed, manuals, stand, mint cond, £1050. Amanda, Tel: (0753) 31095, after 6pm.

KORG SG1 DX piano, 88-note, after touch, pitchbend, modulation, excellent cond, £2150 rrp, sell for £1500. Tel: 01-625 6070, days or 01-372 6301, eves.

MOOG MEMORYMOOG, classic synth, classic sound, MIDI, carrying case, only £1150. Tel: (09277) 66664.

MINIMOOG, offers; Jupiter 8, £600; FB01, £100; TX7, £150. Paul, Tel: 01-734 3314.

MOOG PRODIGY, compact classic monosynth, good sounds, very good condition, £120 ono. Tel: (03543) 5239, eves and weekends.

MOOG PRODIGY, have two, will swap one for other Monosynth. Trevor, Tel: Lancs (0695) 625526, eves.

MY EX8000 plus RX17 drums or some cash for your DW8000. Paul, Tel: (0772) 39124.

ROLAND D10, flightcase, £600; D110 and Akai ME30P wanted. Tel: (06333) 65758, after 6pm.

ROLAND D10, £600; Roland TR505, £100; Roland SH101, £60. Sam, Tel: (0865) 750 702 or (0865) 843200 X326.

ROLAND D10, flightcase, £600; Yamaha TX81Z, £220; Philip Rees 5x5, £50. Wanted: Roland D110. Tel: (06333) 65758, eves.

ROLAND D50, manuals, lead, X-stand, home use only, £780 ono. Iain, Tel: 01-863 3069, eves and weekends.

ROLAND D50, perfect cond, inc stand and pedal, £875; Roland R8, £500. David, Tel: (0296) 641079.

ROLAND D50, cards, manuals, boxed, as new, home use, £850. Paul, Tel: 01-898 6116. Heathrow area.

ROLAND D110, swap for Casio CZ1, ESQ1, JX10, JX8P, DSS1, DX711D, K5, CZ5000 and cash difference. Or sell for £550. Exc cond. Roger, Tel: (0787) 78106, after 6pm.

ROLAND E10 keyboard, £595. Swap for PSR 6300 or Technics SXK700. Bill, Tel: 061-928 5946.

ROLAND E10, immac cond, six months old, boxed, £650 ono. Tel: Swansea (0792) 208485, anytime.

ROLAND E20, £700; Yamaha DX21, £250; Casio CZ5000, £300. Quick sale. Tel: Cornwall (0736) 871207.

ROLAND HP700 SAS piano, weighted keyboard, multitimbral, built-in speakers, immac, £999 ono. Tel: (0628) 37837, eves.

ROLAND JUNO II, perfect cond, boxed, manual, only £300. Tel: (0530) 37277.

ROLAND JUNO 6 and case, £190; TR505, £130; Carlsbro Cobra 90, £180; Fostex X15 and adaptor, £150. Malcolm, Tel: Dartford (0322) 28248.

ROLAND JUNO 6, £200; Roland JX3P, £300; Korg DSM1 rack sampler, £1000; Korg DW8000, £500; Korg DDD1, £300. Dominic or Chris, Tel: 01-724 8327.

ROLAND JUNO 60, plus MIDI interface, good cond, only £225. Tel: (0274) 735672.

ROLAND JUPITER 6, flightcase, £500; Casio CZ101, £100; Kawai R100, £400; Alesis MMT8, £150. Tel: (0705) 252140.

ROLAND JUPITER 6 with MIDI, owners manual, excellent cond, £480. Tel: Sheffield (0742) 334139.

ROLAND JX3P and programmer, £300; Yamaha RX15 drum machine, £150. Tel: (0392) 410797, after 6pm.

ROLAND JX8P, mint cond, boxed or flightcase, £550; PG800 programmer, £100. Both for £600. Jonathan, Tel: (0404) 812264.

ROLAND JX10, flightcase, £950; Oberheim sample player, S900, Pro2000, E-mu, Mirage compatible, £615; Commodore SX64, built-in colour monitor, d/drive, £275. Mint. Tel: 01-948 7680.

ROLAND JX10 plus extras, £799; Korg 707, Kawai K1M, £229 each. All mint cond. Jason, Tel: (0252) 725272.

ROLAND MKS7 Super Quartet sound module, TR707 drums, Juno1 sounds,

£120. Tel: Walsall 643255.

ROLAND MT32, home use only, £250. Tel: (0904) 639717.

ROLAND MT32, boxed, mint cond, Dr T's MT32 editor (Atari ST), £275. Tel: (0243) 572947.

ROLAND MT32, mint cond, boxed, manuals, leads, £200. Tel: Kings Lynn (0553) 840582.

ROLAND PRO-E arranger-keyboard, few months old, as new, £680. Tel: Plymouth (0752) 407664.

ROLAND SH101 great for "Acid" basslines, complete with PSU and poser grip/strap, £99. Tel: (0353) 721523.

ROLAND SH101, sad to see it go, boo! hoo! £85. Ian, Tel: (0536) 510896.

ROLAND VP330 vocoder plus MIDI interface, 4-octave keyboard, £495. Darren, Tel: 01-648 8713.

SEQUENTIAL PRO 1, classic monosynth, very nice condition, great sound, £120 ono. Tel: (03543) 5239, eves/weekends.

SEQUENTIAL PRO1, £150; Roland PG1000, D50 programmer, £200; Roland Juno 106, £400. Paul, Tel: (0380) 870406.

SIMMONS SDE MKII, 19"*£85. Tel: 01-534 8909.*

YAMAHA DX7, 4 ROMs, 2 pedals, manual, absolutely perfect cond, hardly used, £550 ono. Tel: Gloucester (0452) 26910.

YAMAHA DX7S, flightcase, immac, £649. Wanted: RAM cards, Roland D10. Tel: Preston (0772) 323303.

YAMAHA DX11, home use only, vgc, £345 ono. Tel: (0525) 370514.

YAMAHA DX21, case, extra voices, manuals, excellent cond, bargain at £275. Tel: (0388) 730512, after 4pm.

YAMAHA DX21, £250; Roland JX3P, £200. Both good cond. Paul, Tel: 01-898 6116.

YAMAHA DX21, mint cond, hard case, manual. Quick sale, hence £290. Ian, Tel: (0734) 843360.

YAMAHA DX21, hard case, voice tapes, £250; Tascam Porta One, £250. Tel: 01-749 3206.

YAMAHA DX21, case, all manuals, £295; Kawai K1M, boxed, Soundcraft, manuals, £325. Ashley, Tel: (0533) 514220.

YAMAHA DX21, 5 months old, hardly played, mint cond, £299. Tel: (0626) 770651, after 6pm.

YAMAHA DX100, boxed, instruction manual, 1 temperamental key, therefore ridiculous price, £115. Tel: (0494) 25637.

YAMAHA DX100, £150; QX21 sequencer, £140; CM5 MkII computer, large keyboard, £120. Tel: (0273) 463328.

YAMAHA DX100, immac cond, boxed, manuals, tape, £140. Tel: (099 289) 2317, eves/weekends.

YAMAHA PF85 piano, brand new, boxed, guaranteed, £775; Korg DDD1 drum machine, £250. Chris, Tel: (0538) 382006.

YAMAHA PSR70, vgc, flightcase, £300 ono; Yamaha Power V, 5 piece drum kit and cymbals, £350 ono. Tel: (0684) 40220.

YAMAHA PSR6300, touch sensitive, drums, auto accompaniment, sequencer, £650 ono. Tel: Hemel Hempstead (0442) 216982.

YAMAHA PSS680 music station, as new, boxed, instructions, £135 ono. Tel: (04024) 70926.

YAMAHA TX81Z, manual, cables, boxed, £230. Tony, Tel: (0458) 31444.

YAMAHA TX81Z, home use only, £175; MT1X recorder, £272. Tel: Herts (0582) 715549.

YAMAHA TX81Z, £220; Amiga 2000 computer, IMG, 2 disk drives, colour monitor, superb, £1000. Richard, Tel: (0708) 28426.

SAMPLING

AKAI S700, £350; Frontline X8 line mixers, £70; 18 unit rack, £50. Paul, Tel: (02357) 4108.

AKAI S700, excellent cond, 2 brand new boxes Maxell QD's, 6 separate outs, lead, £450. Tel: Ilford 5531361.

AKAI X7000 plus memory expansion, massive library, flightcase, immac, £650 ono. Keith, Tel: (0450) 76131, eves.

AKAI X700 sampling keyboard, with ASK70 expansion board and £90 worth of disks, £500. Tel: 01-703 0719.

CASIO FZ1 plus memory expansion, vgc, originally cost over £2000. Yours for only £625. Dave, Tel: (0274) 616107 or 487444.

CASIO FZ1 sampler, hardly used, home use only, mint cond, £700 ono. Tony, Tel: Brighton 308236.

LYNEX 16-bit sampler, £1200 ono. David, Tel: Brighton (0273) 542188.

ROLAND S10 sampling keyboard, case and disks, £525 ono. Mike, Tel: 021-354 8377.

ROLAND S50 sampler, c/w library, boxed, £750. Iain, Tel: (05435) 79130.

ROLAND S330, 50 sample disks, £750 ono. John, Tel: (0246) 260500, office; (0709) 815644, home.

SAMPLER CD and tapes for sale. Tel: 061-998 3494.

YAMAHA TX16W sampler, as new, large library. Bargain at £750. Tel: (0473) 241401.

SEQUENCERS

KORG SQD1, manual, disks, £210; Roland TR707 drums, manual, cartridge, £125. Tel: Ashton in Makersfield 714080.

KORG SQD8, 8-track MIDI sequencer, disk drive, real and step-time, boxed, PSU, £270. Richard, Tel: (0275) 424130.

ROLAND MC202, mint cond, boxed, manuals, £75 ono. Tel: 051-644 9201.

ROLAND MC500 plus MkII software, home use only, excellent cond, £525 ono. Tel: 01-995 6658, answerphone.

YAMAHA QX5, still in box, as new, free Accessit noise gate, compressor and psu, £199. Tel: (0244) 819441.

YAMAHA QX5, mint cond, boxed, manual, leads, etc, £160. Mike, Tel: 01-390 7481, eves.

YAMAHA QX7 sequencer, vgc, manual, £80. Robert, Tel: (0707) 326704, eves.

YAMAHA QX21, good cond, manual, £90. Mark, Tel: Croydon 01-777 8169.

YAMAHA QX21, RX21, RX21L. All boxed, manuals, immac, £300 the lot. Tel: (0252) 811168.

DRUMS

ALESIS HR16, powerful percussion, brand new cond, boxed, guaranteed, manuals, £250. Tel: Telford 251753.

ALESIS HR16, boxed, as new, home use only, £250. Stuart, Tel: Rayleigh (0268) 747219, after 5pm.

BOSS DR220A, boxed, as new, £89; JHS bassbox, multi effects, £85. Tel: Sussex (0273) 493659.

DRUM MACHINE, perfect cond, not gigged, £50. Tel: 01-883 2715.

DRUMULATOR 64 song model, crash and ride cymbal chips, vgc, £95. Tel: Cheltenham (0242) 570261.

KORG KPR77 drum machine, mint cond, boxed, manuals, £45 ono. Tel: 051-644 9201.

OBERHEIM DX drum machine, £140; Oberheim Prommer, £125. Both boxed, mint cond. Khalid Chowdry, Tel: 01-867 6709.

ROLAND BOSS DR220 drum machine, cost £165, sell for £95. Tel: 021-420 1585.

ROLAND TR505 drum machine, manual, excellent cond, £125. Tel: Dunstable (0582) 664682.

ROLAND TR505, mint cond, boxed, £120; Yamaha YMC10 tape-sync, MIDI thru box, £40. Tel: (0428) 61575.

ROLAND TR626, separate outs, £185; 8:2 mixer, stereo fx return, £100 ono. Tel: (0279) 31337.

ROLAND TR707 drums with free Korg DDM220 percussion, great rhythm package, only £225. Tel: (0353) 721523.

ROLAND TR707 drum machine, £160. Charlie, Tel: (0603) 760426, 9-6 (work); (0603) 860024, eves.

ROLAND TR707 drum machine, perfect cond, £175. Tel: 01-998 2375.

ROLAND TR707 drum machine, PSU, excellent cond, £160. Tel: (0929) 556224.

ROLAND TR727 Latin drum machine, £190; Boss Dr Rhythm, £50. Chris, Tel: Bognor (0243) 266126.

ROLAND TR808 with MPC sync-trak, £250; TR707, £175; Steinberg Pro16 for CBM64, £50. Tel: (0489) 577466.

SEQUENTIAL CIRCUITS Drumtraks, £150. Tony, Tel: (0458) 31444.

SIMMONS equipment: TM1, £150; Pad5 with stands, £150; SDS7 brain, £250. David, Tel: (04022) 29961, eves.

YAMAHA RX5, top of the range drums, three cartridges, 95 voices altogether, £450. Tel: (0353) 721523.

YAMAHA RX11, £175; QX21, £120. Both as new, boxed, manuals. Tel: Herts (0992) 550179.

YAMAHA RX21, psu, manuals, vgc, £125. Roger, Tel: Stafford (0785) 213540, after 6pm.

YAMAHA RX21 drum machine, boxed, manuals, psu, especially usable over MIDI. Bargain at £100. Tel: 01-669 0717.

YAMAHA RX21 drum machine, immac, boxed, inc all leads, manuals, power supply, £120. Jon, Tel: (0934) 621909.

COMPUTING

AMIGA Dr T's MRS sequencer, unused, £35. Tel: (07374) 3553, eves only.

AMIGA with upgraded memory, Music-

X software, MIDI interface, etc, £650 ono. Or swap Akai S900. Andi, Tel: (0722) 338685, after 6pm.

ATARI 520STFM and Steinberg Pro24. Swap for rack synth or WHY. Terry, Tel: Runcorn 718655.

ATARI 1040STFM, mono monitor, Steinberg Pro12 sequencer, MusiCal disks etc, 3 months old, absolutely immac, boxed, £499 ono. Tel: (0384) 410853.

ATARI 1040STFM modulator, SM124 monitor, Dr T's KCS 1.5, some books, £500. Mark, Tel: (0566) 85 645.

ATARI 1040STFM with Pro24 (V3), £500; D110, £400. Derek, Tel: (0450) 75081, after 5pm.

ATARI 1040STFM, mono monitor, monitor stand, boxed, as new, going mega, £425 ono. Tel: (0424) 436674.

BBC B computer, MIDI interface, £200; MIDI interface for Commodore 64, £30. Tony, Tel: (0458) 31444.

C-LAB NOTATOR, brilliant sequencer/scorewriter, latest version, only £300. Piers, Tel: Hatfield (0707) 271641, eves/weekends.

DR T's KCS Level II, back-up disk, original receipt, manuals, GBS reverb (XLR's), mint cond, £150. Tel: East Sussex (0424) 218711.

SPECTRUM & XRI MICON interface, sequencer, DX7 editor, 1000+ voices, £50. Robert, Tel: (0707) 326704, eves.

STEINBERG PRO24, not pirate, version 3 with manual, dongle. Must sell, £150. Tel: (0706) 815912.

STEINBERG PRO24 V3, £190 ono. Swap for anything obsolete but cute. Any offers? Paul, Tel: (0742) 879758.

STEINBERG PRO24 V3 with updates, £185. Tel: West Sussex (0243) 821909.

STEINBERG PRO24, V3, extended manual, upgrades, £200; Roland MKS70 and RAM cartridge, £500. Guy, Tel: 01-360 0412.

YAMAHA CX5, SFG05 unit, voicing, composer, cartridges, extra voices and progs, £200 ono. Mik, Tel: 01-326 0090.

YAMAHA CX5 computer, SFG05, YRM502, £80; YRM101, YRM102, DMS8 for SFG01, £12 each. Tel: 01-521 1671.

YAMAHA CX5M, SFG05, voicing, composing, recording cartridges, large keyboard, printer, voices, progs, £200. David, Tel: (0206) 212373.

YAMAHA CX5M, large keyboard, voicing composer, DMS cartridges, £195; Juno 6 synth, £195. Both as new. Tel: (0602) 274315.

RECORDING

AKAI EX85R micro rack, digital reverb, £100 ono. George, Tel: (0935) 77348.

AKAI ME10D MIDI digital delay, vgc, £75. Tel: (0925) 36766.

ALLEN AND HEATH 16:4:2 mixer, 3 aux, parametric EQ, good cond, £450. Tel: 01-674 2418.

BOSS RGE10 micro rack graphic equaliser, £80 ono. George, Tel: (0935) 77348.

DESCTECH 16:2 mixer, brand new cond, boxed, guaranteed, home use only, £350. Tel: Telford 251753.

EMU SP1200, £995; Yamaha PF1500, £950; Tascam 238, £875; Tascam TSR8, £1675. Tel: 01-462 6261.

FOSTEX A20 stereo with centre time code track, perfect cond, £650 ono. Tel: 01-883 6995.

FOSTEX B16 with remote, Studiomaster 24:16:2 desk, vgc, home use only, will split. Tel: (0905) 778959.

FOSTEX M80, 16:4:8:2 mixdown, DEP13, Akai EX70C, boxed, mint cond, £2300. Will split. Jagz. Tel: (0895) 55922.

FOSTEX X15, MN15 mixer/compresser, mains adaptor, boxed, manuals, £95 ono. Tel: 051-644 9201.

HILL 28:4:2, 4x4560, mids, horns, 3-way amps, £2200 ono; Audio radio mic, £200; PA cabs. Tel: (0492) 532436.

MULTICORE/STAGEBOX, 12 sends, 4 returns, 40 metres, brand new. Tel: (0438) 720143, eves.

OHM mixer, 8:2 rack-mount, great EQ, high spec, £175 ono; Roland vocoder, £300 ono. Tel: (0342) 323094.

PHANTOM PSU, 8 inputs, £95; Tandy PZM mics, updated, £50; DI boxes. Tel: (04867) 3239.

ROLAND SVC350 vocoder, £385; Presto disk cutter. Tel: (0628) 35686.

SECK 18:8:2, perfect cond, £900 ono. Tel: 01-370 0732.

SIMMONS SPM 8:2, K1M, X15/MN15, 2HD/FZ1 disks, QX21, SDE, MD8, £850 ono the lot. Will split. Tel: (0748) 5981.

SONY PCM501 digital stereo mastering plus SL30 Beta video, £475. Tel: Bristol (0272) 272924.

SOUNDCRAFT 1624 mixer, 24:16:16, vgc, home use only, hardly used, need space, £6000. John. Tel: 01-603 7401.

SPECTRUM & XRI interface, step/real-time sequencer, DX7 editor/librarian, over 1000 voices, £90 ono. Tel: (0895) 372161, eves.

STUDIOMASTER B67, 2-track, quarter-inch, VU bridge, 3.75/7.5/15 in console, mint cond, £2800 ono. Joerg, Tel: (0273) 774420, after 6.30pm and weekends.

STUDIOMASTER SERIES II, 16:16:2, £2000; Fostex M20, quarter inch, £450; Roland DEP5, £350; DX7, £400. All vgc. Tel: 01-800 2970.

STUDIOMASTER 16:4 mixing desk, good cond, £500; PG800 programmer, £100 or both for £550. Jonathan, Tel: (0404) 812264.

TANNOY STRATFORD speakers/monitors, fantastic clarity, £99; 10-band stereo graphic equaliser, £49. Both perfect cond. Tel: (0353) 721523.

TANTEK RAK, 11 modules. Pete. Tel: 01-367 1720.

TASCAM 32, mint cond, boxed, recently serviced by Tascam, £650 ono. Tel: 01-670 9707, after 12pm.

TASCAM 38, 8-track, dbx, AHB 12:8:2, Roland SRE555 multi-effects, £2000 ono. All cables. Tel: (0302) 54432.

TASCAM 246, as new, £495; Sessionette 1x12" guitar combo, £165. Tel: (04574) 5025. Manchester area.

TASCAM PORTA ONE recorder, excellent cond, £245; Casio CZ101, PSU, £125. Tel: (0229) 21733.

TEAC 144 portastudio, hardly used in past 4 yrs, £190. Tel: Shropshire (07462) 2971.

TEAC MODEL 2A mixer and MB20 meter bridge, £175. Tel: Cheltenham (0242) 570261.

XRI XR300 SMPTE synchroniser, Frontline 8:2 mixer. Offers. Sean, Tel: (0276) 856363, days or 01-873 0433, eves.

YAMAHA MT1X, 4-track, mint cond, £250 ono. Also, swap my M1 for a M1R and cash. Tel: (0533) 417655.

AMPS

CARLSBRO COBRA 90, £185; Roland Juno 6, case, £185; TR505, £120; Fostex X15, £120. Malcolm, Tel: Dartford (0322) 28248.

MCGREGOR 200W keyboard combo, 3-channel, reverb, graphic, perfect cond, £200. Ian, Tel: 01-688 5608.

PERSONNEL

AMIGA USER seeks contracts, soundtracker, GMC, lots of samples disks. Graham, Tel: (0284) 850588.

EARTH BEAT SYNPHONIC: 808/Eno, release imminent, require artists to feature, and investment fast. Tel: (0272) 540354.

EMOTIONAL BLACKMAIL need a rocky pop frontman, Hampshire based. Kev, Tel: (0703) 268150, eves.

GREENGATE DS3 USERS!?! Is there anyone else out there interested in starting a users group? Chas, Tel: 01-584 6733, days or 01-360 1348, eves.

HARD WORKING young man seeks work as studio hand. Steve, Tel: (04023) 75321.

MELODIST for serious, ambitious songwriters with studio. Notts 30, Stockport 25, Derby 23, Sheffield 18 miles. Great prospects. Tel: (0629) 636222.

PURNELL, PARNELL Nick, Oberheim synth owner living in Chester area, from Birmingham. Tel: 021-420 3295, eves/weekends.

SYNTH/VOX, 18 seeks similar with gear! Ideas! Fun! Depeche, Japan. Nick, Tel: Preston (0772) 740514.

TRULY excellent songwriter seeks good home for good songs. Mike, Tel: 021-354 8377.

VOCALIST required in view of forming band with ideas for lyrics/songs. Justin, Tel: (0703) 641732.

MISC

CASIO DG20, £150 ono; Yamaha RX11, boxed, £200; Casio RZ1, £150; Korg KMS30, £60. Tel: (02612) 2474.

COPYRIGHTED Pro24 III, complete with Greengate DS3 with keyboard, other odds and sods. Swaps considered. Tel: (0724) 857970, eves.

COVERS to suit Toa SL15 or SL150 speakers, £14 the pair. Tel: Rainham (04027) 53873.

FOLDBACK MONITORS with covers, one has 120W amp, other is slave, immac, £175. Tel: (04867) 3239.

GIBSON SG solid bass copy, c/w hardcase, £85 ono; Radiator waterpump, shocks, sunbeam, brand new. Tel: (0203) 310808.

KORG C2500 digital piano, perfect cond, 6 months old, £695. Dave, Tel: York (0904) 635453, eves.

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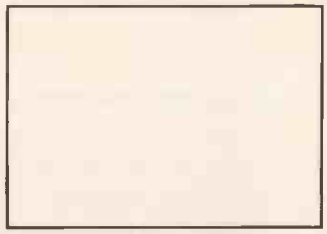

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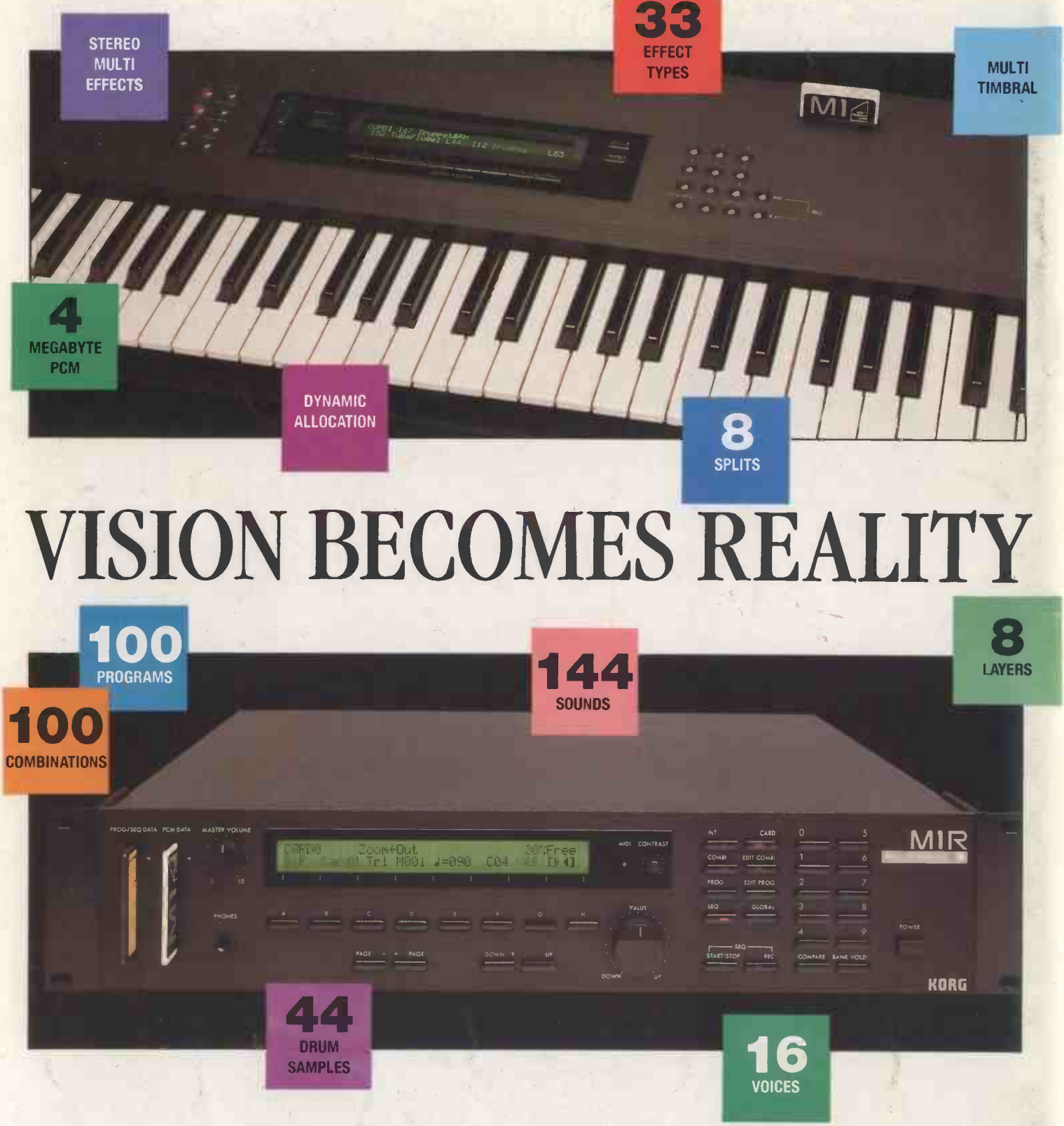

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