SEPTEMBER 1985
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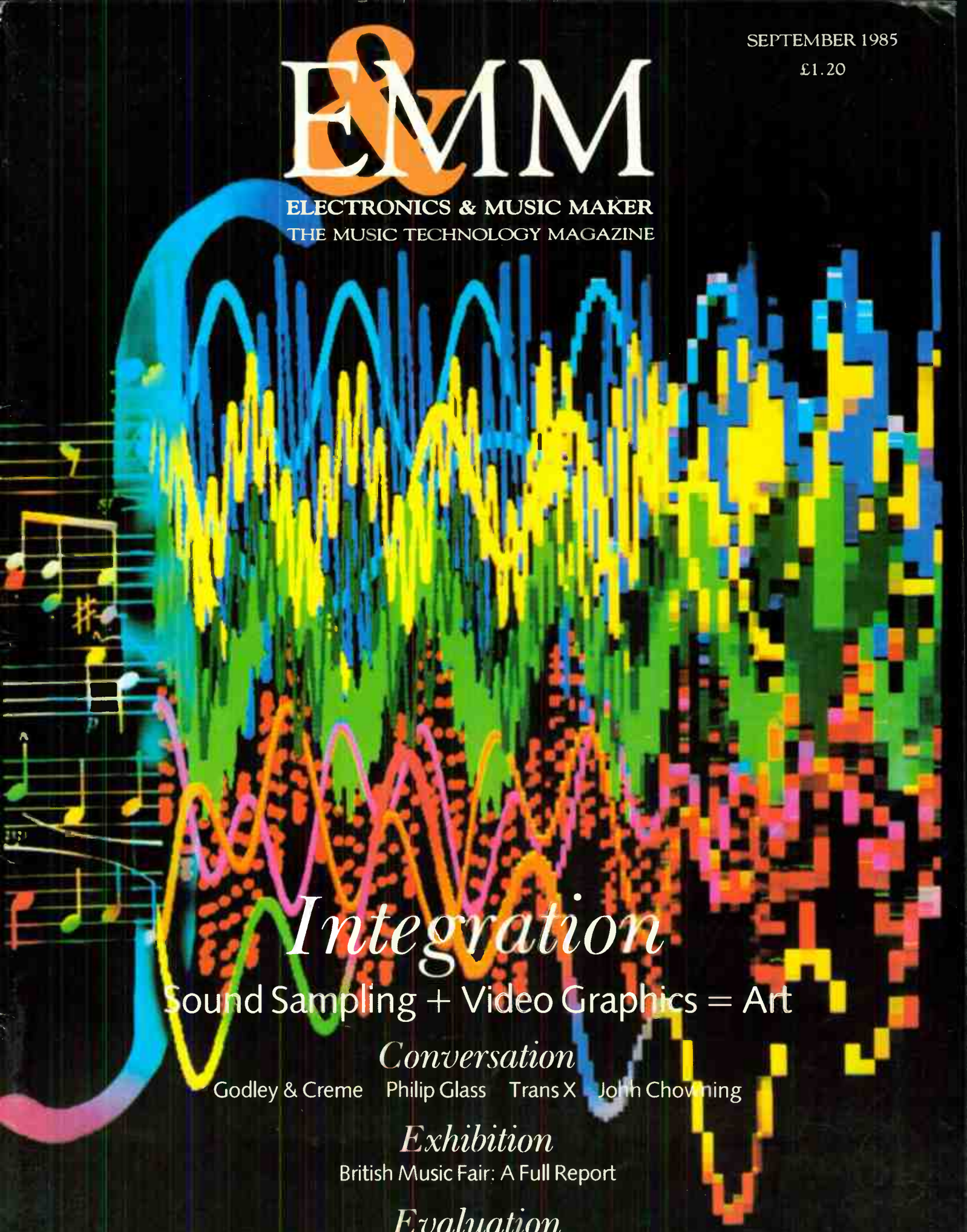
E&MM

ELECTRONICS & MUSIC MAKER
THE MUSIC TECHNOLOGY MAGAZINE



Integration

Sound Sampling + Video Graphics = Art

Conversation

Godley & Creme Philip Glass Trans X John Chowning

Exhibition

British Music Fair: A Full Report

Evaluation

Yamaha RX21 Drums Korg SQD1 Sequencer MultiKlone Kit
Roland SRV2000 Reverb Casio SZ1 Sequencer Syco PSP Processor
Yamaha REV7 Reverb Emulator SP12 Drum Sampler

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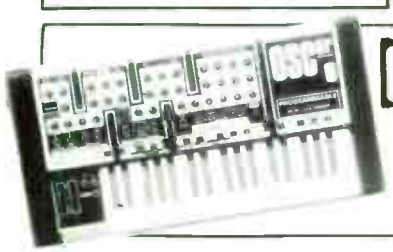

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Contents

E&MM September 1985 Volume 5 Number 7

Comment

Beyond the BMF

Now that all the fuss has died down, it's time to reflect on what this summer's British Music Fair has and has not achieved. Certainly, it's proved this country's modern musicians *will* attend a big musical instrument exhibition, and attend it in large numbers. It's proved that there is a very real thirst for new information and new technology on the part of a lot of those musicians, a thirst that a show like the BMF can go some way towards quenching. And it's proved that the music industry as a whole has been missing an annual public event at which it can show off its latest produce to the people who will eventually end up using it – musicians.

recognise on newsagents' shelves, reaction to our new front cover design was pleasingly enthusiastic. To all those who came along and said hello during the BMF's three public days – and especially those who contributed to our two Live Aid raffles – many thanks are due.

On the other side of the fence, the consensus of opinion amongst industry figures was that the show had been a good thing, and that to do it again next year would be an even better thing. But between the end of this year's show and the start of next year's lies a busy 12 months of musical instrument development, and as ever, predicting exactly how those 12 months will go is a task ridden with difficulties.

BMF fun and frolics *E&MM/Akai competition winner Andrew Cox eventually received his AX80 polysynth during the show – and then realised it was too bulky to carry all the way back to Cornwall. Smiling from left to right are: Seiko Kobayashi, Tim Mahne and Stephen Boyd (Akai); Andrew Cox; Dan Goldstein and Tim Goodyer (E&MM); and Naomi Maki (Akai).* **Front cover photograph** *courtesy Les Arnett and Electronic Data Systems, Inc*

The show gave us at E&MM a chance to meet some of the musicians who keep us in work by buying the magazine every month, and we now have a whole range of opinions and criticisms on which to base future writing and publishing decisions. It was certainly gratifying to know that so many readers appreciated the changes we've been making over recent months, and found them worthwhile. And, aside from the odd reader who'd found last month's E&MM difficult to

If you turn to Page 34 of this month's E&MM, you'll find a fairly detailed report on what was new at the BMF, information that'll be useful both to those that couldn't make it and to those who spent too long struggling through the crowds to see (and hear) everything properly. But that's just the start of the story, because for a variety of reasons, there were a number of significant technological developments that *weren't* on display at Olympia.

Among them is Sequential's new Prophet 2000 sampling keyboard, about which we know very little at the time of going to press, save that it looks just like the keyboard in the photograph we've printed on Page 8. The 2000 is due to make its UK debut (in front of a gallery of stars etc, etc) at a London press conference by the time you read this, and we hope to get our hands on the latest instrument to carry the Prophet name shortly after that.

But from what we hear, Sequential's offering is only the first (or, including the Ensoniq Mirage, the second) of a large number of affordable sampling keyboards that are now under development in the laboratories of Casio, Yamaha, Roland and the rest. It's a pretty safe bet that these rivals will be unveiled at the Frankfurt show this coming February, but by that time, it could be that the dedicated sampling keyboard will be under fire from competing machinery of different forms.

When you consider that Atari's excellent 520ST micro is now in the shops in numbers (see *Newsdesk*), and that a lot of software houses now have STs under examination, it shouldn't be too long before some enterprising individual comes up with a fledgling computer music system based around the world's cheapest 16-bit home micro. Give it some hardware of the right specification and some software that musicians have no difficulty getting into, and such a system could potentially wipe the floor with a dedicated machine, from whatever manufacturing source. It could well be cheaper than any of them, too.

Then there's the threat from things modular, epitomised by Akai's S612 sampler (now made extremely appealing by the addition of an optional quick-disk unit), which saves you having to buy another keyboard if you already possess a suitable one with MIDI tacked onto its back. It's an approach that undoubtedly works, not least because it passes on a significant cost saving to the musician.

Yet to hear some people talk, you'd think that sound-sampling was a technique of such wonderful potential, the synthesiser will be extinct within 18 months. Frankly, we don't think this is likely to happen within a decade or more, let alone the next year and a half, and there's every indication that synthesiser design will take the odd extra leap and bound in the coming months as it faces competition from the sampling contingent. As the healthy debate in our *Communiqué* pages shows, there are still an awful lot of people unconvinced by what sampling technology has to offer them as musicians, and who will stick to their synthesising guns forever and a day. There's room for both techniques, of course, so to pretend that one will ultimately oust the other out of existence is foolishness beyond responsibility. ■

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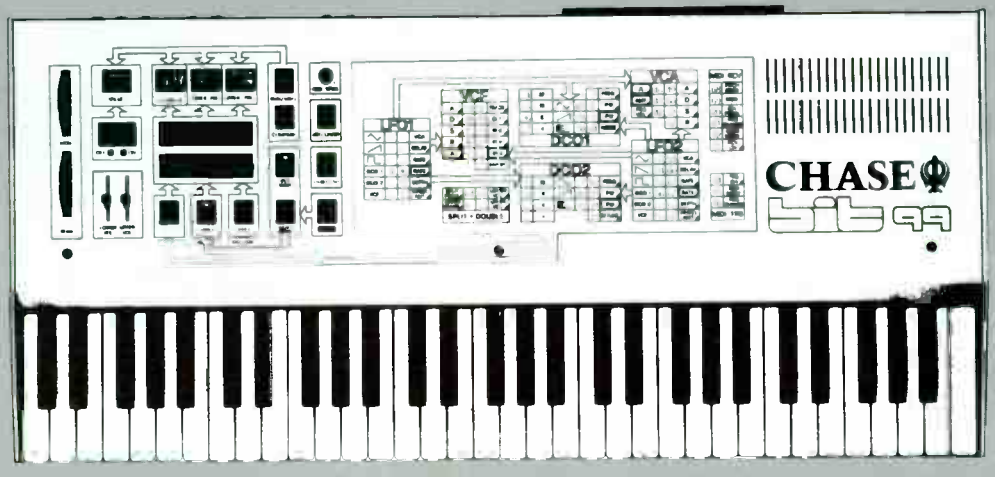

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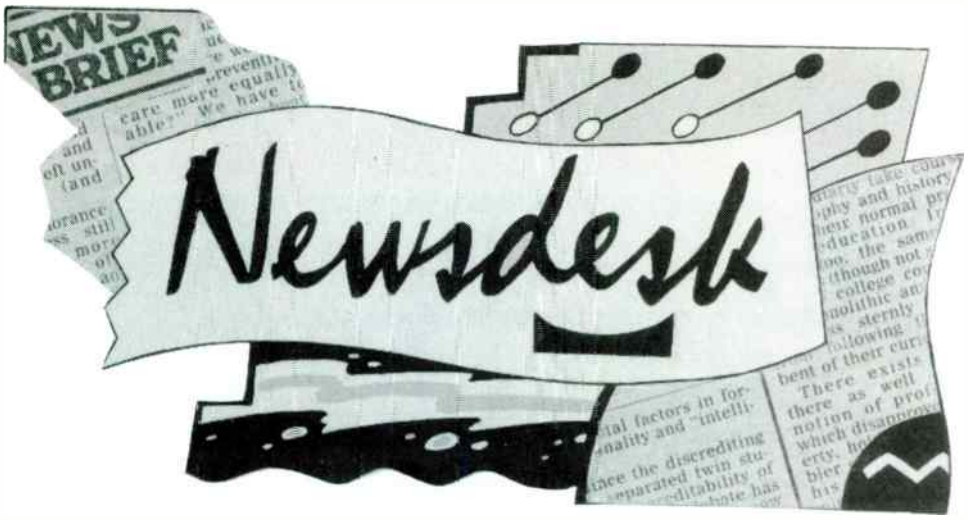


Clear Prophet

Hot news from the States. This is the first available picture of **Sequential's** new Prophet 2000 sampling keyboard due for release in the UK sometime this autumn. We hope to have more news next month: watch this space...

Corporation, 475 Oakland Avenue, Staten Island, NY 10310, USA. ☎ (0101) 718-447-7500

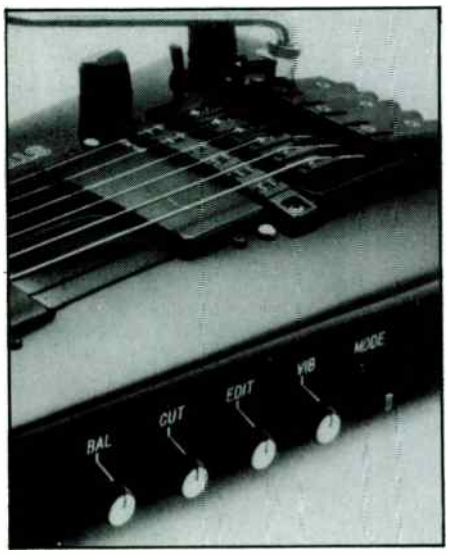
Gateway to Success

After a successful period telling people how to get the best out of recording music at home, **Gateway Studios** are starting a course in synthesiser and sequencer programming. The course is conducted by Gateway newcomer and sometime E&MM contributor Steve Howell, who will also be involving himself in Gateway's Primary Recording Course.

The courses will run for five days at a cost of £200 + VAT, and have been designed to accommodate everyone from complete novices upwards. Quite how efficiently that's achieved is yet to be seen, but the subject matter is certainly wide-ranging, encompassing modular analogue practices, analogue and digital sequencers, MIDI synths, drum machines, FM digital synthesis and sampling, as well as plenty of hands-on experience. **More from** *Gateway School of Recording & Music Technology, 1a Salcott Road, London, SW11 6DQ. ☎ 01-350 0340*

Quarter Pounder

This month's British Music Fair report includes a snippet of information on Gibson's fitting of a pickup capable of controlling Roland's GR700 guitar synth module to Explorer and Les Paul guitars. Now **Steinberger** have done the same to their established headless six-string. The circuitry in the controller leaves the Steinberger guitar almost unchanged visually, and the modification uses the standard 24-pin connector for communication with the sound module. Not content with providing the distinctively-shaped guitar with sounds about which it had previously only dreamed, the new configuration also avails you of the Steinberger Transposing Tremolo System, should you want it. **More from** *Steinberger Sound*



Complete the Jigsaw

Still looking for that big break? **Jigsaw Studios** are currently searching for keyboard players to participate in various projects ranging from Madonna to John Waite in styles. The only initial qualifications are that you have programming skills and a good sense of arrangement, and that you are not a robot. **More from** *Jigsaw Studios. ☎ 01-668 3457*

Music Mastering

The ***Music Master*** catalogue of recorded popular music is reputedly the world's largest, and should be available by the time you read this. With a total of over 70,000 entries, *Music Master* is never going to make light reading, but it would appear to be an essential reference work. The book covers cassettes and compact discs as well as vinyl, documents deletions, and includes a certain amount of biographical detail, too. The only faults we can find with it are (a) that it lists titles alphabetically rather than chronologically, (b) that like anything else that attempts the impossible, it's far from complete, and (c) that being probably the world's largest and heaviest paperback, you can't exactly take it with you on the average train journey. Well worth the asking price of £19.95, though.

Get it Taped

Currently high on **Roland's** list of interests is their Annual Synthesiser Tape Contest, now in its ninth year. As before, the competition is divided into two sections: 'A' for professional musicians, and 'B' for those of more modest experience. Entries should take the form of a cassette of music no more than three minutes in length, and should your submission stand head and shoulders above all the others from around the world, you could find yourself being rewarded with a selection of prizes that includes a Tascam Portastudio 246 and Fostex speaker systems. **Application forms from** *Synsound (Dept ASTC), The Sound House, PO Box 37b, East Molesey, Surrey, KT8 9JB. ☎ 01-979 9997*

Incidentally, winning pieces from the last three years' competitions are available on a compilation cassette, costing £4.95 inclusive from the above address.

Atari Arrival

A teeny bit behind schedule, first production models of the **Atari** 520ST MIDI-equipped home micro (previewed in E&MM July) have hit High Street retail shops in Britain. According to the company's UK wing, there are already 100 of the 16-bit wonders in use in this country, many of them on the benches of established software houses, whose job it is to ensure the computer's hardware facilities are done justice in software. Atari are confident this software will start to appear in 'significant quantities' after the forthcoming Personal Computer World Show (Olympia, September 4-8, admission £2). Over 100 packages covering a wide variety of applications are under development and due to be launched at the show, but as yet, no musical packages have been completed. It's been confirmed that the Island Logic people are currently working on some MIDI sequencing software for the ST, while the company responsible for the Apple Macintosh-based Musicworks package are putting the finishing touches to a new program designed to work with the Atari's internal sound chip. **More from** *Atari UK, Atari House, Railway Terrace, Slough, Berks SL2 5BZ. ☎ (0753) 33344*

PolyMIDI Switch

Last month's review of the Micro Performance PolyMIDI I sequencer said UK distribution was to be through the Oxford Synthesiser Company. But shortly after the August issue went to press, we were told of a change of plan that involved distribution switching to *Capelle Music Industries, 333a London Road, Hadleigh, Essex. ☎ (0702) 559383* ■

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Exclusive Hands On Tascam's newest during September

At long last, the eight track Portastudio is here!

Topping the bill during our **TASCAM MONTH** we have the brand new 388 on show and on demo, exclusively in London at the Turnkey shop.

There's an eight track 1/4" tansport behind the smoked glass cover. Once you load the tape, close the lid and think of it as a cassette!

Integral dbx achieves a dramatic low noise performmance and there's direct access to all eight tracks. The built-in mixer is truly comprehensive means that there are no wires needed to set-up. Extensive EQ, echo and fold back facilities add up to the most convenient eight track system you can buy.

Also on demo for the first time, Tascam's super four track Portastudio the 246. Extra channels and facilities for the demanding musician who needs more studio features.

Ultim-Eight

Tascam's half inch Model 38 recorder is our most popular selling eight track.

There's *always* a deal at the Turnkey Shop when you put together a total package.

As well as several brand new Tascam mixers, you can choose from mixers by AHB, RAM, RSD, Seck, Soundcraft and Soundtracs.

During September we'll also have Tascam's Model 50, their all balanced, industrial eight track workhorse on show.

The choice is yours, you are free to check out all these latest products at the Turnkey Shop.

Walk in Wonders

Callers only, end of line Tascam mixers, dbx units, etc., below our cost..... first come, first served... all visitors get the chance to win one of ten Tascam tour jackets

PORTASTUDIO CLINIC
(Or, do you need your head changed?)

If you own a Portastudio (any model), then bring it in for a free check up at the Turnkey Shop any Saturday in September.

We'll have engineers on hand to check it's performance then perform a full routine clean up at no charge.

Turnkey is renowned for technical assistance at every level and we'll answer all and any queries that you may have during our clinics.

Many minor problems may be cured on the spot.

Rest assured that should your Portastudio exhibit any very serious fault, you can leave it with us for rapid repair back in our workshops. Bring your Portastudio along for a thorough check-up while you check out all the very latest Tascam products.

Portastudio Clinic only during September

Porta One Tape FREEBIE offer, extended till October.

In support of our Tascam month the importers are extending their offer of ten free cassettes until the end of September.

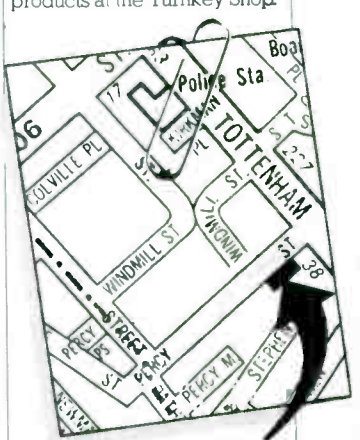
Buy a Tascam Porta-One, 244 Portastudio or 234 Syncaset and get 10 TEAC HDX cassettes free. (S.R.P., £23.80).

All these Tascam four tracks at Turnkeys usual bulk-buy discount prices.

London's 16 Track Centre

The MS16, one inch sixteen track recorder, is built to Tascam's highest engineering standards. During September it's up and running with the computerised, AHB CMC24 mixer.

Tascam Month at the Turnkey Shop is the ideal opportunity to check out the newest products from the foremost multitrack manufacturer - and to strike the best deal on any single product or on a system.



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You will discover the widest range of the latest in recording products, and all the help and friendly advice you need.

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TASCAM 234, Syncset, 4-tr Cassette	£525
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TASCAM Porta-One, s/hand	£349
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No Free Samples

Dear E&MM,

I've been reading, with some interest, the debate on sound sampling and allied topics over the past few months. For what they're worth, I'd like to add my own views.

At present, sound sampling is a bad thing, unless you are lucky enough to be able to afford an Emulator II or similar. Why? Because nothing else allows the user to be creative. Sampling does offer another source of sound, but for this to be used properly, the sampled sound should be recognisably different from that of common musical instruments we hear every day. Either that, or be significantly altered after sampling.

I can see the creativity in sampling a piano and cello and then merging them, or looping a banjo, but merely replaying an instrument (roughly) as it would be played in the real world is ludicrous. If you can't afford the real thing or can't play it, setting up an approximate sound on a synthesiser is potentially a much more creative way out. That way, we get the keyboardist's impression of a sound or instrument in much the same way as an abstract artist doing a portrait picks out the parts he or she believes important to give the character desired, or mutates them into something else to challenge the subsequent viewer.

This brings me to my next point. Many modern synthesists are too lazy when it comes to sound creation. Witness the success of cheap polysynths with limited facilities: one filter for six voices, no footpedal sockets, techniques like doubling-up keyboards via MIDI and willy-nilly use of sequencers. I'm not decrying the technology entirely: the DX7 is potentially a wonderful tool, and it would have been even better if Yamaha hadn't hidden all its functions away in that *box. And occasionally we get the odd real goody, like the Emulator II, the CZ101 and the TR909. What do these have in common? Great specifications (the small keyboard on the CZ101 excepted), coupled with easy accessibility to their facilities.*

Along with the OSCar, the above three are the only recent machines that have grabbed me as being really worthwhile. They prove some R&D departments actually think about their finished product, maybe even asking the odd musician or two to participate in the design as opposed to adopting the 'like it or lump it' approach.

Me? I'm sticking to my MS20 until I can afford a CZ101.

Roger Wilson
Glamorgan

So Long, John

Dear E&MM,

Re: Editorial Comment in the June issue of your rag. 'Who are today's average musicians?' We aren't. 'Where do they live?' Everywhere but Barnstaple. 'What do they do?' Everything but what 'Long' John Gadocha does.

We do it for art's sake, by the way. Being abstract artists, we don't care what the guitar looks like (smack, smack for being suggestive!), because we use it for its expressiveness. Synths provide sounds that make dodgy melodies sound almost interesting, but certainly not sexy. In short, 'Long' John, we shall dub you 'Prat of the Month'. By the way, what's the hosepipe for?

Prat for May was obviously Paul Walker, who ploughed into Martin Straw's quite

sensible criticism of sampling. If your name was Roy Castle you might manage a full-sized orchestra, but few enough people can guide their fingers around a keyboard as it is. Let's face it, Paul Walker is a complete waste of space.

By the way, does anybody actually like *Jean Michel Jarre's brilliant* Zoolook? *E&MM called David Sylvian's yawnworthy* Brilliant Trees *album of the year, yet* Zoolook *gets only criticism. Just goes to show – even E&MM are prats at times.*

But time, I think, to shake someone's hand. Despite his unfortunate name, Crispin Wickenden obviously has taste in despising electropop (even if ELP were terrible, which is why we're about to unleash our own supergroup on the world).

Well, the new logo looks quite decent, so we'll leave you with this thought: Criticism starts only when the innocent are protected.

IMP
Keighley

Peak to Peak

Dear E&MM,

Question: what do owners of the OSCar, Fairlight and Quadra have in common?

Answer: the ability to create two resonant peaks per voice.

These peaks are not the kind that mountain climbers attach flags to. They are emphasised bands of harmonics which can dramatically alter the sound of almost any waveform.

Try this: sneak up on your synth and frighten it by looking at the filter section as though you've never seen it before. It probably says something like 'Envelope Amount, Low Pass Cutoff Freq, Resonance and LFO Amount'. Now ask a few obvious questions, like: 'Why don't you have a high-pass cutoff frequency control?' and 'Why don't you allow inverted envelope control?'. As your synth points to its super-deluxe brother in mitigation, press home your advantage with: 'Why is there only one *resonance control?'.*

Several upmarket synths have extremely comprehensive filter sections, but very few cater for more than one resonance parameter. Many sounds – the human voice is a good example – have more than one band of emphasised harmonics. But the most exciting aspect of this is the range of entirely new sounds that can be created on a synth with a suitable filter.

Most keyboard players are familiar with the incredible bass sounds that can be produced with a MiniMoog: it cuts through many recordings like a knife, and leaves most other bass patches sounding totally inadequate. This is partly due to the three oscillators available on the MiniMoog, but by experimenting with an ARP Quadra which also allows three oscillators per voice when played monophonically, I've found that the famous bass ▷

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It was in April's What Keyboard magazine that the British music public heard about the Korg DW6000 for the first time.

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So how does Korg manage to achieve the quality of digital sounds coupled with such ease of use? Quite simply, whereas on a traditional system the starting point is normally a couple of basic waveforms – for example saw tooth or square waves, Korg have replaced them with eight highly complex waveforms. As What Keyboard went on to state:

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The DW6000 has two oscillators per note, so you can combine one waveform with another giving 64 possible waveform combinations just to start with. Apart from these, the control panel on the DW6000 is very understandable. It only takes a minute to understand, with familiar VCF, VCF EG and EG etc., together with programmable portamento, chorus and noise generator, plus two modes of poly and unison mode for some very powerful lead sounds.

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Dominic Milano summed it up in Keyboard magazine*:

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And as Dave Foister said in Electronic Sound Maker:

"The DW6000, the first of a new hybrid of instruments; an instrument which brings controllable programmable digital sound within the reach of anyone who understands the basics of conventional synthesizers, and for that, the DW6000 has quite simply no competition."

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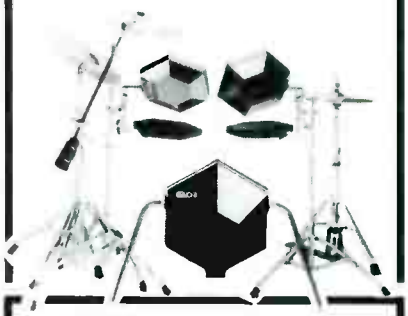

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sound can be produced by careful adjustment of the second resonance control attached to the phaser section. From my work on the ARP, it appears that the filter on the Moog slightly emphasises the harmonics close to the fundamental pitch, thus creating a very bold, dominating tone. Perhaps someone with suitable equipment could give a visual representation of these effects.

Some older synths, like certain members of Korg's impressive PS3000 series, had as many as three resonance settings per voice, yet despite the truly dramatic changes in timbre that this makes possible, manufacturers show no indication of introducing it more widely.

Synthesisers should be about making new experiences in music and, perhaps with E&MM's help, we can expand our horizons more readily.

Martin Straw
Southampton

Orchestral Manoeuvres

Dear E&MM,

Having taken your magazine since Issue 1, I'm pleased to see the uprise of serious debate in your columns. The world of electronic music has often been a source of mystery to the classical musician, and the converse would also appear to be true.

Analogue vs FM synthesis, sampling vs the rest – the story never changes. The pianoforte was a bête noir in the 18th century, when it was set against the tonal versatility of the two-manual harpsichord – touch-sensitivity was just a gimmick. If we translate this into a modern context, do we find debates between members of the LSO concerning oboes having a 'fatter' sound than a flute? I would think not. The essence of any instrument is both what it does and what it sounds like in the hands of someone who can play it.

I wish no more for the cello parts in old Beatles numbers to be replaced by a Fairlight than I wish to see the remarkable versatility of the CMI replaced by an orchestra simply because it is more natural. Neither do I wish to see rich analogue sounds substituted for delicate DX tones where DX sounds are appropriate to the composition.

It's a case of horses for courses, and if history can teach us a lesson, Brahms wrote his piano concerti for the piano because that instrument suited the idea in his mind. Today we have the luxury of being able to choose the sound we want from the instrument we wish, manipulating it to the best of our imagination and, with luck, playing our compositions to the best of our ability.

Taken to its unnatural conclusion, this obsession with a particular type of instrument would lead to orchestras of bassoons and electronic musicians playing only DX7s and MiniMoogs. Forget the music; listen to the system.

Steve Alker
Herts

DXchange

Dear E&MM,

After reading Wayne Blackmore's letter last month, I'd like to air some somewhat different views. I have never had or used a Yamaha DX synthesiser, and would agree that they appear hard to create a desired sound on. But, after hearing a friend's CX5M demo tape, I was amazed at the quality and richness of many of the sounds it produced. Mr Blackmore states he is 'fed up' of hearing about FM synthesisers, but surely the only reason we've heard so much about what is now an ageing synth, is that it is excellent.

He also regards velocity-sensing as 'a gimmick that does nothing to improve the sound'. Why, then, are just about all the other synth manufacturers fitting their new synths with velocity-sensing circuitry? And why were Korg criticised (E&MM March 85) for producing their excellent DW6000 without pressure- and velocity-sensing, only to follow it six months later with the velocity-sensitive DW8000?

Anyone that plays such an instrument will inform you that a large variety of different

sounds can be produced by key velocity changes.

So why have so many people bought FM synthesisers? Probably because they are the best available for variety and excellence of sounds. I once calculated that if you played all the different sounds on the DX7 for one second each, it would take you many billions of times longer than the Universe has existed. Rather longer than would be possible doing the same thing on a Juno 106.

And the E&MM bias? The only reason for the frequent references to Yamaha equipment is that the company seems to be producing a wide range of good products, that sets a standard against which other products may be judged.

Analogue synths will never die, but surely there's a place for FM and digital technology too. And in case you were wondering, I own a humble CS01 and am very pleased with it.

Andy Halliwell
Rochdale

In the Club

Dear E&MM,

As head of the DX Owners' Club, it seems only right that I pick up the gauntlet thrown down by Wayne Blackmore in E&MM August.

First, Mr Blackmore is correct in assuming 'Y' (note abbreviation to save space) have used some of the Zlatna TCS100 technology. In fact, they've improved the design and renamed it MEDI – Mind Expanding Digital Interface – and connected it to the green buttons of their FM synths. When the user switches on and presses one of these buttons, a transfer of digital information takes place via the sensitive nerve endings in the fingers of the user to the brain. The message sent is basically 'Xplore, Xamine, Xperience', and entices the user to remove him/herself from the musical mudbath in which he or she stands, and progress. Like anything digital, the system relies on there being a complete and working link, ie. sensitive nerve endings and an open mind. Judging from his comments about velocity-sensitivity, it would seem Mr Blackmore has some kind of fault at the receiving end.

Personally, I believe the phrase 'each to his own' sums up the situation, and it should be left to the individual to decide exactly which type of synth and sound he or she prefers. So let's not start a battle between FM and analogue. A state of entente cordiale would be almost infinitely preferable.

And as for E&MM featuring mainly Y products, it's worth remembering that a couple of years ago, the review content of the magazine was extensively Roland, with Jupiters, Junos, Drumatixes (Drumatices?) and the rest of them, when these were the most interesting products on the market. More recently, some of the most interesting products have appeared from Y, yet the content of the magazine remains unbiased, and there are plenty of other manufacturers' products reviewed.

Tony Wride
DX Owners' Club

Projected Criticism

Dear E&MM,

I've bought every issue since No 1, because I'm a relatively poor musician seeking to expand my horizons, my techniques and my sound. So, black armbands for the passing of the projects, the drum column and the bits on understanding synthesisers; in short, the educational side of E&MM, which I still use for reference.

Where is Patchwork? Down the MIDI toilet? OK, so it's a hi-tech world out there and you always did the best reviews, but please, please, please: don't give us a whole magazine-full.

It's all very well doing a series on the Fairlight when most of the readership doesn't have one; I respect the educational side of that. But where are the articles about modifying Casios to get more out of them?

Come on, E&MM. Anyone can do the reviews, so take some responsibility for the 'E' in E&MM. How about a build-it-yourself sampler? I've loved the sampling debate that's been going on...my comment? Swap one grandmother for Ensoniq Mirage.

Sean Sanderson
Lancaster

You're entitled to your opinions, but believe it or not, much of the change in E&MM's editorial content is beyond the control of the editorial staff. *Patchwork* is no longer a regular feature because we've found ourselves with a paucity of decent patches. If readers start sending them in again, we'll print them. The same goes for the build-it-yourself projects. If people send us worthwhile circuits, we'll publish them for the benefit of everybody else. Incidentally, we have run a number of features on modifying existing machines so that they can perform sampling tasks, and even devoted more than 20 pages to the construction of a complete sound-sampling device, the Powertran MCS1. Our objective will always be to inform, to educate, and to entertain, in that order. But in order to fulfil those objectives properly, we need the co-operation of the musicians on the receiving end. ■

▶ PLAYBACK

▶ After twenty-five years of working together in music, production and video, Kevin Godley and Lol Creme are tracked down in a seedy part of what may or may not be Southern California

▶ Words: *Tim 'Chandler' Goodyer* ▶ Shots: *Matt 'Spats' Vosburgh*

It was a cold autumn morning in downtown Hollywood. There was a light rain falling and the town had acquired a renewed air of desolation. The windows were all shut, and even the birds had left town. In a small, dingy office above a beat-up liquor store, I was searching for a phone number. My desk, as usual, was a mess, but then that's all part of the journalist's image. I suppose I should have guessed: the number was in the bin.

The phone rang three times before someone answered it. 'Kev? It's Tim. I'll see you in

20 minutes outside Mario's', I said, and hung up.

The Kev in question was one Kevin Godley. He was one half of a partnership that was big in music videos and had been for some time now. I had some questions I wanted answered, and I reckoned he had the answers. He'd just got back into town from New York where he'd been with his associate, Lol Creme. They'd been doing a lot of talking there too – most likely to the wrong people – and I wanted to know why.

I picked up the phone again and dialled another number quickly. 'Hi, Spats. Look, I've got a hit on. It's Kev Godley and Lol Creme and I need your help...Yes, *that* Godley and Creme. I'll try to lead them down towards the beach – get in as many shots as you can...Great...And Spats, don't let me down.'

I'd hired a new Cadillac convertible for the occasion. It wasn't cheap, but I knew I'd have to make a good first impression if I was going to get any further than the average two-bit LA copywriter. As I drove it towards Mario's I wondered just how many other hacks would be in the know about this pair. Sure, they were big names once, but their operations had changed a little since then. Luckily I'd been put in touch by a mutual acquaintance, Karen, who'd since high-tailed it out of town. Was it an omen?

The boys had a record as long as Sunset Boulevard. They'd worked with the sort of talent that makes your mouth water just thinking about it. They could drop names like Wall Street could drop bucks – Duran's 'Girls on Film', The Police's 'Synchronicity', Herbie Hancock's 'Rockit'.

They'd also been busy expanding their activities. From an ad placed in a couple of magazines I'd never heard of – *The Face* and another whose name I couldn't recall if some punk was pointing a gun at my head – they'd recruited four new faces to help out with creative ideas. The ad had attracted the attention of around 1000 people on the strength of only one appearance, and I reckoned that was a pretty good indication of Godley and Creme's stature. But I still needed information, and I needed it fast.

Kev and Lol were already waiting when I arrived at Mario's, a small café that's far enough off the beaten track for big names to sit and talk without fear of being disturbed. 'So what's all this about NYC?' I asked.

Godley drew heavily on a cigarette and replied in a gruff voice. 'We've just released a single and an album over there, so we've spent a week talking about ourselves. It was great!'

I wasn't so sure. After all, it wasn't me they'd been talking to. 'So what about the music racket: you given that up?'

'You can't abandon music if it's there in your brain', Godley continued. 'But you can relegate it to something of a hobby which is what we *have* done. We do so much that we find it difficult to concentrate 100% on two things at the same time, so we've said to ourselves: "we'll make music when we wanna make music", and when we do that we'll put 100% of ourselves into it then.'

I managed a smile. It hadn't taken long for the conversation to get round to percentages. As we began to walk aimlessly down the street, the rain's aim seemed to be improving all the time. To begin with I was worried that we might be recognised, since Kev and Lol had once been half of a set-up called 10cc, a combo that had had more hits than the wall behind the St Valentine's Day Massacre. I needn't have worried: we were quickly beginning to look like any other sodden threesome. I sidestepped into a doorway, the others followed. 'So how did you get in on this in the first place?' I asked.

Godley: 'It just happened.'

Creme: 'Commonsense.'

Godley again: 'When we first started doing video we felt our loyalties suddenly change. It gave us a new palette to work with that we didn't have before.'

This was starting to sound like a narcotics operation. I looked to Lol for something constructive.

'It's more fun. We'd been making records for 15 years and this was dead fresh – so we did more of it. We loved it and it became a business.'

Godley had lit up another cigarette, and was looking down the street the way we'd come, as if he was scared we might be being followed. Whatever, he left Lol to do the talking. I had the feeling I wasn't making myself clear. 'Yeah, great, but how did it *start*?' I pleaded.

'Well, even when we were writing songs we always thought of things in terms of pictures – probably because we both come from an art school background. We made a record called 'An Englishman in New York' that was very visual and for which we had ideas for visual images to go with the track.'

Now I was getting somewhere. 'So who put up the bread, Lol?'

'We said to the record company: "Look, these pictures go with this music; *please* let us do a video for it". And much to our surprise, they said yes.'

My surprise, too. The record company obviously didn't know these boys as well as I did, but that 'please' was a killer. One other thing that was a surprise was the rain. Or more precisely, the sudden lack of it. It was time to move on, so we made our way towards the beach. Godley stopped looking over his shoulder and picked up where Creme had left off.

'Promos had just begun to happen in those days – particularly if you didn't have a band or you weren't able to travel but still had to promote your record. We didn't have a band and couldn't travel, so we did the promo.

'It was just testing the water – getting behind the camera. It was such a pleasure and so easy. It was like coming home; it was where we belonged. We realised what berks we'd been, making pictures using music instead of a camera.'

Now we'd reached the beach and there was no sign of Spats. Just as well, or his cover would have been blown.

Now it was Creme doing the talking. These two were taking turns to speak like gangster families take turns to start wars. 'One of the reasons we'd left the group was the thought that one day we might be able to direct a movie. But we thought as long as we stayed there was no way that was going to happen. All we were being offered was scripts to go with stupid love songs – that's not the same as directing films.'

He kicked an empty bottle from the sidewalk into the road. 'It's ironic that a record company, not a film company, decided to risk some money. You can see their point though: why should two guys that have had success in the music world be able to direct a film? You're talking about an awful lot of money when you're making films. You blow four hundred bucks in a day if you blow a recording session, but you can blow 40 grand in the same day on a film set, *very* easily. They were right not to let us. But luckily we found a process that allowed us to learn how to make films, so that today we feel confident that they wouldn't be risking anything if they *did* let us make a film. We've learned through video.

'A year afterwards we turned round and there was a little industry going. Now it's a big industry and we're up around the top of it. watching it all pile up around us, and we feel a responsibility towards it.'

Like the weather, the story was slowly coming together. A couple of guys from Manchester, England make it big with a beat group. They leave after several years of success for the uncharted waters of video-making – and repeat their success. With the kind of money these two were talking, I guessed there must be a lot of other operators eager for a slice of the action. 'So what's the competition like, Kev?'

'I'm certainly not impressed by most of it. It's the same that happens to anything in the commercial world: as soon as the money gets big and it becomes an industry, the powers that be milk it. Which means that they make as much happen as soon as possible, they bombard you with it and, inevitably, the quality drops.'

'Even when we were writing songs we thought in terms of pictures – probably because we're from an art school background.'

Money again. No matter where the conversation begins, it always works its way back to money. I glanced round as casually as I could. There was still no sign of Spats...

'It's not just the business people that are responsible for the overkill', hissed Creme. 'The people who are making them are jumping in and using their adrenaline more than their brains. We watched MTV in New York, and it's the only time we've seen our ▷

E&MM SEPTEMBER 1985

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OUTER SPACES

Digital reverb, for so long the sole preserve of the large multitrack studio, is now affordable, controllable and MIDI-compatible. We report on two trailblazing machines.

Paul White & Simon Trask

When Roland introduced programmable effect patches on their SDE3000 and SDE1000 digital delays in late 1983, it laid the ground for a new generation of signal processor that offered the musician and sound engineer a much greater degree of flexibility in the use of such effects. It stands to reason that if you can commit the details of a sound patch to memory, you're much more likely to use it in a creative and consistent way.

The obvious next step was to tie this newfound programmability in with MIDI, which is what Yamaha did with their D1500 DDL in the latter half of 1984. The 1500 allowed 16 user-programmable effects patches to be selected by MIDI patch-change codes over a MIDI channel selectable between 1 and 16. This form of remote switching is a real boon to keyboard players with MIDI-compatible synths, as it enables you to associate a musical sound with a particular delay effect. At the touch of a button, you can go from a piano with a single repeat echo to a flanged string sound to a choir sound with ADT.

Of all the sound-processing effects that digital technology has recently brought into the hands of the less-than-wealthy, reverberation is probably the most important. It's the treatment that's been around for longest, and the reason for that lies in the fact that it's the effect we encounter most frequently in the outside world.

For the uninitiated, reverberation is a phenomenon produced by multiple reflections of sound waves, and has a character that's determined by the environment in which the sound occurs. The direct signal is obviously the first to reach the listener (and is therefore also the strongest), but depending on the size and shape of the environment, there will be any number of subsequent reflections from the various surfaces which define that environment. It's the number and relative strengths of these reflections which give us a sense of spatial location and dimension, and add both intensity and quality to the initial sound.

The reflective ability of the surfaces involved obviously plays an important part in the reverberation effect, so surfaces such as thick carpets and curtains are good at absorbing sound and tend to create a 'dry' environment, whilst hard surfaces such as marble, stone or concrete are highly reflective, and can create richly reverberant sounds. It's possible to create an acoustic space with surfaces that are completely non-reflective (it's called an anechoic chamber), but if your home doesn't have one, every sound you play is in some way affected by what happens after it's passed through your amplification system.

But what happens if you don't want your music to sound as if it's being played in a living room? Well, you *could* consider investing in a device designed specifically to create artificial spatial environments. A reverberation unit is something that *simulates*, within reason, the characteristics of naturally occurring environments (plus some unnatural ones).

Hence the great importance musicians, engineers and producers have been attaching to good reverb for a generation or more. It doesn't matter if you have no other outboard effects at all in your studio – a good reverb unit will carry the thing off.

Until recently, sources of really good artificial reverb were both complex to use and expensive to buy, but thanks to the downward cost spiral in which digital technology currently finds itself, such sources have come within reach of the vast majority of musicians and sound engineers. The two machines under review here – the Yamaha REV7 and the Roland SRV2000 – are both ground-breakers when it comes to bringing digital reverb to a bigger, less affluent market than ever before.

Aside from being relatively inexpensive, they share MIDI patch selection facilities, a standard rack-mounting format, and quite a bit more besides. They also have more than the odd difference in spec and in operation, though, as we shall soon see.

Yamaha REV7

In historic terms, the REV7 is a combination of the programmable reverb circuits that grace the company's REV1 professional unit (though suitably scaled-down – the REV1 is *very* expensive) and the MIDI interconnection facilities and affordable price of the D1500 delay line. As such, it breaks new ground for Yamaha as a manufacturer, and like the Roland unit, is further evidence that there is a rapidly increasing empathy between designers in the musical instrument and studio fields. The idea is that the REV7 (and machines like it) have a specification that would be more than acceptable to the sound engineer, while having the operational facilities to give the musician something that's genuinely accessible and creative in use.

Let's get the obvious over with first. The REV7 is a 2U-high, 19" rack-mounting unit, such as will fit alongside your 19" rack-mounting washing machine and your 19" rack-mounting microwave oven. Apparently, even the most practically-minded studio engineers appreciate good cosmetic design, and their clients certainly do, so with this in mind, the REV7 is off to a good start. Cast in a serious-looking black, gold and grey livery, the machine exudes style and looks as though it means business from the word go. The front panel plays host to a two-digit red LED readout showing the currently selected effect patch, and a backlit 2 × 16-character LCD which conveys the current program name and the various associated parameters.

To the left of the aforementioned LCD window is an eight-point input level LED meter, whilst beneath the window are a mono/stereo input switch, an input level selector, a rotary control for mixing the direct and reverb signals at the output stage, a three-band parametric equaliser, and an EQ on/off switch to go with it. The three EQ bands have overlapping frequency ranges which together cover an overall range of 50Hz-20kHz. They act on the reverb sound at the pre-reverb stage, but *not* on the direct sound. Rotary controls governing frequency and level adjustment are provided for each band, and as you might expect, the provision of an EQing facility such as this greatly enhances the degree of control you have over the sound produced – though it's worth noting that the EQ settings *aren't* programmable.

The right-hand half of the front panel is occupied by a mass of closely-positioned pushbutton pads which form four groups of controls. First off is a group of eight pads which allows single-press selection of the first seven preset effects, or (if the User Memory pad is switched in) the first seven user-programmed effects. The next group of controls includes increment and decrement pads which allow you to step through all 90 programs, whilst the third group is a numeric keypad which allows you to punch in your desired effect number.

You needn't confine yourself to the front panel, though, as the REV7's packaging gives you a hand-held remote control unit (complete with lengthy cable) which plugs into the rear of the machine and allows you to select the first seven preset and user effects with single button-presses (as on the front panel), and to step upwards through the remaining presets. Sadly, you can't use this facility to select the remaining user-programmed effects, so if you envisage using the remote control a lot, you'll have to put your most-used effects in positions 31-37, which is a nuisance. Neither can you control the EQ section or carry out any parameter editing remotely.

Moving neatly back to the front of the REV7 itself, remaining controls include pads dedicated to each of the seven user-programmable parameters (see later), a MIDI Control pad which gives access to MIDI channel and patch allocation, a Bypass control which cancels the reverb signal (this allows you to switch instantly between reverbed and 'dry' signals), an Out Phase pad which reverses the polarity of the right output of the reverb signal, and a Mute control, which the manual claims cancels the entire output but in fact doesn't affect the direct signal when Bypass is on.

And so to the rear panel. Whereas the input and output sockets on the REV1 were XLR-type only, the REV7 has XLR *and* quarter-inch jacks. Again, this is an indication that the cheaper unit is aimed at a dual-section marketplace comprising studio people (hence the XLRs) and music people (the jacks). So now you can make the most of your stereo synth, though as noted earlier, it's possible to switch the REV7 to accept a mono input which will then be output as a stereo signal.

> *'The most important reverb characteristic is decay time, or the time the effect takes to decay beyond human hearing.'*

Other back panel sockets are an eight-pin DIN for the remote control unit and two five-pin DINs – you guessed it, MIDI In and MIDI Thru.

Before going any further, it's worth looking at the ingredients that go to make up a reverb sound as we perceive it, and to examine the degree of control the REV7 allows you to exercise over them.

Probably the most important reverb characteristic is its decay time, which convention says is the time taken for the reverb to die

away to a level 60dB below that at which it started. For all practical purposes, though, you can think of it as being the time taken by the reverb to decay to the point where you can no longer hear it. In the case of the REV7, this can be varied up to a maximum of ten seconds and, though this is shorter than the figure offered by the Roland reviewed later, it's still more than long enough for any normal application we can think of.

But the REV7 offers a lot more in the way of variables than just decay time. Other parameters govern the initial delay between the direct sound of the instrument and the first of the reflections, the delay and level of the first reflection, the reverberation times of the high and low frequency portions of the signal (expressed as a proportion of the mid-frequency reverb time), and the diffusion. It's a characteristic of natural reverberation that the higher frequencies tend to be more readily absorbed by an environment's surfaces. The REV7 allows you to simulate (or defeat) this characteristic and, in fact, allows you a fair degree of control over the way in which the 'walls' of your artificial environment absorb different parts of the audio spectrum with different levels of efficiency. Diffusion, meanwhile, is the rate of increase of complexity in the amount and strength of the reflections – the more irregularly shaped the environment, and the greater the number of surfaces it has, the higher the diffusion.

These then, are the variable parameters the REV7 presents you with. But bear in mind that in this particular design, these parameters are to some extent affected by the way the machine's memory is configured. Time to take a look at programmability, then.

The REV7 has 30 onboard ROM effects and 60 user-programmable memories – the same quantities you'll find on the REV1, and a healthy number that puts it ahead of the current competition. There are five effect 'types': REV (Reverb), E/R (Early Reflection), Delay, Echo and MOD (Modulation type), the latter including the sort of phasing, chorus and flanging effects a digital delay line would offer you. Each effect type has up to seven programmable parameters, the nature of which varies according to the type. There are also 'invisible' (non-programmable) parameters which define the basic sound of each effect type.

'The REV7 has 30 onboard effects and 60 user-programmable memories – a healthy number that puts it ahead of current competition.'

The Early Reflection sounds feature the standard initial delay, first reflection and diffusion parameters, and also include liveliness, room size and mode. Liveliness refers to the rate at which the reflected sounds fade (a setting of zero simulates an acoustically 'dead' room), whilst room size determines the time gaps between the early reflections in a manner that's directly proportional to the size of the room (Yamaha have thoughtfully included a Room Size chart at the back of the REV7's user manual). Mode is a handy feature which provides six special cases of early reflection. These are respectively: small hall, large hall, random (an irregular series of reflections which couldn't occur naturally), plate and spring.

Delay type settings allow you to set an initial delay which can give a total possible delay of one second, first reflection delay and level, left and right channel delay times (from 0.1 to 900 msecs) and an overall delay level.

Parameters for Echo-type effects are very similar, with the addition of a feedback gain parameter (top setting gives a virtually infinite repeat) and what Yamaha endearingly call 'high dump', which allows you to reduce the high-frequency response of the echo effect to provide a more muted sound. Needless to say, this unit won't give you the flexibility of a dedicated echo device, but it's a useful addition to the arsenal of effects that the REV7 is capable of creating.

Finally, the Modulation-type effects all feature the initial delay and first reflection parameters already mentioned, with the addition of various LFO modulation parameters. Thus, the stereo flanging settings allow you to set the depth and frequency of modulation of the delay time, whilst the chorus effects allow you to set amplitude modulation depth, delay modulation depth and modulation frequency. Other modulation effects available are reverb flange, stereo phasing, tremolo (well, vibrato actually) and the enigmatically-named 'symphonic', which turns out to be a variation on the ADT/chorus theme.

When it comes to actually setting up a sound using this wondrous array of parameters and groups of parameters, you soon come to realise that this is a much more painless process than the size of said array might imply. If you have a reasonable knowledge of what reverb is about (though you won't find an introduction to the subject in the user manual, incidentally), and some idea of what you want to achieve 'pseudo-acoustically', selecting each parameter in turn and varying it turns out to be a straightforward three-step process that rapidly becomes second-nature.

It goes without saying that once your artificial ambience is the way you want it to be and you've saved it to memory, it remains there even when the REV7 is switched off. Unfortunately, you can't give each of your own reverb patches a name under which to save it, which, when you consider that there's plenty of space in the REV7's LCD for the display of a word or two, is a bit of a shame.

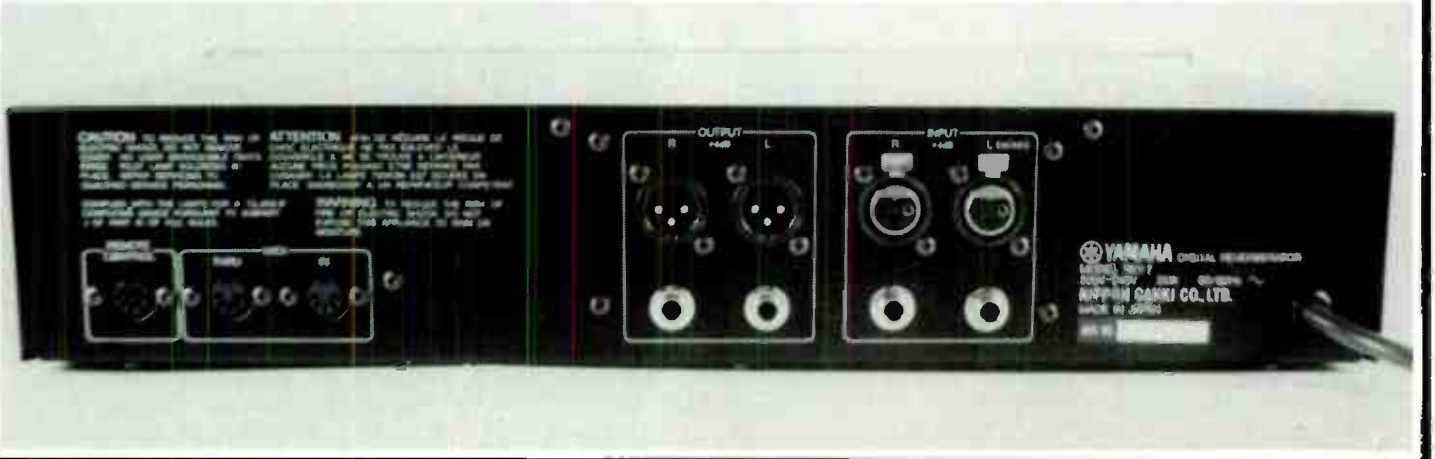
Much more serious, though, is the fact that the REV7 doesn't actually allow you to create reverb patches from scratch. This limitation is imposed by the way each type of effect has its own seven variable parameters, and what it means in practice is that all you can ever do is edit presets – not quite the open-ended programmability that mass of editable parameters promises at first sight.

If you're working on a Large Hall preset, for instance, you can muck about with decay time, initial delay, and the delay and level of the first reflection, among other things. But what you can't do is experiment with different patterns of initial reflections, or their liveliness or room size. This really is a bit of an imposition, and it's only partly offset by the fact that the presets themselves are both high in quality and varied in character, and by the way the plethora of editing permutations means you can change a preset sound beyond recognition.

But enough of this niggling. What your all itching to know is: what does the REV7 *sound* like? On the whole, unbelievably good. Then again, a sampling frequency of 31.25kHz (the REV1 sampled at 44.1kHz, but of such compromises are budget units made) giving a maximum bandwidth of 12kHz, and linear 16-bit quantisation, you'd *expect* the sound quality to be good.

Starting with the conventional Hall and Plate sounds, these are pleasantly smooth and natural-sounding, and the only disappointment is the fact that varying the diffusion parameter does surprisingly little to alter the overall sound. Even if you know what you're listening for, quite drastic changes in this version of diffusion can be almost imperceptible, which means you have to adjust it from one extreme of its range to another to derive any knowledge of its existence. Which, of course, renders all the settings in between more than a mite redundant...

The Early Reflections modes provide just ▷



that – without the main body of reverb. They're useful for simulating environments with relatively unobtrusive reverb characteristics (the average living room, say), or for giving a mono sound source some semblance of stereo depth. Both liveliness and room size are editable parameters in this field of operation, which gives a fair amount of flexibility, and makes it all the more difficult to understand why this facility is omitted from some of the REV7's more commonly used reverb treatments. The way things are structured at the moment, all your hall simulations have to be built up using the same set of initial reflections, and there's no way you can change their spacing or decay profile.

With the object of designing a thoroughly modern reverb unit, Yamaha have endowed the REV7 with the ability to create plenty of special effects in addition to more traditional ones. Thus, you'll find ample provision for the creation of reversed and gated reverb patches, both of which can be very convincing.

As for the DDL effects, these are all more than decent in their own right (though it's worth stressing that the REV7's delay section isn't nearly as comprehensive as many dedicated DDLs), and one patch in particular, flanged reverb, is very expensive-sounding and, in the right hands, surprisingly tasteful.

As for the EQ section, it's worth pointing out that you can create most standard reverb effects (and quite a few non-standard ones) without it. Thus it's not really too much of a handicap that the section's values aren't programmable, and in many cases, you'd be best off looking upon it as an extension of the EQ on the mixing desk.

And so to MIDI which, as we all know, is a lot more important than reverb sounds, and probably more important than music itself. The REV7 follows in the footsteps of the D1500 by allowing MIDI channel selection (all 16 channels and Omni) and assignment of any effect patch to any voice patch – the 90 effect patches may be assigned to any of voice patches 1-128. The existence of a MIDI Thru socket is certainly going to be a bonus for anyone who wants to incorporate the REV7 into a broader MIDI setup but lacks the requisite MIDI routing unit.

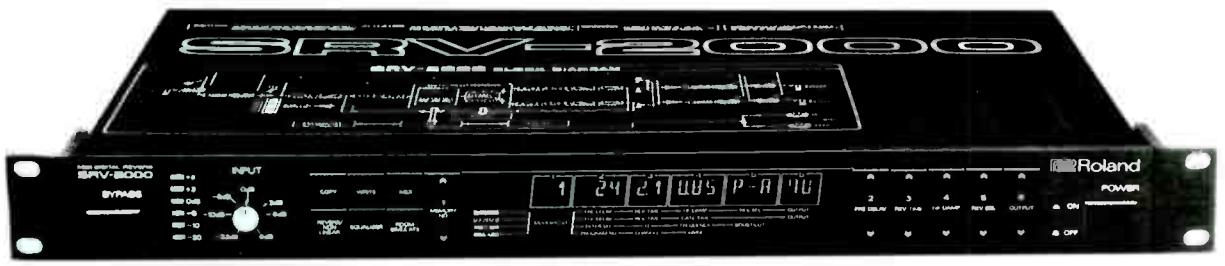
'As for EQ sections, you can actually create some excellent standard reverb effects without using them at all.'

The patch-assignment facility is particularly useful. So much so, in fact, that it really should have been part of the MIDI spec from the beginning; it would certainly help if manufacturers were to implement a similar allocation system on synthesisers from now on. It's never going to be the answer to all your problems (you can assign the same receiving patch to any number of transmitting patches, but a transmitting patch can only have one receiving patch – for fairly obvious reasons unless you adopt an even more sophisticated system).

What Yamaha haven't included is the facility to disable patch changes, though you can minimise any problems this might cause by assigning all your voice patches to appropriate effect patches. The current (lack of a) system relies on users aligning the patches they wish to combine, but more often than not means people end up using certain combinations purely by chance, or else selecting patches manually on the slave instrument.

What's a real shame is that there's no way of saving any of your carefully-crafted patches or instrument-specific voice/effect allocations. Despite a healthy number of user-programmable memories and the above-mentioned patch allocation system, there are plenty of situations (particularly in a professional studio environment) where single and bulk patch dump facilities would be invaluable – notably for loading customised sets of effects. Even more valuable would be the ability to load a new set of voice/effect allocations tailored to a particular synth, or even tailored to a new set of voices for the same synth.

There's no earthly reason why effect patches shouldn't be given the same 'transportability' we take for granted with synth patches – after all, the requirements are basically the same.



Roland SRV2000

Roland's offering is a neat rack-mounting package that can synthesise and store up to 32 different acoustic environments (rather less than the REV7), and can create contemporary gated or non-linear sounds in addition to the more conventional rooms, halls and plates. The memories can be accessed using MIDI patch-change information, increment/decrement footswitches, or the front panel controls.

Like the Yamaha, the SRV gives you a high degree of control over a number of different reverb parameters, including room size, initial reflection characteristics, reverb density and frequency content, to name but a few. More on those later, though.

Turning to the spec sheet, we find that the maximum reverb decay time is a massive 99 seconds (far, far longer than the same parameter on the Yamaha) and that this can be frozen to give infinite sustain (plus or minus 10%) by means of a footswitch. In this mode, the sound can be added to in real time, which means layered reverb effects are a very realistic possibility.

In terms of styling, Roland's designers have adopted a different – but by no means inferior – approach to making their machine look impressive. The SRV2000 has a typically Roland black anodised panel, and a really comprehensive numeric display. Looking more closely, we find that the first controls from the left of the panel are the bypass switch (complete with status LED) and the input gain control, the effects of which are monitored by a six-segment LED meter – much the same as on the SDE2500 DDL (see next month's E&MM for a review of this. The multi-function display is flanked by control buttons, the exact functions of which we'll be considering later, and the display itself comprises no less than six windows, all of which contain either two or three seven-segment LED numeric displays. Whether you prefer this approach to the all-embracing LCD window of the REV7 is a matter of personal taste; objectively, they both do their jobs admirably. Directly to the left of the display is a rocker switch that increments or decrements the memory number, while to the right of the display are five more similar switches, which control the parameter values displayed in the last five windows. All these controls work in the same way by stepping up or down through the parameter values, and pressing both sides of the switch increases the stepping rate.

Turning our attention to the back panel, we find MIDI Out and MIDI Thru connectors and a recessed reverb/direct knob, in addition to the more usual signal and footswitch connections. As is customary with reverb units (and like the REV7), this is a mono in, stereo out machine, and could therefore find use as a device for beefing up mono signals by spreading them across a stereo soundstage.

In the footswitch department, there are five sockets: two for preset up/down switches, two for delay in/out switches, and one to activate the aforementioned Infinite facility. No footswitches are included in the Roland's RRP, but they're very straightforward units, so if you haven't enough change to buy any, you could always make some.

Time to get more seriously into what the SRV2000 can achieve in practical reverb terms. Unlike the REV7, the Roland machine *doesn't* confine you to editing factory preset patches, since the design imposes no limitations regarding which parameters you can adjust within each type of effect. You start setting up a reverb sound by choosing one of the basic plate, room or hall settings, and then adjusting the parameters until you achieve your desired effect. Two plates, five halls and eight room simulations form the basis of all the

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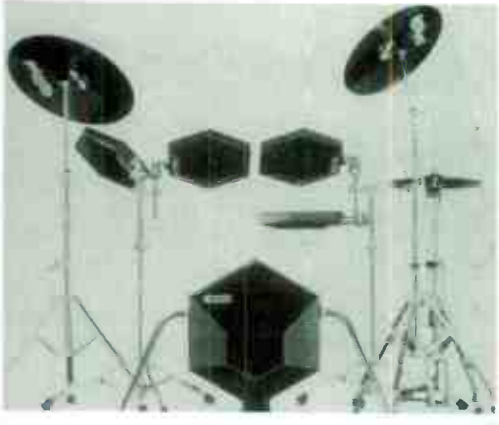

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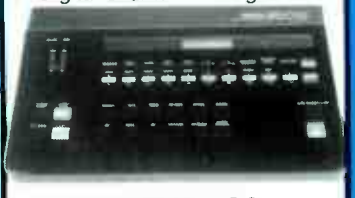

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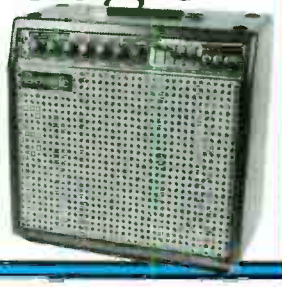

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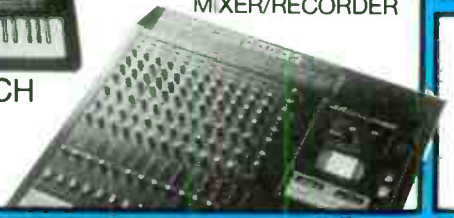

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effects, the rooms varying in size from a one-foot cube to a hundred-foot cube. Size in this context doesn't define the reverb time, but dictates the colouration and reverb density of the environment; the same is true of the halls and plates.

Decay time is adjustable from 0.5 seconds to 99 seconds though the choice of basic 'environment' does dictate the maximum decay time for a particular effect. You can add a pre-delay up to a maximum of 999mS (to create the illusion of distance between the sound source and the nearest wall), and there's also a rather sophisticated EQ section, which comprises two parametric stages and a shelving high pass filter. These are programmed via the increment keys, and the display when the unit is put into equaliser mode using, you've guessed it, the Equaliser button.

Of course, a real environment does not reflect all frequencies equally. Most manmade rooms tend to absorb high frequencies more readily than low ones (probably due to the recent fetish for flock wall paper), and it's for this reason that most electronic room simulators contain some form of high-frequency damping control. The SRV2000 lets you choose from 99 levels of HF damping, so you can create an emulation of just about any size of enclosed space – from the empty hold of an oil tanker to the inside of a sleeping bag (well, almost).

That's all very well, but what if you're after an *unnatural* acoustic environment. No problem: just press the non-linear button. The non-linear section allows you to gate any reverb effect that you may have previously set up; the maximum gate time is 450mS, which is more than adequate for any gated effect we've ever come across. Although gated reverb is generally used on drums, it can also yield interesting results when used on other sound sources such as electric guitar or synth.

It might seem that these controls are all you need to produce the reverb effect you've been dreaming about, but...there's more.

There's a further mode of operation imaginatively called 'Further mode', which lets you alter the very structure of time and space, or at least what passes for it inside this box. In essence, this mode lets you alter reverb density in ten stages, and this corresponds in real life to the number of reflections in any given space of time after the original sound – the higher the density, the more reflections there are. In the case of a real room, this parameter is affected by the shape of a room and the number and type of objects within it.

As for those crucial first reflections, the Roland lets you adjust them in one of two ways. First, the level of these reflections can be adjusted using the Attack Gain parameter, which gives a choice of nine levels. Second, you can adjust the attack time, again over nine levels.

This too has its counterpart in real life. When you're at the front of a large room near to a sound source, the reverb density builds up quite quickly. But move towards the rear of the room, and the attack or onset of reverberation becomes noticeably slower. Alhough this might not appear to be all that significant, it's one of those things the brain picks up on in order to analyse an environment.

And as an additional bonus, the SRV2000 lets you change the density of these initial reflections without altering the density of the reverb that follows...

If you don't want to go to all the trouble of defining your hypothetical room from scratch, you can just select a room or hall program and then press the Room Simulator button. This calls up from memory a pre-programmed set of parameters which have been designed to create a reasonably realistic simulation of a typical room.

The use of 16-bit linear conversion circuitry and 28-bit parallel arithmetic processing means that, as with the REV7, sound quality is really very impressive. Quite simply, there's no perceptible distortion or noise – the dynamic range is a quoted 90dB.

The stereo output results in an illusion of great depth, and the sound seems to have considerable front to back perspective as well as panoramic spread. All the conventional reverb sounds are smooth and convincing, and for those cynics who think that a 10kHz bandwidth is not enough, it's worth saying that you need to bring the filters into play to curtail the high-frequency end of virtually

'You have to bring the Roland's filters into play to curtail the high frequencies of virtually any treatment you set up.'

every sound treatment you can set up, to avoid the output becoming unnaturally bright. This is partly due to the fact that real-life reverberation contains relatively little in the way of extremely high or extremely low frequencies, though it may also be that by the time you've worked in studios long enough to understand the advantages of an 18kHz bandwidth, your hearing will have deteriorated to the point where you can't appreciate it anyway.

Seriously though, the gated reverb sounds are as realistic (if that's a word you can apply to an effect that has no parallel in the real world) as the conventional settings. Imagine our disappointment, though, when we found that the SRV2000 doesn't follow the REV7 in offering a set plan for reverse reverb effects. Could we simulate the effect using the existing parameters? We wondered.

Well, after much button-poking, it transpired that a fair reverse envelope simulation could be set up by choosing a very fast decay time, and a long attack time and a high level on the initial reflections. This doesn't give you reverb before the sound actually takes place (you'll have to buy a Zlatna Panega anticipation sampler for that...see E&MM April), but it does add a reverse envelope to the reverb directly following a sound – and is especially effective when used on snare drums where a little pre-delay helps the illusion of acoustic space along.

But one particularly useful thing Roland *have* incorporated into this design is a facility for programming the reverb level as well as the other parameters, so you can set up reverb patches for a given mix or arrangement without having to worry about changing levels.

What Yamaha's designers have seen fit to build onto the REV7 in the way of MIDI facilities, Roland's people have also deemed worthy of fitting to their digital reverb. Thus, the SRV2000 can be addressed in MIDI Omni mode or can respond to any one of 16 designated MIDI channels, and the 32 reverb memories can be called up using MIDI patch-change information. In practice, of course, this means the SRV2000 can be programmed to operate in conjunction with a MIDI keyboard, such that each patch change calls up a reverb setting selected to complement the synth patch. One thing to watch in this context is that the reverb output is muted whenever a memory is changed, so don't expect one reverb effect to flow smoothly into the next without a break.

Conclusions

It's reckoned in some circles that the more variable parameters you give people, the greater the number of horrendous noises they

'The greater the number of variable parameters you give people, the more horrendous noises they can create with them.'

can create with them. And in support of this theory, we found that with the incredible programming sophistication these two reverb units offer, it is indeed possible to generate some utterly hideous reverb and delay effects. If you want to make a drum kit sound like it's being played in a sardine tin (with the sardines still in it), one of these machines will fit the bill nicely.

Precisely *which* of these two you plump for is pretty much up to you. Without wishing to sound like a publicity handout, it's worth saying that each is an excellent machine in its own right, and a real advance for synth players and engineers alike.

The Roland has extra programmability in its favour. There's nothing worse than being presented with a whole load of variable parameters, only to discover that some of them are not accessible in certain modes. Yet this is exactly the problem the REV7 presents you with once you've been using it for an hour or two. The Roland, by contrast, gives you complete programming flexibility, as well as offering a set of 16 fine-sounding presets you can use as a basis for editing if you want to; you can even restore them to the machine's memory after you've erased them.

Yet the Yamaha scores over the SRV2000 in other areas. Its memory is significantly bigger, it has a useful DDL built in that makes it rather more than just a reverb unit, and it also sounds subjectively cleaner, if occasionally more noisy, than the Roland.

So, an even match between two extremely sophisticated machines, both of which should go a long way towards altering the way keyboard players view reverb effects, and the way recording engineers view musical sounds. ■

Yamaha REV7 *£1199* **More from** *Yamaha, Mount Avenue, Bletchley, Milton Keynes, Bucks MK1 1JE.* ☎ *(0908) 649222*

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A FAIR RESULT

August's British Music Fair not only gave our music industry a welcome shot in the arm. It also gave the nation's musicians a guaranteed annual public show for the foreseeable future.
Report *Dan Goldstein* **Photography** *Matthew Vosburgh & Tim Goodyer*

It's too early to say, I know, but a week after Olympia 2 shed itself of synthesisers, computers, Portakabins full of organs, know-all musicians, know-nothing musicians, know-a-little-bit-but-only-started-reading-E&MM-last-month musicians, frustrated salespeople, overworked demonstrators, and drunken members of the music press, it seems likely the hall is going to be opening its doors to the same motley crew next year – and probably every year until everybody gets fed up and takes up gardening instead.

There *were* an awful lot of musicians at BMF '85: a total of 13,653, in fact, plus a further 5102 trade visitors who turned up during the first three days of the show. They came from all parts of the country (and abroad), and they came in many different shapes and sizes: from the millionaire to the impecunious, from the expert to the novice, from the computer buff to the Iron Maiden fan. And they were all there for the same purpose: to try out the latest gear, see if it did what they'd been told it did, and judge whether or not it was worth taking out a second mortgage to buy. So the salespeople were frustrated because they knew that if they left the stand to which they belonged, they stood only an evens chance of getting back on it again within half-an-hour. The demonstrators were overworked because excessive demand meant they had to play the same four songs not 30 times in six days, but 50. And the members of the press were drunk because...well, because that's what members of the press go to these exhibitions for. They *also* attend them so that when they get back to the office, they can sit in front of their word processors and compile a comprehensive report on what was new at the show, so that all those that didn't attend (shame on you) can get the lowdown on the latest innovations.

In the event, all four of E&MM's staff members turned up at some stage or other, as did a goodly number of our regular contributors, so what follows isn't just What The Editor Saw. To be fair, though, it was The Editor who guessed the area to make a beeline for would be the Akai stand, a black, distinctly hi-tech affair wherein the prolific Mr Kokubo (a freelance composer who has an impressive list of credits in his native Japan) was directing the demo operations with as deft a hand as any musical instrument manufacturer could wish for. He was more than ably assisted by two young Oriental girls, Seiko Kobayashi and Naomi Maki, who played, adjusted, danced and smiled their way through a meticulously-prepared half-hour set that demonstrated Akai's latest

Looking down *on the ground floor of Olympia 2. This is a trade day; the public ones were rather busier*

Power to bassists *with new Roland bass guitar synth module that gives them more flexibility than their guitar-playing counterparts, thanks to JX8P electronics*

product to remarkable effect. True, much of the sound was pre-recorded and replayed using a couple of Akai's MG1212 12-track cassette systems, but there was plenty of live action too, as more than a few hapless pressmen discovered. Between them, Seiko and Naomi used no fewer than a dozen S612 MIDI samplers, complete with matching MD280 disk drives. Even with this much in the way of sampling hardware, the two girls still had to do an awful lot of disk-swapping (something they carried out with great aplomb), though this was made a lot easier by the fact that the 280 has a built-in rack for housing the floppies of your choice. Neat and well laid-out, the machine uses the new Japanese Quick-disk standard, and at an RRP of £279, makes an indispensable partner for the S612 (£899).

The ladies had a few more tricks up their sleeve, though, in the shape of a pair of MX76 MIDI master keyboards (due to hit the UK in quantity before the year is out) and a similar number of VX90 MIDI voice modules (ditto), which provided most of the synth (ie. unsampled) noises. Both the keyboard and the module had been seen before at the Frankfurt show as long ago as February, but the same couldn't be said for the AX60 polysynth, a brand-new machine aimed slightly downmarket from the established AX80. The 60 has taken the place of the previously-seen AX90 (which, had it appeared, would have been *up*market from the 80) in the Akai scheme of things, and jolly decent it seems, too. For a six-voice, one-oscillator-per-voice job, the 60 was far from overshadowed sonically by its more expensive stablemates during the demos, though some of the credit for this must go to its comprehensive built-in digital delay and stereo chorus facilities. It also has an arpeggiator and a splittable keyboard, but you won't see the AX60 for a while yet, I'm afraid. The pair of BMF prototypes have now been shipped back to Japan, where they'll get a number of modifications including a fluorescent display of editable parameters similar to the one on the AX80. The stern-faced 'technical man' from Japan who gave me that information refused to comment on reports that his company were working on an upmarket sampling device (probably called S812), but he did confirm they were having problems with their dedicated music computer, the CPZ1000. Since it made its debut at the aforesaid Frankfurt shindig, the CPZ (together with matching RZ1000 and EZ1000 sequencing and editing add-ons) hasn't changed too much, so that although the hardware side of things is now pretty much finalised, Akai's software writers still have a job on their hands if they're to come up with a package facility-laden enough to justify the system's high price-tag. To be fair, though, that price-tag has undergone a drastic and welcome cut, from the previously-quoted £3299 to a now-probable £1999.

Next-door to Akai were **Casio**. Their demonstrator, Richard Young, had neither the charm nor the sex appeal of Akai's *femmes fatales* (*Oh, I don't know...* - **Production Ed**), but his conversation was a lot better, and his performances no less dedicated. The people at Casio had a carefree grin on their faces for much of the show's duration, but they've good reason to look happy. The company's relaunch into the professional side of the music biz has been wildly successful, with their CZ range of Phase Distortion polysynths ▷

Ready, steady, go *on the Akai stand, with demonstrators Seiko (in black) and Naomi showing off more than the company's latest; much to our dismay, they kept their hands to the gear*

Yamaha RX21 *photographed at odd angle, four days before being filched by enterprising BMF punter who wanted to make a cheap drum machine even cheaper*

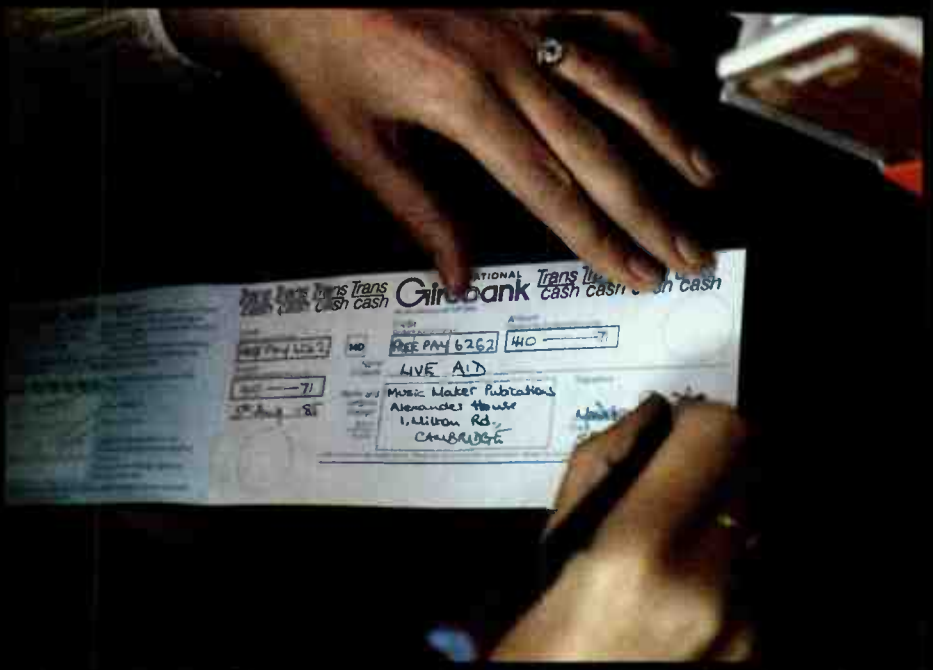
▷ proving justifiably successful with dealers and punters alike. Now they're seeking to consolidate their position by introducing a number of new machines, but only one of these, the SZ1 digital sequencer, was on dem at the BMF. The SZ1 looks unexceptional, but as this issue's review shows, beauty is more than skin deep and, seeing as the device has a quite ridiculous price-tag attached to it, it should prove yet another winner for the pocket calculator people. As for the rest of the new gear, mystery reigns. Even after well-nigh three bottles of Yugoslav Laski Riesling, bossman Martin Brady would say nothing about Casio's rumoured sub-£1000 sampling keyboard, sub-£500 sampling drum machine, or anything else that isn't already officially in existence. A lesser man would have given way to the pressures of the grapevine, but Brady gave way only to the grape in its liquid, high-in-alcohol form.

In fact, if there was a theme to this year's BMF, that theme was alcohol. Maybe it was the prospect of thousands of swarming, slobbering and swearing musos rushing onto the stands that did it, but even during the three trade days (and at £1.10 a pint), business at the Exhibitors' Club bar was brisk. **Yamaha** did the sensible thing and locked a whole load of booze in a small 'VIPs only' room at one corner of their vast stand. No sooner had we arrived on said stand, than computer expert Martin Tennant had whisked us through the door and sat us down with a sandwich in one hand and a can of Skol in the other. 'But what about the instruments?', we pleaded. 'What about the music? What about the technology?' Tennant was unmoved, but he did eventually take us through some new CX5M software that had arrived in the UK just two days before. The software included an impressive-looking MSX graphics package (for use with Yamaha's Music Macro software), some equally impressive educational programs (one of them reads music off a playcard system similar to the one employed in a couple of Yamaha's more domestically-oriented keyboards), and the now-finished RX Editor package, which we hope to be reviewing in next month's E&MM. You may remember that another new CX5 program, a four-track MIDI Recorder, was shown at the beginning of the year alongside the RX Editor, but whereas all the bugs have been ironed out of the latter, Yamaha seem to be having second thoughts about the former, which has yet to surface in production form. The company's apparent reluctance to release sequencing software that can be accessed using external MIDI instruments has led to at least one British software writer developing his own system. In this instance, it's an eight-track real- and step-time package that lets you use both external MIDI gear *and* the CX5's internal FM sounds to record with, and also allows you to dump finished songs to MSX disk (Yamaha were exhibiting a new disk drive at the BMF), something everyone had thought couldn't be done because the CX5's sound chip got in the way of some of the MSX Disk Operating System's address lines. The system isn't yet in production and doesn't yet have Yamaha's blessing, but if Martin Tennant is enthusiastic about something and it isn't lager, you can bet it's worth looking into. Just remember where you read it first...

Security at the BMF was on the whole pretty good, so imagine our surprise when, waltzing casually back onto the Yamaha

Roland SBX10 *is new downmarket Sync Box; loses SMPTE, gains more realistic price-tag*

What does this do? *Yamaha's Martin Tennant (left) trying to explain new CX5 software to E&MM Editor Goldstein and hanger-on Halliday (right)*



Live Aid *benefitted from BMF generosity; hundreds bought charity tickets as Quark MIDI Link and Fostex X15 were raffled on Music Maker Publications stand*

stand near the show's end with the object of relieving them of an RX21 drum machine for review purposes, we were greeted by a red-faced Jerry Uwins, group gear manager extraordinaire. 'Er, the RX21 I was going to let you guys have for review has, er, just been nicked', said Uwins, pointing a trembling finger at a section of the stand where a mains lead and a pair of headphones dangled aimlessly from their polystyrene mounting. Like most of the other exhibitors, Yamaha had put the emphasis on 'hands-on' testing of equipment in order to give musicians something to get their teeth into without being disturbed. And somebody on that final Sunday afternoon had obviously found the RX21 too nice-sounding, too easily programmable and, most important, too easily *portable* for temptation to be resisted. Luckily, they found us another machine to take away and look at, but if someone offers you a cheap (all right, even cheaper) RX21 down the pub over the next few weeks, call Shaw Taylor immediately.

No such problems on the SIEL stand, due in part to the fact that what was to have been the company's star attraction, a new polysynth by the name of DK70, didn't arrive in time for the show. Thus, it was very much the tried and tested on the professional part of the Italians' display, but there was plenty of evidence that the company isn't afraid to introduce innovations to the domestic market. Latest of these is an ingenious hardware and software package that allows Commodore 64 users to escape the confines of the dreaded SID chip in one easy step. It's called the Sound Buggy, and provides rhythm, bass and melody voices that can be programmed from the computer using the accompanying software and stored for later use. It's even MIDI-compatible, and costs so little (£99) that even the least musical CBM64 user is going to have difficulty ignoring it for any length of time.

SIEL UK were also playing host to an excellent new drum system, also for Commodore machines, that deserves to take off in a big way. The Syntron Digidrum (for that is its name) uses a selection of remarkably accurate drum voices, generated entirely in software and updatable at any time simply through the acquisition of new disks containing new libraries of sounds. You can program these voices in step time or what SIEL call 'partial real time', dumping rhythm patterns to disk as soon as you've finished them. Again, watch this space for a review as soon as the software is in full production.

Plenty more software was in evidence on the Rosetti stand. Rosetti are an old industry stalwart who've recently taken the bold step of buying themselves out from their previous parent company, Thorn EMI. The result is a more attacking marketing strategy which should benefit the company's hi-tech lines, namely Jellinghaus MIDI software and IVL Technologies' Pitchrider. JMS have now perfected their Scorewriter program for the Commodore 64, and it's now possible to buy their 12-track Recording Studio, Sequence Chain and Scorewriter programs as one EPROM-based package, saving money (total cost is just £339) and reducing loading times to a fraction of what they would be if the system were on disk. The Scorewriter prints traditional music notation with consummate ease from whatever music you may have stored using the sequencing software, and you ▷

Casio demonstrator *Richard Young in all-action pose; he collapsed of exhaustion on the Saturday, but the show went on*

Electro paradiddle *as E&MM production person Trish McGrath gives Simmons' wonderful SDS9 kit a real thrashing*

Front panel cosmetics *of Akai's budget AX60 won't look anything like this when it gets into production, we thought you might like to see it anyway*

▷ can specify a setting for a number of different parameters, such as how many staves you want the music arranged on. There's a lot more still to come from JMS, though, particularly on the hardware front, with digital percussion units, drum-to-MIDI converters and vast, control-laden DX7 programmers 'just around the corner'.

As for the Pitchrider, this is an ingenious pitch-to-MIDI converter that Rosetti have just started bringing in from the States. We heard it tracking a flute flawlessly, but as man-on-the-spot Doug Ellis pointed out, any instrument that produces more in the way of complex harmonics than the flute's simple sinewaves leaves the current system somewhat at a loss. Much less easily caught out is a newer, more elaborate version of Pitchrider designed to work with guitar signals, and this machine should be arriving on these shores as you read this. More details as and when we have them.

Rosetti *also* unveiled two new Gibson guitars (a Les Paul and an Explorer, to be exact) with Roland guitar synth pickups built in. Not to be outdone, however, **Roland** themselves were showing an entirely new guitar-based machine, the GR77B bass guitar synth. The transition to four strings has obviously meant changes to both the controller (the G77) and the synth sections as distinct from their six-string counterparts, and in the case of the synth, the change has meant a switch from JX3P to JX8P sound-generation. What this means is that Roland bassists currently have a rather more versatile synthesiser at their disposal than their guitar-playing colleagues. We predict Roland will have attended to this situation come Frankfurt '86.

Whatever they do, though, it's clear Roland are no longer content to base their musical instrument manufacture in the pro keyboard arena. Once the darlings of the budget synth industry, the company have now diversified their interests to encompass sound reinforcement gear, guitars, drums, home recording and domestic musical instruments. And, being a rather clever lot, they've ensured that no matter what they've released, it's had MIDI tacked onto the back. Which is why so many musicians of so many kinds were seen gawking respectfully at the home recording demos (featuring the SRV2000 reverb reviewed this issue), and the band presentations at which every instrument – polysynth, guitar synth, effects unit, drum machine, electronic drumkit – was electronically compatible with every other.

Clever they may be, but the Roland people were just as susceptible to the lure of drink as anyone else at the BMF, so that when beleaguered demonstrator Alan Townsend spluttered 'hangover' into a microphone with the object of storing it in the new Boss DSD2 sampling delay pedal, he meant every word of it.

As for the young fellows at **Korg**, they had every reason to be punch-drunk before the show had even started. Not only had their new SQD1 turned out to be even better than first reports had suggested (the vast memory and the built-in Quick-disk drive were one thing, but the under-£600 RRP was another), but the company also had a couple of prototype DW8000 polysynths on dem, too, at the more than capable hands of Paul Brookes. The 8000 has more of what the earlier DW6000 *should* have had, in the shape of a velocity-sensitive keyboard and an excellent, programmable digital delay line onboard. The preset sounds are better than they were on the 6000, too, but apparently they're not good enough for Korg UK, who've now sent the 8000s back whence they came, for reprogramming and the fitting of a better keyboard. That done, the 8000 will have more than a firm base from which to launch itself into the sub-£1000 polysynth battleground. Korg even have a matching rack-mounting expander, the EX8000, on the stocks to be unleashed at about the same time as the DW8000. The EX's electronics are identical to those of the DW, right down to the digital delay, so now you can tie two synth patches in with two delay patches to make one, vast audible assault. The implications are mind-boggling...

Korg DW8000 *won't be in the shops until it gets new sounds and a new velocity-sensitive keyboard; we can't wait*

I mentioned word processors at the start of this feature, and mine is now telling me I'm running out of wordspace. Result? This last bit is going to be necessarily brief. So, apologies are in order to the following for not getting anything like the coverage they deserved. To **Simmons**, whose SDS9 demonstrations were simply *sensational*, and did more to reduce the number of doubting Thomases in the 'drummers don't want modern technology' camp than anything else at the show. If you went along and saw them bashing wonderful synth solos out on a load of hexagonal pads, you'll know what I mean. To **Pacifex** (neé Syco), on whose stand many musicians spent long hours studying the wondrous Fairlight CVI (that's Computer Video Instrument, for those at the back who haven't been listening) in action in glorious – largely post-produced – colour on monitors placed strategically out of reach of the over-curious. Meanwhile, more sensible individuals took their place in the queues to play Ensoniq Mirage sampling keyboards, of which there were several scattered about the tasteful demonstration area. To all those that participated in the many concerts, lectures and related events that took place during the public days, and thereby provided relief for show-weary journalists as well as showing hordes of musicians what *can* be done if you take the trouble to learn how to manipulate technology successfully. Particularly praiseworthy are the efforts of **Turnkey**'s Nick Williams, Dave Whittaker and Peter-John Vettese, whose PPG/Oberheim/Synclavier demos were even more splendid than that equipment line-up would suggest; and Yamaha's Micky Barker, John Etheridge, Dave Bristow and John Chowning, who between them got a lot of information across in about as accessible a way as I can think of – through the performance of good, inventively written and sensitively played music. Pure and simple. ■

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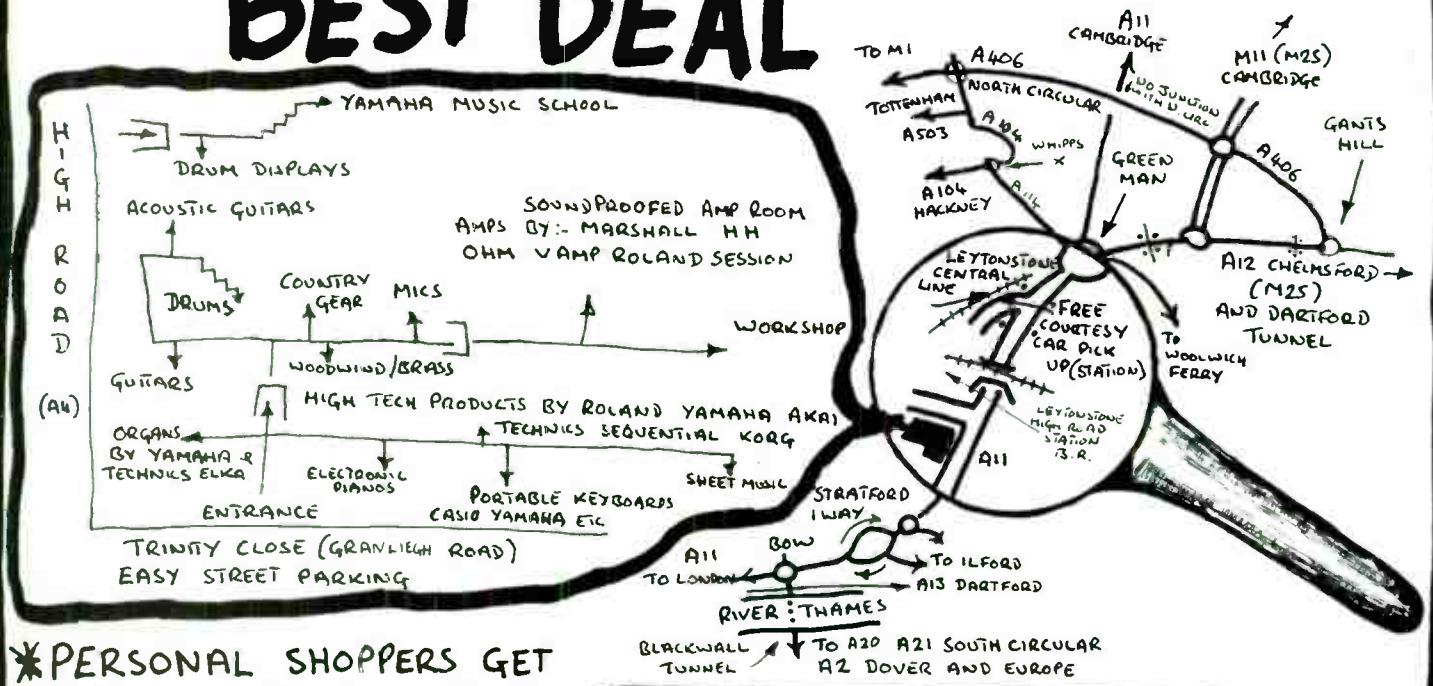

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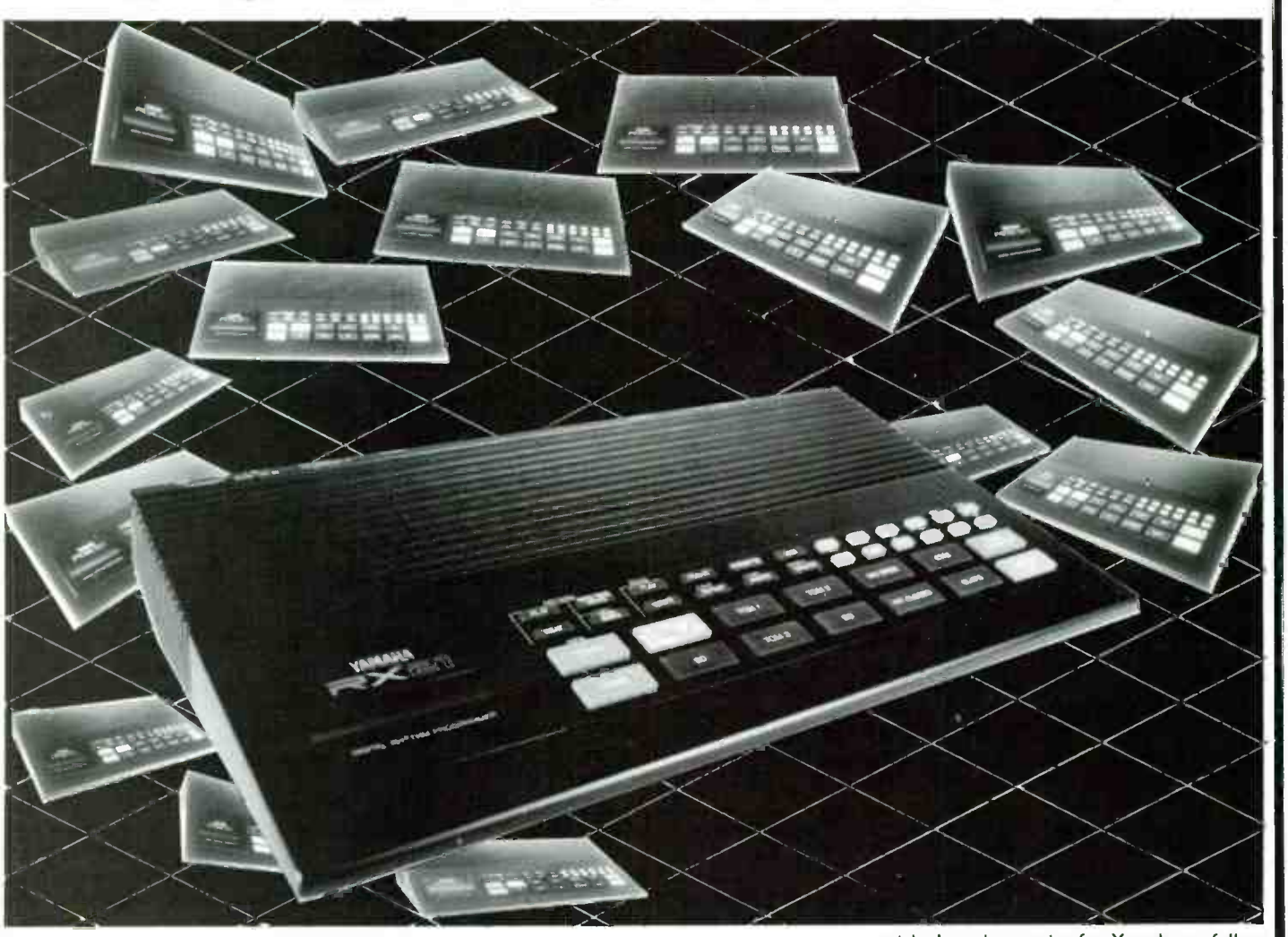


With the release of the RX21, Yamaha aim to take the lead in the affordable drum machine stakes. But have inevitable economies resulted in an instrument that's worth taking seriously?

Simon Trask

One of the strengths of digital technology is that it keeps getting cheaper and cheaper. And for today's musicians, this can only mean that the instruments they buy that make extensive use of this technology (synths, samplers, drum machines, sequencers and now the new generation of digital signal processors) are going to go on getting cheaper as well – and at a rate which wouldn't have been dreamed of even three years ago.

Yamaha's latest drum machine, the RX21, is a case in point. At all but £250, you can now get what amounts to a professional drum machine at less than a semi-pro price. Inevitably, there *have* been compromises at the design stage in order to get the price down this low – but not as many as you might at first suppose.

First, to the drum voices themselves. You'll not be surprised to learn that the RX21 follows the Japanese drum machine tradition of presenting a closed system when it comes to voicing – that is, it offers none of the expansion possibilities the Americans are so fond of (the Sequential TOM's plug-in cartridges, for instance). I guess that in these days of MIDI modularity, it could be argued that the production of cheaper units the musician can add together as finances permit is a better route to take, but it's by no means a one-sided argument.

So what you get here are nine PCM-encoded voices comprising the familiar kit sounds, plus the ubiquitous handclaps. A year or two back that would have seemed a decent enough selection, but now that Roland and Korg have started freeing impecunious musicians from the restrictions of kit drums, it might have been wise for Yamaha to follow suit. It remains to be seen whether an 'RX21 Latin' is on the stocks.

In case you might be thinking that the RX21's budget price has resulted in a lowering in quality of the voices, I should stress they're actually the *same* sounds used by the company's RX15 drum machine – it's just that there are fewer of them. And if there's one thing that characterises all these sounds – bass, snare, three toms, open and closed hi-hats, crash cymbal and handclaps – it's *presence*. They're all crisp and punchy, with the bass drum and low tom in particular having plenty of 'oomph' behind them. No danger of any of these sounds getting lost in a mix, I'd say. If it's blitzkreig attacks on the sensibilities that you're after, you'll be happy to know that the 21 is capable of playing all its nine voices at once...well, almost: Yamaha have bowed to tradition in not allowing the open and closed hi-hats to sound on the same beat..

Along with the overall volume level, it's possible to set individual levels for each voice, though these levels aren't programmable per pattern – more evidence of cost-cutting by comparison with the RX15, on which they are.

What *has* been retained from Yamaha's more expensive machines is the more useful facility of being able to program an accent for

any voice on any beat. Thus you can reinforce a four-to-the-bar (or the downbeat on some odd time signature like 7/16), turn a beat around, or give some sizzling syncopations some extra bottle. Accentuation is also useful for giving added interest to sustained cymbal sounds that are being played repeatedly – on the RX21, it's particularly effective applied to the open hi-hat. The problems start when you realise that the 21's accent is programmable for each step, rather than for each voice. So if you have two voices playing on the same step and you want to accent one of them, the other will be accented as well. You *can* vary the amount of accentuation you give to each voice (though again, this is not pattern-programmable), but it's still not an ideal situation.

So much for the voices. What of the RX21's memory capabilities? At first sight the RX21's budget price doesn't seem to have affected its provision of patterns: a creditable 100. However, it transpires that 44 of these are preset rhythms, safely tucked away on ROM so that you can't get rid of them. This still leaves you with as many programmable patterns as you get on Roland's TR707, but the patterns Yamaha have provided on ROM are neither as varied nor as interesting as they could have been, and I kept finding myself wanting to get in there and muck about with them.

Talking of changing things a bit brings us on to the actual operation of the RX21. Patterns can be recorded in real and step time and freely passed between one mode and the other. Thus you can record some parts of a pattern in step time and some in real time, or perform step-time edits on parts recorded in real time – a nice degree of flexibility that's made possible by the fact that all input, whether in real or step time, is quantised to one of four values (only one of which can be active per pattern, of course). These are 12, 16, 24 and 32 (ie. triplet quavers, semiquavers, triplet semiquavers and demisemiquavers). And you'd better decide whether you want triplet or 'straight' type quantisation before you start recording, because you can't change from one to the other once finger has been laid on pad. More of an irritation than a limitation, though.

The maximum length for a single pattern is 16/16, and this can be reduced to as little as 1/16. Real-time recording gives you the usual metronome beat on each crotchet, accented on the first beat of the bar. In time-honoured fashion, the pattern loops continuously until you exit record mode, so that you can add to it at whatever point and time you want. Any beat you don't like can be deleted by judicious application of the Clear button in conjunction with the appropriate voice pad, though if that beat is also an accent, you need to find a third finger for the Accent pad.

Sounds *'They're actually the same voices used by Yamaha's own RX15 machine – it's just that there are fewer of them.'*

The 21's version of step-time writing allows you to enter one voice at a time on each quantisation step (rests are input by means of the all-purpose '+' key). As with real-time recording, the steps keep looping until you exit record mode, so you can build up your pattern gradually. As you move through each step, the voices already recorded on that step are played back to you – if only every step-time system did that. And as I mentioned earlier, you can move to real-time writing at any time and carry on recording your pattern, should you wish.

But Yamaha have done a bit more with the step-time system. Specifically, you can view a step-time representation of your patterns (one voice at a time, of course) in the LCD window, where a system of dashes and dots gives a clear indication of each step while small blobs (they look a bit like hand grenades) show where a beat has been placed. Not even Yamaha's costliest digital drum package, the RX11, has a visual display of this kind, and it's certainly a useful inclusion that's as educational as it is informative. In fact, my only major grouse is that, like so many LCDs, this one isn't backlit, so that unless you look at it straight on in decent light, you have to use it 'at a stare' rather than 'at a glance'.

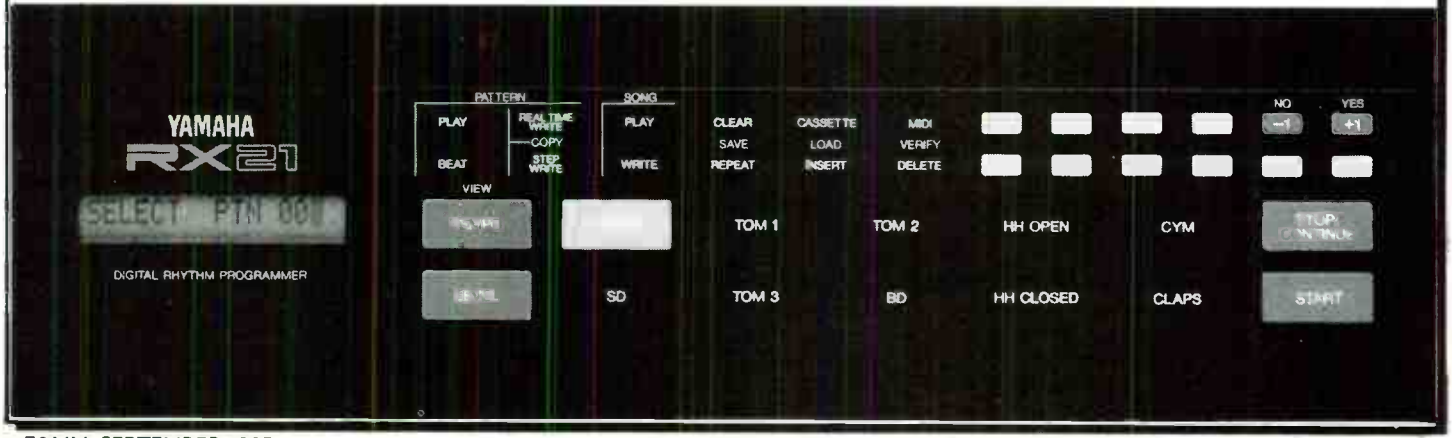
Like any decent programmable drum machine, the RX21 allows you to combine patterns into songs. In all, the memory can hold four of these songs, each of which can be made up of as many as 512 patterns. My own feeling is that more songs with fewer steps would have been far more useful, both for live work *per se* and for using the RX21 in conjunction with a MIDI sequencer. To give the memory eight songs of 256 steps each, or even 16 songs of 128, would surely have cost very little extra in software terms.

In song mode, the RX21 gives you the basic editing facilities of inserting and deleting steps, but what you won't find are any of those useful facilities that give you real *flexibility* in song programming, such as tempo changes and pattern repeats. Again, you have to look to a more expensive instrument such as the RX15 for features like these.

On a more positive note, one area where Yamaha deserve much praise is in front panel design. Not for the rubber buttons and pads that they've endowed the 21 with (the triggering pads are OK, but the control buttons are a bit on the dinky side), but for the ease with which it's possible to find your way around the instrument. For any newcomers to the world of drum machines, the RX21 shouldn't foster any phobias – the control layout makes it a doddle to use, even if the scaled-down facilities must also be partly responsible for this.

As on the RX15 and RX11, Yamaha have provided a facility for copying a pattern from one position into another – useful if you want to take a pattern and adjust it bit by bit for inclusion in a song, for instance – and you can clear both patterns and songs at a touch of the appropriate button. There's also a Repeat on/off function which affects patterns and songs alike, while tempo is continuously variable from crotchet=40 to crotchet=250.

When it comes to conversing with the ▷



outside world, the RX21 is strictly MIDI-only, with one each of MIDI In and Out sockets on its rear panel. The machine can be set to read either its own internal clock or incoming MIDI timing bytes, allowing the RX21 to control or be controlled by a sequencer or another drum machine.

And yes, you can play the 21's voices from a MIDI keyboard, though not vice versa, it seems. The MIDI receive channel for this purpose can be any one of the 16, which gives you maximum flexibility if you want to run the RX21 off a MIDI sequencer. However, voice-to-pitch allocation is fixed and you can't actually *record* patterns into the RX21 from a remote source. What this facility is rather handy for, though, is playing the drum machine voices from a MIDI keyboard or sequencer without regard for how the RX21's internal configuration puts together its rhythms.

It'll come as no surprise to all but the inveterate dreamers among you that audio output on the RX21 is confined to left/mono and right outputs (and headphones, of course). For the delights of individual audio outs, your cheapest bet is still Roland's TR707 or its Latin percussion equivalent, the TR727 – but just remember the RX21 is half the price of either of these. There may well come a time when affordable multitrack facilities make individual outs *de rigeur* on all drum machines, but in the meantime, there's no reason why the average Portastudio owner on the lookout for an affordable drum machine shouldn't be fairly content with stereo outs, whilst perhaps wishing Yamaha had included user control over stereo panning of the RX21's voices.

External storage of the 21's data can be to either cassette (with the familiar array of save, load and verify functions – a complete dump takes 15 seconds) or via System Exclusive MIDI dump (though this, of course, requires a computer and appropriate software at the receiving end).

Chances are that if you're prepared to read a review of a drum machine that sells for £250, you're unlikely to dismiss the RX21 out of hand. It certainly offers enough in terms of voice quality, memory and programmability to satisfy a good number of people, and it has to be said that at roughly half the price of any other MIDI drum machine currently on the market, it offers more than half the capability.

Programming *'To have more songs with fewer steps would have been a lot more useful, both for live work and for running with a MIDI sequencer.'*

The problem lies in the fact that the further down the price scale you go, the smaller price differentials become – so that whereas there's a fair old price difference between the new DX21 polysynth and its illustrious elder, the DX7, the difference between an RX21 and an RX15 is rather less. Thus it may be that a lot of musicians will pass over the 21 in favour of its more facility-laden colleagues, spending more money but getting a more expensively specified instrument in the process.

On the other hand, the idea of a MIDI drum-and-sequencer combination for around £500 (something the RX21 and the Casio SZ1 sequencer, reviewed elsewhere this issue by yours truly, make possible) is certainly an appealing one. Neither machine is the pinnacle of achievement in its marketplace, but both make a lot of economic sense.

The RX21 makes musical sense, too. For unlike some budget instruments, it's been designed with care and built to standards that are higher than some machines costing twice as much. ■

DATAFILE

Yamaha RX21 Drum Machine

Programming *Real and step time*
Drum Voices *9: Bass drum; snare; toms 1, 2 and 3; hi-hat open and closed; crash cymbal; handclaps*
Voice Generation *PCM, 256Kbit ROM × 2*
Memory *100 patterns (56 programmable, 44 preset); four songs (maximum 512 patterns per song)*
Display *16-character × 1-line LCD*
Interfacing *Left/mono and right audio outs; stereo headphone output; MIDI In and Out; Tape save/load*
Dimensions *350(W) × 55.5(H) × 202.5(D)mm*
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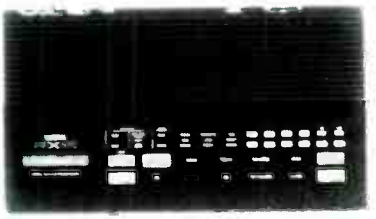

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Appraisal

ME AND MY E-MU

With the ground-breaking Emulator II coming under threat from cheap sampling keyboards, E-mu Systems turn their attention to putting user-sampling into the hands of the drum machine owner. The result? Another, even bigger ground-breaker. *Paul Wiffen & Annabel Scott*

The latest product from E-mu Systems has had a name change since we first reported its appearance at the Frankfurt Musikmesse in February. Then it was proudly sporting the name of Drumulator II, which seemed a fairly safe bet as there are few people who aren't aware of the original E-mu drum machine, whose appearance in the Spring of '83 broke the £1000 price barrier that had kept the digital drum machine in the professionals-only domain and left Linn with a virtual monopoly over the market. The Drumulator set a pattern that was followed by a good many competing machines, and even today, it can still boast the best set of alternative sounds available for any machine – courtesy of US company DigiDrums, whose Rock Drums set is a fitting posthumous tribute to John Bonham, from whom the sounds were sampled. All this was made

possible thanks to a far-sighted policy on the part of E-mu, who didn't restrict the space available for each sound to one chip.

However, the new Drumulator – as many people will doubtless continue to call the SP12, despite the fact that the word has been removed from its front panel – has a new facility in common with the Santa Cruz boffins' other wonder machine, the Emulator. In other words, it samples.

The new name clearly shifts the emphasis to the sampling aspect (SP12 stands for Sampling Percussion). That isn't surprising, even when you consider that sampling on drum machines isn't that new. Linn announced it on their 9000 (reviewed E&MM April '85), but here we are in August and we've yet to see a production version of the hardware update which makes this possible. (We've also heard some horror stories about the cost of this update – a couple of grand according to some reports, and this on top of the £5175 RRP.) On the other hand, the SP12 is in the shops even as you read this. Thus, as far as we're concerned, the Emulator SP12 is a first, and at a price that could make the Linn look very silly.

Let's start again from the top and take the SP12 on its own terms (though we won't be able to resist comparisons to the Drumulator and Emulator II at times, because the SP12 really *does* combine the best features of both units). Thirty-two sounds are available in all, in four banks of eight, with the top bank referring to user-sampled sounds and the other three labelled with the factory sounds. There are eight velocity-sensitive programming pads below eight sliders (one for each set of four sounds), which can either mix volumes or set alternative pitches for any one sound. To the right we find a keypad and a thoroughly informative LCD, plus some tempo controls. A set of assorted programming buttons sits above the sliders and the rest of the panel is divided up into four areas, selected by overall function buttons labelled Setup, Cassette/Disk, Sync and Sample. Within each area, multiple Functions are selected by typing a number listed on the keypad panel. It might sound complicated, but this system will be more than familiar to anyone who's ever spent more than 15 seconds with the EII. If anything, it's more effective here, as the operating software is contained internally rather than being continually accessed from disk (a problem that's been eliminated on the EII by a soon-to-be-available hard disk update).

Sampling *'The move up to 12-bit sampling is long overdue in the percussion field, where sounds are more vulnerable to the limitations of eight-bit resolution.'*

As with any machine that hopes to sample and replay for your delectation and delight, sound quality is the SP12's most crucial area of performance. E-mu's brochure claims that "by utilizing a 12-bit data format and increased sampling rate, the SP12 is able to produce sounds whose combination of clarity, brilliance and dynamic range easily sets a new standard of fidelity for digitally-sampled drum machines". Pretty strong stuff, but it's true. Set up next to a Linn 9000, the SP12 makes its competitor sound dull, muffled and uninspiring. *And* the factory sounds are refreshingly modern: deep, powerful toms, a sharp, clicky bass drum, a good selection of electronic kit sounds, plenty of realistic ethnic percussion, and so on. In fact, had the SP12 been released a couple of years back, the 24 internal sounds would have justified the three grand price tag on their own.

But the chief selling point in 1985 is that you can load alternative sounds from cassette or disk, or sample and save any sound that comes within spitting distance. In other words, you can keep your personal sounds *in the machine* as if they were factory samples. Together with the onboard operating software, this represents a significant step forward in the way sampling can be used: no problems with the operating system, or any of your favourite samples, getting erased or stolen on disk. And this, in turn, means the disk has now been consigned to its most useful function for the travelling musician, namely the storage of back-up and/or alternative data.

Programming the SP12 is pretty straightforward, though there are more options available before you start than on most other machines. For instance, you can specify tempo numerically to the nearest 0.1BPM, which is a lot better than the painstaking choice between 120 and 122 that so much of the competition forces you to put up with.

Sounds from any of the four banks of sounds can be entered simply by using the Select button to switch between banks as you program. The velocity-sensitivity of the pads is an option that can be switched in or out, and of course, time signature is fully programmable in terms of both number and value of beats.

As for the actual recording of rhythm patterns, we're happy to report that at long last, the Americans have come up with a drum machine that allows programming in step time. It must have been tough, breaking out of the 'jazz-rock' mentality and making a machine accessible to musicians with the humblest instrumental technique, but E-mu have gone ahead and done it all the same. Step Mode allows you to go through and place beats exactly where you require them, or correct patterns entered in real time with a precision that's just not possible even with the most intelligent quantising system. And the interaction with real-time programming means you can use whichever method suits you best for each pattern, or each instrument, if you prefer.

The Set-Up section gives you even greater programming flexibility, by giving the eight sliders and pads alternative functions in the Multi Pitch and Multi Level modes. So for instance, you can assign all eight pads to the same sound and use the sliders to set different volume levels, thereby writing in beats at levels that vary precisely as you want them to.

You can do the same thing with tuning. Believe it or not, the SP12 is the first drum machine from outside the Sequential stable which actually addresses the possibility of variable tuning on each beat. Mind you, this should come as no surprise, since we heard last year that the young lady who wrote the Drumtraks software has made the journey over the mountains from San José (home of SCI) to Santa Cruz. In fact, the E-mu device takes the potential uses of tuning much further. Anyone who's ever substituted a pitched musical sound in a Drumtraks will have discovered that Western intervals are a little tricky to achieve. No such problems here. The SP12's sliders give various options here including chromatic tuning, pentatonic scales (the default setting), major or minor scales, or whatever exotic Oriental tuning scale you may care to enter in your more experimental moments.

Upgrading *'The standard sample time is OK for percussion sounds, but for more musical ones, the five-second Turbo update is a necessity.'*

The astute amongst you will have already realised that you don't have to limit yourself to drum sounds on the SP12. Any pitched sound you can sample can be stored and sequenced by the machine – and once you've entered your chromatically-tuned, user-sampled glockenspiel part, you can return to the standard mode quickly and simply.

One good thing about Multi Mode is that the LCD has a special little display for it, with a bar chart that shows pitch or volume level for each sound. This alters as you move the sliders, so now you can see at a glance how the buttons are set up for pitch and volume.

Multi Mode is selected by a left-hand switch which also offers two other options. One is for normal volume mixing on the sliders, while the other is Tune-decay, which offers a selection of sound variations whose nature depends on the character of the original sound. For instance, the toms' slider gives control over tuning, but the hi-hat's offers ▷

control over decay time. This is a wonderful facility that allows you to program a lot of expression into percussion parts either before or after recording, simply by varying the parameter manually with the appropriate slider. On the hi-hat especially, the results can prove extremely lifelike.

Turning to the back panel, the SP12 has eight instrument outputs with a fairly sensible assignment of sounds, so that the toms, for instance, go to different outputs and can thus be panned apart from each other. And if this assignment fails to satisfy, you can re-assign any sound to any output, the only limitation here being that the filtering on each channel differs according to the requirements of the sound normally played through that channel. This becomes less drastic as you step through the channels until you reach 7 and 8, which have only the anti-aliasing filters necessary to minimise sampling quantisation noise. There's even a possibility you'll be able to switch these filters in and out on production models.

The great thing about the SP12 is the range of options it gives you for the building-up of songs – particularly if you're using a lot of tuned sounds (be they slap bass, marimbas, glockenspiels or timpani). Creating a song will be a familiar process to any one who has ever used a Drumulator: it uses the same system to compile 100 songs from the 100 patterns or Segments available. Total capacity is around 5000 notes depending on the density of patterns, but an imaginatively-titled Turbo kit hardware update increases this capacity to 15,000 notes.

Programming *'At long last, the Americans have come up with a drum machine that allows you to record completely in step time.'*

The Turbo kit also increases your user sampling time to 5 seconds. On the standard SP12 this is limited to 1.2 seconds which, of course, has to be divided between the eight user samples. This is OK for most percussion sounds (you'd be surprised just how many different bass drums and toms you can fit into 1.2 seconds), but for the more musical stuff (such as orchestral crashes), the Turbo kit would seem to be more a necessity than a luxury. It adds about £500 to the cost of the machine, but it's worth it.

The SMPTE option wasn't present on the model we reviewed, but this was due merely to lack of software, as the code is received through the rear panel Cassette sockets. For those who've yet to join the rather exclusive club which SMPTE currently represents, there are plenty of other sync options, specifically MIDI (for which the SP12 has In, Out and Thru sockets), and a 24ppqn code (which is fortunately becoming more standard these days for sync-to-tape and inter-machine applications). Also on the rear panel are sockets for footswitch control of Run/Stop, Step/End Repeat and Tap/Auto Repeat, as well as a Metronome output, Sample input, Mix and individual outputs, and the Disk interface socket.

But if there's one area where the SP12 really comes into its own, it's that of sampling. In a manner very similar to that of the Emulator II, you can set input level and triggering threshold using the LCD window, which allows you to choose a reasonable input level. All the EII's sampling options are there: you can trigger the sample automatically or manually, you can check it back immediately, re-sample it, or save it as required. Just one pot is used to control input gain, but you can also adjust the internal preamp level to obtain the best balance between volume and low distortion.

The more complex compositional elements on the SP12 are similar to those of the Drumulator, so those of you who are familiar with the old stalwart will be glad to hear that the new model retains the Swing Factor, Program Tempo Change and Program Mix Change of the Drumulator, and also the splendid Call Subsong option. This allows you to halt progress through a song and remain cycling round a short sub-section until inspiration for that interminable lead guitar solo oint you can re-enter the main song using the End Rep footswitch.

As regards cassette/disk storage facilities, these are vastly increased over what was bestowed upon the Drumulator. Among other things, they allow you to Save All Segments and Songs, Save All User Sounds, Load All Segments and Songs, Load Single Segment, Load All User Sounds, Load Single Sound, Verify Segments and Songs, Verify User Sounds, Catalog Disk or Tape, and Format Disk. In the unlikely event that you'll need more than the standard 100 onboard, loading songs from disk will doubtless prove a great advantage on stage. As far as disk storage is concerned, the latest we've heard (from Kevin Monahan of E-mu) is that the system is designed to work directly with the JL Cooper MIDI Disk Drive (an American all-purpose unit for storing MIDI data), on a simple 'plug-in and go' basis. Being able to load and save new sounds with a disk drive won't just be more ergonomically efficient; it should also be a good bit more economical than having to keep blowing new sounds onto EPROMs all the time.

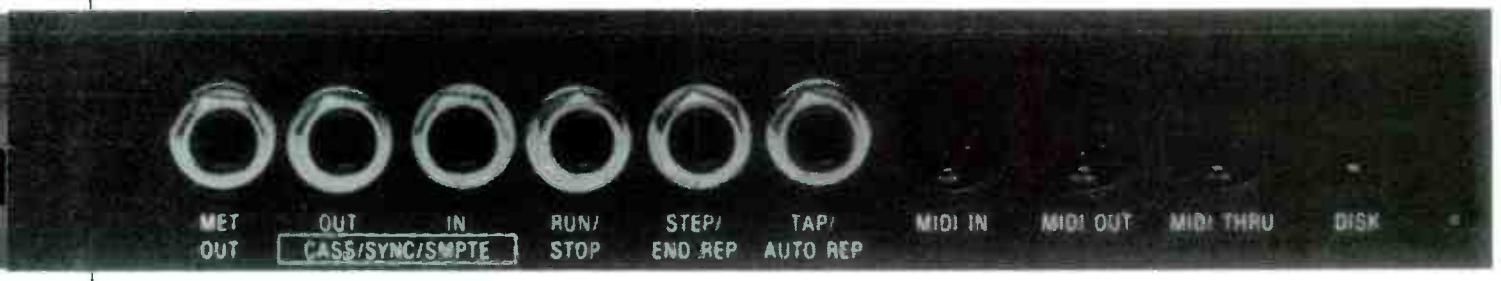
Summing-up a machine that's as consistently competent as the SP12 is difficult. There's no point going over the most important features again, since all that would achieve would be a doubling in the length of this review. The one useful thing you can do is place the new Emulator in the context of its immediate competition, if indeed it has any.

Upmarket, the Linn 9000 sounds nothing like as good as the SP12, and costs an awful lot more. It needs expensive updates to enable it to sample and interface to disk and SMPTE, though to be fair, it does cover areas the SP12 doesn't. The Linn is a 32-channel MIDI recorder as well as a drum machine, whereas the SP12 makes no attempt to cover MIDI sequencing. But then again, the two-grand price difference covers the cost of any stand-alone sequencer on the market. Come to think of it, it could buy you several.

Downmarket, the Sequential Drumtraks with 0.5 software update now performs many of the SP12's more elaborate tricks, but without the tuning accuracy. Neither Roland nor Yamaha have anything to compare to the SP12, so the most we can usefully conclude is that the SP12 is streets ahead of the LinnDrum, which is one of the few machines in the same price bracket. The big difference here lies simply in the user-sampling – no small bonus for no extra money.

The move up to 12-bit sampling is long overdue in the percussion field, where sounds are more vulnerable to the limitations of eight-bit resolution. The SP12's factory sounds have the clarity that's prompted so many people to resort to sampling and sequencing percussion sounds on extremely expensive machines like the Synclavier, so viewed in those terms, its value for money is remarkable.

For the adventurous rhythm programmer or the session keyboardist player on a relatively limited budget, E-mu's latest represents an excellent – nay, the only – way of creating custom rhythm patterns using custom sounds. So start saving. You *need* this machine. ■



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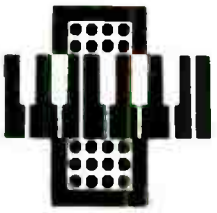

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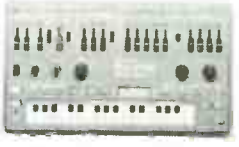

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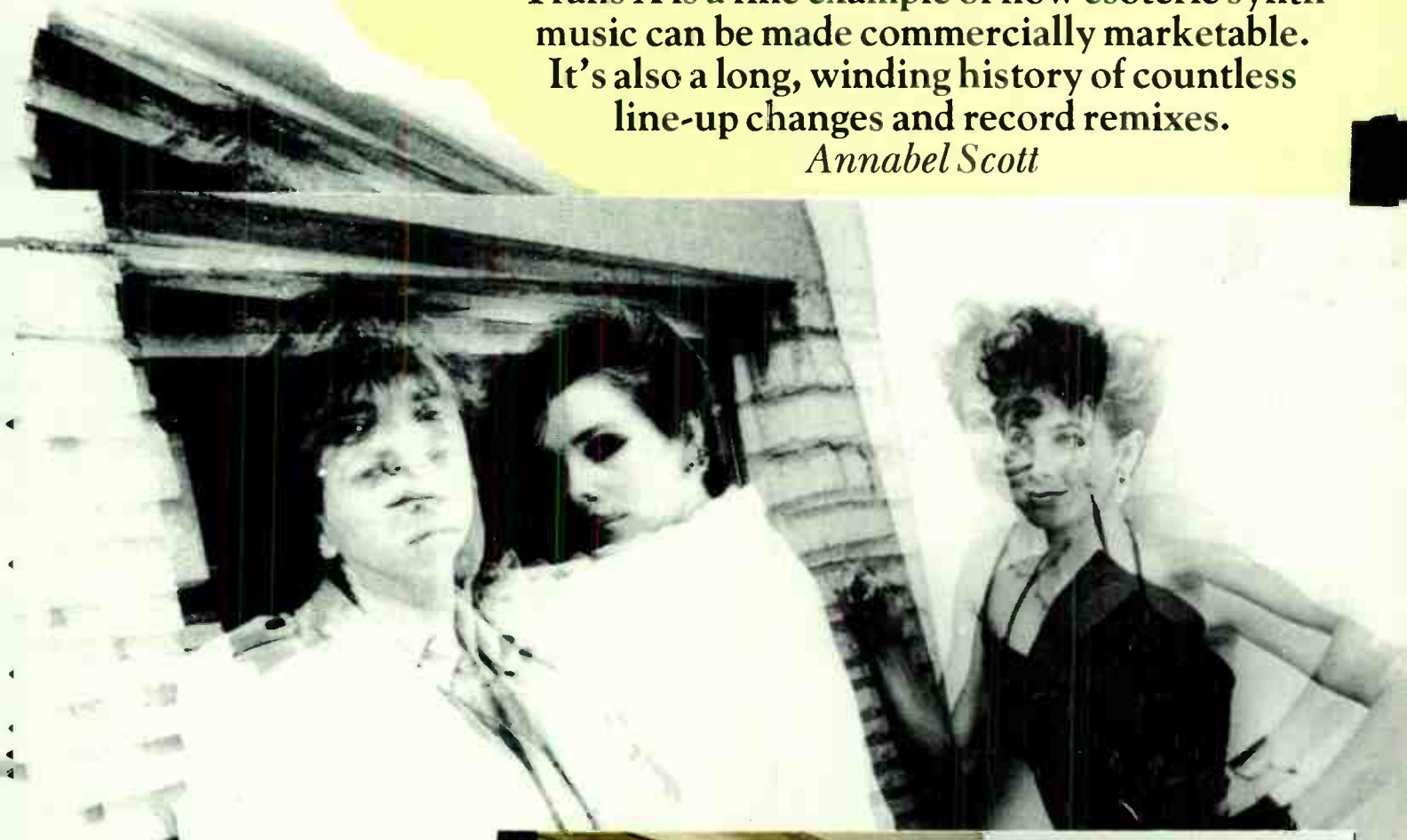
TRANSFORMATION

The story behind electronic chart-toppers Trans X is a fine example of how esoteric synth music can be made commercially marketable. It's also a long, winding history of countless line-up changes and record remixes.

Annabel Scott



Let me give you some idea of just how quickly French-Canadian electro-poppers Trans X have risen to fame and fortune. When their single, 'Living on Video' went into the Top 20 in its second week of release, Polydor's parent company in Germany shipped all their available press information on the band over to the UK. Biographies, photos, videos, all featuring composer Pascal Languirand and sultry singer Laura, allowed the publicity machine to swing into action, and at least a few details about the band became public knowledge.

But when Trans X turned up in London for a round of meetings and interviews, conster- ▷

▷ nation reigned. There was no sign of Laura, who had apparently left the band two years ago and returned to modelling after discovering that the touring side of the band's existence disagreed with her. There was no sign, in fact, of the rest of the band, who'd all been sacked at one stage or another as Languirand went back into the studio to record almost entirely with synthesisers. And Pascal was *now* accompanied by two new female vocalists – Sylvie Daviau, who is very French (but comes from Canada) and Jean-Elliot Manning (who is very American, but lives in Montreal).

This was the signal for a hectic updating of the band's photofiles and biographies, which had to be fitted in between radio and TV appearances and interviews such as our own. And the full picture is even more complicated than it already appears, because as some sharp-eared types may have spotted, 'Living On Video' has actually been released three times now, most recently with a slightly modified mix. So what has the band been doing since the song was first recorded, back in 1983?

Pascal Languirand explains. 'At the same time we recorded 'Living On Video' I did a whole album called *Message on the Radio*. That was released on Matra Records, which is Polydor's subsidiary in Canada, but the album wasn't released in the UK. After it came out I put together a band so we could play live. I played keyboards, and there was another keyboard player, a bassist, a guitarist and a drummer. So we played around Canada for a while, and then 'Living On Video' was released again.

'It wasn't until earlier this year that I was asked to remix the single because it was going to be released a third time. Obviously somebody at Polydor had confidence in it, because it had already been a hit on the Continent. I remixed it very quickly, and then we heard it had gone into the UK chart.'

We'll return to Languirand's pop exploits later, but first, it's worth recapping on his previous musical career. He's already released two solo albums, *De Harmonia Universalia* and *Vivre Ici Maintenant*, which could quite justifiably be described as being in a cosmic vein. How did those albums come about?

'Well, very much in the same way that Klaus Schulze's solo albums happened. I was a drummer originally, like Schulze, but I heard some synthesiser music and thought I *had* to get into it. The first synth I got was an old Farfisa Synthorchestra, which at least I could play chords on. I also played guitar, and had the Roland GR500 guitar synth system coupled with a Moog Taurus bass pedal unit.

'Luckily my family had good connections with the TV and film industries in Canada, and I was able to get some work recording a soundtrack for a TV series called *Vivre Ici Maintenant*. That was about very esoteric subjects, something different every week, so it needed this kind of 'cosmic' music. Then I recorded *De Harmonia Universalia* which allowed me to use more synthesisers and the Korg Vocoder.'

Both albums were released on the Minos label, but it's unlikely you'll find copies now other than by mail order from specialist distributors such as Lotus. Yet in spite of their obscurity, they're fine examples of the flowing guitar/synth style popular in California (I'm thinking here of Bernard Xolotl and others), and just the sort of thing that's likely to turn up as backing music for a *Horizon* episode about the mating cycle of the killer ant.

De Harmonia has five tracks, the titles being 'Inesperdistan', 'Abalii', 'Atlantis', 'O Nos Omnes' and 'Nova'. The opening's

'Luckily my family had good connections with the TV and film industries in Canada, so I was able to get some work writing soundtracks.'

particularly powerful – lots of deep bass Taurus notes followed by Baroque choirs of vocoder chords chanting delicate, sensitive French vocals.

And despite the fairly limited instrumentation, the sound never allows itself to get clichéd or outdated, which must say something for Languirand's tasteful use of effects and his mix of acoustics and electronics. 'Abalii' features acoustic piano as well as gentle guitar synth lines, while 'Atlantis' is heavier, with some crashing acoustic guitar and piano chords and, again, some thoughtfully delivered French vocals.

The sequencers come into play on 'O Nos Omnes', which underpins the choir and guitar synth sounds with a churning analogue sequence, while 'Nova' is an indication of the pop style to come: a more melodic sequence, and more complex layers of guitars and sound effects.

Languirand was keen to try something a little more commercial, however, and says he was able to apply the same compositional techniques to writing some more conventional songs. What was the first attempt he made at a commercial song?

'I want to integrate two musical styles, so that I can deal with cosmic subjects in a more commercial, pop format.'

'It was called 'Living On Video'! That really was the first one I did, although in all we did seven tracks for *Message On The Radio*. They're all more or less dance tracks, but I wanted to use some of the subjects I'd had in mind for the more 'cosmic' pieces. 'Living On Video' was written after I'd seen the film *Tron*. It was really about what it would be like to have to live inside some kind of video machine. And then there's '21st Century', 'Digital World' and so on.'

In fact, 'Digital World', which formed the B-side of the single, is the album's outstanding track, in spite (because?) of the fact that its vocal content is sparse and its synthesiser work verging on the experimental. It was written with occasional synth player Steve Wyatt, and used some larger polysynths such as the Elka Synthex, which Languirand chanced upon in the studio while recording the album.

'We recorded at Ultra-Son studio in Montreal, which is a nice 24-track with a Soundcraft desk. They had a few synthesisers there which I used a little, but mainly I was using my own equipment. After that I sold everything to put the band together, but the studio now has an Emulator II which I can use while I'm working there.'

But the equipment list for 'Message' is quite formidable – Roland Jupiter 4, Jupiter 6, CSQ600 and TR808, Korg VC10 vocoder and Polysix, Oberheim OB8, DMX and DSX, Elka Synthex, guitars, Simmons kit and Mattel drums. And as you may have spotted during the Trans X single's recent heavy airplay, there's also a bit of Casio VL-Tone on 'Living On Video', and elsewhere. For his own part, Languirand is at pains to point out that this is really a Jupiter 4, but anyone who's suffered the VL1's built-in Austrian Folk Tune a few hundred times can usually spot one a mile off...I know I could.

The composer adds: 'we only used the Oberheim a little, and the DSX sequencer hardly at all. I usually use the CSQ600 sequencer for bass lines, but recently I've been using the Roland MSQ700 as well, and of course that's much more versatile.'

All the album's lead vocal credits go to Languirand, with Laura filling in with a few Continental-sounding interjections. And her voice is still on the single, despite the fact that she's left the band. 'I didn't make a lot of changes when I remixed 'Living On Video' earlier this year', explains Languirand. 'The main ones were to thicken up the lead vocals with a little bit of ADT, and to change the drum parts. Originally they were recorded with a TR808, but the studio has bought a LinnDrum since then, so I overdubbed some of the percussion.

'There was no sync track recorded originally, so obviously I couldn't lock in a very complicated drum part to the original drums. I ended up playing some drum fills by hand from the LinnDrum, and I think it was quite successful.'

As already mentioned, the band's mentor took Trans X on tour after recording the album, after which Laura left to be replaced by Sylvie Daviau. 'I enjoy touring and singing on stage', she comments. 'But I think Laura was happier going back to modelling. Before this I was studying in Montreal – I'd done some studio work, but never anything like this.'

The new vocalist is Jean-Elliott Manning, who'd only tied up with the band a couple of weeks before we spoke to them. 'I'd worked with Pascal on a couple of other projects previously', she explains, 'but Trans X is something new for me. I studied in San Francisco and I was mostly involved with Salsa music there, and that has a lot of percussion and rhythm. I lived in France for a while and I really wanted to be in a bilingual environment, so Montreal was ideal. In the time I've been there I've done a lot of composition and produced a couple of stage musicals.'

So doesn't the electronic pop of Trans X come as something of a shock to the system?

'Well, it's certainly all new to me, but I'll enjoy learning about it. I think electronic instruments are the place to be at the moment, so I couldn't have a better opportunity to learn up on them.'

Manning's big treat for the night after the interview was going to be a trip to Andrew Lloyd-Webber's *Starlight Express*, since she quotes Webber/Rice musicals as one of her greatest influences. But was her musical input going to change the direction of the band? Languirand: 'I've already started writing songs for a new album, and I'm experimenting more this time. I had one with a really funky beat, but it was quite coincidental that Elliott was into exactly that sort of thing.'

So how does the songsmith go about composing in the studio?

'Usually I have a basic idea for a tune in my head, and I write all the words later. At first I just set up all the synthesisers and play the tune 'live', getting as close to it as I can and singing any words that come into my head over the top. Then it stays more or less in the same form when I record it with the finished vocals.

'For the new album I want to look back a little more to the cosmic style I used to use. I want to integrate it more into the pop style so I can deal with the same sort of subjects, but in a pop format. I won't really go back to playing cosmic music, though – *this* is what I'm doing now. But I'll be able to use the Emulator II at Ultra-Son, using the sounds just as pure sounds. I won't be imitating real instruments with them: you'll be able to tell they're sampled.'

So will the new version of Trans X be able to tour? Will Languirand take backing tapes on stage?

'No, I wouldn't use backing tapes. We'd reform a band with an extra keyboard player, so that we'd be able to *play* all the songs. I'd very much like to play in Germany, where I spent some time and thought it was wonderful. And Holland and Belgium, where we had some success with the single, and of course the UK.

'But it's very hard for bands to tour in Canada itself. It takes three days to get from one city to the next, and that makes a tour very expensive. Sometimes you'd go and end up playing for a hundred people as well, so only the very big bands can do it. Even Canadian bands like Saga, who are huge on the Continent and particularly in Germany, aren't very well-known in Canada and don't tour a lot.'

After extending their stay an extra day to fit in more interviews, the band were set to return to Montreal to start recording the new album, and to think about another single. Does Languirand feel he's under pressure now that 'Living On Video' has been a hit?

'Not really, because the next album is more or less finished. I've written almost all the songs and it doesn't take very long to actually record them. We should be putting out a single before too long and the album will follow it a few weeks later. Then perhaps we can think about going on tour – if the next single's a success.'

For someone who's gone rapidly from the heady heights(!) of cosmic synthesiser music to the more down-to-earth – though financially more rewarding – world of pop singles, interviews and tours, Languirand is remaining admirably cool. Luckily, he seems to have a fairly stable background; his success isn't a matter of life and death to him. And as for his vocalists, Sylvie and Elliott, Trans X will be fun for as long as it lasts.

And for everybody out there plugging away with experimental styles of music and considering making it a little more commercial in order to achieve greater recognition, Trans X have become an object lesson in how to do it, regardless of whether their success continues. Keep an eye on them. ■

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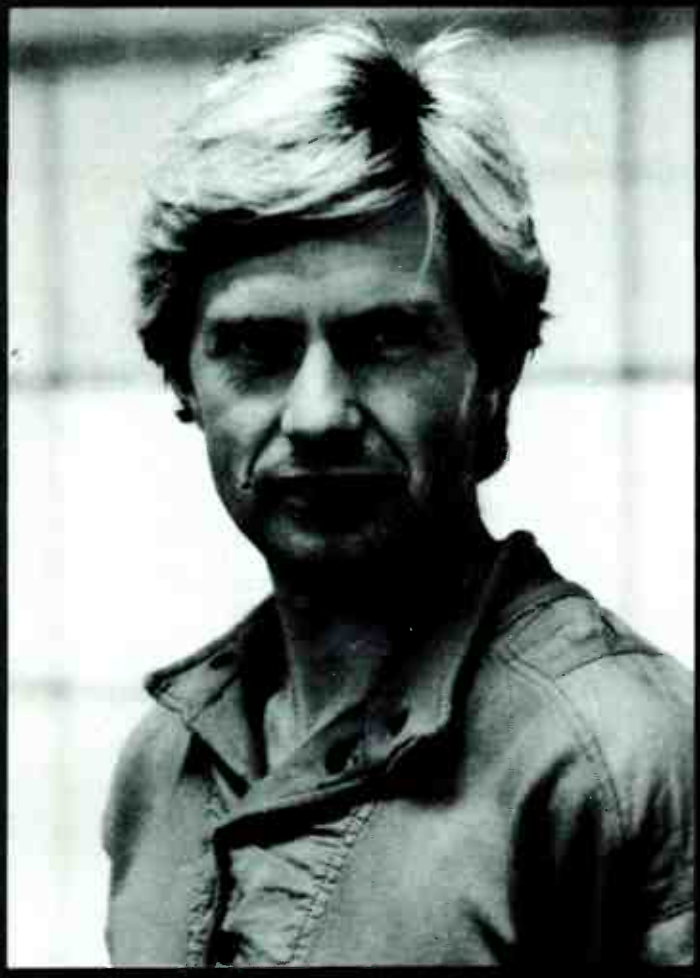


Take a piece of music, sample it, analyse it, add a splash of colour and a touch of artistic licence, and you have E&MM's most striking front cover picture for years. But this is just the beginning.

Dan Goldstein

Not long ago, a standard-issue press release arrived at these offices, accompanied by a rather impressive black and white print of some musical video graphics. The press release has long since disappeared underneath the heaps of waste-paper on the Editorial desk, but I seem to recall it carried the pretentious headline 'Sampling plus Voiceprinting equals A New Art Form', or words to that effect. There was a phone number at the bottom of the missive, so I determined to get in touch.

The man on the other end of the line introduced himself as Les Arnett, a freelance designer who had completed the voiceprint after being commissioned to produce 'a visual representation of music' for a poster promoting a London appearance by the Dallas Symphony Orchestra.

'I often come over to Cambridge to do research at Sinclair', said Arnett, 'so I'll drop by sometime. I'll send you a duplicate transparency of the voiceprint, too, so you can see what it looks like in colour.'

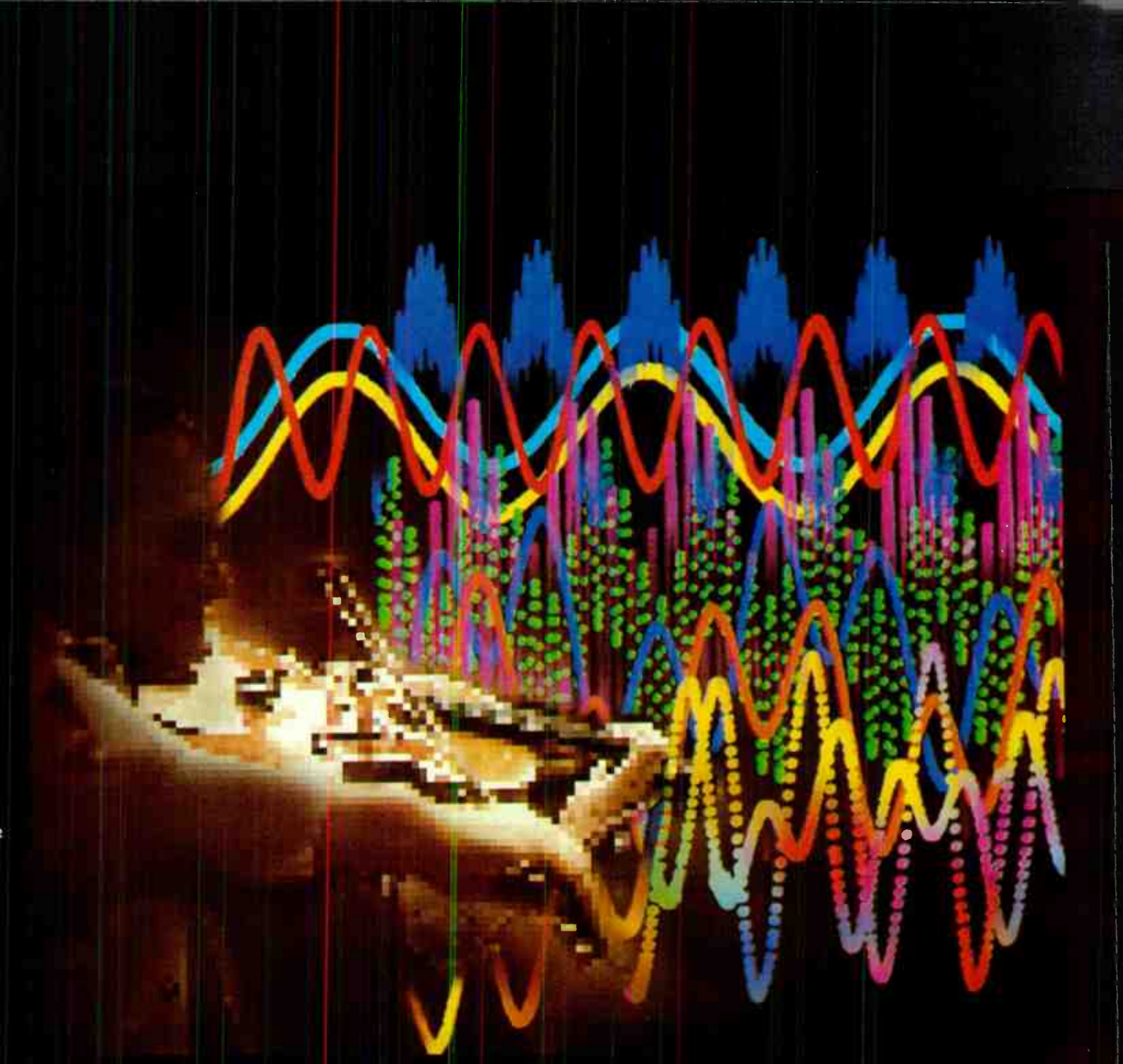
He did, and we were very, very impressed. 'We normally have pics of musicians surrounded by banks of keyboards', I explained as Arnett sipped his first cup of Music Maker coffee. 'But the voiceprint is so stunning we've decided to break with tradition – if you don't mind.'

Arnett minded not at all, and proceeded to show us a second voiceprint, reproduced here, that he'd just put the finishing touches to. He was immediately interested in E&MM and what went into its production, which wasn't surprising, when you consider he spent many years as an Art Editor at several major magazine publishers. When it got to the point where he was ultimately responsible for the artwork of 34 monthly titles, he threw in the towel and set up on his own.

As a partner in a small design consultancy called Van Der Graph, he's undertaken a lot of design work in the commercial hi-tech field. Prior to the voiceprinting experiment, his most notable achievement was managing to interface a modern business computer system with an ancient '50s telex machine using lasers, the object being to illustrate an exhibition stand theme of 'Linking the Unlinkable'. And just to emphasise that theme further, Arnett divided the stand into two BBC TV stage sets, from Fawlty Towers *and* Blake's Seven *respectively.*

More recently, the designer has worked on a hi-tech exhibit for the States that involved no fewer than seven moving holograms, and it was a Stateside connection that brought him the DSO voiceprinting job...

'An American company called Electronic



Data Systems were sponsoring the Dallas Symphony Orchestra to come over to Britain to take part in the American Festival in May, and it was they who commissioned me to produce some promotional artwork.

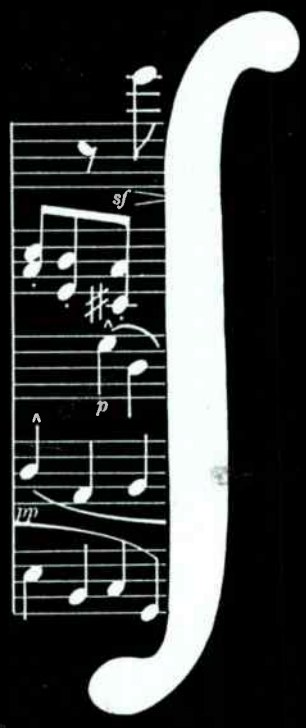
'Being a computer-based company that's heavily involved in sponsoring music, they wanted the illustration to be a very graphic visual representation of music. John McNulty, who collaborated with me in this project, is a real computer expert. He has something like 29 patents to his name in the computer field alone, so he was obviously a great help. But it still took us six weeks of research just to find out what we were going to need to make something like this possible. We went to places like the BBC Radiophonic Workshop and other studios, and most people just laughed at us when we told them what we wanted to do; they thought we were round the bend.

'We knew you could get visuals of music in various forms, but none of them were actually representative of the music as it evolved through time. They simply involved people deciding that a certain light should come on at a certain point in the music, so they bore no direct relation to the music at all.

'That was the big problem: getting a representation of music changing through a distance in time. Eventually, we hit upon the process that produced these voiceprints.'

And what, precisely, is that process?

'We applied the principle of Fourier analysis to 300 different wavelengths of different instruments within a piece of music. We then broke that information ▷



down and compressed it, fed it into a series of oscilloscopes, and from those into a Digital Equipment VAX computer for final analysis. It's the computer that gives you the scored waveshapes you can see in the finished image, but at that stage, everything is still in black and white. It's when you get to the Quantel system that the "art" bit comes in, because that's the stage at which you introduce colour. You have lots of options: you have to reject certain waveshapes because they don't fit in, and you have to decide where you want to introduce colour and which colours you want to introduce.

'The way I did it was to give each colour its own specific pitch range, starting with blue for the highest frequencies. Where you can see the colours blending together is where more than one instrument is occupying the same frequency range, because obviously, musical instruments overlap in pitch.

'The whole thing took us about six weeks to do, and the latest voiceprint has taken us a similar length of time. John wrote the analysis program himself, and the computing equipment we were using has a very high specification. It's used in industrial applications like stress-testing bridges, that sort of thing. So there were no problems accommodating the musical frequency information. The system could probably accommodate frequencies well beyond what humans can actually hear, in fact.'

But if the computing side of the process posed Arnett and McNulty no technological problems, the fusing together of several technologies (music, computing, video) caused them enough worries to last a year, let alone the duo's six-week deadline.

'That may have been why so many people laughed in our faces at the beginning', reflects Arnett. 'We were trying to blend several technologies that were never really intended for that degree of integration. Each time we pushed the computing side to its limits, the video was pushed further on as well, and so on. That caused us the problems, though it's also what makes the art form unique. What worries me is that some people will look at what we've achieved and say "that's fantastic – but I could do it with a marker pen". Because you probably could achieve something similar by fudging it, cutting out half the processes that we went through to achieve this. That way you'd end up with an image that wasn't really representative of the music at all, but unless you'd done things properly the way we have, you wouldn't know whether the image that resulted wasn't a true representation of the 1812 Overture, or Bruce Springsteen, or whatever.'

Still, Arnett can be confident that no matter what other artists may do to his process in the years to come, his name will go down in the hi-tech history books as being the first to boldly blend where no man had blended before. And whereas imitators may seek to short-cut their way to artistic glory by copying his technique, Arnett is set to stay well ahead of the pack, simply by refusing to admit that what he's created thus far is the limit of what can be achieved.

'The machinery we've used has a total cost of about £3 million, which gives you some idea of the potential that must exist by using it all in combination. The Quantel system is absolutely mind-boggling. The thing we use most is the Quantel paintbox, and that's quite amazing in its own right, even though it's only a small part of the system. You're given a light pen or an electronic airbrush, which you direct onto the screen using a colour or colours chosen from a palette underneath. And like I say, that's where the artistic interpretation comes in. We do it with the music on headphones, so that the colours reflect the music in some way.

'But I'm sure the current image is really rather crude compared to what could be done. There are two steps we want to take on from this. The first will involve adding another dimension to the waveform, so that instead of it being just an x- and y-axis form, it'll have a depth dimension as well. With the current system, a C played on a guitar looks pretty much the same as a C played on a violin. When we've added depth, we'll be able to represent the difference in harmonic structure between the two, and the waveform will actually come towards you and recede into the distance as that structure changes. That will certainly make things more vibrant.

'The second stage is much more radical. We've been working towards abandoning waveforms altogether, using entirely different visual shapes to represent music. We're hoping someone will finance the development of six more voiceprints. If they do, we'll be using a different way of representing music in each one, so that each one has a different visual form – like a completely digital breakdown, for example.'

Should those half-dozen pieces of artwork be commissioned, it'll also enable Arnett and McNulty to help solve two other current limitations, connected with visuals and music respectively.

'We want to exhibit the six in different parts of the world, but the problem we have to get round is one of making sure the images look as striking as they do on the original monitor screen. You'll probably get a load of stick from your printers over these transparencies, because reproducing them in print is a real problem. It's currently the weakest link in the chain, because as with everything else, the further away you go from the original, the worse the image becomes. What we hope to do when we exhibit these is backlight them on light tables, so that we don't have to go any further than film in the reproduction. There is one colour scanning house that's currently working on an interface between the digital Quantel data and the scanners, so that the printed image is a direct representation of the monitor one. But that could still be some way off.'

And the musical problem?

'So far we've had to confine ourselves to purely classical pieces. We have looked briefly at other forms of music, but you need the guineas. Taking six weeks off to investigate something costs a lot of money: just sitting in front of the Quantel costs £200 an hour!

'For the first image, we had to confine ourselves to what the DSO were playing in London, so we worked on Mahler's First Symphony. It's described as a dirge and that's pretty accurate. It's interesting in its own way, but musical interest doesn't necessarily translate into visual interest. There are some much livelier pieces that would have produced more striking results. I think the second piece – which is a representation of a Brahms violin concerto – proves that. We've dispensed with the musical notes and replaced them with a picture of a violinist, which is digitised – and totally changed – from a photograph.

'If and when we do the set of six images, we'll be working on six totally different sorts of music, as well as six different ways of representing them visually. That should confirm our suspicion that different forms of music end up appearing in different visual "families".'

Look forward to seeing them, then. ■

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OUTTAKES

The music column that treats professional offerings with the same disrespect it offers its readers' demos. For September, Phil Oakey, Thomas Dolby and Mark Shreeve have their heads on the chopping-block.

Tim Goodyer & Dan Goldstein

VINYLTAKES

In the perpetually uncertain world of popular music, I find myself certain of one fact: E&MM's next competition will *not* contain a question concerning the bass drum/snare drum pattern employed on the **Philip Oakey & Giorgio Moroder** album. Yes, the pattern you were all afraid to use – bass, snare, bass, snare – is here in all its glory, bar after bar after bar of it. As *Dare* was the party album of '81, so this eponymously-titled release (on Virgin) could be the same in 1985, what with Side 1 containing a continuous 20 minutes of dance music, complete with a liberal smattering of the now obligatory Fairlight 'Orch 4' preset. The resemblance to the Human League is more than passing, though this release misses the lower-register Oakey vocals that proved to be the League's salvation on more than one occasion. The second side dispenses with the instrumental bridges and houses the strongest of the album's songs, 'Be My Lover Now' is the song in question. You've probably heard this already as it's the current single release, but for those who haven't, it's notable for being blessed with an enticing melody backed up by the most considered production job on the album. As for the rest, predictability rules, I'm afraid.

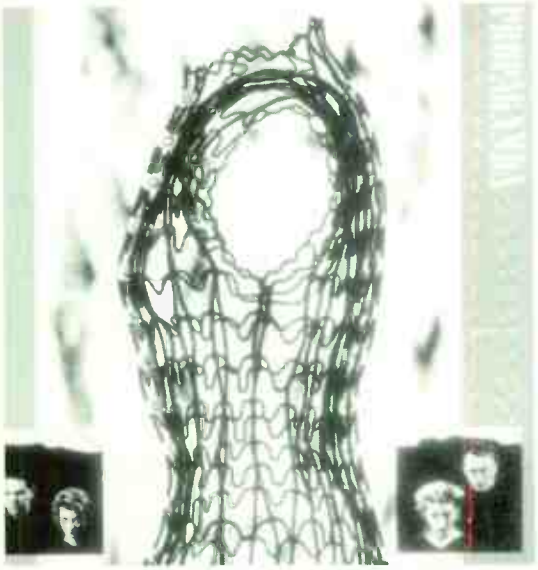
Predictability is one adjective you can't apply to a compilation album from Czechoslovakia; *Czech! Till Now You Were Alone* (Old Europa Café Records) is the first such disc to arrive in these offices, so it was greeted with a fair amount of curiousity. It's an independent compilation of unsigned Czech new wave acts, put together by an Italian, Rudolfo Protti, and as far as we know, not freely available in its country of origin. There are 19 (yes, I know) bands in all, each contributing one track to what is quite a lengthy album. The recording sounds like a below-average fifth-generation copy of a live bootleg, but is surprisingly listenable nonetheless. The music has a rawness that matches the recording quality, but there's quite a bit of musical invention here. Especially worthy is '20 stoleti' (20th Century) by a band called **Mama Bubo**, which interweaves synth and vocal melody lines under reggae guitar to produce something genuinely new and inspiring. Yet even if the music were third-rate, the compilation would still be a remarkable achievement, produced as it is under a regime that frowns upon this sort of self-examination and self-expression. More information, as well as the album itself, from Rudolfo Protti, Via del Maglio 8, 33170 Pordenone, Italy.

Still on an East European tack, we come to the latest work by established British composer **Dave Smith**. The record in question is *Albanian Summer* (Practical Music), 'a 45-minute, one-movement, episodic, romantic, entertaining and invigorating tour de force inspired by the composer's visits to Albania'. That's what it says in the sleevenotes, anyway. In reality, the music is sensitively written, the performances (by Jan Steele on alto sax and Janet Sherbourne at the piano) consistently dexterous and occasionally inspired, the recording (by Jonty Harrison at Birmingham University's Electroacoustic Music Studio) beautifully clear and natural. Albanian music incorporates elements of many different cultures and influences yet is quite different from any of them, and *Albanian Summer* captures that individuality by showing a healthy lack of regard for musical tradition and

convention. Now and again, changes in mood and texture are hindered by the unchanging instrumentation. And like so many pieces that attempt to bring a particular brand of music away from its usual context, some episodes are less involving than they would be in their normal environment. It's still an engaging record, though, especially in its more tranquil moments, and worth tracking down.

Propaganda

'Sounds range from sparkling digital to filthy analogue, and the whole thing has been arranged with seductive ease.'



With luck, *A Secret Wish* (ZTT) will be a little more readily available than either of the previous two releases. It's the long-awaited first LP from **Propaganda**, and the wait has been well worth it. Irresistibly pretentious, the band don't exist in reality at all, hence their well-earned reputation for being the thinking man's Frankie. Most of the music – and all the production – is the work of regular ZTTers Andy Richards and Steve Lipson. The list of contributing artists includes the likes of David Sylvian, Glenn Gregory and Ian Moseley, but discerning precisely where they appear is another matter. The tracks are more 'pieces' than 'songs', but are constructed with insight and precision, thus the vocals generally are more atmospheric than musical – and fit beautifully. Sounds range from sparkling digital to filthy analogue, and the whole thing is arranged with seductive ease. Recommended, especially if you admire the work of Edgar Allen Poe.

Also high on the recommended list is a new album from **Man Jumping**. Entitled *Jumpcut* (Cocteau), it's a bold attempt to put the compositional rigidity of systems music into a looser, jazzier, more lyrical and more accessible context. The combination looks contrived on paper, but on vinyl – and in the capable hands of the band's instrumentalists – it works a treat. The album's almost entirely instrumental so you won't find any singalong material, but it does contain the band's excellent last single, 'Aerotropics', amongst its seven cuts. Heavily laden with Latin-style percussion, brilliantly-played brass and some disparagingly tasteful piano and synth licks, the album has an atmosphere entirely its own. Buy it.

High hopes were held for the new **Dolby's Cube** release in advance of its arrival. After all, this man is one of a very select breed of brilliant producer/songwriters and a master of modern keyboards and their sounds. A glance at the sleeve of this one shows the Cube (in its present incarnation) to be a collection of talents ranging from the Brecker Brothers to George Clinton. How disappointing, then, to find that 'May the Cube be With You' (Parlophone) is little more than a dancefloor chant, and not a very good one at that. Granted, it's bound to be fun in the right situation, but apart from a pleasant Shakatak piano break and the Breckers' horns doing nicely what Dolby's Fairlight has been doing for some time now, the single has little to commend it. Do what you do well, Thomas, and leave this sort of thing to those that haven't anything better to do.

Very much better is 'Running Up That Hill' (EMI), Kate Bush's first record release in a Very Long Time Indeed. It's certainly odd-sounding, but that's due mainly to the way the instruments and (especially) *that* voice have been treated; the song itself is catchy but unremarkable. This is Bush's first single to be available in 12" form and it works – the shorter version pales into insignificance by comparison. Let's have the album. And fast.

Lots of nice sonic treatments on **Mark Shreeve's** 'Legion' (Jive Electro), too – stuttering samples, wandering sequencers, a few Fairlight presets, busy drum machines... So much, in fact, that the single begins to sound rather like the sort of thing NASA put in their deep space probes to document the state of human progress to recipient alien civilisations. Shreeve is now free of the technological constraints he once complained of, but the application of his new-found instrumental wealth is uninspired, to say the least. The aliens discovering the probe would learn what a dance beat is, sure enough, but they wouldn't be given a very good lesson in musical creativity. Most conspicuous by its absence is a decent melody: there's nothing here that you could go away and whistle after hearing the record ten times, let alone once. Back to the drawing board Mark

Yet more pleasant sounds on 'I Can't Believe' (RCA), the first fruits of recent company signing **The Nightcatchers**. Man behind the faders is none other than Level 42's Mark King, who's succeeded in making his unmistakable, er, mark. There's certainly a lot going on here, with sequencer, guitar and drum patterns trading chops like kids trade bubblegum cards. A vocoder helps the vocal delivery on its way, but there's still a stumbling block in the form of a worryingly awkward lyric. The situation is eased by the contribution of Nikki Leeger's backing vocal, but... The remaining track, 'Times Are Changing' is produced by the band themselves and, as well as a great sequence line, possesses a few TR808 handclaps as well as some decidedly Frankie Goes To Hollywood vocal tricks to commend it. My advice? Keep your eyes (and your ears) open for this lot.

Finally, a band with an assured future. **King's** latest, 'Alone Without You' (CBS) is not a new song; the band have been churning it out live for some time now. In his recent E&MM interview, keysman Mick Roberts warned us to keep an eye on the keyboards on the 12" version of this. We did, and it's not going to change the world, though there's no denying there are some noises in there you won't have heard before. But this isn't the band's strongest song, and nor is it the 12" version's most desirable attribute, since there's a fresh mix of 'Love and Pride' that proves it's still got something to say. Wait for the appearance of one of the newer songs, 'Torture', before you get too enthusiastic.

DEMOTAKES

Declaring total dedication to gaining a recording contract, a plethora of 'commercial material', and a wealth of desirable equipment that includes a CX5M, a DX7 and a JP6, **One Hand Clapping** comprise Robert Radford and Brian Nylon. One thing you can be sure of before you even hear this tape is that these boys are serious. No reasonable expense has been spared, and the smallest degree of faithlessness has been exorcised. Personally, I'm not convinced of the alleged commercial strengths of most of the material here, though there is notable exception in the form of 'It's Called Love', which would be great if it had a less contrived and predictable chorus. The production could do with a little more attention to detail, too, but there's no doubt the ideas are there...

Anyone who knows a good chorus when they've written it has a head start when it comes to demos in general, and is always a welcome inclusion in *Out-Takes*. Such a man is Randy Spence who, whilst still unable to give his TR606 drum machine the kiss of life, has managed to make a lot happen in 'Dancing Shoes', the uptempo half of his demo. Some imaginative and quite original sounds from a JX3P contribute greatly to this end. Unfortunately, Spence doesn't pursue this theme on 'Ladybird', which is just too pedestrian to ever become involving. This is probably a deliberate move in the interests of diversity, but having a broad range of styles at your disposal isn't everything. More positively, an interesting aspect of this home eight-track recording is the complete absence of any reverb, yet the demo breathes in spite of this. Forget the ballads, Randy, and get your dancing shoes on.

Taking the topical issue of sampling into their own hands, Alan Wilson and Sean McCreavy, alias **Two's A Crowd**, have produced a demo that makes use of their own Baron Sampler. Whilst this is an endlessly commendable thing for any group of musicians to do, the fact that you can't actually *hear* the thing in action is a bit of a let-down. I'm assured said sampler was still under development at the time of this recording and is now in far better shape, which go some way to explaining things. As for the music itself, the listed influences (they include Nik Kershaw, Genesis and the Beach Boys) don't really make much of an appearance, either. If there's one thing that varied lot have in common it's dynamics, but there's not much of that on Two's A Crowd's demo: the DR110 drum patterns just trickle along without a high or a low point in sight. That aside, a lot of the tracks (and there *are* a lot of them) are very Genesis, and all are well recorded on a Fostex X15. The vocals are a mite too low in the mix and too dry for comfort, but experience is a wonderful thing...

Inside Out *'A budding two-piece making impressive use of synth atmospheres, layered over neat fretless bass and Oberheim DX drum patterns.'*

Inside Out are another budding two-piece, making impressive use of DX7 and JX3P to create atmospheres layered over some neat fretless bass and Oberheim DX drum patterns. Where the band let themselves down is in their choruses. I know it's hard, but a chorus *is* meant to contain the strongest of a song's hooks. The verses make excellent use of those atmospherics and are engaging enough to carry a weak vocal – no mean feat in itself – but the choruses cry out for more consideration. Back on the credit side, stereo and sequencing effects have been used sparingly and are much the better for it – discretion at last.

Last but by no means least come **QSM**, a London trio who've already pressed up two of the songs on their E&MM demo as a single. The first of these, 'Tell Me', is a very catchy piece of white reggae that sees its composers making excellent use of sampled brass from a Greengate DS3. The Apple-based sampling wonder is also responsible for some rather tasteful drum sounds, this being juxtaposed with an uncredited drum machine which isn't. The single's B-side is a more straightforward piece of sequencer-based rock, and suffers a little from repetition and tatty production. As for the rest of QSM's submission, some of it could do with a bit of tightening-up in all departments, but there's plenty of songwriting talent here.

If you've made a demo of your own music and fancy getting a second opinion – as well as the chance of seeing your name in print – send it to DemoTakes *at the editorial address. Enclose as much biographical and equipment detail as you can, and a recent photograph if possible; the next time you open up E&MM, you might find a picture of yourself staring back at you...* ■

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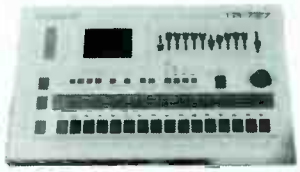

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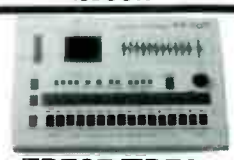

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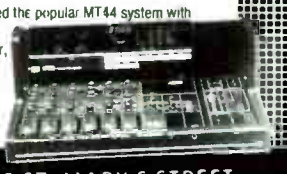

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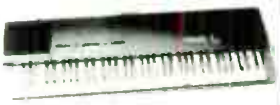

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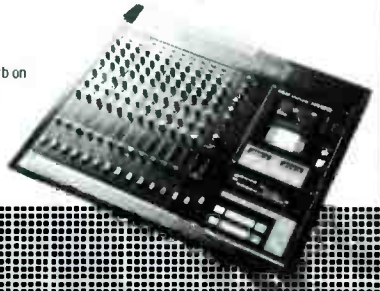

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GLASS

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Systems music composer Philip Glass' taste remains as refreshingly catholic as ever, but the London performances of his latest portrait opera, *Akhnaten*, were disappointing.
Annabel Scott

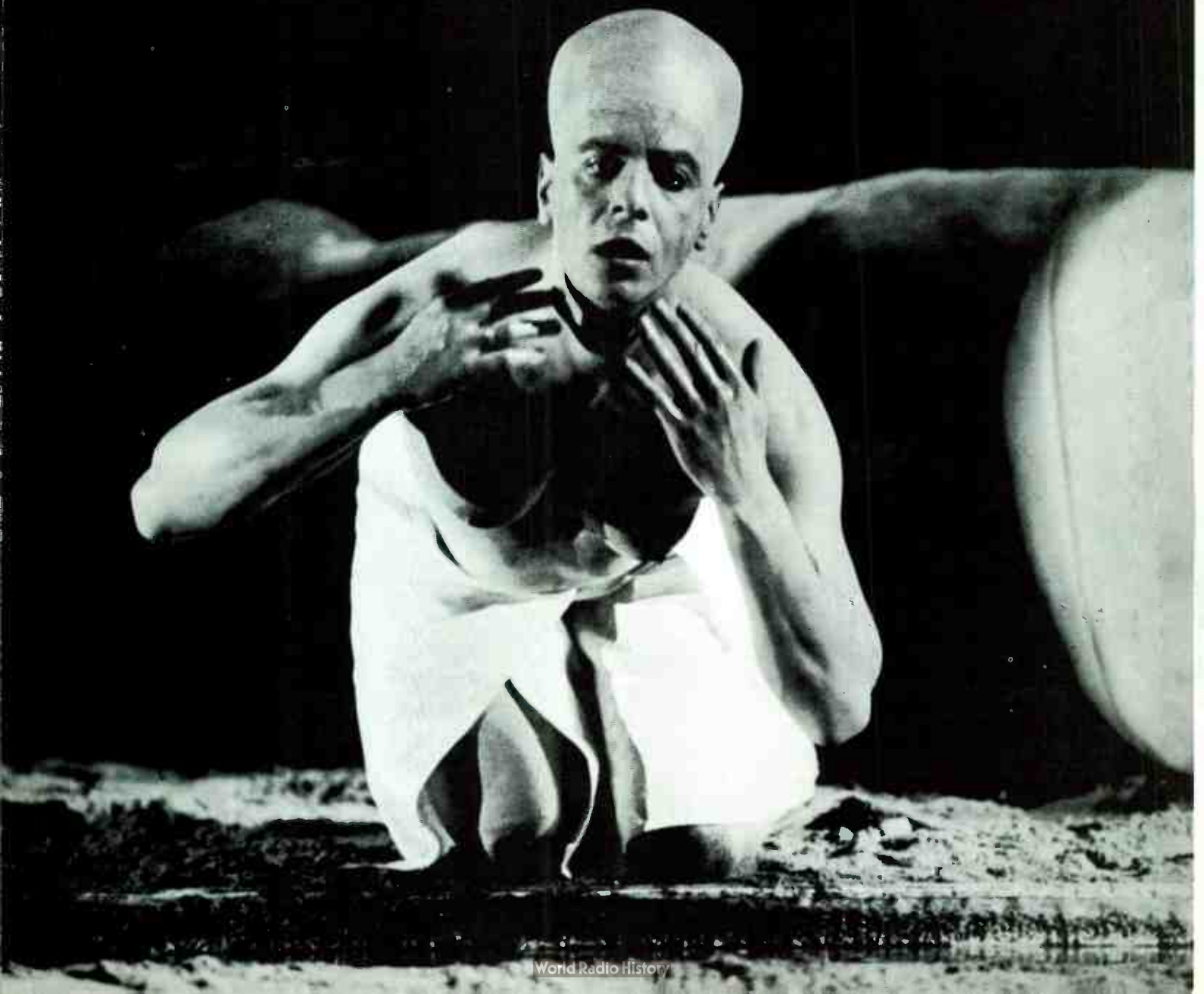
Seat Q10 in the London Coliseum, while affording a perfect view of the sand-covered set of Philip Glass' third opera *Akhnaten*, would have held one drawback to anybody used to appreciating the amplified outpourings of the Philip Glass Ensemble. It was just too quiet. Even the climactic moments of the third act paled into insignificance compared to, say, Tangerine Dream's tuning-up procedure.

Never mind. We're here to listen to the music, and there's plenty of it – three acts, each around 40 minutes long and introducing a couple of musical innovations to the Glass repertoire. One of these comes in the first act, a hectic percussion passage that marks the ascent to the Egyptian throne of Amenhotep, who swiftly renames himself Akhnaten to signify his belief in a single God: Aten, the sun. Akhnaten, played by Christopher Robson and bizarrely made-up with bald wig and false breasts (apparently, the man had some hormonal problems which 'Ancient Akkadian isn't equipped to describe), delivers Glass' repeated arpeggios in English, Akkadian and Hebrew at a surprisingly high pitch. Higher, in fact, than that of the female players (Sally Burgess and Marie Angel) who take the parts of spouse Nefertiti and mother Queen Tye respectively.

Backstage before the show's commencement, the composer is talking background into the Walkman. *Akhnaten* is his third 'portrait opera' in less than a decade, but as the world's best-known writer of systems music,

Akhnaten *Christopher Robson in the title rôle during the ENO's presentation*

Photography *Clive Barda*



Glass is a lot more prolific than that statement might suggest. In addition to his operatic activities, Glass' 1985 will witness an album of songs written in collaboration with Laurie Anderson, Paul Simon and David Byrne among others, a soundtrack for a Paul Shrader film by the name of *Mishima*, and a sprinkling of other works in the theatre and ballet fields. Obviously, each of these projects has its own set of artistic and commercial *raisons d'être*, but why *Akhnaten*?

'The Stuttgart Opera had commissioned a piece, and I'd decided while writing *Satyagraha* (which portrays Mahatma Gandhi's early life in South Africa) to write a third portrait opera. Now they've decided to do the three portrait operas in the Spring of '87, which is very ambitious. They're doing a new version of *Einstein on the Beach*, which deals with science, while *Satyagraha* is about politics and *Akhnaten* is about religion. I don't intend to do any more portrait operas, though.'

In fact, *Akhnaten* is the first large-scale Glass piece to be put on in London, though his Ensemble has played at The Dominion and at Sadler's Wells previously. Why the delay?

'Well, it's all money, isn't it? And having an opera company committed enough to put it on. It's good, if not vital, to have a company with a real commitment to playing the piece. I first spoke to Lord Harwood (English National Opera bigwig) two or three years ago. He was interested in *Satyagraha*, but then he came to Houston and saw *Akhnaten*. Some of the singers were European, and it was the latest work, so it seemed the best piece to do. Also, quite a lot of it is in English whereas *Satyagraha* is entirely in classical Sanskrit, because the spoken text of *Akhnaten* is always delivered in the language of the country in which it's performed.'

So is *Akhnaten* a straight classical piece?

'There's a DX7 in the orchestra which I've written a short solo for, but from the point of view of the music I've done in the past – working with the synthesiser ensemble – it's very trad, because it's written for a repertory opera company. But it appears very different to the people playing it, partly because it requires so much endurance and stamina. In fact, it's an unusual orchestra – Akhnaten is a counter-tenor and the orchestra has no violins, just violas, cellos, basses, a lot of percussion and the synth. So all the high voices and low strings make it a very dark piece, which I like.

'Because *Akhnaten* doesn't have a large orchestra, the synthesiser helps to smooth out some places where the wind and brass parts don't get much time to breathe. I wrote the piece in '83 and I've found different ways to do that now, so I don't use it any more. But in the studio we usually have a synthesiser doubling the brass parts, or some Emulator strings underneath the real ones. That's what I call extended instrumentation – synthesisers doubling acoustic parts to give them more power.'

Time to spoil the plot, Michael. After the enthronement of the first act and a ritual bathing scene accompanied by the most lyrical solo of the opera (a beautifully repetitive oboe 'loop'), the second act chronicles Akhnaten's destruction of the old pantheon of gods, represented by giant mummies standing at the centre of the stage. Taking their place is a huge sun-symbol which hangs at the back of the stage, and

Glass *High technology's biggest 'serious music' champion* **Photography** *Annie Liebowitz*

Akhnaten calls out to the sun as he ascends a huge ladder to try to reach it. The act closes on this note, and in the final act, Akhnaten's downfall begins.

Isolated in his city of the sun, Akhnaten sings to his six daughters and ignores pleas from his advisors for guidance on the problems of the country. Gradually, the chorus from outside the city builds up and the people of Egypt appear, to kick down the walls of sand which have been built to represent the city of the sun. Texts spoken in English emphasise how far Akhnaten has lost touch with his society, and the final scenes take us forward to the present day, where we're presented with a group of tourists littering the remains of his abandoned city. After their departure, the ghosts of Akhnaten, Nefertiti and Tye reappear to play for one last time among the ruins.

At this point the action comes to an abrupt halt, and looking through the libretto, it becomes clear that all the complex pieces of stageplay that characterised earlier productions have been removed. There's no final stately funeral procession, no royal balcony appearance, no heavenly land of Ra. In fact, the lack of variation in the set lets the music down badly, and makes it difficult to follow the course of the action – itself intentionally episodic.

So we're left with little but the music which, despite the percussion and some synthesiser brass effects, is not Glass' most powerful. It isn't just the lack of volume. Most of the material is listenable, sure enough, but only at two or three points do we encounter huge, shifting chord patterns such as those in *Koyaanisqatsi* (Glass' soundtrack for Godfey Reggio's film of the same name), or compelling solo passages like those of *Glassworks* or, indeed, *Satyagraha*. Perhaps a front-row seat would have made a difference, but the fact remains that the staging is disappointing, emphasising what the music lacks, rather than what it achieves.

The performance is a sell-out, as all the others at the Coliseum are, and those that miss *Akhnaten* miss the chance to hear Glass in a lyrical, rather than overtly technological, frame of mind. For this writer, it's Glass' excursions into the latter territory that make more rewarding listening.

That said, if anybody wanted to pay my air fare to Stuttgart in Spring '87, you'd have trouble holding me back. ■

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TECHtalk

As part of their British Music Fair activities, Yamaha brought FM synthesis inventor John Chowning over to Olympia to give a series of public talks. He also gave E&MM an interview so informative, we're having to run it over two issues. Questionmaster *Simon Trask* Photographer *Jerry Uwins*

Almost anyone who's worked with Yamaha's ground-breaking series of Frequency Modulation synths will have come across the name of John Chowning, the founding father of FM's musical applications. For some years now, he's been director of the Centre for Computer Research in Music and Acoustics at Stanford University in California, but currently he's on sabbatical at IRCAM in Paris – just a short hop across the water from August's British Music Fair. The BMF seemed an ideal opportunity to get the lowdown on a chunk of music technology history, to discover what he's working on now – and to find out what the man's really like 'in the flesh'. In fact, far from being a lofty academic, Dr Chowning proved to be a modest, approachable and above all open-minded man, with plenty of enthusiasm for the latest trends in music technology. But first things first...

I can't imagine many people know that much about you, so let's start with some background.

My background is all musical, and my training rather traditional. However, I played and had a lot of interest in jazz for a number of years when I was younger, in which context I played the drums. I became interested in composition while I was at college in Wittenburg, Ohio, and gained a degree in

composition there. Then I went to Paris and studied composition with Nadia Boulanger for three years, after which I went to Stanford as a graduate student in Composition.

After a year of graduate work I read an article by Max Matthews – this was, I think, in December 1963 – which was the first published work on the use of computers to synthesise sound. It was rather different to the work of Hiller and Xenakis which revolved around the use of computers in composition. While I was in Paris, Boulez had the *Domaine Musicale* series, so while I was studying with Boulanger I'd heard a lot of new music involving electronic music – some of the early works of Stockhausen such as *Kontakte*, and Berio's *Omaggio á Joyce* – so I was intensely interested in electronic music and in loudspeakers as a medium. At Stanford they didn't have any electronic music equipment of the sort that studios in those days had, but they did have a fledgling computer system that was rather good for the time, at the beginning of the Artificial Intelligence project. So having read this article by Max Matthews I investigated the possibility of our implementing his programs at Stanford – Bell Labs MUSIC IV was the program they had at the time. With the help of a young mathematics undergraduate student, David Poole, I was able to implement the MUSIC IV program at Stanford using a PDP1 and an IBM 7090 joined together through a shared common disk, and that was, I think, the first on-line computer music system in the world.

That was my beginning with computer music in 1964, and I quickly saw that I could learn to program in less time than it takes to learn good counterpoint or 18th century harmony, and that learning to program extended a kind of freedom of rather extraordinary dimensions – that is, I realised that if I could program the computer I could kind of be an engineer without ever having to learn to solder.

I quickly became interested, in '64 and '65, in the problem of space, and in trying to create sounds with the computer which did not seem to come from point sources – that is, loudspeakers. In fact, the first bit of musical acoustic or psychoacoustic research was in creating spatial illusions, and by just having a modicum of programming capability I was able to design these programs which moved sounds in space. I learnt a lot about perception, and I also learnt that to have effective control of these machines, you needed to have some skills in acoustics and psychoacoustics. And of course, my musical background was the most valuable thing of all, because my ears were what lead me everywhere, including to FM.

Had you learnt anything about acoustics or psychoacoustics as part of your musical training?

No, not in my musical training. I learnt about them 'in the lab', so to speak – kind of an incidental education. Very few music schools even *today* give any training in acoustics – and psychoacoustics would be even more strange.

So learning to program was a very exciting thing for me, and I realised a lot about the value of programming using a high-level language – which at that time was Fortran. In fact, MUSIC IV was written in Fortran and assembly language.

We got a PDP6 in 1965, and David Poole and I wrote a special program based on MUSIC IV but optimised to make use of the timesharing environment that was provided by the PDP6. It was an improvement on MUSIC IV in some ways, and like that program, it was based on the idea of the unit generator – a very important conceptual notion that Max Matthews first presented in the early MUSIC programs, and which allowed those of us who had interest but no technical training to get hold of these ideas of signal processing without having to encounter the mathematics, which was at that time (and still largely is) completely foreign to me.

We *were* very naïve technically – there are 16-year-old kids today who have much more knowledge about sampling, the digital representation of sound and so forth. But we were

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working side by side with computer scientists and engineers, and it was an almost ideal environment because there were enough people in the lab that I could ask questions of before I'd cycle back to the first person and embarrass myself by repeating my questions.

By 1966, I'd worked out the basic ideas for moving sounds through illusory space – that is, for controlling the angle, velocity and apparent distance of sound. So I could move sounds through this illusory space with only three or four loudspeakers and have a 360-degree sound-space. That was very exciting. How to pan sound was pretty obvious – the only robust parameter which you can control is relative amplitude between speaker pairs. However, the question of distance was not well understood, and there I think we made a bit of a contribution through realising that distance is mostly a function of the ratio of direct to reverberant signal. If you have independent control over reverberation and direct signal, you can create an illusion which I think is the analogue of perspective, so I call it 'auditory perspective'. In the auditory domain, something that is soft in pressure may have the subjective impression of great intensity, because we understand that it's not soft because it's soft, but it's soft because it's far away. But at the source it's loud because we hear a relatively great amount of reverberation with the direct signal. It's a very important subjective cue, and one which I feel ought to be better used in the synth or loudspeaker music that we hear. Much of it I find so loud that it's on the edge of pain, and I think often it's really not what composers or performers wish. They want a big sound, sure, but not pain.

What's needed is a better understanding of the perceptual attributes – the distance cue, for example. I've thought a lot more about this distance perspective in recent years, and in particular the relationship of spectrum to perceived amplitude. With the DX7 you have control over spectrum as a function of velocity, which is very important. One of the important attributes of FM is that such a relationship is an easily-made coupling, because velocity is not just loudness or intensity. In fact, sometimes the better representation of loudness is not intensity at all, but spectral richness or bandwidth. That was implemented easily because the algorithm allows it.

'The Yamaha GS1 had 50 chips in it just for FM processing. The DX7, by contrast, has just two.'

So at what point did the initial development of FM synthesis take place?

That began in 1966. I was quite happy about what I was able to do with the projection of sounds in space, but the sounds themselves were still rather dull. What could we do with a computer but not vast amounts of computer time? We could make a square wave, triangle or sawtooth or a sinusoid – perhaps sum a few sinusoids – but nothing terribly interesting or dynamic, and certainly nothing that approached the richness of sounds that we experience in the natural world. And so I was experimenting with modulation (vibrato, in fact), realising that with the computer I could extend the depth of modulation and rate of the vibrato to arbitrary limits. There was no boundary because it was done in software. Mind you, this was not in real time. A few seconds of music would maybe take a couple of minutes to come through, but for any numbers of minutes it could turn into hours. So we didn't make many pieces and we made them with very great care.

In experimenting with these sounds I just kept pushing the vibrato rate and depth, with one sinusoid modulating another. I noticed that beyond the audio band, I didn't experience the instantaneous change in pitch any longer. Instead, what I was hearing was a change in timbre. So then I just picked some values: say a carrier frequency (at that time I called it a centre frequency) of 100Hz and a vibrato rate of 100Hz, and maybe a vibrato depth of 100Hz. That seemed strange, but the computer didn't care. I noticed that it was no longer a sinusoid I heard, nor was it a sinusoid with vibrato, but a slightly richer tone than what would be formed by a sinusoid on its own, still at 100Hz. Then I discovered that if I put everything up by a factor of two the pitch was an octave higher, as you would expect, and the spectrum seemed to be about the same.

So I did a few experiments, first with basic integers and then with some more complex ratios, and realised that with very simple control over two oscillators, I had all these different kinds of tones, and I thought that was wonderful. Then I realised that if I made the modulation depth of one of these oscillators change in time, I had what was a standard effect on synthesisers of the time – the bandpass filter. But I also knew that you couldn't do those things in digital at the time, because it was just too expensive. So then I asked an engineer to help me understand what was going on according to the theory. We looked at a standard engineering text and he explained to me the equation and its trigonometric expansion, which really points at the spectral domain – and that was what was interesting. We discovered that what I was doing was exactly predictable by the equation defined in the 1920s for FM broadcasting, where the broadcast signal was always the music or speech signal and the modulating signal was always a sinusoid. So to explain that they start with a simple case and use a sinusoid as a modulator, and that's exactly what I was doing, except that I was doing it so that the carrier was in the audio band.

Having found this theoretic explanation, we were able to predict pretty much what was going to happen. Then we extended it: what happens if you have two carriers or two modulators in parallel? Or cascade modulation as in Algorithm 1 on the DX7? It's the explanation that's complicated, not the actual process, but that's the trade-off. Intuitively it's not so clear, but computationally it's efficient, whereas additive synthesis is intuitively very clear but computationally a bit unwieldy, so the database is pretty large.

I experimented with a number of different forms of the algorithm and realised that it was extensible. If you had three oscillators then you got what you'd expect, maybe twice as much power or even more. I did a number of simulations of various tones, but there were some that I couldn't do, like brass tones, and I didn't quite understand why. However, I'd made the acquaintance of Jean-Claude Risset, a French composer who at the time (1967) was working at Bell Telephone ▷

TECHtalk

▷ laboratories with Max Matthews on computer music, and who'd done some analysis of brass tones. Through the analysis and Fourier synthesis of those tones, he'd realised that one of the signatures of brass tones was the relationship between increase in intensity and increase in bandwidth – the harmonics came in sequentially during the rise time of the amplitude envelope.

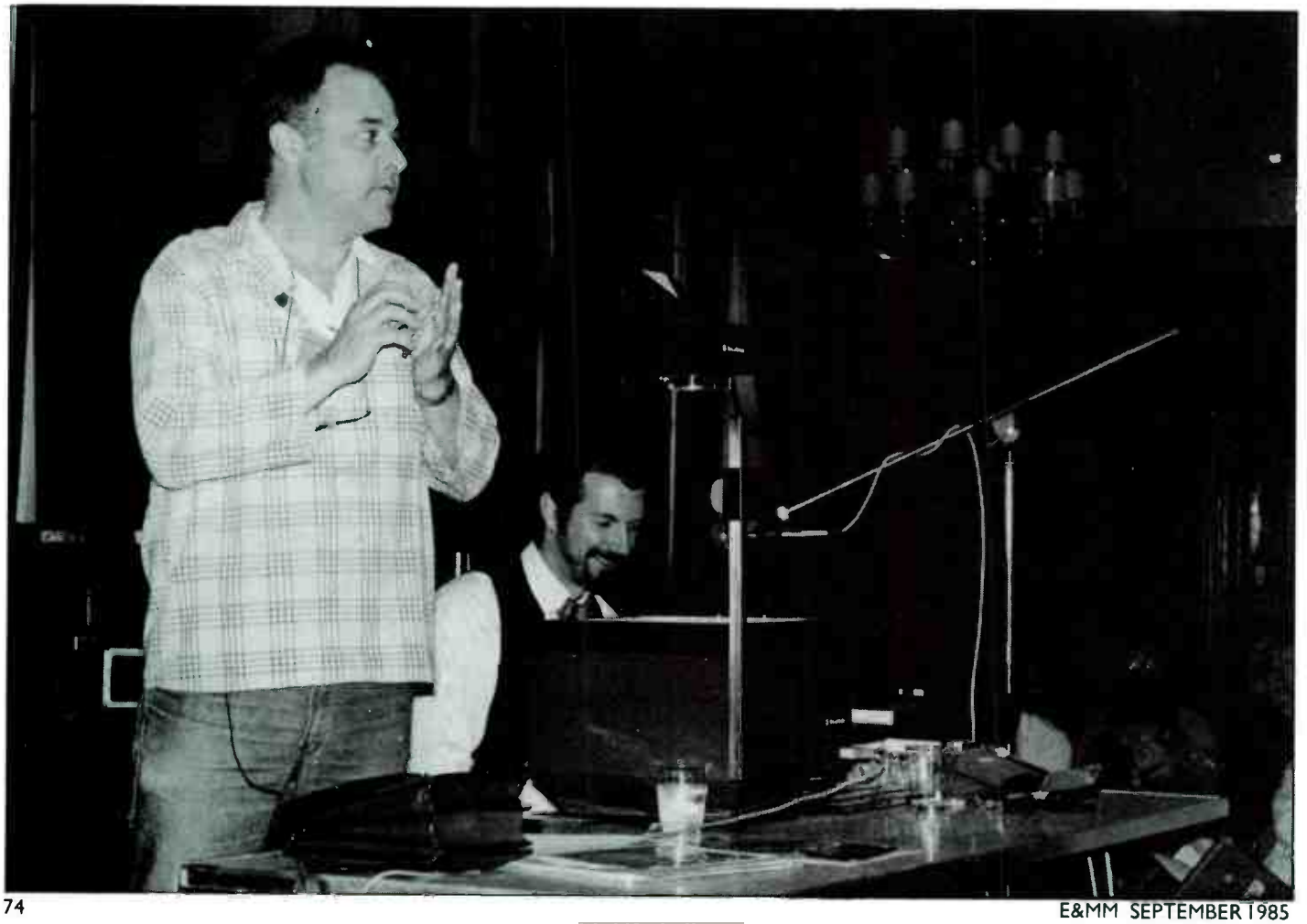
In 1970 I remembered this, and while I was looking at the basic FM equation I thought that if I used the same envelope for the modulation index as I'd used for the amplitude envelope, then the right thing should happen. Within a half-hour or so I had some unbelievably good brass tones, rather elegantly done with only two oscillators. At that moment I realised that there are a lot of correlations between energy and bandwidth – with the bell tones, for example, which were probably the first truly realistic tones that I'd managed with just two operators. I was using the same envelope for the modulation index as I was for the amplitude, except that the ratio of carrier to modulator was one which gave inharmonic components.

The brass tone was a big step, because I realised then that Jean-Claude had used maybe 16 oscillators in parallel to get a sound which was different, but not necessarily better-sounding, than the one that I was doing with just two oscillators.

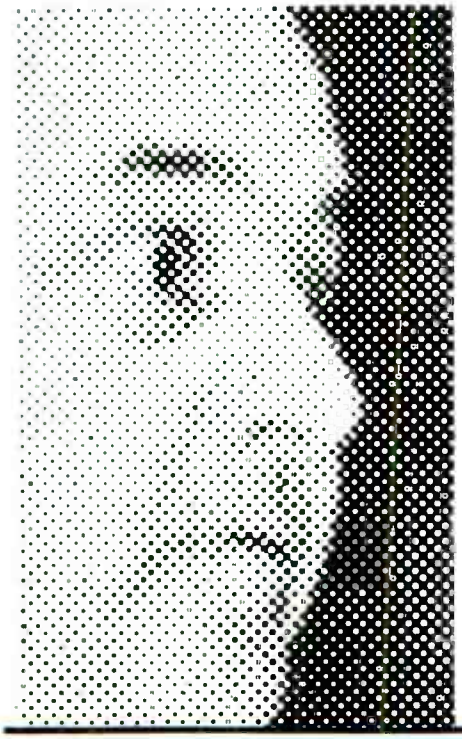
How did Yamaha come to adopt FM synthesis?

Well, just after I'd synthesised these trumpet tones using FM, which was in '71, I realised that there was probably some commercial interest in such a technique. So I explained it to an office at Stanford called Technology Licensing, which was just beginning at that time. I played them some examples, and explained how it was done in a rather simple way. They contacted some American organ companies to see if any of them would be interested. Hammond sent some engineers a couple of times, but they just didn't understand this idea of 'digital'. They thought the tones I was producing were very interesting, but I don't think they really understood when I explained how it all worked – it was just not a part of their world.

Anyway, Stanford University heard that Yamaha were making organs, though they were not a well-known company in the States at the time, at least not in that area. So Yamaha sent one of their engineers who happened to be in Los Angeles at the time, and after ten minutes of explanation he understood exactly what I was talking about. Yamaha were already, I guess, thinking digital and doing theoretic work in the area.



TECHtalk



So Yamaha quickly became very interested. I signed the rights of the patent over to Stanford, who paid all the patent costs, and I think that rightly they get most of the income from the royalty, because the work was done in their labs, and because they use most of the money to support the Centre for Computer Research in Music and Acoustics.

Over the years Yamaha worked at the development of FM, but it couldn't be implemented in a commercially viable form until the development of VLSI chips. Remember that the GS1, Yamaha's first FM keyboard, had 50 chips or so in it that were related *just to the FM processing*. The DX7, in contrast, has just two. There were eight operators in the GS1 whereas the DX7 has six, but then there are aspects of the DX7 which are more complicated than the GS1, so it may be about the same order of complexity. But the reduction is enormous, so when people say that I developed the DX7, I have to say that's not true. It's an idea that I had, and I worked with Yamaha, but it required a very high degree of mathematical expertise to realise, and I don't have that expertise. I was very naïve, and it was maybe because I was *not* very well educated in technology that I was able to discover what I did. Radio engineers are so programmed to think of the carrier frequency as being in megaHertz, outside of the audio range. I was a naïve musician doing something that I shouldn't have been doing, in a way. It didn't make any sense musically to have vibrato that deep and that fast, and from the point of view of engineering, there was no particular interest in the results of having such low carrier frequencies. ■

'After I'd synthesised trumpet tones using FM, I realised there was probably some commercial interest in the technique.'

Next month: Using FM to mimic grand pianos until musicians can't tell the difference, working with Dave Bristow, and the future of MIDI...

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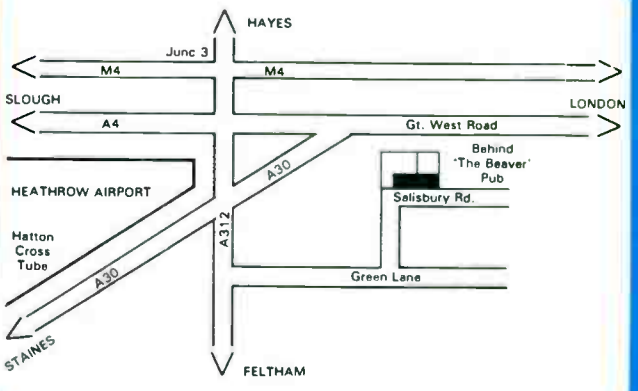
This month we thought we'd show you a map so you can find us easy.



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BARCLAYCARD VISA

CHECKLIST enters its second phase for the second time, as we present a revised rundown of the dedicated sequencers, computer music systems, and music software packages currently available in the UK.

The listing follows the same format as last month's polysynth guide. For anyone who missed that, you'll find a make-by-make rundown of each individual product and its typical retail price, accompanied by shortform specification details and the comments – for, against, and summing-up – of E&MM's own reviewing team where possible; guaranteed to raise the wrath of the music industry and keep Britain's music-playing population better informed than ever.

In the three months since we last ran this episode of CHECKLIST, there's been quite a bit of marketplace activity, notably on the dedicated sequencer side of things. That's good news for the hordes of musicians who find computers and their operation about as friendly as the Cyberman invasion of Earth, and who've previously been a bit limited in the range of dedicated machines available to them.

As for software, there's continued expansion in the number of programs on offer and, sadly, E&MM's reviewing team has had trouble staying the pace: there are now more packages we haven't examined than there are ones we have. But fear not. We hope to remedy the situation over the next couple of months by reviewing a record number of new programs, thereby satiating the desire of a growing number of converts to the computerised way of performing tasks musical.

As before, we've omitted the lower-end programs aimed at exploiting the internal sound chips of popular home micros, even if they offer MIDI as a selectable option, in the interests of preserving the sanity of both our compilers and our readers. There's also no space for packages which, while of obvious technological and musical interest, aren't readily available outside their native Japan, Germany, US or wherever.

That aside, you should find the listing to be a valuable source of technical data on today's 'music production' packages, with the added bonus(!) of E&MM's considered opinion thrown in for good measure.

Choosing gear has never been easier.

SEQUENCER

CASIO

SZ1 – £299 Four-track digital MIDI sequencer, step- and real-time recording options; storage capacity 3600 notes (step time), 1800 notes (real time; switchable touch data response, cassette and cartridge storage, MIDI-only synchronisation. + *Cheapest dedicated MIDI recorder yet, and without too many sacrifices, two MIDI Outs, easy to use;* – *doesn't store pitchbend data, available memory could be restricting, cartridges aren't cheap;* = *inherent limitations are tolerable given machine's big price advantage over everything else, thus good value, two SZ1s MIDI'd together would make a neat eight-track sequencing system for not much outlay.*

KORG

SQD1 – £599 Two-track MIDI recorder, step- and real-time recording options; 15,000-note storage capacity; MIDI In, 2 MIDI Outs, Sync 48 (Korg standard) and tape sync facilities, quick-disk storage. + *Logical layout gives excellent ergonomics, hence machine is one of easiest to use, disk storage is quicker, more convenient, more reliable than just about anything else;* – *non-variable clock rate obliges you to buy adaptor unit if your system's not a MIDI one, two-track format could prove limiting;* = *viable and presentable alternative to previously-available machines, with more than the odd bit of design inspiration to help it on its way, shares QX7's 16-channel MIDI assignment system, which is good.*

OBERHEIM

DSX – £1195 Sixteen-channel (eight CV/Gate outs) digital sequencer; 6000-note, ten-sequence, ten polyphonic track capacity; patch change, split and double control parameter information; cassette storage, internal or external sync options. + *Part of comprehensive Oberheim system comprising excellent DMX/DX digital drum machines and OB8 poly, does its job smoothly and efficiently;* – *not MIDI-compatible, but see below;* = *obvious choice for Oberheim system owners that's been subject of recent price reduction, now has limited MIDI capability thanks to US company J L Cooper's Oberface – if you can find it.*

ROLAND

MC202 – £160 Two-channel digital CV/Gate monophonic sequencer; real or step-time recording options, approx 2600 note capacity; tape storage, portamento and accent facilities, internal or external (24ppqn) sync options, battery or transformer operation. + *Built-in sound-generating synth module, second sequence channel, very low price;* – *no MIDI facilities, synth section sounds nothing special and incorporates no patch memories;* = *excellent introduction to sequencing sadly approaching the end of its useful working life, but still difficult to ignore if money is tight.*

MSQ100 – £525 Single-track, 6100-event polyphonic sequencer; step- and real-time recording options, velocity parameter information, cassette storage, internal or external sync (24ppqn) option. + *16 channels of MIDI recording, cost, power-down memory retention;* – *multifunction controls make many options difficult to access, no overdub editing facilities;* = *versatile, cost-effective machine outperformed by Yamaha QX7, but probably a better bet for existing Roland sequence users.*

MSQ700 – £850 Eight-track digital MIDI and DCB sequencer; real- or step-time recording options, 6500-event capacity, voice, envelope and filter parameter information; tape storage, MIDI In and Out. + *Ease of operation, DCB connection means JP8 and Juno 6/60 owners can use their synths in MIDI systems;* – *no MIDI Thru and only one MIDI Out, high cost for what's inside the machine;* = *a deservedly and consistently good seller, but position of prominence now under threat from recent rivals and arrivals.*

YAMAHA

QX1 – £2299 Eight-track digital MIDI sequencer, real-time recording with extensive step-time editing facilities, 32 songs, 999 measures, pitchbend, modulation, key velocity, aftertouch control parameter information; approx 80,000 note capacity, disk storage, MIDI In, Thru, eight MIDI Outs. + *Unrivalled (for a dedicated machine) editing and MIDI track assignment options, tailor-made for Yamaha's own superlative TX816 sound rack;* – *inadequate display, silly keyboard, costs a lot for a jazzed-up eight-bit micro;* = *has spent a year at the top of the dedicated sequencer tree and deservedly so – contemporary technology's version of the Micro-Composer, but polyphonic and a lot more flexible.*

QX7 – £499 Two-track digital MIDI sequencer, step or real time recording options; key velocity, aftertouch, pitchbend, modulation, foot control, breath control parameter information; cassette storage, internal and external MIDI syncing options, MIDI In, Out, Thru. + *Ease of use (considering multiplicity of job commands and functions), track assignment flexibility, cost;* – *only one MIDI Out;* = *well thought-out machine that offers versatility of computer software in a more musically-accessible package, 16-channel MIDI recording affords more potential than two-track format would indicate, still a good bet for the money.*

SOFTWARE

EMR

BBC MIDI Hardware Interface – £90 MIDI In, two MIDI Outs, sync (24 ppqn) connections.
MIDItrack Composer – £50 Disk-based, step-time sequencing package for BBC B. + *Reasonably comprehensive range of editing facilities;* – *like a lot of early step-time packages, too laborious to make using it enjoyable or even tolerable;* = *designed for computer buffs rather than musicians, if yyou're one of the latter, you'll be disappointed.*
Performer – £80 Eight-track, disk-based, real-time sequencing package for BBC B; **Graphics – £37** Graphics-generation package for BBC B, responds to input of MIDI music information; **Notator – £40** Forthcoming disk-based link package for Composer, permits hard copy of music; **BBC Editor – £40** Forthcoming disk-based link program for Composer and Performer, allowing both real-time and step-time input. *All above EMR BBC packages to be reviewed.*
CBM64 Hardware MIDI Interface – £90 MIDI In, two MIDI Outs, sync (24 ppqn) connectors.
Performer – £80 Eight-track, disk-based, real-time sequencing package for Commodore 64. *To be reviewed.*
Spectrum MIDI Interface – £90 MIDI In, two MIDI Outs, sync (24 ppqn) connectors. ▷

MIDItrack Performer – £80 Eight-track, cassette-based, real-time sequencing package for Spectrum. + *Easy to use, above average use of Spectrum's limited graphics capabilities;* − *still a few editing idiosyncracies, won't work with any hardware other than EMR's own interface;* − *a definite and welcome improvement on EMR's earlier BBC package, let's hope they keep it up.*

HINTON

MIDIC 1.0 – £250 (2K), £300 (10K) Intelligent interface between MIDI and RS232 computer-standard connection. Includes utility program that allows incoming MIDI data to be viewed on-screen to assist users wishing to write their own MIDI software. + *Excellent idea put into practice with competence by company with limited resources, system is essentially open-ended;* − *hardware lacks non-MIDI facilities, R&D costs passed on in high selling price;* − *one of the best thought-out MIDI packages to appear since the system's inception, though its eventual success will depend on the software-writing skill of others.*

JELLINGHAUS

Commodore 64 MIDI Hardware Interface – £90 MIDI In, MIDI Thru, three MIDI Outs, external Clock In; made for Jellinghaus Music Systems by SIEL in Italy.

12-track Recording Studio – £100 12-track, 7677 event, disk-based real-time sequencer for CBM64; velocity, pitchbend, aftertouch and program change parameter information, internal or external sync options. + *potentially easy to use, plenty of channel assignment options;* − *terrible manual hinders rapid acclimatisation, both hardware and software have their idiosyncracies;* − *flexible system from a company that knows what it's doing in the programming department, even if the hardware sometimes lags behind a little.*

Sequence Chain Program – £45 Add-on for 12-track Recording Studio, acts as link between sequences of various tempi and time signatures, allows storage of patch changes. *To be reviewed.*

SixTrak Sound Editor – £50 Commodore-based patch-editing program for Sequential SixTrak and MAX polys. *To be reviewed.*

Scorewriter – £340 Combination program produces hardcopy screen dump of music notation display from sequencing software; price includes 12-track Studio and Sequence Chain programs stored on EPROM. *To be reviewed.*

JORETH

Music Composer System – £250 Eight-track, disk-based, real-time and step-time sequencer for CBM64, sold complete with hardware interface; 6000-note capacity, MIDI In, three MIDI Outs, internal or external sync options. + *Excellent low-level Music Composition Language, syncable to non-MIDI clock (selectable timebase), easy to use considering complexity;* − *relatively high asking price;* − *the premier MIDI software package for CBM64 users, so far produced in small numbers by Worcestershire company particularly responsive to musician's – rather than programmer's – requirements and suggestions.*

LEMI

Apple MIDI Card – £TBA MIDI In, three MIDI Outs, external Clock In, footswitch jack, for use with Apple home computer and Apple-compatible lookalikes.

Future Shock Software – £TBA Disk-based eight-channel, real-time sequencer package, 2900-note capacity. + *Easy to use thanks to single-keystroke commands and handy Help page, decent editing facilities;* − *tricky to get hold of in the UK, Apple isn't exactly world's best-value home micro;* − *well thought-out and eminently usable real-time sequencing package, and good value in its native Italy.*

AMP 83 Software – £TBA US-originating collection of Apple-based MIDI programs, including step- and real-time sequencer (16 channels, 4000-note capacity), and delay program that introduces time delay between MIDI Receive and Transmit signals.

PASSPORT DESIGNS

Apple MIDI Card – £220 MIDI In, MIDI Out,

Drum Sync In/Out (24, 48 or 96 ppqn), plugs into expansion slots on Apple motherboard.
MIDI/4 Plus Software – £120; MIDI/8 Plus – £180 Disk-based real-time sequencing packages for Apple II and CBM64; four-track, 5500-note capacity (MIDI/4), eight-track, 11,000-note capacity (MIDI/8). + *Extensive overdubbing facilities now matched by a decent range of editing options, plenty of support from one of computer music's most active companies;* − *still too expensive to be a really major force in the UK marketplace, though they do at least have a distributor now;* = *better than average software at a higher than average price, but Passport's best may be yet to come.*

ROLAND

MPU401 Hardware Interface – £160 'Intelligent' interface for Apple and IBM PC; MIDI In, two MIDI Outs, Sync Out, Tape In/Out connectors; additional computer bus allows four MPUs to be connected in parallel.
Microware Software – £TBA 48-channel MIDI sequencer for IBM PC and Roland MPU401. *To be reviewed.*

SEQUENTIAL

900 – £35 'DumpTraks' software facilitates program and sequence dumping to CBM64 disk from any Sequential polysynth equipped with MIDI; **910 – £75** Disk-based CBM64 expansion for SixTrak poly, allowing up to two keyboard splits and assignment of voices, display and alteration of voice parameters using pitch and mod wheels and memory for storing and editing sequences; **920 – £75** Similar to above for MAX polysynth, capabilities include 'superpatch' stacks, keyboard split and voice assign, and voice creation and amendment using 64's QWERTY keyboard; **931 – £TBA** 4000-note capacity Recorder/Editor/Composer for SixTrak and MAX; **932 – £TBA** Printer for 931 Composer showing up to six voices on conventional stave format, tempo and transposition details; **933 – £TBA** 'Album Series' package facilitates performance of current musical favourites on SixTrak, MAX and Drumtraks digital drum machine, allows control over tempo, key and voice timbre; **964 – £75** Disk-based polyphonic MIDI sequencer for CBM64 with 4000-event capacity; velocity, pitchbend and mod parameter information, facilities for overdubbing, copying, correction. *All above Sequential programs to be reviewed.*

SIEL

Spectrum MIDI Hardware Interface – £79 Spec similar to JMS interface unit.
Spectrum Live Sequencer – £22 Cassette-based, single-track, polyphonic, real-time sequencer for Spectrum; control over tempo, looping facility. + *Simple to use, inexpensive;* − *obvious limitations of single-track format;* = *good starter program for the short term.*
CBM64 MIDI Hardware Interface – £79 Spec similar to JMS interface unit.

CBM64 Live Sequencer – £69 Disk or cassette-based, 16-track polyphonic, real-time sequencer for CBM64; editing and transposition facilities, song memory. + *Remembers velocity and aftertouch data, fairly easy to use, who can argue with 16 recording channels at this money?;* − *needs more editing facilities, laborious playback routine;* = *almost, but not quite, the perfect* player's *software package.*
Expander Editor – £53 CBM64/Spectrum disk- or cassette-based graphic parameter control program for Siel Opera 6, DK600 and Expander 6. + *Excellent graphics program puts 'analogue' visual on computer monitor for rapid, straightforward patch editing;* − *nothing, except that DK80 Editor has even better graphics;* = *a real winner, shows Siel have programming ingenuity in abundance.*
BBC/CBM64 Multitrack Composer – £39 (disk), £36 (cassette) Six-channel step-time sequencer, 9000 note capacity, QWERTY input of information. + *Highly versatile, masses of editing facilities for very little money;* − *can be a real pig to use;* = *should succeed among composers rather than musicians, but still too many keystrokes per note for our liking.*
MIDI Data Base – £39 CBM/Spectrum disk- or cassette-based synth program file, stores 250 patches for any MIDI synth except Yamaha DXs and Casio CZs. + *Versatile program that lets you house synth patches in related 'families', among many other things;* − *nothing we can think of;* = *well-conceived and user-friendly package that does something really novel with the MIDI standard, and a real bargain.*
Digital Echo/Delay – £54 CBM64 disk- or cassette-based digital delay program, works by inserting delay between MIDI Receive and Transmit signals; 5mS-200mS delay, control of signal/effect balance, 14 'heads', auto-loop, MIDI-assignable file sequence. *To be reviewed.*
Keyboard Tracking Program – £75 CBM64 disk- or cassette-based program facilitates assignation of master keyboard with splits, arpeggiation, ▷

sequencing to control any MIDI source. *To be reviewed.*

DK80 Editor – £55 CBM/Spectrum disk- or cassette-based Editor for DK80 polysynth, gives full control over user-adjustable parameters by joystick or QWERTY keyboard, complete with real-time waveform shaping, Help pages. + *Excellent graphics, coupled user-friendly operation;* ■ *the fact that similar packages don't exist for a bigger range of synths, sluggish cursor movements, the odd bug or two;* − *makes parameter editing more rewarding, proves new technology can assist sound-changing to good effect.*

DX7 Editor – £TBA Voice Editor and patch memory for Yamaha DX7. *To be reviewed.*

SDS

DX7 Editor – £25 Cassette-based DX7 voice editor program for Sinclair Spectrum, works with most major Spectrum MIDI Interfaces; allows libraries of voices to be built up on cassette. + *Excellent and easy-to-use (if rather derivative) graphics, even more remarkable given humble Spectrum origins;* ■ *nothing unless Yamaha are planning to sue for graphics plagiarism;* − *another patch-editing winner, all the more useful in the context of DX7's unhelpful LCD window, saves Spectrum owners the cost of CX5M and appropriate software.*

UMI

UMI 1B – £295 British-built all-in-one MIDI sequencing package for BBC B, comprising Aries RAM expansion board, ROM-based step- and real-time sequencing software with extensive editing and song-chaining facilities, DX7 voice dump. + *Sequencer beautifully easy to use in either entry mode, compaction facilities allow removal of memory-intensive dynamic and mod wheel data, informative and helpful graphics layout;* ■ *only the cost;* − *superbly conceived and well laid-out sequencer package that does everything all the others do and more. Also available: quicker, more facility-laden UMI 2B at £495.*

XRI SYSTEMS

Micon MIDI System Controller – £108 Eight-track (mono) real- and step-time sequencer for 48K Spectrum; 10-sequence, 24,000-event capacity; comes complete with hardware interface incorporating MIDI In, two MIDI Outs, internal or external sync options. + *Sync to non-MIDI clock (selectable timebase); excellent step-time editing facilities, very creditable music notation display, open-ended structure offers scope for user-programming;* ■ *poor real-time facilities;* ■ *again, British programming cleverness beats inadequacies of host micro to produce a really usable and versatile package, too good to ignore unless real-time editing is top of your list of priorities.*

COMPUTER

AKAI

CPZ1000 Music Computer – £TBA MIDI music computer incorporating twin 3.5" disk drive in 19" rack-mounting format.

Specifications as yet undisclosed, but auxiliary hardware includes RZ1000 recorder panel, EZ1000 editing module, and MZ1000 CRT display unit, all expected to be available before end of year. *To be reviewed.*

ATARI

520ST Home Computer – £700 68000-based home micro with 512K RAM, mono monitor and disk drive included in price; built-in MIDI In and Out sockets, GEM graphics system, BASIC and logo programming languages. + *Excellent graphics, interfacing, language implementations add up to extremely attractive computer package on which MIDI is even more attractive bonus;* − *no MIDI software available yet, internal sound chip is a bit of a let-down, package too pricey for most first-time home computer buyers;* = *all in all, probably the immediate future of non-dedicated computer music systems, or at least a major part of it, even more musician interest now that downmarket 128K model has been resurrected – should be available here soon.*

E-MU SYSTEMS

Emulator II – £7250 Eight-voice, eight-bit sampling system, five-octave velocity-sensitive keyboard, split and layering facilities, analogue filtering and LFO, disk storage. + *Superlative sound quality, maximum 17-second sample length, onboard sequencer, MIDI compatibility, ease of use in all areas, especially looping;* ■ *long loading times, poor keyboard;* = *great improvement on original Emulator, and one of the easiest and most cost-effective routes into high-quality sound-sampling.*

ENSONIQ

Mirage – £1695 Eight-note polyphonic sound-sampling keyboard; built-in 3.5" disk drive, sequencer and analogue sound-modifying section, five-octave touch-sensitive keyboard with split options, full MIDI compatibility. + *Superb sampling sound quality, good range of sound-modifying options, user-friendly control layout, European version's better (than US equivalent) keyboard and disk drive;* − *lack of step-time facilities limits sequencer's usefulness, demand outstrips supply in some areas;* = *wonderful sampling machine with a price that brings the technique within reach of vast numbers of people for the first time, imminent hardware and software updates are Ensoniq's insurance against looming competition from several quarters.*

FAIRLIGHT

CMI – £28,500 + VAT (basic system) Eight-voice, eight-bit digital synthesis and sampling, built-in dual disk drive, six-octave music and QWERTY keyboards; wide range of sound creation and music production software packages. + *Designed as a total computer music system from the outset, and it shows;* − *comparatively poor sampling quality, soon to be replaced by 16-bit Series III;* = *an industry standard, though showing signs of being left behind by cheaper, newer technology, Series III could change all that.*

GREENGATE

DS3 – £250 Four-voice, eight-bit, disk-based digital sound-sampler for Apple II/IIe; optional (£200) five-octave keyboard, onboard real-time sequencer. + *Sounds surprisingly good for cost, new looping and editing software improves system's versatility;* − *not very easy to use, poor interfacing;* = *still one of the cheapest ways of getting into polyphonic sampling, if you have an Apple...*

KURZWEIL

250 – £10,995-£18,035 12-voice, disk-based sampling system; 88-note velocity-sensitive weighted keyboard, split facility. + *Excellent sound quality thanks to unique 'Contoured Sound Modelling' system, comprehensive interfacing, onboard sequencer and chorus, 12-channel outputs;* − *user-sampling requires (expensive) addition of Apple Macintosh computer;* = *after all the pre-release hype, the Kurzweil delivers the goods: but elements of its design could be a lot more cost-effective.*

NED

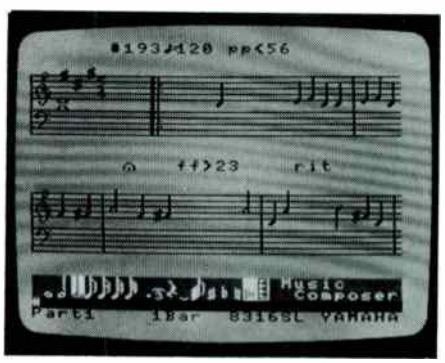
Synclavier – £24,500-£105,000 Eight- to 32-voice, 16-bit FM digital synthesis and sampling system; 76-note, individually pressure-sensitive, weighted keyboard, 32-track onboard sequencer, internal or external sync options, SMPTE syncing facilities. + *Vast range of software updates and options, future ones include fully polyphonic sampling;* − *outrageously expensive, Yamaha's DX exploits have made FM synth section look very silly;* = *an excellent system for studios, musicians and composers with more money than they know what to do with.*

PPG

Wave 2.3 & Waveterm B – £5245 & £6760 Eight-voice, 16-bit, additive synthesis and disk-based sampling system; five-octave velocity- and pressure-sensitive keyboard, onboard sequencer software. + *Versatility of analogue/digital hybrid synth system, relatively cost-effective;* − *suspect build consistency;* = *highly versatile and justifiably popular studio system, now with notable better (16-bit) sampling quality and upgradable with Expansion Voice Unit and weighted Processor Keyboard.*

YAMAHA

CX5M Music Computer – £449; MSX software cartridges – £36; YK10 full-sized keyboard – £165 32K MSX micro with onboard eight-voice FM digital sound chip of similar spec to that in DX9 poly. + *Excellent sound capability thanks to*



Yamaha's unbeatable FM system, superb voice editing and composing software packages; − *silly miniature keyboard supplied, MSX micro and FM sound chip add up to a lot less than the RRP;* = *for the time being, the only serious contender in the cheap music micro stakes, with extended graphics, MIDI sequencing and RX drum machine editing programs imminent.*

CX7M 128 – £TBA 128K version of CX5M for introduction this winter, details to come. *To be reviewed.* ■

SUBscribe

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PART OF THE FURNITURE

Sequencer by Korg; furniture by The Reject Shop, Habitat, Debenhams and Maple, Waring & Gillow; photography by Tim Goodyer

Korg's new SQD1 is the company's first dedicated MIDI sequencer, but from a glance across its front panel and a quick look at its spec sheet, you'd think they'd been making them for years. What's more, the price is right.

Tim Goodyer

It's been said before that books furnish a room, but these days, much the same can be said of computer technology. The accompanying photograph, taken in a ground-floor maisonette on the outskirts of the university city of Cambridge, shows how a piece of scintillating new technology can transform an otherwise mundane sitting room into a stimulating living environment. The technical marvel is the Korg SQD1, and it should be available from a variety of retail outlets early this coming autumn.

In a non-domestic furnishing context, the SQD1 is a two-track dedicated polyphonic MIDI sequencer, the first such machine to carry the Korg name, and a timely entrant into what's been a fairly quiet sector of the hi-tech musical instrument market. It has a 15,000-note memory and an onboard disk drive for more permanent storage of your work. The disks are of the 2.8" Quick Disk variety, and each one of them holds around 15,000 notes per side – I make that 30,000 in all – which can be accommodated in up to five songs (sequences) per side. Any sequence may use memory up to this 15,000 note maximum but, obviously, at the cost of putting any more sequences on the same side of that particular disk.

Before you get as far as wishing to dump to disk, it's quite likely that you'll want to record a sequence into the machine. This can be done in either real time or step time, a section of the control panel being devoted to each with

accompanying sections for Play Only, Edit and Data Transfer. These are presented in a column down the left-hand side of the front panel, and are associated with eight function switches whose purpose changes in accordance with the current mode of operation.

One of the reasons the SQD1 blends in so well with contemporary styles of interior decor is that it is more than a little stylish on its own. This isn't just coincidence, either, because the Korg's aesthetics actually perform a useful ergonomic function. For instance, the SQD1's layout puts multifunction and operation switches along two sides of a grid that tells you what they do in the various modes available, so that although switching from one job to another is still a far from pleasurable procedure, it's a lot smoother than it is on a lot of machines. Beneath the function switches are six more buttons which behave in a manner not totally dissimilar to those of a tape recorder, and are labelled appropriately. However, seeing as these switches also serve the disk drive and one or two auxiliary purposes when necessary, there's a second set of labels below.

Turning our attention momentarily to the rear panel reveals a MIDI In, two MIDI Outs, Sync In and Out (at Korg's 48ppqn rate), Tape Sync In and Out (on 3.5mm jacks), Click Out (also on a 3.5mm jack, providing a duplication of the metronome that emanates from somewhere within the unit), Play/Stop and Record footswitches (quarter-inch jacks), and six DIP switches governing the selection and filtering of MIDI data. More specifically, the first of said DIP switches (I know they're cheap, but they're terribly fiddly – if only there was some EEC legislation banning them) you can configure MIDI Out information to include what's incoming as well as what's being transmitted from the sequencer. This is a nice feature if your controlling keyboard has only one MIDI Out and you want to play another synth or expander as well as input data to the SQD1. The last of the offending DIPs facilitates routing of MIDI information internally to the Quick Disk, or out over the MIDI bus, as required.

The unit comes ready equipped with a mains lead which works well, invoking, with the collaboration of the mains switch, a cheery HELLO from the display and instant entry to Play mode. Of all the alternative modes you might want to be in at this point, Play must occupy a position at the very bottom of the list, due to a complete absence of information within the machine. Time, then, to select a more suitable alternative. Assuming this is the first time you've removed the SQD1 from the fashionably furnished lounge and attempted to utilise it to any musical end, you probably won't have any previously prepared disks to load. Thus, your mode choice lies between Real Time Record or Step Time Record.

Opting for Real Time Record alters the display message to End and automatically selects a 4 beats-per-measure configuration, the Main as opposed to Sub track for recording, MIDI Channel 1 and no resolution (ie. quantisation). Naturally, all these default values can be altered subsequently. The beats-per-measure value actually determines the number of beats in a bar, and the SQD1 can be persuaded to give between 2 and 8 of these, in spite of LEDs that are denoted only 2-5. This apparent miracle is achieved by holding down the appropriate multifunction switch and using the REW (Down) and FF (Up) buttons, which also look after incrementation and decrementation of things. Should you opt for a value in excess of 5, two of the LEDs will light to give a total numerical value of the parameter, so that 4 + 2 = a beats per measure value of 6. Orwell was wrong.

The choice of Main Track is consistent with the operation of the SQD1 as a two-track recorder, the normal way of loading data being to record your first track on Main and your second on Sub. If you're happy with the second track you bounce Sub onto Main, thereby amalgamating the two and clearing Sub for the next overdub. Any of the full range of 16 MIDI channels can be selected and stored as part of the sequence. It's also possible to change the channel mid-track if you want to, so the music on that channel needn't be played by the one synth for its entire length.

In Real Time mode, the absence of any resolution allows you to retain all your timing mistakes/nuances, unaffected by the influence of technology. However, should you wish to correct your alcohol-impaired dexterity in the interests of restoring some semblance of musicality, the SQD1 offers five timing alternatives: quaver, triplet quaver, semi-quaver, sextuplet semiquaver, and demi-semiquaver. And all of these are only as far away as the appropriate multifunction and Up/Down switches.

If you thought that was logical, try this: recording is initiated by prodding the Rec button or a footswitch connected to the relevant jack, while tempo is determined by the position of a rotary pot marked, strangely enough, Tempo. Perceptively avoiding the criticism that would otherwise accompany the arrangement, Korg have provided a switch that alters the subject of the display. ▷

the alternatives being Location (which is generally the most informative), Avail Note (which gives the total number of remaining notes available), and – you've guessed it – Tempo.

The metronome starts as soon as you press the Record button and sounds on each beat, the first beat of each bar being accented while the display gives a visual count-in for one bar. This done, recording begins. The display gives a bar and beat count up to a maximum of 9999 bars, regardless of the adopted time signature.

Having committed the first part of next week's Top 40 Breaker – complete with MIDI channel, patch-change, pitchbending, modulation and pedal sustain information – to the machine's memory, it may please you to listen through it, to make sure it's the perfect rendition you hope for or the sloppy, ill-timed performance you fear. Either way, it's nice to know this can be done without recourse to the Play mode, as the Play switch functions admirably in both Real and Step Time Recording modes. If recording is interrupted or a drop-in is in order, it can be resumed simply by positioning the required bar number in the display and going back into Record. The count-in occurs as before and recording can recommence, the new data overwriting any previous information on the way. The time signature is also open to modification at any point without leaving Recording mode, simply by halting the recording, altering the beats-per-measure value and resuming the recording.

Fine, but what about a bass line? Easy. The Reset button returns you instantly to the start of the piece, you move to the Sub track and repeat the recording procedure. The first track will then play back obediently whilst you're doing this, lest you forget the key or where, precisely, the middle eight began.

Recording subsequent tracks is where the fun really starts. Having satisfactorily recorded the first two tracks, it's necessary to bounce them together onto the Main track in order to free the Sub track for further overdubs. This is achieved painlessly in both Recording modes by holding down the Bounce multifunction key and pressing the Reset (Enter) button. The bounce is then executed and FINISH appears in the display to indicate successful completion of the operation. Successive recordings and bounces follow suit in the same way, until your *magnum opus* is finally complete.

To help you on your way to this end, there's a thing called Edit mode. In it, a Copy facility allows any bar to be added to the end – but only the end – of the sequence. Positioning the bar in question in the display identifies it as the one to be copied – a practice the SQD1 encourages you to use liberally. Holding the Copy multifunction key and pressing the Enter button does the rest. Similarly, the Insert function allows the insertion of an empty bar at the point indicated in the display.

Layout

'Multifunction and operation switches run next to a grid that tells you what they do in the various modes available.'

In a similar manner, you can also Delete a bar, remove the contents of a bar with the Blank function, or Erase from any point to the end of the song.

For argument's sake, let's say you fancy obviating the need for all the post-performance removal of extraneous noises by inputting everything in step time. If you do, the SQD1 has plenty in its armoury of facilities to make your dreams come true. Selecting Step Time Recording mode brings you to a similar position to the Real Time starting point, in that there's a 4/4 time signature default and you start off on the Main track. Additionally, the SQD1 defaults to semiquaver resolution. Logically enough, this means there are two recording steps per quaver, but all the resolution options are open to you should you require them.

Thankfully, recording in step time is as fully polyphonic as it is in real time – and that isn't always the case. Step-time recording necessarily provides three options not found in real time, but don't fret: all of them are accessed in the same way as the other multifunction facilities.

The additional commands are displayed as Tie, Rest and an arrow pointing off the panel to the left. Both Ties and Rests are of equal length to the notes as determined by the resolution setting, but they can be repeated until they're as long as you want them to be. For instance, a semiquaver becomes a quaver with one tie or a crotchet with three.

The mysterious arrow does not, as I had originally hoped, point to a compartment containing a lot of money or the secret of eternal youth, but instead signifies a back step, should you accidentally enter a bum note or a redundant rest (yes, it can be done, even in step time).

Reaching the end of your endeavours is a reassuringly satisfying feeling, and the sensible thing to do at this juncture, if you haven't already done it, is to save all the information to disk. SQD1 does not accomplish this of its own volition as Yamaha's QX1 does; how, when and where you save is entirely your own decision. As there's no power-down memory retention, it's advisable to keep the situation well in hand, as a rushed departure to the pub could cost you more than your driving licence. So the Kronenbourg will have to wait, but not for too long as dumping to disk is quite easy, if a little slow. A previously unused disk requires initialisation before use and, to this end, an option is included amongst the Data Transfer commands – no need to buy ready-formatted disks here (remember the Mirage?). This done, you're ready to make your dump, as it were. Pressing the Save key brings up a SAVE prompt in the display, and pressing the Enter button whilst holding down one of the multifunction switches (numbered 1-5) kicks off the saving procedure and tags your song with the relevant number for the disk directory and future retrieval.

To establish what's already on a disk, there's a function called Song that displays numbers of songs previously saved. There's also a back-up facility that lets you take the complete contents of one side of a disk into the SQD1's memory and regurgitate it onto a fresh disk – a nice touch.

Now, as a regular, curry-eating, heterosexual E&MM reader and SQD1 owner, you can be secure in the knowledge not only that you've written your first Number One, but also that it's safely saved and backed-up on five 2.8" disks. Given that, you've probably been busy – most likely arranging for the two girls who'd received your rock star chat-up routine at the local wine bar last week to sing backing vocals on *the* single. But as we all know, plans like these always contain unpredictable and unwelcome flaws. The people in Korg's R&D department have obviously encountered similar difficulties themselves, as they've pre-empted your next problem: tuning. In your enthusiasm for your work, you've recorded it all in the wrong key. But all is not lost. Thanks to Korg's foresight, transposition is available over six semitones sharp and five semitones flat. A sigh of relief is in order.

Facilities

'Recording in step time on the Korg is as fully polyphonic as it is in real time – which isn't always the case.'

Moving back to the subject of disks, the Load procedure is much the same as that for saving: selecting Load brings up a LOAD prompt that requires you to press Enter whilst holding down the desired song number. The girls are impressed. Play mode allows looping of the song as well as the option of playing back either the Main or Sub tracks separately if required.

We've already seen that the Korg SDQ1 is a magnificent addition to the visual aesthetics of even the most modest contemporary home interior. As a MIDI sequencer it's pretty good, too. It holds more notes than any of its immediate competition, while only the Yamaha QX1 – at a getting on for £2000 more – provides a built-in disk drive that gets round the attendant frustrations of dumping to cassette tape. It's a shame there are only two tracks, but the SQD1 shares a flexible MIDI channel assignment system (with two of its most immediate rivals, the Roland MSQ100 and Yamaha's QX7) that gives you something approaching a 16-channel recording system if your keyboard setup is suitably equipped. And by comparison with most if not all of the competition, the SQD1 has a control layout that makes recording successfully with it a rewarding experience, not a black art. Well done, Korg. ■

DATAFILE

Korg SQD1 Digital Sequencer

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KLONE ★ RANGER

Industrial Klone *photography by Tim Goodyer*

No matter how exciting current state-of-the-art electronic drum developments may be, there's still plenty going on further down the technological ladder. The new MultiKlone kit proves the point, and does so for less than £400.

Paul White

Maybe this is a personal thing, but despite being available in one form or another for several years now, Klone electronic drums have never really warranted more than a few moments of my critical attention. I suspect this was partly due to the rather basic nature of the kits, both in terms of electronics and cosmetics. But all that may be consigned to the history books with the arrival of a new kit by the name of MultiKlone. An altogether more serious offering, it comprises a five-piece kit with a rather novel hardware set-up based round a single, heavy-duty stand. This should prove practical and quite durable in use, but has the sort of appearance you either love or hate. The control unit is also a vast improvement on its forerunners, and I succeeded in producing some quite excellent sounds during the system's short stay in these offices.

But I'm leaping ahead of myself.

Once you've handed over the readies, you're entreated to take receipt of a sturdy fibre case, about the same size and shape as one you'd keep the stands of an acoustic kit in. Easily carried in one hand, this case will quite happily hold the entire kit: stands, pads, sound module and leads. Everything, in fact, except for the bass drum pedal, which you have to buy separately.

Unfortunately, the review box didn't contain an instruction manual either, but as I'm an insufferably clever sod, I had it up and running in no time.

As I've said, the entire kit 'hangs' on a single stand (which has more arms than a Krishna god with fleas), and to this, the five pads and the bass pedal are firmly fixed. Available in a choice of black, white or red, the moulded hexagonal plastic pads are fitted with hard rubber playing surfaces, which are bonded directly to a plywood backboard. Being a curious sort of chap, I removed the four screws to see what was inside, and the answer turned out to be Not Very Much.

This isn't surprising, as the pads are used only as pickups and in no way contribute to the actual sound of the drums. Thus, all that's needed is a tiny piezoelectric transducer, which is exactly what these pads contain. It's bonded to the rear of the plywood back plate and protected from damage by a generous dollop of silicon rubber compound, which also strengthens the joint between the transducer and its cable, the latter terminating in a jack socket on the underside of the pad.

At the end of each of the arms on the stand is a swivel fixing (rather like the tilting attachment found on the top of conventional cymbal stands), and this screws directly into a metal threaded insert on the base of the drum pad. I must confess to being a little worried by this method of fixing at first, but the plastic surrounding the insert is reinforced and quite flexible. So as long as you don't play like a complete animal, it shouldn't pose any problems.

The bass drum pad is identical in construction to the other four, and is mounted about six inches above ground level, so that a typical beater will hit it somewhere near the centre –

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the pedal fixing is a simple flat plate. In addition to the arms that hold the pads, there's an extra arm in the centre which, on the old kits, was used to hold the sound module. The new module has no provision for such a fixing and so can't be fitted to this stand (which is a shame), but the extra arm could still be put to good use holding up your favourite 'Krut' cymbal.

On the face of it, the MultiKlone 'brain' is an unobtrusive and rather inauspicious unit, yet it houses the electronics for five channels of sound, with each drum channel possessing no fewer than nine controls. And that doesn't include the manual trigger buttons, which are invaluable for setting up sounds. There's also a Master Level control, an overall Noise Quality(!) control, and a Repeat button that works in conjunction with the Repeat control on each channel to produce automatic flam effects.

Sounds *'The natural 'acoustic' voices are what sets this kit apart from so many electronic outfits and their Space Invader noises.'*

The rear panel is where the connecting leads to the pads are plugged in, and in addition to a main output that also doubles as a headphone socket, there's provision to connect a footswitch for remote control of the Repeat option. Of great use if you want to record the kit or equalise/treat each drum sound independently is the fact that each drum channel has its own audio output.

A small red LED on each channel tells you which drum you've hit, just in case you've had a few pints too many and don't know where your sticks are landing, and it also offers some visual indication of the playing dynamics which the MultiKlone shares with most other analogue drum synths.

All five channels are identical electronically, and each is capable of generating tom-tom, snare or bass drum sounds depending on how you set up the various parameters. The kit has no preset voices and no user-programmable memories, so the sounds set up on the front panel are the sounds you get. To create a sound, you obviously have to know what the various controls do, so let's proceed with an explanation of these.

Conventional knobs are used for the more frequently-used parameters – Level, Tune, Sweep and Decay – whilst presets are adopted for the more obscure ones: Noise Level, Bend, Q/Tone, Attack and Repeat. The reason for the mixture? Money, money, money.

Running through the control functions, Decay sets the duration of the beat, ie. how long the sound takes to die away. As with most analogue drum synths, the Klone uses a mixture of tone and filtered noise to create its sounds, and the next control, Sweep, effectively sweeps the noise filter at a rate set by the Decay control. This gives a wah-wah type of effect when listened to in isolation, but used constructively, it can be a pretty useful feature. Below this we have Tune, which sets the basic pitch of the sound, and this is followed by the Level control which is used to set individual channel volume.

Moving across to the preset-style controls, we find some rather less conventional functions. First of these is Repeat, which determines the timing between flam beats when the master Repeat button is activated. This can be varied from virtually nothing to a well-spaced double beat, and is particularly effective on snare and tom sounds.

The Attack control is used to emphasise the beginning of each beat in order to simulate the effect of a drum stick hitting the head. Now, this isn't a distinct 'click' as it is on some electronic kits. It's more a case of the level being raised for a brief instant at the beginning of the sound, a technique which, though unconventional, is nonetheless quite effective.

Moving down the panel we find the curiously named Q/Tone control, which works in conjunction with the noise filter Sweep control and determines the bandwidth of that filter. If that doesn't mean much to you, don't worry. In subjective terms it simply makes the effect of the filter become either sharper or softer: you just fiddle with it until it sounds right.

The Bend control can be set to make the pitch either rise or fall during the decay period, a falling pitch giving the classic electronic drum sound, and a rising pitch being useful for simulating Indian tabla sounds or creating special effects – definitely a worthwhile inclusion. The last control is for Noise level, and this determines how much noise is added to the final sound. Few seem aware of the fact, but even toms benefit from some added noise, and a little experimentation with the filter settings can give a convincing 'skin' sound to a drum.

Appearance *'The MultiKlone 'brain' looks unobtrusive and inauspicious, yet houses the electronics for five channels of sound.'*

In terms of master controls, Noise Quality affects all the channels and varies the setting of a filter, which treats the common noise source. This can then be used to change the character of the noise on all channels simultaneously, which has the advantage of keeping all the channels sounding as though they belong to the same drum kit.

So much, then, for the conducted tour and the theory. Does the thing actually make usable sounds?

If you've ever played about with an electronic kit, it doesn't usually take long to come up with the familiar 'goat being kicked in the stomach whilst sneezing' snare drum sound, or toms that sound like a sick owl being put out of its misery, or a bass drum with a pitch high enough to sound like the doors of a tube train shutting.

But this little unit is capable of far greater subtleties. By using the filtered noise and carefully tuning the Noise Quality, Sweep and Q/Tone controls, it's possible to obtain some quite natural 'acoustic' tom sounds. They may not be incredibly futuristic, but they're what sets this kit apart from so many other electronic outfits and their awful Space Invader noises. Likewise the bass drum sounds, which though unlikely to cause many SDS9 owners to fling themselves under a passing bus, do succeed in sounding pretty good. Excellent, in fact, when you consider the MultiKlone's price.

I was genuinely surprised at the wealth of good sounds available from this modest little kit. The Attack control seems somewhat superfluous, as I found myself setting it to full, on all channels, at all times. Still, I suppose it could be useful for creating softer, less percussive voices.

The ingredient that has the greatest effect on the final sound is probably the filtered noise. This can be a mite fiddly to set up, especially if you're after a particular effect, but once you've got the sounds set up, it's quite easy to change the character of the whole kit just by using the Noise Quality control. Potentially, that makes setting up sounds from scratch a lot less time-consuming.

In the hardware department, the stand system works very well, even if it doesn't look as poseworthy as some of its competitors. You may also find you have to swap around some of the arms (or some of yours) before you settle on a comfortable playing position. But one big advantage of the single-stand system, and one that working drummers will appreciate, is that there's enough room to set up your cymbal stands without running out of floor space.

Play the kit from pads and you'll find the dynamic range is really quite good, but you do have to play fairly hard to get an even sound, and this is where my chief criticism lies. I can't help feeling some sort of sensitivity control is essential on a kit of this type (even a master control for all the voices would be a help), but I suppose this has to be weighed against cost. Because what we're dealing with here is an *extremely* competitively-priced kit.

It's when you consider that you could turn up to a gig with the Klone kit in one hand and a combo amp in the other that it all starts to make sense.

I like this kit a lot. It has no pretensions, yet features one or two quite bold design concepts which should make it well worth getting to know. It sounds good enough to give a number of other electro-kit manufacturers something to think about, especially when you consider that price.

And incidentally, the control unit itself is available separately, so if you want to use different pads with the kit, or even the controller on its own, your needs are catered for.

Manufactured in the wilds of Essex (near Southend), the complete kit will leave you change from four hundred quid, making it quite possibly the best value electro-kit currently available. ■

DATAFILE

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1984

JANUARY

Music *Simple Minds, Saga, Hawkwind, Dave Hewson* **Appraisal** *Oberheim OB8, Vigier Bass, SIEL Cruise, The Kit & Accessories, Passport Soundchaser* **Technology** *Using Sequencers, Electronic Metronome* **Studio** *Ibanez DM2000*

FEBRUARY

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MARCH

Music *Vince Clarke & Eric Radcliffe, Blancmange* **Appraisal** *Sequential SixTrak, Roland SDE3000, Roland System 100M, Electronic Percussion Guide (nine reviews inc Sequential Drumtraks, Boss DR110, AHB Impulse One, Hammond DPM48)* **Technology** *Music Composition Languages Pt3, S-trigger Converter, Lead Tester, Using Sequencers Pt2*

APRIL *Sold Out*

Music *Fad Gadget, Vic Emerson (Sad Café), Brian Chatton* **Appraisal** *Simmons SDS7 & SDS8, Roland Jupiter 6, TR909 & MSQ700, Yamaha PS Keyboards, Crumar Composer, Klone Dual Percussion Synth, Vox White Shadow Bass* **Technology** *Gentle Art of Transcription Pt1, Ins & Onts of Digital Design, Understanding the DX7 Pt1, Syndrom Pt1, Bass Pedal Synth* **Studio** *Ibanez UE400 & UE405*

MAY

Music *Wang Chung* **Appraisal** *PPG Wave 2.3 & Waveterm, Roland Juno 106, Roland JSQ60, Casio 310, M&A Electronic Drums* **Technology** *PDSG Pt1, Understanding the DX7 Pt2, String Damper, Clap Sounds* **MIDI Supplement Pt1** *Specification, Theory & Practice, Product Guide* **Studio** *Huddersfield Polytechnic Music Studio, Steve Levine on MIDI, Dynacord PDD14*

JUNE

Music *Orchestral Manoeuvres in the Dark, Indie labels* **Appraisal** *Roland GR700/G707, SynthAxe, SIEL Expander 6, Sequential Model 64 Sequencer, MFB512 Digital Drum m/c, Jen Musipack 1.0, Boss DD2 Delay Pedal* **Technology** *Gentle Art of Transcription Pt2, PDSG Pt2, Understanding the DX7 Pt3, Syndrom Pt2, Multiwave LFO* **MIDI Supplement Pt2** *Inside MIDI, MIDI & The Micro, BeeBMIDI Interface 1 (construction)*

JULY

Music *Human League, Steve Jolliffe, Jade Warrior* **Appraisal** *Yamaha DX9, Korg Super Section, Yamaha MK100, Microsound CBM64 add-on, TED Digisound, JMS MIDI Software* **Technology** *PDSG Pt3, Spectrum MIDI (Sequential SixTrak and DX7 Patch Dump), Understanding the DX7 Pt4, RackPack, BeeBMIDI 2 (construction)* **Studio** *Ibanez DM1100*

AUGUST

Music *Rusty Egan (Visage), Cocteau Twins, Hans-Joachim Roedelius* **Appraisal** *Synclavier Update, Technics SXK250, Yamaha PF10 & PF15, SIEL Piano Quattro & PX jr, Roland HP300, HP400, PB300 & PR800, Garfield MiniDoc, E-H Instant & Super Replays, EMR BBC MIDI Software* **Technology** *Fairlight Explained Pt1, Understanding the DX7 Pt5, BeeBMIDI 3 (DX7 Voice Dump), Syndrom Pt3, Miniblo, SynthMix Pt1*

SEPTEMBER

Music *Thomas Leer, Chris & Cosey* **Appraisal** *Oberheim Xpander, Korg EX800 & RK100, DigiAtom 4800, MicroLink ML10 System, Roland MPU401 & Software, Sycologic AMI & MX1, Passport MIDI/4 Software* **Technology** *OMDAC Update, Fairlight Explained Pt2, Step-time Composition on the Sequential Model 64, SynthMix Pt2, Dual VCLFO, Understanding the DX7 Pt6* **Studio** *Cutec MX1210*

OCTOBER *Sold Out*

Music *Ultravox* **Appraisal** *Yamaha CX5M & Software, Roland Mother Keyboard System, 360 Systems Update, Yamaha PS6100, ddrums, Yamaha RX11 & RX15, Korg DDM220, Tama Techstar Electronic Kit, Frazer Wyatt Speakers, Greengate DS3 Sampler* **Technology** *PDSG Pt4, Fairlight Explained Pt3, OMDAC Update 2, Powertran MCS1 Pt1, Understanding the DX7 Pt7* **Studio** *Reports on ELCS, Hollow Sun, Computer Music Studios*

NOVEMBER *Sold Out*

Music *Cabaret Voltaire, Peter Hammill, Axxess, UK Electronica* **Appraisal** *Chroma Polaris, Emulator II, Crumar Bit One, Casio CT6000, Ricol Action Replay, Amstrad CPC464 Computer* **Technology** *BeeBMIDI 4 (programming with interrupts), Fairlight Explained Pt4, PDSG Pt5, Drum Sequencer (BBC B), Wasp/CBM64 Sequencer, Powertran MCS1 Pt2* **Studio** *Yamaha D1500 MIDI Delay, Everything but the Kitchen... (syncing to tape)*

DECEMBER *Sold Out*

Music *Vangelis, Tangerine Dream, Musica Nova* **Appraisal** *Kurzweil 250, Akai AX80, Siel DK600, Technics Digital 10, Roland TR707, Korg DDM110, MPC DSM8, Ultimate Percussion UP5, Acorn Music 500, Software roundup inc reviews on Music Maker (CBM64), SIEL Expander Editor (Spectrum), Island Logic Music System (BBC), UMI 1B (BBC), SIEL Composer/Arranger (CBM64), JMS 12-track Recording Studio (CBM64)* **Technology** *BeeBMIDI 5 (buffers), Fairlight Explained Pt5, Powertran MCS1 Pt3, Syndrom Pt4* **Studio** *Everything but the Kitchen... (interfacing analogue synths)*

1985

JANUARY *Sold Out*

Music *Tears For Fears, Neuronium* **Appraisal** *Casio CZ101, Simmons SDS EPB, Keyboard Combo Roundup, Elka X30, Sequential MAX, TED Digisound Update, SIEL MK900, LEMI MIDI Software* **Technology** *BeeBMIDI 6 (Juno 106 voice dump), Powertran MCS1, Back to Basics* **Studio** *Everything but the Kitchen... (syncing drum machines & sequencers)*

FEBRUARY

Music *Laurie Anderson, Jean-Michel Jarre, Ars Electronica & ICMC* **Appraisal** *Roland JX8P, MPC Programmer 8, Roland SBX80, Korg KMS30, Roland MSQ100, SIEL 16-track Sequencer, EMR MIDItrack Performer* **Technology** *Digisound Voice Card, Back to Basics (VCOs)* **Studio** *Newcastle College of Art & Technology, Everything but the Kitchen... (syncing with timecodes)*

MARCH

Music *New Order, Steve Tibbetts* **Appraisal** *Korg DW6000, MPC DSM32, Synclavier Performance System, Simmons SDS1, OSC Advanced Sound Generator (synth preview), Sycologic M14, ATPL Symphony BBC add-on* **Technology** *CX5M Revisited, Fairlight Explained Pt6, BeeBMIDI 7 (DX7 Editor Pt1)*

APRIL

Music *Keith Emerson, China Crisis, Tim Souster* **Appraisal** *SIEL DK80, Pearl DRX1 Electronic Drums, Yamaha TX7 Expander & QX7 Sequencer, Linn 9000, Datel Sound Sampler, SDS DX7 Voice Editor* **Technology** *BeeBMIDI 8 (DX7 Editor Pt2), Fairlight Explained Pt7, Powertran BBC-MIDI Interface, Time Machine syncing project* **Studio** *Delta SX301 DDL add-on*

MAY

Music *Bill Sharpe, I-Level, Severed Heads* **Appraisal** *Yamaha TX816 MIDI Rack, QX1 Sequencer, KX88 Mother Keyboard, Akai S612 Sampler, Sequential MultiTrak, Korg MR16 MIDI Rhythm Sound Unit, Technics DP50 Drum Machine, Joreth Music Composer Software (CBM64)* **Technology** *TechTalk (Robert Moog), Time Machine add-on (RX15-MC202), Powertran MCS1 Software, Fairlight Explained Pt8*

JUNE

Music *Mick Roberts (King), Loose Ends, Ian Boddy* **Appraisal** *Casio CZ5000 Poly, Oberheim Matrix 12, The Anvil (drum machine preview), Keyboard Stand Roundup, MIDI FX (JMS MIDI Master Synchroniser, Quark MIDI Link 999, JMS CGX Interface, Bokse US8 Universal Synchroniser), Microsound CBM64 Sampling System, XRI Micon Software* **Technology** *TechTalk (Dave Simmons), Fairlight Explained Pt9, Fairlight Goes MIDI* **Studio** *Powertran DDL sampling add-on*

JULY

Music *Patrick Moraz & Bill Bruford, Level 42* **Appraisal** *Ensoniq Mirage, Chase Bit 01, SIEL Expander 80, Sequential TOM, Atari 520ST Micro, Passport MIDI/4 Plus & MIDI/8 Plus, Hinton MIDIC, Microskill AS32 (synth preview)* **Technology** *Music 500 AMPLE program* **Studio** *Zeus B Held, Korg SDD2000*

AUGUST

Music *Tim Lever (Dead or Alive), Sting, Stewart Copeland* **Appraisal** *Yamaha DX21, Roland TR727, Simmons SDS9, PolyMIDI 1 Sequencer, SIEL DK80 Graphic Editor & MIDI Data Base software (CBM64), Roland MIDI FX, Micro Musical ML50 Pedalboard* **Technology** *Minimoog retrospective* **Studio** *Eric van Tijn & Jochum Fluitsma (Mai Tai), APRS findings, Logitech sampler*

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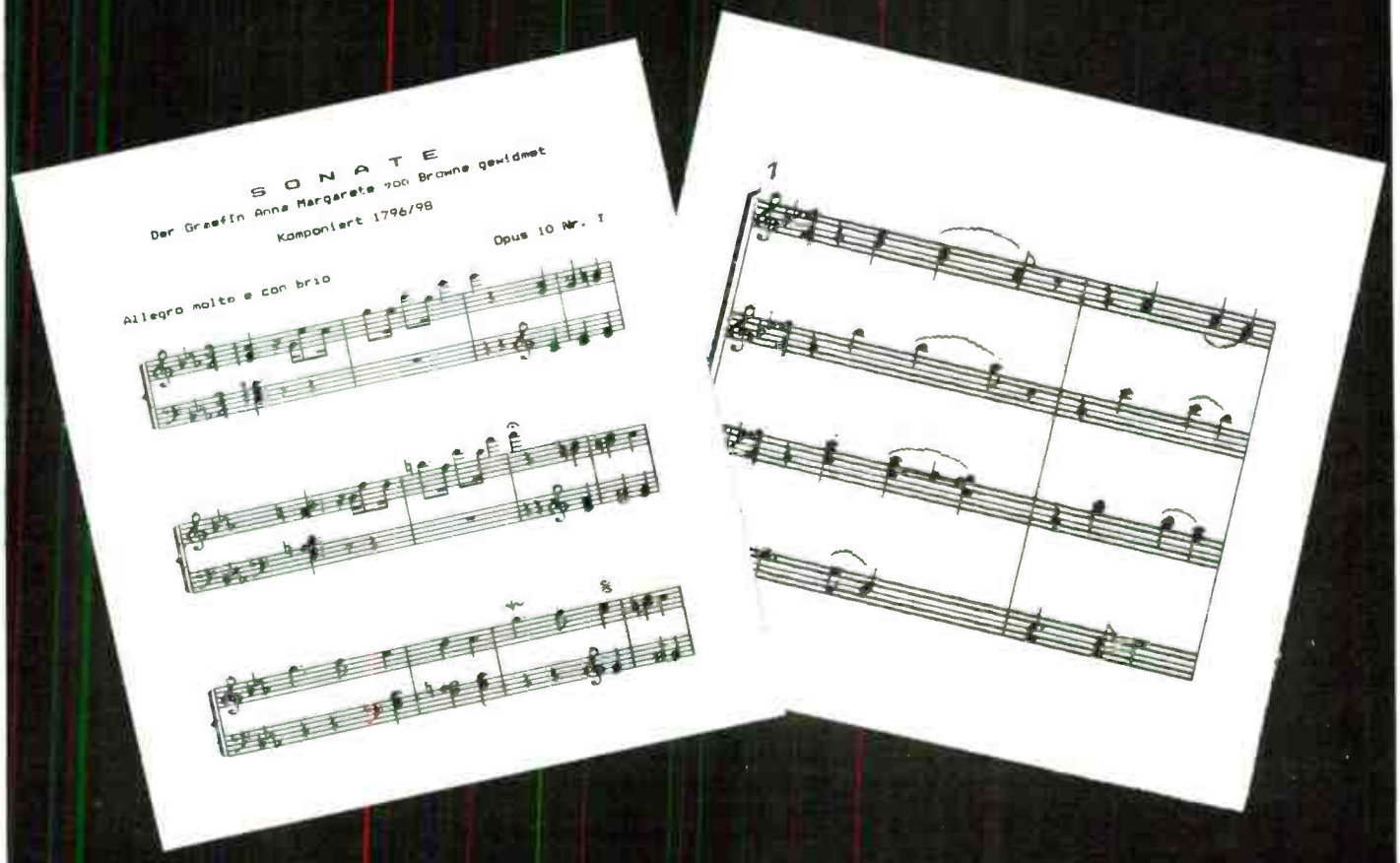

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CHEAP! *but not so nasty*

True to form, Casio have entered the sequencer market with a machine so cheap, it could carve out an entire market sector of its own. It certainly deserves to. *Simon Trask*

As recording in its various forms becomes an increasingly integral part of the musician's approach to their art, there's no doubt that demand for affordable MIDI sequencers is going to grow, and grow rapidly. If you already possess one of the better-known home micros, a computer-based software package can make a lot of sense, both in musical and economic terms. But if the dedicated sequencer route is the one for you, you've previously had to fork out something in the region of £500 to get even the cheapest machine. The recent French entry, the PolyMIDI 1 (see review, E&MM August), and Korg's new SQD1 (see review elsewhere this issue) are no exception.

Well, Casio's new SZ1 sequencer should change all that, with an RRP of £295 (which probably means a shop price of about £250) that should put it in a price category occupied by only one machine – itself.

In both appearance and in operation, it's clear the SZ1 takes its lead from the sequencer portion of Casio's flagship synth, the CZ5000. Like that sequencer, it has facilities for both real- and step-time entry, but what I should make clear right now is that the SZ1 is a *cut-down* version of the 5000's sequencer. The main result of this economising is that the SZ1 has four tracks as opposed to the 5000's eight, and that the note storage capacity has been halved accordingly. The step-time section has undergone some simplification, too, though it still enjoys more than afterthought status.

Storage capacity is 3600 notes in step time (or Manual, to use Casio's phrase) and 1800 notes in real time – with, in the latter case, an inevitable further reduction if you start recording velocity data. You're also limited to 1999 beats or steps per track – not too serious a problem.

Layout *'The SZ1 takes its lead from the sequencer portion of Casio's flagship synth, the CZ5000 – it's a cut-down version of that.'*

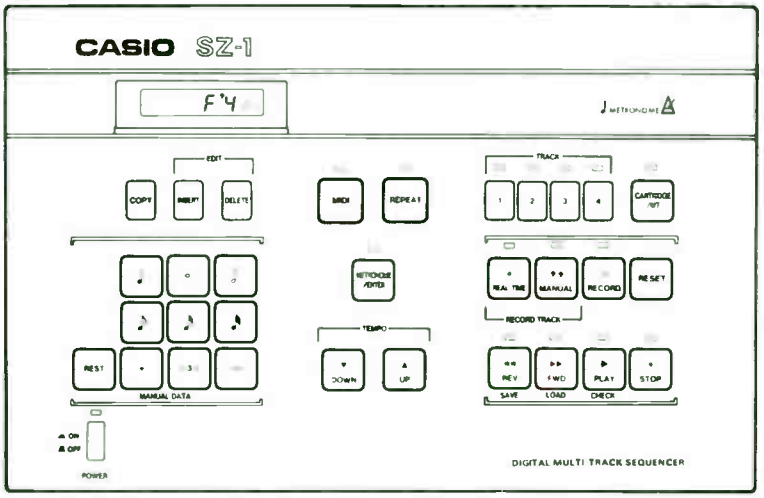
It's hard to say how much, or how little, recording capacity this gives you in real terms, because unlike audio tape recording, digital sequencing is influenced by the *style* of music you want to record. Still, I'd say an average application would give you 2-3 minutes of music – not quite enough for that concept album you've been planning all these years.

The front panel layout is commendably clear, and sees Casio retaining the tape-recorder style of operation that's characterised the company's previous sequencers, be they in professional synths or domestic keyboards. In fact, you'll be glad to know that operation of the SZ1 requires the minimum of button-pushing. This can only be a good thing, as it allows you to get on with the business of using the sequencer to its best advantage without having to worry about what combination of buttons to press next. If there's any aspect of the SZ1's operation that can be a bit tedious, it's having to hit the Reset button (which resets the track pointers to the start of the track data) before you can do anything.

Real-time recording on the SZ1 is just that – there are no quantisation options, so there's no way you can compensate for lack of playing ability. The SZ1 has a built-in metronome that you can switch out if you want to, but it doesn't sound too unpleasant. You can specify tempo over 45 levels between crotchet=40 and crotchet=256. Once you've specified the track to be recorded, you get a four-beat count-in from the metronome and then you're away, with the LCD displaying the current beat number and the metronome, if you've switched it on, helping to keep you on the straight and narrow – though as the SZ1 functions in beats only, there's no helpful first-beat-of-the-bar metronome accent.

You go out of Record mode by pressing Reset or Stop; selecting the latter means you can resume recording from the point at which you stopped. Once a track has been reset, the SZ1 won't prevent you from recording over it – though you can't record over a step-time track in real-time and vice versa.

As well as note data, you can record patch changes, control changes 0-121 and the Casio CZ series Glide On/Off (a MIDI System Exclusive parameter). The ability to record any control changes (values higher than 121 refer to MIDI mode commands) means controls such as sustain pedal and mod wheel are catered for automatically. A switch on the back panel allows you to enable or disable reception of touch data (velocity and pressure), but this is the only form of MIDI data you can choose to filter out.



One really annoying thing: the SZ1 can't record pitchbend data. Admittedly, such data tends to gobble up large chunks of memory and the SZ1 is only modestly endowed in the memory stakes, but I can't help thinking these choices should be left open to users, rather than predetermined by manufacturers.

The semi-good news is that you can edit a track recorded in real time either in Record mode or after you've exited Record mode. This is achieved in the time-honoured fashion of 'dropping-in' on the relevant track. If you're still in Record mode, you can use Rewind to take you to the appropriate section. The SZ1 enters playback and starts recording as soon as you lay a finger on the keyboard – any data previously recorded is erased from this point on. To make any alterations *after* exiting Record, you set up the relevant track for recording and then start playback, playing as soon as you reach the offending passage – again, the SZ1 starts recording automatically. What isn't so good is that you can't 'drop out' once you've begun recording – if you exit from Record mode, your sequence finishes at that point. It seems like a small point, but as any Sociology student will tell you, being able to drop out makes dropping in a lot easier.

Step-time recording offers note values from semibreve down to semiquaver (these can also be rests) plus dotting, ties and triplets. The LCD shows you the current step and the note value associated with that step. You input data by selecting a note value and then playing a note on the keyboard, which means that if you want to keep to the same note value for any length of time, you can effectively play in real time.

Step-time recording is monophonic per track, and as with real-time recording, you can only record on one track at a time. This makes the whole process rather long-winded, something that seems particularly inappropriate when you consider step-time recording has a greater note capacity than real-time. What's worse is that you can't listen to what's on any of the other tracks whilst you're recording in step time – so you really need to have all your parts worked out.

I don't know about you, but I reckon the whole point of step time entry is that it lets you record music you can't play in real time; and that if you're going to have a step-time system, there's no reason why it should limit you to monophonic lines. The SZ1's monophonic limitation seems to have been designed with the Solo mode (MIDI Mode 4) of Casio's CZ synths in mind. This is the multitimbral facility whereby each of the synth's voices listens to an adjacent MIDI channel, and is capable of playing a unique voice patch determined by the incoming data. The only hitch here is that if you want to avail yourself of all four multitimbral voices, it ties up all four SZ1 tracks in one go. Why? Because although the SZ1 allows you to bounce tracks down (more on this anon), you have to assign them to the same MIDI channel first – so before you even begin, you've lost the multi-channel requirement that makes multitimbral operation over MIDI possible. This also means you can't have more than four-voice multi-timbrality.

Editing options available *in step time only* comprise Copy, Insert and Delete. Copy works within a chosen track, and duplicates whatever data is currently within that track. Thus you can record a four-bar bass riff once and repeat it any number of times within the limits of the available memory – and the facility works exponentially (four bars become eight, eight bars become 16 and so on), so a couple of button-presses go a long way. This is disappointingly inflexible, and it's also a real shame Casio haven't implemented the same facility for tracks recorded in real time.

Meanwhile, no prizes for guessing that Insert and Delete allow steps of data (whether they're notes or rests, patch or control changes) to be inserted into or deleted from step-time tracks. You can reach any point in the recorded data by means of the Fast Forward and Rewind buttons, which operate at the maximum tempo rate of 256BPM, but I can't help feeling it would've been nice to have been able to jump to any beat/step that took your fancy. It's all very well imitating tape recorder-style operations, but that shouldn't mean you have to build in the limitations of that medium as well.

The SZ1 allows you to do more than just record four tracks, though. It's possible to bounce as many as three tracks (which can be any mixture of real- and step-time) onto a vacant fourth track, though regrettably this isn't accomplished through any onboard facility. Instead, you have to connect one of the MIDI Outs to MIDI In, set your vacant track to Record and the tracks you want to bounce to Play, and then start real-time recording. This means the length of your piece determines the length of time it takes to bounce the tracks down – not an ideal situation when you bear in mind that one of the potential advantages of software-oriented devices is that they allow you to transcend the inherent limitations of physical reality (space-time, the universe and all).

And what's more than a mite unfortunate is that any tracks you want to bounce down have to be assigned the same MIDI channel – if you don't do it yourself the SZ1 will do it for you, making its choice of channel according to some arcane principle known only to Casio's programmers. That said, you *can* assign a track to any of the 16 MIDI channels retrospectively, regardless of what channel the incoming data was sent on, so it may well be that the channel is disregarded for note storage purposes and only added at the output stage. By this token, a track can't encompass more than one MIDI channel. Whatever, it's an unfortunate limitation which means you can't send data out on any more than four MIDI channels at a time.

The inevitable Repeat function makes its appearance on the SZ1, and acts on both real- and step-time tracks alike. Unfortunately, all track repeats are tied in with the length of the

longest active track, rather than repeating according to their own length. This means you can't have one track which repeats a short riff or chord sequence while you record a solo on top (as you can on the PolyMIDI 1, for instance) unless you copy or play that sequence for the number of times you want it – a bit wasteful on storage space.

You can dump data to a choice of external storage media (cassette or cartridge), but if you do this, you're obliged to saving the entire contents of the SZ1's internal memory in one go. A tape dump takes 22 seconds, but if you heed my advice and avail yourself of the SZ1's Check function to make sure your data has actually saved properly, the process takes another 22 seconds.

The advantage of cartridge storage is that it's near instantaneous, but at well-nigh £30 per cartridge (and remember that one cartridge stores only one complete memory dump), it's an expensive – if essential for live work – way of going about things. Hats off to Casio for providing an alternative to tape, though.

When it comes to communicating with the outside world, the SZ1 is strictly MIDI, so if you want to hook up a non-MIDI drum machine, drive an analogue sequencer or (delight of delights) sync to tape, you'll have to invest in another box such as Korg's KMS30 or Roland's new SBX10 – not necessarily a bad thing, but it does mean extra cost. On the MIDI front, you can choose between internal or external clock, a choice that allows the SZ1 to be either master or slave to another MIDI sequencer or drum machine. The SZ1's rear panel also houses a start/stop footswitch socket, but unfortunately this is limited to playback only – it would have been useful to have the same facility for recording, too.

But it's good to see Casio have provided two MIDI Outs, which could be the difference between having to buy a multiple MIDI Thru box and a holiday in Corfu.

The SZ1 follows Casio's CZ101 and CZ1000 synths in being able to run off either batteries or mains, and the batteries also backup the internal memory through power-down. They have a claimed life of one year if used only for the latter purpose, but a mere five hours if they're used as the main power supply. So when the batteries go, your sequences go, too. Still, Casio's fascination for battery power does mean you can use a CZ101 linked up to an SZ1 in the Transit between gigs, should inspiration strike unexpectedly.

Performance *'The batteries last a year so long as you use them only for backup, but a mere five hours as the main power supply.'*

Summing up, it's clear the SZ1's design brief was to produce an affordable sequencer rather than a no-holds-barred wonder device. It goes without saying that there's room for both in the marketplace, but Casio's underlying philosophy has seemingly always been to produce goods that the majority of people can afford – and it's something they do well.

Thus, the SZ1 won't give you all the flexibility which, in an ideal world, £250 would buy you without any problems. But it *is* a lot more than the Noddy instrument its price says it ought to be. Some people will write it off altogether, others will welcome the advent of an affordable MIDI sequencer, still more will have a job deciding whether to go for an SZ1 or save up a bit more and go for something more elaborate.

If you're on the lookout for an all-purpose sequencer that's the music world's answer to the word processor and gives you seemingly unlimited note storage, the SZ1 probably isn't for you. But if you're after a usable and useful sequencer at a *very* modest price, give it the same serious attention you'd give a telegram from the pools people. ■

DATAFILE

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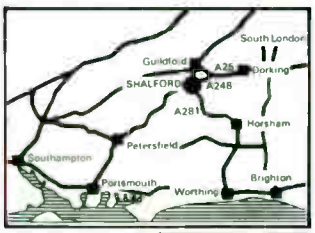

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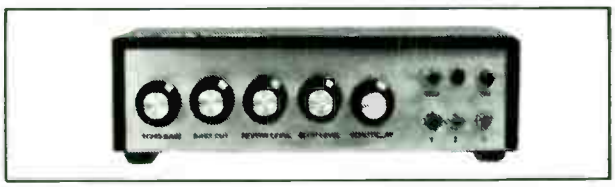

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From the uncharted backwaters behind Paddington Station comes another wonder of contemporary MIDI technology, the Sycologic PSP. It could shape the future of modern percussion-playing. *Nigel Lord*

I have been doing a little crystal ball-gazing on your behalf, and what I have seen is this. In the not-too-distant future, all electronic drumkits, drum machines, synths, sequencers and effects units will be universally interconnectable through MIDI, now an internationally standard digital interface. Well, that isn't strictly true. Inevitably, some bright spark will one day (and that day may not be all that far off) invent some sort of replacement for MIDI; faster, easier and more versatile to use. But with luck, that replacement will retain compatibility with the present standard, so that people with MIDI-based gear need not suddenly contract that violent contemporary music disease, PODS (Planned Obsolescence Deficiency Syndrome).

The percussion world has been noticeably slow on the MIDI uptake, but now that Simmons have taken the plunge (with spectacular results) by fitting to their new SDS9 electro-kit, the dreaded interface will soon have one less area of musical instrument technology left to conquer. Further evidence that this blitzkrieg is about to take place comes in the form of the Sycologic Percussion Signal Processor (PSP for short), one of a growing number of music boxes that do an awful lot more than their mundane appearance would suggest.

The PSP's main purpose in life is to take signals derived from piezo crystal pickups in drum pads, microphones and most other low-level electrical devices, and turn them into MIDI information. That information can then be used to control all the MIDI-equipped

instruments detailed above. Thus, by attaching these pickups or microphones to any object – pads, acoustic drums, paint tins or next door's cat – you can access the sounds generated by the instruments, and bring them under control of the sticks you hit the objects with.

The PSP's most obvious application is to allow the user to 'play' the voices of a MIDI-equipped drum machine from a set of pads, and when you think of some of the quite excellent sounds generated by the sampled voices of many machines these days, this in itself is a jolly handy feature to have. But the

PSP also allows you to access the voices and functions of synthesisers, sequencers and effects units, all of which may be transferred across either a set of pads or a miked-up acoustic kit. Imagine a DX7 marimba sound transferred at different pitches across a set of drums, and the implications behind the PSP start to become a little clearer.

And because the PSP can take signals from a whole range of devices and turn them into MIDI information, practically anything can be miked-up or have a pickup attached to it, and be played as a percussion instrument triggering any sound generated or stored by any piece of MIDI equipment. The really attractive thing about this is that piezo crystal pickups are available for literally a few pence: add a couple of wires, and you have all you need to trigger the PSP. If you're feeling lazy, you can even buy small bugs for a few quid each which perform the same function.

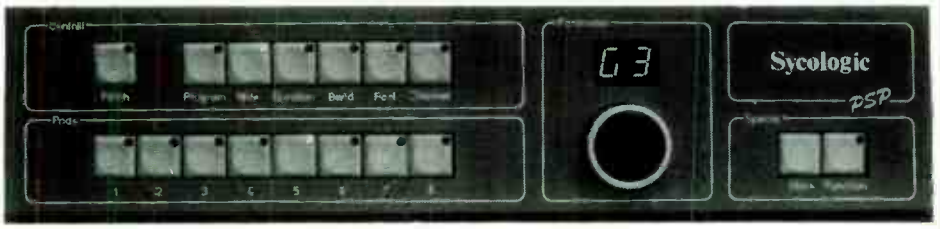
As if all this wasn't enough, Sycologic have equipped the PSP with the ability to modify

'The PSP can also do something rather unexpected: let you take drum sounds that already exist on tape and replace them with new voices.'

the signal derived from a pickup or microphone *before* it reaches the sound generator of the synth, drum machine or whatever. This modification is principally to do with changing the shape of the signal, so that the voices being played are subjected to different dynamics determined by the settings of the PSP. In simple terms, what this means is that the envelope of a sound can be altered by changing the signal that's triggering it.

And as with all the PSP's variable parameters, these changes may be stored within the machine, allowing you to achieve a particular kind of control over a sound at the touch of a button. So for instance, you can generate a sound with a linear build-up, another with an exponential attack which rises more quickly at the beginning, or one which rises very slowly and then drops away – all from similar beats on a pad. In fact, the PSP offers you 12 factory preset options for shaping the trigger signals which fire the voices, so you've got plenty of forms of control over playing dynamics.

One rather fascinating option involves randomised dynamics, which vary the signal randomly as you play the pad, producing a series of drum strokes at different volume levels. A clever idea, but it's where one of my few criticisms of the unit comes in. The variation between loud and soft beats caused



by this randomisation is quite marked – so marked, in fact, that it's really only useful as a special effect. Had the variation in dynamics been more limited, it could have been used as an accurate simulation of the change in playing dynamics an ordinary drummer exhibits while playing a series of consecutive beats. This would be rather neat on a sampled cymbal, for instance, where instead of an identical sample being repeated over and over again, the randomised dynamics could be used to introduce a degree of variation between beats, to simulate more closely the playing of a real cymbal. Still, I'm told the dynamic shapes are generated in software, so presumably this bit of the PSP could be reprogrammed to good effect. Let's hope it is – and fast.

The PSP can process the signals from eight separate inputs (pads or whatever), in addition to a hi-hat switch. And each input has its own set of performance controls, which include MIDI Program Change, Note (for pitch change), Duration (for adjusting the length of

'Imagine a DX7 marimba sound transferred at different pitches across a set of drums, and the PSP's implications become clearer.'

the note or beat), Bend (for controlling the rate of pitchbend), Feel (for the control over dynamics already mentioned), and Channel (which allows you to assign each pad to a particular MIDI channel). The last-mentioned function allows you to send trigger signals to any one of 16 different pieces of MIDI equipment, and thus combine the sounds of more than one instrument. For example, you could program a pad applied to Input 3 to trigger a sound on DX7 synthesiser, a Simmons tom, and a Roland drum machine *simultaneously*. Or, by applying the input signal to separate MIDI channels, trigger them individually: that's how versatile the thing is.

The entire programming section uses a pushbutton selector for each parameter, a common rotary increment control and a reasonably informative LED display. The idea is that you select the parameter you want, and then alter it individually using the control knob and display readout before entering the desired level into memory.

We haven't finished on the facilities front, though. The PSP can also do something rather unexpected, in the form of letting you replace drum sounds that already exist on tape. This is possible thanks to the unit's ability to derive a trigger pulse from a drum signal recorded on audio tape, and then use that signal to trigger a different drum sound which may itself be recorded at some later stage. This is the sort of thing even large recording studios have trouble putting into practice, so the advent of the PSP should be more than welcome in those quarters.

Thus, as simple as the front panel looks, the shared functions of many of the controls hide a wealth of other features far too numerous to mention. After all, what we have here is an extremely comprehensive controller, designed to cope with any combination of equipment, and making it possible to connect more or less anything to more or less anything else, altering a whole host of signal characteristics in the process. Yes, the PSP *is* expensive, but its cost has to be balanced against its vast inherent versatility, coupled with the meticulously detailed approach its designers seem to have adopted. And unlike so much home-grown hi-tech music gear, the PSP really looks the part. Its visual appeal is unlikely to be put to shame by any competing piece of rack-mounting wizardry, Japanese, American or otherwise.

Only one thing stands between the PSP and world domination: the possible inability of drummers to see the potential a machine like this is capable of putting their way. Magazines like E&MM can obviously help here, but it's also essential that the machine gets all the marketing and publicity backup it needs. Once that's happened, there should be a PSP in every decent-size studio in the land. Percussion will never be the same again. ■

DATAFILE

Sycologic Percussion Signal Processor

Controls *Pad selectors 1-8; parameter controller and LED display; 6 pad parameter selectors; 2 store/function selectors*
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A GALLERY OF MISFITS

For every well-publicised musical success, there's a corresponding failure lurking in the background. And as we discovered when we searched through our instrument files, some of those failures have been pretty spectacular... *David Ellis*

Given an industry that's as flourishing as the synth business, it's easy to forget the outtakes that weren't quite 'alright on the night'. For while the magazines, newspapers, dealers' shelves and advertisements are choc-a-bloc with glamorous new machines, it's worth bearing in mind that while a small percentage of them will end up revolutionising the industry and selling millions, a similar number will simply sink without trace, ducking out of the Championship without getting as far as the First Round. And as this Gallery of Misfits will show, there have been an awful lot of manufacturers who threw caution to the wind – and ended up with nothing more than a momentary blot on the musical landscape.

The first group of lemon keyboards to consider has to be the one housing instruments that attempted to construct railways before the train had been invented. Keeping abreast of technology and musical fads is all very well, but anticipating the future makes life rather more difficult.

Electronic Sackbut *was much more than a string machine, but never got further than this '70s pre-production model*

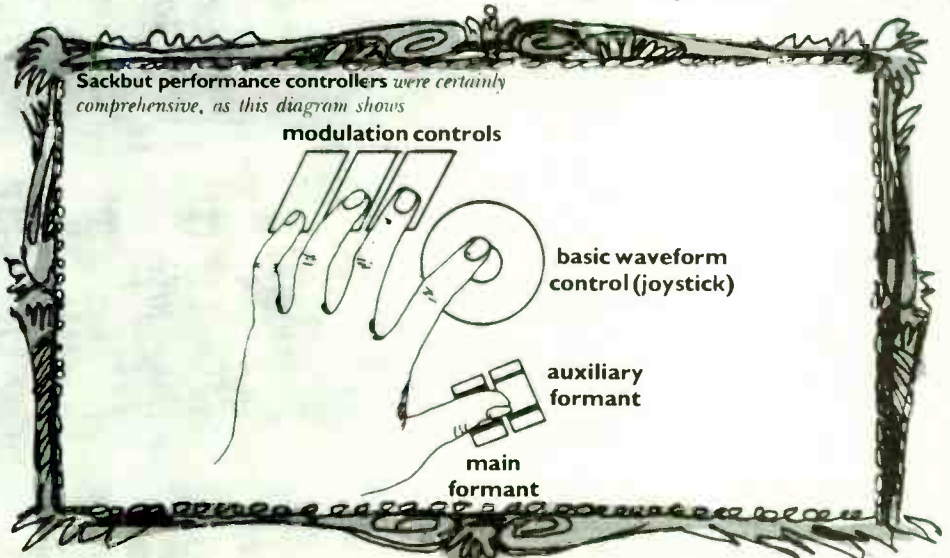
Pride of place in this section must go to the **Ondes Martenot**, a bizarre, monophonic keyboard that has a well-earned reputation for screaming from vertiginous heights in countless budget horror movies – and soothing the savage beast, 'con molto corny vibrato', in the pages of Messiaen's Turangalila Symphony and myriad TV film scores. And despite the fact that he invented his machine in France in 1928, when valves were very much the in-thing technology-wise, Monsieur Martenot pushed and pulled the technology to its limit. In doing so, he succeeded in creating an instrument with a good deal more musicality in its temperamental beat-frequency circuits than a lot of today's ersatz hangers-on. Take the Ondes' aftertouch, for instance, an innovation to keyboard technique 50-odd years before the MIDI had been dreamt up and Sequential's Dave Smith had got his velocity bytes together. Martenot took his cue from string players, noticing that the left hand moved back and forth on the string to add vibrato. On the Ondes Martenot, this principle got translated into a keyboard capable of lateral movement, with an arrangement of variable capacitance overlapping metal plates providing its distinctive ability at aftertouch vibrato. And then there's the performance control – a bag of carbon granules depressed by the left hand that provides a precisely user-defined ADSR envelope to whatever's played on the keyboard. That's innovation for you.

'What happened to the Ondes Martenot in the intervening years? In a few words, not a lot.'

What's happened to the Ondes Martenot in the intervening years? Well, in a few words, not an awful lot. There's still only one owner and player in the UK, a few in the States, and a sizeable number (not surprisingly) in France. But it still gets my vote as one of the more emotional musical communicators around, which doubtless explains why it still accompanies many a sinking of a fang into the old jugular vein. Oh yes, and the valves have since been replaced by transistors...

The other thing the Ondes Martenot had going for it is/was its commercial availability, albeit on a special order, and rather expensive, basis. Regrettably, the same can't be said for the **Electronic Sackbut**, a monophonic keyboard that can justly lay claim to being the first realistic string synth condemned to heavenly pluckings before its time. It was invented by a Canadian, Hugh Le Caine, in 1946, and like the Ondes Martenot, the Electronic Sackbut reflected an intention to marry the expressiveness of the violin to the mechanics of the keyboard. But unlike the Ondes, whose basic timbral quality was static during the course of a note, the Sackbut allowed the performer to vary timbre with the left hand, courtesy of both frequency and amplitude modulation controls, a waveform joystick, and formant controls.

But describing the Electronic Sackbut as a string synth does it a disservice. A 1952 recording of Le Caine playing his instrument shows it to be much, much more than that, and like the Ondes, a thoroughly musical addition to the catalogue of musical technology. So what went wrong? Well, like most inventors, Le Caine came up against financial and manufacturing bottlenecks. In fact, the early '70s saw a resurrected, pre-production version of the Sackbut, but commercial reality again escaped Le Caine's remarkable



Sackbut performance controllers *were certainly comprehensive, as this diagram shows*

EMS polysynthi *was attempt to give Brit company's academic achievements a place in the commercial field, but money problems killed it*

'The '70s were a critical time for many a synth company...and lots of them were thinking of ways to grab a slice of the action.'

invention, and it ended up in the white elephants' graveyard amongst fellow tinkling ivories.

Looking back, the '70s were a critical time for many a synth company. Competition from Roland and Korg ousted Moog from pride of place in the monophonic synth market, Sequential Circuits captured the imagination of thousands with the Prophet 5 poly, and a lot of manufacturers were left thinking of ways to grab their slice of the action.

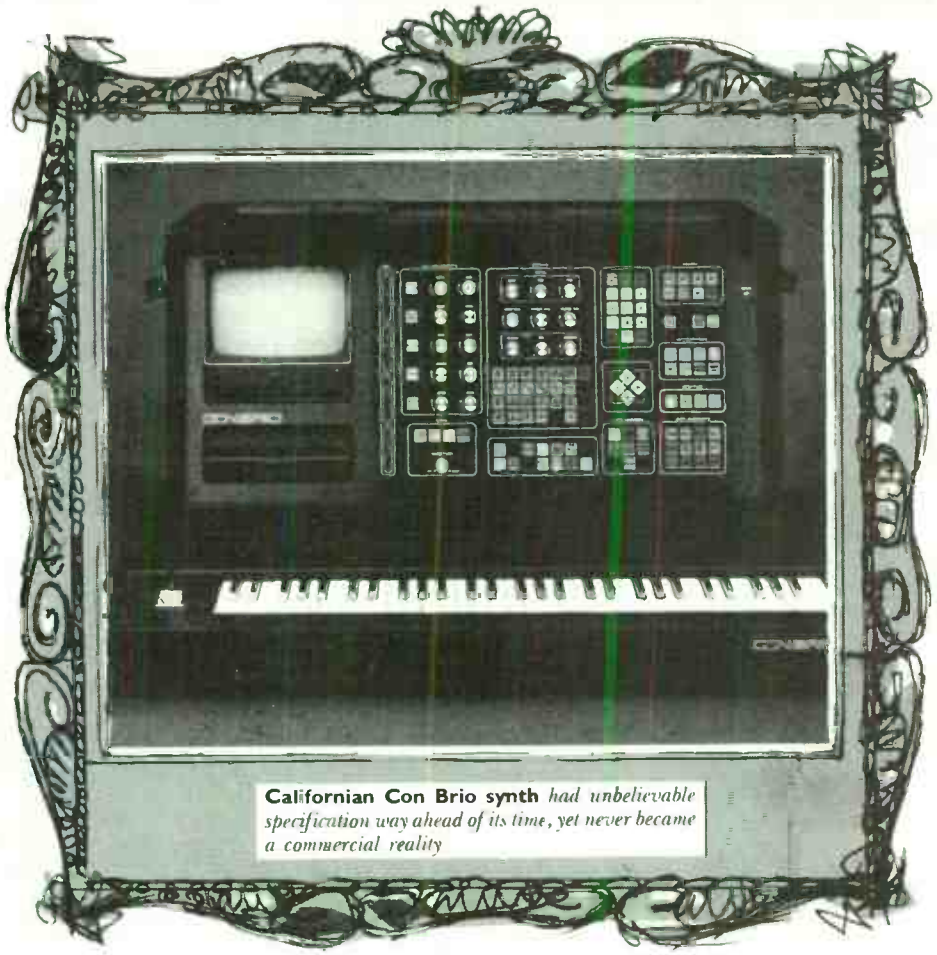
EMS (London) Ltd found themselves in precisely that position. Their **polysynthi** of 1979 represented a clearly intended move into the commercial market, and an attempt to carry over the (largely) good name of their more academically-inclined Synthi AKS and VCS3 synths into the rock and pop field. But the boarding of the gravy train wasn't to be that straightforward. Notwithstanding some design problems – notably an alarmingly free-floating 'pressure-sensitive' keyboard – and colour-coded panel graphics that looked like they were aimed at the under-10s, EMS pushed ahead with production, markering, and advertising...and then ran headlong into financial difficulties. As for the feature that was seen to be the machine's greatest promise – an add-on polyphonic sequencer allowing 'up to ten minutes of polyphony' and 'capable of many simple and complex effects such as octave additions, transpositions, and complex voicings', it fell flat on its feet virtually from square one.

So too did the offshoot from EMS' subsequent collapse and sell-off to UK firm Datanomics. All the right intentions were there – a repackaging of the Synthi AKS that put a micro in charge of the patchbay jungle – but the **Datasynth** (as the new machine was called) came at the wrong time, in the wrong way, and at the wrong price. Lessons were learnt, and the Datasynth died a rebel without a cause.

Quite what happened to Peter Zinovieff, the erratically brilliant erstwhile zoologist who headed EMS in pre-takeover days, isn't exactly clear, but the last news we heard of him was in the context of Sinclair Spectrums being attached to the Cambridge Pianola Company's Pianocorder. When the mighty fall, they do it with a bang.

Actually, doing it with a bang is also an apt epithet to attach to those that sought to extend keyboard technology into hyperspace, but suffered at the hands of NASA-style 'computer malfunctions' that left them with rather more earthbound flights of fantasy. Most impressive of this bunch of stranded albatrosses is the **Coupland Digital Synthesizer**, a veritable monster of an instrument that once graced the back page of the *Computer Music Journal* during the sultry days of July 1978, but never quite seemed to find the energy to escape from its two-dimensional advertising copy. Described as a 'portable (oh yeah? – I'd like to see someone carrying a seven-and-a-half octave keyboard...) polyphonic music instrument' and including a touch-sensitive function panel, liquid crystal bar graphs, numeric displays, and all manner of user-interactive goodies, the Coupland was way ahead of its time. Its 12 time-multiplexed 'waveshape generators' with '12-bit x 1K look-up tables' and 'a constant 40,000 samples/sec' were doomed to a rather less grand finale than some virtuoso or other bashing out Bach's Toccata and Fugue in D

Datanomics Datasynth *was better-aimed shot at revitalising EMS image, but still flopped*



Californian Con Brio synth *had unbelievable specification way ahead of its time, yet never became a commercial reality*

minor on its less-than-ivory ivories. What with an intended manufacturing base in Phoenix, Arizona, 'dust to dust, ashes to ashes' seems a singularly appropriate epitaph.

Still, one keyboard that did rise again (albeit momentarily) from the ashes was the Con Brio ADS 200R. Selling at a basic price of $20,500 and described as being in 'a more portable and economical form', the Con Brio was one of those typically American systems born out of a love of technology, the odd joint or two, and a whole lot of Californian sunshine. With not one, or two, but three processors in charge of sound synthesis, the ADS 200R boasted a 16-track sequencer storing up to 80,000 notes, automated mixdown and editing features, a built-in monitor screen, a 5.25" integral disk drive, a choice of 32 or 64 16-bit stereo or quadraphonic outputs with a 96dB S/N ratio, and a whole lot more besides. Whether it was the Music Programmer option (which provided every bit of performer/score interaction you might possibly want), or the optional Scorewriter (which'd trot out your masterwork as hardcopy to order) that did it, the ADS 200R oozed class from first LCD to last key.

But that didn't stop it from disappearing almost without a trace. Con Brio's mistake was that they kept themselves to themselves and never really got their production act together. Shame really, bearing in mind what the ADS 200R offered. And what about the Con Brio design team? Would you believe, they've ended up writing Commodore 64 MIDI software for Sequential? No, I couldn't stomach it at first, but it just goes to show that even the best brains can be bought these days... ■

More obscure nostalgia next month, when David Ellis concludes his survey of the synths that never made it to the starting-line...

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