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THE WORLD'S PREMIER HI-TECH MUSIC MAGAZINE

September 1990
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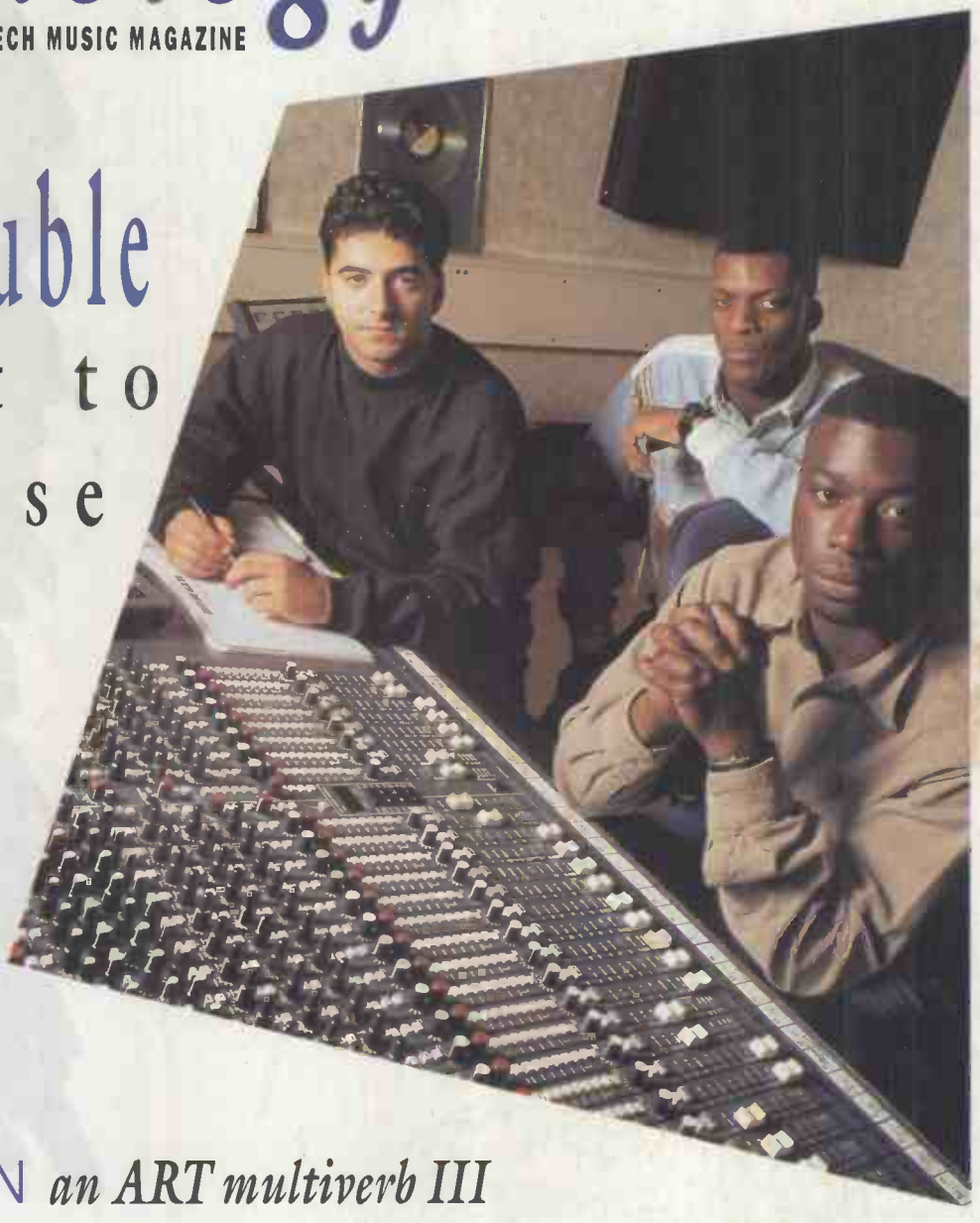

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THE SHOCK IN 3U

The sound of the 90's has been cut down to size.

What promises to be the most popular synth of the decade, the ground breaking SY77, is now available in 19" rack-mount form taking just 3U of precious rack space.

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For further information on the TG77 and SY77, please complete this coupon and send to: Yamaha-Kemble Music (UK) Ltd., MI & Pro Audio Division, Mount Avenue, Bletchley, Milton Keynes, MK1 1JE.

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MUSIC TECHNOLOGY & TSC

PROPHET 5 RACKMOUNT

The Studio Electronics range of classic synths have proved to be some of our best sellers. New to the range which includes the **Midimoog**,Obierack and **Harvey 808** is the P5, a rebuild of the original prophet five into an 19" rackmount with extensive midi capabilities.If you already have a rev 2.3 or higher Prophet 5 we can send this to America for rebuilding alternatively a limited quantity of units will be available from June on a first come first served basis.We already have a waiting list for these units,so if you are interested please contact our sales department.

ROLAND S770

4 years in developement the S770 sets a new standard in sampling quality.The bottom end is unreal from this 24 voice 16 bit digital sampler with 20 bit D/A converters. The S770 comes as standard with an internal 40 m/b hard drive, digital and SCSI interfaces, output to mono and RGB monitors and is expandable to 16 m/b of waveform ram. An extensive library already exists on both Optical,removeable 45 m/b cartridge and CD rom.

KORG WAVESTATION

Co-designed by Dave Smith of Sequential Circuits fame it would take pages to describe how this synth works.It is suffice to say that it sounds absoloutely brilliant. First shipments are due in May and the price wil be £1575.00 inc vat.

KEY DEALS

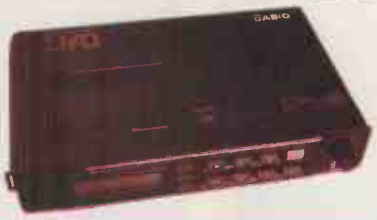
1. **Roland** SBX10 sync box was £200.00 we have limited stocks at **£29.00** first come first served,
2. S/H **Emax** HD keybd £1295.00 + vat
3. S/H **Emax** HD Racks £1295.00 + vat.
4. **Casio** VZ10M synth £199.00
5. S/H **AKAI** S1000 £1650.00
6. **Casio** DA1 ex demo £450 + vat
7. Apple **Mac plus & EZ vision** £999.00
8. **Emu Proteus** plus ***FREE*** editor
9. **Soundtracs** Midi PC's from £ 3200.00
10. S/H **Fostex** B16 £1495.00.

SOUNDTOOLS FOR ATARI

For all you Atari owners who don't want to invest in a Mac system.Digidesign have announced the release of the Soundtools direct to disk recording and editing system for the Atari Mega 4. Offering most of the features of the Mac system Soundtools ST will sell for £1995

HIT LIST

1. **Roland** S770 stereo sampler
2. **Waldorf** Microwave synthesizer
3. **Yamaha** SY22 synthesizer
4. **ZOOM 9002** gtr effects processor
5. **Apple** MacPortable computer
6. **Midimoog** synthesizer
7. **Akai** S1000 sampler
8. **Russian Dragon** timing display
9. **Diki Devices** RMCD removeable hard disk/cd rom combo
10. **Roland** D70 Synthesizer
11. **Opcode** Vision mac
12. **Emu** Proteus



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We are the UK's **largest** supplier of Synthesizers,Computers and personal Studio Equipment to the **professional** market. We **manufacture** a number of key products ourselves from S1000 memory boards to the Diki Devices range of Hard disks and peripherals and our **buying power** allows us to offer you **terrific deals** sometimes well below **trade prices.**

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TSC

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VOLUME 4 NUMBER 10 SEPTEMBER 1990

THE WONDER STUFF

MY FIRST SYNTH gave me a considerable amount of pleasure. Quite apart from the musical barriers that fell away as a direct consequence of having *that* amount of control over sound for the first time, there was the matter of other peoples' attitudes towards it. There were the sceptics, of course, but most enjoyably there were those who were obviously in awe of a synthesiser. To these people the idea of building a sound from a couple of oscillators, filtering it and having it develop over a period of time was simply incredible. They were impressed but quite happy to leave it to me to worry about. Shallow stuff this, except that an alarming number of the people I'm referring to were musicians.

It would be fair to say that they had a problem with synthesisers. It wasn't a problem that concerned the principle of having an instrument that derived its sound from electronic components, it was the conceptual problem of working with such an instrument. Essentially there were no rules - there was nothing to restrict you in the applications of the instrument, but equally, there was nothing to guide you in its use.

For me it was simple: I could do anything the instrument allowed me to do because I didn't have any preconceptions about any aspect of the instrument or the working methods I should adopt. But in 1990 I find that I am having to re-invent my perception of hi-tech instruments on a regular basis. Every significant new development requires a reassessment of everything from my own working methods and the gear I currently use to anything I might buy because of this new innovation. And I know I'm not alone in having to deal with progress in this way.

Let's touch on a couple of examples. MIDI: suddenly all the equipment can communicate and be controlled by a central sequencer - except that all your past experience of recording has to be reassessed (the relationship between tempo and pitch, for example). Sampling: no more dodgy synth flute patches, now you can have the "real" sound - could sampling other pieces of music really have any significance?

What I'm getting at is the relationship between our attitudes and our use of hi-tech equipment. Your attitude to gear will be at least as great an influence on your music as your attitude to various musical styles and your playing ability. In the most damaging cases, your attitude can limit your use of the gear you own or prevent you from turning some new development to your own advantage.

It's an accepted fact that children deal with progress a lot more pragmatically than adults. Give a child a computer and it will milk it dry. But don't expect it to be impressed by the level of technological achievement. Give a computer to a member of the slide-rule generation, however, and its technological significance will be well appreciated. But it's very likely to end up being used as an expensive electronic slide-rule.

Consider this: the next time you're tempted to buy a piece of gear because you think it's awe-inspiring, you're almost certainly not going to get the best out of it. You can afford to be impressed by a piece of equipment, but not amazed by it. Because the time you spend wondering at the possibilities opened up by technology, is time you should be spending using it. I believe the secret is in being able to adapt your attitudes and your practices to the ever-changing hi-tech environment. ***Tg***

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Colour Reprographics *by CLE, St Ives.* **Printing by** *Worcestershire Web Offset, Droitwich, Worcs.* **Distributed by** *AGB Impress Ltd, London. Tel: 071-253 3456.*

When it comes to creating sounds on the D-70 the only limit is your creativity. If it's standard sounds you want, you'll find the internal ROM contains tones from multi-sampled pianos, choirs and strings to synths and drums; and you'll find traditional synthesis techniques like filters and LFOs.

But the D-70 will appeal to those who want to break new ground. The raw elements of invention are there, not just in the form of basic waveforms and noise spectra among the 128 RS-PCM tones, but through innovative technology like Differential Loop Modulation. The unique DLM process can be used to truncate a waveform and process it with loop modulation, enabling the creation of thousands of new, distinctive waveforms from the original PCM wave. All you have to do is to let your imagination run riot.

Performance features in the 30-voice D-70 include real-time editing, on-board effects and full MIDI controller facilities. And in addition to velocity and aftertouch you'll even be able to control release time from the 76-note keyboard.

As for the sound – we'll leave that to your imagination...

To: Roland (UK) Ltd., West Cross Centre, Brentford, Middx TW8 9EZ
Fax: 081-847 1528 Telephone: 081-568 1247

Please send me more details on the D-70 Super L.A. Synthesizer

Name

Address

MT 90

VIDEO AGE

It is only a matter of time before the advance of video technology and its uses means video magazines become recognised alongside more traditional means of publishing like the magazine you're now reading. Towards this end, Los Angeles-based Video Publications Industries and BMG in Britain have jointly launched three such video magazines - *Metalhead*, *Slammin' Rap* and *Dance International*. All running for around 60 minutes and appearing on VHS cassette, these magazines are intended to cater for three separate areas of music: heavy metal, rap and dance, respectively.

Taking a closer look at the inaugural release of *Dance International* you'll find a selection of interviews and features covering the different aspects of the dance movement and all prepared exclusively for this release. There are interviews with the likes of Neneh Cherry and Lisa Stansfield, and features on everything from dance steps to studio technology.

Specifically spotlighted are the New York DJ/production team of Bones and Musto and the Frankfurt-based Logic record label and studio (home of recent No. 1 artist, Snap). Filmed in the studio itself, the Logic interview covers aspects of today's hi-tech production techniques.

In addition to this there are animated computer graphics sequences specially designed and constructed by British company Decode Design. Assembled on the Apple Mac, some of the techniques used are in the forefront of computer video development and use multi-layering - a technique that is along the same lines as music sequencing. Other construction methods involve the projection of scanned photographs onto moving three-dimensional objects.

At present, all three video magazines are bi-monthly, cost £9.99 each and should be readily available now through "audio and video outlets worldwide". ***Tg***

GET ON UP LIKE A. . .

The 1990s, eh - technology that most of us use and take for granted on a day to day basis is being put to stranger and stranger uses, a newsworthy example of this being the hi-tech 'Brain Machines' used to combat stress in the USA.

The machines work by the use of synchronised sound and light frequencies to which the brain responds, rather like a tuning fork, to put the subject into a deep state of relaxation and produce a profound sense of well-being. Apparently, the machine also has the interesting side-effect of heightening sexual arousal, and when couples use the machine together they experience a deep 'bonding' which may be helpful in treating sexual problems.

So now you know, and should you be aching to get hold of one of these devices (prices range from £295 to £595), Cerebral Dynamics (UK) Ltd are UK distributors. And no, it's not a wind-up.

Contact the London Neuro-Centre, 23 Camden Lock, London NW1 8AF. Tel: 071-284 4769 or 071-383 5607. ***Dp***

Book Now. . .

Omnibus Press' series of practical self-help guides for musicians and songwriters, *The Business of Music*, has been completed by the release of the last five titles in the series, *Making Money Making Music; The Craft and Business of Songwriting; How to Pitch and Promote Your Songs; Getting Noticed - The Musicians' Guide to Publicity and Self-promotion*, and *Successful Lyric Writing*.

James Dearing's *Making Money Making Music* (£10.95) explains strategies for getting started and creating a steady income from musical talent. He presents a system which first of all considers making money locally, and then goes on to consider forming, rehearsing and promoting a live performing act, and finally concentrates on increasing income through other musical employment opportunities.

The Craft and Business of Songwriting (£12.95), by John Braheny, explains how the music industry works in relation to the songwriter or writer/performer. The creation and marketing of commercially successful songs is covered, as is copyright, publishing and demos, and examples from dozens of songwriters are also provided.

Promotion of your work is covered in greater depth by Fred Koller, in his book *How to Pitch and Promote Your Songs* (£7.95). Marketing, targeting, creation of professional demo packages, pitching to record companies and income, are all covered in this weighty tome.

On a similar theme, *Getting Noticed - The Musician's Guide to Publicity and Self-promotion* (£9.95) will impart to you the knowledge of how to heighten your profile and so get more work. James Gibson demonstrates how to generate professional, effective publicity materials on a budget. This book contains details on everything from publicity photographs to getting exposure in the media, putting together letters to solicit work, dealing with broken contracts, basic advertising and publicity plans.

Last but not least, *Successful Lyric Writing* (£12.95) by Sheila Davis is "The only practical self-contained lyric-writing course available in book form". Contents inlcude exercises, practice critiques and quizzes to reinforce songwriting theory each step of the way.

All the above should be available from good bookshops, and of course your trusty library. ***Dp***

Train's a Comin'

If you're all at sea with today's generation of modern musical equipment, First Choice, a division of Advanced Recording Concepts, are offering what might be a rescue service. From August onwards, they will be commencing training on the Korg Wavestation, with instruction also available on a range of hardware and software products from Roland, Steinberg, C-Lab and many others.

First Choice also offer a personal advice, sales and installation service, supporting all major manufacturers. For further details, call Doctor Colin on (0730) 88386, fax him on (0730) 88390 or write to First Choice at Hurst Farm Barns, Hurst Lane, Privett near Alton, Hants GU34 3PL. ***Dp***

WHO DARES WINS

If you cast your mind back a few months you'll remember the competition MT ran in conjunction with Gajits Music Software, the prizes being five copies of Gajits' friendly, entry-level Atari program, Sequencer One - you remember the one, 32 tracks, 192ppqn resolution, cue points, comprehensive editing. Very nice.

The time has now come to announce the fortunate five winners. Well done to R Cornish of Willenhall, P Wilcox of Stoke-on-Trent, J Hullah of Twickenham, J West of Margate and S Cochrane of Brighton. Prizes have already left the office, and for those of you who didn't win a copy but are interested in Sequencer One (RRP a mere £89.95), Gajits are eager to hear from you, and can be contacted at 28 Dennison Avenue, Withington, Manchester M20 8AF. Tel: 061-434 2768/061-446 2304. ***Dp***

Multiple Exposure

West Midlands-based company Exposure Productions have introduced a novel new multi-purpose housing unit designed to accommodate all your music and computer hardware plus a wide variety of hi-tech equipment, in one attractive, space-saving stand.

The Multiframe (for that is its name) is assembled in seconds and suits all environments including studio and live work; it consists of a main frame with various parts selected by the individual according to her or his needs. When your equipment grows, the Multiframe grows with it, since you can add other mounts and attachments at any time.

Complete packages average at around £100 and at present there are 20 mounts and attachments available, with dozens more on the drawing board.

For more information, contact Exposure Productions on 021-561 2339. Trade and distribution callers are welcome. ***Dp***

THANKS FOR THE MEMORY

If you fancy a whopping 8Meg upgrade for your S1000, Akai Professional will be only too happy to oblige with the EXM008 8Meg memory expansion boards. Up to four of the boards can be installed, giving a very nice 32Meg of memory, which allows over three minutes stereo sampling time at 44.1kHz and 6.5 minutes mono sampling time at the same sample rate.

EXM008 boards can be used in conjunction with EXM005 2Meg expansion boards, but no more than two 2Meg boards can be used in any combination.

The price of the EXM008 expansion is £1500 excluding VAT. I'll 'ave half a dozen.

Details from Akai Professional, Halsemere Heathrow Estate, Silver Jubilee Way, Parkway, Hounslow, Middlesex TW4 6NQ. Tel: 081-897 6388. ***Dp***

CUE THE BEAT

Evenlode Soundworks are announcing the availability of Steinberg's cut-down, low-cost alternative to Cubase, Cubeat. The new program sacrifices certain features - such as score printing and editing and advanced MIDI management functions - in favour of the lower price of £285 including VAT. However, Cubeat offers a wide range of features, including a Grid edltor, Key editor, 16 arrange windows, each with 64 independent tracks, human sync, direct SMPTE lock, sophisticated auto-quantise and an additional five different quantise strategies. Cubeat requires an Atari with at least 1Meg of RAM and a monochrome monitor. Once again, watch out for MT's review.

More info from Evenlode Soundworks, The Studio, Church Street, Stonesfield, Oxford OX7 2PS. Tel: (0993) 898484. ***Dp***

Just One Stiletto

Stiletto Sound Systems are announcing the release of a number of new Stiletto Pro Sound libraries. Now available are new libraries for the Oberheim Matrix (100 sounds) and Cheetah MS6 (96 sounds). Work is also under way on new libraries for the Korg M1, Casio VZ, Roland Alpha Juno, Akai S1000, Emax and more.

Stiletto also make the suggestion that if you have a synth that they don't cater for, give them a call and they'll consider it - and if enough people call about the same instruments to make this viable, they will oblige.

More details from Stiletto at 14, Nelson Street, Dumfries DG2 9AY. Tel: (0387) 50748. ***Dp***

PROTEUS 2: *THE SEQUEL*

Following in the steps of the original and very successful Proteus, E-mu have produced the Proteus 2, a mainly orchestral module which offers 8Meg of new orchestral sounds - solo and ensemble violins, viola, cellos and basses, wind instruments, brass, and orchestral percussion. However, as well as this type of sound, the Proteus II offers synth sounds, made possible by the module's user editing functions and new complement of digital waveforms.

The Proteus/2 features 32-voice polyphony and 16-channel multi-timbrality.

Also new from E-mu is the Proformance, a 16-bit stereo sampled piano module. All the piano samples onboard are true stereo samples, not simply mono samples panned left and right. A variety of piano sounds are on offer; classic grand, rock piano, and honky-tonk piano to name but a few.

More info from E-mu UK, Roy Goudie, PO Box 1, Prestonpans, East Lothian EH32 0TT. Tel: (0875) 813330.

SCANNERS

Test equipment manufacturers Magni Systems have recently developed a full broadcast-quality PAL version of its VGA Producer computer-image scan converter.

Before text or graphics images on a computer screen can be used for video or broadcast, the screen drive signal needs "scan conversion". The internal VGA (Video Graphics Adaptor) drive card, now used by many PCs, provides a high-resolution image, but the scanning, line structure and colour systems are unsuitable for television. Simply pointing a camera at a computer screen gives a poor picture with annoying flicker.

The VGA Producer card fits inside virtually any IBM PC AT or true compatible computer and with a suitable VGA card provides a video output that can be viewed directly on a television screen, or mixed or recorded.

The unit has a simple external Control Box, which, with a video camera or recorder, provides simple facilities for overlaying captions, mixing, keying (cut-outs), borders, cross-fades and cuts. More complex effects can be achieved with external vision mixing and editing facilities, using the Producer simply for scan conversion.

For further details, contact the UK importer FWO Bauch Ltd, 49 Theobald Street, Borehamwood, Herts WD6 4RZ.

'Ello 'Ello 'Ello

PC owners can't fail to have noticed the increased attention being afforded this formerly mainly business-orientated machine in musical terms. Software is almost coming out of the woodwork, one of the latest packages being MidiQuest, a universal Graphic editing program for the PC.

Midiquest offers on-screen graphic editing for a veritable plethora of synths and MIDI equipment, including Yamaha DX11, 21, 27, DX7/7II, RX7, SPX90, DMP7 and V50; Casio CZ range and VZ1; Korg DDD5, DS8, DW and EX synths, M1/M3R and T-series; Kawai K1/3/4 and R50; Roland D10/110/5/50, JX8P, MT32 and U-series; Ensoniq SQ80, ESQ1 and VFX; Sequential DrumTraks Prophet 10/5/600/t8 and SixTrak; Lexicon LXP1; Oberheim Matrix 1000/6, E-mu Proteus; Digitech DSP128; JL Cooper MSB1620/Plus.

The program is a universal editor/librarian, will create new drivers, analyses SysEx data and raw MIDI data, incorporates a randomiser and has full disk functions. It requires an IBM XT/AT/PS2 or clone with 640K RAM, any graphics driver, a Microsoft compatible mouse and an MPU-compatible interface.

Computer Music Systems also offer MIDI sequences for Voyetra Sequencer Plus users - a set of popular songs and hits in MIDI sequence format. The Hands On Software titles cost £19.95 for three titles, and Hands On also offer a small selection of classical titles for £19.95 for each title. Digital Music Archives Classical titles (reviewed MT May '90) are also available from Computer Music Systems for £19.95 per title. ***Dp***

MCM: THE STORY CONTINUES

It's been quite some time since MCM flooded us with news of their ever-extending range of products - but they took the opportunity of the recent British Music Fair to remedy the situation with a very large press information pack. So without further ado, what's going down at MCM?

New from Invision, producers of a well-respected range of CD-ROM sounds for the Akai S1000 and the Emulator III, is the official 4Meg upgrade board for the E-mu Proteus. Invision have been licensed by E-mu to produce the Protologic, as it's called. This provides 4Mb of quality sounds in addition to the original Proteus onboard sounds. Protologic offers 128 new presets in memory and room for another 256 in RAM, and fits neatly inside the Proteus so there are no trailing wires to contend with.

Available in late August to early September, the Protologic upgrade is priced at £449 including VAT.

New gadgets from Friendchip (makers of the SRC-AT synchroniser) include the MTC Plus, a unit which generates SMPTE and MTC simultaneously for running a sequencer to SMPTE without having a tape recorder - useful for pre-production work without tape, as you're able to work with the timecode generator as if it were a recorded track. All controls can be accessed from an Atari, and the retail price of the MTC is £599 including VAT. Also new from Friendchip is the TCR1, a 1U-high rackmounting device designed to take any old SMPTE timecode and refresh it onto a new track - where master tapes have been copied or where timecode has become distorted or dropped out, the TCR1 is promised to return the timecode to a usable state. This useful unit will retail for £99 including VAT.

You'll probably have heard of Zoom, the new company who launched themselves with the 9002 multi-effects unit, a device the size of a Walkman, capable of delivering a wide variety of 16-bit effects, with up to six effects at once. The 9002, designed to fit comfortably on a guitar strap, is mainly aimed at the widdly-widdly brigade, but Zoom's forthcoming 9010 multi-effects processor will be a more widely-targeted unit, packaged in a 1U-high rackmount case and said to be four truly discrete digital processors in a single rack space - with MIDI. Boasting 16-bit sound quality, the 9010's memory offers 60 factory presets and 60 user-programmable locations. It is, the makers claim, "really easy to use".

At a projected retail price of £1399, it won't be the cheapest multi-effects processor around, but it promises to be one of the best - and as soon as we can get hold of one, we'll tell you if we think it is.

If you happen to have any axe-wielding friends you love very much indeed, Zoom have put together a Christmas package guaranteed to hit the spot - a 9002 processor, leather guitar strap with Zoom logo and a set of guitar strings, all gift-wrapped. Very nice, if you've £369.95 to spare in the festive season.

A prominent location on the MCM stand at the BMF was given to the new Ultimate Support Studio Organiser stand (retail price £169.95). The Music Maker team was quite impressed with its "ergonomic wrap-around design", with a variety of possibilities for the elegant disposition of much of your studio gear - including keyboard, recording deck, speakers and rack gear. The Studio Organiser also has various accessory options, such as mic booms, available. Ultimate Support also offer, via MCM, the Stealth keyboard stand, featured in these pages recently, and the Apex Column, apparently the most popular hi-tech keyboard stand on the market.

MCM are reporting a recent upsurge in interest in high-capacity disk storage devices, in the wake of the launch of Digidesign's Sound Tools System for the Atari. Diki Devices offer a large range of hard disk drives, from the DD44R removable SCSI drive, up to 700Mb drives and optical drives. For use with Atari Sound Tools, MCM can supply a DMA-SCSI converter which either fits into the back of the drive or comes in a free-standing case.

MCM also have available erasable magneto-optical drives for use with the Atari or S1000, though the Diki Devices range of drives works with all the major samplers.

Finally, on the software side, MCM are announcing Passport Trax for the Amiga and Atari, and Encore notation software for the Atari. From Opcode comes Studio Vision, combining the Vision sequencer with Digidesign's Sound Tools to give complete control over two tracks of digital audio and 99 tracks of MIDI data, all from within one program. Coda Systems have released Finale PC, ported over from the Macintosh, running on IBM PC and compatibles and almost identical in function to the Mac version.

More information on any of the above from MCMXCIX, 708a Tudor Estate, Abbey Road, London NW10 7UW. Tel: 081-963 0663. ***Dp***

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communiqué

sample & hold

I am 13 and I need a drum machine badly. I have tried getting an old Casio RZ1 but can't get hold of one. I would prefer a sampling drum machine, but failing that I want a really dirty-sounding machine.

I have spent what seems like a lifetime searching for old records with dope beats on them, and now I can't get an RZ1 to sample them with.

So, I need a drum machine I can sample beats off records with for under £200. Any suggestions?

Tom Perchard
St Albans
Herts

It's got to be a cheap sampler, hasn't it, Tom? Let's look at the facts: your choice of drum machine is very limited (how many sampling drum machines do you know of?), and your limited budget makes a difficult situation almost impossible. But you don't need a drum machine as much as you need the ability to sample.

Assuming you're talking about breaks rather than individual drum sounds, all you really need to be able to do is lift and loop a short section of a record. Once your loop is good you can leave the sample running round and round and get on with the rest of your music.

So, what's avalable for your two "C"s? Not too much, I'll agree, but Akai S700s are now starting to change hands for around £250-275 if you're lucky. Again they're thin on the ground but as long as you're good at scanning the Free Ads and quick with the telephone dial you should be alright. Roland's MKS100 also goes for around £275. Failing these, Akai S612s come in under your budget. Where the MKS100 and S700 score over the S612 is in longer sampling time and the facility to save more than one sample per side of disk. All these machines suffer from using 2.8" Quick Disks and are only monophonic - but that shouldn't worry you. Peace, ***Tg***

the music machine

The editorial entitled *The Art of Repetition* (MT, July '90) interested me greatly, as I've been wondering a lot recently about the distinction between a "real" musician and a charlatan. On the whole I agree with what you have to say, but I'd like to add a few points of my own.

If both types of musician use the same technology to create their music, the pros will nearly always come up with music that's technically superior and probably more pleasant. There's no point in musicians being jealous of charlatans who've made it, as they will always be inferior to real musicians.

In my recent GCSE music exam I deliberately avoided using any electronic equipment for my compositions because (1) there was a possibility of being marked down for receiving "aid" from a computer, (2) I would learn more about music theory if I was unaided by technology and (3) I wanted to be able to put my compositions onto manuscript for performance on one instrument.

I also want to say that I think it's unfair that you should persecute people who cannot perform their music without the aid of a machine. A lot of music cannot be performed by anyone without using machines. So, what you are effectively saying is that everyone should limit the complexity of their music. Isn't that strange coming from the editor of MT? Also I think you overrate the ability to perform live. You're right to say that it's an enviable skill, but pretty soon we will have computers which sight read - these will be invaluable to composers who are knowledgeable about music theory but not so hot at performance.

Ian Miller
Eltham
London

First of all, let me say that I regard any musical instrument except the human voice as a machine of some kind - so the idea of persecuting anyone is faintly ridiculous. Music is music regardless of the method of its conception and realisation - the real question is how good a piece of music is and, therefore, how you define what "good" is.

The distinction between "traditional" musicians and "non-musicians" has no bearing on an artist's ability to create a worthwhile piece of music. A well-educated, technically adept player is at least as likely to create a piece of self-indulgent drivel as someone using technology in lieu of these qualifications. Again, the distinction that must be made is with the music, not its creator. As for your point about jealousy, I never mentioned the word. And if you're going to introduce it to the discussion, you must be careful not to confuse it with justice, because a musician who believes his or her work to be valuable is fully entitled to feel resentful of the success of another artist whose music might be the product of a commercial world - especially when the financial reward represents the key to being able to continue to pursue their music.

I wish you well with your exam results, but again your reasoning seems clouded. I accept that your examiners may be sufficiently poorly informed not to appreciate the difference between your contribution and your equipment's (which would be disappointing but not surprising), but you can learn about music theory through technology rather than in spite of it. This is a long discussion in itself, but for example, someone used to playing a keyboard, but unfamiliar with the stave can learn a lot through using a sequencing program with notation facilities. Finally, and most worryingly, why do you believe that a piece of music composed for, and performed on electronic instruments cannot also be written onto manuscript paper for a solo musician to perform on a "traditional" instrument? Can't you take a piece of "traditional" music for a single instrument and have it played by an electronic one? If you can, surely it works the other way around. Even if your composition is too involved for one instrument, you could write an arrangement suitable for a single instrument. It might even help you "learn more about music theory".

As for your sight-reading computers, I'm not sure there's much of a place for them. Why must a computer that can "sight read" be so important? In a way, putting a disk containing sequence data into a computer endows it with the ability to produce a piece of music in a way that bears comparison with presenting an orchestra with sheet music - both can take the information and turn it into music. And computers can already do this. The originator of the sequence data - like the author of the sheet music - need not be a brilliant performer, they need only know how to construct music for their chosen instrument.

But overrate the ability to perform music live, in front of a (hopefully) enthusiastic audience, I do not. ***Tg***

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in brief

PASSPORT MASTERTRACKS PRO

I HAVE AN Amstrad PC1640 HD20. Don't laugh - Amstrad have done more to popularise the PC than IBM ever did. And it's a nifty little machine (although better PC buys are available now). It's a little slow and, in true Amstrad fashion, it's not *quite* 100% IBM PC compatible.

Take the mouse - it doesn't use the serial port like most PCs, it has its own mouse port. So far, it's coped with all the programs (music and otherwise) I've thrown at it but it wasn't at all happy with the run-time version of Windows supplied with MT Pro.

To cut a long story short, the non-standard Amstrad mouse requires a special mouse driver in order to work with Windows and this is only available from one source (as far as I've been able to determine) at a nominal cost of £3.50. However, along with the disk you get a licence agreement from Amstrad which you are requested to sign, basically promising not to give the thing to the Commies unless you first obtain a Cocom export licence.

So my first gripe is aimed at Amstrad - as they're aware of this incompatibility in their machine I'd have expected the fix to be free (I'm talking principles here) and available through many sources, not just one. The Cocom licence agreement is a joke.

Secondly, as one who knows his way around computers reasonably well, it took me a week of phone calls to discover why the mouse wouldn't work, what the solution was and where to obtain it. Even PC Man, my resident PC guru, couldn't offer an answer and what he doesn't know about PCs wouldn't fill an MT Free Ad.

MCM, I'm afraid, weren't aware of the problem - or the solution - although they did contact Passport and one of the program's writers, Perry Devine (sounds like a sparkling drink), rang me from California and promised to send me an updated version of the program - which still hasn't arrived. Of course, no one's heard of the Amstrad 1640 in America so their ignorance of the problem can be excused.

However, if you export software into another country, the least you should do is check out the machines it's likely to be run on. A good PC expert *should* be able to list any potential problems - although this problem definitely was an exception. If the 1640 was an obscure computer I could understand it, but it's a very popular machine in the UK and this fracas cost me a lot of time. You're reading the words of a disgruntled reviewer.

But I can't take my grievances out on the program because it's really very neat. Interested readers are referred to the original review of MT Pro (July '87 - aren't you glad you kept them all?) and to the review of MT Pro4 on the Mac (MT, July '90). I must point out, however, that this PC program is MasterTracks Pro (review v3.51) and not Pro4. The two names can be confusing. Pro4 is, so far, only available on the Mac and has a few more features than MT Pro.

The ethos of the programs, however, is the same - Track Sheet, Song and Step Editor windows (in Pro4 the Track and Song windows are combined into one Track Editor window), 64 tracks and graphic note and controller editing.

The main omissions are the Global Edit Filter, Song Playlist, Graphic Faders, Notepad (you can write notes onto the track list providing you don't use all 64 of them), Change Filter, Scale Time and Event List. Although one of the advantages of graphic editing is that you don't have to dive about among MIDI events, there are times when an Event List is very useful and it seems strange that MT Pro has never had one. But, how important this is will depend upon the user.

MT Pro will sync to MIDI Time Code and stripe a tape with SMPTE, although a little more info in the manual about this wouldn't go amiss. It also has the Fit Time, Chase Controllers and SysEx storage functions of Pro4. Like Pro4, SysEx data can only be saved to disk and not into a track. Shame.

One of MT Pro's main claims to fame is its ease of use. The Song Editor window which shows the song divided into bars is great to work with, so much so that other sequencers have nicked the idea. Easy to use it certainly is.

I should also add that the PC1640 is hardly the fastest machine alive (it *is* alive, I tell you) and operation, especially under Windows, can be a little slow. If you're really serious about sequencing, I'd have to say that the two don't make an ideal combination. I did try it on PC Man's super 20Mhz, 386 AT machine and it fair whizzed around. With an "average" 10 or 12Mhz PC it should run fine.

The manual is well written and makes the program easy to get into - in fact the program is very easy to use, due mainly to the Windows environment - although a couple of topics could have been covered in more depth. It has a mammoth six-page contents list but no index. C'mon, guys.

MT Pro already has a good name in the music business as one of the most user-friendly sequencers around. It's certainly that, and one of the most graphic, too, particularly for a PC sequencer. This latest update just makes it a bit more friendly and powerful. If ease-of-use and intuitiveness are high on your list of priorities you'll like it. ■ ***Ian Waugh***

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software

Welcome to Music Technology's software service. It is designed to help you get the most from the magazine and your computer. Here you will find demonstration versions of some of the software you have read about and may be considering buying. You will also find two virus killing programs (Vkiller for general use, Penicillin for cleaning out boot sectors) and a number of fully-working utilities (like Hollis Research's D50 librarian and Quinsoft's MIDI rechanneliser) which are free for you to use as you wish. Please make use of the virus-killing programs as virsuses are an ongoing problem which continues to threaten your work and your equipment. Vkiller is quick and easy to use and may save you a lot of time, trouble and money.

The disks have been arranged to make best use of the available storage space, so the combinations of programs on any disk are a result of this attempt to make the service as friendly and cheap as possible, not for any other reason. Please note that not all the programs will be accessible to the 520ST due to the nature of its disk drive, but the disks will run on all other STs. If you're using a 520ST we will supply each "Disk" on two single-sided disks, thus ensuring all programs are accessible to you.

DISK 1

Vkiller, TDM Prodigy, Mididrummer.

The original virus killing program by George Woodside (written in May '89 and able to cope with almost all viruses currently in circulation). Also includes demos of **TDM Prodigy** (reviewed MT, April '89) and **Mididrummer** (reviewed MT, June '89) with only save routines disabled.

DISK 2

Flu, Hybrid Arts Ludwig.

Flu (written by George Woodside) is a simple program which demonstrates some of the less-harmful screen symptoms of viruses currently circulating. **Ludwig** (reviewed MT, April '89) is Hybrid Arts' powerful algorithmic composition program.

DISK 3

Gajits Sequencer One, Keynote Chameleon, Dr T's Proteus Editor.

All recent software: **Sequencer One** (reviewed MT, March '90) is a comprehensive entry-level sequencer, **Chameleon** (reviewed MT, Dec '89) is a new-style generic patch librarian that will run as a desktop accessory and **Proteus Editor** (reviewed MT, March '89) is Dr T's editor for E-mu's popular sample reader.

DISK 4

Intelligent Music Realtime, Dr T's X-Or.

IM's **Realtime** (reviewed MT, April '89) is an "artificially intelligent" sequencing program which is designed to encourage the gentle art of experimentation; **X-Or** (reviewed MT, November '89) is Dr T's powerful generic patch editor.

DISK 5

Hybrid Arts EZ Track Plus, Quinsoft Trax studio accessories.

EZ Track Plus (reviewed MT, Dec '88) is a budget sequencer which retains the feel of Hybrid's upmarket Edit and SMPTE Track packages; **Trax** is a new nest of studio management programs: track sheet, cuesheet, cassette labelling, address book (including industry contacts), invoicing forms. . .

DISK 6

Hollis Trackman, Quinsoft FB01 & 4-Op FM librarians.

Trackman (reviewed MT, March & Dec '89) is Hollis Research's friendly, cost-effective 32-track sequencer (demo includes fully-working D50 librarian and 500 6-Op FM patches). **Quinsoft's** *Price is Right* librarians for Yamaha FB01 and 4-Op FM synths (reviewed MT, Feb & March '90 respectively) includes fully-working MIDI channel and controller accessory.

DISK 7

Penicillin, Passport Mastertracks Junior.

Penicillin is a virus killing utility written by George Woodside - it specialises in cleaning the boot sector of infected disks - use with care! **Mastertracks Junior** (reviewed MT, June '88) is a 64-track budget sequencer which retains many Pro features.

Disks cost £5 each (please add a further £1.50 if you want software supplied on two single-sided disks).

NB: This is the library available at the time of writing. More disks will be added to the list as soon as they are ready. This service is for you, to help you try out software before you buy - we will continue to run it as long as the interest is there to support it. This is not a profit-making venture on behalf of MT.

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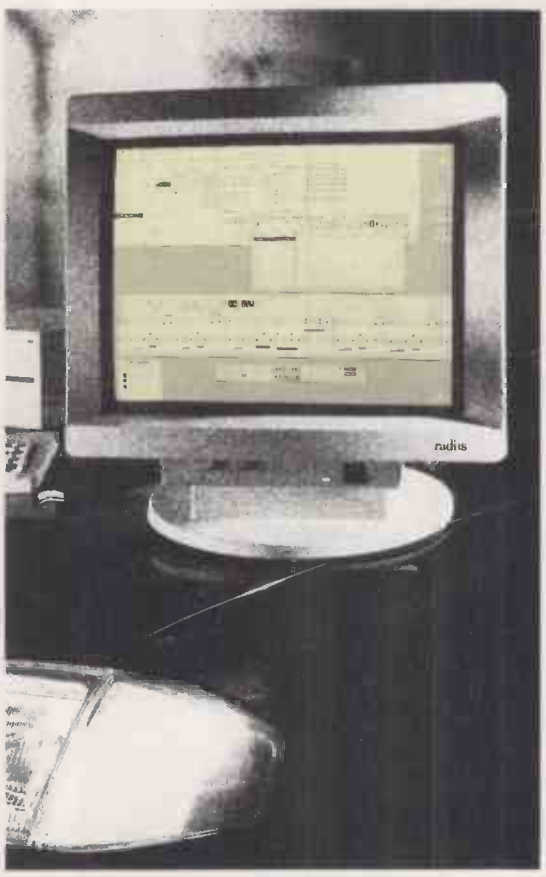

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The Mercedes too has a high list of standard fitments, but beneath the svelte lines it's like all other cars. - It goes from A to B without stopping.

Not something that can be said of *other* Mac sequencers.

Cubase

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ON THE BEAT

FROM THE STREETS OF NEW YORK TO THE PAGES OF MT - HIP HOP HAS COME A LONG WAY IN ITS DEVELOPMENT AND INFLUENCE ON MUSIC AS WIDE-RANGING AS THE CHARTS AND JAZZ. TEXT BY NIGEL LORD.

WHILST THOSE WHOSE business it is to predict the arrival of pop's *next big thing* have been slowly waking up to the fact that (in mass market terms), it simply isn't going to happen, an entire sub-culture has entered through the back door and slowly but surely revolutionised the music we hear on the radio and the dancefloor. Though still of minority interest in its purest form, hip hop (along with its progeny, techno and house) has been responsible for most of the new thinking which has kept pop music afloat in the becalmed waters of the '80s.

Production values which for years have dictated the way we listen to music have been gradually redefined to take on board the change in

ILLUSTRATION: CLIVE GOODYER

emphasis from the melodic to the rhythmic which hip hop represents. (I wonder how many of those who complain about "black men with record players" adorning the cover of MT then turn to their drum machines and select a range of hip hop-inspired samples from which to write a rhythm track?)

On television too, hip hop has been assimilated by those whose job it is to write the music for commercials and title sequences - its rhythmic emphasis being ideally suited to the fast cuts between visual images which are constantly beamed at us from our screens. And of course, in its original street form, hip hop continues to thrive and provide a seemingly endless stream of new music and new talent, and through this has kept faith with those who recognised its potential when it first surfaced towards the end of the '70s.

Like most modern idioms, its origins are far from precise, but there can be little doubt that it has a heritage which includes such diverse elements as a capella and doo-wop music, street funk, the narrative styles of Louis Jordan and Cab Calloway, '70s disco, radio jocks, the heavy rock of bands like the Stones and Led Zep, West Indian toasting, the robotic styles of German bands (particularly Kraftwerk), the political awareness of Malcolm X and Mohammed Ali - and a host of other influences too numerous to mention. Out of this heady brew has emerged an instantly recognisable style heavily reliant on sampling, rapped vocals, turntable scratch and cutting techniques - and of course, the beatbox.

With such a heritage, it becomes difficult to pinpoint the precise moment at which hip hop came into being - particularly as the music is so entwined with the hip hop culture of the Bronx in New York (which has to be regarded as its spiritual home). However, two records, both released in 1979, could be said to have brought hip hop to the attention of the wider listening public - *King Tim III* by the Fatback Band and *Rapper's Delight* by the Sugarhill Gang. Of the two, *Rapper's Delight* was probably the more important (and certainly the better known), and in many ways became the prototype hip hop track, incorporating, as it did, an MC vocal rap and an instrumental track based almost entirely on a cut up and re-mixed version of Chic's 'Good Times'.

Since then, the procession of hip hop bands and artistes has continued unabated, and though in recent years, many have begun to enjoy a degree of mainstream success, there are still many more whose music seldom ➤

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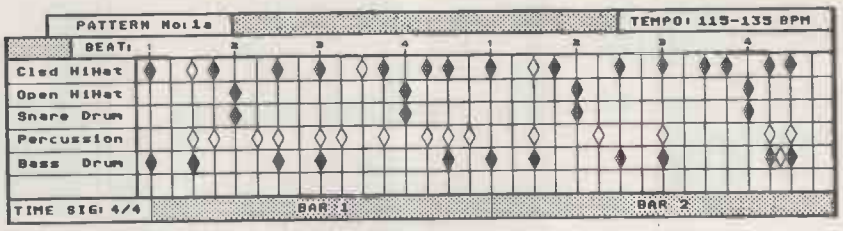
reaches beyond the streets from which it was born. In the last few years, of course, hip hop has spawned a number of bands who seem to make it their business to keep the polemic (rhyming or otherwise) as controversial as possible. And whilst it can be argued that hip hop has always maintained a high degree of political awareness, it has to be said that some of the material put out by bands such as Public Enemy and NWA is about as far away from a song like Grandmaster Flash's 'The Message' as it's possible to get.

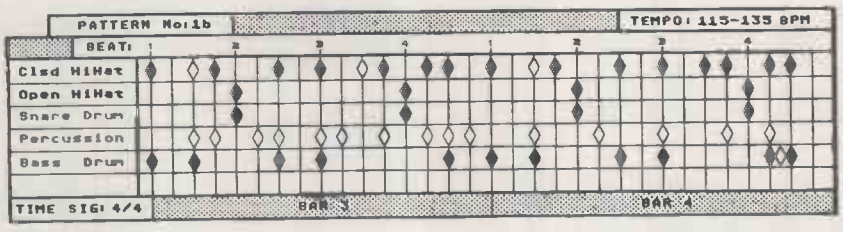
Musically, I've always found the concept behind hip hop to be compelling. The idea of producing your own music on anything that comes to hand - whether it's a pair of turntables, a beatbox or a voice box - is as fascinating as it is timeless. Rhythmically, hip hop owes perhaps its greatest debt to the black DJs of the '70s and early '80s who decided that the expression *playing records* could be taken much more literally than anyone had thought possible in the past.

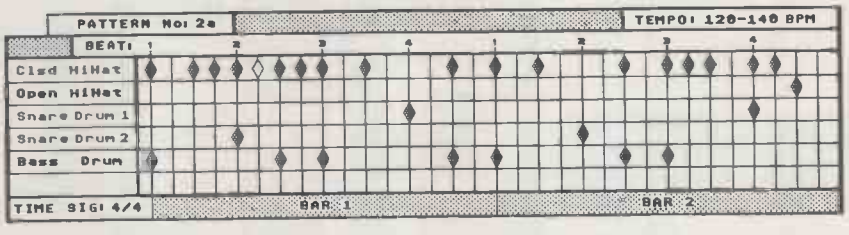
Beginning with the idea that tracks could be played back to back and blended into one another in order to keep up the pace on the dancefloor, they had soon started to experiment with those sections of the music which featured drum breaks. Winding back a record by hand, it was possible to repeat a few bars of the drum track, and by using two records simultaneously they could actually cut between them and build a complete rhythm track within a piece of music.

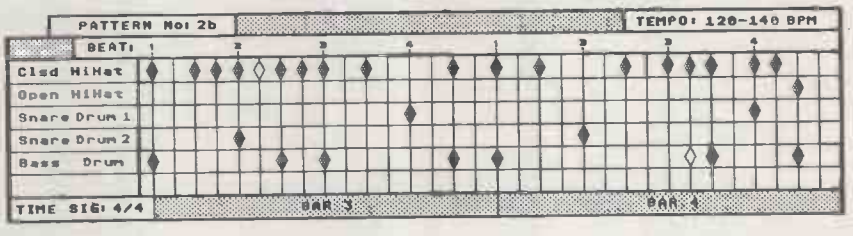
The strict timing requirements of dance music made the use of the beatbox an obvious next step, and their adoption by many black musicians during the early '80s coincided with the appearance of machines of such relative sophistication as the TR808. Though it was to be many years before manufacturers would wise up and start to incorporate tailor-made hip hop samples such as scratches and popping, the voices these early machines did offer were the perfect complement to the turntable-generated rhythm of the DJs.

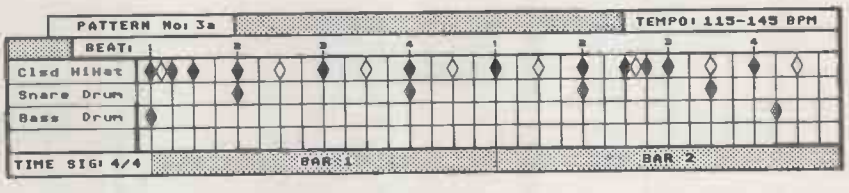
From our point of view, hip hop rhythms provide a natural stopping off point in our exploration of the drum machine. I'd have to accept the argument that we are somewhat overdue in our examination of hip hop as a distinct genre. To make up for this, I have included no less than ten➤

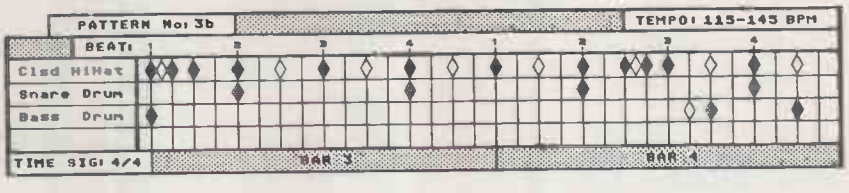


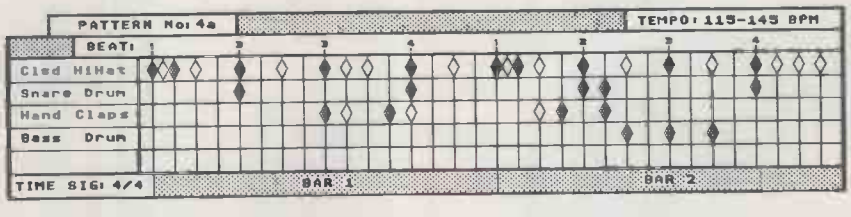


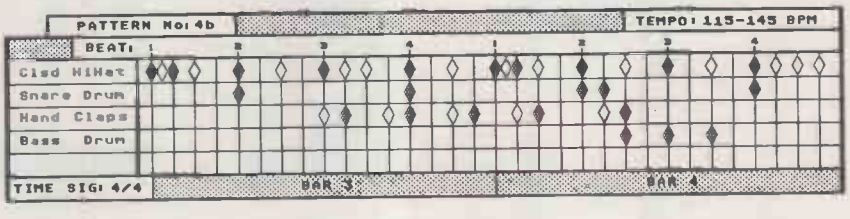












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YAMAHA WX11 / WT11

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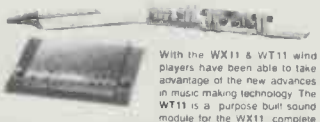

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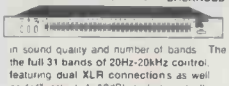
ROLAND GE-131 BALANCED 31 BAND GRAPHIC



Until now budget graphics have been severly limited both in sound quality and number of bands. The Roland GE-131 offers **the full 31 bands of 20Hz-20kHz control. featuring dual XLR connections as well** as 1/4" jacks (+4 -10dB), and so is ideally suited for studio use Also features Footswitch bypass, and hum cancelling
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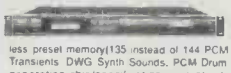

The M3R is basically a Korg M1R without sequencer and with less preset memory(135 instead of 144 PCM Multi-Samples Attack Transients DWG Synth Sounds. PCM Drum Samples) The sound generation chip/specification is identical i.e 16 note poly. 16 oscillators and the onboard sounds combine the best of M1 and remarkably the new T-series sounds as well. All sounds can be edited and modified using (T series) filters and amplifiers and stored in 100 patch memories (Instant recall of factory sounds.). 8 part multi-timbral plus 100 combination memories. 34 16 bit digital multi-effects including reverbs, chorus, delays, exciter, rotary speaker, etc Combine up to 4 effects. 44 PCM drum samples. All with editable pan, tuning, effects, volume, etc. 19" rack mounting. 4 assignable sep. outs. Very user friendly. Huge library available on cards.
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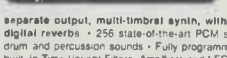

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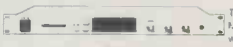
AKAI XE8 16 BIT DRUM SAMPLE PLAYER



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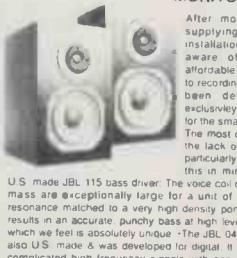

After more than 10 years supplying small studio installations we were acutely aware of the lack of an affordable unit properly suited to recording. The GS115's have been developed by JBL exclusivley for Turnkey to cater for the smaller studio
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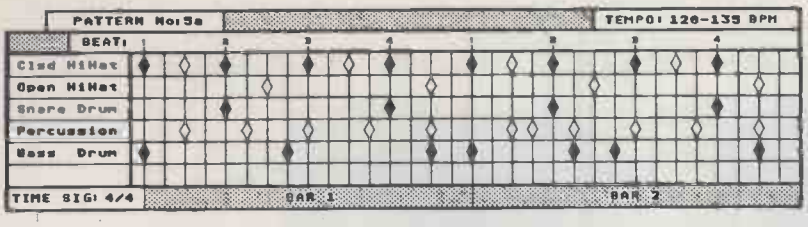

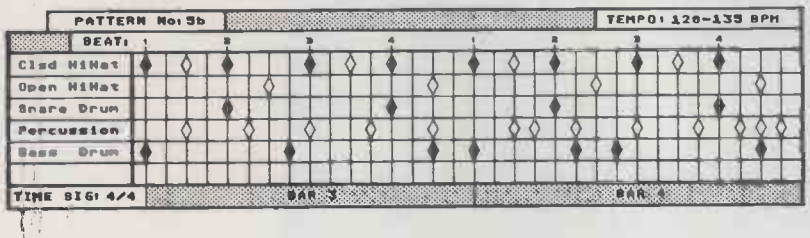

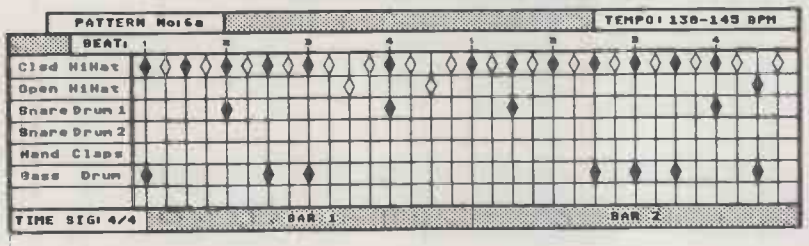

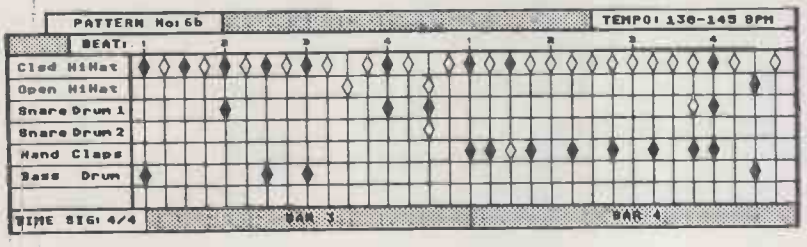

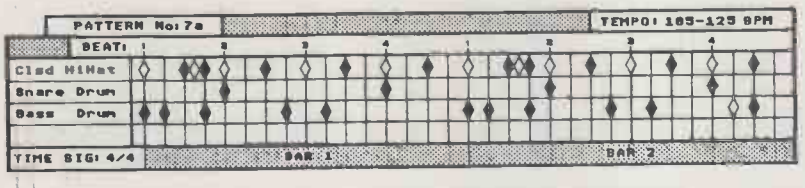

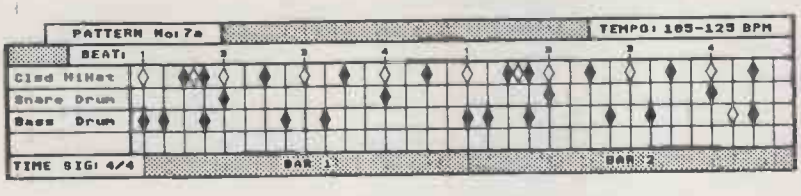

➤ individual patterns for your consideration, and together they provide a pretty fair cross-section of the kind of programming techniques commonly associated with hip hop.

As you might imagine, instrumentation doesn't provide much of a problem: hi-hats, snare and bass drums make up the bulk of the voice requirements together with handclaps on a few of the patterns and also a 'percussion' line which may be given over to any short duration voice that takes your fancy. The relative simplicity of the examples also removes the necessity for a blow-by-blow account of programming requirements, and setting them as I have on grids with each beat divided into four should also improve clarity where clusters of notes occur.

I should mention that examples 3 and 4, being broadly similar in feel, could be combined and used together in the same track, and that pattern 8a and 8b is really two separate rhythms which again, are similar enough to be used together. Two things which aren't similar - or shouldn't be - are the twin snare drums which crop up in patterns ➤

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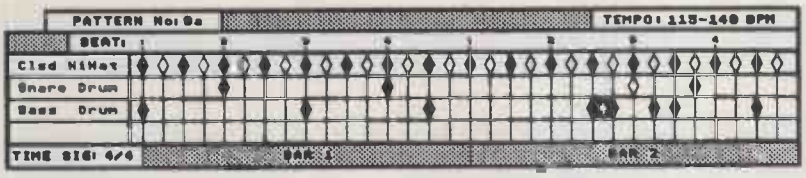
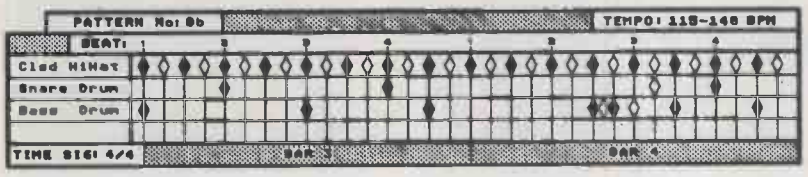
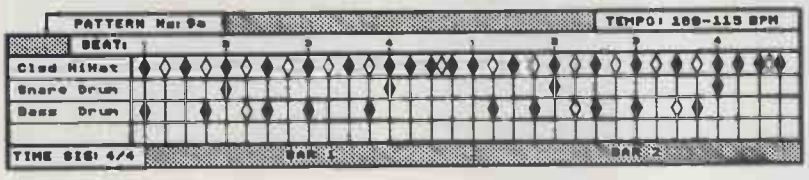
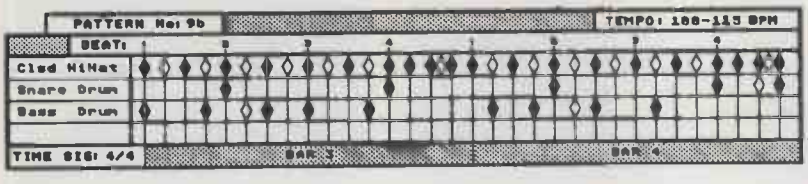
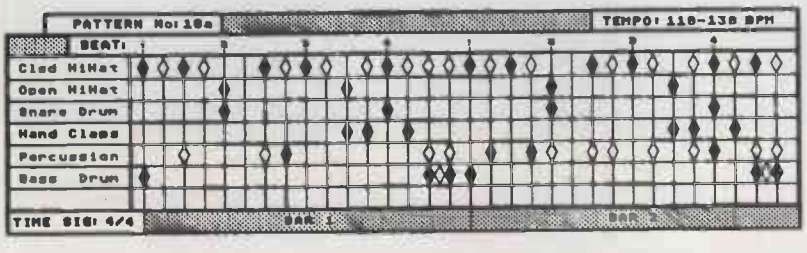
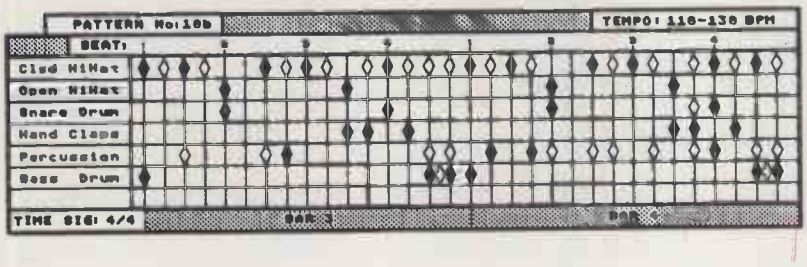










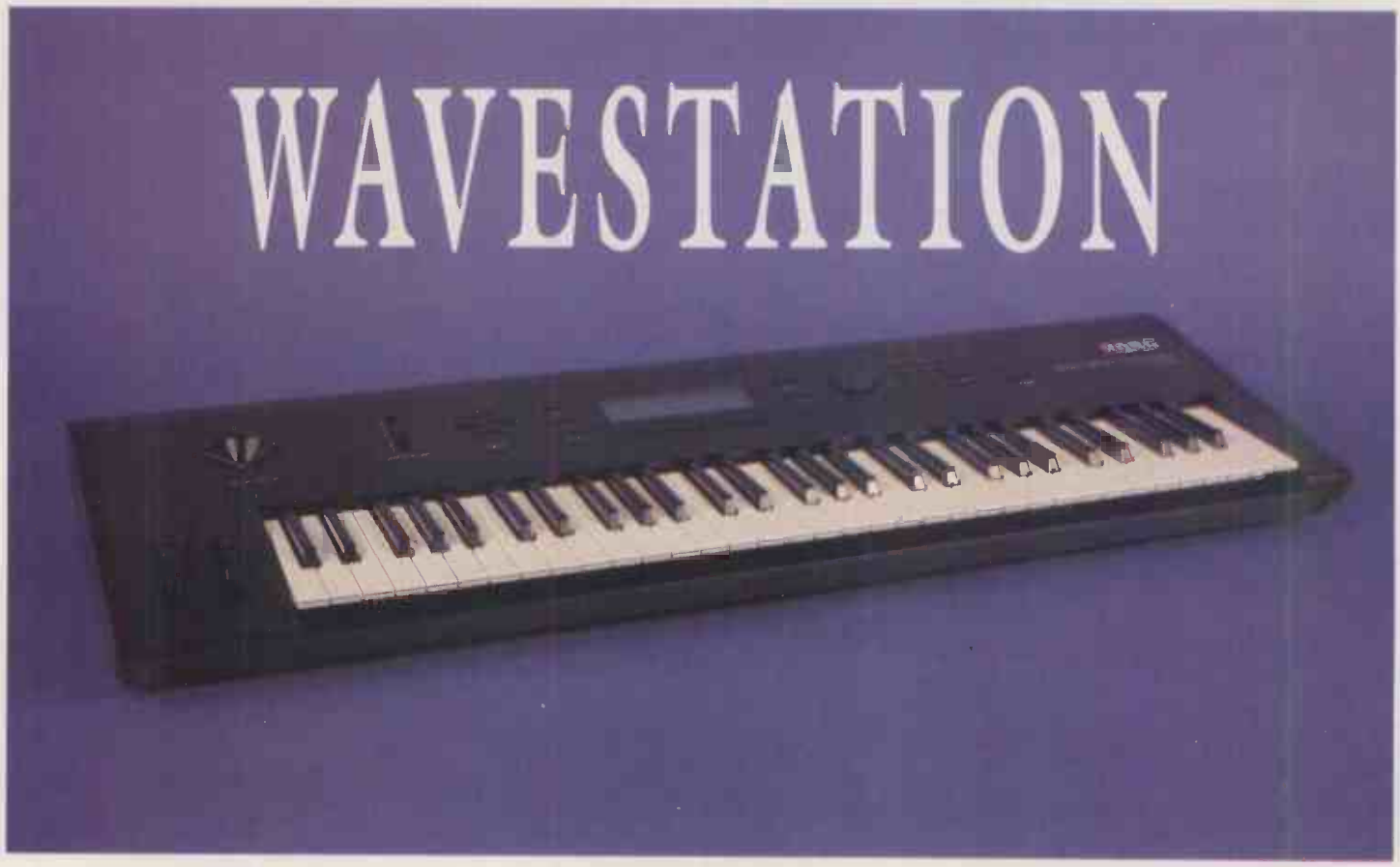


➤ 2 and 6. In fact, two totally different voices need to be used if the right effect is to be achieved. Finally, it's worth pointing out that extensive use of triplet-based patterns is common within hip hop and that it would be worthwhile digging out the relevant articles in this series if you're looking for something with a little more swing to it.

I'd be less than honest if I didn't admit that in programming terms, this month's article represents something of a step backward on our quest for rhythmic adventure. Certainly, no-one who has mastered the intricacies of Latin rhythm and odd-metre time signatures is going to find anything here to worry about. However, despite their simplicity, there are some very effective grooves amongst this month's examples, which would be at home within a variety of hip hop and other dance styles.

Hopefully, the trickier bits included in this month's patterns will get your fingers itching. If you should come up with something really exciting and are prepared to allow it to become public, why not stick it onto a cassette and send it to us for inclusion in an article I'm hoping to put together comprising the best rhythm tracks that you, the great MT readership, can come up with. It'll be *my* chance to see just how good *your* programming is. ■

WAVESTATION



PHOTOGRAPHY: JON SHRIMPTON

Korg's latest synth is intended to complement rather than succeed the company's M and T-series synths. Is the Wavestation different enough to establish its own identity? Review by Simon Trask.

SUCCESS BREEDS ITS own problems. Once a manufacturer has produced a best-selling instrument, the problem which inevitably confronts them is how to build on that success. Can they advance the technology and the concept sufficiently to capture the imagination of the musician once again? More often than not the answer is no. It's as if something in the vector of success prohibits one company from keeping the edge for too long.

One company who know a lot about vectors are Korg. At one time they were languishing in the backwaters of hand-me-down Yamaha technology, seemingly destined to be forever overshadowed by both the big Y and Roland, but the immense success of the M1 in the late '80s signalled a return to prominence for a company who have a long and worthy history in the world of synthesisers.

Following the M1 and its inevitable M1R rackmount version, Korg have flown in the face of conventional wisdom by producing only one downmarket version (the sub-£1000 M3R rackmount) but three upmarket versions (the T-Series synths). This can be explained in part by the M1's technology being too sophisticated to produce cheaply, but equally it's clear that the company are on a mission to build a reputation for themselves as purveyors of high-class professional synths.

No-one can doubt the sophistication of Korg's technology these days. With the M1 they demonstrated a clear technological edge over the competition, and at the same time produced an instrument which, conceptually speaking, was just right for its time. But times change. Nowadays musicians are tiring of the workstation ethos, they have sample-based synths coming out of their ears and they yearn for something which might perhaps be, well, just a little bit more synth-like in the traditional sense.

Cue the Wavestation, and the return of another kind of vector, namely vector synthesis. "Return", because the Wavestation has a clear ancestry in Sequential's Prophet VS synth - hardly surprising when you consider that Korg's new synth was designed by ex-Sequential personnel. The combination of Western design talent and Eastern business sense is nothing new. The foundations of Yamaha's success in the '80s were laid by John Chowning at Stanford University in California during the '60s - but then FM synthesis would probably

never have reached the commercial marketplace if it hadn't been for Yamaha. Similarly, Akai's most successful samplers were born in the minds of British and American designers, while when Yamaha bought out Sequential in late 1987, they took on board members of the Sequential design team with a view to making use of their sampling expertise. The story goes that the Californians were more interested in producing a successor to the Prophet VS, and a subsequent transfer to Korg provided them with an environment conducive to pursuing this aim. The end product of Californian dreams and Japanese sobriety is with us now in the form of the Wavestation, a synth which strikes out in some intriguing new directions.

OVERVIEW

THE WAVESTATION PROVIDES a mixture of the familiar and the not-so-familiar. The traditional oscillator-filter-amplifier analogue synthesis model lies at its heart, as do 365 waveforms and samples, with waveforms VS35-125 making the Wavestation's ancestry clear. Where once you had only a limited choice of waveforms to work with, and had to rely on filtering to create different sounds from them, the Wavestation gives you a tremendous variety of sounds to begin with. Although samples are included, they tend to be of the percussive variety rather than the whole instrument multisamples we've become used to. Thus you'll not find that staple of the workstation synth, the multisampled acoustic piano. And that's really no bad thing.

The not-so-familiar comes in two forms, which appear at the beginning and the end of the synthesis chain - namely wave sequences and vector envelopes. The former can be used for wavetable synthesis and/or melodies, arpeggios and rhythmic sequences, while the latter allows you to dynamically vary the amplitude balance of the oscillators within a Patch. The Wavestation also has a front-panel vector position joystick, like its precursor the Prophet VS and Yamaha's recently-released SY22. In addition to being used for programming the mix envelope, the joystick can also be used to override the envelope at any time during performance.

These features allow you to create a great deal of movement in your synth sounds, and it's this which is perhaps the most intriguing aspect of the Wavestation.

Four oscillators per patch has become pretty much the current standard, and this is what the Wavestation has. There are 35 Patches in ROM, 70 in two RAM banks, and a further 35 on ROM or RAM card. Korg's new synth also allows you to combine up to eight four-oscillator Patches on the keyboard in all manner of note split/layer and velocity split configurations. This combination is known as a Performance, of which there are 50 in ROM, 100 in two RAM banks and a further 50 available on RAM or ROM card. Each Performance has eight Parts, and each Part can be assigned one Patch together with various parameters such as level, detune, transposition, delay and sustain on/off. Each Part can also be set to Local, MIDI or Both, governing whether or not it plays on the Wavestation's keyboard and sends and receives via MIDI, and can be assigned its own MIDI transmit channel. In this way you can replicate your keyboard textures on external MIDI instruments, or selectively double onboard sounds with external sounds. This facility means that the Wavestation could become a very useful master keyboard.

Other Part-specific parameters allow you to select one of 16 tuning tables (four in ROM and 12 user-defined) and a performance mode (polyphonic or unison legato, with a choice of last, low or high-note triggering for the latter), route the whole Patch through a particular effects bus, and send a MIDI patch change command on the Part's MIDI channel whenever the Performance is selected.

A Performance isn't a multitimbral setup in the sequencing sense, however. This capability is provided by what Korg call a Multiset, where you can assign a Performance to each one of the 16 MIDI channels. You can create and store 16 Multisets in the Wavestation's memory, and call them up remotely via a SysEx command.

The Wavestation can be set to either Basic or Part channel MIDI transmission, and can receive in either Omni, Poly, Multi or Mono mode. If you want to use a Multiset then you need to select Multi or Mono, which allows you to have up to 16 Performances running at once off a sequencer while you play another Performance on the keyboard (assuming you don't run out of notes).

The synth's front panel is sparsely populated with buttons and sliders, with operation centred around a large backlit LCD screen. The Wavestation's numerous parameters are organised in a hierarchical fashion based around numerous software display pages which have been organised in a logical manner with a view to clarity and accessibility. On the bottom row of each page is a list of pages at the next level down, and you select these using the Function buttons located below the LCD. Successive presses of the Exit button to the right of the LCD step you back up through the levels to the Performance Select page, so you needn't worry about getting lost in an indecipherable maze of pages. In fact, once you've familiarised yourself with the page organisation you can move around the various pages with great speed using the Function and Exit buttons.

> "An interesting feature of the Wavestation is its ability to record sound edits as an integral part of a MIDI sequence, as well as record a Patch creation session."

An interesting feature of the Wavestation is its ability to translate virtually every front-panel action into MIDI-communicable SysEx data, allowing you to record sound edits as an integral part of a MIDI sequence, as well as record a Patch creation ➤

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➤ session so that you can go back over every step at any time (and not lose all your work because you forgot to save the Patch once you'd created it).

One consequence of hierarchical page organisation is that some pages are quite a few button-presses away from one another. Consequently, Korg have included what is becoming a very familiar feature on Japanese synths these days: a Jump function which allows you to move directly to any software page via a user-defined list using the Function buttons.

Last but not least, the Wavestation implements patch overlapping, that is, the principle whereby notes which are active when you select a new Patch, Performance or Multiset continue to play their existing sound until they're released and have gone through their release stage. A very welcome feature which gives you a great deal of flexibility in combining different sounds in performance.

PERFORMANCES

THE WAVESTATION POWERS up on the Performance Select page. Even if you're playing a single Patch, you still do it by selecting a (single-Part) Performance. So to get an idea of the Wavestation's capabilities we'll look at some of its Performances.

Performance ROM 1, 'Deep Atmosphere', combines four Patches - 'Ravel by Numbers', 'Industrial', 'Air Vox' and 'Motion' - in a mixed split/layer configuration. 'Ravel by Numbers' consists of four waves: Glass Vox, MV Wave, Spectrum 2 and PWM String. 'Industrial' consists of one wave: WSNoise, which is a wave sequence consisting of four looped and fully crossfaded steps: Spectrum 2, Spectrum 3, Spectrum 4 and Spectrum 1. 'Air Vox' consists of one wave, which is Air Vox. Finally, 'Motion' consists of a wave, SynString, and a 22-step looped wave sequence, Unison, which cycles through a succession of diverse sounds such as SynOrch, Electric Guitar, Inharm 1, Glass Hi and SuperSaw to create a sort of metallic/strings rippling effect in the background. Additionally, both 'Ravel by Numbers' and 'Motion' have looping mix envelopes applied to them, so that the amplitude balance between the sounds within each Patch fluctuates slowly. The end result is a very characteristic combination of smooth sustained sounds (strings, "soft" noise and vocal breathiness) with background movement created by metallic tinkling and hissing sounds.

'Ravel by Numbers' crops up again in the enchanting 'Northern Lights' (Performance ROM 29), in which subdued strings and soft metallic hisses are given a shimmering surface courtesy of some more metallic tinklings, this time from the WS S&H wave sequence.

Another Performance in the same vein is RAM2 1, 'City of Tomorrow', which combines six Patches - 'Debussy VS', 'Motion', 'Choir' and 2 x 'Doublepad' (a combination of SynStrings and wave sequence Spectrum2, a sort of metallic whooshing noise) - using various note and velocity splits and mix enveloping of waves within Patches to create a constantly-changing mixture of sustained strings in fifths and various bubbling, tinkling and whooshing sounds to make a very effective panoramic background sound. In fact, the abilities of the Wavestation in this area suggest it would make a very useful synth for providing background effects in film work.

I must also mention RAM1 49, 'Debussy on Wheels' - if only because of its name. In fact it's a "scaled-down" version of 'City of Tomorrow', using just the 'Debussy VS' Patch (a four-oscillator combination of Sine, SynString and PWM String waves and Unison wave sequence, with a looped mix envelope being used to repeatedly and slowly crossfade between SynString and PWM String while the tinkings of Unison fade in and out of the mix).

> "Given that you can use the wave sequences to create rhythms, riffs and melodies, you'll be glad to know that the Wavestation's wave sequences can be sync'd to incoming MIDI clocks."

A good example of how wave sequences can be used to create detailed rhythmic accompaniments is provided by RAM1 20, 'Midnight Run', a split keyboard texture which uses in the lower half a combination of a wave sequence called Taps (a pitch and rhythm sequence using several muted guitar samples) and the Multi-Tap Delay digital effect to create a dancing, spiralling rhythmic accompaniment, with an underlay of sustained strings and an added initial percussive attack provided by a "noise chiff". The upper half mixes a breathy 'Air Vox', nasal 'Vocalise' and "flutey" 'SynStrings' to create a hoarse and slightly tacky sustained sound which floats very effectively over the rapid rhythmic stuff going on in the accompaniment.

Not that all your Performances have to be rhythmic, complex, continually-shifting special effects. The Wavestation doesn't force you to use it in any particular way. You can equally create a wide range of more familiar instrumental sounds. Performance ROM 27, 'Warm Strings', is a straight layered mix of three single-wave Patches - 'SynString', 'SynOrch' and 'PWM String' - producing a clear, vibrant synth strings sound. In a similar vein is Performance RAM1 17, 'Bowed Strings', which combines 'PWM String' and 'SynOrch' with a bowed strings attack sample.

'SunGlasses Kid' (Performance RAM1 24) is a hard-edged electric piano sound which sits somewhere in between a Rhodes sound and the brighter DX sound. It's very satisfying to play, with a good bite to it on percussive chording. It's a split texture, with layered 'Shock Bass' and 'Organ Perc' in the lower half and layered 'Soft EP' and 'Changin' Tines' in the upper half, but in practice it has a smooth continuity of sound across the keyboard. If ➤

➤ you sustain notes in the upper half of the keyboard, a sort of metallic glistening sound wafts in courtesy of a wave sequence provided by the 'Changin' Tines' Patch. If you don't like this effect (and it does rather get in the way of straight playing) you can easily deselect the Patch from the Part and write the edited Performance back into memory.

Performance ROM 28, 'Chiffy Kalimba', layers four Patches: 'Digi Harp' (waves Pluck 2 and Sine), 'Tambotak' (waves Thai Marimba and Tambourine), 'Glass Bottle' (waves Glass Hit and Bottle) and 'Pluck 3' (wave Pluck 3). That adds up to seven oscillators, and therefore seven voices - which in turn means you're down to four-note polyphony. Use this Performance in a Multiset and you haven't got much (if anything) in the way of polyphony for other Performances in the Multiset. It's worth bearing in mind the practical limitations that the Wavestation's 32-voice polyphony imposes as you set about creating ever more sophisticated multi-layered sounds.

"Storage of the WS's joystick positions means that the experimentally inclined can take the joystick wigglings from one Patch and superimpose them on another Patch."

Performance ROM 4, 'Mini Lead', is a powerful lead synth sound which uses two Parts to layer wave sequence Mini with itself four times (two wave sequences in each Part), with a touch of detune on one layer and Uni Legato with Last Note Priority performance mode selected. Crossfading between wave sequence steps of different pitches is employed to bring in a screaming "feedback" effect on sustained notes, while you can use aftertouch and/or the mod wheel to bring in some vibrato (LFOs 1 and 2 act as modulators on pitch, and the depth of their effect is controlled by aftertouch and the mod wheel).

Illustrating how Performances readily allow you to use Patches in a variety of contexts, Performance RAM1 0, 'Ski Jam', is a split keyboard texture with a rhythmic wave-sequence accompaniment in the lower half and Mini again layered with itself in the upper half. Well situated in the zero slot, it makes a great introduction to the Wavestation's capabilities.

PATCHES

EACH OF THE four oscillators within a Patch can be assigned either an individual wave or a wave sequence. The Wavestation comes with 32 ROM wave sequences and room for a further 64 in two RAM banks, while a further 32 can be accessed off ROM or RAM card. Each RAM bank can hold up to 500 sequence steps, while an individual wave sequence can be up to 256 steps long. Any edits to a wave sequence are automatically stored into memory, so there's no need to remember to save them.

Each step in a wave sequence can be assigned any one internal or card wave (no, you can't assign a wave sequence to a step within itself or within any other wave sequence, in case you were wondering), and can be given its own semi and fine tuning, level, duration and crossfade amounts. Whether a wave sequence is a continuously evolving sound (wavetable synthesis) or a clear-cut sequence of sounds (for melodies and rhythms) is determined by the crossfade parameter, which of course means that you can alternate between the two within a single sequence if you want.

Sometimes a clicking sound is produced as a side-effect of moving from one wave to another with no crossfade. You can turn this to your advantage for rhythmic effects, but alternatively a crossfade value of one or two will smooth the click away.

Step duration can be set from 1-499 or Gate. If a step is set to Gate, the wave sequence will hold on that step until the note is released. Other wave sequence parameters are the start and end steps of the sequence, number of repeats (off, 1-126 or infinite) and loop direction (forward or forward/backward).

If you decide that you want to speed up or slow down a wave sequence, fear not: you don't have to alter every step duration manually. Durations can be compressed and expanded by from 1%-200% with just one parameter. A value of 50% halves all durations, while a value of 200% dqubles them. Simple, and really easy to execute.

Another neat feature allows you to modulate the start point of a wave sequence using any one of 13 mod sources (see below). You can set a ±mod amount and start step, which means you can modulate backwards or forwards from any specified step in the sequence. If you're using keyboard note or note velocity as the mod source, the initial step varies but then the sequence plays normally to its end or until the note is released. However, other mod sources such as the mod wheel, aftertouch and the LFOs allow you to select individual steps within a sequence by adjusting the position of the relevant controller. So for instance, you can play note sequences using the mod wheel, which needn't be as daft a thing to do as it sounds.

Given that you can use the wave sequences to create rhythms, riffs and melodies, you'll be glad to know that the Wavestation's wave sequences can be sync'd to incoming MIDI clocks. In this case a duration value of one becomes equivalent to one MIDI clock - which means that the maximum resolution of the wave sequences is a modest 24ppqn. It also means that, where you might naturally begin creating wave sequences with durations based on multiples of two, for MIDI purposes they need to be based on durations of three - unless you want everything to be in triplets. For instance, each step in the wave sequence Tap Drops (ROM 27) has a duration of eight, which translates into triplet quavers when the sequence is slaved to MIDI clocks. The result is that you're forced to think in terms of MIDI clocks rather than crotchets, quavers and the like.

It's also worth bearing in mind that the Wavestation's internal clock runs at a fixed rate ➤

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➤ (effectively at 105bpm) and you use step duration settings to create different tempi. However, as soon as you switch to MIDI sync, the clock rate depends on the rate of the incoming MIDI timing bytes. Unless you want all your music to be at 105bpm, you'll soon run into problems unless you program your wave sequences in relation to MIDI sync from the outset.

The rest of the Wavestation voice module consists of a 24db/octave low-pass filter with initial cutoff, keyboard tracking, exciter amount and two mod source and mod amount parameters (but no resonance); an amplifier with velocity envelope amount, attack velocity mod, envelope keyboard mod and two modulation source and modulation amount parameters; a dedicated four-stage amplifier envelope; one freely assignable four-stage envelope; and two freely assignable LFOs with rate, initial amount, shape (triangle, square, sawtooth and ramp), sync on/off, delay, fade-in, and depth mod source and amount and rate mod source and amount parameters. Like Ensoniq's synths, the Wavestation employs a sophisticated modulation matrix, with 13 modulation sources including keyboard, velocity, aftertouch, LFO and two user-definable MIDI controllers routable to five destinations (amplifier level, filter cutoff, mixer "x" axis, mixer "y" axis and oscillator pitch).

> "The Wavestation doesn't represent a complete break with the Korg sound we've all grown to know and love, but it does allow you to do things that no other synth does."

Once you've created your four sounds within a Patch, you can use the mix envelope to adjust the balance between them through time. The mix envelope has five Points, each of which refers to four x/y co-ordinate positions of the vector joystick, and therefore four amplitude mixes of the oscillators within a Patch. You can set durations for the transitions between consecutive points, effectively fading the oscillators in and out over time, loop the envelope from Points 0-3, 1-2 or 2-3 either forwards only or bidirectionally, and select a repeat setting of off, 1-126 or infinite.

Using a combination of slow crossfades and envelope looping, you can spin the mix envelope out over quite a time. However, for extended sound mixes with a much greater number and variety of changes you can turn to your MIDI sequencer. This is because the vector position joystick's x/y co-ordinates are transmitted via MIDI as controllers 16 and 17. Yamaha's SY22 does the same thing, but unlike the SY22, the Wavestation can respond to these controllers on all 16 MIDI channels when it's receiving in Multi mode.

This external storage of joystick positions means that the experimentally inclined can try taking the joystick wigglings done with one Patch and superimposing them on another Patch. The result might make no sense at all, but there again it might produce a great result - you don't know until you try.

Sophisticated digital effects processing has been Korg's forte ever since the M1, and the Wavestation continues in this tradition. Once again you get two independent effects processors which can be combined in parallel or serial configurations. Processor one is always routed to the stereo output pair, while processor two is similarly routed in serial configuration, but routed to two individual outs in parallel mode, with the option to pan the effect output across to the stereo outs. Assignability of the Wavestation's oscillators to the effects and outputs is very flexible, as you might expect.

Advances come in an increased number of effects and in the inclusion of modulatable effects parameters, with a similarly wide range of mod sources as there are for the synthesis parameters. Effects include nine reverbs, two gated reverbs, two stereo delays, three stereo multi-tapped delays, several stereo choruses and flangers, distortion and overdrive, stereo pitch shifter and several effect combinations. Common to most of the effects is low/high EQ, a useful feature. As you might expect, these are high quality effects, but, if you want to switch them out for some reason, Korg have included a global effect on/off parameter.

VERDICT

IN MANY WAYS the Wavestation would make a very effective second keyboard - which is seemingly what Korg intended, complementing an M1 or a T-Series synth, perhaps. But equally its ability to transmit on up to eight MIDI channels at once, replicating all manner of keyboard split/layer configurations on external MIDI instruments, makes it in some respects a good candidate as a controller keyboard.

The Wavestation doesn't represent a complete break with the Korg sound we've all grown to know and love, nor is it any kind of fundamental conceptual leap forward, but it does allow you to do things that no other synth does, and it does allow you - in fact, encourage you - to be experimental. That hoary old advertising slogan, "The only limit is your imagination", springs to mind when considering what you can do with the wave sequences, because it's clear that the Wavestation's implementation of wave sequencing is tremendously versatile, allowing you to create slowly-evolving sustained sounds, delicate tinkling effects, arpeggios, melodies, bass riffs and all manner of rhythms from simple beats to complex cross-rhythms, and at the same time mix them together in all sorts of ways using vector synthesis. There's a lot of depth to the Wavestation, and a lot of interesting possibilities - certainly more than I can cover here. At the same time, to get the most out of it (and to my mind that's the best reason for buying it) you do need to indulge in a certain amount of head-scratching to figure out what the hell's going on, some of the time. Partly that's because the Wavestation is such a sophisticated instrument and there's so much that can go on in the sounds themselves. ■

Price *£1575 including VAT.*
More from *Korg UK, 8-9 The Crystal Centre, Elmgrove Road, Harrow HA1 2YR. Tel: 081-427 3397.*

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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 6 in the series; P.A. – Portastudios – 8 Track – Financial advice, MIDI and information on our recording and MIDI school. To obtain any of our fax packs just phone or write.

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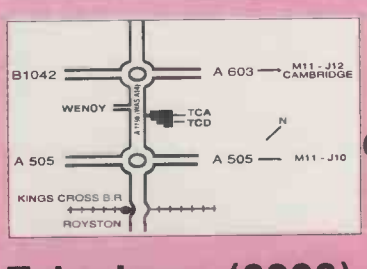

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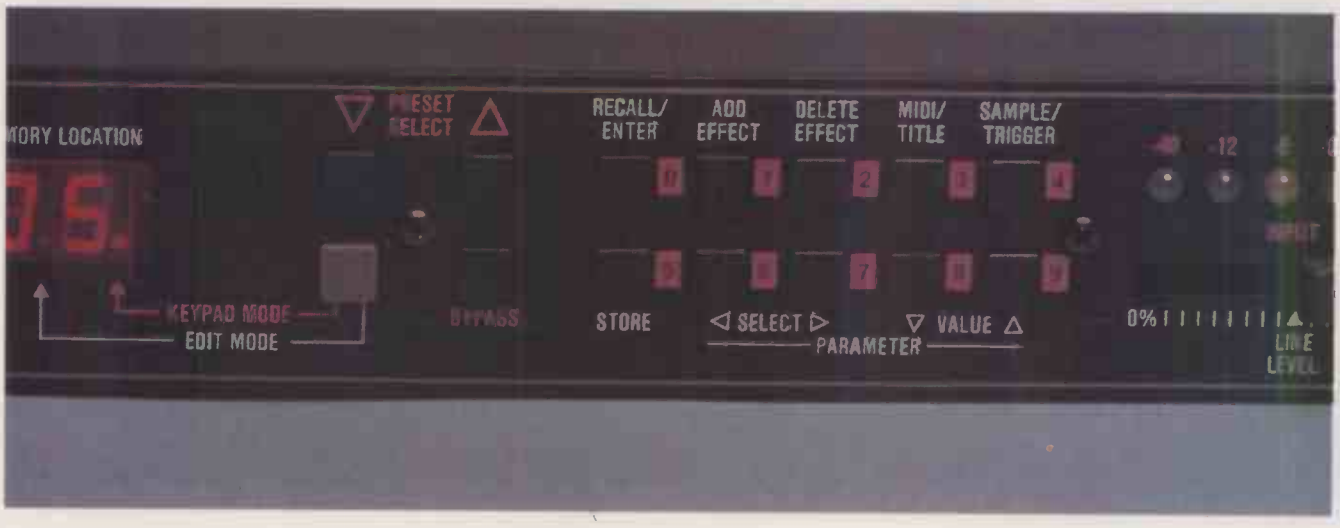

PHOTOGRAPHY: JON SHRIMPTON

IN THE BEGINNING there was natural reverberation. This appeared everywhere there happened to be a few surfaces capable of reflecting sound, and generously contributed to mankind's early attempts to make music. When mankind had evolved sufficiently to erect structures dedicated to the playing of music, he valued nature's contribution enough to make it an important aspect of the buildings' design.

Then there were electronics - and mankind sought to emulate natural reverb. There were spring reverbs, plate reverbs and finally digital reverbs. Initially, digital reverberation was an expensive commodity, and was available only to a select few of the race's musicians. Then the revolution arrived, and digital reverb was there for everybody. All they had to do was decide which unit to buy. . .

Today the trend is towards multi-effects processors that will create reverberation along with effects such as echo, equalisation, flanging, phasing and pitch shifting. In fact ART's new Multiverb III is an excellent example of what is possible with digital sound processing. The Multiverb III is a 20-bit, stereo processor which boasts some 53 different effects and adds sampling to the above list. It also has 200 user-programmable memory locations and can be controlled in real time using MIDI messages (for full details see the review in last month's MT). It's fair to say that the Multiverb III can transform a recording from an unremarkable demo into a polished production. Why would you want to know all this? Because the Multiverb III is what you're about to try to win in this month's competition. All we need now are a few searching questions. . .

Q1

What is the name of ART's budget-level preset effects processor?

a) ET
b) LT
c) ST

Q2

What is the maximum number of simultaneous effects the Multiverb III offers?

a) 2
b) 3
c) 4

Q3

How many reverb algorithms does the Multiverb III have?

a) 12
b) 18
c) 24

ENTRIES ON A postcard only, please, to arrive no later than **Monday, 17th September**. Please remember to include your own name and address on your entry. All entries should be addressed to: ***"ART Lessons", Music Technology, Alexander House, Forehill, Ely, Cambridgeshire CB7 4AF.***

On the side-splitting subject of multiple entries, special mention should go to K Bailey - that *is* Kevin J Bailey, isn't it - from Chichester. Kevin's entries to "Future Shock" arrived in the same post as two entries from Oliver Bailey, also of Chichester - I make that four. Meanwhile the PC software on offer in "Personal Services" appealed to someone with an abundant supply of Thomas Hardy stamps. Thanks, but no thanks, to Mike Pogson. Or is that Marc Dando. Or Sarah Dando. Or Louise Kershaw. Or Elaine Kershaw. Or Derek Kershaw. . .

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AN IMMATERIAL WORLD

Despite their relentless search for fresh "product", the record companies occasionally overlook small areas of musical experimentation. It's Immaterial occupy one such space.

Interview by Nigel Lord.

"IT HAS TO BE CAPITAL PUNISHMENT"

"You're probably right. If you locked them up, they'd end up back on the streets once they got out".

It's five o'clock on a hot May afternoon and within minutes of our meeting, Jarvis Whitehead and I find ourselves in agreement over the punishment due anyone caught walking down a busy street strumming a guitar. Our discussion had been prompted by some minstrel wandering down Lark Lane, a faded but pleasant Liverpool thoroughfare in which are situated the offices of Essential Productions - the management company to which Jarvis is signed as one half of It's Immaterial. His other half (so to speak), is John Campbell; together they form what is one of this country's most valuable musical assets. Comparatively few people would agree but then, comparatively few people have been given the opportunity to listen. And that's another crime for which we should be discussing stiff sentences.

Happily for a small group of cognoscenti, the band can do no wrong and these loyal few have done what they can to spread the word to an uncaring world. There hasn't, however, been much "word" to spread in recent times. Like Kate Bush and Tears for Fears, It's Immaterial had allowed a gap of some four years to separate their last/latest vinyl offerings.

Back in '86, *Life's Hard and Then You Die* rewarded its listeners with some of the most sharply-honed melodies the decade had produced and provided a blueprint for what could be achieved by a band prepared to embrace new technology and combine it with more traditional instruments. Throughout, the music was suffused with incisive humour, courtesy of Cambell's wry, whimsical narrative style, and an eclecticism which had critics reaching for the thesaurus in search of suitable adjectives.

The singles, 'Driving Away From Home' and 'Ed's Funky Diner' brought the band the closest thing to mainstream success they have enjoyed. A couple more sank without trace, and if profiles in the press, radio and TV were anything to go by, so too had the band.

At the end of last year Campbell and Whitehead were rumoured to be working on a video project which it seemed reasonable to connect with the release of a second album. And *Song* - for that is its name - was released earlier this year.

But the world doesn't seem to have time for such an album. It lacks the immediacy which has become a prerequisite for popular music - there are no hook lines corkscrewing their way into your skull and you can't really dance to it. Despite this, It's Immaterial have, with producer Calum Malcolm, released a meticulously crafted set of songs which, with a little listening, etch their way into your subconscious.

Happily, Campbell and Whitehead still seem wedded to the (apparently) outdated notion that music - pop music, anyway - is about songs. Sceptics might consider four years a long time for two people to write ten songs, so where had the time gone?

"We went to Europe after the first album was released to do a series of live dates", recalls Campbell. "When we got back, we moved into a small rehearsal studio with our own 16-track and started demoing material for the second album - that was the year of '87. From March '88 through to December we were up in Scotland recording.

By '89 we had only really finished one track and the rest of the year we spent dabbling with the idea of making a long-form video to go out with the album."

This sounds like the kind of creative space normally afforded to bands having already gained considerable success.

"There certainly wasn't any commercial success to speak of", contradicts Whitehead, "we're just fortunate in having a rather gracious record company who allow us to work at our own pace."

And the success of the first two singles?

"They gained us some kind of profile", admits Campbell. "You could say it was the critical success of that album which bought us the time to write and record the second. I'm sure the record company wouldn't have been quite so gracious had the first record not been received so well. I think they suspected there was promise there and that in time it would grow".

Speaking of the singles, the original producer of *Driving Away From Home* was Talking Heads' Jerry Harrison, yet David Bascombe was credited as producer on the actual release - proving that even the most prestigious of producers don't necessarily make good partners.

Campbell: "He seemed to be very firmly of the opinion that it was a country and western song and we never saw it as that. It was a "road" song, but he wanted to go right back to country and western roots and do it completely in that style.

"For us it was an amalgamation of a few things. There was a lot of irony in the fact that we were Mancunians and it was a road song about Britain. We were coming in at a very oblique angle and I just don't think he picked up on it."

The song brought the band its greatest vinyl success four years ago, but now there is the success of *Song* to consider. You might expect a single to have already been chosen, but Campbell reckons it isn't that simple.

"When we came to write the last song we thought 'let's roll up our sleeves and write the single which we can use to sell the other nine songs'. And we tried for a year but we couldn't do it. Every time we did anything - change the EQ on a particular instrument, for example - we just didn't like it. We couldn't bear to go through with it. It isn't that we don't want to do anything commercial, it just doesn't seem to work for us."

For many, the band's understated humour has provided one of the most cogent reasons for latching on to their music. Apart from coming up with the title *Life's Hard and Then You Die*, the songs themselves are sprinkled liberally with priceless lines. Much of it is of Campbell's devising.

"I think the humour is an escape valve. Sometimes you find yourself expressing your own character too much and at times you get quite melancholic - especially when you're trying to create something and it's not going well. Really, you'd have to say it's for your own benefit; it's there to rescue it for you because it's getting a little too deep at those moments. But I wouldn't say it was particularly understated. . ."

But there is an underlying Englishness about the songs on both albums; a pre-occupation with suburbia, out-of-season holiday towns and drab Sunday afternoons - all traditional English themes.

Campbell again: "Usually it starts with some expression I've heard or something I've read somewhere, and then you build in your own experiences around that. Most of the names are names of friends; most of the street names and locations are places I know or have been to. That's how personal the writing becomes. I think a lot of that English feel stems from a hatred of the Americanisms that come into the language. I find myself fighting against those kind of lyrics."

On the subject of feel, *Song* has more cohesion than the first album. Presumably this was because like most first albums, *Life's Hard* was made up of a collection of songs which had been gathered together from the time the band was formed - whereas the second was conceived as a complete set of ten songs.

"That's right", Whitehead confirms. "In fact, we tried to homogenise the new album. Some of the demos we started off with were distinctly different so when we got to Calum's studio (Castlesound in Edinburgh) we made a deliberate effort to make the album work as a whole, and to make it different from the first album. The other thing with *Song* was that the three of us worked more or less in isolation, whereas with *Life's Hard* there were many different people involved."

Clearly, the two of them prefer to maintain control over the entire creative process. If I have any criticism to make of the new album, however, it's that rather too much control seems to have been exacted on occasion. The album is never allowed to drift into uncharted waters. But this is not something of which Campbell is unaware.

"For months we dabbled around trying to create a particular kind of tension. In a sense it's a sort of controlled emotion; it's not quite letting go at any point. That's what was interesting me at the time. You get the impression that something's just about to happen in the narrative, but it never quite does. So I suppose that's where the element of control comes from."

This might also be the reason they resist the temptation to capitalise on the more obviously catchy parts of the songs. But Campbell has a simpler explanation: he gets bored with the repetition. Yet like The Blue Nile, a band with whom it's not difficult to draw parallels (apart from the Calum Malcolm connection), there seems to be a fundamental appreciation of the value of a well-constructed song. Surprisingly, Campbell plays this down.

"I can see the parallels between us and The Blue Nile - and several other bands - but I've never really looked at us as songwriters in the strictest sense. We construct some kind of narrative story, I suppose, but the melodies are all quite simply placed.

"When we first went into Castlesound, the songs were very sketchy indeed. In fact they were practically written and re-written in the studio. Castlesound is in quite a pastoral setting and this, I think, came to be ➤

"A lot of our English feel stems from a hatred of the Americanisms that come into the language. I find myself fighting against that kind of lyrics."

➤ reflected in the music. And spending such a long time there meant that we really got to understand the studio and got involved much more in the recording process."

FROM THE TIME OF THE FIRST ALBUM, It's Immaterial have seemed quite happy to avail themselves of the benefits of hi-tech equipment. Do they feel they've gained any sort of mastery over it?

Campbell: "Having to go out and play the first album live - even though there were six of us in the band - there were still things we needed to sequence using a computer. So we had to look into that side of things. But we've never been totally on top of the technology. We tend to form attachments to certain instruments. On the new album, for example, we grew very found of the Jupiter 8. And we used a Yamaha KX88 as the master keyboard because we liked the feel of it. We're still very fond of the TR808, too. We used it on *Life's Hard* and again on *Song*".

"When you're working with an instrument and you don't know what you can do with it, you end up looking for pure ideas or trying to get something out of it that moves you."

If anything, the acoustic piano which gave much of the first album its fluid feel, has taken more of a back seat on *Song*.

"Not at all", replies Whitehead, "it's still there if you listen for it. In fact, that was one of the reasons for working with Calum - he's a great keyboard player. But he's very subtle; every note he plays is designed to enhance the song. In that sense he's very 'efficient'."

The respect shown for other people's musicianship is unmistakeable. Yet between themselves Campbell and Whitehead adopt a resolutely anti-muso stance. Is there any degree to which they might find themselves deliberately limiting their own development in order to protect their approach to writing music?

Whitehead: "That's been a part of the history of the band really. It's not so much a case of a particular chord being too clever or anything, it's more to do with the creative process being so difficult that if you tighten the boundaries in any way it makes it that much easier. When you're working with an instrument and you don't know what you can do with it, you end up looking for pure ideas or trying to get something out of it that moves you. And this leaves space for accidents to occur as well. In fact, we spend most of our time looking for accidents."

This approach also applies to their use of samplers, which seem to play a significant role in the new album.

"All the samples on the album were done by us", Campbell explains ". . .apart from a few from the Emulator library. We did a lot of sampling outside - we sampled castanets in a cave on the East Lothian coast."

"Also", Whitehead continues, "the percussionist who worked with The Blue Nile, Nigel Thomas, had left all his percussion instruments behind in the studio. There were lots of ethnic instruments and some really interesting things to hit, so we managed to get quite a wide range of percussive samples which we could experiment with." "But", explains Campbell, "we are aware that there are certain traps you can fall into. So for rhythm tracks, for example, we try to use very varied sounds and build up a sense of a rhythm rather than deliberately trying to find something different."

On the subject of drums and rhythm tracks, in a previous interview (E&MM, September '86), Campbell and Whitehead revealed that their use of a drum machine - the ubiquitous TR808 - had stemmed from the difficulties experienced working with the real thing. It seemed that whenever they ended up working alongside a drummer, their problems began.

Campbell explains: "It was the fact that we really couldn't find anyone who could play the rhythms we wanted. It was also the vocabulary between us: we weren't able to express ourselves too well. It's difficult trying to get an idea out of your head and communicating it to somebody.

"So we end up being fairly introverted and trying to discover a way round it ourselves. That's why we've persevered with drum machines. We play around with a track constantly trying to place the rhythm parts. Usually we set up a keyboard with some percussion samples and then attempt to slot them in and see where they fit. We go through a track many times looking for the right places. On *Song* we also spent a lot of time miking up and trying various types of reverb on the samples. Rather than using digital reverbs, Calum prefers to use rooms - there's a fabulous selection at Castlesound - and we spent a lot of time experimenting with different instruments in them."

The duo were clearly impressed by the way Malcolm works (and with his penchant for fine wines), but previous associations had turned out much less successful - that with Jerry Harrison being a case in point. The impression they give is one of being enthusiastic about their music to the point where they are unable to release control over it to others.

"It's such a hard thing to do", admits Cambell, "but we're desperately trying to learn to delegate. We know we're obsessive and want to be involved in every aspect of the things we do.

"I think a lot of it came about because we've been led down so many wrong avenues. We found that as soon as you loosen the reins, it becomes hard to get back in control. Soon it's nothing like you intended it to be, but by that time it's hard to do anything about it. I suppose we have come to deliberately avoid those situations simply because we're afraid of where that process can lead."

But how about in other areas where you simply have to leave it to someone else, like promotion of the album? "That's one of the reasons we take so much time making it. We make sure we get everything right - doing the absolute maximum amount that falls within our jurisdiction. I suppose it's like a plea to the people who are going to promote and market it to do it properly."

This reluctance to rely on others has also made them steer away from the vagaries of live performance.

"We haven't played any dates since '87", says Campbell, "and that was the first time we'd played live

for two or three years. We'd like to do it if the process was a bit easier, but again, it's difficult finding the people we'd be happy playing with and who could interpret the songs in the way we'd like."

Whitehead agrees: "That was one of the briefs we gave ourselves for this new album. We tried to do something simple enough that we'd be able to play live without relying on too many other people. Having been round Europe and had a band together for a while, it's a nightmare."

In the light of this reluctance to perform live, the concept of extended video work could have been tailor made for It's Immaterial, giving them almost total control over their work.

"To a certain extent", agrees Whitehead, "but we've still had to work with directors - even though all the ideas for the videos have been our own. I think our involvement with video has to do with it being a visual thing; it's easier for us to grasp visual ideas.

"All the formal training John and I had was in the visual arts rather than music, and at the risk of sounding pretentious, this is reflected in the way we work in the studio. We tend to see things visually and discuss them in that way."

But how do a band who have avoided the pitfalls of the musical cliche manage to avoid those which seem to have dogged the video industry over the years?

"I don't know", says Whitehead, "but we spent the whole of last year *trying* to avoid them. Having completed most of the album, we didn't see any reason why we should do a selection of videos. We conceived it as an album rather than a number of different singles, so we wanted to do a long-form video."

But how can a long-form video secure airtime on *Top of the Pops*, for example?

"How would *we* secure airtime on *Top of the Pops*?" counters Campbell. "We've never regarded ourselves as a commercial band in that sense. If we write and record something and people like it, then fine, but really we do it to please us - and we have to bear the consequences of that."

One of the consequences is that, despite having produced two of the most compelling albums of the last few years, Whitehead and Campbell are wont to lapse into rather maudlin discussions as to whether they will get the opportunity to make a third. Having never been one to blame the current malaise in the music industry on the outpourings of factories like PWL, I would, nevertheless, find it difficult to maintain what little faith I still have in the music business if the system was so choked up it couldn't provide an outlet for a band like It's Immaterial. We shall see.

The interview concluded, we walk out into the pleasantly bohemian atmosphere which is Lark Lane on a warm Friday evening. Thankfully, the man trying to advertise the fact that he could play the guitar is nowhere to be seen. I mutter promises about buying three copies of the new album and getting every member of my family to do the same, but I know the best I can do is to whet the appetites of a few MT readers. Jumping in the car I make my way across the city and within minutes I find myself on the motorway. *Drivin' on down the M62 to Manchester. . .* ■

FUNCTION JUNCTION PLUS

In principle, MIDI is a powerful system of communication and interconnection of electronic instruments; in practice, MIDI is a mess of cables and endless repatching - until Function Junction. Review by Vic Lennard.

A MIDI PATCHBAY is usually the last piece of MIDI equipment you'd consider buying. After all, it's not a necessity - it doesn't make any noise - and you *could* choose to spend half your studio time swapping MIDI leads around. . . But once you start to use different keyboards and wish to edit some of your synths using editing software, the MIDI patchbay quickly becomes something of a necessity.

When you come to choose a patchbay, there are two criteria you should be aware of: the number of MIDI inputs and outputs the unit has and the processing facilities offered. While the cost tends simply to be proportional to the number of connections the unit has, you should also be aware of any processing features absent from the patchbay - MIDI merging, for example - as a separate unit will add to the final price of your system.

Audio Architecture's Function Junction has been under development for over a year now, but was redesigned during this period to incorporate more facilities than were originally planned. The standard unit now has eight MIDI Ins and Outs, while the Plus version has 16 MIDI Ins and Outs. The unit under review here is the Function Junction Plus, but I'm sure you'll forgive me if I refer to it as FJ from time to time.

DESCRIPTION

ENCLOSED IN A 2U-high rackmount case, the most immediate feature of the Fuction Junction is the large 2x24 character display, backlit in late-night red. The buttons on the front panel fall into four groups; two rows of Input and Output assign buttons with dual functions for the first eight of each; Two pairs of Process/System and Connect/Solo buttons with LEDs for each function; cursor right/left and Enter. There's also a Power on/off button (nice to see this on the front), remote control and footswitch sockets, and a red reset button on this panel.

The rear panel houses the 32 MIDI sockets for the In and Out connections - the reason for the unit's 2U height - and an RS232 socket for expansion purposes. The mains lead is removable and there's a fuse mounted in the socket - pay attention everyone else.

BASIC USE

SETTING UP THE Ins and Outs of a MIDI patchbay should be easy - it certainly is with FJ. Press the Connect button to enter Connect mode and the display mirrors the front panel buttons with the outputs shown on the top line. Press any output button - one, for example - and the cursor instantly moves to that number and prompts "Input?". Press one of the input buttons, say 5, and the display changes to "In5" while the number five appears in the input row underneath output 1. Pressing input button 6 at this point changes the input character from 5 to "m" (to indicate a merge is taking place), and "In5" becomes "In56". It's simple and concise.

Selecting further outputs and their relevant inputs completes a basic patch. You can immediately see what your current connections are by looking at the two rows on screen. Selecting any output lets you read off the inputs for that output. The only restriction here is that there's only space

to see the first five merged inputs after "In". Perhaps the display should scroll to show all inputs, but it would be an unusual situation that required you to merge more than five MIDI inputs.

You are restricted to a maximum of 16 connections on the Function Junction Plus, after which you are prompted "No more Connections! (maximum is 12)" on the screen. The figure 12 appears to be the maximum allowable for the eight-input/eight-output version of the Function Junction - the next operating system update will probably correct this.

By using the above procedure, you don't need to worry about different methods for multiple assignment of inputs and outputs. Merging is accomplished automatically.

PROCESSING

PRESSING THE PROCESS button takes us - unsurprisingly - into Process mode. If an input is connected to more than one output, you can first choose whether any processing on this input will affect all output connections. The cursor keys scroll through those inputs with multiple outs so that you can choose which to treat separately. Otherwise, each connection is treated as an independent entity. The 16 possible connections are labelled from A to P so our previous example would appear as "A:In5 › Out1".

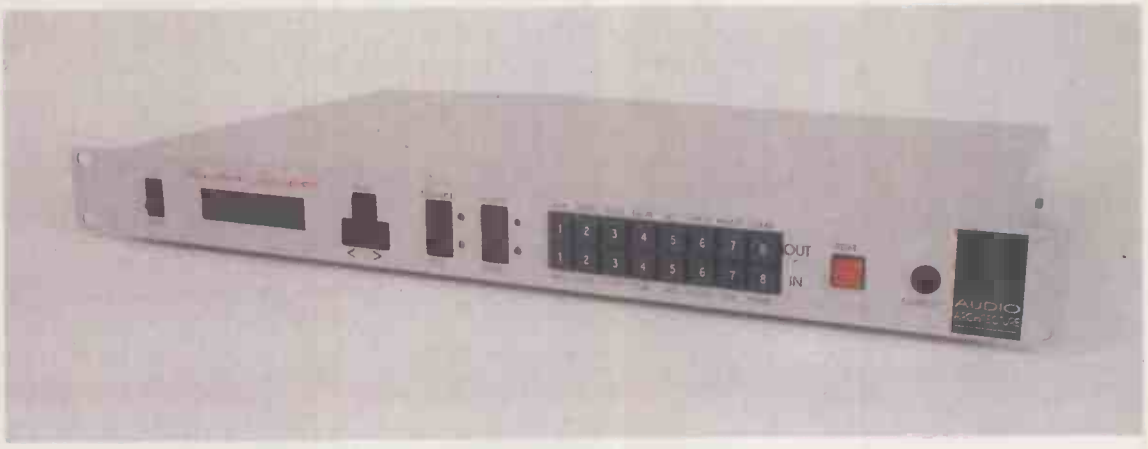
Having selected the single or multiple connection for processing, you then have various options, accessed by pressing one of the first eight output buttons - the process name is written clearly above the buttons. Once you finish with an edit, a press of the Edit button takes you back to the Select Function screen.

FJ FUNCTIONS

HERE IS A summary of the Function Junction's functions:

Zone: each connection can have an independent zone. The screen shows the "Lo" and "Hi" notes for the zone. These can be set either by using the cursor buttons or by pressing the relevant notes on a connected MIDI keyboard. If you happen to decide while setting this that either the current input or output is wrong, you can change them from this page. Not only that, but by continued scrolling through the inputs and outputs you can also select a specific MIDI channel for the zoning to occur on.

Filter: filtering can take place either on a specific input so that all data on a multiple connection is affected, or on each individual connection. You can filter out any of the following; MIDI clock, channel pressure, polyphonic pressure, pitchbend, modulation wheel, sustain, all-notes-off, all MIDI



controllers, program changes, note data and system exclusive. If you have previously selected a zone and MIDI channel, then only data in this zone and on the relevant MIDI channel will be filtered. The screen gives you the option to Pass All or Filter. Once you select the latter, the options above are offered. One omission from the list is that of active sensing. This is a one byte message every 300 milliseconds sent out from many keyboards to inform connected modules that it is still there. This can cause problems when working with zones and with the modern-day reliability of MIDI, active sensing is rarely necessary.

Transpose: as with filter, either an input or a connection can be affected. The transpose range is between -128 semitones and +127 semitones. I can't imagine anyone not being satisfied with that.

Delay: you can delay the MIDI data by either a number of milliseconds (up to 2.5 seconds) or a number of beats. This latter option allows you to synchronise repeats with the tempo of your music. You can set the tempo between 40 and 240bpm, and the delay time in terms of fractions or multiples of a beat. Whether delay has been set by time or beats, you then choose a number of repeats between 0 and 15 and an amount by which the velocity changes from one repeat to the next. This could be used to make notes decay away like an echo or to swell up. Now comes the creative bit: each repeat can be transposed by a number of semitones and this can be incremental or not. For example, if you choose an incremental transpose of +1 semitone, the first repeat is one semitone higher than the input note, the second is two semitones higher and so on. You can then send the repeats to another output only or as well as the original. Another option is to increment the MIDI channel for each repeat. You could be using a multitimbral synth like the Roland D110 and have the repeats going through different sounds, one at a time.

Velocity: as with previous processes, this can occur on an input or a connection. You can fix the velocity at a specific value, compress it by 8:1, 4:1, 2:1 or ➤

➤ 4:3, so restricting the dynamic range, or expand it by 4:5, 2:3, 1:2, 1:4 or 1:8. Experimenting as data is passing through soon helps you to select the best value for each situation. There is also the option of setting a central MIDI velocity at which no effect will happen. The further away from this value that a note velocity occurs, the greater the effect.

"Even with 16 MIDI channels of data running, the system load meter rarely ventured above 40% and no MIDI timing problems were apparent."

Velocity Switching/Crossfading: this is like the function you usually find on samplers. Velocity switch sends note data out of a different out once a threshold value (which you set) has been exceeded. Crossfade balances the note data between two outs depending on the velocity. The balance depends on a velocity offset value which, again, you can set.

Continuous Controller Remap: not all MIDI devices will respond to all MIDI controller data. For instance, Roland's D10 will not recognise MIDI controller #2 (breath control) but will recognise controller #11 (expression). Remap lets you translate one type of MIDI controller into another. Two remaps are available per connection. All continuous controllers from 0-31 and 64-120 are accessible and are named where names exist. Audio Architecture are going to have their work cut out keeping up with the MIDI Manufacturers Association who have just assigned some new functions and names. Also, it is a shame that aftertouch can't be remapped. Many synths do not recognise pressure data and it would have been useful to be able to convert aftertouch to, say, volume or mod wheel. Similarly, pitchbend could be remapped if the Most Significant Byte (MSB) were used. This would give 7-bit resolution and hence 128 positions for the wheel.

Clear: you can clear the processing links on any of the connections, one particular patch or the entire memory. As the manual warns "Careless use of these functions can severely damage your mental stability!". True.

SYSTEM FUNCTIONS

A PRESS OF the System button lights up the LED next to that button and offers the following:

MIDI: you can dump internal data to a librarian and then reload it. The output from which data will emerge can be chosen and the options are for all data, individual patches (you choose the one) and miscellaneous data (for the system data).

External MIDI Control: as would be expected, patches can be selected via MIDI program change commands. More interesting is the ability to change internal parameters by MIDI controller. This idea of addressing the values of parameters via MIDI is not new (effects units such as ART's Multiverb and Alesis' Quadraverb use it), but it's quite a novel facility for a MIDI patchbay. Up to eight parameters chosen from velocity value, delay time, repeat velocity offset and on/off switches for velocity, velocity cross switch/fade, transpose, delay and filter may be enabled. You can dictate which MIDI controllers on which input and MIDI channel(s) will address the parameters.

Footswitch: a push-to-make footswitch plugged into the front panel can be used as a reset button or to increase the patch number or start/stop the internal clock.

Clock: MIDI clock can be set on or off for each individual patch. The clock source can either be taken from the internal clock (where the tempo can be set between 40 and 240 bpm), or a MIDI clock from any of the first eight MIDI Ins. But why only the first eight? Perhaps this is a further hangover from the smaller unit. You can also dictate from which of the 16 Outs MIDI clock is sent.

Cue: there are 16 cues per patch, sent out when that patch is selected. Each cue transmits a MIDI program change and a MIDI volume setting from a specific output and on a specific MIDI channel if required. So you can tailor your system to set up the patches and volume levels of each synth by simply selecting an FJ patch. This is one of the unit's best features.

The other features are Copy, for duplicating patches, Write Protect and Name.

OTHER FUNCTIONS

THERE ARE OFTEN moments when you'd like to be able to hear precisely what an instrument is doing. Solo lets you do just that. By selecting an input or output, you can hear a specific module or connection.

The Enter button has two other modes. Pressing it once takes you to the monitor page where the 16 Outs and Ins are displayed onscreen. The numbers block out as MIDI data is received or transmitted. This tells you immediately where any problems are occurring. Pressing Enter a second time brings up the System Loading page. This gives a percentage figure of the weight of data currently being processed.

Finally there is a red reset button. A short press of this sends out reset commands for those functions most likely to cause hanging notes. This takes just over a tenth of a second and may well not produce an audible glitch. Prolonged holding of the button sends out individual notes off on each MIDI channel from each output. This takes nearly 32 seconds as a total of 98,304 bytes are transmitted. Expect a glitch.

IN USE

HAVING HAD FUNCTION Junction Plus running the MIDI side of my studio for the past six weeks or so, the results have been uniformly excellent. Even with 16 MIDI channels of data running, the system load meter rarely ventured above 40% and no MIDI timing problems have been apparent. The convenience of

being able to use different MIDI instruments and remapping MIDI controllers as necessary is difficult to describe. For instance, using the Yamaha WX11 wind controller with a synth which doesn't recognise MIDI breath control - which most outside of Yamaha don't - is normally problematic. Here, you simply remap the MIDI controller #2 (breath control) to controller #7 (volume).

It's true to say that a lot of FJ's facilities duplicate those of a sequencer - filtering, transposing, delaying and the like - but have you ever tried to emulate these features in real time as you need to when playing live? Having velocity crossfading move from one sound to another according to your touch on the keyboard is a fabulous option, as are many of the tricks that can be set up with the delays. The Function Junction can add to the creative process in ways you normally associate with a musical instrument - it really is that good.

There are, however, one or two points which still need to be ironed out: the software is inaccurate in places because of its origination on the eight-by-eight version. Also, when you attempt to make a 17th connection on the Plus model, it often doesn't even go to the warning screen. The contrast on the display dims as if a change is about to take place, but only occasionally does it do so. There was originally also a problem with MIDI dumping data - but this was fixed within one day of my mentioning it to AA. These were the only problems I could find in many studio hours of use.

VERDICT

BACK IN JUNE I waxed lyrical about Miditemp's PMM88 MIDI patchbay and still believe it to be an excellent unit. But Function Junction takes the principle a stage further. The unit has many excellent features, but the most important is the user interface.

While you won't need to look at the Function Junction manual very often, when you do you'll find it to be superbly written. Many of the major manufacturers would benefit from being made to sit in a room and read it to see how a manual should be written.

There have been criticisms raised in the course of this review, but as the manufacturer is close to hand (being British) I feel certain that changes will be made as a result.

At a cost of £699, Function Junction Plus has few, if any, rivals, especially bearing in mind the strength of its processing. The eight-by-eight model weighs in at £429 which is, perhaps, a little expensive for a unit handling just eight routes. Either way, the Function Junction offers you considerable power over your MIDI system with a level of convenience never before attained. ■

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BIG Blue Music

GIVEN THE CHOICE OF COMPUTERS AVAILABLE FOR MAKING MUSIC, WHO IN THEIR RIGHT MIND WHOULD CHOOSE AN IBM PC? THEN WHY IS PC SOFTWARE MOVING FASTER THAN EVER BEFORE? WHERE DOES THE PC FIT INTO THE MODERN MUSIC STUDIO? TEXT BY IAN WAUGH.

TOWARDS THE END of 1988, when it was time to look back over the previous 12 months and forward to the next, I wrote that 1989 would be the year of the PC music software boom. I was wrong. It didn't happen then and it hasn't happened in 1990. Now, I don't think it's going to happen in 1991 either but then I'm not Russell Grant. But what I do think is that PC music software is showing out and it will continue to do so during 1991 and for a good few years after that.

Some estimates say that the IBM PC and compatibles account for around 90 percent of all the computers in the world. Believe me, that's a lot of machines. Software writers write software for computers which have a large user-base. Around 50,000 PCs are being sold in the UK every month and if only a fraction of those are used for music, on top of the existing user-base, that's a pretty good market for software writers to sell into. That being so, one would expect the PC to be supported by the largest and best selection of music software. But it isn't. No, I'm not totally sure why either, but later in this piece I'll hazard a few guesses.

So what is the PC doing in the music market at the moment? Will it ever achieve fame, fortune, popularity and find true love? As I said, I'm no star gazer but let's check a few aspects, look at the opposition and see what we can forecast.

SEND IN THE CLONES

FIRST, LET'S DEFINE terms. What is "an IBM PC or compatible"?

When people talk about a PC they usually mean one of two things - a Personal Computer in general or an IBM PC (or compatible) in particular. Usually it's the latter.

The success of IBM's PC format led many other companies to produce compatible machines - clones. Well, that's the way of the world - the Japanese have made a fortune out of copying Western ideas. With the cheap labour in Taiwan, for example, it's not difficult for a manufacturer to land a PC clone in the UK considerably cheaper than IBM. It's called competition.

And the competition has been hotting up considerably over the past few years - and prices have been dropping accordingly. And we all know what that means: lower prices lead to more sales. Some companies, however - such as Acorn - stick resolutely to the belief that the public will pay a lot more for a little extra. Perhaps they will if they know exactly what they're paying for, but to most buyers a computer with pretty graphics is just a computer with pretty graphics no matter how fast it runs or how many bits it has to its name. Acorn's Archimedes could have wiped the floor with the Atari ST and Commodore Amiga if it had been marketed more aggressively.

The point of the analogy with Acorn is that, as the PC market has proved, people are quite happy to buy a non-IBM machine (or, to continue our analogy, a ST or Amiga) if it does a similar job. Enter Clive Sugars and the Amstrad clone factory. Although IBM - Big Blue to their friends - remain one of the major suppliers of PCs, sales figures for early this year showed that Amstrad are selling just as many. In fact, it's probably true to say that Amstrad have done more to ➤

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➤ popularise the PC in the UK - and reduce its price - than any other company.

A PC clone should run any software written for the IBM PC. Most do, although occasionally the odd irregularity will appear. The Amstrad 1640, for example, has its own mouse port which may not be directly compatible with all PC software. A case in point is MasterTracks Pro which requires a special mouse driver routine which seems to be one of the computer world's best-kept secrets.

CHIPS TO GO

THE PC FORMAT isn't just one specification either - it covers a multitude of sins. The system can be based on different processors which run at different speeds. The most common and popular ones are the 8086 (8-bit), 80286 (16-bit), 80386SX (32-bit chip with 16-bit data buss), 80386DX (full 32-bit chip) and the new 80486 (a 80386DX with 80285 cache controller and 80387 maths co-processor). A 80586 is under development and that looks like being based around a 64-bit chip.

The system can have different amounts of on-board RAM - 640K is standard although 286s usually have 1Meg and with a 386 you really need 2Meg or more. A range of different display resolutions is also available for which different monitors may be required. For serious applications - that includes music - you really need a hard disk, too.

The good news is that the individual parts which make up a PC are relatively inexpensive compared with similar parts for other computers - £200 for a 32Meg hard disk with controller, for example - eat your heart out, ST owners.

Although PCs are available for as little as £300, the smallest serious system will cost around £400-500 (without a hard disk) and you would need to pay £700-800 for something with more balls (based on the 8086) with a hard disk.

This variety within a single format causes another problem both for the software writer and the user. What configuration does the writer write for and will the software you want work with your system? Have you enough RAM? Is the screen resolution high enough? Do you need a hard disk?

Fortunately, most PC software will run on a fairly minimal system and a lot of it is designed to take advantage of features such as extra memory and enhanced graphics should it be fitted - so you generally get the best of both worlds. Before use, you usually have to run through an installation procedure which configures the program for your setup. So pity not the ST or Amiga owner who only has to worry about whether or not the software will run in half a Meg of RAM.

OS OR SOS

THERE CAN BE few people left in the world who will openly contest the notion that the PC is not an easy machine to use. Actually, like any computer, it's not the machine which is easy or difficult to use, it's the software. PCs run under an operating system called MS-DOS which is old, creaky and decidedly unfriendly. This isn't just my opinion. I have sworn affidavits from dedicated PC users, too.

Once you get the hang of it, however, the average piece of PC software is probably no more difficult to use than software running on any other computer. Use does breed familiarity as well as a certain amount of contempt. You see, early PC software was command- and menu-driven and most of it has stayed that way.

Now while this may be fine for people who have used the software from its inception and for people to whom MS-DOS is a way of life, it really isn't going to attract many newcomers to PC music land. I have used and reviewed what must now amount to well over 100 music software packages on a wide range of machines, and it's my opinion that a good graphic environment is worth its weight in manuals. Please feel free to disagree, but in the world of music (as opposed to the world of computers) I believe most musicians want to get on with the business of making music and a program with a WIMP (Windows Icons Mouse Pointer) environment can generally be assimilated quicker than one without. Plus, musos don't want to worry about installation procedures, batch files, graphics adaptor card compatibility and the like.

The good news, however, is that some software developers are now writing (and re-writing) their PC software to run in graphic environments (Passport's MasterTracks Pro, for example, runs under Windows) and I firmly believe this is the way to make PC music software more immediately useable and appealing.

OF MICE AND MUSIC

SO WHAT'S HAPPENING in the PC music software market? Well, music software has been around on the PC for a long time - it was probably the first computer to receive major music programs. Like the business software, most were command- and menu-driven and it has taken developers a long time to update the user interface.

Just to make my opinion on this matter absolutely clear - I'm not against command and menu-driven programs at all, but I find it far easier to use a program which has a well-designed GUI (Graphic User Interface). I have no doubt that most non computer-literate musicians will find a GUI easier to use, too.

The user interface is not a stationary concept - it changes as developers learn more about computer-human interaction - and the software developers which stay ahead are the ones which note the changes and improve their software. If you need proof, ask any Mac user. One thing they all comment on is how easy the machine is to use.

One reason for the lack of GUI development which has been suggested by my tame PC guru is that PCs have only recently become powerful enough to support them. GUIs require a certain amount of computing power and a machine running at, say, 8Mhz or perhaps even 12Mhz may not give the instant response and screen updates which you get with a text-based display.

Also, it can't have escaped your notice that most PC music programs originate in America where children are weaned on PCs. Consequently, the PC user-interface is second-nature to most American users. But if you want to run music software in America you buy a Mac. . .

However, PCs have certainly had the power for good GUIs for a few years, and the ST has shown what can be achieved in the way of music software in an amazingly short time.

The really hot news in the PC world at the moment is Windows 3, a GUI which even the detractors of Windows are saying nice things about. The feeling is that now, at last, we will see more PC programs running under GUIs.

GUI FOOEY

BUT USER-INTERFACES AREN'T everything. What about quality, performance and features? As a reviewer, I'm in the fortunate position of being able to try out a lot of software. In practice I sometimes use the piece of software currently under review for a project although, as I'm sure you'll appreciate, it can take quite a while to become familiar with a package - and for certain applications I find myself

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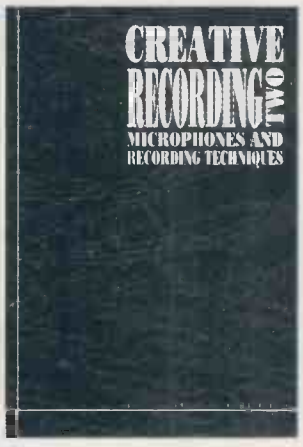

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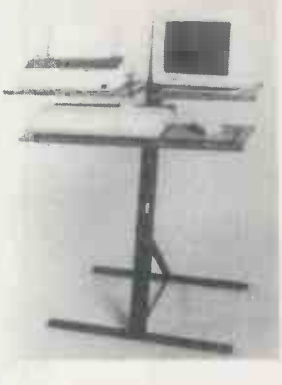

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➤ returning to C-Lab's Notator which runs on the ST.

Along with Steinberg's Cubase (once it gets its scorewriter update which I haven't yet seen) Notator represents the state of the art in music software. There is no comparable program for the PC - a fact which was even echoed by one of the PC music distributors. If you think there is, please let us know.

Is there any kind of music software which you can get on the PC that you can't get elsewhere - and cheaper? Probably not a lot, and without a leading-edge program there is little incentive to buy a PC primarily for music.

THE HARD AND SOFT

THERE ARE EXCELLENT music programs available for the PC. My preference for a GUI leads me to suggest you look at anything running under one, but if you're not averse to menu-driven programs you'll find many other powerful pieces of software to choose from.

But before you can run any music software you need a MIDI interface. If you can pick up an Amiga MIDI interface for £25 and Atari can fit one to an ST free, as it were, how come PC interfaces are so expensive?

Well, there's generally more to them. There's the plug-in card which, er, plugs in to the backplane and - and this, so they say, is the main reason - PC interfaces are "intelligent" in that they buffer the MIDI data, so relieving the software of part of the data-handling chore. Intelligence doesn't come free.

As you might expect in the PC world, there are several different interfaces on the market. It's most important to get one which is compatible with Roland's MPU-IPC MIDI interface - most are, but check. This has replaced the Roland MPU401 which used to be regarded as the industry standard. The good news is, the MPU-IPC is cheaper. (Hard to believe, eh?) The MPU401 cost around £250 while the MPU-IPC is £139. I know, you can buy almost half an ST for that. Still, the price is moving in the right direction.

Package deals are available at around £180-200 which bundle an interface with a sequencer and this can save you tens of pounds. Contact the PC music distributors listed below for details.

Most PC music software comes from America and, after running the gamut of all the various parties who need a slice of the action, they tend to end up on our shores costing the same number of pounds as they do dollars. Or perhaps the suppliers are charging what they think the market will stand. Software producers for other machines do, and PC software has always tended to be relatively expensive, primarily, I believe, because the PC has always been seen as a business machine and business means a corporate budget, which means big bucks.

Cynical? No, I'd say realistic. After all, these people are in business to make money. If people were prepared to pay £500 for *your* mega-blitz suite of office programs and you were achieving steady sales thank you very much, why would you lower the price?

But now, as PCs become more a part of the consumer computer scene and as this user-base increases and is seen to do so by developers, perhaps (fingers crossed) we shall see a reduction in prices. PC games, for example, are coming out at less than £30 compared with upwards of £40 not so long ago.

The last few years have seen the formation of specialist PC music software distributors such as MIDI Music, Computer Music Systems and Digital Music. All report that business is booming - well, they would, I suppose, wouldn't they? - and one, which also handles ST software, commented that ST music software sales seem to be taking a rest.

PC BUYER

IF YOU WANT a computer primarily for running music software, the PC is not the one to buy. Not yet, at any rate.

Of course, if you use a PC at work or college you may prefer to buy a machine with which you are familiar, and which lets you transfer files between home and work.

Ask an honest PC user which system you should buy and he'll tell you to get one which will handle your current requirements plus any foreseeable ones - you don't need a 32Mhz machine with eight Meg of onboard RAM for wordprocessing. However, even for wordprocessing, I'd hate to run a PC without a hard disk - most PC users consider them essential.

Although we mentioned the 8086 processor earlier, most pundits would recommend you go for a 286 minimum. If you were already thinking that way, then look at the 386. You'll need a 386 to take best advantage of Windows 3. The price difference now is quite small and you get more power for your money as well as a degree of future-proofing.

If music is your main aim and you have a couple of grand to spend you should take a look at Yamaha's C1, a portable 286 machine with built-in MIDI sockets.

1992 AND ALL THAT

IN SOME WAYS the PC is an anachronism. It was introduced in 1981, and while the basic concept of PC-compatibility has changed little since 1983, the machines have leapt ahead power-wise by several orders of magnitude. It seems to survive by virtue of its own inertia.

The PC was, is and very likely will always be primarily a machine for business - a sphere of operation in which standardisation means more than innovation. But, in its many forms, it has a lot going for it. It comes in an enormous variety of configurations to suit all applications and pockets.

With the recent launch of the 486 chip (a 486 machine will currently cost you over £2000) and the promise of the even faster 586, the PC of the future looks rosy. Windows 3 will enable developers to write PC software to challenge the Mac and the Amiga - but perhaps not quite the Archimedes (Acorn where are you?).

As PCs are, literally, constructed from separate bits and pieces, the machines are upgradable. So when new technology comes along you'll be able to replace your 486 processor with a 586, plug in a new graphics card, add more hard disk space and so on.

But what about the music? Well, I'm still a little surprised that PC music software is lagging behind that for the ST - perhaps I'll be proved wrong any day now - but there's still a lot of excellent stuff available. Check out MasterTracks Pro, Twelve Tone Systems' Cakewalk, Magnetic Music' s Prism and Texture, and Voyetra's Sequencer Plus. (Several of these have already been reviewed in MT - more to follow.) There is also a range of voice editors and even algorithmic composition programs - more details of these and other PC software can be had from MT's *Software Bible* which came free with July's issue of *MT*.

The only reason why the definitive music program is not available for the PC is that nobody's written it - yet. They didn't write it in '89. Or '90. Yet the PC is growing in popularity as a music computer. Perhaps '91 will be the year of the PC. Or '92. . . ■

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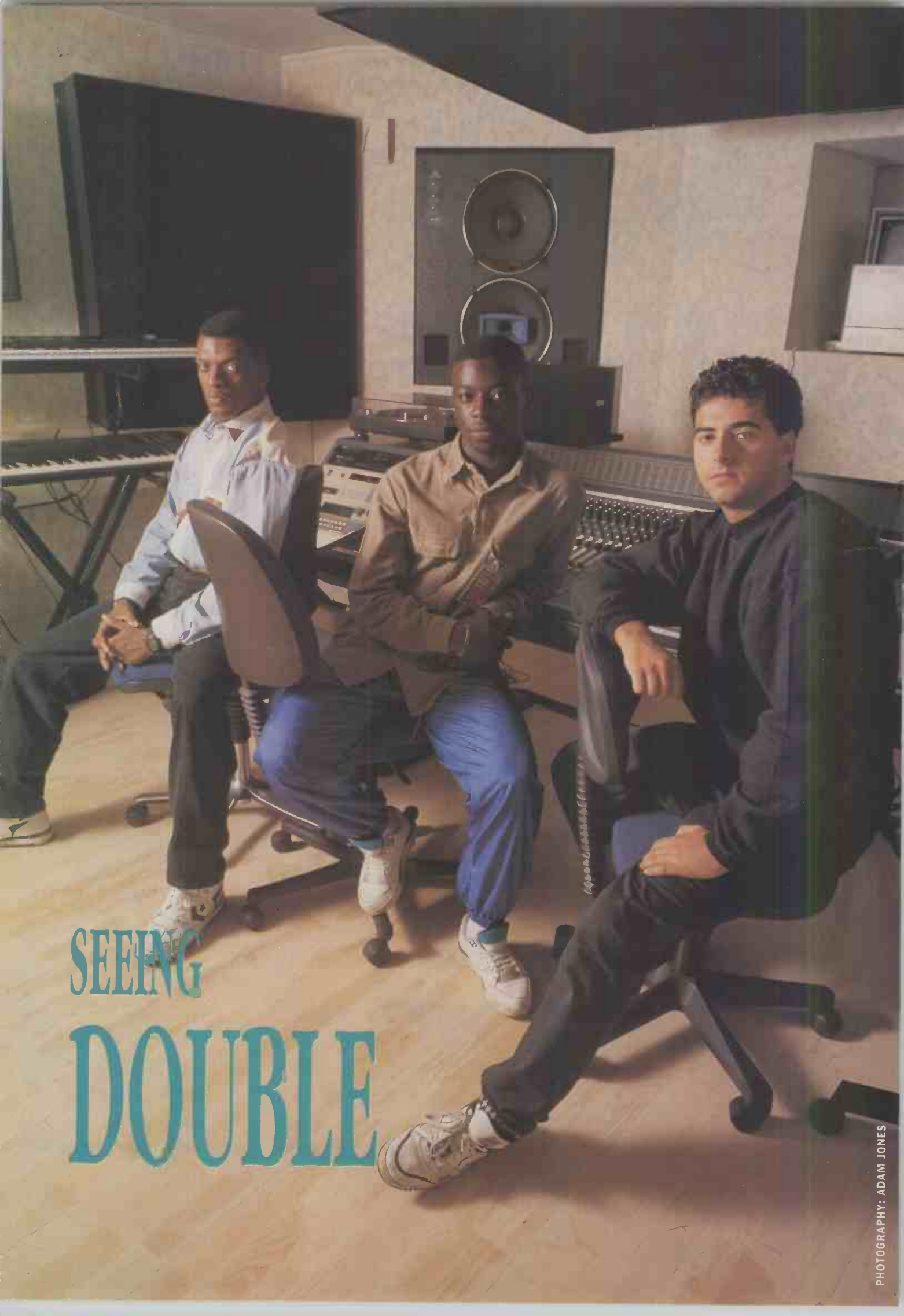

SEEING DOUBLE

PHOTOGRAPHY: ADAM JONES

From DJing and bedroom mixing in the early '80s to topping the charts and running a commercial 24-track recording studio today, Double Trouble are aiming for longevity in the music business. Interview by Simon Trask.

IT'S POORLY SIGNPOSTED AND A DANGEROUS place to be if you don't keep your eyes open. What am I talking about? Why, the road to success. Many travel along it, few reach their intended destination. Perhaps those most likely to find success are the ones who progress in a leisurely fashion, stopping off to make friends along the way.

If you're after success it helps to have a reliable vehicle with lasting appeal, one that might even be labelled a classic one day. A flashy vehicle might get you around more quickly, but your car stereo will be permanently tuned to Radio 1, and the barbie doll hanging in the window is likely to have cut loose for a solo career.

DOUBLE TROUBLE HAVE FOLLOWED A long and winding road to success, beginning in 1983 when founder members Leigh Guest and Michael Menson met at a North London college and, discovering that they had a common interest in the burgeoning electro music scene, set about learning how to mix records. Then they formed the Double Trouble Roadshow and began DJing at clubs and warehouse parties around London.

Seven years later, they're successful recording artists with several chart hits under their belt, a debut album just released and their own commercially-run 24-track studio in the heart of London. Located opposite Argents and a couple or so doors along from Rose Morris, Noisegate Studios occupies the building which once housed Denmark Street Studios. But where Denmark Street hosted groups such as The Who and The Kinks, Noisegate reverberates to the sound of dance music. Guitars and drumkits have been replaced by samplers and drum machines, and what was once the live area is now Noisegate's control room.

It's here that I meet the three core members of Double Trouble - Guest, Menson and fellow DJ/musician Carl Brown, who joined the group in '85 - to discover, among other things, how they managed to progress from owning a twin-deck disco unit to a 24-track recording studio equipped with the latest technology. Double Trouble's steady progression to success is in many ways typical of the young '80s musician - surrounded by synths, samplers, sequencers and drum machines and absorbing the Thatcherite entrepreneurial ethic.

The rock musos of old frequently blew their earnings on drugs and booze, and when they weren't driving Rolls Royces into swimming pools or trashing hotel rooms, they were running up massive studio bills recording *The Concept Album*. If Double Trouble want to run up massive studio bills, they can do so at Noisegate. But the studio isn't a plaything, it's a business which has to make money to survive.

Guest: "Secretaries and engineers need paying, so we've got to get in a certain amount of outside custom. When we use the studio, we charge ourselves for it via our record company, so if we spend 12 hours in the studio we pay for 12 hours."

"That's the only way you can tell what's being spent and what needs tightening up", adds Menson.

"Today", Guest continues, "if we weren't here we'd be working in another studio down the road, where we might not be getting such a good service, we might not get the hours that we want, we might not get the engineer we want - and we wouldn't be able to do an interview in the middle of the day."

The group readily appreciate how much things have changed for musicians in the past decade. And, as DJ/musicians who've been using technology since day one, they also appreciate the profound role which technology has played in the changes.

"Ten years ago you'd have to go to a record company with a demo before you could even think about getting into a studio", says Menson. "If they liked what you'd done and they thought you looked good they'd put you in an expensive studio with a producer, so you'd inevitably run up a big bill. Nowadays you can be the artist, producer and engineer all in one, and you can walk off the street into an independent label with a finished track and say 'take it or leave it'. People in our field have more control over their music because they are the producer, engineer and mixer as well as the artist."

There's a new generation of engineers coming through who are at ease with the technological paraphernalia of the modern hi-tech recording studio. However, when Double Trouble first ventured into studios back in the mid-'80s it was a very different story.

"It's depressing to think about some of the problems we've had", reflects Menson. "Like when you go in for a remix at 11 in the morning and you don't get the first drum pattern down until five in the evening because of syncing problems."

"This was in 48-track studios, as well", adds Guest. "A lot of it was down to incompetent engineers who just didn't understand and didn't want to understand about MIDI. That's what's so good about the engineers who work here: they're trained along dance music lines but can cater for other types of music. They're not scared to turn up the bass and make the needle go into plus six or whatever. It's the overall sound that counts."

It wasn't only unfamiliarity with the technology which Double Trouble encountered in their early days. Studios were also slow to latch onto the new ways in which technology was being utilised.

"It was natural for us to use a sampler for looping breaks", Menson explains, "but for someone who's been playing bass guitar or keyboards all their life, it must have seemed pretty weird. Back in '85/'86/'87 we went into studios to do remixes, but they weren't really ready for it. We'd say 'can you sample off a record?' and they'd look at us twice. They did have a record player, but it was in the corner in a drawer collecting dust, so they'd try to put us off. We always took along equipment from our home studio, because they wouldn't have proper decks, they wouldn't have Pro24, they wouldn't have a sampler. It was like there was a gap in the market that we had to fill with our studio."

When it comes to buying gear, Double Trouble have always had a clear philosophy.

"As soon as we took the decision that we wanted to get into mixing seriously, we got the Technics SL1200 decks and the best GLI mixer we could afford", Guest explains. "Because we always wanted the best, we always overstretched ourselves. We gave up a lot of our personal luxuries to get the gear together."

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doing", adds Menson, "so we want to have the best equipment around us."

The search for the best equipment means that next on the Noisegate shopping list is an Akai DD1000 stereo optical disk recorder.

"Optical disk recording is the future", proclaims Guest. "You've got so much versatility with it, and all your edits are non-destructive. I think we're going to be real sweet on that."

The group's first piece of hi-tech kit was a Korg SDD2000 MIDI-controlled sampling delay, which they bought back in 1985 along with a Korg DDM110 drum machine.

"We used to take the sampling delay out with us and do live sampling off records, which was quite unheard of at the time", recalls Guest. "We developed our own system of cueing. Even then we used every piece of equipment to the maximum. Our mixes were getting away from straight turntable mixing and into tape editing and adding samples. The equipment we had was quite basic, but we did the best we could with it. We knew every piece of equipment inside out and more. We utilised certain features on the sampling delay that other musicians wouldn't have though about using. That's always been a key element as far as our production techniques go, trying to do things which are original."

Money from running the mobile enabled the group to invest in more equipment, such as a Fostex Model 20 two-track tape machine.

"Tape editing became our forte", continues Guest. "We'd do quarter-inch edits, dub that onto cassette, then record from cassette back onto quarter-inch while adding samples live on top. From there we decided that we had to get a Portastudio."

At that time, Guest was working in a club which just happened to be situated below dance music label Serious Records. He saw his chance. . .

"I was in this record company every single day helping them out, mailing out records, running errands for them, just to get in with them. Eventually they let us do a mix for them. They paid us £100 for the first one. Whenever we did mixes the money went straight into our studio."

Encouraged by this success, they decided to make the studio a paying concern, and Noisegate was officially born in January '87. The premises were modest, however.

"The studio was in my bedroom", explains Guest. "And my bedroom became a cupboard."

By this time they had a Roland Alpha Juno 1 synth (used mainly for triggering samples on the SDD2000), a Yamaha SPX90 effects processor, a Yamaha RX21 drum machine and a Fostex 250 multitracker. To make some money, the trio started doing jingles and adverts for pirate radio stations.

"We were using scratches, sound effects, delays and echoes. . . To a pirate station it was out of this world. We sold jingles for £4 for one voice-over. The average jingle takes 40 minutes to voice and edit and put onto cassette, so it wasn't economically viable, but it was getting us in with a all the pirate radio stations like LWR and Rock to Rock. When bigger things came along like adverts and gigs we got ourselves in on them.

"The work wasn't massive, but it was a steady stream. There was one year, '87 I think, when I didn't see much club life for four or five months because of doing jingles. We had to service the stations because we knew they'd look after us in the future. At the moment we're preparing a jingle package for KISS FM, which is very important for us to get, and that's the fruits of our labour. We'll only get the job now because we're so experienced in doing jingles."

"And we dealt with them when they were a pirate station, so they give us respect now", adds Guest.

In '87 the group bought their first sequencer, a Yamaha QX5, and a Roland S220 rack-mount sampler, raising the necessary cash by putting out a couple of bootleg mix records called 'Supermix' which were made to look like US imports.

"Another thing we did to earn money was give turntable mixing lessons, which advanced into studio techniques", Menson says. "This was when we had the Portastudio, and there were a lot of people who wanted to get into sampling and recording. We offered them a service where we'd show them how to use a Portastudio and a sampler as well as how to mix. It was teaching them to be what we call a DJ/studio engineer."

By this time the group were also doing remixes, and in '88 they had chart success with their remix of Bam Bam's 'Give It To Me', which was done at Noisegate.

"It was first edited onto reel-to-reel, then bounced onto the four-track, with samples added live on top of that", recalls Menson. "It's personal satisfaction when that gets into the charts alongside tracks done in 24-track and 48-track studios."

Eighty-eight also saw the trio moved to eight-track with a Fostex Model 80 and Studiomaster Stellarmix 12:8:2 desk, while on the sequencing side they invested in an Atari 1040ST and Pro24 III. In exchange for doing jingles, they were also able to get hold of one of the first Sony TCD10 portable DAT machines in the UK, giving them a digital mastering facility in an eight-track studio.

One of the first tracks the group recorded on their eight-track setup was 'Cockney Rhythm' with East End rapper the Rebel MC. This also became their first single, released on the independent B-Ware Records label. Mixing up reggae and hip hop in a raw, earthy style at a ➤

EQUIPMENT LIST

24-TRACK STUDIO

SEQUENCING
Atari 1040ST computer
Steinberg Cubase sequencing software

RECORDING
Alesis graphic equalisers (2)
Alesis Quadraverb fx processor
Aphex Aural Exciter
Citronic mixer
Drawmer DS201 noise gates (2)
Drawmer DL221 compressor
Eventide H3000 harmoniser
Focusrite 115HD EQ
Lexicon LXP5 fx processor
Lexicon PCM70 reverb
Saturn 24-track analogue multitrack and remote
Sony DTC 1000ES DAT machine
Soundtracs Quartz 32-channel desk with MIDI muting and Trackmix fader automation
Urei 813C monitors
XRI XR300 SMPTE/MIDI synchroniser
Yamaha NS10 monitors
Yamaha SPX1000 fx processor (3)

INSTRUMENTS
Akai S1000 sampler (with Syquest hard disk)
Akai S950 sampler
Ensoniq VFX synth
Roland D110 synth module
Technics SL1210 turntable
Yamaha V50 synth

time when house music was all the rage, the single suffered from poor distribution and didn't do at all well. Were the group dispirited?

Menson: "We knew we had good foundations, and that's come through for us. We've progressed from the four-track cassette to the eight-track, then to 16-track and now 24-track. We've always gone up step by step. A lot of people jump straight into using 24-track, but there are tricks you can learn from using an eight-track and a 16-track. It's been important for us to go through every stage and learn it inside out."

The group decided to try another single with the Rebel MC, 'Just Keep Rockin''. Following a thumbs-down from all the majors, they were taken up by another independent dance label, Desire Records. The single went on to become a Top 20 hit all over Europe and big club hit in America, while the subsequent single 'Street Tuff', again with the Rebel MC, became not only a Top 10 hit around Europe but the biggest-selling UK rap record.

It was after they'd demo'd 'Street Tuff' that the group decided it was time to wave goodbye to the bedroom and set up a commercial 16-track studio in proper premises.

"We'd had the eight-track for quite a while", Guest explains, "and we decided to set up a business plan with the bank, get a cash-flow forecast and all the usual things. We had to prove that it would be a good business. It took two or three months to convince the bank, but in the end we got the loan."

Originally promised a site in Islington, they had all the gear ready but were let down a day before they were due to move in.

"Then we found this place, which was an absolute khazi", continues Guest. "Nobody had been here for a year and a half when we moved in, which was last September."

Although the trio had professional advice and supervision every step of the way, all the rebuilding work was undertaken by themselves and by friends with building skills. Coming right in the middle of 'Street Tuff''s success, they found themselves hustling building materials one moment and performing on *Top of the Pops* the next.

Initially a 16-track studio with a Tascam MS16 tape machine and Soundtracs PC MIDI desk, Noisegate has since been upgraded to 24-track status with a Saturn analogue multitrack and Soundtracs Quartz desk. However, as well as the 24-track studio they've also provided a more modest eight-track studio, not wanting to break with their old clientele. While the 24-track gets bookings from majors like Virgin and MCA (Adamski was in for several weeks working on his second album) and is used by Double Trouble themselves, the eight track - which the group refer to as the DJ Programming studio - generates a steady stream of business in its own right.

"It was busy from day one", says Guest. "We built the eight-track studio like the old place in south London, so that it had the same feel."

DOUBLE TROUBLE'S DEBUT ALBUM, *As One*, features vocalists Janette Sewell (who sang on 'Street Tuff' and used to be a backing singer with Simply Red) and rappers The Rebel MC and MC Silk. Each vocalist has been given three tracks, leaving one an instrumental. It's a nicely varied album, yet all the tracks have the distinctive Double Trouble style.

"It's important to have variety", Menson states, "because a lot of people perceive dance bands simply as housey beats or a Soul II Soul groove. Our influences come from soul, rare groove, hip hop, funk and reggae, and that's come out in the album. At the same time we felt it was important not to use loads of different artists, because then there's no continuity."

While their gear has steadily increased in sophistication, the group have managed to keep a raw sound which suits their style of music.

"It's down to effective use of sampling technology, and the way we treat our sounds", explains Menson. "We do use samplers a lot, but that's not to say that we sample other people's basslines all the time. What we do is sample sounds that we like and then create our own music from those sounds."

So rhythm loops don't figure prominently in the group's music?

"In the early days we used to depend on loops quite a lot", Menson replies, "but we've been doing this for quite a while now, so we've progressed. There's a lot of special tricks we use which are hard to explain. It's not even trickery, it's just developing a sample and a sound."

Noisegate isn't exactly overflowing with synthesisers. Only an Ensoniq VFX, a Yamaha V50 and a Roland D110 rackmount grace the studio - no old analogue synths to be found. It turns out that the group have all the synth sounds they want, old and new, sampled and stored on hard disk.

"These days you can buy sample CDs with the sounds of different synths on them, you don't have to get into editing sounds", explains Guest. "Things like the D50 are hard to program, and most people use the presets. We mix together the sounds from two or three different synths to make one overall sound. To make a brass sound we'll use one sound from the V50, one from the VFX and another from the Akai sample library."

Similarly, drum machines don't figure in the scheme of things - again, sampling has replaced the dedicated machine. Additionally the group have hundreds of electronic and acoustic drum sounds recorded on DAT tapes. As with synth sounds, the group layer different sounds to get what they want.

For Double Trouble, working in the studio means everyone being able to turn their hand to whatever's required, as Menson explains:

"One day I'll do the programming, then the next day Leigh will be programming. It's not 'we need some drums, Leigh get over there', it could be either one of us. It's the same with the keyboards and the samplers."

And how do the group set about putting a track together?

"It's normally working up from a drum and bass foundation", Menson replies, "although we like to think of a concept first. For example, 'Just Keep Rockin'' was about warehouse raves, and that's why there are shouts in there and it's very pacy. It's quite a basic track but it's very effective, like a lot of the

EQUIPMENT LIST

DJ PROGRAMMING STUDIO

SEQUENCING
Atari 1040ST computer
Steinberg Cubase sequencing software
Steinberg Pro24 III sequencing software

RECORDING
Aiwa double cassette deck
Alesis Quadraverb fx processor
Drawmer compressor
Fostex R8 8-track recorder
Fostex Model 20 2-track recorder
GLI mixer
Gemini mixer
Roland Alpha Juno 1 synth
Studiomaster Proline 16:8:16 desk
Sony TCD D10 portable DAT machine with digital mic
Vestafire RV3 reverb
Yamaha SPX90 fx processor
Yamaha NS40M monitors

INSTRUMENTS
Akai S900 sampler
Technics SL1200 turntable (2)

➤ warehouse grooves are. When you know the idea behind a track you can see there's a reason behind the way we do our drums and so on."

Once confirmed Pro24 III users, Double Trouble have been using Cubase since January. Menson is considerably more enamoured of the software than he is of the computer: "I hate Ataris, they're forever crashing. Cubase is really easy to work with, though; everything's clear and concise, and you can see what's going on. We have the v1.1 update, which has things such as Auto-save, which combats the dangers of the computer crashing. We've used quite a few different sequencers. C-Lab is good, but Cubase is better for our way of working."

The 24-track studio is well equipped for handling MIDI-controlled muting. As well as Cubase's internal track muting, the Soundtracs desk has automated muting which can be controlled via MIDI from Cubase, using program changes for snapshots and notes for individual channel mutes.

"With dance music you have things cutting in and out, and with rap music the whole backing track has to drop out on occasions", comments Guest. "We've done it manually in the past, but now with the computer automation we can put more time into creative ideas. Also, we tend to have sequenced parts running continuously through a song and then mute individual tracks within the sequencer when we need to.

"For our own work as Double Trouble we only put vocals on tape. Everything else comes live off the sequencer, because we have enough channels on the desk. We'll have 48 channels by the middle of August."

In what has become a very common move, the initial release of the group's most recent single 'Love Don't Live Here Any More' was followed closely by a 12" of remixed versions done by the likes of Blaze and the Dynamic Guvnors - all take different approaches. As well-established remixers themselves, what did Double Trouble think of this situation?

Guest: "It's up to Blaze what they want to keep, but obviously they want to put their own mark down as remixers, as would we. We've just remixed the Snap single, 'Ooops Up!', and all we did was use the vocals and a couple of parts that were on the original tape. But that's what's required of a remixer. You don't just take out the bassline from the first 12 bars of a song any more, there's a new era of remixers and producers."

Menson feels that the remix mania will die down as remixers naturally progress to become producers.

"The remixers who have been doing good remixes are now being called in as co-writers and producers", he explains, "and I think that's the way things are going to go. Many tracks have been saved by remixers, so if you think someone's good as a remixer, why not get him in to produce the track from the outset?

"Dorrell and Macintosh do really good remixes, but are they remixing or are they producing? When you're remixing, you find out the good parts and the bad parts of a mix and you accentuate the good and take out the bad, which is production. A lot of good remixers are getting respected as producers, now - especially in America, but it's starting to happen here, too."

With the album out, Double Trouble are planning to do some live shows.

"We're going to do a quarter-playback type thing", explains Guest. "We're not going to go on stage and pretend to play bass guitars. We are the musicians of today - technological musicians, I suppose you could say. We've played all the parts you hear on our own tracks; we don't sample a piano part, for instance. When we're sequencing, everything's played in live. Sometimes we slow down the computer for tricky parts, but we always play in parts live. Although we started out as DJs, we picked up keyboard playing as we were going along. And of course, The Rebel MC, Janette and MC Silk can all do what they do live. Janette recorded the vocal for 'Love Don't Live Here Any More' in one take."

IT'S CLEAR FROM TALKING TO DOUBLE Trouble that they've never adopted a short-term view. One way or another they plan to be involved in music for some while to come.

"It's important to have longevity", Menson agrees. "That's paramount in all of our minds. We spent a lot of time on the album. We could have knocked one out before Christmas, but it wasn't important to do that. It *was* important to do an album which we felt would stand the test of time."

"Because we're so meticulous and critical of our own work, we knew the album was going to take us a long time", continues Guest. "I thought 'How on earth are we going to make ten tracks the standard of a 'Street Tuff' or a 'Just Keep Rockin'"?'. A lot of people would see that as pressure, but we see it as part of the fun of making music.

"We made 'Just Keep Rockin'' specifically for the clubs and for the love of doing it, and we've had the same attitude with the album and with everything else we've done. If people don't want to pick up on it, fine, but we know that there are people who appreciate the time that you spend on something. A lot of dance bands these days just churn it out, they have one hit and they're gone. This is our third hit in the UK, which must show some sort of continuity and longevity. Now we've completed our first album, and that's a milestone for us."

But while much has changed for Double Trouble over the years, it seems that some things never change.

"The inspiration hasn't really changed", says Menson. "When someone appreciates what you're doing, it gives you a buzz, and you want to do even better next time. When we were doing the Double Trouble Roadshow in the early days and creating our own live mixes, we'd get people coming up to us wanting to know where they could 'buy the record', and we'd say 'Actually, it's a mix'. And we're still on the same buzz that we were on in 1983."

Guest. "The love of the music is the most important thing. Music started out as a hobby for us, and that's the way it is now, a serious hobby. We're in here seven days a week. We know we've given up a lot of luxuries to be here, but if you make music that's good then any money you make is going to come in the future anyway."

And if there's one thing Double Trouble seem assured of, it's a healthy future. ■

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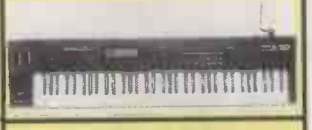

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MTC1

Until now, sequencing and tape recording have been regarded as complementary, if not alternative, systems. But Fostex' MTC1 promises a new age of integration. Review by Vic Lennard.

WHEN FOSTEX RELEASED the R8 in 1988, it followed in their tradition of providing good quality eight-track recorders at an affordable price.

One of the major advantages the R8 has over its predecessor, the Model 80, is the removable front panel. This serves as a remote control for the unit without putting you to the expense of having to buy an extra box. However, Fostex obviously had other ideas regarding remote control which few of us suspected. When I reviewed the R8 (MT March 1989), I made a passing comment about the serial port being for "future use of a Model MTC1 MIDI Time Code controller." Read on, the future is here.

OVERVIEW

THE MTC1 HAS three main functions; a SMPTE timecode read/write generator; MIDI Time Code (MTC) for synchronising to/from sequencers which will send/receive MTC; and a function which allows all operations of the R8 to be controlled by MIDI event messages.

Physically, the MTC1 is a small black box which attaches to the rear of the R8 recorder by a couple of screws. Connection is by a short lead which plugs into the serial port and power is derived from the recorder, with a red LED to show that all is OK. An LTC (Longitudinal Time Code - generally SMPTE to you and me) Out connects to one of the track inputs (usually track eight) to allow SMPTE to be written to tape. The output from this track then plugs into the LTC In, with a green LED to show when a signal is being received. In addition, there are the usual MIDI In/Out/Thru sockets, with another green LED next to the MIDI In to show whether the received message has been recognised by the MTC1.

Finally, there are eight switches, termed Mode Set, arranged in a small block. These set the following: MIDI channel to receive on (switches 1-4), adherence to the set MIDI channel or acceptance of data on any channel (switch 5), acknowledgement of remote control commands from MIDI event messages (switch 6) and the SMPTE frame rate (switches 7 and 8).

Although MIDI Time Code was covered in the March 1990 issue of MT, a brief recap might be

helpful here. In short, SMPTE code from tape is translated into hours, minutes, seconds and frames. This allows you to work in terms of time both on tape and sequencer instead of having to convert into bars and beats as with SMPTE.

MIDI REMOTE CONTROL

ANY OF THE R8's functions can be controlled by MIDI note events using the MTC1 - for example, it's possible to hit a C2 (note 48) on your keyboard and see the R8 go into play mode.

As there are a large number of functions which can be carried out, the MTC1 uses a single note on for the most common operations and two notes on for those which are used less often. A C2 note sets the R8 into play, F2 rewinds, A2 puts the R8 into fast forward, and C3 stops the recorder in any mode. G2 puts the R8 into cue mode for monitoring from tape, and keeps it in this mode while the key is held down. On release when the note off is received, cue is turned off.

For other operations, a key denoted Shift must be held down while the key denoted Normal is pressed. So to select a track for recording on, B4 (note 83) has to be held down while either C1 is pressed for all tracks to be put into record mode, or a note between C#1 and G#1 (corresponding to tracks 1-8) is pressed for a single track. Interestingly enough, notes A1 through G#3 are reserved for tracks 9-32. A sign for the future?

For the purposes of this review, if accessing a function requires a Shift key followed by a Normal key, it will be written in the order Shift-Normal. For instance, to select all tracks for record, the sequence would be (Shift)B4-(Normal)C1.

The R8 has a good selection of loop modes. These facilitate playing, recording and the like each time the loop restarts. The MTC1 supports all of these. The sequence F#4-F3 turns loop mode on, A#4-C#3 selects the loop start, while A#4-D3 selects the loop end point - real-time control with a difference. Once you have set the loop points, you have two options: stay in playback mode (G#4-C2) or record on any selected tracks (G#4-C#2). The R8 also offers you the ability to loop and change the monitoring from tape to input at a preset record punch-in point, then change back to tape monitor after the record punch-out. This is called Rehearsal mode. To achieve this using the MTC1, set the loop points and the location where record will take place. Punch-out (B2) drops you out of record but keeps the tape running until the loop end and then rewinds to the loop start.

Certain MIDI commands are used in a way that is, strictly speaking, outside their true meaning. Local control On/Off usually divorces a keyboard from its internal sounds. However, the MTC1 uses Local On/Off to remove control of the R8 from the front panel. All Notes Off turns off any MIDI note events currently controlling the MTC1, while Omni On/Off effectively operates switch five on the Mode Set block. This then allows for MIDI commands on any channel to be recognised.

SPECIAL COMMANDS

SOME FEATURES OF the MTC1 are unique to it and do not exist within the R8.

Probably the most important of these is the Time Reference selection. This decides the method by which the MTC1 will be time-locked. The standard method is to lock the MTC1 to the SMPTE code on tape while the tape is running, and to tach/direction information when in rewind or fast forward (this is especially useful when running in sync with a low-band U-matic video machine). The Tach option allows you to remain locked in sync while in frame-hold mode as LTC is only used when the U-matic is playing. There are three other options; SMPTE only, which would be used with a sequencer but non audio-visual (A/V) system; tach/direction only, for locking to a non-SMPTE-based A/V system, in which case whatever is on the R8 is not truly locked to the system; MIDI Time Code only, for locking to an external MTC generator other than the MTC1. MTC1 also outputs Direct Time Lock for those of you fortunate enough to have an Apple Mac running Mark of the Unicorn's Performer.

> "In my 'umble opinion, if you're using Cubase and an R8, you cannot afford to do without the MTC1 - it will revolutionise your working methods."

All R8 punch In/Out and cue points can be saved to an event list - the only problem being that these figures have to be requested from the MTC1 by a SysEx command. However, the manual carefully lists all messages, and many sequencers will allow you to set up SysEx messages byte by byte. Once saved to a computer, you can reinstate these for future use.

IN THE FIELD

HAVING READ THIS far, you might be thinking that using the MTC1 is more bother than it's worth - and if you had to control all MTC1 functions solely by MIDI note events, I would probably agree with you. R8 owners working without a sequencer will probably find that life is easier without an MTC1.

However, once used in conjunction with a sequencer, the MTC1 really comes into its own. You can set up the functions that you need on certain tracks of your sequencer, and move them to specific places within a song when you need them - no more having to worry about whether that punch-in is going to work. You can then set up the sequencer in rehearsal mode, test it as many times as you like, and go for the take. The sequencer does all the awkward button-pushing for you. Even without using MIDI Time Code - there's every chance that your sequencer will not respond to it - the MTC1 is indispensable for anyone with an R8 and a sequencer.

Of the current range of sequencers for the Atari ST, ➤

only Cubase can currently utilise MIDI Time Code. Consequently, Fostex and Steinberg have worked together on the development of the MTC1 unit.

With SMPTE on tape, and MIDI Time Code being output by the MTC1 and received by Cubase, the result is a synchronised system which is difficult to beat. Steinberg have written a MIDI Manager page for the MTC1 to let you select functions on screen, including the more awkward facilities like cue and punch points. Consequently you can operate the R8 by using the mouse or from the computer keyboard while the system is locked.

Not only that, but Steinberg have created a software driver for the R8. For instance, if you move to bar 25 and click on the Play icon, the R8 shuttles to that point and the system starts up in sync. With this and Cubase's MIDI Manager page, which can co-exist on screen, you never need to touch the R8's transport controls. Admittedly, if you want to play in MIDI data from a keyboard, you'll need a MIDI merge box, but this is a small price to pay for this level of sophistication.

However, without the ability to turn on the SMPTE generator from the front panel of the R8, you need to set up a time offset based on the display reading on the R8. It's no big deal but worth a mention.

VERDICT

CONSIDER THE PRICE of a stand-alone MIDI Time Code generator/SMPTE read/write unit and then add in the remote control facilities. How much would you expect to pay - £300-400? The pleasant surprise held by this system is that the RRP of the MTC1 is £189 including VAT.

In my 'umble opinion, if you're using Cubase and an R8, you cannot afford to do without the MTC1 - it will revolutionise your working methods. Even if you're using another sequencer, the MTC1 is still a good buy if you're prepared to spend some time setting up the various MIDI messages for remote control.

The MTC1 can also be used with the new Fostex four-track recorder, the 280. This will provide all of the R8 features including full remote control of operation and MIDI Time Code synchronisation. The latest machine to be launched from the Fostex stable is the G16 (the replacement for the E16) debuted at this year's APRS. This has an optional MTC1-style unit/synchroniser board available, with MIDI sockets on the rear panel. This will make it a 16-track tape complement to Cubase. And are Fostex hiding a 24-track MTC compatible machine up their corporate sleeve? What of the other Software houses - how long will it be before another sequencing package incorporates MTC, and becomes a possible partner for the R8/MTC1? Only time will tell, but the Cubase/R8/MTC1 system is with us now and offers a new level of sequencing and tape integration. ■

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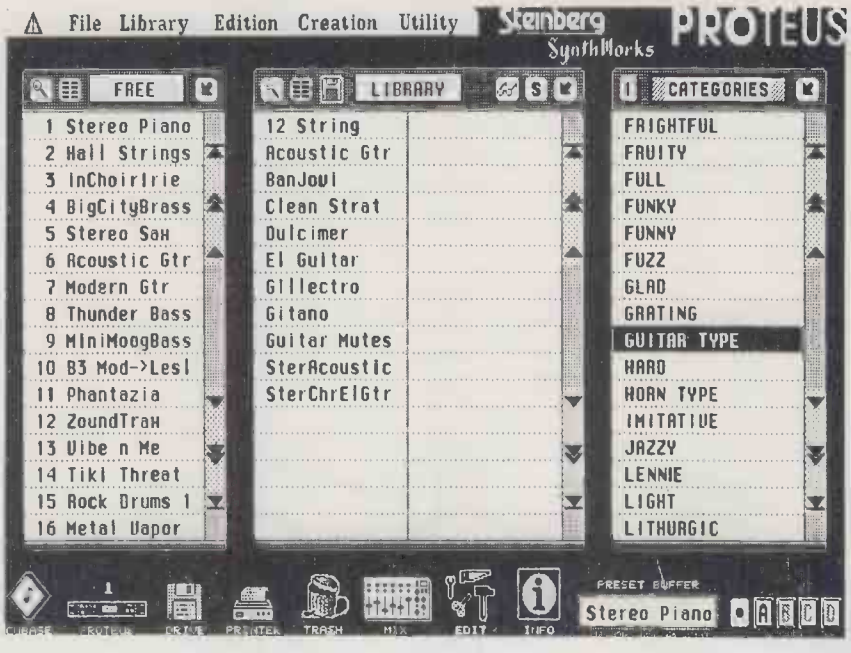
PROTEUS SYNTHWORKS



Continuing their line of excellent Synthworks editors for instruments like Roland's D10, D20, D110 and MT32, Steinberg have unveiled an editor for E-mu's Proteus sample reader. Review by Vic Lennard.

LAST YEAR STEINBERG came out with some excellent Atari ST visual editors - their Synthworks series for Roland's D-series synths. Latest in the company's Synthworks series is Proteus Synthworks, intended, not surprisingly, for E-mu's popular Proteus sample reader. Does it live up to the standards set by its forerunners?

On boot-up (with the usual Steinberg security dongle), you are presented with the edit page for the preset. All edits pertaining to the preset, including MIDI and real-time modulations, are shown here, and yet the page appears to be uncluttered. This is partly because of the way that pop-up windows are used for a variety of the edits.

Much of the page is self-explanatory and uses the idea of tones on the left-hand side flowing through to outputs on the right. Clicking on Keyboard Range brings up a keyboard so that you can actually set the key range in the most convenient manner, while a click on one of the envelopes fills half of the screen with an enlarged version of it for easier editing. Here you select from eight starting envelope settings and drag the boxed corners into the required positions. You can call up either of the other two envelopes without having to exit from the one you're currently working on, and also have the option of stretching or compressing the envelope by the use of the appropriate pair of icons. But the most stunning feature here is displaying changes of each envelope corner in terms of time, SMPTE frames or bars/beats, taking tempo, time signature and start point into account

as necessary. This allows you to lock the character of the envelope onto the piece of music which it is being used with. Excellent. Back shows the original shape underneath the current edit while Undo restores the original.

Tones are selected from a pull-down menu and are shown by category. The adjectives assigned to each tone (see later) are shown at the top of the screen as you select it.

The modulation system used by Proteus is not unlike that used by analogue synths of yesteryear, and Steinberg have obviously decided to make this a feature of their editor. The eight blocks of modulation sources have "jack plugs", and any function which can be controlled by either real-time, MIDI or LFO modulation has a "jack socket". It works in a similar way to Digidesign's Turbosynth: using these you can "plug" one module into another - if the socket is capable of accepting the plug from the particular source, a small box opens showing this fact. Click on any plug and its current locations are shown, while a click on a socket indicates any plug currently inserted into it while the cursor changes to a pair of scissors so that you can cut the connection. It's graphic, intuitive, and definitely more fun than a table full of numbers. Finally, Patch Info shows all patches at the same time and again gives you the scissors icon to edit them.

PERFORMANCE EDITOR

AS PROTEUS IS a multitimbral expander capable of playing up to 32 notes in total on all MIDI channels, the obvious screen layout to adopt is that of a 16-channel mixer. And this is precisely what Steinberg have implemented, screws and all. The visual aspect is rather good with a push button to mute a MIDI channel, a rotary for pan and an extremely smooth fader for volume. Click on the channel number for solo. Again it's an entertaining approach which is quick 'n' easy to use.

LIBRARIAN

THE LIBRARIAN PAGE is made up of three windows. The left-hand window shows the current bank of 64 presets. The centre window diplays the disk library whose entries can be made up of individual presets, banks of 64 presets, tuning scales and performances. The flexibility of this system cannot be underestimated. When reviewing previous Steinberg editors with the "semantic" approach - using up to eight adjectives to describe each sound - I have been left with the feeling that a lot of work would be necessary to label each sound and yet the usefulness of the system was still limited. However, what we have within Proteus Synthworks is a totally different kettle of fish. Up to eight labels (from a list of 255), the date and a comment can be saved, and you can sort them by the above three criteria or by name, tone component or a combination of any of these. Also, when you make selections on the preset edit page, the labels appear at the top of the page. This interaction between the pages is a genuinely useful feature and, while it will take time to set up the library properly, the benefits of taking the time and trouble quickly become apparent. Available computer memory space is split between the sequencer and the library and you can set the size of each division.

Some of the facilities within the library are fairly standard - moving, swapping and so on - and separate libraries can be merged. You can even import entries from one library into another. Finally, because the Proteus allows you to link up to three presets to the current one, these links can be saved as part of a preset and can then be sent to the unit upon selection.

CREATING PRESETS

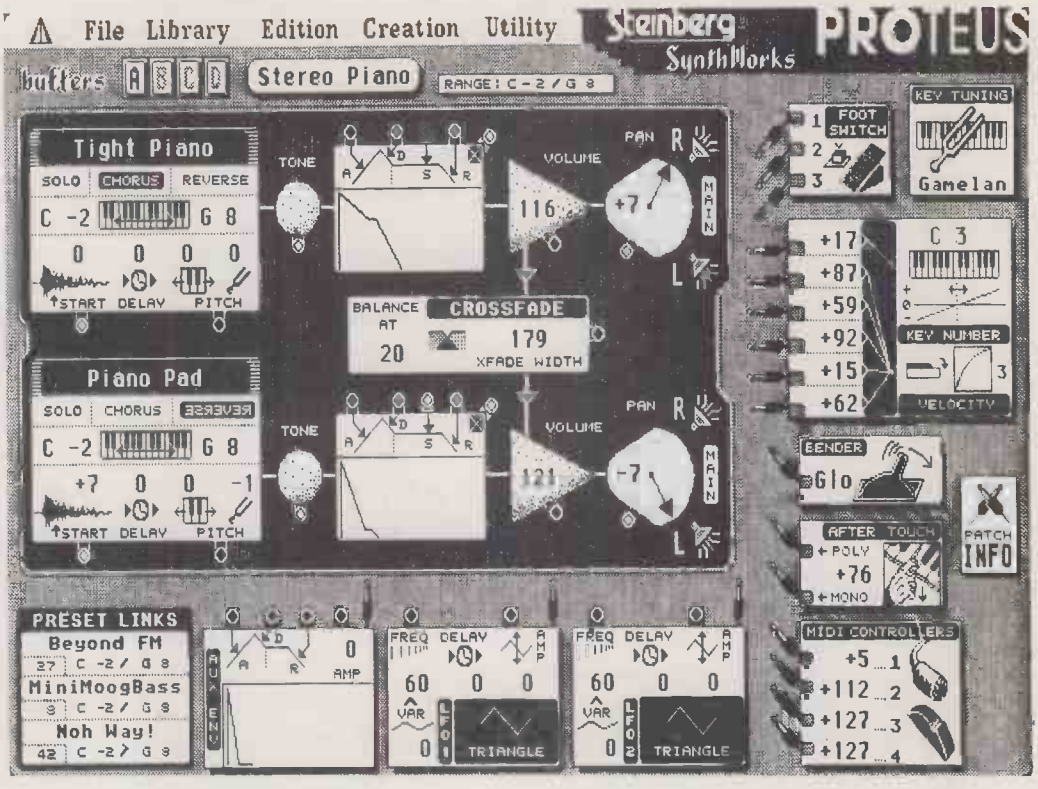
EDITORS FOR MOST synths can randomise and mix sounds to good effect if the algorithms are musically designed. The problem with the Proteus is that the tones themselves cannot be edited - meaning that standard randomising techniques are unlikely to give useable results. The first method that Steinberg have used is derived from previous editors but the others are rather more ingenious.

Quadratic Mixture sounds like something a maths teacher might prescribe. The presets from the four buffers are placed in the corners of a square and you govern the "mix" by the position of a cross within that square. Quantise doesn't change the values of the parameters but selects more from the preset at the nearest corner and least from the furthest. The selection of parameters is random so that a different result will occur each time, even if the cross is in the same position. Non-Quantise looks at the values of the parameters and creates a linear mix of them, again dependent upon the distance from each preset. The new preset is immediately sent to Proteus so that you can hear it. If you like what you hear Store it, otherwise Return and begin again.

"The modulation system used by Proteus is not unlike that used by analogue synths of yesteryear, and Steinberg have obviously decided to make this a feature of their editor."

Puzzle Creation cuts and pastes the values of the parameters in a chosen preset to another preset. You can either create a single preset or 16 of them, including names. To have some degree of control over the process, Define Graft Map allows you to set up a mask from the 13 areas of a preset map while Transplant then carries out the creation process. Sounds to me as if someone's been watching too much *Casualty*.

The randomising function is called Sound Processor. This gives a selection table for each parameter with the following headings; Depth, the amount by which a value can be changed;➤



➤ Threshold, the value that has to be exceeded for the parameter to be affected; Mode, whether depth value is Relative (%) or Absolute (amount); Quantise, the figure of which the depth must be a multiple; Type has three selections, Off, Linear - any value within the depth range can be selected, Shaper - select a curve via Edit Curve to influence selection. Finally, Output affects the final value: Free, the value is whatever has been calculated; Range, only takes values within a range defined in Edit Range; Quantum, will either take the calculated value or up to seven others which you can select. You then have the choice of Preset one or two, the first gives slight modifications while the second is for the more adventurous of us.

It is difficult to imagine a more comprehensive randomiser than this. Indeed, referring to it in terms of a random generator is unfair because you have a high degree of control over the end results. Admittedly it is the very nature of Proteus which makes this so effective, because there would be far too many parameters to effect in many other synths.

MISCELLANEOUS

THERE ARE THREE other edit pages to be found in Proteus Synthworks - Keyboard/Drum Tuning, Master (global) Settings and Preset Map. Saving any edits in terms of system exclusive involves selecting between five options: as a Cubase track at the current memory position if running under M.ROS, a Pro24 pattern, a MIDI file, raw SysEx for use with another sequencer/librarian or as a program file which allows itself to be executed from the desktop. Also, you can save a single preset either with its links, with a performance, with a tuning scale or with everything. This flexibility is as much down to the Proteus's MIDI Implementation as to Steinberg's ingenuity.

Proteus Synthworks' onboard sequencer records at a resolution of 1/96th ppqn, is MIDI file compatible and files can be loaded from/saved to a Pro24. There are keyboard equivalents for the screen commands, a pop-up keyboard which can send out pitchbend, aftertouch and modulation as well as playing arpeggios, and various manners in which you can edit the values of parameters using the mouse, Atari keyboard and external MIDI controllers.

Finally, there is an excellent onboard manual which you can either read through by selecting a topic or use the Help mode by pointing to specific items.

VERDICT

STEINBERG'S PROTEUS SYNTHWORKS is so comprehensive that I am bound to have missed something in my travels. It is based on the same premise as their other editors - if enough is packed into the editor there is unlikely to be anyone who can turn round and say "why didn't you incorporate. . .".

Yes, there are likely to be many features that you won't use, especially if you are not doing your sequencing with Cubase, but each page of the editor is easy to use as well as incorporating a degree of fun. When I reviewed Proteus (MT, November '89) I mentioned that there were some excellent presets inside just waiting to be discovered. This editor is probably the one that will help you to find them. ■

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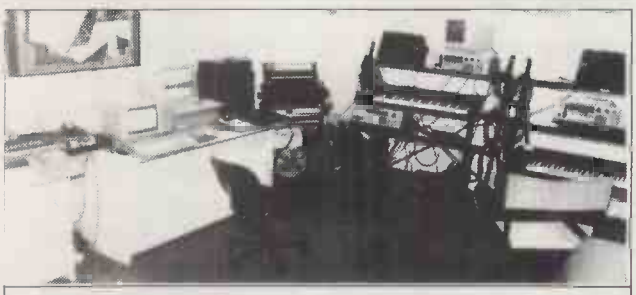

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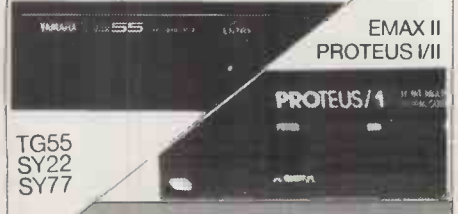

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80 DAYS

ONCE DESCRIBED BY PETER VETESSE AS "A GLORIOUSLY FLAWED INSTRUMENT", THE CS80 REMAINS ONE OF THE MOST UNRELIABLE YET SOUGHT-AFTER ANALOGUE SYNTHS OF ALL TIME. TEXT BY PETER FORREST.

FROM ITS RELEASE in January 1978 (after only a two-year development period) the CS80 was a mythical beast. It was such a monster that you never quite knew whether what people told you about it was true. There was stuff about it weighing more than a tone-wheel Hammond, and more stuff about Yamaha having to redesign it with differing value components depending on how close to the centre of the machine the component was, so that massive differences in temperature could be catered for. First some facts.

Number one: my CS80 doesn't get especially hot, but it is monstrously heavy. If you can imagine trying to lift Demis Roussos you'll know the sort of proposition. It weighs precisely 100kg, according to the handbook - roundabout the same as the L100 Hammond Keith Emerson used to massacre years before. In context, that's equivalent to seven JX10s. Don Snow, ex-Squeeze, ex-Sinceros keyboard player, and such an aficionado of the CS80 that he provided the review in *Keyfax* (the keyboardsman's secondhand bible), recalls several occasions when he had to manhandle his CS80 up and down stairs on his own, to get to a recording session. The technique going down was to hold it upright, ease it to the edge of the step, and then let gravity take over. Going up was the reverse of that, with him supplying the motive power instead of gravity. (He also tells of the time that he tried to get the beast into the back of his Reliant Robin, but that's another story.)

It's pretty easy to see why the CS80 weighs so much. For a start, it's built into its own flightcase; second, although the keyboard isn't very long - the 61 notes that has become the usual synth standard - it's very solid, with a well-engineered weighted action that's getting on for half-a-metre from front to back. Third, everything else about its construction is also ultra-solid. Fourth, if you ever manage to look inside, you'll see that it's packed tight with by far the most elaborate and dense analogue electronics ever seen in a synth. What this adds up to is an instrument which is great if you can keep it one place, but a roadie's nightmare (literally, in one case) if you want to take it anywhere.

The CS80's internal construction is really one of the most crucial elements in the story. There's so much more crammed into it than even its near contemporaries, like the Prophet 5 or the OBX (let alone a modern synth), that it looks as if it comes from a different era. And that was both its beauty and its downfall.

Back to the facts. In modern terminology the CS80 is an eight-voice machine, with two VCOs per voice, but it's really two separate eight-voice synthesisers operated by the same keyboard. Each synthesiser, or channel, has a really comprehensive range of controls. You have a choice of sawtooth and/or square waves, with sliders for

adding sine wave or white noise. The square wave has three PWM sliders, to control the speed, the intensity and ratio of the modulating pulse.

The resultant wave combination can then be modified with a comprehensive filtering arrangement. High and low-pass filters are available, both with resonance controls. You've then got the usual ADSR controls, plus an extra attack level control. (Generally, Yamaha do a good job with making the CS80 intuitively easy to get to grips with, but their terminology here - Attack Level and Initial Level - is a mess.) The VCA is controlled by seven sliders, governing the amount of signal fed from the sine wave and/or VCF, the ADSR, and the overall level.

The CS80 doesn't have a proper split facility, but you can layer the two sounds and determine how the touch sensitivity (both velocity and aftertouch) is going to affect the VCAs and VCFs for each of them - velocity crossfading, in effect. The aftertouch, by the way, is polyphonic - like the Prophet t8 - so that pressure on one note affects only that note, not any others you're playing at the time. It goes a long way to making the synthesiser potentially as full of nuance and expression as a guitar.

The keyboard's versatility doesn't end there, either. You've got four levers to control how brightness and volume change across the five octaves. The other main performance control is a 510mm long pitch ribbon above the keyboard - which takes some getting used to after pitch wheels, but has a lot to be said for it, particularly as there's no detent - you just slide from wherever your finger first hits the ribbon. There's no modulation wheel - Yamaha obviously reckoned that with polyphonic aftertouch provided, you've got no need for one. Fair enough. (The pressure needed for aftertouch, incidentally, was described by Rod Argent as like doing weight-training; but it's no worse than a JX10.)

Other controls that come easily to hand include sliders for setting up overall brightness and resonance and controlling the mix between the two sounds; for setting portamento and sustain times, and for setting each channel's coarse tuning (in octaves or fifths) as well as detuning channel two. There's also a chorus/tremolo unit with variable speed and depth; and switches for portamento or glissando, and for making the supplied foot-pedal a volume control or a combined volume and filter pedal.

You can also decide whether the footswitch (supplied) should switch between portamento and glissando, or should act as a sustain pedal. The more you look at this instrument, the more clear it becomes that it was designed to be the ultimate performance instrument. More's the pity, then, that its sheer bulk and its awful reliability record, meant that so few were ever actually produced.

I sometimes wonder if all CS80's are as bad as each other when it comes to reliability. Perhaps somewhere there's a charmed example that sits in state in someone's studio and never goes out of tune, loses its presets, gets dirty keyboard contacts or goes ape on its keyboard sensitivity. If you find one like that - not one that's just been painstakingly serviced, but one that just doesn't ever seem to need servicing - then it's worth a fair bit of money.

It's more likely that you'll see CS80s advertised as "not totally working", with a "tuning problem" or needing "attention". If you've got the space and cash available, should you be tempted? I'd say yes - as long as you don't want it as your main synthesiser, or indeed as an instrument that you can rely on. But if you want a source of staggering off-the-wall stereo sounds, you've got to give it a go. Let's face it, with so many people having access to quality cheap technology it's the old stuff that's going to make your music sound different. Old stuff obviously includes instruments like guitar and sax - and voice - but it also includes more unusual synthesisers becuse they'll help give you individuality in an age of mass production. remember: you can solve problems of unreliability with a sampler.

You might still be wondering what makes the CS80 so special. OK, it's old-style analogue throughout where more recent "analogue" synths are either digital/analogue hybrids or use a master oscillator, so that all voices are phase-locked and lack those minor phase and pitch discrepancies that make sounds special. But that still leaves it serious competition: the Prophet 5, the Oberheims up to the OB8, the Memorymoog. What sets it apart from them?

Well there's the quality of the panel hardware and keyboard, plus the versatility of the performance options available from the keyboard's touch sensitivity. (None of the above list of classics even has velocity sensitivity.)

The quality of most of the CS80's preset sounds (when they're working) is definitely up there with the best analogue synthesisers ever produced, and while you are stuck with them for ever - no ROM changing or even cassette access - they're fair sounds to be stuck with. It's fascinating talking to different people about their favourite of the 22 available (from chunky illuminated buttons at the centre of the machine). Everyone is enthusiastic or even fanatical about several of the presets, but no two people have the same preference. All the presets have their merits, even if, for example, 'Guitar' doesn't have much in common with anything with a neck and six strings.

You do have a certain amount of programmability, with the potential to set up two sounds on the synth's controls, and a further four on miniature sliders that lurk under the block diagram on the top left of the machine. The sliders are small, and it's not easy to get that precise position that makes the sound how you want, but like all the hardware on the machine, they are such good quality that anything is actually possible.

Six programmable sounds to work with doesn't seem much, but it seemed pretty good in early 1978 against the non-programmable monosynths and the Polymoog (one memory, I believe). It seemed good until the Prophet's 40 memories (which were a good deal less reliable than the CS80's) appeared.

Even with such meagre memory, the beauty of the CS80 is that there are so many ways to articulate its voices. I've metioned touch sensitivity and the chorus (analogue - warm and instantaneous in the way outboard chorus isn't), but maybe the best thing of all is the ring modulator section. It is this that helps give the CS much of its "organic" character.

The Prophet 5 scored with its poly-mod option, but the CS80's ring mod is a cut above in its ease of use and variety of sounds. You have five more dedicated levers to play with, and they produce a range of effects that are easily as good as the Prophet's, but a whole lot simpler to control. One sets the amount of modulation - and seems to change the wave-form as well; one sets the oscillator speed - from about 0.5Hz up to a few hundred (that's a guess, because the manual is laughably unhelpful). What that means is that as well as the really off-the-wall ring-mod associated with putting two pitched sounds together, you've got a wide range of LFO-type ring modulation that's actually usable in melodic contexts.

Perhaps the most exciting bit comes from a combination of the other three levers: Depth controls the extent of an automatic sweep of the ring mod oscillator, and Attack and 'Decay' control how long this sweep takes to get to and ➤

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from maximum. In practice it's easy to use, and the results are stunning. It's possible to set the same effect up on any patchable synthesiser system, from a Roland 100M to a Matrix 12, but how often would you do it? On the CS80 it's there by your left hand - so you use it.

Someone else who loved the CS80 is Vangelis - come to think of it, his version is probably still in good order. In December '84 (after almost everyone else had "gone digital"), the Big V admitted to Dan Goldstein (in this very mag) that the CS80 was the best analogue synthesiser ever produced. Presumably, with the arrival of the Prophet t8/Synclavier, and master keyboards of real quality like the KX88 and MKB1000, he will have had to revise that judgement by now; but it's strong praise by anyone's standards.

The list of admirers of this instrument is long, and although the problems of portability and reliability mean that no-one in their right mind would now take a CS80 on tour, there are still a great number of people who look back on it as one of the great synths. Users included Brian and Roger Eno, Herbie Hancock, Andy Mackay, Kate Bush, Rick Wakeman, Klaus Schulze, Peter Vetesse, and the BBC Radiophonic Workshop.

Yamaha originally pitched the CS80 around about the £5000 mark, and it didn't get discounted that much because it was the leader of the day and rich musicians and record companies were willing to pay up. In real terms (as they say on party political broadcasts) that must be equivalent to around 12 grand today.

It's tempting to try to get hold of a CS80 that's less than perfect, and therefore cheap, and restore it. But be warned: inside there are 35 circuit boards all packed with components, and all hard-wired. Just to pull one circuit board out involves 30 or 40 unsoldered connections. If you were to go through just those boards at the back one by one, you'd need to unsolder and resolder well over 1200 joints!

The situation is made worse by the fact that Yamaha designed lots of custom LSI chips for the CS80 - two digital for the keyboard, and eight analogue for synthesiser control. You can get hold of some nowadays (by special order from Japan) but not all. Which makes it a bit tricky if the one you need doesn't exist any more. All you can hope to do is get hold of another (dead) CS80 and cannibalise it, hoping that the same bit hasn't gone down on that one as well.

Should you decide to take on such a task and need a little help, Yamaha say that although they don't normally service CS80's, they could do one in an emergency. They also say that most parts are still available from Japan. Their labour costs are about £20 per hour. If that sounds too steep, or you're not claiming "emergency" status, London's Synthesiser Service Centre are quite confident that they can deal with any problem that comes up - in most cases without having to order special parts. Labour charges this time come in at £32.50 per hour. (See contacts at the end of this article.)

But despite all the problems, people don't seem likely to give up on the CS80. One defective CS80 advertised for sale recently was snapped up by people who were prepared to come over from Sweden, transport it back there, and then get out the soldering iron and scope. It looks as if analogue synth technology is going to make it into the 21st century. ■

Contacts: *Yamaha-Kemble, Tel: (0908) 371771; The Synthesiser Service Centre, 6 Erskine Road, London NW3, Tel: 071-586 0357.*

demo takes

"Is it what the record companies are looking for? Is there a future for me?" asks Bristol-based MT reader **Andy** of your all-knowing demo reviewer. And, not content merely to enquire, he boasts that Shakatak's Nigel Wright is very impressed with him and reckons our Andy to be a very talented songwriter - of course, if this was an exaggeration on Andy's part, he's well and truly in it now. But enough of the sparring, let's get the cassette machine cranked up.

The first of three tracks, 'Stepping on Foreign Land' opens with the kind of lift from a hi-fi test record that has been flogged to death by the dance fraternity - "I am speaking from the left, I am speaking from the right", and so on. So Andy's another derivative disciple of dance. . . Well, actually the song quickly settles down to be a pretty catchy pop/dance track that isn't entirely offensive. Track two, 'Tomorrow', casts Andy in an early (read good) Duran role, and the closing cut, 'Take Me I'm Yours', confirms the boy to be stuck right in the middle of the commercial dance battlefield. Now, much as it pains me to agree with anyone from Shakatak, the songwriting is actually well up to scratch - for the genre, that is. Well-structured songs with tidy arrangements and *good* melodies are obviously Andy's strength.

There are, however, two significant failings of *The Demo*, as the demo is ingeniously entitled. The first of these concerns Andy's voice. While the melodies are good enough to distract your attention for a while, once you get past them and listen to it, there's not a lot to get excited about. Even the gentle flanging that's been employed to help bed the vocal into the rest of the track becomes more of an irritation once you've spotted it.

The second area of disappointment is the production - this is particularly sad as Andy declares it to be a point of pride in the demo. While the Korg M1 and EX800, E-mu Emax, Yamaha TX81Z and Roland MKS20 are all ably managed (as are the Commodore 64/Steinberg Pro16, Fostex R8, Seck 24:2 and assorted outboard gear), the sounds in general - and the drum sounds in particular - lack the final touches that distinguish a demo from a vinyl release. There's nothing wrong that the help of a capable producer wouldn't put right, but I'd hold fire on that intended independent record release if I were you, Andy.

And from Andy we move to **Aunty**. (I just love tacky links.) The man From Aunty is Wolverhampton's Paul Wetton, but why he should want to call himself Aunty is well beyond my meagre ken. It's certainly not some pop sales pitch, as Paul's declared interests are in audio-visual work and "to do my own concept album". Leaving the concept album in the sleeve for a moment, the first of the five tracks here is an atmospheric mix of sustained Kawai K1 chords and moody electric bass (the real thing). 'Where' moves uptempo; a Roland TR505 trips along behind some funky bass tricks and a little (real) electric six-string. '7even 8ight Wash' shifts up another gear - not in tempo, but in the transformation of the funky six-string into a Santana-style sustained lead. The drum programs and bass work follow the mood changes nicely and are complimented by some tastefully sparing keyboard work (from the K1 and a Yamaha DX21). Less appealingly than the previous tracks, 'Rollo' has something of a humorous/ungainly feel to it. and it's a relief to hear it make way for 'Train Off Th (Pt 1)'. The latin feel of the percussion, tasteful murmuring funk bass and sustained string chords here make a fitting backdrop for some solo fretless bass work. I suspect Paul is justifiably proud of his bass playing.

Flawlessly recorded onto a Tascam Porta One (and transferred to DAT for duplication), the undoubted aim of Paul's demo is to showcase his musical versatility. Largely he succeeds; I can imagine the music here adapted to fit a variety of musical situations. On the strength of this tape alone, however, there's no doubt that Andy's talent lies with his grooves rather than the ability to turn his hand to any musical style that may be demanded of him. The real value of anyone tendering for A/V work is going to be their ability to meet the brief. I'd suggest that development of some of the ideas here (only one of the tracks approaches three minutes in length) would be a more satisfying, if potentially less lucrative direction to take. But what do I know - a funk concept LP might be only a short '70s revival away. . .

Without any question, *Song Title of the Month* goes to **The New Art Movement**. But '2 Def 2 Dance 2' is just about as good as it gets. For a moment, when the TB303 kicked in and the samples started to fly, I thought I was dealing with a serious acid attack, but I was wrong. Instead, East Grinstead's Paul Wilson has composed an horrendous piece of junk pop that would have been labelled tacky the best part of ten years ago. Not content with that, he's recruited one of the least capable female vocalists and one of the most unconvincing rappers in East Grinstead to help him deliver it. The result is badly conceived, badly timed, badly executed - and badly received.

Now I don't want you thinking I'm being unreasonably negative about this, so here are a few facts. First the gear list: Ensoniq ESQ1 synth, Roland S10 sampler, Roland TB303 Bassline, Roland SVC vocoder, Oberheim DX drum machine with TR808, 909 and Linn chips, Tascam 80-8 eight track, Revox A22 two-track, Alesis Microverb, Roland SDE1000 delay, Dynamix 16:2 desk, Aphex Type C enhancer, and so on. Now a taste of the lyric: "and when you hear this beat/you'll have to move your feet/the sound is way too sweet/for you to hold back". Perhaps most painful of all is hearing a vocoder introduce "bass", "grand piano" and "Angela", *Tubular Bells* style.

It seems somehow sacrilegious that such a mountain of good gear should have been used to create such a musical monstrosity. I know people who'd kill - well, maim at least - to have this sort of stuff at their disposal. I guess the moral of the story is that the gear does not the music make.

Fortunately it's not all bad news from The New Art Movement - there was only one track on the demo. ■ ***Skum***

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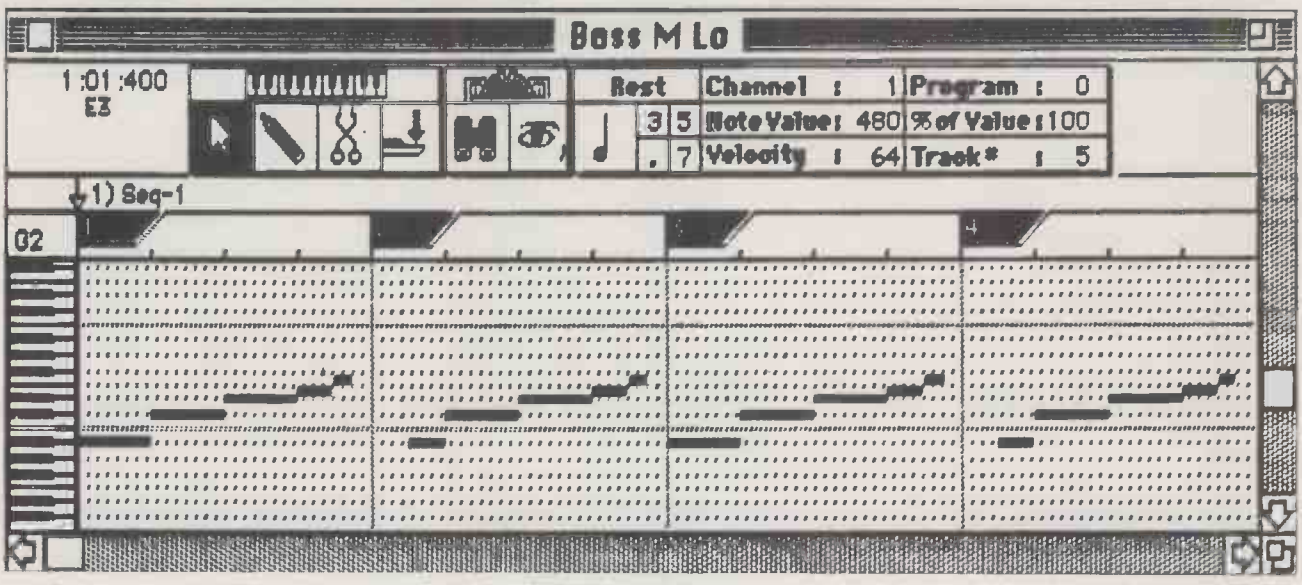


There's not usually much activity on the Mac sequencer front - the major programs are established and well liked. So what sort of reception can Dr T's new Beyond expect? Review by Mike Collins.

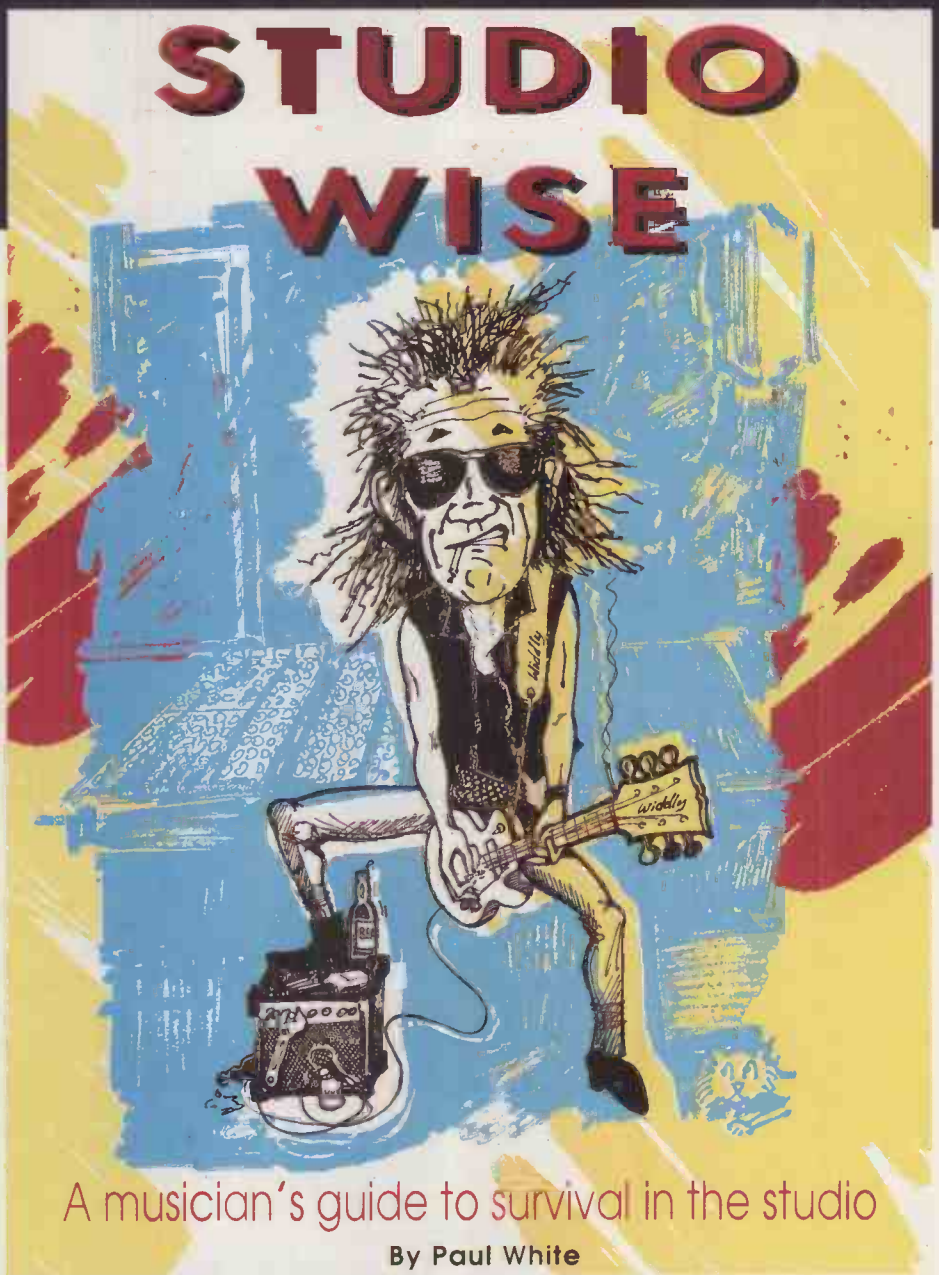
WELCOME TO THE world of professional Macintosh sequencers. Generally accepted as the preferred music computer (being more powerful and reliable than other personal computers, but costing considerably more), there isn't usually music software action worth reporting on. While there's a new budget sequencer for the Atari every other week, Mac sequencers are capable, reliable, established. It's an unusual event to receive a new arrival - but that's what we've got in Dr T's Beyond.

Unfortunately, the review copy was pre-release and came without a manual, so the first test for Beyond was to establish how intuitive the program is. It quickly becomes obvious that designer Jeremy Sagan has been influenced heavily by the competition - MOTU's Performer, Opcode's Vision, and Passport's Mastertracks Pro. Being familiar with all of these, I recognised that parts of this program had taken their inspiration from the others. It's good to see that, in many cases, the designer had done his best to improve on various aspects of the user interface compared with the competition. For instance, in common with Vision, most of the edit parameters can be altered either by selecting and over-typing the value you want, or by selecting the parameter and moving the mouse up to increase or down to decrease it. Most parameters could also be altered using natty-looking up/down arrows, and some parameters can even be altered using on-screen sliders as well. I felt that the action of the mouse and the up/down arrows is somehow smoother than Vision's.

One of the things which impresses me about Beyond is that all the windows can be re-sized to occupy very small areas of the screen, more so than Performer's windows, and much more so than Vision's. This becomes quite important when working on the Mac SE's small screen. The general look of Beyond's screen graphics is very attractive, and I prefer it in many ways to Vision's, although it still doesn't top Performer's extremely chic look and feel. But let's get to the features.

The menus are extremely logically organised, so let's start with the Setup Menu. First comes the MIDI Setup dialogue box with the usual options to set MIDI Port and Clock Rate, and then the first individual feature of this program. This is a pop-up menu which lets you choose whether you want to use a 480ppqn resolution, or 384ppqn, 240ppqn, or 192ppqn. I believe a similar feature is available on Dr T's previous Macintosh sequencer, KCS Level II. The next menu selection brings up the SMPTE box to set frame rate and SMPTE offset - no surprises here, but more logically positioned than Performer's which is rather hidden away in a mini-menu. A neat touch in the next menu selection is a Notepad window with a simple text entry facility, although this doesn't support the standard Macintosh Cut/Copy/Paste edit commands. I feel that this could be improved upon, perhaps even offering a printout facility. But

STUDIO WISE . . .



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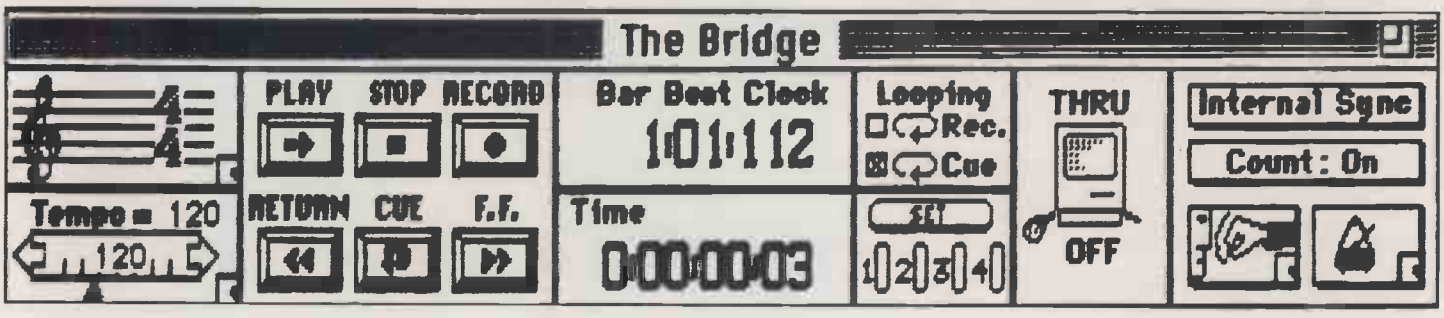
➤ the next selection is sound - Controller Chasing. This defaults to off, but lets you choose what you chase - just how Performer does it. Sequencers such as Vision, however, force you to use the feature even when you don't want to.

And it gets better. Vision has very powerful selection criteria which enable you to selectively accent particular beats within a bar, for example, but it's fiddly to work out how to use. Beyond's Selection Filter makes this obvious at a glance. This is just the kind of user-friendliness which you need from a computer, rather than something which makes you break your right brain creative flow to stop and analyse with your left brain.

The next step is to check out the Record/Play options. This dialogue box offered choices to set up count-off bars both before recording or before playback - helpful to have this choice - and the option to wait for the first incoming note before switching into Play/Record. A Record/Loop setup dialogue allows choices between a "multiple-take" mode or a "song-building" mode, and how many tracks to allocate when loop recording. These were the first options I encountered which were not completely intuitive. The last menu selection here is a Record Filter, something which has become standard on most Mac sequencers.

Importing a song saved as a standard MIDI File (created in Vision) is a straightforward procedure, and everything comes across OK including Track Names, SysEx data, and Markers.



CLOSE TO THE EDIT

THE GRAPHIC EDITING window is very clear and easy to read, with a grid system to help you identify timings and pitches. The notes were displayed as horizontal bars with lengths representing the note values, and at heights representing the pitches.

A click on any of these brings up an event editor dialogue box to let you adjust the note's parameters numerically. A pencil tool in combination with a "palette" of note values makes note entry using the mouse easy, although an option for MIDI keyboard note entry is available as well. There is also a Display window which shows a list of events at their bar locations, similar to Performer's event editor window.

It was here I came across my first real disappointment with Beyond. When I clicked on a note here to edit it, I was thrown into the graphic editing window, where I had to click on the note (admittedly with a cursor conveniently placed just before it to identify it) to access the event parameters in order to adjust them numerically. In other words, there is no proper event list editor (as on Performer, Vision and Mastertracks). Although many people may prefer graphic editing, I find event-list editing about ten times faster.

Back to the menus. The next set were intriguingly labelled Switches. This is another extremely logical positioning and grouping of features found on other programs, but sometimes hidden away. These are: Hide/Show Grid for the Note Editor window; use Single or Double click on the graphic note display to call up the event edit dialogue box (useful if you are mainly using graphic editing and want to avoid accidentally bringing up a numeric dialogue); SMPTE/Bar display toggle for the edit windows; Selection Filter on/off; Synchronised Scrolling of the graphic display, (though not smooth scrolling as on the ST Virtuoso sequencer); Show/Hide SysEx in the Note Editor window; and Velocity Stems on/off. This last feature is a great new addition to the graphic display which adds a thin stem at the start of every note which is longer or shorter according to the velocity. Definitely a neat way of giving visual feedback, and something which I'm sure musicians used to looking at conventional music notation could adjust to quite quickly.

Staying with the menus, we come to the Windows menu. The first selection here brings up a Memory window showing the number of bytes available for recording. Next comes the Sections Window. This contained 32 sections, which I reckon can hold either sections of a song to be strung together elsewhere, or even different songs. A Tracks Window is available for each of the sections, and there are 99 tracks provided in each of these. Time to check out the Tracks Window more closely. . .

My Vision-originated sequences came up in Section 1, occupying about 18 tracks. The layout here reminds me of a combination of Vision and Mastertracks Pro. Columns at the left let you select Record, Mute, or Solo for each track; then there's space to name the track, followed by a check box to select looping for the track, and a box showing the number of bars to be looped in the track. Continuing across towards the right of the screen you'll find selection boxes for the Instrument. These are rather similar to Vision again, you get a pop-up menu when you click on any of these boxes to let you select a pre-defined Instrument consisting of a choice of modem or printer port/MIDI channel with a name of

your own choosing (entered in the Instruments window) to help you get your sounds organised.

There are scroll bars at the bottom of the screen giving you access to a track editor window similar to Mastertracks Pro's. This lets you see the Tracks laid out horizontally, with darkened sections showing where there is actually data present in them. This system is one of the easiest for making changes to the tracks as a whole, using the standard Macintosh Cut/Copy/Paste commands on selections made by pointing, clicking and dragging to highlight the bits you want. The Markers I had set up in Vision appeared here above the Tracks Window, which was OK, but I did find myself missing Performer's dedicated Markers window which also serves as a kind of autolocator by moving the sequence to the bar location when you click on the individual markers.

How about Continuous Controller editing? Until I met Beyond, I reckoned that Mastertracks Pro had the best graphic editor for this type of data going. Now I actually prefer Beyond's Controller editing. It's much easier to draw in controller data in Beyond than in any of the other Mac programs (most of which now offer this feature).

While I was messing about with this, the Transport Window was jumping to the bar location of the data I was editing. I, for one, have been crying out for this very feature, because I invariably want to check the effect of the edits I'm working on, and it can take a few moves to get some of the other sequencers to locate to the point being edited. But Beyond was right there with me.

The Transport Window looked great on my Mac II, using a very attractive, but subtle, choice of colours to enhance the look. It's a very straightforward area of Beyond, having "buttons" for Play, Stop, Record, Rewind, Cue, and Fast Forward. Extremely intuitive, instantly obvious; another design feature which doesn't impede the creative flow. (Other sequencer designers please take note.)

The Instruments setup window is where you define the Instruments which you select for each Track in the Tracks Window. Here you choose a MIDI Channel and Output port, name the instrument, and set up a Program Change command to select that instrument on your MIDI gear. Each Instrument has a Data Fader, which lets you adjust MIDI controller information for the instrument. By default, this is set to Controller 7 for MIDI Volume messages. There is also a handy Master Fader for these. In addition, there are buttons in this window to send All Notes Off, Local Control On, and Local Control Off messages.

ON THE RECORD

RECORDING FROM SCRATCH in Beyond is extremely quick and straightforward. Once you have recorded a track, most people feel the need - rightly or wrongly - to quantise. Quantise features can be applied either to note attacks or releases. Also, there are options for setting Swing percentage, and for Strength of quantisation (how near to the strict values the quantisation moves your notes). Options for Duration include Scale to a percentage of, or Set to a value, and Transpose options allow either chromatic or "in-scale" transpositions, as well as an option to set all notes to a particular note. This last Transpose option is particularly useful when editing drum machine notes.

Beyond has comprehensive options for changing Velocity, Controller, and Pitchbend data, and a Reverse function to reverse either timings of selected events, or pitches of selected notes "in-scale" or chromatically. The Shift option lets you shift events by a specified number of clocks either behind or ahead, and the Channel option lets you change the MIDI channel of a track.

There are comprehensive functions available in the Human Feel option whereby you can randomise start times, durations, velocities, or tempo changes to give your music a more "natural" feel, and there's a Harmony option which lets you add up to four notes to a monophonic line and move these harmonies either in-key or chromatically as the line moves away from the root note. The last four options let you Scale Time (compress it or expand it), set Tempo (or change gradually from one tempo to another), set Time & Key Signatures (over specified ranges of bars), or send an All Notes Off command.

The Edit Menu contains the standard Macintosh Undo, Cut, Copy, Paste, Clear, and Select All commands, and has Merge Data, Delete Duplicates (very handy), and Extract Data (similar to Performer's Split Notes). This last command includes options to remove notes not in scale, or remove selected types of data, on all channels, or only on a specified channel. Finally, the File Menu, besides supporting the standard Macintosh File commands (New, Open and so on), also has Import and Export MIDI File, and a Save Preferences option to let you configure Beyond to your own taste.

VERDICT

BEYOND HAS ALL the makings of a first-rate Macintosh MIDI sequencer program. This pre-release version didn't crash once, and I only encountered one small problem when using the Harmony option, and this was probably a misunderstanding on my part which I couldn't clear up as I did not have a manual. It's certainly a logical and easy-to-use program, and includes most of the high-powered features which programmers have come to expect in a Macintosh sequencer. The one major feature I missed was Event List editing. Also, the Display list could have been improved by providing a view filter so that just notes (or whatever data) would be displayed. However, there are many people who prefer graphical editing, and in this case Beyond could be their ideal choice, offering the pick of most of the best features of the other Macintosh sequencers in one program. ■

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KORG DW8000, with stand, manual and tapes, ungigged, £375. Tel: (0925) 812407.

KORG M1, with RAM card and extra sounds, vgc, £1000 ono. Tel: 081-654 7707.

KORG M1, £1000; Roland R8, £530; Boss DR550, £150; Yamaha CX5M, £100. Rich, Tel: (0202) 665521.

KORG M1, immac, boxed, manuals, home use, £950 ono. Clive, Tel: 071-832 5203, office; 081-579 4518, home.

KORG P3 piano and card, £200; Simmons SDE synth, £150; Roland TR626, £200; Roland D110 synth, £400. Tel: 081-878 0512.

KORG POLYSIX, £220; Juno 106, £320; Yamaha PSS780, £730, all manuals, offers! Tel: (0629) 824546.

KORG POLY 61M, £160; FB01, £90; QX5, £140; Casio CT610, £150. Tel: (0942) 675384.

KORG POLY800, good working order, power supply included, £180 ono. Nick, Tel: (0272) 770083.

KURZWEIL HX1000 horn expander, sell or p/x for sampler/expander etc. Tel: (0706) 50897.

MOOG PRODIGY bass synth, complete with bass pedal conversion, unique! £120 ono. Tel: (0533) 750939, after 6pm.

MOOG ROGUE, good cond, psu, owner's manual, service manual, £130. Tel: (03543) 5239.

OBERHEIM MATRIX 6, mint, boxed, editor, £650 ono; Alesis HR16, perfect, boxed, £200 ono. Tel: 081-682 0905.

OSCAR, MIDI, duo, £250; Poly800, £150; Casio CZ101, £90, all excellent cond. Marlow, Tel: (06284) 73393.

RHODES CHROMA with MIDI and flightcase, £400; Tascam 238, 8-track recorder and remote, £750. Tel: 091-388 5562.

ROLAND A80, weighted keys, controller keyboard, £1050 ono. Tel: (0252) 521902.

ROLAND D5, brand new, hardly used, boxed, £400; Casio CZ230s plus case, £99. Jason, Tel: (0245) 37514.

ROLAND D5, excellent cond, ROM card, £400; Korg Poly61, vgc, £180. Tel: 031-665 0361.

e£395 ono. Tel: 071-624 8019.

ROLAND D20, excellent, latest ROM updates from Roland, £775. Tel: (0734) 668709.

ROLAND D20, mint, home use only, flightcase, stand, £900 ono. Steve, Tel: (0726) 61420.

ROLAND D20, as new, boxed, used for home recording, £800 for quick sale. Tel: (0923) 229790.

ROLAND D50, flightcase, as new, home use only, ROMs (American), £900. Steven, Tel: (0388) 816973.

ROLAND D50, £750 ono; Roland Super-JX, 3 ROMs, flightcase, £750; Tama 3-tier A-frame, £75. Tel: 021-559 4149.

ROLAND D50, perfect cond, manual, £770; PA-decoder Vol II card, £45, both for £800. Tel: (0923) 266664.

ROLAND D50, brand new, still in box, absolutely immac, additional card, £875. Tel: (0757) 638106.

ROLAND D50, £750; Atari 1040STF and Atari colour monitor, software, £600. Tel: (0438) 723630.

ROLAND D70 megasynth, flightcase, the best synth around! Forced sale! £1500. Iain, Tel: (0543) 579130.

ROLAND D110 module, as new, home use only, manual, box, £450 ono. John, Tel: 071-435 0748.

ROLAND D110, £350; Yamaha DX11, £350; Roland PC100, £40; Casio PT30, £20, all immac. Tel: 081-684 2853, eves.

ROLAND D110, RAMs, £380; Akai MX73 keyboard, £250; Yamaha MIDI Merge, £50; KS10 speakers, £60. Tel: (0283) 701120.

ROLAND E20, intelligent synth, £600 ono; Kawai K1m expander, £200. Tel: (0536) 743523.

ROLAND JP6, £400; Casio CZ1000, £100; Roland JP8 spares/repair, £250. Tel: 041-423 5485.

ROLAND JUNO 2, RAM, flightcase, £360; Sequential Circuits Pro1, £100, excellent cond. Tel: (0484) 651061.

ROLAND JUNO 6, excellent cond, manual, only £149. Dave, Tel: (0274) 616107.

ROLAND JUNO 60, mint, boxed, stand, £300. Tel: (0274) 495411.

ROLAND JUNO 60, with JSQ60 sequencer, Marshall practice amp, chorus plus flanger pedals, £300. Tel: (0332) 381209, eves.

ROLAND JUNO 106, excellent cond, little home use only, £280. Tel: (0622) 764384.

ROLAND JUPITER 6, MIDI, £350; Kawai

K4, as new, £595; Ensoniq EPS, £850. Tel: (0473) 40007, eves.

ROLAND JUPITER 8, MIDI, flightcase, mint, £850 ono; Roland SH101, mint, flightcase, £90. Tel: (06333) 3528.

ROLAND JUPITER 8A, immac, original manual, RX5, mint, cartridge, boxed. Steve, Tel: (0909) 771581, eves.

ROLAND MKS20 digital piano module, vgc, flightcase, £330. Tel: (0494) 773146, eves/weekends.

ROLAND MT32, editor, sounds, perfect, never gigged, still boxed, £275. Chris, Tel: (06333) 64516.

ROLAND PG100 programmer for D50, D550, boxed, never used, £99. Tel: (0705) 375163. Post C.O.D.

ROLAND SH101, hard case, manual, £95 ono. Tel: (0602) 313916.

ROLAND SH101, mint, £120 ono; Roland MC202, mint, £95. Khalid, Tel: 071-721 4314, days; 081-472 6304, eves.

ROLAND SUPER-JX10, £700; Casio FZ1, disks, £675; TX81Z, £190; RX5, £375. Tel: 081-994 6094.

ROLAND U110, £350; Casio VZ1, £330; Casio CPS700, £250, boxed, vgc. Tel: (0438) 317667.

ROLAND U110, great cond, instructions, £400 ono; QX21, just been overhauled, offers. Tel: 021-783 3005.

ROLAND U110, boxed, as new, £390; Midiverb II, £150, may p/x. Tel: (0706) 50897.

ROLAND W30 workstation, perfect, boxed, manuals, £1000 ono. Tel: 051-734 0064.

ROLAND W30 workstation, 3 months old, immac, £1150 ono. Tel: (0502) 731237.

ROLAND W30, Roland Juno2, Jen SX1000, Yamaha MR10, X-stand. Lee, Tel: (0594) 24902.

SEQUENTIAL CIRCUITS SIXTRAK analogue polysynth, built-in sequencer, MIDI, £175. Tel: (0268) 43815.

SEX, no, just a QX21, brand new cond, £75; Vesta Fire MR10, £175, everything included. Tel: (0483) 34893.

SIEL DK80, bitimbral dynamic polysynth and sequencer, as new, £175 ono. Tel: (0438) 350471.

SWAP brand new Kawai K4, for Casio FZ1 sampler of similar cond, or sell £699 ono. Tel: (0384) 410853.

TECHNICS PR40, superb cond, bargain, £850. Tel: (0256) 881179.

VOX CONTINENTAL keyboard, £150; Fostex 160, 4-track, £325. Tel: (0422) 356214.

YAMAHA CLAVINOVA CVP7, excellent cond, weighted keyboard, sequencer, MIDI. Darren, Tel: 081-648 8713.

YAMAHA CS70M analogue polysynth, flightcased, £275; ARP Omni, flightcased, £85. Tel: (0895) 636274.

YAMAHA DSR2000, £350; KX5, £90; EMT10, £165; Korg 707, £295; Siel DK600, £270. Tel: 081-997 2179, eves.

YAMAHA DX7, 5 ROMs, home use only, classic machine, £500. Graham, Tel: (0234) 45920.

YAMAHA DX7, £450; Roland U20, £725; Roland D110, £395; Roland MKS20, £395; Emax, £1095. Tel: 081-462 6261.

YAMAHA DX7, £400; Ensoniq Mirage, £450; JX8P plus PG800, £400; QX5 plus RX11, £250; 3-tier stand, £50. Tel: 071-481 4886.

YAMAHA DX7/TX7, excellent cond, home use only, £650 together, £495/£175 separate, may deliver. Tel: (0332) 558728.

YAMAHA DX7IID, £750; Roland TR505, £100; Pro1, £70; Yamaha PF70 electric piano, £600. Tel: (0803) 294009.

YAMAHA DX7IIFD, mint, c/w Coopland sound disk, £850; HR16 drum machine, boxed, £199. Andy, Tel: (0553) 827362.

YAMAHA DX7S, mint, 3000+ sounds on ST disks, worth £300, "Pro12" worth £100, £750. Tel: (0273) 594197.

YAMAHA DX7S, immac, 128 internal sounds plus 3300 on Atari disks, £600; FB01, £100. Tel: (0984) 34545.

YAMAHA DX11, manual, RAM cartridge, flightcase, mint cond, home use only, £380. Tel: (03543) 5239.

YAMAHA DX21, dual split etc, flightcase, extra sounds, great cond, £300 ono. Matt, Tel: (0727) 57525.

YAMAHA DX21, excellent cond, case, manuals, extra voices, home use only, £200. Tel: (0388) 730512, after 4pm.

YAMAHA DX27, leads, £200; Roland TR626, £190 ono; 5-channel mixer, £40. Patrick, Tel: (0254) 667412.

YAMAHA DX100, excellent cond, ideal for home studio/computer setup, £150. Niel, Tel: 061-456 9587, after 6pm.

YAMAHA EMT10 module, £125; MTR DI boxes, £10 each; Goodmans 12-band graphic, £45. Tel: (0483) 570088.

YAMAHA FB01, mint, boxed, manual, £135; PSR70, case, L4 stand, pedals etc. Craig, Tel: (0533) 866203, after 6pm.

YAMAHA FB01, multitimbral FM expander, vgc, manual etc, £100. Neil, Tel: (0928) 33341.

YAMAHA HS5 organ, cost £2800, will accept £1700 ono, 1 yr old. Tel: (0388) 662564.

YAMAHA PF70 electronic piano, stand, home use only, must sell, £600 ono. Tel: 091-529 4788, anytime.

YAMAHA PSS680 FM synth, auto accompaniments, sequencing, PCM drums, MIDI, boxed, adaptor, £130. Tel: (03473) 420.

YAMAHA PSS780, with synth cords, drums, 100 voices, £110. Simon, Tel: 021-708 0763.

YAMAHA SK30, classic analogue polysynth, collectors interested? Two Korg DS8 ROMs, sensible offers. Tel: 081-890 9280.

YAMAHA TX81Z, mint cond, £210; Yamaha SPX90, mint cond, £200. Tel: 071-631 0040 X409, days.

YAMAHA TX81Z, brand new, still in box, absolutely immac, bargain, £285. Tel: (0757) 638106.

YAMAHA TX812, editor, over 5000 sounds, D50, editor, 1000 sounds, £695 and £825 respectively. Tel: (0908) 315898.

YAMAHA V50 workstation, sequencer, drums, effects, synth etc, disks, manual, box, vgc, £800. Neil, Tel: (0928) 33341.

YAMAHA YS200 synth, the user friendly power house, 10,000-note sequencer, 8-tracks, £590. Mike, Tel: 061-792 3081.

SAMPLING

AKAI S900, £750; MTR 12:8:2, £250; U110, £350; 1040ST, SM125, £450; MK7VA, £200. Tel: (0743) 240226.

AKAI S900 sampler, brand new, boxed, additional large sound library, immac, bargain, £800. Tel: (0757) 638106.

AKAI S900, with 16-bit board, £900; EPS 2 x memory, £100; piano module, £300. Tel: 071-487 2593.

AKAI X7000 and S700, both excellent cond, £500 and £400 respectively ono. Andy, Tel: (0633) 613342.

CASIO FZ10M, £650 or p/x for D50 plus £150. Tel: (0268) 776554.

CLEAROUT! Roland S10, 80 disks, £345; Yamaha RX5, 3 ROMs, £345; Casio CZ1000, £135; Casio MB10, FZ1 RAM, £135; Yamaha MT100, 4-track, £195, consider swaps/px. Neill, Tel: (0934) 614303.

E-MU EMAX HD sampling keyboard, 36 banks of sounds, immac cond, £1200 ono. Tel: 081-954 9431.

EMULATOR 1, large library, £250; Roland MT32, £200; Yamaha FB01, £100. Tel: (0223) 860348.

ENSONIQ EPS sampling keyboard, excellent cond, boxed, c/w sound disks. Tel: (0642) 480765.

ENSONIQ EPS, x2 memory expander cartridge with SCSI connector, £200 ono; Aria digital delay pedal, £90; heavy metal, £50. Tel: (0909) 566695.

ENSONIQ MIRAGE MkII, c/w case, MASOS and large library, immac, £450. Don, Tel: 031-441 3948, 6-11pm.

ENSONIQ MIRAGE with MASOS, sequencer expander cartridge and disks, £475. Tel: (0703) 614333.

ENSONIQ MIRAGE, £500; Oberheim Matrix 1000, £250, both for £750. Tel: (0305) 265558.

KURZWEIL K250 expander sampler/sequencer, brilliant sounds, plus Apple Mac and large library, £1750. Tel: 081-368 7071.

ROLAND S10, large library, as new, £480; Casio SZ1, £60; Fostex 160, £300. Tel: (0283) 33458.

ROLAND S10, disks, case, immac, Midiverb III, new, boxed, £525 the lot. Tel: 021-705 0652.

ROLAND S10, 5 boxes of disks, £380; Roland Juno 106, £300. Tel: (0324) 27158.

ROLAND S50, monitor, massive library, £750. Andy, Tel: (0273) 822556, 24 hrs.

ROLAND S330 sampler, boxed, manual, version 1.03 software, mint cond, library available, Atari ST patch copy software, £750. Also Director-S sequencing software for S330, good sequencer, doesn't occupy sample memory, £70. Tel: (03543) 5239.

SWAP Roland R8 plus ROM, D110 plus ROM and editor, ESQ1, plus cash for FZ1 (10M), S330. Marlon, Tel: (0493) 843859.

SEQUENCERS

KAWAI Q80 digital MIDI sequencer, mint, hardly used, genuine bargain, only £350. Paul, Tel: (0792) 458328.

KAWAI Q80, 32 tracks, huge memory, disk drive, excellent editing facilities, vgc, offers around £325. Tel: 081-654 7707.

ROLAND MC202, 2-channel, 2600-note sequencer/synth, boxed, manual, CV/gate/sync cables, mint, £90 ono. Andy, Tel: 021-433 4066.

ROLAND MC500 MkII, £450; Quadraverb, £275; Roland U220 sample player, £475, all as new. Tel: (0532) 624256.

DRUMS

ALESIS HR16, books, £215; Alesis Microverb II, £95, both as new. Tel: (0908) 310765.

ALESIS HR16 drum machine, boxed, manual, £175. Tel: (0272) 540354.

BOSS MIDI PADS, MPD4 plus 3 BP1, with holders, tunable, velocity sensitive, £150. Tel: (0703) 583126.

DRUMULATOR + Rockset, boxed, home use only, £80. Tel: (0734) 428716, eves.

KORG DD220 latin, £80; Korg KPR77, £50; Korg KMS30 MIDI-sync coupler, £50. Marlow, Tel: (06284) 73393.

LINN DRUM, MkII, MIDI interface, custom chips, flightcase, £250 ono; Bokse US8 universal synchroniser, £90 ono. Tel: (0342) 323094.

ROLAND R5, boxed, manuals, as new, £390. Mike, Tel: 061-792 3081, anytime.

ROLAND R5, immac, boxed, £295; Yamaha EMT10 piano module, £120. Tel: (0276) 685151.

ROLAND R8, human rhythm composer, mint, boxed, manuals, rare 808 sound card, £500. Joel, Tel: (0474) 357095, after 5pm.

ROLAND TR505 drums, vgc, £130 ono. Tony, Tel: (0332) 381661.

ROLAND TR606 Drumatix, mint, boxed, manuals, £80. Tel: (03543) 5239.

ROLAND TR606, individual outputs, best offer secures. Bob, Tel: (03474) 472, after 6pm.

ROLAND TR707, good cond, box, manuals, PSU, £150. Nick, Tel: Wolverhampton 755561.

ROLAND TR707, TR727, MC202, Boss 220E and JSQ60 for sale, all in good cond. Ian, Tel: 081-885 3926.

ROLAND TR707, £110. James, Tel: (0786) 78655.

SEQUENTIAL DRUMTRAKS with Simmons snare and toms, 808 snare plus claps, congas, tunable, individual outs, £135. Tel: 081-947 4864.

YAMAHA RX5, good cond, 2 cartridges, £325 ono. Dave, Tel: (0602) 507033, eves.

YAMAHA RX5, 12 outputs, full MIDI, excellent cond, £300 ono. John, Tel: (02518) 3235.

YAMAHA RX11, individual outputs, great sounds, £170; RX21L, £80, both boxed, as new. Tel: 021-471 4157.

YAMAHA RX21, exc cond, boxed, psu, manual, £125. Tel: (0843) 32357.

YAMAHA RX21L, (latin), boxed, manual, as new, £50. Tel: 081-947 4864.

YO! LADS! Roland TR909 for £310 or straight swap for TR808. Dev, Tel: (0203) 666246.

COMPUTING

AMSTRAD 6128 sequencer, 8-track EMR and interface, 1 In/2 Out, plus sync, £80 or exchange comp/lim. Tel: (0889) 882 883.

ATARI ST, expanded to 2.5Meg, mono monitor, software, £550, may p/x. Tel: (0706) 50897.

COMMODORE 128, disk drive, printer, mouse, books, software, vgc, boxed, £345. Tel: (0983) 527757.

COMMODORE 128, 1541 drive, RGB monitor, C-Lab sequencer with MIDI interface, £350 ono. Tel: 081-528 9001, quoting 806507.

CUBASE, registered, £295; Dr T's D110 editor plus 2000+ sounds, £65; Pro24 v3.0, original, £90. Tel: (0706) 50897.

DR T'S KCS Level II (Atari), backup, manuals, registered, £120; Roland MC202, PSU, manual, £125. Tel: (0424) 218711.

JORETH MIDI interface, composer, linker, CZ and DX7 editors, must sell, £85 ono. Tel: 091-529 4788, anytime.

MINT COND, latest version, C-Lab Notator, £420; Cubase, £450. Tel: (0529) 303089.

PASSPORT MIDISOFT STUDIO, 32-track sequencer software, Atari ST, £80 ono. Tony, Tel: (0332) 381661.

RAM MUSIC MACHINE, £25; Cheetah Specdrum with 3 kits, £25. Garry, Tel: (0942) 227223.

STEINBERG PRO24, v3, original, boxed, manual, with free EZ-Track+, for quick sale, £50. Tel: (0223) 247980.

STEINBERG PRO24, £75; Yamaha RX5, £350; Simmons Portakit, £350. John Runfold, Tel: (02518) 3235.

YAMAHA CX5M II/128, disk drive, mouse, printer, screen, software, £400. Richard, Tel: 071-937 3004, eves.

RECORDING

ACCESSIT stereo reverb, PSU, boxed, good cond, £80 ono. Tony, Tel: (0332) 381661.

AKAI MG12/14, £2499; Prophet 10, £999; S950, £999; TX81Z, £169; Tascam 244, £279; MX76, £999. Tel: (0782) 723101.

ALESIS S15Q dual 15-band graphic, Ross 12x2 mixer, Peavey Mini Monitors, offers. Tel: (0483) 570088, days.

ALLEN & HEATH System 8 mixing desk, 16:8:2, plus stand and PSU, £1000. Toni Rutherford, Tel: 081-897 6388.

ALLEN & HEATH desk, plus multicore and reel, 16:4:2, flightcased, £1600 ono. Tel: (0203) 222454.

APHEX Exciter Type E, rackmount kit, £90 obo; Korg SDD1200 dual digital delay, £150 obo. Tel: (0932) 772004.

BOSS RBF10 micro-rack flanger, mint cond, boxed, psu, £85; Boss RV2 stereo reverb pedal, vgc, psu, £100. Tel: (0843) 32357.

COMPLETE STUDIO, virtually new, only used weekends, bargain, £6000, cost £9000+. Bob, Tel: (0482) 218706.

8:4:2 MIXER, 3-band, sweep EQ, 2 effects sends, perfect cond, £220 ono. Tel: (0482) 46166, after 5.30pm weekdays.

FOSTEX A4 open-reel four-track, little use since recent service, very good cond, including service manual, £340 ono. Tel: (03543) 5239.

FOSTEX B16, Allen & Heath System 8 2416 mixer, Tascam 244 portastudio, mics, stands, processors. Tel: (0633) 213110.

FOSTEX E16, with 8316 remote, very little use, £2500; Revox A77, £300. Tel: 081-994 6094.

FOSTEX E16, Soundtracs 24:8:16 desk, 42 channels on mixdown - very quiet, lots of outboard. Tel: (0908) 315898.

FOSTEX M80, 8-track recorder, Seck 18:8:2 mixer, wiring loom, all manuals, only £1650. Tel: (0234) 59451.

FOSTEX X15 portastudio, boxed, psu, good cond, £180. Tel: (0843) 32357.

FOSTEX 260 multitracker, £400; Tascam MTS30 synchroniser, £90; Dynamix 12:2 mixer, £200. Dave, Tel: (0639) 845768.

HOME STUDIO SALE: Alpha Juno 1, Sequential Multitrak, £220 each; Clavinova VP3, £450; Teac 144, £150; Cheetah MS6, £170. Mike, Tel: (0702) 337817.

JL COOPER MIDI Merge, £50; Yamaha YMC10 MIDI tape sync, £40. James, Tel: 081-954 5275.

MICROPHONE Audio-Technica PRO4H and boom stand, £35; Vesta 4-track recorder, £95. Tel: (0782) 273182.

MIDIMIC pitch-to-MIDI, DDM220 beatbox, Jen monosynth, Realistic graphic, no reasonable offer refused. Tel: (0707) 271641.

MIXERS: Dynamix 12:2, £150; Marshall 6:1, £50; A&H mini mixer 6:2, £35. Tel: (0239) 810187.

MTR 16:2, in perfect, boxed cond, manual, excellent for keyboards, £299 ono. Tel: (0252) 871243, 24 hrs.

PHILIP REES 2M MIDI Merge, latest version, £50. Chris, Tel: (0272) 775747.

PHONIC PROFESSIONAL mixing console, 12x2 phantom power, mint, £285 ono. Dave, Tel: (05255) 5703, anytime.

RAM RM16, Fostex A8, £1250 ono; Hill 28:4:2, flightcased, £750 ono; 1kw PA, Hill, H/H, Bose, cables, £1350 ono. Tel: (0492) 532436.

RECORDING EQUIPMENT: Vesta MR30 multitrack recorder, £80; Audio-Technica mic and stand, £40. Tel: (0793) 729256.

ROLAND RE201 Space Echo, good cond, £135. Tom, Tel: 061-226 4440.

SECK 12:2, perfect, boxed, £400 ono; Cubase, original, £300 ono. Tel: 081-682 0905.

SECK 12:8:2 desk, £650 ono. Tel: (0252) 521902.

SIMMONS 8:2 programmable MIDI mixer, 19" rackmount, vgc, £175 ono. Dave, Tel: (0602) 507033, eves.

SOUNDCRAFT 200 Series, 24:4:2 (+8) mixer, excellent cond, phantom power, balanced inputs, 4 auxs, ideal sequencing/recording/gigging, £1200. Tel: 081-556 7888.

STUDIOMASTER 8:4 mixer, Custom patchbay tape/line/mic inputs, quiet, £325 ono. Tel: (0353) 740690.

STUDIOMASTER PROLINE 16:4:8 mixing desk, boxed, mint cond, less than 1yr old, loads of inputs on mixdown, compact, powerful, EQ, phantom power, four aux, £1050 ono.Tel: (03543) 5239.

TASCAM 234 rackmounted portastudio, £325; Axxeman, £145; Bassman, £145; Ensoniq EPS sampler, £875. Tel: (0953) 850363.

TASCAM 244 portastudio, mint, £245; Yamaha RX11 drums, £125; 12U flightcase, £55. Tel: (0625) 22580.

TASCAM 244 portastudio, £350; Yamaha RX15 drum machine, £165. Darren, Tel: 081-648 8713.

TEAC A3440 reel-to-reel 4-track, Studiomaster 8:4 mixer, £395 each ono, as new, must sell. Tel: 091-529 4788.

TEAC A3440, M2A 6:4:2 mixer, MB20 meter bridge, £450. Andrea, Tel: (0603) 415959.

XRI XR300 SMPTE synchroniser, excellent cond, £175. Kevin, Tel: (0424) 225594.

YAMAHA D1500 digital delay, £195; Akai ME10D MIDI delay, £95 ono, both immac. Tel: 061-881 8556.

YAMAHA MT44D, 4-track recorder, mixer and patchbay, manuals, flightcase, £350. Tel: (0742) 668575.

AMPS

HH 100W 2 x 12" combo, reverb, sustain, perfect for keyboard or guitar, £175. Alan, Tel: (0379) 76 670.

LANEY 6-channel PA system, bins and horns, excellent cond, £160 ono. Edward, Tel: (0763) 82 578.

OHM P45, 100W speakers, pair, superb sound, £120. Ian, Tel: (0280) 814080 X3332, days/(08675) 3268.

ROLAND Keyboard 60 amp, £190; Modem WS4000, £90; MIDI tape sync, Kabanda TS9, £120. Tel: (0635) 69933.

VALVE MIC preamps for Neumann, balanced, suitable DI guitar, £150 pair; Tannoy 15" Lancasters, £400. Alan, Tel: (0379) 76 670.

PERSONNEL

ANY synthists (Colchester area) interested in writing something half decent, 808 State to Kraftwerk. Stuart, Tel: (0621) 816400.

FEMALE singer/songwriter required. Image no importance, own equipment, anywhere in Britain. Steven, Tel: (0254) 887145.

FEMALE soul singer with emotion and expression wanted for Yorkshire-based band. Michael, Tel: (0302) 322841, after 6pm.

SYNTH player and vocalist M/F needed to form excellent band. Local only. Tel: (0295) 262872.

VOCALIST F/M wanted for chart/dance music. Paul, Tel: 071-708 4833, eves.

WANTED: good lyricist for diverse commercial material. No time wasters please. Brian, Tel: (0298) 24776.

WANTED: members to form free music

network, exchange ideas etc. Write: 27 Middlefield Road, Falkirk, Stirlingshire, Scotland FK2 9HP.

MISC

CD SINGLES, having a bit of a clearout, so 10 for £9, (4 sets). Tel: (0274) 727961.

COMPLETE SET Electronics & Music Maker, offers. Martin, Tel: (0709) 817648.

EMS MKII 2000 vocoder, 4 months old, as new, boxed, can travel Lincs, Yorks, £650 ono. Tel: (04698) 559, anytime.

48 QD DISKS, contain S700 pro samples, £50. Tel: (0629) 580886, work/(0246) 433158, home.

GIBSON SG guitar, £400; 6-piece Premier drumkit, £350. Tel: (0273) 505246/730386.

KAHLER Human Clock, £175 for quick sale. Richard Brown, Tel: (0924) 371766, days/387023, eves.

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ROLAND U20 owners: info/tips exchange. Write: Simon, 69 St Ives Road, Fallowfield, Manchester M14 5NH.

ROLAND W30! Wanna swap samples? Peter, Tel: Dublin 0001-830-673, after 6pm weekdays/anytime weekends.

URGENTLY required company 55 Atari workstation stand, any cond, cash waiting. Paul, Tel: (0905) 426453.

WANTED: Alesis MMT8 sequencer, must be good cond, with box, manuals. Tel: (0227) 464881, after 8pm.

WANTED: cheap! Atari ST, Roland MT32 module, must be cheap, not much dosh. Niel, Tel: 061-456 9587.

WANTED: D110, TX81Z! Exchange/sell MT32, FB01, JX3P, PG200, flightcase, manuals, vgc. Chris, Tel: (0923) 247129.

WANTED: for Korg DDD1, latin 5 ROM card, (DDC-B05), desperately need wood-block! Hugh, Tel: (0602) 820736.

WANTED: mod grip for SH101! Also fairly cheap MIDI master keyboard (Cheetah?). Nick, Tel: (0946) 830 262.

WANTED: Roland CR78 compu-ray, must be good cond, sound data tape for Roland JP6. Tel: 041-423 5485.

WANTED: Tascam 38 remote control, plus dbx noise reduction, will collect. Jerry, Tel: (0270) 666615.

ad index

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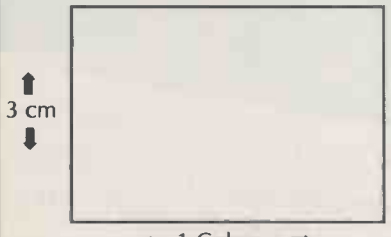

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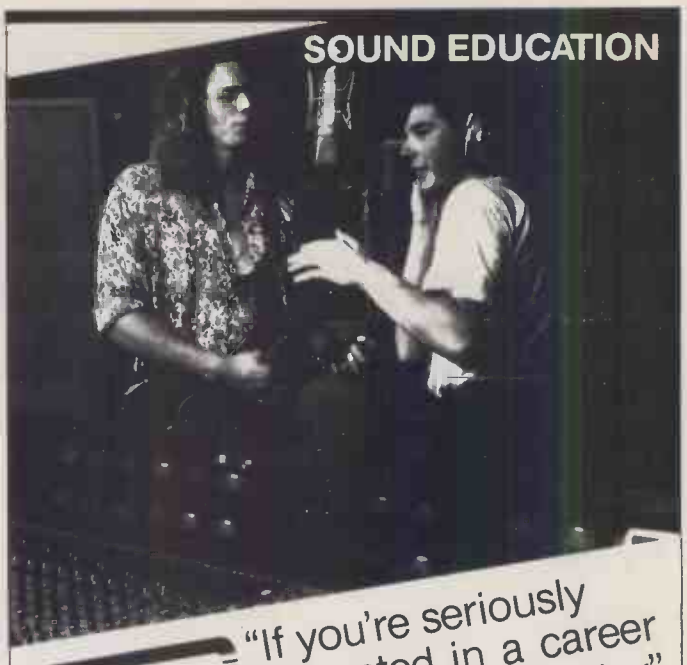

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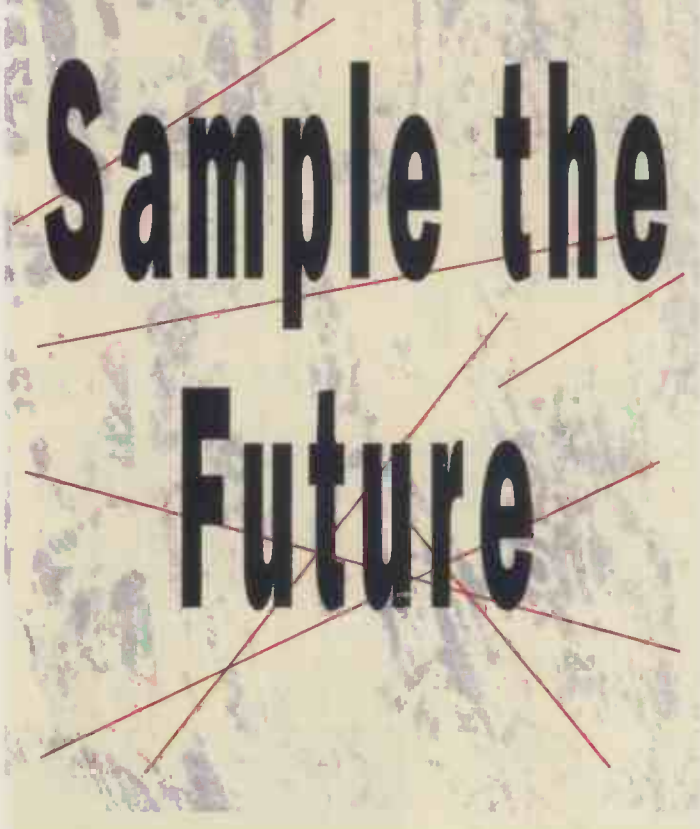

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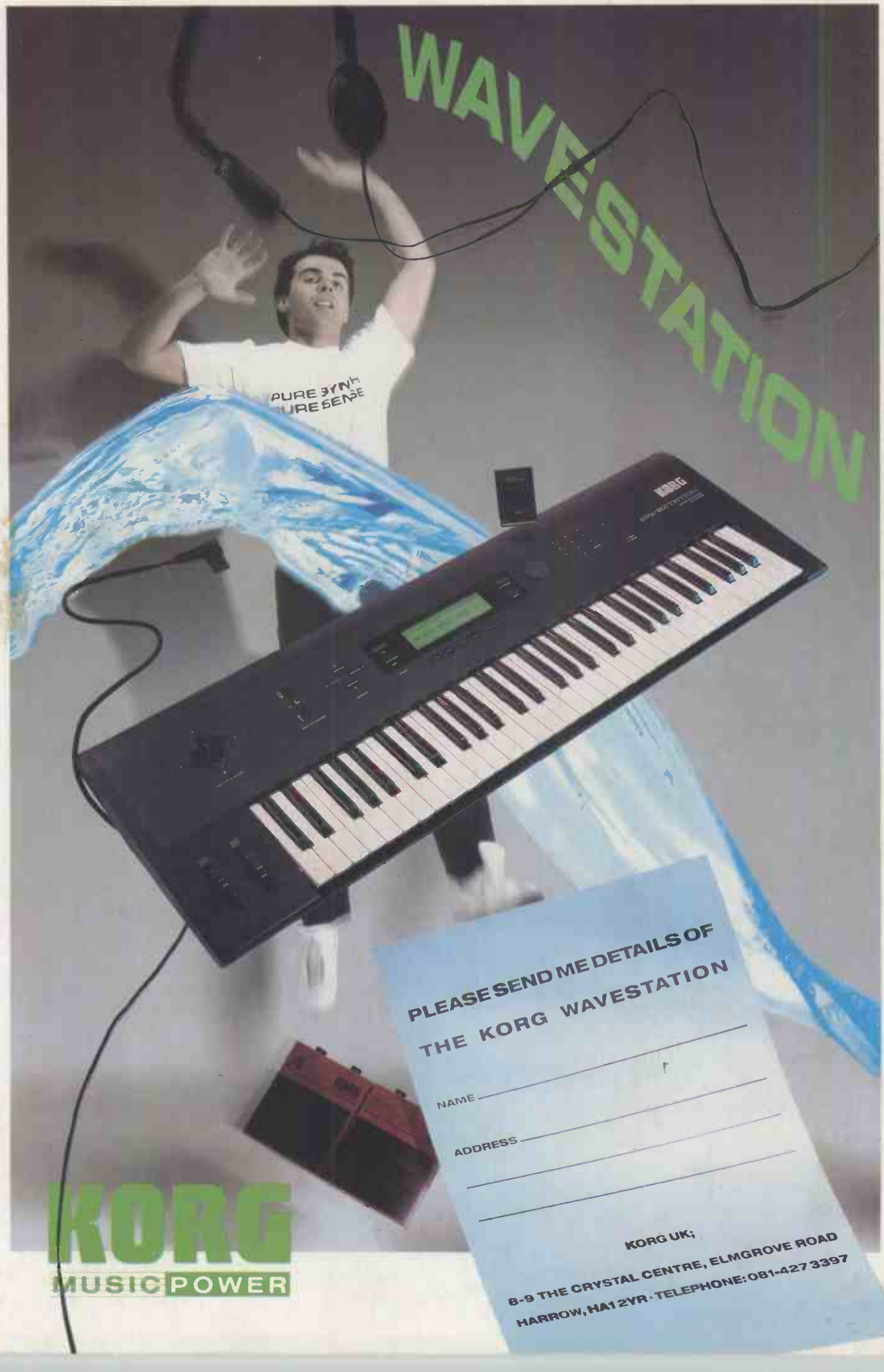
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